04/14/2022

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:	**90 Tatnic Hill Road, Brooklyn, CT 06234**
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 six (6) wireless telecommunication antennas at an antenna center line height of 81-feet on an existing 90-foot Guyed Tower, owned by Southern New England Telephone CO, C/O Duff & Phelps LLC at PO Box Addison, TX 75001. AT&T now intends to remove three (3) 8' CCI TPA-65R-LCUUUU-H8 Panel Antennas, each currently installed in position [4]. AT&T then install three (3) 8' CCI OP65R-BU8DA Panel Antennas, Three (3) 8' CCI DMP656R-BU8EA-K Panel Antennas, each to be installed in position [3 +4]. In addition, AT&T intends to remove six (6) Remote Radio Units and install one (1) RRUS-4478 B14, one (1) RRUS-8843 B2/B66A and (1) RRUS-4449 B5/B12 in positions [3+4], all sectors, for a total of nine (9) new RRUs. AT&T is also proposing to replace (1) DC Fiber Squid with (1) new DC9 Raycap Squids, as well as (1) Fiber Line and (3) DC Cables to their equipment configuration. 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. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to John A. Berard – Town Building Official, Town of Brooklyn, CT at 69 South Main Street, Suite 22, Brooklyn, CT 06234 and Austin Tanner – First Selectman, Town of Brooklyn, CT at 4 Wolf Den Road, PO Box 6234, Brooklyn, CT 06234. A copy of this letter is being sent to the property owner Southern New England Telephone CO, C/O Duff & Phelps LLC at PO Box 2629 Addison, TX 75001. And a copy is being sent to the management company AT&T at 550 Cochituate Road, Framingham, MA 01701.

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

- **EM-CING-019-170328 –** New Cingular Wireless PCS ("AT&T") notice of intent to modify an existing telecommunications facility located at 90 Tatnic Hill Road, Brooklyn, 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 81 -foot level of the 90-foot Guyed Tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to

levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

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

Sincerely,

Kristina Cottone

CC w/enclosures:
John A. Berard – Town Building Official, Town of Brooklyn, CT
Austin Tanner – First Selectman, Town of Brooklyn, CT
Southern New England Telephone CO, C/O Duff & Phelps LLC - Property Owner
AT&T - Owner

04/14/2022

Memo: No Initial Zoning Decision Found

Upon consulting with the Building Inspector for the Town ofBrooklyn, it was determined that no initial zoning decision for this tower could be found. The building department phone number is 860-779-3411.

Kristina Cottone
Real Estate Project Manager | Smartlink
85 Rangeway Road, Building 3, Suite 102 North Billerica, MA 01862

SiteSafe
A QUALTEK Company

8618 Westwood Center Drive, Suite 315, Vienna, VA 22182
703.276.1100 ● 703.276.1169 fax
info@sitesafe.com ● www.sitesafe.com

Smartlink on behalf of AT&T Mobility, LLC
Site FA – 10035010
Site ID – CTV2075
USID – 71311
Site Name – BROOKLYN MRCTB057039-MRCTB057034-MRCTB056974-MRCTB049966-MRCTB056945-MRCTB056968

TATNIC HILL ROAD
BROOKLYN, CT 06234

Latitude: N41-46-05.27
Longitude: W71-58-17.10
Structure Type: Guyed

Report generated date: April 4, 2022
Report by: Benjamin Schnable
Customer Contact: Kristina Cottone

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

Table of Contents

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: NEW-ENGLAND_CONNECTICUT_CTV2075_2021-LTE-Next-Carrier_LTE_mh705r_2051A11YFQ_10035010_71311_09-20-2021_Final-Approved_v4.00

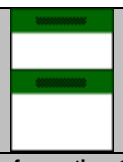
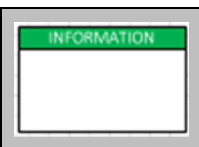
CD's: 10035010_AE201_220321_CTL02075_Rev2_4TX4RX_ANTENNA MODS_5G NR 1DR-1_LTE 4C_LTE 3C_RF MODS

RF Powers Used: Max RRH powers.

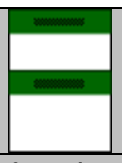
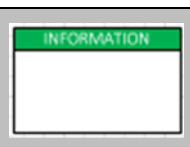
AT&T Mobility, LLC Duty Cycle: MPE Calculations are modeled with "75% Downlink Duty Cycle" for LTE and 5G.

1.3 Signage Summary

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

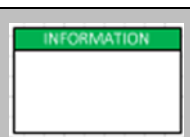
AT&T Signage Locations																
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Point																		
Alpha																		
Beta																		
Gamma																		
Status	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	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											1							
Alpha																		
Beta																		
Gamma																		
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 base of the tower 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												1						
Alpha																		
Beta																		
Gamma																		
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 base of the tower is a Caution 2B sign.

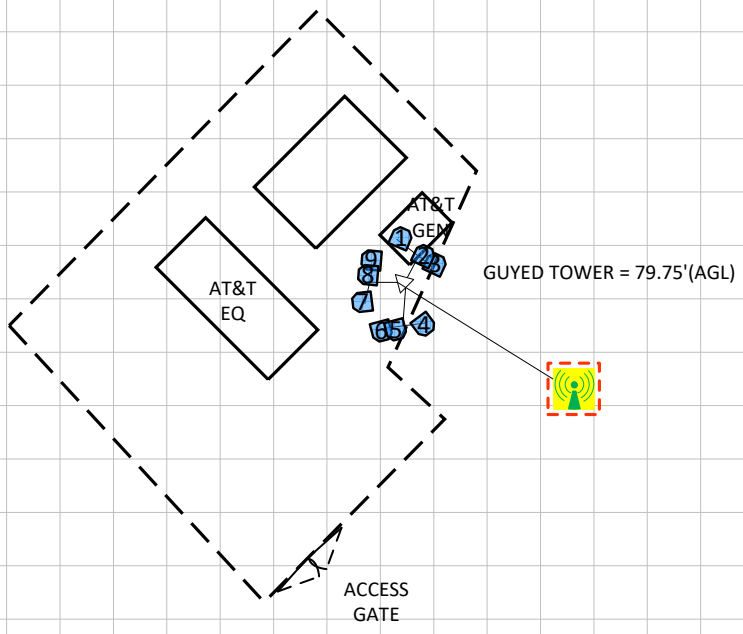
Note: The table above represents EVERY compliance item that MUST be implemented at this location.

2 Scale Maps of Site

The following diagrams are included:

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

Site Scale Map For: BROOKLYN



AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | DISH | UNKNOWN CARRIER

Sign Legend

Notice | Notice 2 | Caution | Caution 2 | Warning | Warning 2 | Info | Info 2 | RF Emissions Diagram

Barrier Signage Legend

No-sign | Notice 2 | Caution 2 | Warning 2 | Notice | Caution | Warning

Existing Barrier ——— **Proposed Barrier/Sign** — — — **Remove Barrier/Sign** X

(Feet)

0 15.7 31.4

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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	Powerwave 7770	Panel	850	UMTS	23	82.0	4.6	40	TPO	Watt	1	424.68	11.51	78.71	78.71
2	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	763	LTE	35	65.9	8	160	TPO	Watt	1	2421.7	13.05	77	77
2	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	2100	LTE/AWS1	35	69.1	8	160	TPO	Watt	1	3838.13	15.05	77	77
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	737	LTE	35	66.0	8	160	TPO	Watt	1	1879.84	11.95	77	77
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	850	5G	35	68.3	8	160	TPO	Watt	1	2260.06	12.75	77	77
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	1900	LTE	35	66.2	8	160	TPO	Watt	1	2911.52	13.85	77	77
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	143	82.0	4.6	40	TPO	Watt	1	424.68	11.51	78.71	78.71
5	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	763	LTE	165	65.9	8	160	TPO	Watt	1	2421.7	13.05	77	77
5	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	2100	LTE/AWS1	165	69.1	8	160	TPO	Watt	1	3838.13	15.05	77	77
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	737	LTE	165	66.0	8	160	TPO	Watt	1	1879.84	11.95	77	77
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	850	5G	165	68.3	8	160	TPO	Watt	1	2260.06	12.75	77	77
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	1900	LTE	165	66.2	8	160	TPO	Watt	1	2911.52	13.85	77	77
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	263	82.0	4.6	40	TPO	Watt	1	424.68	11.51	78.71	78.71
8	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	763	LTE	275	65.9	8	160	TPO	Watt	1	2421.7	13.05	77	77
8	AT&T MOBILITY LLC (Proposed)	Cci OPA65R-BU8DA	Panel	2100	LTE/AWS1	275	69.1	8	160	TPO	Watt	1	3838.13	15.05	77	77
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	737	LTE	275	66.0	8	160	TPO	Watt	1	1879.84	11.95	77	77
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	850	5G	275	68.3	8	160	TPO	Watt	1	2260.06	12.75	77	77
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas DMP65R-BU8EA-K	Panel	1900	LTE	275	66.2	8	160	TPO	Watt	1	2911.52	13.85	77	77

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.

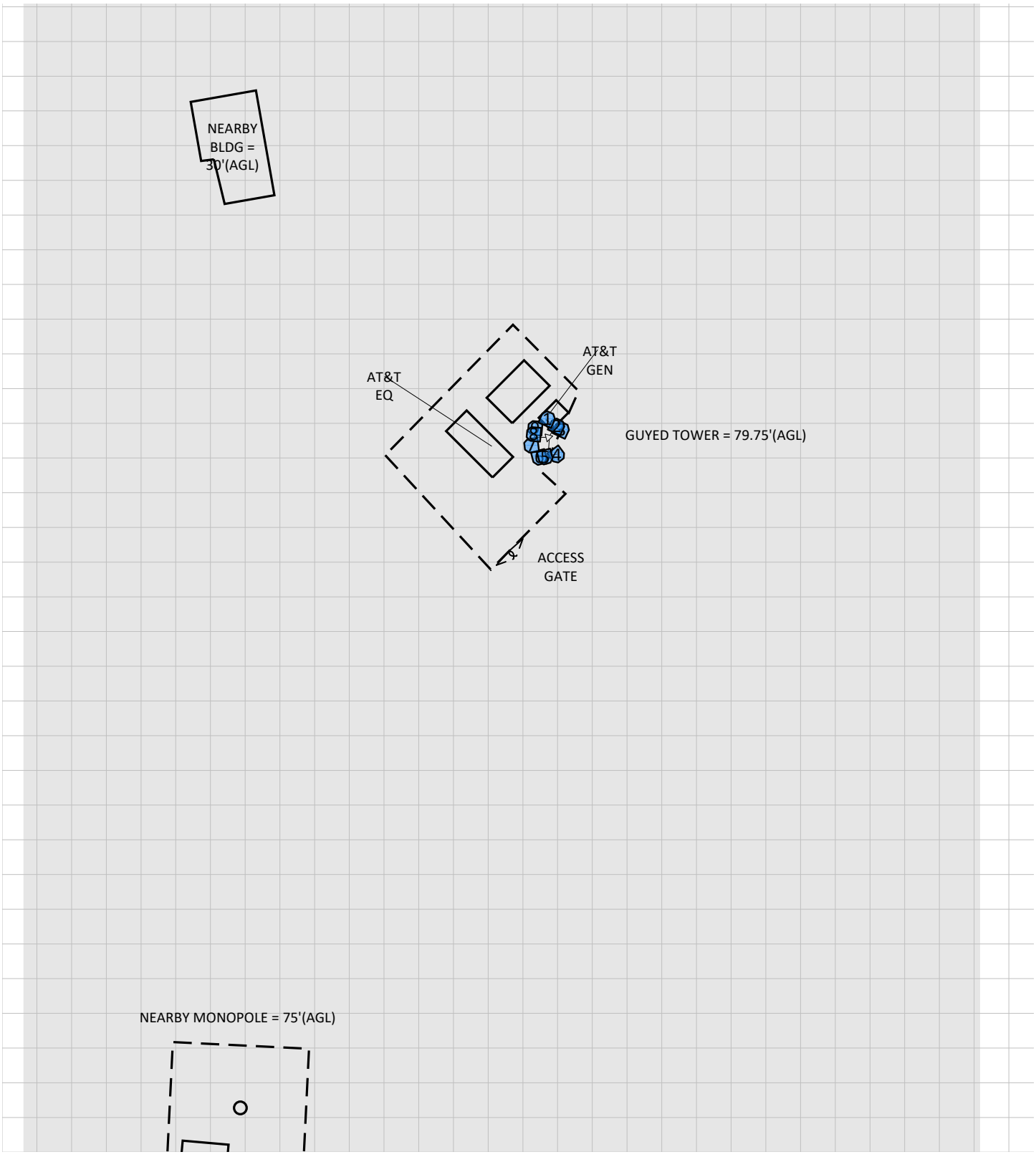
4 Emission Predictions

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'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: BROOKLYN
Composite View



% of FCC Public Exposure Limit

0-5	5-100	100-500	500-5000	5000+

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | DISH | UNKNOWN CARRIER

Barrier Signage Legend

No-sign | Notice | Caution | Warning

Existing Barrier ——— **Proposed Barrier/Sign** — — — **Remove Barrier/Sign** X

(Feet)

0 27.2 54.4

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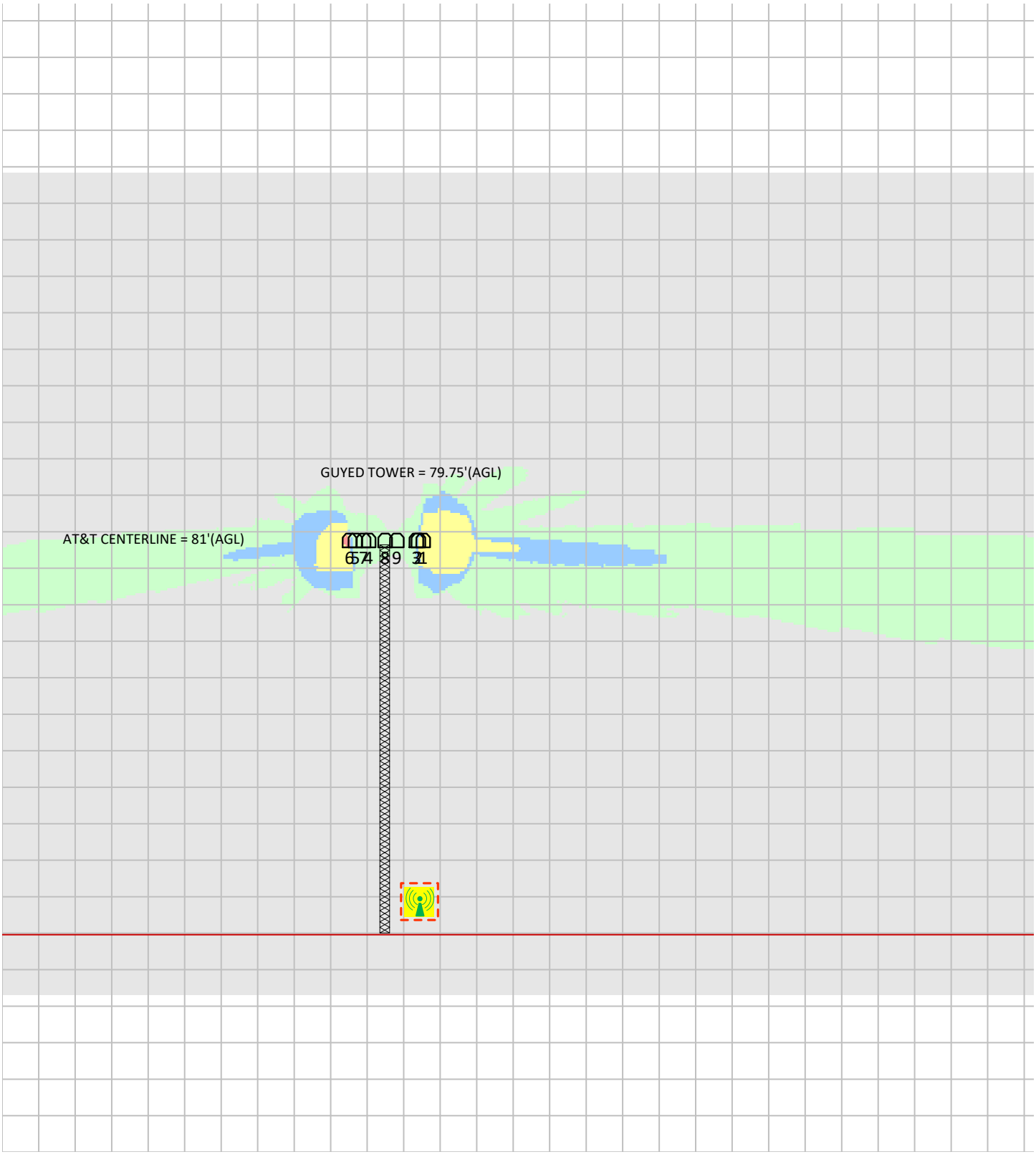
Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: BROOKLYN
Elevation View



% of FCC Public Exposure Limit

0-5	5-100	100-500	500-5000	5000+

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | DISH | UNKNOWN CARRIER

Barrier Signage Legend

No-sign | Notice | Caution | Warning

Existing Barrier ——— Proposed Barrier/Sign — — — Remove Barrier/Sign X

(Feet)

0 14.1 28.2

www.sitesafe.com
4/4/2022 9:54:08 AM

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

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, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

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:

Site Access Location (Guyed Tower Base)
(1) Caution 2B sign required at the base of the tower.

Notes:

- Any existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.
- Areas where the predicted RF emission level is above 5000% General Public MPE level are located within the near field of the antennas and are restricted by the antenna mounts. Thus, Caution 2 signs are sufficient.
- Since the red area only extends a few feet from the front of the antennas, AT&T policy states that Caution 2 signs are adequate.
- Signage may already be in place. Sitesafe does not have record of any existing signage because there were no previous visits or data supplied regarding them. All remediation is based on a worst-case scenario.

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 Benjamin Schnable.

April 4, 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.

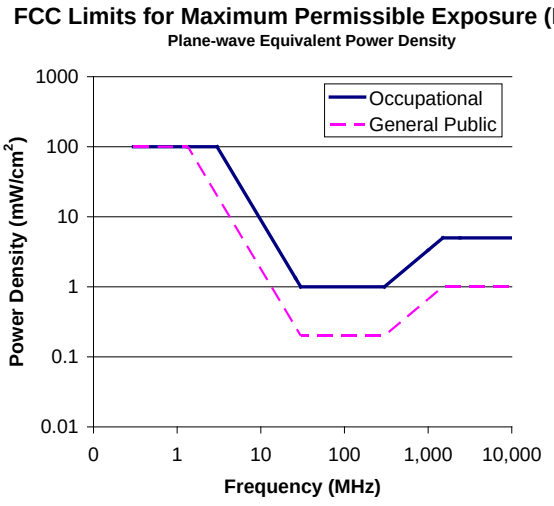
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* 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_scenihr/docs/scenihr_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

90 TATNIC HILL RD

Location	90 TATNIC HILL RD	**Mblu**	15/ / 17/ /
Acct#	00258500	**Owner**	SOUTHERN NEW ENGLAND TELEPHONE CO
Assessment	$260,700	**Appraisal**	$372,300
PID	2887	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$259,800	$112,500	$372,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$181,900	$78,800	$260,700

Owner of Record

Owner	SOUTHERN NEW ENGLAND TELEPHONE CO	**Sale Price**	$3,000
Co-Owner	C/O DUFF & PHELPS LLC	**Certificate**	
Care Of		**Book**	0035
Address	PO BOX 2629 ADDISON, TX 75001	**Page**	0127
		Sale Date	12/30/1959
		Instrument	
		Qualified	U

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
SOUTHERN NEW ENGLAND TELEPHONE CO	$3,000			12/30/1959	0035	0127
HALE JANET D	$0			11/15/1954	0032	0232

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0

Building Percent Good:
Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Cndtn	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos/BrooklynCTPhotos//\00\00\23\21.JPG)

Building Layout


Building Layout (ParcelSketch.ashx?pid=2887&bid=2887)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	4300
Description	TEL TWR MDL00
Zone	RA
Neighborhood	500
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.5
Frontage	
Depth	
Assessed Value	$78,800
Appraised Value	$112,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD5	Cell Shed			360.00 SF	$81,000	1
FN4	FENCE-8' CHAIN			430.00 L.F.	$2,400	1
SHD5	Cell Shed			384.00 SF	$86,400	1
TWR	CELL TOWER			1.00 UNITS	$90,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$259,800	$112,500	$372,300
2019	$279,400	$112,500	$391,900
2018	$279,400	$112,500	$391,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$181,900	$78,800	$260,700
2019	$195,700	$78,800	$274,500
2018	$195,700	$78,800	$274,500

February 16, 2022

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

RE:		
	Site Number:	CT2075
	FA Number:	10035010
	PACE Number:	MRCTB057034
	PT Number:	2051A11YFQ
	Site Name:	BROOKLYN
	Site Address:	Tatnic Hill Road Brooklyn, CT 06234

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Smartlink to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine its capability of supporting the following additional loading (based on RFDS dated 1/21/2022 v.3.0):

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (6) LGP17201 TMA's (14.4"x13.9"x3.7" – Wt. = 31 lbs. /each)
- **(2) OPA65R-BU8DA Antennas (96.0"x21.0"x7.8" – Wt. = 77 lbs. /each)**
- **(1) OPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 64 lbs. /each)**
- **(2) DMP65R-BU8EA-K Antennas (96.0"x20.7"x7.7" – Wt. = 127 lbs. /each)**
- **(1) DMP65R-BU4EA-K Antennas (48.0"x20.7"x9.7" – Wt. = 76 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.) (Tower Mounted)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 14, 2017, were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 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 130 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 1.09 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- 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 0.171 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.062.
- The mounts have 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 mounts have been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mounts are to be secured to the existing guyed tower with threaded rods and clamps tightened around the tower leg. HDG considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the Proposed SitePro1 VFA14-H10-2120 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	95	LC83	68%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 14, 2017.

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 proposed mounts will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mount must be tightened and re-plumbed prior to the installation of new appurtenances.
6. 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.

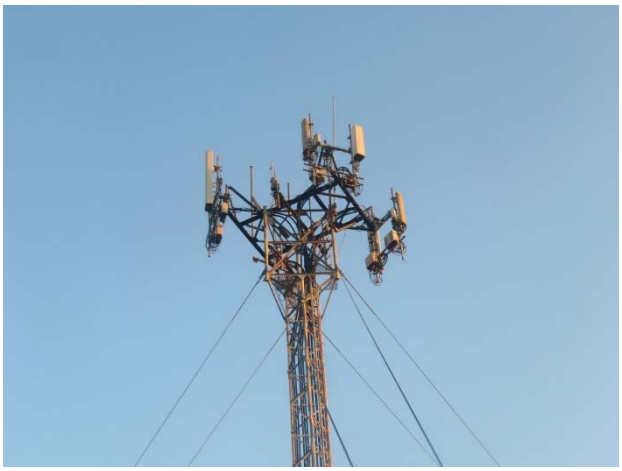
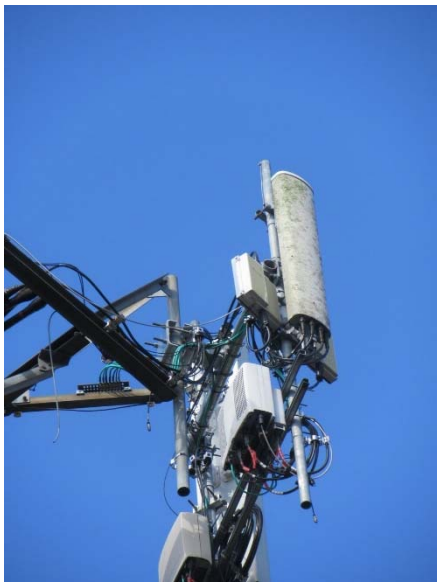
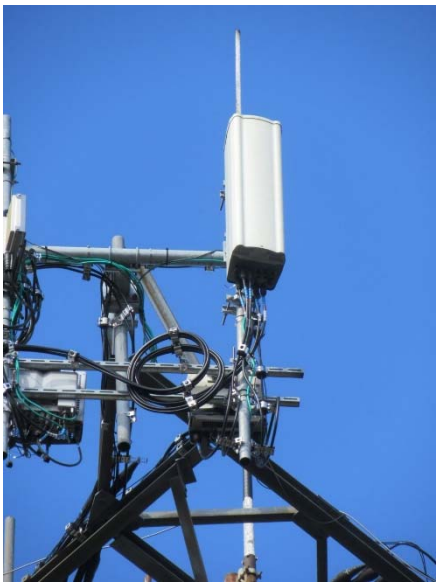
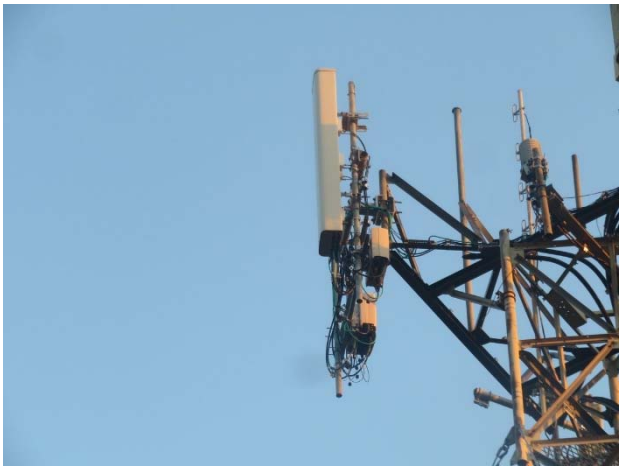
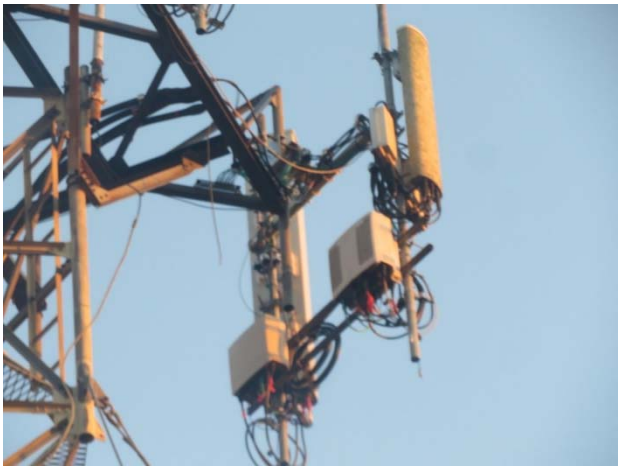
Respectfully Submitted,
Hudson Design Group LLC

Daniel P. Hamm, PE
Principal

Michael Cabral
Vice President

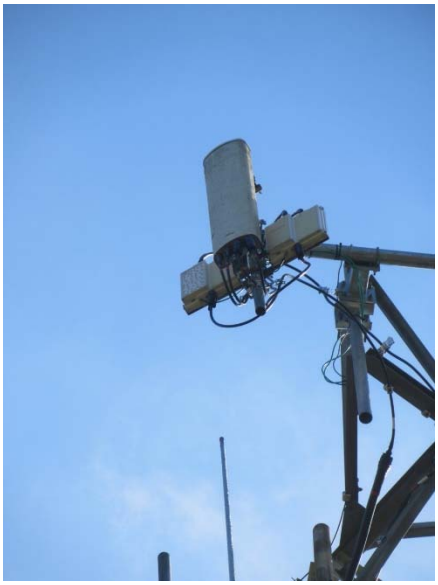
Daniel P. Hamm, PE
Principal

FIELD PHOTOS:
*Note: Existing mounts to be removed.

FIELD PHOTOS (CONT.):
*Note: Existing mounts to be removed.



HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	81	(ft)
z_g=	1200	(ft)
α=	7	

K_z= 0.930

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

$K_h = e^{(f*z/H)}$

K_{zt}= 1

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

Category= **1**

K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	81	
z_s=	545	(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=	0.98	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.00	(from Table 2-3)
K_{iz} =	1.09	(from Sec. 2.6.10)

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

t_{iz} = 1.09 in

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

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=	79.0	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

2.6.9.4 Structures Supported on Other Structures

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

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	0.930	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**33.55**	K_e=	0.98	(from 2.6.8)
$q_{z\ (ice)}$=	**4.96**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**1.79**	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.09 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)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	185	34	10
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	4.57	1.29	607	101	32
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.39	1.24	432	73	23
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	600	100	32
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	2.32	1.20	278	48	15
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	42	9	2
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	22	6	1
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	47	10	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	25	6	1
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	45	9	2
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	23	5	1
LGP17201 TMA	14.4	3.7	13.9	0.37	3.89	1.26	16	4	1
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	52	10	3
Plate 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	3		
Plate 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	3		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	3		
5/8" RoundBar	0.6	12.0		0.05	0.05	1.20	2		
2" Pipe	2.4	12.0		0.20	0.20	1.20	8		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	10		

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.09	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	185	98	163
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	607	275	524
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	432	190	371
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	600	272	518
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	278	142	244
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	42	68	48
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	22	68	34
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	47	66	52
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	66	35
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	55	48
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	23	55	31
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	16	56	26

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.24	2.85	4.34	7.96	1.28	1.43	33	20	30
OPA65R-BU8DA Antenna	98.2	23.2	10.0	15.81	6.81	4.23	9.83	1.28	1.49	100	51	88
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.82	5.09	3.16	7.35	1.23	1.41	72	36	63
DMP65R-BU8EA-K Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	87
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	42
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	10
B14 4478 RRH (Shielded)	20.3	6.3	15.6	0.89	2.20	3.20	1.30	1.23	1.20	5	13	7
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	10
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	6	13	8
B2/B66A 8843 RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10
B2/B66A 8843 RRH (Shielded)	17.1	7.6	15.4	0.91	1.83	2.24	1.11	1.20	1.20	5	11	7
LGP17201 TMA	16.6	5.9	16.1	0.68	1.85	2.82	1.03	1.21	1.20	4	11	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	10	5	9
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	32	15	28
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	23	10	20
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	28
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	13
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	4	2
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	2
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	1	3	1

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.09	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	185	98	120
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	607	275	358
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	432	190	251
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	600	272	354
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	278	142	176
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	42	68	61
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	22	68	56
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	47	66	61
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	66	56
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	55	53
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	23	55	47
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	16	56	46

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.24	2.85	4.34	7.96	1.28	1.43	33	20	24
OPA65R-BU8DA Antenna	98.2	23.2	10.0	15.81	6.81	4.23	9.83	1.28	1.49	100	51	63
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.82	5.09	3.16	7.35	1.23	1.41	72	36	45
DMP65R-BU8EA-K Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	62
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	32
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	12
B14 4478 RRH (Shielded)	20.3	6.3	15.6	0.89	2.20	3.20	1.30	1.23	1.20	5	13	11
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	12
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	6	13	11
B2/B66A 8843 RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10
B2/B66A 8843 RRH (Shielded)	17.1	7.6	15.4	0.91	1.83	2.24	1.11	1.20	1.20	5	11	10
LGP17201 TMA	16.6	5.9	16.1	0.68	1.85	2.82	1.03	1.21	1.20	4	11	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	10	5	6
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	32	15	19
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	23	10	13
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	19
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	9
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	4	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	3
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	1	3	2

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.09	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	185	98	98
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	607	275	275
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	432	190	190
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	600	272	272
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	278	142	142
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	42	68	68
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	22	68	68
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	47	66	66
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	66	66
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	55	55
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	23	55	55
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	16	56	56

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.24	2.85	4.34	7.96	1.28	1.43	33	20	20
OPA65R-BU8DA Antenna	98.2	23.2	10.0	15.81	6.81	4.23	9.83	1.28	1.49	100	51	51
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.82	5.09	3.16	7.35	1.23	1.41	72	36	36
DMP65R-BU8EA-K Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	50
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	26
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	13
B14 4478 RRH (Shielded)	20.3	6.3	15.6	0.89	2.20	3.20	1.30	1.23	1.20	5	13	13
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	13
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	6	13	13
B2/B66A 8843 RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	11
B2/B66A 8843 RRH (Shielded)	17.1	7.6	15.4	0.91	1.83	2.24	1.11	1.20	1.20	5	11	11
LGP17201 TMA	16.6	5.9	16.1	0.68	1.85	2.82	1.03	1.21	1.20	4	11	11

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	10	5	5
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	32	15	15
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	23	10	10
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	15
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	8
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	4
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	4	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	3
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	1	3	3

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.09	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	185	98	120
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	607	275	358
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	432	190	251
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	600	272	354
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	278	142	176
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	42	68	61
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	22	68	56
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	47	66	61
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	66	56
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	55	53
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	23	55	47
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	16	56	46

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.24	2.85	4.34	7.96	1.28	1.43	33	20	24
OPA65R-BU8DA Antenna	98.2	23.2	10.0	15.81	6.81	4.23	9.83	1.28	1.49	100	51	63
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.82	5.09	3.16	7.35	1.23	1.41	72	36	45
DMP65R-BU8EA-K Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	62
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	32
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	12
B14 4478 RRH (Shielded)	20.3	6.3	15.6	0.89	2.20	3.20	1.30	1.23	1.20	5	13	11
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	12
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	6	13	11
B2/B66A 8843 RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10
B2/B66A 8843 RRH (Shielded)	17.1	7.6	15.4	0.91	1.83	2.24	1.11	1.20	1.20	5	11	10
LGP17201 TMA	16.6	5.9	16.1	0.68	1.85	2.82	1.03	1.21	1.20	4	11	9

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	10	5	6
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	32	15	19
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	23	10	13
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	19
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	9
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	4	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	3
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	1	3	2

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.09	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	185	98	163
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	607	275	524
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	432	190	371
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	600	272	518
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	278	142	244
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	42	68	48
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	22	68	34
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	47	66	52
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	66	35
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	55	48
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	23	55	31
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	16	56	26

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.24	2.85	4.34	7.96	1.28	1.43	33	20	30
OPA65R-BU8DA Antenna	98.2	23.2	10.0	15.81	6.81	4.23	9.83	1.28	1.49	100	51	88
OPA65R-BU6DA Antenna	73.4	23.2	10.0	11.82	5.09	3.16	7.35	1.23	1.41	72	36	63
DMP65R-BU8EA-K Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	87
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	42
B14 4478 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	10
B14 4478 RRH (Shielded)	20.3	6.3	15.6	0.89	2.20	3.20	1.30	1.23	1.20	5	13	7
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	10
4449 B5/B12 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	6	13	8
B2/B66A 8843 RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10
B2/B66A 8843 RRH (Shielded)	17.1	7.6	15.4	0.91	1.83	2.24	1.11	1.20	1.20	5	11	7
LGP17201 TMA	16.6	5.9	16.1	0.68	1.85	2.82	1.03	1.21	1.20	4	11	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	10	5	9
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	32	15	28
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	23	10	20
DMP65R-BU8EA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	28
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	13
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	4	2
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	2
LGP17201 TMA	14.4	3.7	13.9	0.37	1.39	3.89	1.04	1.26	1.20	1	3	1

Date: 2/16/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.09 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		80 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		115 lbs

OPA65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	21.0	
Depth (in):	7.8	
Total weight of ice on object:		250 lbs
Weight of object:	77.0 lbs	
Combined weight of ice and object:		327 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:		186 lbs
Weight of object:	64.0 lbs	
Combined weight of ice and object:		250 lbs

DMP65R-BU8EA-K Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		247 lbs
Weight of object:	127.0 lbs	
Combined weight of ice and object:		374 lbs

DMP65R-BU4EA-K Antenna

Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	20.7	
Depth (in):	9.7	
Total weight of ice on object:		128 lbs
Weight of object:	76.0 lbs	
Combined weight of ice and object:		204 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:		34 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		94 lbs

4449 B5/B12 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:		34 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		107 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		30 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		102 lbs

LGP17201 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	3.7	
Depth (in):	13.9	
Total weight of ice on object:		25 lbs
Weight of object:	31.0 lbs	
Combined weight of ice and object:		56 lbs

DC9-48-60-24-8C-EV Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		39 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		68 lbs

PL 11-1/4x5/8

Weight of ice based on total radial SF area:

Height (in):	11.25	
Width (in):	0.63	
Per foot weight of ice on object:		16 plf

PL 3-1/2x5/8

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	0.63	
Per foot weight of ice on object:		6 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

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.63	
Per foot weight of ice on object:		2 plf

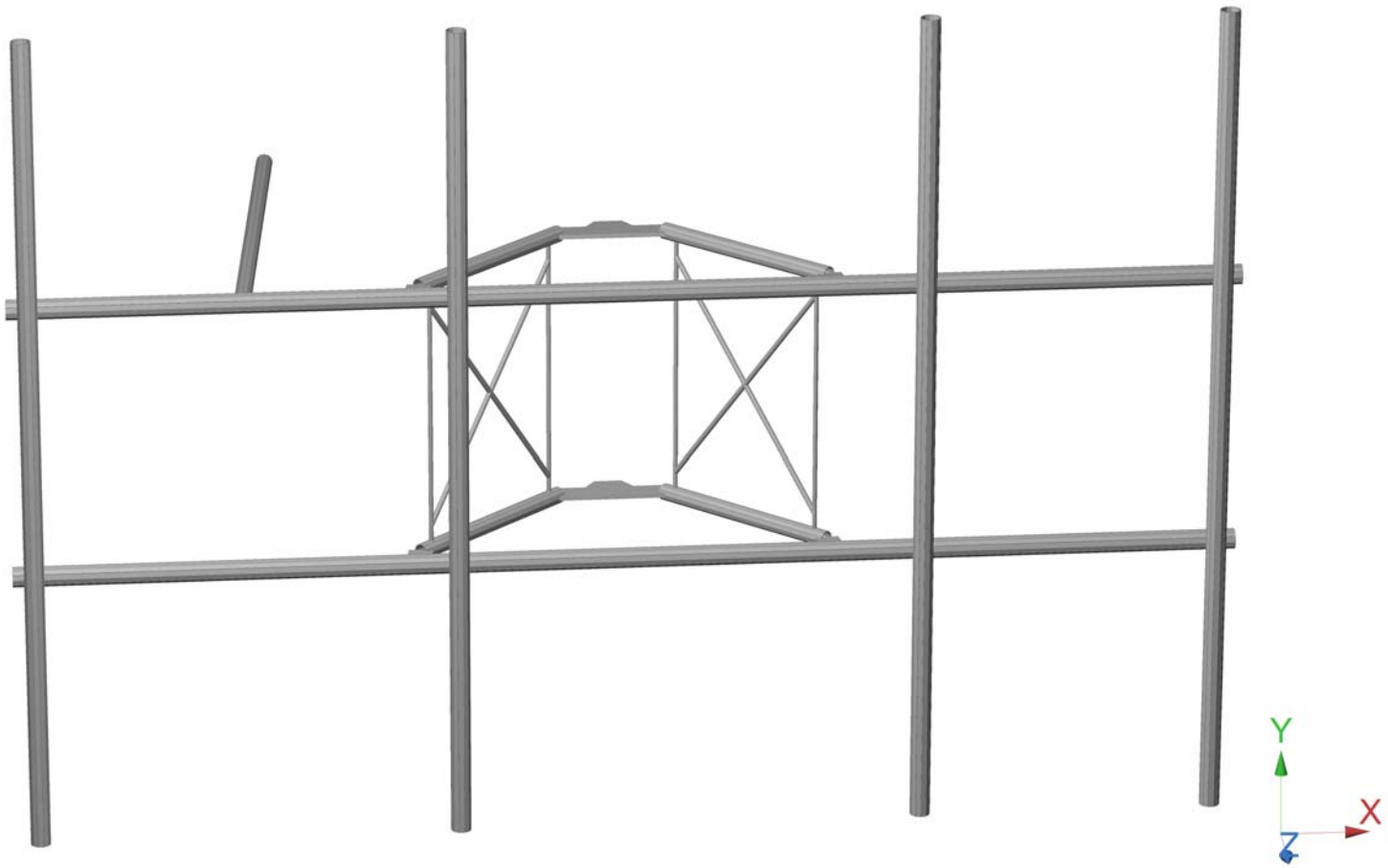
3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		2 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)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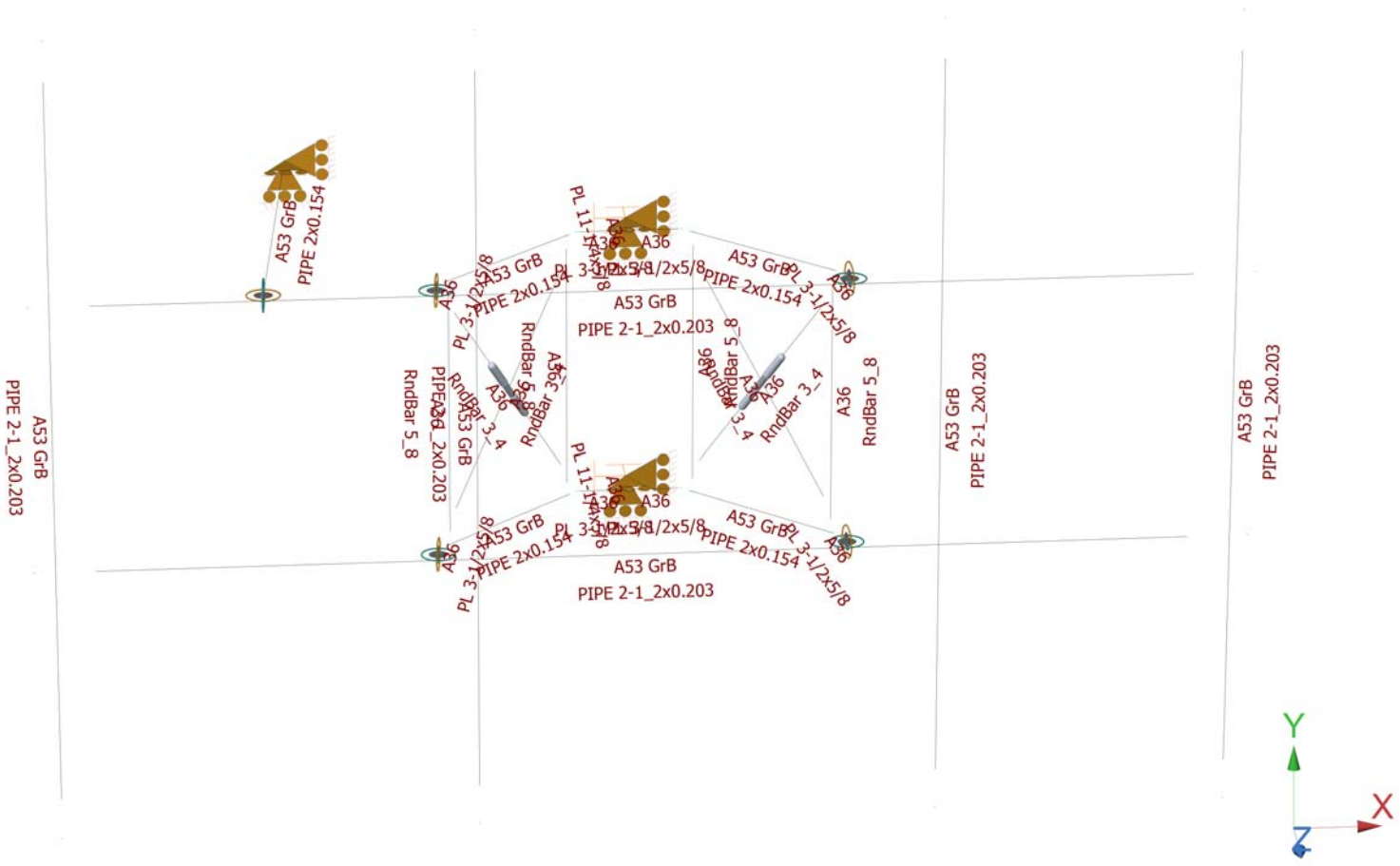
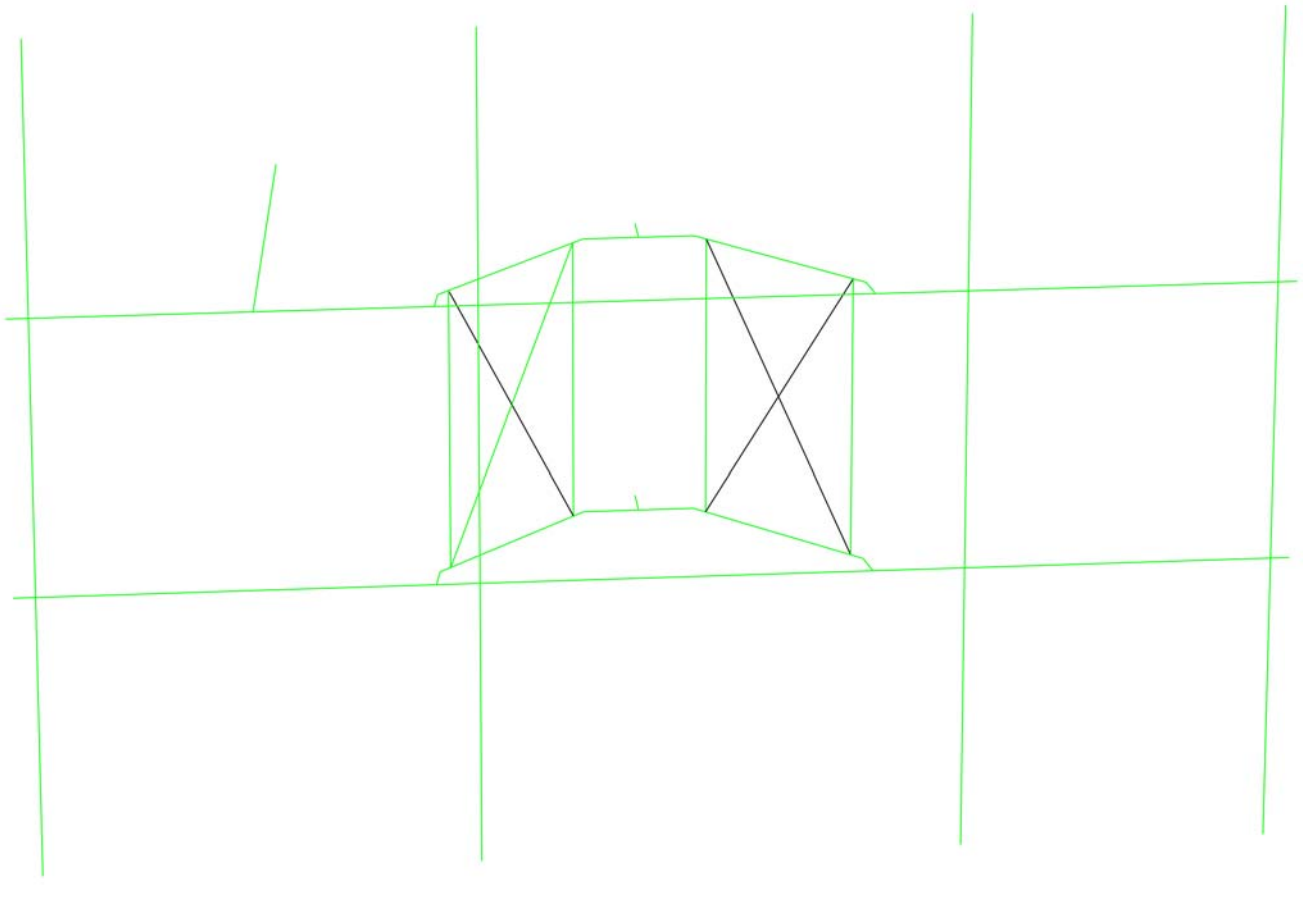
X
Z


A53 GrB
PIPE 2x0.154
PL 11-1/2x5/8
A36
PL 3-1/2x5/8
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
RndBar 5_8
RndBar 3_4
A53 GrB
PIPE 2-1_2x0.203
Y
X
Z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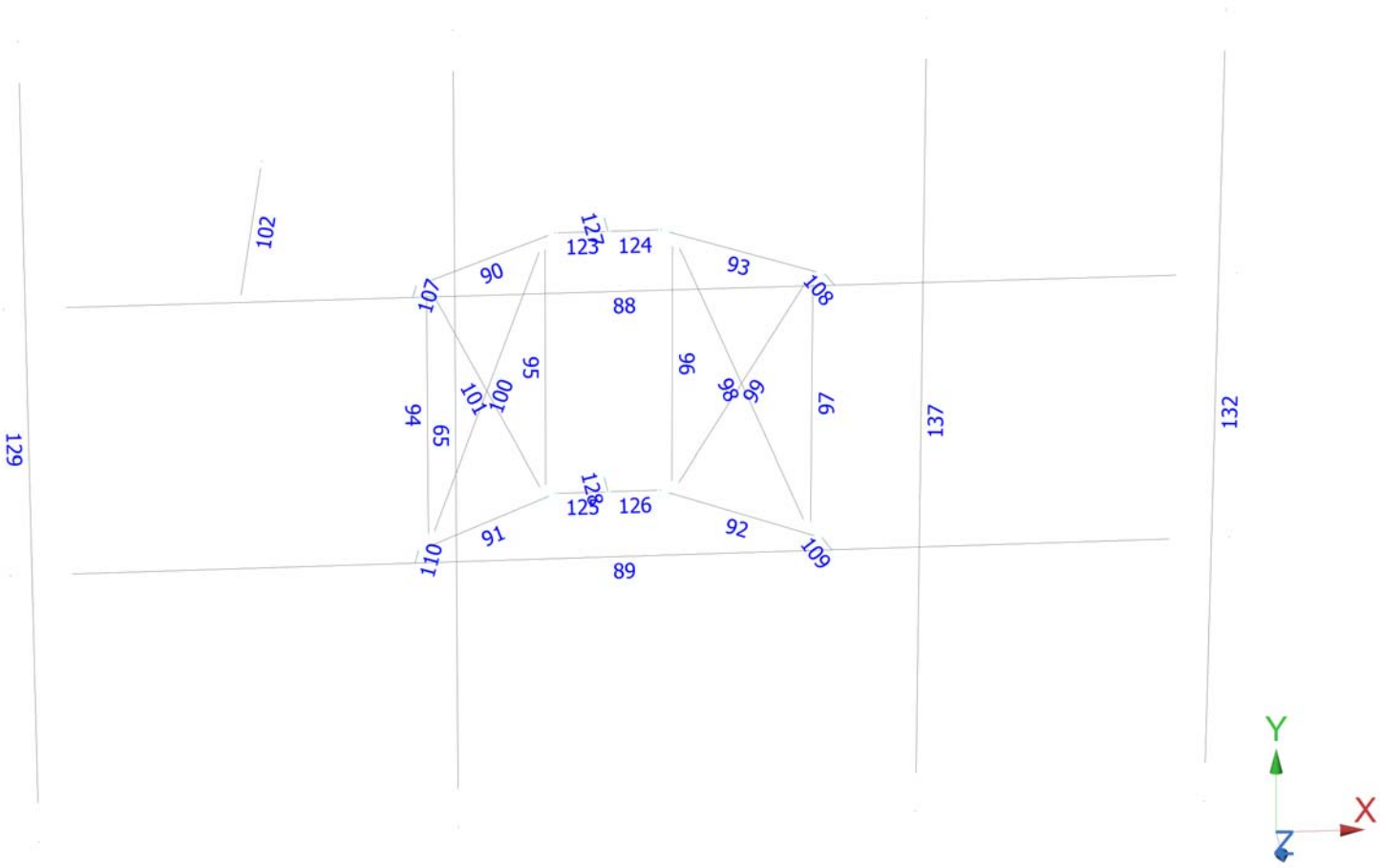
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X
Z

RAM® Elements
CONNECT Edition

Current Date: 2/17/2022 8:53 AM
Units system: English

Load data

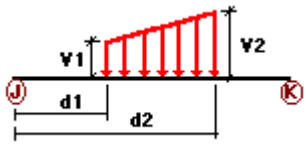
GLOSSARY

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	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



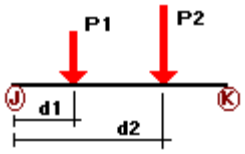
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	88	z	-0.01	0.00	0.00	No	0.00	No
	89	z	-0.01	0.00	0.00	No	0.00	No
	90	z	-0.008	0.00	0.00	No	0.00	No
	91	z	-0.008	0.00	0.00	No	0.00	No
	92	z	-0.008	0.00	0.00	No	0.00	No
	93	z	-0.008	0.00	0.00	No	0.00	No
	94	z	-0.002	0.00	0.00	No	0.00	No
	95	z	-0.002	0.00	0.00	No	0.00	No
	96	z	-0.002	0.00	0.00	No	0.00	No
	97	z	-0.002	0.00	0.00	No	0.00	No
	98	z	-0.003	0.00	0.00	No	0.00	No
	99	z	-0.003	0.00	0.00	No	0.00	No
	100	z	-0.003	0.00	0.00	No	0.00	No
	101	z	-0.003	0.00	0.00	No	0.00	No
	102	z	-0.008	0.00	0.00	No	0.00	No
	107	z	-0.003	0.00	0.00	No	0.00	No
	108	z	-0.003	0.00	0.00	No	0.00	No
	109	z	-0.003	0.00	0.00	No	0.00	No
	110	z	-0.003	0.00	0.00	No	0.00	No
	123	z	-0.003	0.00	0.00	No	0.00	No
	124	z	-0.003	0.00	0.00	No	0.00	No
	125	z	-0.003	0.00	0.00	No	0.00	No
	126	z	-0.003	0.00	0.00	No	0.00	No
	127	z	-0.003	0.00	0.00	No	0.00	No
	128	z	-0.003	0.00	0.00	No	0.00	No
	137	z	-0.008	0.00	0.00	No	0.00	No
W30	88	z	-0.01	0.00	0.00	No	0.00	No
	89	z	-0.01	0.00	0.00	No	0.00	No
	90	z	-0.008	0.00	0.00	No	0.00	No
	91	z	-0.008	0.00	0.00	No	0.00	No
	92	z	-0.008	0.00	0.00	No	0.00	No
	93	z	-0.008	0.00	0.00	No	0.00	No
	94	z	-0.002	0.00	0.00	No	0.00	No
	95	z	-0.002	0.00	0.00	No	0.00	No
	96	z	-0.002	0.00	0.00	No	0.00	No
	97	z	-0.002	0.00	0.00	No	0.00	No
	98	z	-0.003	0.00	0.00	No	0.00	No
	99	z	-0.003	0.00	0.00	No	0.00	No
	100	z	-0.003	0.00	0.00	No	0.00	No
	101	z	-0.003	0.00	0.00	No	0.00	No
	102	z	-0.008	0.00	0.00	No	0.00	No
	107	z	-0.003	0.00	0.00	No	0.00	No
	108	z	-0.003	0.00	0.00	No	0.00	No
	109	z	-0.003	0.00	0.00	No	0.00	No
	110	z	-0.003	0.00	0.00	No	0.00	No
	123	z	-0.003	0.00	0.00	No	0.00	No
	124	z	-0.003	0.00	0.00	No	0.00	No
	125	z	-0.003	0.00	0.00	No	0.00	No
	126	z	-0.003	0.00	0.00	No	0.00	No
	127	z	-0.003	0.00	0.00	No	0.00	No
	128	z	-0.003	0.00	0.00	No	0.00	No
	137	z	-0.008	0.00	0.00	No	0.00	No
W60	65	x	-0.01	0.00	0.00	No	0.00	No
	88	x	-0.01	0.00	0.00	No	0.00	No
	89	x	-0.01	0.00	0.00	No	0.00	No
	90	x	-0.008	0.00	0.00	No	0.00	No
	91	x	-0.008	0.00	0.00	No	0.00	No
	92	x	-0.008	0.00	0.00	No	0.00	No
	93	x	-0.008	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No

	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.003	0.00	0.00	No	0.00	No
	99	x	-0.003	0.00	0.00	No	0.00	No
	100	x	-0.003	0.00	0.00	No	0.00	No
	101	x	-0.003	0.00	0.00	No	0.00	No
	102	x	-0.008	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	129	x	-0.01	0.00	0.00	No	0.00	No
	132	x	-0.01	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
W90	65	x	-0.01	0.00	0.00	No	0.00	No
	90	x	-0.008	0.00	0.00	No	0.00	No
	91	x	-0.008	0.00	0.00	No	0.00	No
	92	x	-0.008	0.00	0.00	No	0.00	No
	93	x	-0.008	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No
	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.003	0.00	0.00	No	0.00	No
	99	x	-0.003	0.00	0.00	No	0.00	No
	100	x	-0.003	0.00	0.00	No	0.00	No
	101	x	-0.003	0.00	0.00	No	0.00	No
	102	x	-0.008	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	129	x	-0.01	0.00	0.00	No	0.00	No
	132	x	-0.01	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
W120	65	x	-0.01	0.00	0.00	No	0.00	No
	88	x	-0.01	0.00	0.00	No	0.00	No
	89	x	-0.01	0.00	0.00	No	0.00	No
	90	x	-0.008	0.00	0.00	No	0.00	No
	91	x	-0.008	0.00	0.00	No	0.00	No
	92	x	-0.008	0.00	0.00	No	0.00	No
	93	x	-0.008	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No
	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.003	0.00	0.00	No	0.00	No

	99	x	-0.003	0.00	0.00	No	0.00	No
	100	x	-0.003	0.00	0.00	No	0.00	No
	101	x	-0.003	0.00	0.00	No	0.00	No
	102	x	-0.008	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	129	x	-0.01	0.00	0.00	No	0.00	No
	132	x	-0.01	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
W150	65	z	0.01	0.00	0.00	No	0.00	No
	88	z	0.01	0.00	0.00	No	0.00	No
	89	z	0.01	0.00	0.00	No	0.00	No
	90	z	0.008	0.00	0.00	No	0.00	No
	91	z	0.008	0.00	0.00	No	0.00	No
	92	z	0.008	0.00	0.00	No	0.00	No
	93	z	0.008	0.00	0.00	No	0.00	No
	94	z	0.002	0.00	0.00	No	0.00	No
	95	z	0.002	0.00	0.00	No	0.00	No
	96	z	0.002	0.00	0.00	No	0.00	No
	97	z	0.002	0.00	0.00	No	0.00	No
	98	z	0.003	0.00	0.00	No	0.00	No
	99	z	0.003	0.00	0.00	No	0.00	No
	100	z	0.003	0.00	0.00	No	0.00	No
	101	z	0.003	0.00	0.00	No	0.00	No
	102	z	0.008	0.00	0.00	No	0.00	No
	107	z	0.003	0.00	0.00	No	0.00	No
	108	z	0.003	0.00	0.00	No	0.00	No
	109	z	0.003	0.00	0.00	No	0.00	No
	110	z	0.003	0.00	0.00	No	0.00	No
	123	z	0.003	0.00	0.00	No	0.00	No
	124	z	0.003	0.00	0.00	No	0.00	No
	125	z	0.003	0.00	0.00	No	0.00	No
	126	z	0.003	0.00	0.00	No	0.00	No
	127	z	0.003	0.00	0.00	No	0.00	No
	128	z	0.003	0.00	0.00	No	0.00	No
	129	z	0.01	0.00	0.00	No	0.00	No
	132	z	0.01	0.00	0.00	No	0.00	No
	137	z	0.008	0.00	0.00	No	0.00	No
Di	65	y	-0.005	0.00	0.00	No	0.00	No
	88	y	-0.005	0.00	0.00	No	0.00	No
	89	y	-0.005	0.00	0.00	No	0.00	No
	90	y	-0.005	0.00	0.00	No	0.00	No
	91	y	-0.005	0.00	0.00	No	0.00	No
	92	y	-0.005	0.00	0.00	No	0.00	No
	93	y	-0.005	0.00	0.00	No	0.00	No
	94	y	-0.002	0.00	0.00	No	0.00	No
	95	y	-0.002	0.00	0.00	No	0.00	No
	96	y	-0.002	0.00	0.00	No	0.00	No
	97	y	-0.002	0.00	0.00	No	0.00	No
	98	y	-0.002	0.00	0.00	No	0.00	No
	99	y	-0.002	0.00	0.00	No	0.00	No
	100	y	-0.002	0.00	0.00	No	0.00	No

101	y	-0.002	0.00	0.00	No	0.00	No
102	y	-0.005	0.00	0.00	No	0.00	No
107	y	-0.006	0.00	0.00	No	0.00	No
108	y	-0.006	0.00	0.00	No	0.00	No
109	y	-0.006	0.00	0.00	No	0.00	No
110	y	-0.006	0.00	0.00	No	0.00	No
123	y	-0.006	0.00	0.00	No	0.00	No
124	y	-0.006	0.00	0.00	No	0.00	No
125	y	-0.006	0.00	0.00	No	0.00	No
126	y	-0.006	0.00	0.00	No	0.00	No
127	y	-0.016	0.00	0.00	No	0.00	No
128	y	-0.016	0.00	0.00	No	0.00	No
129	y	-0.005	0.00	0.00	No	0.00	No
132	y	-0.005	0.00	0.00	No	0.00	No
137	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	65	y	-0.039	1.50	No
		y	-0.039	8.50	No
		y	-0.06	5.00	No
	129	y	-0.064	1.50	No
		y	-0.064	8.50	No
		y	-0.073	5.00	No
		y	-0.072	5.00	No
	132	y	-0.018	3.25	No
		y	-0.018	6.75	No
		y	-0.031	8.00	No
		y	-0.031	8.00	No
Wo	65	z	-0.304	1.50	No
		z	-0.304	8.50	No
		z	-0.022	5.00	No
	129	z	-0.30	1.50	No
		z	-0.30	8.50	No
		z	-0.025	5.00	No
		z	-0.023	5.00	No
	132	z	-0.093	3.25	No
		z	-0.093	6.75	No
		z	-0.016	8.00	No
		z	-0.016	8.00	No
W30	65	3	-0.262	1.50	No
		3	-0.262	8.50	No
		3	-0.034	5.00	No
	129	3	-0.259	1.50	No
		3	-0.259	8.50	No
		3	-0.035	5.00	No
	132	3	-0.082	3.25	No
		3	-0.082	6.75	No

		3	-0.026	8.00	No
W60	65	3	-0.18	1.50	No
		3	-0.18	8.50	No
		3	-0.056	5.00	No
	129	3	-0.178	1.50	No
		3	-0.178	8.50	No
		3	-0.056	5.00	No
	132	3	-0.06	3.25	No
		3	-0.06	6.75	No
		3	-0.046	8.00	No
W90	65	x	-0.138	1.50	No
		x	-0.138	8.50	No
		x	-0.068	5.00	No
	129	x	-0.137	1.50	No
		x	-0.137	8.50	No
		x	-0.066	5.00	No
	132	x	-0.05	3.25	No
		x	-0.05	6.75	No
		x	-0.056	8.00	No
W120	65	2	-0.18	1.50	No
		2	-0.18	8.50	No
		2	-0.056	5.00	No
	129	2	-0.178	1.50	No
		2	-0.178	8.50	No
		2	-0.056	5.00	No
	132	2	-0.06	3.25	No
		2	-0.06	6.75	No
		2	-0.046	8.00	No
W150	65	2	-0.262	1.50	No
		2	-0.262	8.50	No
		2	-0.034	5.00	No
	129	2	-0.259	1.50	No
		2	-0.259	8.50	No
		2	-0.035	5.00	No
	132	2	-0.082	3.25	No
		2	-0.082	6.75	No
		2	-0.026	8.00	No
Di	65	y	-0.126	1.50	No
		y	-0.126	8.50	No
		y	-0.034	5.00	No
	129	y	-0.124	1.50	No
		y	-0.124	8.50	No
		y	-0.034	5.00	No
		y	-0.03	5.00	No
	132	y	-0.041	3.25	No
		y	-0.041	6.75	No
		y	-0.025	8.00	No
		y	-0.025	8.00	No
WI0	65	z	-0.051	1.50	No
		z	-0.051	8.50	No
		z	-0.006	5.00	No
	129	z	-0.051	1.50	No
		z	-0.051	8.50	No
		z	-0.006	5.00	No
		z	-0.005	5.00	No
	132	z	-0.018	3.25	No
		z	-0.018	6.75	No
		z	-0.004	8.00	No
WI30	65	3	-0.044	1.50	No
		3	-0.044	8.50	No

		3	-0.007	5.00	No
	129	3	-0.044	1.50	No
		3	-0.044	8.50	No
		3	-0.008	5.00	No
	132	3	-0.016	3.25	No
		3	-0.016	6.75	No
		3	-0.006	8.00	No
WI60	65	3	-0.032	1.50	No
		3	-0.032	8.50	No
		3	-0.011	5.00	No
	129	3	-0.032	1.50	No
		3	-0.032	8.50	No
		3	-0.011	5.00	No
	132	3	-0.012	3.25	No
		3	-0.012	6.75	No
		3	-0.009	8.00	No
WI90	65	x	-0.026	1.50	No
		x	-0.026	8.50	No
		x	-0.013	5.00	No
	129	x	-0.026	1.50	No
		x	-0.026	8.50	No
		x	-0.013	5.00	No
	132	x	-0.011	3.25	No
		x	-0.011	6.75	No
		x	-0.011	8.00	No
WI120	65	2	-0.032	1.50	No
		2	-0.032	8.50	No
		2	-0.011	5.00	No
	129	2	-0.032	1.50	No
		2	-0.032	8.50	No
		2	-0.011	5.00	No
	132	2	-0.012	3.25	No
		2	-0.012	6.75	No
		2	-0.009	8.00	No
WI150	65	2	-0.044	1.50	No
		2	-0.044	8.50	No
		2	-0.007	5.00	No
	129	2	-0.044	1.50	No
		2	-0.044	8.50	No
		2	-0.008	5.00	No
	132	2	-0.016	3.25	No
		2	-0.016	6.75	No
		2	-0.006	8.00	No
WL0	65	z	-0.017	1.50	No
		z	-0.017	8.50	No
		z	-0.001	5.00	No
	129	z	-0.016	1.50	No
		z	-0.016	8.50	No
		z	-0.001	5.00	No
		z	-0.001	5.00	No
	132	z	-0.005	3.25	No
		z	-0.005	6.75	No
		z	-0.001	8.00	No
WL30	65	3	-0.014	1.50	No
		3	-0.014	8.50	No
		3	-0.002	5.00	No
	129	3	-0.014	1.50	No
		3	-0.014	8.50	No
		3	-0.002	5.00	No
	132	3	-0.005	3.25	No

		3	-0.005	6.75	No
		3	-0.001	8.00	No
WL60	65	3	-0.01	1.50	No
		3	-0.01	8.50	No
		3	-0.003	5.00	No
	129	3	-0.01	1.50	No
		3	-0.01	8.50	No
		3	-0.003	5.00	No
	132	3	-0.004	3.25	No
		3	-0.004	6.75	No
		3	-0.002	8.00	No
WL90	65	x	-0.008	1.50	No
		x	-0.008	8.50	No
		x	-0.004	5.00	No
	129	x	-0.008	1.50	No
		x	-0.008	8.50	No
		x	-0.004	5.00	No
	132	x	-0.003	3.25	No
		x	-0.003	6.75	No
		x	-0.003	8.00	No
WL120	65	2	-0.01	1.50	No
		2	-0.01	8.50	No
		2	-0.003	5.00	No
	129	2	-0.01	1.50	No
		2	-0.01	8.50	No
		2	-0.003	5.00	No
	132	2	-0.004	3.25	No
		2	-0.004	6.75	No
		2	-0.002	8.00	No
WL150	65	2	-0.014	1.50	No
		2	-0.014	8.50	No
		2	-0.002	5.00	No
	129	2	-0.014	1.50	No
		2	-0.014	8.50	No
		2	-0.002	5.00	No
	132	2	-0.005	3.25	No
		2	-0.005	6.75	No
		2	-0.001	8.00	No
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	132	y	-0.50	50.00	Yes
LLa2	137	y	-0.50	50.00	Yes
LLa3	65	y	-0.50	50.00	Yes
LLa4	129	y	-0.50	50.00	Yes

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	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 2/17/2022 8:53 AM
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	**65**	LC2 at 33.33%	0.25	OK	
		88	LC81 at 32.81%	0.55	OK	
		89	LC87 at 32.14%	**0.58**	**OK**	
		129	LC77 at 33.33%	0.48	OK	
		132	LC47 at 33.33%	0.33	OK	
		137	LC47 at 33.33%	0.29	OK	
	PIPE 2x0.154	**90**	LC81 at 93.75%	**0.41**	**OK**	
		91	LC87 at 93.75%	0.31	OK	
		92	LC40 at 93.75%	0.22	OK	
		93	LC43 at 93.75%	0.30	OK	
		102	LC3 at 0.00%	0.05	OK	
	PL 11-1/4x5/8	**127**	LC26 at 100.00%	**0.42**	**OK**	
		128	LC30 at 100.00%	0.27	OK	
	PL 3-1/2x5/8	**107**	LC76 at 100.00%	0.43	OK	
		108	LC40 at 100.00%	0.32	OK	
		109	LC41 at 100.00%	0.37	OK	
		110	LC82 at 100.00%	0.53	OK	
		123	LC81 at 100.00%	0.61	OK	
		124	LC41 at 0.00%	0.47	OK	
		125	LC87 at 100.00%	**0.63**	**OK**	
		126	LC41 at 0.00%	0.48	OK	
	RndBar 3_4	**98**	LC47 at 100.00%	0.25	With warnings	
		99	LC40 at 0.00%	0.26	With warnings	
		100	LC87 at 0.00%	0.39	OK	
		101	LC85 at 100.00%	**0.39**	**With warnings**	

RndBar 5_8	**94**	LC76 at 87.50%	0.67	OK
	95	LC83 at 87.50%	**0.68**	**OK**
	96	LC41 at 87.50%	0.48	OK
	97	LC40 at 87.50%	0.48	OK

RAM® Elements
CONNECT Edition

Current Date: 2/17/2022 8:55 AM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
142	0.00	0.00	0.1833	0
143	-0.6362	0.00	0.6617	0
144	0.00	-3.3333	0.1833	0
145	-0.6362	-3.3333	0.6617	0
146	0.6362	-3.3333	0.6617	0
147	0.6362	0.00	0.6617	0
158	-7.25	0.00	2.8133	0
159	7.25	0.00	2.8133	0
160	-7.25	-3.3333	2.8133	0
161	7.25	-3.3333	2.8133	0
162	-2.4126	0.00	2.4208	0
163	-2.4126	-3.3333	2.4208	0
164	2.4126	-3.3333	2.4208	0
165	2.4126	0.00	2.4208	0
166	-2.2835	0.00	2.2929	0
167	-2.2835	-3.3333	2.2929	0
168	-0.7653	0.00	0.7895	0
169	-0.7653	-3.3333	0.7895	0
170	0.7653	0.00	0.7895	0
171	0.7653	-3.3333	0.7895	0
172	2.2835	0.00	2.2929	0
173	2.2835	-3.3333	2.2929	0
174	-4.50	0.00	2.8133	0

175	-4.00	0.00	-2.3167	0
176	-2.00	-6.6667	3.0133	0
177	-2.00	3.3333	3.0133	0
184	-2.4792	0.00	2.8133	0
185	2.4792	0.00	2.8133	0
186	2.4792	-3.3333	2.8133	0
187	-2.4792	-3.3333	2.8133	0
208	0.00	0.00	0.6617	0
209	0.00	-3.3333	0.6617	0
210	-7.00	3.3333	3.0133	0
211	-7.00	-6.6667	3.0133	0
216	7.00	3.3333	3.0133	0
217	7.00	-6.6667	3.0133	0
229	3.50	-6.6667	3.0133	0
230	3.50	3.3333	3.0133	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
175	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
88	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
102	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00

127	208	142	PL 11-1/4x5/8	A36	11.25	4.00	0.00
128	209	144	PL 11-1/4x5/8	A36	11.25	4.00	0.00
129	210	211	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
132	216	217	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
137	230	229	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
65	315.00	0	0.00	0.00	0.00
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
129	315.00	0	0.00	0.00	0.00
132	315.00	0	0.00	0.00	0.00

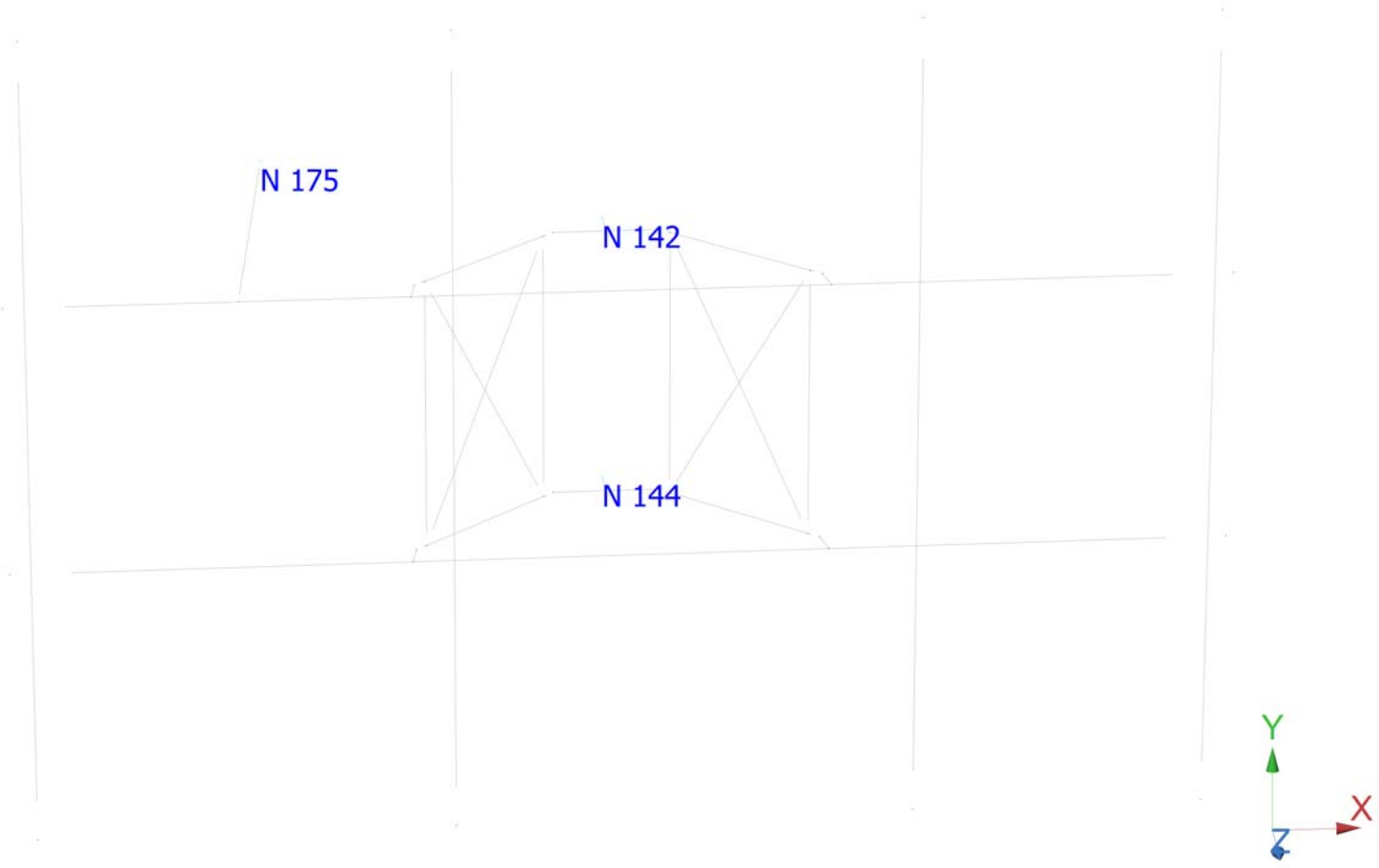
Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full

108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full

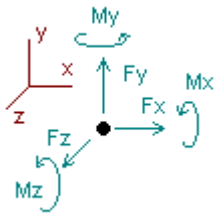

N 175
N 142
N 144
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 2/17/2022 8:56 AM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2D+Wo**						
142	0.59939	0.68190	-0.80255	-0.19978	0.00000	-0.01742
144	-0.50816	0.53634	1.85626	-0.21500	0.00000	-0.04292
175	-0.09123	0.00831	0.94593	0.00000	0.00000	0.00000
SUM	0.00000	1.22655	1.99964	-0.41478	0.00000	-0.06034
Condition **LC2=1.2D+W30**						
142	1.08099	0.67319	-1.29925	-0.18582	0.00000	0.01113
144	-0.04733	0.54536	1.56030	-0.21241	0.00000	-0.01860
175	-0.11371	0.00800	1.16254	0.00000	0.00000	0.00000
SUM	0.91995	1.22655	1.42359	-0.39823	0.00000	-0.00747
Condition **LC3=1.2D+W60**						
142	1.24239	0.66427	-1.72014	-0.17030	0.00000	0.01458
144	0.10793	0.55436	1.21890	-0.21108	0.00000	-0.01350
175	-0.09827	0.00792	1.20411	0.00000	0.00000	0.00000
SUM	1.25205	1.22655	0.70286	-0.38138	0.00000	0.00107
Condition **LC4=1.2D+W90**						
142	1.24754	0.66764	-1.71033	-0.16998	0.00000	-0.00270
144	0.20738	0.55033	0.84043	-0.20026	0.00000	-0.02615
175	-0.06574	0.00858	0.86990	0.00000	0.00000	0.00000
SUM	1.38919	1.22655	0.00000	-0.37023	0.00000	-0.02886
Condition **LC5=1.2D+W120**						
142	1.12697	0.67447	-1.51605	-0.17414	0.00000	-0.04061
144	0.13954	0.54244	0.46107	-0.18764	0.00000	-0.05792
175	-0.01446	0.00964	0.35211	0.00000	0.00000	0.00000
SUM	1.25205	1.22655	-0.70286	-0.36178	0.00000	-0.09852

Condition **LC6=1.2D+W150**

142	0.92413	0.67105	-1.71044	-0.16374	0.00000	-0.06922
144	-0.00224	0.54509	-0.03058	-0.18013	0.00000	-0.08374
175	-0.00194	0.01041	0.01743	0.00000	0.00000	0.00000
SUM	0.91995	1.22655	-1.72359	-0.34387	0.00000	-0.15296

Condition **LC7=1.2D-Wo**

142	0.33894	0.68618	-0.86957	-0.18335	0.00000	-0.15054
144	-0.43207	0.52725	-0.18332	-0.16773	0.00000	-0.15056
175	0.09313	0.01312	-0.94675	0.00000	0.00000	0.00000
SUM	0.00000	1.22655	-1.99964	-0.35108	0.00000	-0.30111

Condition **LC8=1.2D-W30**

142	-0.14010	0.69444	-0.37241	-0.19674	0.00000	-0.17927
144	-0.89292	0.51819	0.11365	-0.17037	0.00000	-0.17514
175	0.11308	0.01392	-1.16482	0.00000	0.00000	0.00000
SUM	-0.91995	1.22655	-1.42359	-0.36712	0.00000	-0.35441

Condition **LC9=1.2D-W60**

142	-0.30022	0.70324	0.04704	-0.21200	0.00000	-0.18271
144	-1.04768	0.50925	0.45519	-0.17176	0.00000	-0.18033
175	0.09585	0.01406	-1.20509	0.00000	0.00000	0.00000
SUM	-1.25205	1.22655	-0.70286	-0.38376	0.00000	-0.36304

Condition **LC10=1.2D-W90**

142	-0.30510	0.70020	0.03638	-0.21252	0.00000	-0.16562
144	-1.14713	0.51334	0.83359	-0.18258	0.00000	-0.16788
175	0.06305	0.01301	-0.86997	0.00000	0.00000	0.00000
SUM	-1.38919	1.22655	0.00000	-0.39510	0.00000	-0.33350

Condition **LC11=1.2D-W120**

142	-0.18568	0.69387	-0.15807	-0.20887	0.00000	-0.12783
144	-1.07955	0.52125	1.21248	-0.19521	0.00000	-0.13617
175	0.01318	0.01143	-0.35155	0.00000	0.00000	0.00000
SUM	-1.25205	1.22655	0.70286	-0.40408	0.00000	-0.26399

Condition **LC12=1.2D-W150**

142	0.01565	0.69752	0.04074	-0.21956	0.00000	-0.09950
144	-0.93779	0.51851	1.70381	-0.20254	0.00000	-0.11048
175	0.00219	0.01052	-0.02096	0.00000	0.00000	0.00000
SUM	-0.91995	1.22655	1.72359	-0.42210	0.00000	-0.20998

Condition **LC13=0.9D+Wo**

142	0.48141	0.51005	-0.59259	-0.15168	0.00000	0.00383
144	-0.39024	0.40357	1.64659	-0.16711	0.00000	-0.01850
175	-0.09117	0.00630	0.94564	0.00000	0.00000	0.00000
SUM	0.00000	0.91991	1.99964	-0.31879	0.00000	-0.01467

Condition **LC14=0.9D+W30**

142	0.96287	0.50121	-1.08940	-0.13766	0.00000	0.03207
144	0.07070	0.41258	1.35092	-0.16451	0.00000	0.00553
175	-0.11362	0.00613	1.16207	0.00000	0.00000	0.00000
SUM	0.91995	0.91991	1.42359	-0.30218	0.00000	0.03761

Condition **LC15=0.9D+W60**

142	1.12402	0.49231	-1.51049	-0.12216	0.00000	0.03540
144	0.22621	0.42152	1.00973	-0.16318	0.00000	0.01056
175	-0.09818	0.00608	1.20363	0.00000	0.00000	0.00000
SUM	1.25205	0.91991	0.70286	-0.28534	0.00000	0.04595

Condition **LC16=0.9D+W90**

142	1.12935	0.49587	-1.50108	-0.12188	0.00000	0.01801
144	0.32551	0.41752	0.63152	-0.15238	0.00000	-0.00219
175	-0.06567	0.00651	0.86956	0.00000	0.00000	0.00000
SUM	1.38919	0.91991	0.00000	-0.27426	0.00000	0.01582

Condition **LC17=0.9D+W120**

142	1.00909	0.50299	-1.30729	-0.12610	0.00000	-0.01992
144	0.25741	0.40968	0.25238	-0.13980	0.00000	-0.03397
175	-0.01444	0.00725	0.35204	0.00000	0.00000	0.00000
SUM	1.25205	0.91991	-0.70286	-0.26590	0.00000	-0.05389

Condition **LC18=0.9D+W150**

142	0.80631	0.49980	-1.50216	-0.11576	0.00000	-0.04858
144	0.11559	0.41230	-0.23899	-0.13232	0.00000	-0.05987
175	-0.00195	0.00781	0.01756	0.00000	0.00000	0.00000
SUM	0.91995	0.91991	-1.72359	-0.24809	0.00000	-0.10845

Condition **LC19=0.9D-Wo**

142	0.22193	0.51702	-0.66178	-0.13602	0.00000	-0.12933
144	-0.31496	0.39299	-0.39181	-0.11965	0.00000	-0.12664
175	0.09302	0.00991	-0.94605	0.00000	0.00000	0.00000
SUM	0.00000	0.91991	-1.99964	-0.25566	0.00000	-0.25598

Condition **LC20=0.9D-W30**

142	-0.25694	0.52823	-0.16447	-0.15032	0.00000	-0.15728
144	-0.77596	0.38112	-0.09518	-0.12166	0.00000	-0.15135
175	0.11295	0.01056	-1.16394	0.00000	0.00000	0.00000
SUM	-0.91995	0.91991	-1.42359	-0.27198	0.00000	-0.30862

Condition **LC21=0.9D-W60**

142	-0.41683	0.53517	0.25514	-0.16500	0.00000	-0.16090
144	-0.93094	0.37407	0.24620	-0.12346	0.00000	-0.15619
175	0.09572	0.01067	-1.20420	0.00000	0.00000	0.00000
SUM	-1.25205	0.91991	-0.70286	-0.28846	0.00000	-0.31709

Condition **LC22=0.9D-W90**

142	-0.42191	0.52947	0.24482	-0.16474	0.00000	-0.14412
144	-1.03021	0.38060	0.62439	-0.13482	0.00000	-0.14329
175	0.06294	0.00984	-0.86921	0.00000	0.00000	0.00000
SUM	-1.38919	0.91991	0.00000	-0.29956	0.00000	-0.28741

Condition **LC23=0.9D-W120**

142	-0.30282	0.52282	0.05085	-0.16097	0.00000	-0.10635
144	-0.96235	0.38851	1.00308	-0.14740	0.00000	-0.11158
175	0.01312	0.00859	-0.35107	0.00000	0.00000	0.00000
SUM	-1.25205	0.91991	0.70286	-0.30837	0.00000	-0.21793

Condition **LC24=0.9D-W150**

142	-0.10155	0.52623	0.25014	-0.17160	0.00000	-0.07798
144	-0.82056	0.38580	1.49412	-0.15471	0.00000	-0.08583
175	0.00216	0.00789	-0.02067	0.00000	0.00000	0.00000
SUM	-0.91995	0.91991	1.72359	-0.32630	0.00000	-0.16380

Condition **LC25=1.2D+Di+WI0**

142	1.00204	1.24546	-1.56570	-0.34969	0.00000	-0.16470
144	-0.98541	0.96654	1.65636	-0.35312	0.00000	-0.19314
175	-0.01663	0.02255	0.17034	0.00000	0.00000	0.00000
SUM	0.00000	2.23455	0.26100	-0.70280	0.00000	-0.35784

Condition **LC26=1.2D+Di+WI30**

142	1.08537	1.24404	-1.65205	-0.34734	0.00000	-0.15997
144	-0.90324	0.96812	1.60751	-0.35274	0.00000	-0.18901
175	-0.02020	0.02239	0.20647	0.00000	0.00000	0.00000
SUM	0.16193	2.23455	0.16193	-0.70008	0.00000	-0.34899

Condition **LC27=1.2D+Di+WI60**

142	1.06021	1.24445	-1.62297	-0.34794	0.00000	-0.16400
144	-0.91524	0.96750	1.59312	-0.35206	0.00000	-0.19219
175	-0.01558	0.02260	0.15924	0.00000	0.00000	0.00000
SUM	0.12940	2.23455	0.12940	-0.69999	0.00000	-0.35619

Condition **LC28=1.2D+Di+WI90**

142	1.06650	1.24481	-1.63056	-0.34762	0.00000	-0.16616
144	-0.89297	0.96690	1.52301	-0.35013	0.00000	-0.19366
175	-0.01053	0.02284	0.10755	0.00000	0.00000	0.00000
SUM	0.16300	2.23455	0.00000	-0.69775	0.00000	-0.35982

Condition **LC29=1.2D+Di+WI120**

142	1.04015	1.24593	-1.59297	-0.34837	0.00000	-0.17324
144	-0.90969	0.96533	1.45275	-0.34773	0.00000	-0.19961
175	-0.00106	0.02329	0.01082	0.00000	0.00000	0.00000
SUM	0.12940	2.23455	-0.12940	-0.69610	0.00000	-0.37285

Condition **LC30=1.2D+Di+Wl150**

142	1.05761	1.24554	-1.60759	-0.34785	0.00000	-0.17369
144	-0.89498	0.96570	1.43851	-0.34756	0.00000	-0.20008
175	-0.00070	0.02331	0.00715	0.00000	0.00000	0.00000
SUM	0.16193	2.23455	-0.16193	-0.69541	0.00000	-0.37377

Condition **LC31=1.2D+Di-Wl0**

142	0.95348	1.24790	-1.47634	-0.35081	0.00000	-0.18943
144	-0.97047	0.96247	1.38897	-0.34479	0.00000	-0.21307
175	0.01699	0.02417	-0.17363	0.00000	0.00000	0.00000
SUM	0.00000	2.23455	-0.26100	-0.69560	0.00000	-0.40251

Condition **LC32=1.2D+Di-Wl30**

142	0.87023	1.24930	-1.38994	-0.35314	0.00000	-0.19417
144	-1.05264	0.96090	1.43785	-0.34517	0.00000	-0.21721
175	0.02049	0.02435	-0.20984	0.00000	0.00000	0.00000
SUM	-0.16193	2.23455	-0.16193	-0.69831	0.00000	-0.41139

Condition **LC33=1.2D+Di-Wl60**

142	0.89536	1.24891	-1.41903	-0.35256	0.00000	-0.19015
144	-1.04064	0.96151	1.45222	-0.34585	0.00000	-0.21404
175	0.01588	0.02412	-0.16260	0.00000	0.00000	0.00000
SUM	-0.12940	2.23455	-0.12940	-0.69841	0.00000	-0.40418

Condition **LC34=1.2D+Di-Wl90**

142	0.88909	1.24856	-1.41146	-0.35288	0.00000	-0.18799
144	-1.06291	0.96211	1.52234	-0.34778	0.00000	-0.21257
175	0.01082	0.02387	-0.11088	0.00000	0.00000	0.00000
SUM	-0.16300	2.23455	0.00000	-0.70066	0.00000	-0.40056

Condition **LC35=1.2D+Di-Wl120**

142	0.91542	1.24745	-1.44906	-0.35214	0.00000	-0.18091
144	-1.04619	0.96368	1.59259	-0.35017	0.00000	-0.20662
175	0.00138	0.02341	-0.01412	0.00000	0.00000	0.00000
SUM	-0.12940	2.23455	0.12940	-0.70232	0.00000	-0.38753

Condition **LC36=1.2D+Di-Wl150**

142	0.89796	1.24784	-1.43445	-0.35266	0.00000	-0.18046
144	-1.06090	0.96331	1.60683	-0.35035	0.00000	-0.20615
175	0.00102	0.02339	-0.01045	0.00000	0.00000	0.00000
SUM	-0.16193	2.23455	0.16193	-0.70301	0.00000	-0.38661

Condition **LC37=1.2D+1.6LL1**

142	0.46939	0.91663	-1.10804	-0.26952	0.00000	-0.08512
144	-0.46944	0.69946	1.10849	-0.25846	0.00000	-0.09861
175	0.00004	0.01046	-0.00045	0.00000	0.00000	0.00000
SUM	0.00000	1.62655	0.00000	-0.52799	0.00000	-0.18373

Condition **LC38=1.2D+1.6LL2**

142	-0.31379	0.91276	-1.11671	-0.25380	0.00000	0.04816
144	0.31391	0.70334	1.11545	-0.25099	0.00000	0.05810
175	-0.00012	0.01045	0.00125	0.00000	0.00000	0.00000
SUM	0.00000	1.62655	0.00000	-0.50479	0.00000	0.10626

Condition **LC39=1.2D+1.6LL3**

142	1.25255	0.91478	-1.11470	-0.24982	0.00000	-0.21958
144	-1.25280	0.70130	1.11732	-0.24666	0.00000	-0.25462
175	0.00026	0.01047	-0.00262	0.00000	0.00000	0.00000
SUM	0.00000	1.62655	0.00000	-0.49648	0.00000	-0.47419

Condition **LC40=1.2D+WL0+1.6LLa1**

142	-1.03854	1.14054	-1.46110	-0.31489	0.00000	0.17019
144	1.04420	0.87565	1.48301	-0.31334	0.00000	0.20140
175	-0.00565	0.01036	0.05809	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	0.08000	-0.62823	0.00000	0.37159

Condition **LC41=1.2D+WL30+1.6LLa1**

142	-1.01222	1.14004	-1.48725	-0.31412	0.00000	0.17162
144	1.06917	0.87616	1.46816	-0.31322	0.00000	0.20260
175	-0.00675	0.01035	0.06930	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	0.05020	-0.62734	0.00000	0.37422

Condition **LC42=1.2D+WL60+1.6LLa1**

142	-1.02056	1.14022	-1.47667	-0.31436	0.00000	0.17022
144	1.06531	0.87595	1.46345	-0.31300	0.00000	0.20150
175	-0.00514	0.01037	0.05282	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	0.03960	-0.62736	0.00000	0.37171

Condition **LC43=1.2D+WL90+1.6LLa1**

142	-1.01937	1.14035	-1.47873	-0.31427	0.00000	0.16939
144	1.07190	0.87580	1.44254	-0.31242	0.00000	0.20091
175	-0.00353	0.01040	0.03619	0.00000	0.00000	0.00000
SUM	0.04900	2.02655	0.00000	-0.62670	0.00000	0.37030

Condition **LC44=1.2D+WL120+1.6LLa1**

142	-1.02678	1.14071	-1.46809	-0.31451	0.00000	0.16713
144	1.06705	0.87539	1.42154	-0.31173	0.00000	0.19900
175	-0.00068	0.01045	0.00695	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	-0.03960	-0.62623	0.00000	0.36613

Condition **LC45=1.2D+WL150+1.6LLa1**

142	-1.02122	1.14060	-1.47180	-0.31436	0.00000	0.16688
144	1.07188	0.87550	1.41694	-0.31166	0.00000	0.19876
175	-0.00045	0.01045	0.00465	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	-0.05020	-0.62602	0.00000	0.36564

Condition **LC46=1.2D-WL0+1.6LLa1**

142	-1.05384	1.14143	-1.43026	-0.31539	0.00000	0.16210
144	1.04884	0.87458	1.40160	-0.31083	0.00000	0.19483
175	0.00500	0.01054	-0.05133	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	-0.08000	-0.62622	0.00000	0.35693

Condition **LC47=1.2D-WL30+1.6LLa1**

142	-1.08015	1.14192	-1.40411	-0.31616	0.00000	0.16067
144	1.02386	0.87407	1.41645	-0.31095	0.00000	0.19362
175	0.00609	0.01056	-0.06255	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	-0.05020	-0.62711	0.00000	0.35430

Condition **LC48=1.2D-WL60+1.6LLa1**

142	-1.07181	1.14174	-1.41469	-0.31592	0.00000	0.16208
144	1.02773	0.87427	1.42116	-0.31118	0.00000	0.19473
175	0.00448	0.01053	-0.04607	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	-0.03960	-0.62709	0.00000	0.35681

Condition **LC49=1.2D-WL90+1.6LLa1**

142	-1.07301	1.14161	-1.41263	-0.31600	0.00000	0.16291
144	1.02114	0.87443	1.44206	-0.31175	0.00000	0.19532
175	0.00286	0.01051	-0.02943	0.00000	0.00000	0.00000
SUM	-0.04900	2.02655	0.00000	-0.62775	0.00000	0.35822

Condition **LC50=1.2D-WL120+1.6LLa1**

142	-1.06560	1.14125	-1.42326	-0.31577	0.00000	0.16516
144	1.02598	0.87484	1.46306	-0.31245	0.00000	0.19723
175	0.00002	0.01046	-0.00020	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	0.03960	-0.62822	0.00000	0.36239

Condition **LC51=1.2D-WL150+1.6LLa1**

142	-1.07116	1.14137	-1.41956	-0.31591	0.00000	0.16541
144	1.02116	0.87473	1.46766	-0.31251	0.00000	0.19747
175	-0.00020	0.01045	0.00210	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	0.05020	-0.62843	0.00000	0.36288

Condition **LC52=1.2D+WL0+1.6LLa2**

142	-0.27117	1.13748	-1.45223	-0.32262	0.00000	0.06344
144	0.27651	0.87873	1.47752	-0.32327	0.00000	0.06760
175	-0.00534	0.01034	0.05471	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	0.08000	-0.64589	0.00000	0.13105

Condition **LC53=1.2D+WL30+1.6LLa2**

142	-0.24481	1.13700	-1.47835	-0.32186	0.00000	0.06486
144	0.30145	0.87924	1.46262	-0.32315	0.00000	0.06881
175	-0.00644	0.01031	0.06594	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	0.05020	-0.64502	0.00000	0.13367

Condition **LC54=1.2D+WL60+1.6LLa2**

142	-0.25316	1.13717	-1.46781	-0.32210	0.00000	0.06347
144	0.29759	0.87903	1.45792	-0.32293	0.00000	0.06771
175	-0.00483	0.01035	0.04948	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	0.03960	-0.64503	0.00000	0.13117

Condition **LC55=1.2D+WL90+1.6LLa2**

142	-0.25196	1.13729	-1.46988	-0.32201	0.00000	0.06264
144	0.30417	0.87887	1.43700	-0.32235	0.00000	0.06713
175	-0.00321	0.01038	0.03289	0.00000	0.00000	0.00000
SUM	0.04900	2.02655	0.00000	-0.64436	0.00000	0.12977

Condition **LC56=1.2D+WL120+1.6LLa2**

142	-0.25938	1.13764	-1.45930	-0.32223	0.00000	0.06040
144	0.29934	0.87846	1.41600	-0.32165	0.00000	0.06523
175	-0.00036	0.01045	0.00370	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	-0.03960	-0.64388	0.00000	0.12563

Condition **LC57=1.2D+WL150+1.6LLa2**

142	-0.25382	1.13753	-1.46302	-0.32209	0.00000	0.06015
144	0.30416	0.87856	1.41138	-0.32159	0.00000	0.06499
175	-0.00014	0.01045	0.00143	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	-0.05020	-0.64367	0.00000	0.12515

Condition **LC58=1.2D-WL0+1.6LLa2**

142	-0.28649	1.13833	-1.42160	-0.32307	0.00000	0.05540
144	0.28117	0.87764	1.39609	-0.32076	0.00000	0.06109
175	0.00532	0.01058	-0.05449	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	-0.08000	-0.64383	0.00000	0.11649

Condition **LC59=1.2D-WL30+1.6LLa2**

142	-0.31284	1.13882	-1.39547	-0.32383	0.00000	0.05398
144	0.25623	0.87713	1.41099	-0.32087	0.00000	0.05989
175	0.00641	0.01061	-0.06573	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	-0.05020	-0.64470	0.00000	0.11386

Condition **LC60=1.2D-WL60+1.6LLa2**

142	-0.30450	1.13865	-1.40602	-0.32360	0.00000	0.05537
144	0.26009	0.87733	1.41569	-0.32110	0.00000	0.06099
175	0.00481	0.01057	-0.04927	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	-0.03960	-0.64470	0.00000	0.11636

Condition **LC61=1.2D-WL90+1.6LLa2**

142	-0.30570	1.13853	-1.40394	-0.32369	0.00000	0.05620
144	0.25351	0.87749	1.43662	-0.32167	0.00000	0.06157
175	0.00319	0.01053	-0.03267	0.00000	0.00000	0.00000
SUM	-0.04900	2.02655	0.00000	-0.64536	0.00000	0.11776

Condition **LC62=1.2D-WL120+1.6LLa2**

142	-0.29828	1.13818	-1.41453	-0.32347	0.00000	0.05844
144	0.25834	0.87791	1.45761	-0.32237	0.00000	0.06346
175	0.00034	0.01047	-0.00349	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	0.03960	-0.64584	0.00000	0.12190

Condition **LC63=1.2D-WL150+1.6LLa2**

142	-0.30384	1.13829	-1.41081	-0.32361	0.00000	0.05869
144	0.25351	0.87780	1.46223	-0.32244	0.00000	0.06370
175	0.00012	0.01046	-0.00121	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	0.05020	-0.64605	0.00000	0.12239

Condition **LC64=1.2D+WL0+1.6LLa3**

142	0.90323	1.13646	-1.44573	-0.33109	0.00000	-0.16745
144	-0.89797	0.87981	1.47189	-0.33329	0.00000	-0.18970
175	-0.00526	0.01028	0.05383	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	0.08000	-0.66438	0.00000	-0.35714

Condition **LC65=1.2D+WL30+1.6LLa3**

142	0.92962	1.13598	-1.47172	-0.33036	0.00000	-0.16600
144	-0.87305	0.88032	1.45686	-0.33317	0.00000	-0.18848
175	-0.00636	0.01025	0.06506	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	0.05020	-0.66354	0.00000	-0.35448

Condition **LC66=1.2D+WL60+1.6LLa3**

142	0.92126	1.13614	-1.46120	-0.33058	0.00000	-0.16740
144	-0.87691	0.88011	1.45219	-0.33295	0.00000	-0.18958
175	-0.00475	0.01030	0.04861	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	0.03960	-0.66353	0.00000	-0.35698

Condition **LC67=1.2D+WL90+1.6LLa3**

142	0.92247	1.13625	-1.46322	-0.33049	0.00000	-0.16821
144	-0.87034	0.87994	1.43120	-0.33237	0.00000	-0.19014
175	-0.00313	0.01035	0.03202	0.00000	0.00000	0.00000
SUM	0.04900	2.02655	0.00000	-0.66286	0.00000	-0.35835

Condition **LC68=1.2D+WL120+1.6LLa3**

142	0.91504	1.13659	-1.45264	-0.33070	0.00000	-0.17044
144	-0.87516	0.87951	1.41019	-0.33167	0.00000	-0.19203
175	-0.00028	0.01045	0.00285	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	-0.03960	-0.66237	0.00000	-0.36246

Condition **LC69=1.2D+WL150+1.6LLa3**

142	0.92060	1.13648	-1.45634	-0.33055	0.00000	-0.17068
144	-0.87033	0.87961	1.40555	-0.33160	0.00000	-0.19226
175	-0.00006	0.01046	0.00058	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	-0.05020	-0.66216	0.00000	-0.36294

Condition **LC70=1.2D-WL0+1.6LLa3**

142	0.88788	1.13724	-1.41504	-0.33149	0.00000	-0.17543
144	-0.89328	0.87867	1.39037	-0.33077	0.00000	-0.19616
175	0.00540	0.01064	-0.05533	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	-0.08000	-0.66225	0.00000	-0.37159

Condition **LC71=1.2D-WL30+1.6LLa3**

142	0.86150	1.13771	-1.38904	-0.33222	0.00000	-0.17688
144	-0.91820	0.87816	1.40541	-0.33088	0.00000	-0.19738
175	0.00650	0.01068	-0.06657	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	-0.05020	-0.66310	0.00000	-0.37425

Condition **LC72=1.2D-WL60+1.6LLa3**

142	0.86985	1.13755	-1.39956	-0.33200	0.00000	-0.17548
144	-0.91434	0.87838	1.41008	-0.33111	0.00000	-0.19628
175	0.00489	0.01062	-0.05011	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	-0.03960	-0.66311	0.00000	-0.37175

Condition **LC73=1.2D-WL90+1.6LLa3**

142	0.86864	1.13744	-1.39754	-0.33209	0.00000	-0.17467
144	-0.92091	0.87854	1.43106	-0.33168	0.00000	-0.19571
175	0.00327	0.01057	-0.03352	0.00000	0.00000	0.00000
SUM	-0.04900	2.02655	0.00000	-0.66377	0.00000	-0.37038

Condition **LC74=1.2D-WL120+1.6LLa3**

142	0.87607	1.13711	-1.40813	-0.33189	0.00000	-0.17244
144	-0.91609	0.87897	1.45207	-0.33238	0.00000	-0.19383
175	0.00042	0.01047	-0.00435	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	0.03960	-0.66427	0.00000	-0.36627

Condition **LC75=1.2D-WL150+1.6LLa3**

142	0.87051	1.13722	-1.40443	-0.33203	0.00000	-0.17220
144	-0.92092	0.87887	1.45671	-0.33245	0.00000	-0.19360
175	0.00020	0.01047	-0.00207	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	0.05020	-0.66448	0.00000	-0.36580

Condition **LC76=1.2D+WL0+1.6LLa4**

142	1.99188	1.15417	-1.45632	-0.31018	0.00000	-0.33441
144	-1.98700	0.86228	1.48651	-0.30375	0.00000	-0.39501
175	-0.00488	0.01010	0.04980	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	0.08000	-0.61393	0.00000	-0.72942

Condition **LC77=1.2D+WL30+1.6LLa4**

142	2.01813	1.15358	-1.48233	-0.30943	0.00000	-0.33292
144	-1.96194	0.86295	1.47142	-0.30369	0.00000	-0.39370
175	-0.00599	0.01002	0.06112	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	0.05020	-0.61313	0.00000	-0.72662

Condition **LC78=1.2D+WL60+1.6LLa4**

142	2.00975	1.15404	-1.47174	-0.30974	0.00000	-0.33426
144	-1.96578	0.86237	1.46672	-0.30338	0.00000	-0.39486
175	-0.00437	0.01014	0.04461	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	0.03960	-0.61312	0.00000	-0.72912

Condition **LC79=1.2D+WL90+1.6LLa4**

142	2.01089	1.15446	-1.47367	-0.30974	0.00000	-0.33497
144	-1.95914	0.86184	1.44566	-0.30272	0.00000	-0.39543
175	-0.00275	0.01026	0.02801	0.00000	0.00000	0.00000
SUM	0.04900	2.02655	0.00000	-0.61246	0.00000	-0.73041

Condition **LC80=1.2D+WL120+1.6LLa4**

142	2.00339	1.15541	-1.46294	-0.31013	0.00000	-0.33707
144	-1.96391	0.86068	1.42457	-0.30185	0.00000	-0.39739
175	0.00012	0.01047	-0.00122	0.00000	0.00000	0.00000
SUM	0.03960	2.02655	-0.03960	-0.61198	0.00000	-0.73446

Condition **LC81=1.2D+WL150+1.6LLa4**

142	2.00889	1.15542	-1.46662	-0.31002	0.00000	-0.33727
144	-1.95903	0.86065	1.41990	-0.30176	0.00000	-0.39762
175	0.00034	0.01048	-0.00348	0.00000	0.00000	0.00000
SUM	0.05020	2.02655	-0.05020	-0.61178	0.00000	-0.73489

Condition **LC82=1.2D-WL0+1.6LLa4**

142	1.97614	1.15722	-1.42510	-0.31124	0.00000	-0.34186
144	-1.98197	0.85844	1.40466	-0.30062	0.00000	-0.40172
175	0.00584	0.01089	-0.05956	0.00000	0.00000	0.00000
SUM	0.00000	2.02655	-0.08000	-0.61186	0.00000	-0.74357

Condition **LC83=1.2D-WL30+1.6LLa4**

142	1.94989	1.15782	-1.39908	-0.31198	0.00000	-0.34335
144	-2.00703	0.85777	1.41976	-0.30068	0.00000	-0.40303
175	0.00694	0.01097	-0.07089	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	-0.05020	-0.61266	0.00000	-0.74638

Condition **LC84=1.2D-WL60+1.6LLa4**

142	1.95826	1.15735	-1.40967	-0.31168	0.00000	-0.34200
144	-2.00319	0.85835	1.42445	-0.30100	0.00000	-0.40187
175	0.00533	0.01085	-0.05438	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	-0.03960	-0.61267	0.00000	-0.74388

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

142	1.95713	1.15694	-1.40774	-0.31167	0.00000	-0.34129
144	-2.00983	0.85889	1.44552	-0.30165	0.00000	-0.40129
175	0.00370	0.01073	-0.03778	0.00000	0.00000	0.00000
SUM	-0.04900	2.02655	0.00000	-0.61333	0.00000	-0.74259

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

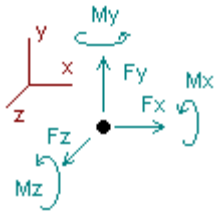
142	1.96463	1.15599	-1.41847	-0.31129	0.00000	-0.33920
144	-2.00506	0.86005	1.46661	-0.30252	0.00000	-0.39933
175	0.00084	0.01052	-0.00854	0.00000	0.00000	0.00000
SUM	-0.03960	2.02655	0.03960	-0.61381	0.00000	-0.73853

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

142	1.95913	1.15598	-1.41479	-0.31139	0.00000	-0.33900
144	-2.00994	0.86007	1.47127	-0.30262	0.00000	-0.39911
175	0.00061	0.01050	-0.00628	0.00000	0.00000	0.00000
SUM	-0.05020	2.02655	0.05020	-0.61401	0.00000	-0.73810

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 [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
142	Max	2.018	LC77	1.249	LC32	0.255	LC21	-0.11576	LC18	0.00000	LC1	0.17162	LC41
	Min	-1.080	LC47	0.492	LC15	-1.720	LC3	-0.35314	LC32	0.00000	LC1	-0.34335	LC83
144	Max	1.072	LC43	0.968	LC26	1.856	LC1	-0.11965	LC19	0.00000	LC1	0.20260	LC41
	Min	-2.010	LC87	0.374	LC21	-0.392	LC19	-0.35312	LC25	0.00000	LC1	-0.40303	LC83
175	Max	0.113	LC8	0.024	LC32	1.204	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.114	LC2	0.006	LC15	-1.205	LC9	0.00000	LC1	0.00000	LC1	0.00000	LC1

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Connection Check

Date: 2/17/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

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CHECK CONNECTION CAPACITY (Worst Case)

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

Bolt Type = A325 5/8" (Threaded Rod)

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{Vall}= 8283 lbs.

TENSILE FORCES

Reaction **F =** 1720 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 2018 lbs. (See Bentley Output)
Reactions in Y direction: 1249 lbs. (See Bentley Output)

Resultant: 2373 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t= 430.00 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 593.31 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.031	+	0.072	=	0.103	<	1.0	**Therefore, OK !**

STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT2075
SITE NAME: BROOKLYN

Tatnic Hill Road
Brooklyn, CT 06234

Antennas Mounted on the Tower

Prepared for:

smartlink at&t

Dated: February 15, 2022

Prepared by:

HUDSON Design Group LLC

STATE OF CONNECTICUT
DANIEL HAMM
PROFESSIONAL ENGINEER

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

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 79' self-supporting tower supporting the proposed AT&T's antennas located at elevation 81' 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:

- Tower Structural Analysis prepared by GPD Group dated August 21, 2013.
- Tower Mapping Report prepared by ProVertic LLC dated December 9, 2021.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **58.0 %** - (Diagonals at Tower Section L1 from EL.71.9' to EL.80.9' 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 **94.8 %** - (Uplift Controlling).

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APPURTENANCES CONFIGURATION (BASED ON RFDS DATED 1/21/2022):

Tenant	Appurtenances	Elev.	Mount
AT&T	(3) 7770 Antennas	81'	***VFA14-H10-2120***
AT&T	(6) LGP17201 TMA's	81'	***VFA14-H10-2120***
AT&T	***(2) OPA65R-BU8DA Antennas***	81'	***VFA14-H10-2120***
AT&T	***(1) OPA65R-BU6DA Antennas***	81'	***VFA14-H10-2120***
AT&T	***(2) DMP65R-BU8EA-K Antennas***	81'	***VFA14-H10-2120***
AT&T	***(1) DMP65R-BU4EA-K Antennas***	81'	***VFA14-H10-2120***
AT&T	***(3) B14 4478 RRH's***	81'	***VFA14-H10-2120***
AT&T	***(3) B5/B12 4449 RRH's***	81'	***VFA14-H10-2120***
AT&T	***(3) B2/B66A 8843 RRH's***	81'	***VFA14-H10-2120***
AT&T	***(1) DC9-48-60-24-8C-EV***	81'	***VFA14-H10-2120***

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1 5/8" Cables	81'	Tower Face
AT&T	***(3) DC Power Cables***	81'	Tower Face
AT&T	***(1) Fiber Cable***	81'	Tower Face

Proposed AT&T Coax Cables shown in Bold.

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ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. Of Component (ft)	Pass/Fail	Comments
Legs	47.2 %	41.9 – 51.9	PASS	
Diagonals	**58.0 %**	71.9 – 80.9	PASS	**Controlling**
Secondary Horizontal	1.1 %	71.9 – 80.9	PASS	
Horizontal	6.1 %	41.9 – 51.9	PASS	
Top Girt	16.2 %	71.9 – 80.9	PASS	
Bottom Girt	2.2 %	71.9 – 80.9	PASS	
Guy Pull-Off	11.1 %	61.9 – 71.9	PASS	
Torque Arm	18.2 %	61.9 – 71.9	PASS	
Guy Cable	36.1 %	61.9 – 71.9	PASS	

TOWER FOUNDATION SUMMARY:

	Stress Ratio	Pass/Fail	Comments
Overturning	1.5 %	PASS	
Bearing	**29.9 %**	PASS	**Controlling**

ANCHOR BLOCK FOUNDATION SUMMARY:

	Stress Ratio	Pass/Fail	Comments
Shear	49.3 %	PASS	
Uplift	**94.8 %**	PASS	**Controlling**

HUDSON Design Group LLC

DESIGN CRITERIA:

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

   County: Windham
   Ultimate Wind Speed: 130 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Nominal Ice Thickness: 1 inch

2. Approximate height above grade to proposed antennas: 81'

***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 tower 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.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, and RRHs be mounted on the proposed sector frame supported by the tower; the proposed surge arrestor be mounted on the tower leg.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).

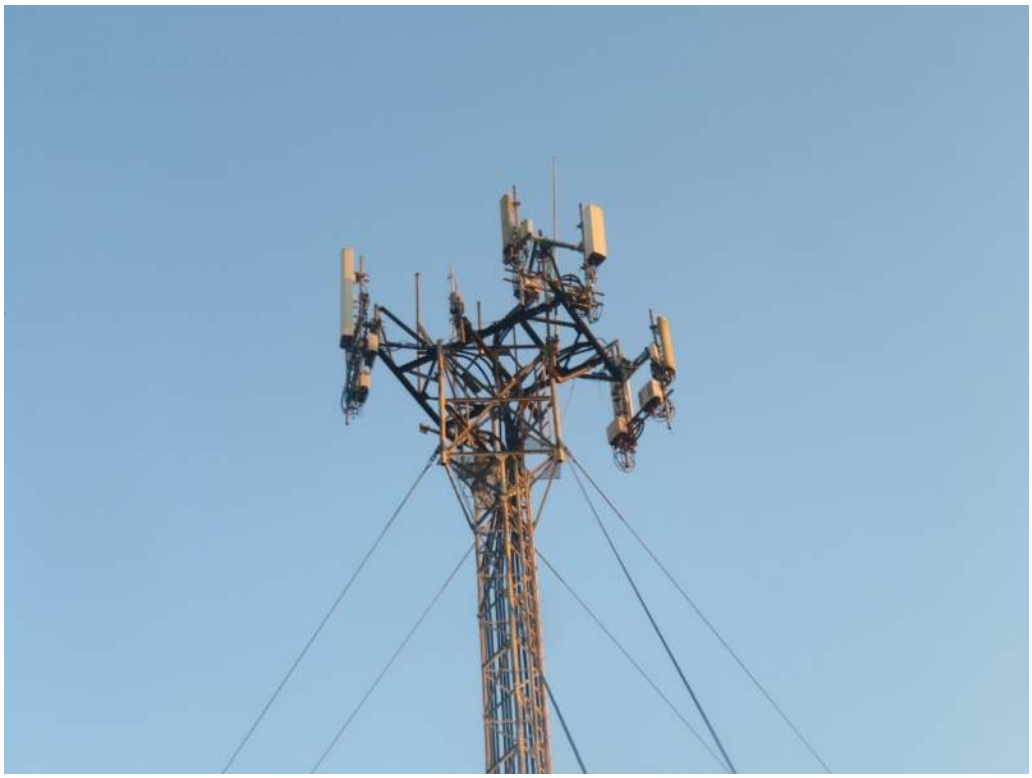

Photo 1: Photo illustrating the Tower with Appurtenances shown.

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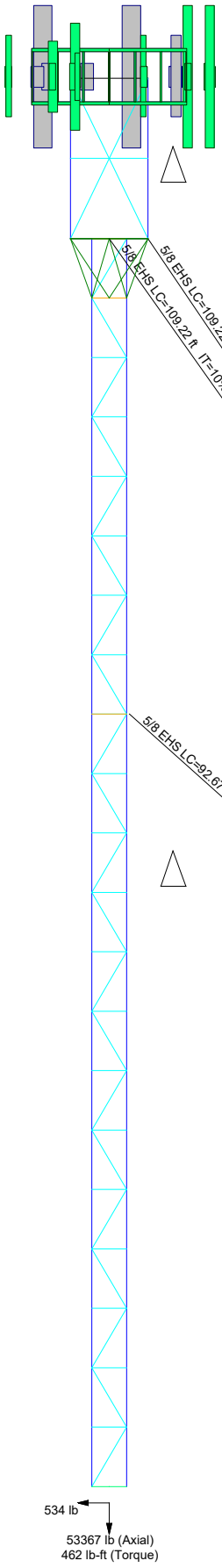
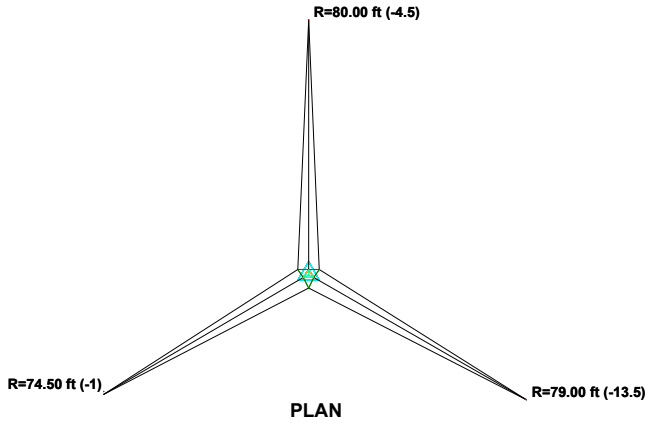
Design Group LLC

CALCULATIONS

Section	T8	T7	T6	T5	T4	T3	T2	T1	L1
Legs	V3x3x1/4 + (2) 1/4 Plates					V3x3x1/4			P3.5x.226
Leg Grade					A36				A53-B-35
Diagonals		L2x2x3/16				L1 1/2x1 1/2x3/16		L2x2x3/16	
Diagonal Grade						A36			
Top Girts					N.A.				L2x2x3/16
Bottom Girts					N.A.				L2x2x3/16
Horizontals					L1 1/4x1 1/4x3/16				N.A.
Sec. Horizontals					N.A.				L2x2x3/16
Top Guy Pull-Offs		N.A.				L2x2x3/8	N.A.	L3x2x1/4	N.A.
Bot Guy Pull-Offs				N.A.				L2x2x3/16	N.A.
Face Width (ft)					3.13				7
# Panels @ (ft)					21 @ 3.33333				1 @ 9
Weight (lb)	3225.2	422.4	192.3	87.4	26.2.2	305.6	26.2.2	704.9	565.9





PLAN

DESIGNED APPURTENANCE LOADING

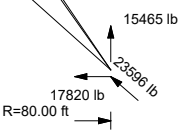
TYPE	ELEVATION	TYPE	ELEVATION
7770 Antenna w/ Mounting Pipe	81	DMP65R-BU8EA-K Antenna w/ Mounting Pipe	81
7770 Antenna w/ Mounting Pipe	81	DMP65R-BU8EA-K Antenna w/ Mounting Pipe	81
7770 Antenna w/ Mounting Pipe	81	DMP65R-BU4EA-K Antenna w/ Mounting Pipe	81
LGP17201 TMA	81	B14 4478 RRH	81
LGP17201 TMA	81	B14 4478 RRH	81
LGP17201 TMA	81	B14 4478 RRH	81
LGP17201 TMA	81	4449 B5/B12 RRH	81
LGP17201 TMA	81	4449 B5/B12 RRH	81
LGP17201 TMA	81	4449 B5/B12 RRH	81
VFA14-H10-2120 Sector Frame	81	B2/B66A 8843 RRH	81
VFA14-H10-2120 Sector Frame	81	B2/B66A 8843 RRH	81
VFA14-H10-2120 Sector Frame	81	B2/B66A 8843 RRH	81
OPA65R-BU8DA Antenna w/ Mounting Pipe	81	DC9-48-60-24-8C-EV Surge Arrestor	81
OPA65R-BU8DA Antenna w/ Mounting Pipe	81	Steel Platform (CT2075)	80.9
OPA65R-BU6DA Antenna w/ Mounting Pipe	81		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 130 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. TOWER RATING: 58%



ALL REACTIONS ARE FACTORED

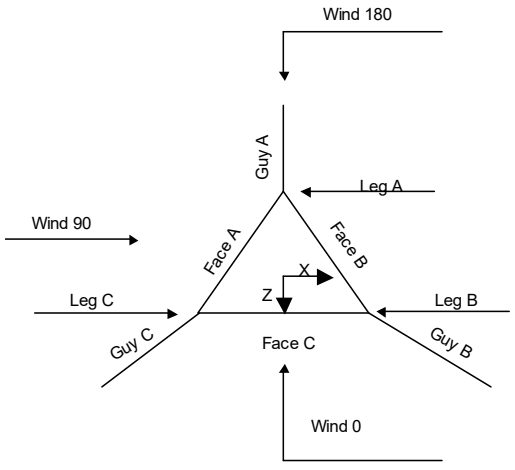
Hudson Design Group
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: **79' Guy Tower**			
Project: **CT2075**			
Client: AT&T	Drawn by: ID		App'd:
Code: TIA-222-H	Date: 02/15/22		Scale: NTS
Path: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\TnxTower\Tnx Projects\AT&T\CT\CT2075 - GT\CT2075 (GT).dri			Dwg No. E-1

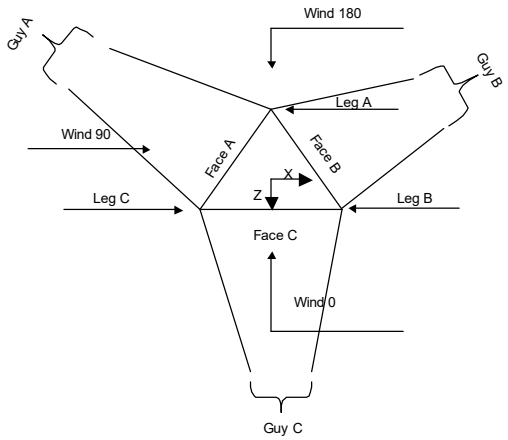
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 80.90 ft above the ground line.
The base of the tower is set at an elevation of 1.90 ft above the ground line.
The face width of the tower is 3.13 ft at the top and 3.13 ft at the base.
An index plate is provided at the 3 sided -tower connection.
There is a 3 sided latticed pole with a face width of 7.00 ft.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 1.90 ft.
Basic wind speed of 130 mph.
Risk Category II.
Exposure Category B.
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.
Pressures are calculated at each section.
Stress ratio used in latticed pole member design is 1.
Stress ratio used in tower member design is 1.
Safety factor used in guy design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Corner & Starmount Guyed Tower



Face Guyed

3 Sided Latticed Pole Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
L1	80.90-71.90			7.00	1	9.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
L1	80.90-71.90	9.00	X Brace	No	Yes	0.0000	0.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 80.90-71.90	Pipe	P3.5x.226	A53-B-35 (35 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 80.90-71.90	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
L1 80.90-71.90	Single Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	71.90-61.90			3.13	1	10.00
T2	61.90-51.90			3.13	1	10.00
T3	51.90-41.90			3.13	1	10.00
T4	41.90-31.90			3.13	1	10.00
T5	31.90-28.57			3.13	1	3.33
T6	28.57-21.90			3.13	1	6.67
T7	21.90-11.90			3.13	1	10.00
T8	11.90-1.90			3.13	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	71.90-61.90	3.33	K Brace Left	No	Yes	0.0000	0.0000
T2	61.90-51.90	3.33	K Brace Right	No	Yes	0.0000	0.0000
T3	51.90-41.90	3.33	K Brace Left	No	Yes	0.0000	0.0000
T4	41.90-31.90	3.33	K Brace Right	No	Yes	0.0000	0.0000
T5	31.90-28.57	3.33	K Brace Left	No	Yes	0.0000	0.0000
T6	28.57-21.90	3.33	K Brace Left	No	Yes	0.0000	0.0000
T7	21.90-11.90	3.33	K Brace Right	No	Yes	0.0000	0.0000
T8	11.90-1.90	3.33	K Brace Left	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 71.90-61.90	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T2 61.90-51.90	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 51.90-41.90	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 41.90-31.90	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 31.90-28.57	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 28.57-21.90	60 Angle	V3x3x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T7 21.90-11.90	60 Angle	V3x3x1/4 + (2) 1/4 Plates	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 11.90-1.90	60 Angle	V3x3x1/4 + (2) 1/4 Plates	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 71.90-61.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T2 61.90-51.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T3 51.90-41.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T4 41.90-31.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T5 31.90-28.57	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T6 28.57-21.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T7 21.90-11.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)
T8 11.90-1.90	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/4x1 1/4x3/16	A36 (36 ksi)

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
71.9	EHS	A	5/8	4240.00	10%	21000	0.813	109.13	80.00	0.0000	-4.50	100%
		B	5/8	4240.00	10%	21000	0.813	114.93	79.00	0.0000	-13.50	100%
		C	5/8	4240.00	10%	21000	0.813	102.77	74.50	0.0000	-1.00	100%
45.2333	EHS	A	5/8	4240.00	10%	21000	0.813	92.59	80.00	0.0000	-4.50	100%
		B	5/8	4240.00	10%	21000	0.813	96.91	79.00	0.0000	-13.50	100%
		C	5/8	4240.00	10%	21000	0.813	86.08	74.50	0.0000	-1.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
71.9	Torque Arm	7.00	30.0000	Bat Ear	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/2
45.2333	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
71.90	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Single Angle	L3x2x1/4 L2x2x3/16
45.23	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L2x2x3/8

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
71.9	88.72	93.44	83.55		1.13 1.8 sec/pulse	1.26 1.9 sec/pulse	1.01 1.7 sec/pulse	
45.2333	75.28	78.79	69.98		0.82 1.6 sec/pulse	0.90 1.6 sec/pulse	0.71 1.5 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
71.9	No	No	1	1	1	1	1	1
45.2333	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
71.9	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1
45.2333	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
71.9	A	33.70	27	4	1.0021
	B	29.20	26	4	0.9878
	C	35.45	27	4	1.0072

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
45.2333	A	20.37	26	4	0.9529
	B	15.87	26	4	0.9294
	C	22.12	26	4	0.9608

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (AT&T (Existing)) **	C	No	Yes	Ar (CaAa)	80.90 - 1.90	6	6	1.9100	1.9100		1.04
DC Cable (AT&T (Proposed))	C	No	Yes	Ar (CaAa)	1.90 - 1.90	3	3	0.9570	0.9570		0.88
Fiber Cable (1-1/4") (AT&T (Proposed))	C	No	Yes	Ar (CaAa)	1.90 - 1.90	1	1	1.2500	1.2500		0.48

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	80.90-71.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.314	0.000	56.16
T1	71.90-61.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40
T2	61.90-51.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40
T3	51.90-41.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40
T4	41.90-31.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40
T5	31.90-28.57	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.820	0.000	20.80
T6	28.57-21.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.640	0.000	41.60
T7	21.90-11.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40
T8	11.90-1.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.460	0.000	62.40

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	80.90-71.90	A	1.088	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	26.485	0.000	314.96
T1	71.90-61.90	A	1.073	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.386	0.000	347.11
T2	61.90-51.90	A	1.056	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.336	0.000	343.70
T3	51.90-41.90	A	1.036	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.278	0.000	339.71
T4	41.90-31.90	A	1.011	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.207	0.000	334.87
T5	31.90-28.57	A	0.991	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.717	0.000	110.32
T6	28.57-21.90	A	0.974	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	19.399	0.000	218.32
T7	21.90-11.90	A	0.935	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	22.683	0.000	257.47
T8	11.90-1.90	A	0.855	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	21.722	0.000	235.73

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	1 5/8	71.90 - 80.90	0.6000	0.6000
T1	1	1 5/8	61.90 - 71.90	0.6000	0.5549
T2	1	1 5/8	51.90 - 61.90	0.6000	0.5892
T3	1	1 5/8	41.90 - 51.90	0.6000	0.5655
T4	1	1 5/8	31.90 - 41.90	0.6000	0.5970
T5	1	1 5/8	28.57 - 31.90	0.6000	0.6000
T6	1	1 5/8	21.90 - 28.57	0.6000	0.5888
T7	1	1 5/8	11.90 - 21.90	0.6000	0.5962
T8	1	1 5/8	1.90 - 11.90	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Steel Platform (CT2075)	C	None		0.0000	80.90	No Ice	18.00	18.00	1000.00
						1/2" Ice	20.00	20.00	1150.00
						1" Ice	22.00	22.00	1300.00
**									
7770 Antenna w/ Mounting Pipe	A	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	5.84 6.32 6.77	4.35 5.20 5.92	56.90 105.42 160.42
7770 Antenna w/ Mounting Pipe	B	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	5.84 6.32 6.77	4.35 5.20 5.92	56.90 105.42 160.42
7770 Antenna w/ Mounting Pipe	C	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	5.84 6.32 6.77	4.35 5.20 5.92	56.90 105.42 160.42
LGP17201 TMA	A	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
LGP17201 TMA	B	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
LGP17201 TMA	C	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
LGP17201 TMA	A	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
LGP17201 TMA	B	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
LGP17201 TMA	C	From Leg	3.00 6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	31.00 41.95 55.17
**									
VFA14-H10-2120 Sector Frame	A	From Leg	0.00 0.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	14.40 21.40 27.70	9.20 14.60 19.50	672.00 826.00 1048.00
VFA14-H10-2120 Sector Frame	B	From Leg	0.00 0.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	14.40 21.40 27.70	9.20 14.60 19.50	672.00 826.00 1048.00
VFA14-H10-2120 Sector Frame	C	From Leg	0.00 0.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	14.40 21.40 27.70	9.20 14.60 19.50	672.00 826.00 1048.00
OPA65R-BU8DA Antenna w/ Mounting Pipe	A	From Leg	3.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	107.60 226.28 355.31
OPA65R-BU8DA Antenna w/ Mounting Pipe	B	From Leg	3.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	107.60 226.28 355.31
OPA65R-BU6DA Antenna w/ Mounting Pipe	C	From Leg	3.00 -6.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	12.89 13.39 13.90	7.10 8.05 8.88	85.90 176.82 276.10
DMP65R-BU8EA-K Antenna w/ Mounting Pipe	A	From Leg	3.00 2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	156.20 274.88 403.91
DMP65R-BU8EA-K Antenna w/ Mounting Pipe	B	From Leg	3.00 -2.00 0.00	0.0000	81.00	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	156.20 274.88 403.91
DMP65R-BU4EA-K Antenna	C	From Leg	3.00	0.0000	81.00	No Ice	8.83	5.01	99.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
w/ Mounting Pipe			-2.00			1/2" Ice	9.43	5.89	167.72
			0.00			1" Ice	9.97	6.59	243.22
B14 4478 RRH	A	From Leg	3.00	0.0000	81.00	No Ice	2.02	1.25	60.00
			-2.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
B14 4478 RRH	B	From Leg	3.00	0.0000	81.00	No Ice	2.02	1.25	60.00
			-2.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
B14 4478 RRH	C	From Leg	3.00	0.0000	81.00	No Ice	2.02	1.25	60.00
			-2.00			1/2" Ice	2.20	1.40	77.66
			0.00			1" Ice	2.39	1.56	98.08
4449 B5/B12 RRH	A	From Leg	3.00	0.0000	81.00	No Ice	1.97	1.40	7.20
			-5.50			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
4449 B5/B12 RRH	B	From Leg	3.00	0.0000	81.00	No Ice	1.97	1.40	7.20
			-5.50			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
4449 B5/B12 RRH	C	From Leg	3.00	0.0000	81.00	No Ice	1.97	1.40	7.20
			-5.50			1/2" Ice	2.15	1.56	25.68
			0.00			1" Ice	2.33	1.72	46.97
B2/B66A 8843 RRH	A	From Leg	3.00	0.0000	81.00	No Ice	1.64	1.35	72.00
			-6.50			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	B	From Leg	3.00	0.0000	81.00	No Ice	1.64	1.35	72.00
			-6.50			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	C	From Leg	3.00	0.0000	81.00	No Ice	1.64	1.35	72.00
			-6.50			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
DC9-48-60-24-8C-EV Surge Arrestor	C	From Leg	3.00	0.0000	81.00	No Ice	1.14	1.14	29.00
			-6.50			1/2" Ice	1.79	1.79	49.30
			0.00			1" Ice	2.00	2.00	72.38

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Ice+1.0 Temp+Guy
6	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
7	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
9	Dead+Wind 0 deg - Service+Guy
10	Dead+Wind 90 deg - Service+Guy
11	Dead+Wind 180 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	80.9 - 71.9	Latticed Pole Leg	Max Tension	4	4787.44	0.00	-0.00
			Max. Compression	2	-6262.95	0.00	0.00
			Max. Mx	7	-3882.40	-101.29	-45.15
			Max. My	6	-3908.81	-3.43	111.25
			Max. Vy	3	-2242.54	0.00	-0.00
			Max. Vx	2	2351.27	0.00	-0.00
		Latticed Pole Diagonal	Max Tension	4	3781.28	5.84	1.88
			Max. Compression	2	-4341.26	0.00	0.00
			Max. Mx	7	305.39	21.99	1.23
			Max. My	2	-4147.58	3.04	-3.44
			Max. Vy	7	-18.10	21.99	1.23
			Max. Vx	2	0.63	3.04	-3.44
		Latticed Pole Secondary Horizontal	Max Tension	4	120.72	-1.10	2.33
			Max. Compression	2	-135.73	8.67	-1.78
			Max. Mx	8	12.70	13.79	-1.27
			Max. My	4	120.72	-1.10	2.33
			Max. Vy	8	-18.15	13.79	-1.27
			Max. Vx	4	0.67	-1.10	2.33
		Latticed Pole Top Girt	Max Tension	2	1070.92	0.00	0.00
			Max. Compression	4	-802.12	0.00	0.00
			Max. Mx	5	237.21	-49.75	0.00
			Max. My	2	-319.43	0.00	-0.00
			Max. Vy	5	28.43	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Latticed Pole Bottom Girt	Max Tension	3	0.07	0.00	0.00
			Max. Compression	3	-0.07	0.00	0.00
			Max. Mx	5	0.00	-49.75	0.00
			Max. My	2	-0.06	0.00	-0.00
			Max. Vy	5	28.43	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T1	71.9 - 61.9	Leg	Max Tension	4	17912.62	12.01	192.76
			Max. Compression	2	-21608.15	-136.28	-9.90
			Max. Mx	3	-2270.89	371.55	47.95
			Max. My	2	-21589.59	85.13	-198.80
			Max. Vy	3	256.74	371.55	47.95
			Max. Vx	2	-166.06	85.13	-198.80
		Diagonal	Max Tension	4	3234.77	0.00	0.00
			Max. Compression	2	-4536.24	0.00	0.00
			Max. Mx	7	-608.38	-14.40	0.00
			Max. My	2	916.80	0.00	0.03
			Max. Vy	7	-12.59	0.00	0.00
			Max. Vx	2	0.03	0.00	0.00
		Horizontal	Max Tension	4	295.34	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	227.74	-6.73	0.00
			Max. My	2	39.67	0.00	-0.00
			Max. Vy	5	8.60	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Guy A	Bottom Tension	4	9124.67		
			Top Tension	4	9186.59		
			Top Cable Vert	4	6469.11		
			Top Cable Norm	4	6522.58		
			Top Cable Tan	4	2.77		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Bot Cable Vert	4	-6326.41		
			Bot Cable Norm	4	6575.42		
			Bot Cable Tan	4	2.08		
		Guy B	Bottom Tension	2	7250.57		
			Top Tension	2	7319.71		
			Top Cable Vert	2	5469.98		
			Top Cable Norm	2	4863.56		
			Top Cable Tan	2	57.38		
			Bot Cable Vert	2	-5342.34		
			Bot Cable Norm	2	4901.48		
			Bot Cable Tan	2	75.36		
		Guy C	Bottom Tension	3	8790.42		
			Top Tension	3	8849.48		
			Top Cable Vert	3	6312.86		
			Top Cable Norm	3	6201.65		
			Top Cable Tan	3	25.67		
			Bot Cable Vert	3	-6179.38		
			Bot Cable Norm	3	6251.81		
			Bot Cable Tan	3	38.60		
		Top Guy Pull-Off	Max Tension	3	0.05	0.00	0.00
			Max. Compression	3	-0.05	0.00	0.00
			Max. Mx	5	0.00	-13.46	0.00
			Max. My	2	-0.05	0.00	-0.00
			Max. Vy	5	17.21	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Bottom Guy Pull-Off	Max Tension	4	1781.47	0.00	0.00
			Max. Compression	2	-2174.18	0.00	0.00
			Max. Mx	5	532.95	-9.84	0.00
			Max. My	2	1304.25	0.00	-0.00
			Max. Vy	5	12.58	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	4	10362.04	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	7	7238.26	-23.41	0.00
			Max. My	2	1355.77	0.00	-0.00
			Max. Vy	7	26.70	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-8595.67	0.00	0.00
			Max. Mx	7	-5975.95	-32.36	0.00
			Max. My	2	-2467.13	0.00	0.11
			Max. Vy	7	-26.75	0.00	0.00
			Max. Vx	2	-0.09	0.00	0.00
T2	61.9 - 51.9	Leg	Max Tension	4	2243.21	-111.38	26.10
			Max. Compression	2	-20499.11	-236.48	-30.37
			Max. Mx	7	-14696.97	-256.64	-1.51
			Max. My	4	-15115.33	-170.53	-47.10
			Max. Vy	7	-152.40	-256.64	-1.51
			Max. Vx	2	28.43	-189.37	46.84
		Diagonal	Max Tension	4	425.23	0.00	0.00
			Max. Compression	2	-887.78	0.00	0.00
			Max. Mx	7	-577.18	-11.20	0.00
			Max. My	2	-114.75	0.00	0.02
			Max. Vy	7	9.80	0.00	0.00
			Max. Vx	2	-0.02	0.00	0.00
		Horizontal	Max Tension	2	304.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	266.21	-6.63	0.00
			Max. My	2	111.75	0.00	-0.00
			Max. Vy	5	8.47	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	2	0.00	0.00	0.00
T3	51.9 - 41.9	Leg	Max Tension	4	1530.50	120.18	29.74
			Max. Compression	2	-21884.07	-269.85	-18.76
			Max. Mx	7	-18031.38	-313.22	-3.05
			Max. My	2	-3405.02	250.38	56.57
			Max. Vy	8	179.03	287.36	1.44
			Max. Vx	2	-31.65	250.38	56.57
		Diagonal	Max Tension	2	1398.93	0.00	0.00
			Max. Compression	3	-1937.98	0.00	0.00
			Max. Mx	7	-528.91	-11.01	0.00
			Max. My	2	-114.86	0.00	0.02
			Max. Vy	7	-9.63	0.00	0.00
			Max. Vx	2	-0.01	0.00	0.00
		Horizontal	Max Tension	8	760.33	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	277.55	-6.51	0.00
			Max. My	2	107.74	0.00	-0.00
			Max. Vy	5	8.32	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Guy A	Bottom Tension	8	5885.46		
			Top Tension	4	5945.70		
			Top Cable Vert	8	3285.88		
			Top Cable Norm	8	4955.24		
			Top Cable Tan	8	0.42		
			Bot Cable Vert	4	-3115.07		
			Bot Cable Norm	4	4993.50		
			Bot Cable Tan	4	0.02		
		Guy B	Bottom Tension	6	6007.22		
			Top Tension	6	6158.41		
			Top Cable Vert	6	3815.02		
			Top Cable Norm	6	4834.33		
			Top Cable Tan	6	30.44		
			Bot Cable Vert	6	-3547.98		
			Bot Cable Norm	6	4847.43		
			Bot Cable Tan	6	31.46		
		Guy C	Bottom Tension	7	5638.41		
			Top Tension	7	5761.88		
			Top Cable Vert	7	3182.07		
			Top Cable Norm	7	4803.49		
			Top Cable Tan	7	12.28		
			Bot Cable Vert	7	-2932.89		
			Bot Cable Norm	7	4815.57		
			Bot Cable Tan	7	11.93		
		Top Guy Pull-Off	Max Tension	8	2384.84	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	2259.59	-12.79	0.00
			Max. My	2	2003.76	0.00	-0.00
			Max. Vy	5	-16.34	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T4	41.9 - 31.9	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-19413.94	265.22	-21.76
			Max. Mx	7	-17601.92	-325.15	-1.54
			Max. My	2	-7134.10	238.66	30.69
			Max. Vy	7	-195.19	-325.15	-1.54
			Max. Vx	2	-22.18	238.66	30.69
		Diagonal	Max Tension	3	1120.98	0.00	0.00
			Max. Compression	2	-2056.35	0.00	0.00
			Max. Mx	6	-740.66	-10.78	0.00
			Max. My	2	-111.28	0.00	0.01
			Max. Vy	6	-9.43	0.00	0.00
			Max. Vx	2	-0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Horizontal	Max Tension	7	370.83	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	352.18	-6.37	0.00
			Max. My	2	174.84	0.00	-0.00
			Max. Vy	5	8.14	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T5	31.9 - 28.5667	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	7	-17303.25	-331.39	-0.76
			Max. Mx	7	-17303.25	-331.39	-0.76
			Max. My	3	-15130.99	241.40	-19.98
			Max. Vy	7	197.02	-331.39	-0.76
			Max. Vx	2	-17.08	250.25	-14.62
		Diagonal	Max Tension	2	755.71	0.00	0.00
			Max. Compression	3	-1510.96	0.00	0.00
			Max. Mx	6	-674.85	-10.60	0.00
			Max. My	6	-573.74	0.00	0.01
			Max. Vy	6	9.28	0.00	0.00
			Max. Vx	6	0.01	0.00	0.00
		Horizontal	Max Tension	8	380.12	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	358.73	-6.26	0.00
			Max. My	2	192.25	0.00	-0.00
			Max. Vy	5	8.00	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T6	28.5667 - 21.9	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	7	-17358.99	331.55	-3.76
			Max. Mx	7	-16447.14	333.08	2.89
			Max. My	3	-9921.38	-226.63	16.01
			Max. Vy	6	-200.20	-328.68	0.85
			Max. Vx	2	-15.87	244.03	-10.00
		Diagonal	Max Tension	3	607.91	0.00	0.00
			Max. Compression	2	-1415.01	0.00	0.00
			Max. Mx	6	-591.23	-13.32	0.00
			Max. My	6	-573.57	0.00	0.01
			Max. Vy	6	11.66	0.00	0.00
			Max. Vx	6	-0.01	0.00	0.00
		Horizontal	Max Tension	8	384.38	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	363.86	-6.16	0.00
			Max. My	2	196.28	0.00	-0.00
			Max. Vy	5	-7.87	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T7	21.9 - 11.9	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-17413.85	286.98	-0.43
			Max. Mx	7	-17199.02	-318.88	-0.92
			Max. My	3	-11346.09	-224.93	11.99
			Max. Vy	6	-184.27	-318.15	0.09
			Max. Vx	2	-15.53	-228.33	-7.46
		Diagonal	Max Tension	3	374.81	0.00	0.00
			Max. Compression	2	-1049.01	0.00	0.00
			Max. Mx	6	-469.08	-12.92	0.00
			Max. My	6	-462.00	0.00	0.01
			Max. Vy	6	11.31	0.00	0.00
			Max. Vx	6	-0.01	0.00	0.00
		Horizontal	Max Tension	8	368.58	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	353.99	-5.95	0.00
			Max. My	2	176.71	0.00	-0.00
			Max. Vy	5	-7.60	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T8	11.9 - 1.9	Leg	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	6	-17497.68	-305.74	35.04
			Max. Mx	6	-17497.68	-305.74	35.04
			Max. My	4	-12196.87	-190.04	38.43
			Max. Vy	6	183.08	-305.74	35.04
			Max. Vx	4	-24.40	-190.04	38.43
		Diagonal	Max Tension	2	244.97	0.00	0.00
			Max. Compression	4	-868.73	0.00	0.00
			Max. Mx	6	-354.57	-12.12	0.00
			Max. My	6	-405.64	0.00	0.01
			Max. Vy	6	-10.60	0.00	0.00
			Max. Vx	6	-0.01	0.00	0.00
		Horizontal	Max Tension	8	356.07	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	8	326.84	-5.52	0.00
			Max. My	2	169.84	0.00	-0.00
			Max. Vy	8	7.06	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Base Beam	Max Tension	4	520.27	-22315.72	390.34
			Max. Compression	2	-168.50	32.53	-0.04
			Max. Mx	6	-17793.44	-32119.77	-100.27
			Max. My	2	-12715.47	-22945.66	-456.76
			Max. Vy	6	-17793.44	-32119.77	-100.27
			Max. Vx	2	-252.74	-22945.66	-456.76

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 74.5 ft Elev -1 ft Azimuth 240 deg	Max. Vert	4	-5252.98	-5541.85	3034.16
	Max. H_x	4	-5252.98	-5541.85	3034.16
	Max. H_z	3	-14631.27	-14334.30	8205.72
	Min. Vert	3	-14631.27	-14334.30	8205.72
	Min. H_x	3	-14631.27	-14334.30	8205.72
	Min. H_z	4	-5252.98	-5541.85	3034.16
Guy B @ 79 ft Elev -13.5 ft Azimuth 120 deg	Max. Vert	3	-3567.69	3408.72	2062.01
	Max. H_x	2	-13897.42	12179.02	7255.50
	Max. H_z	2	-13897.42	12179.02	7255.50
	Min. Vert	2	-13897.42	12179.02	7255.50
	Min. H_x	3	-3567.69	3408.72	2062.01
	Min. H_z	3	-3567.69	3408.72	2062.01
Guy A @ 80 ft Elev -4.5 ft Azimuth 0 deg	Max. Vert	2	-1211.64	1.16	-1815.98
	Max. H_x	6	-7923.60	4.48	-9914.29
	Max. H_z	2	-1211.64	1.16	-1815.98
	Min. Vert	4	-15465.42	-15.59	-17820.49
	Min. H_x	3	-8802.68	-218.25	-10422.66
	Min. H_z	4	-15465.42	-15.59	-17820.49
Mast	Max. Vert	6	53366.76	37.68	151.64
	Max. H_x	4	37097.72	47.46	-439.72
	Max. H_z	2	38108.90	-0.68	533.58
	Max. M_x	1	0.00	21.21	5.39

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. M_z	1	0.00	21.21	5.39
	Max. Torsion	4	461.68	47.46	-439.72
	Min. Vert	11	34107.50	26.42	-97.16
	Min. H_x	3	37639.49	-180.81	56.79
	Min. H_z	4	37097.72	47.46	-439.72
	Min. M_x	1	0.00	21.21	5.39
	Min. M_z	1	0.00	21.21	5.39
	Min. Torsion	2	-442.79	-0.68	533.58

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	34113.65	-21.21	-5.39	0.00	0.00	-43.75
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	38108.90	0.68	-533.58	0.00	0.00	442.79
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	37639.49	180.81	-56.79	0.00	0.00	-391.89
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	37097.72	-47.46	439.72	0.00	0.00	-461.68
1.2 Dead+1.0 Ice+1.0 Temp+Guy	53131.82	-41.05	-2.77	0.00	0.00	-80.47
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	53366.76	-37.68	-151.64	0.00	0.00	-12.80
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	53316.43	4.34	-5.26	0.00	0.00	-124.49
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	53140.20	-44.94	118.56	0.00	0.00	-148.29
Dead+Wind 0 deg - Service+Guy	34168.42	-16.56	-149.72	0.00	0.00	29.53
Dead+Wind 90 deg - Service+Guy	34245.93	34.48	-11.18	0.00	0.00	-91.40
Dead+Wind 180 deg - Service+Guy	34107.50	-26.42	97.16	0.00	0.00	-116.23

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	-0.00	-9005.54	0.00	-0.26	9005.45	0.03	0.003%
2	-100.62	-10712.60	-13110.06	100.63	10712.60	13110.00	0.000%
3	11324.70	-10637.86	98.18	-11324.64	10637.86	-98.13	0.001%
4	100.62	-10598.52	12314.50	-100.71	10598.52	-12314.43	0.001%
5	-0.00	-22867.99	0.00	-0.16	22867.99	-0.13	0.001%
6	-12.47	-22902.40	-3170.83	12.36	22902.39	3170.16	0.003%
7	2707.35	-22858.73	10.80	-2707.35	22858.73	-10.93	0.001%
8	12.47	-22833.59	3074.40	-12.68	22833.59	-3074.19	0.001%
9	-21.43	-9017.69	-2795.95	21.41	9017.69	2795.93	0.000%
10	2415.64	-9001.77	20.92	-2415.70	9001.77	-20.93	0.001%
11	21.43	-8993.39	2626.48	-21.47	8993.39	-2626.51	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00008510
2	Yes	9	0.00000001	0.00002581
3	Yes	8	0.00000001	0.00001300
4	Yes	7	0.00000001	0.00003919
5	Yes	6	0.00000001	0.00005552
6	Yes	6	0.00000001	0.00006592
7	Yes	6	0.00000001	0.00009502
8	Yes	6	0.00000001	0.00006751
9	Yes	6	0.00000001	0.00002139
10	Yes	6	0.00000001	0.00005451
11	Yes	6	0.00000001	0.00004198

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	80.9 - 71.9	Latticed Pole Leg	P3.5x.226	2	-5557.39	77641.60	9.3	Pass
		Latticed Pole Diagonal	L2x2x3/16	13	-4341.26	7483.92	58.0	Pass
		Latticed Pole Secondary Horizontal	L2x2x3/16	18	-135.73	12172.90	1.1	Pass
		Latticed Pole Top Girt	L2x2x3/16	4	-802.12	4963.82	16.2	Pass
		Latticed Pole Bottom Girt	L2x2x3/16	8	-108.48	4963.82	2.2	Pass
T1	71.9 - 61.9	Leg	V3x3x1/4	21	-21608.20	46355.50	46.6	Pass
		Diagonal	L2x2x3/16	38	-4536.24	12463.10	36.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	29	-374.26	6167.72	6.1	Pass
		Guy A@71.9	5/8	181	9186.59	25440.00	36.1	Pass
		Guy B@71.9	5/8	175	7319.71	25440.00	28.8	Pass
		Guy C@71.9	5/8	169	8849.48	25440.00	34.8	Pass
		Top Guy Pull-Off@71.9	L3x2x1/4	22	-0.05	34337.20	0.1	Pass
		Bottom Guy Pull-Off@71.9	L2x2x3/16	36	-2174.18	19512.60	11.1	Pass
		Torque Arm Top@71.9	L2 1/2x2 1/2x1/2	183	10362.00	72900.00	14.2	Pass
		Torque Arm Bottom@71.9	L2 1/2x2 1/2x1/2	179	-8595.67	47337.50	18.2	Pass
T2	61.9 - 51.9	Leg	V3x3x1/4	42	-20499.10	46355.50	44.2	Pass
		Diagonal	L1 1/2x1 1/2x3/16	60	-887.78	5095.59	17.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	44	-355.05	6167.72	5.8	Pass
T3	51.9 - 41.9	Leg	V3x3x1/4	63	-21884.10	46355.50	47.2	Pass
		Diagonal	L1 1/2x1 1/2x3/16	67	-1937.98	5095.59	38.0	Pass
		Horizontal	L1 1/4x1 1/4x3/16	65	-379.04	6167.72	6.1	Pass
		Guy A@45.2333	5/8	192	5945.70	25440.00	23.4	Pass
		Guy B@45.2333	5/8	191	6158.41	25440.00	24.2	Pass
		Guy C@45.2333	5/8	187	5761.88	25440.00	22.6	Pass
		Top Guy Pull-Off@45.2333	L2x2x3/8	190	2384.84	44064.00	5.4	Pass
T4	41.9 - 31.9	Leg	V3x3x1/4	84	-19413.90	46355.50	41.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	L1 1/2x1 1/2x3/16	102	-2056.35	5095.59	40.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	92	-336.26	6167.72	5.5	Pass
T5	31.9 - 28.5667	Leg	V3x3x1/4	104	-17303.20	46355.50	37.3	Pass
		Diagonal	L1 1/2x1 1/2x3/16	109	-1510.96	5095.59	29.7	Pass
		Horizontal	L1 1/4x1 1/4x3/16	106	-299.70	6167.72	4.9	Pass
T6	28.5667 - 21.9	Leg	V3x3x1/4	113	-17359.00	46355.50	37.4	Pass
		Diagonal	L2x2x3/16	126	-1415.01	12463.10	11.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	121	-300.67	6167.72	4.9	Pass
T7	21.9 - 11.9	Leg	V3x3x1/4 + (2) 1/4 Plates	128	-17413.90	87669.00	19.9	Pass
		Diagonal	L2x2x3/16	147	-1049.01	12463.10	8.4	Pass
		Horizontal	L1 1/4x1 1/4x3/16	136	-302.73	6167.72	4.9	Pass
T8	11.9 - 1.9	Leg	V3x3x1/4 + (2) 1/4 Plates	149	-17497.70	87669.00	20.0	Pass
		Diagonal	L2x2x3/16	155	-868.73	12463.10	7.0	Pass
		Horizontal	L1 1/4x1 1/4x3/16	151	-304.18	6167.72	4.9	Pass
							Summary	
						Latticed Pole Leg (L1)	9.3	Pass
						Latticed Pole Diagonal (L1)	58.0	Pass
						Latticed Pole Secondary Horizontal (L1)	1.1	Pass
						Latticed Pole Top Girt (L1)	16.2	Pass
						Latticed Pole Bottom Girt (L1)	2.2	Pass
						Leg (T3)	47.2	Pass
						Diagonal (T4)	40.4	Pass
						Horizontal (T3)	6.1	Pass
						Guy A (T1)	36.1	Pass
						Guy B (T1)	28.8	Pass
						Guy C (T1)	34.8	Pass
						Top Guy Pull-Off (T3)	5.4	Pass
						Bottom Guy Pull-Off (T1)	11.1	Pass
						Torque Arm Top (T1)	14.2	Pass
						Torque Arm Bottom (T1)	18.2	Pass
						RATING =	**58.0**	**Pass**

Anchor Block Foundation

Checks capacity of anchor blocks with or without a berm for a guyed tower per TIA-222-G

Site Number: CT2075
Site Name: *BROOKLYN*
App Number:

Design Reactions		
Shear, **S**:	17.82	kips
Uplift, **Ua**:	15.47	kips
Resultant Force, **Rf**:	23.60	kips
Tower Height, **H**:	79.00	ft
Guy Anchor Radius, **R**:	74.50	ft

Guyed Anchor Properties		
Depth to Bottom of Deadman, **Da**:	6.5	ft
Anchor Width, **Wa**:	4.0	ft
Anchor Thickness, **Ta**:	5.0	ft
Anchor Length, **La**:	5.0	ft
Concrete Volume, **Vc**:	3.7	yd^3
Frost Depth, **Fd**:	3.5	ft

Material Properties		
Rebar Tensile, **Fy**:	-	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	0.150	kcf
Clear Cover, **cc**:	3	in
Strength Reduction Factor, **φ:**	0.9	

Design Checks	*Capacity/ Availability*	*Demand/ Limits*	*Check*	*%*
Shear (kips):	36.11	17.82	**OK**	**49.3%**
Uplift Capacity (kips):	16.31	15.47	**OK**	**94.8%**

Soil Properties — No. of Soil Layers? 2

Layer	φ, deg	c, ksf	δ, kcf	d, ft
Berm	0	0.000	0.000	0.00
1	0	0.000	0.125	1.50
2	36	0.000	0.125	6.50

Date: 2/15/2022
Project Name: BROOKLYN
Project No.: CT2075
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

Foundation Overturning Calculations

Tnx Tower Output:

Shear =	0.534	kips
Axial =	53.367	kips
Torque =	0.462	kip-ft

Foundation Dimensions

Concrete Weight =	150	pcf	
Distance to Center of Concre	2.165	ft	(Reference TSA prepared by GPD Group)
Concrete Depth (W_d) =	4	ft	(Reference TSA prepared by GPD Group)
Concrete Area (W_a) =	22.33	ft^2	(Reference TSA prepared by GPD Group)
Total Concrete Weight (W_c) =	13.398	kips	
Resistant Moment (M_r) =	144.5462	kip-ft	
Overturning Moment (M_o) =	2.136	kip-ft	
Bearing Capacity =	2.3899	ksf	

Foundation Stability (FS):

2.136 kip-ft < **144.5462 kip-ft** **Therefore, OK !**

Bearing Capacity:

2.3899 ksf < **8 ksf** **Therefore, OK !**

HUDSON
Design Group LLC

REFERENCE DOCUMENTS

AT&T Towers
2300 Northlake Center Dr Ste 405
Tucker, GA 30084-4032
(404) 532-5855

Kevin Clements
520 South Main Street, Suite 2531
Akron, OH 44311
(678) 781-5061
kclements@gpdgroup.com

GPD #: 2013723.4.02
August 21, 2013

STRUCTURAL ANALYSIS REPORT WITH MODIFICATION DESIGN

AT&T DESIGNATION:	**Site USID:**	**SNET004**
	Site FA:	**10137471**
	Site Name:	**BROOKLYN**
	AT&T Project:	**Wireline Cingular Tower Only Modification 12-4-2012**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F, ASCE 7-05, 2003 IBC & 2005 CTBC** **85-mph Fastest Mile with 0" ice** **38-mph Fastest Mile with 3/4" ice**
SITE DATA:		**198 Tatnic Hill Rd., Brooklyn, CT 06234, Windham County** **Latitude 41° 46' 0.012" N, Longitude 71° 58' 0.3" W** **Market: NEW ENGLAND** **79.75' Modified Guyed Tower**

Mr. Marty Jelleme,

GPD is pleased to submit this Structural Analysis Report with Modification Design to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

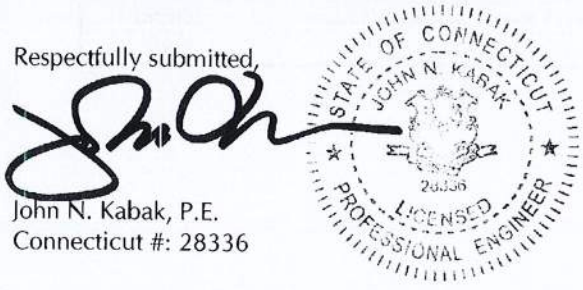
Analysis Results

Tower Stress Level with Proposed Equipment:	62.4%	Pass
Foundation Ratio with Proposed Equipment:	97.7%	Pass

Note: In order for the analysis results to be valid for the existing, proposed, and reserved loading in Appendix A, the modifications referenced in the design drawings by GPD (Project #: 2013723.4.02, dated 8/21/2013) must be installed.

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T Mobility. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



John N. Kabak, P.E.
Connecticut #: 28336

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing modified structure is capable of carrying the proposed loading configuration as specified by AT&T. This report was commissioned by Mr. Marty Jelleme of AT&T.

Modifications reported in the tower mapping by GPD (Project #: 2013723.4.01 Rev 1, dated 8/12/2013), were taken into consideration in this analysis.

In order for the analysis results to be valid for the existing, proposed, and reserved loading in Appendix A, the modifications referenced in the design drawings by GPD (Project #: 2013723.4.02, dated 8/21/2013) must be installed.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Tower Legs	48.3%	Pass
Diagonals	55.2%	Pass
Horizontals	19.4%	Pass
Guy Wires	33.4%	Pass
Torque Arms	55.7%	Pass
Member Bolts	62.4%	Pass
Anchor Rods	18.1%	Pass
Tower Base Foundation	82.9%	Pass
Anchor Foundation	97.7%	Pass

ANALYSIS METHOD

tnxTower (Version 6.3.1.1) and RISA 3D (Version 9.1.1), commercially available software programs, were used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analyses is included in Appendices B and C. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

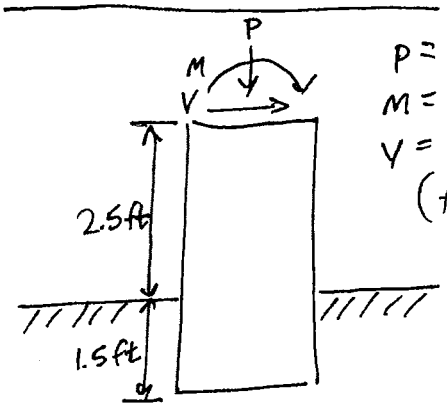
DOCUMENTS PROVIDED

Document	Remarks	Source
Notice of Co-location Form	Not Provided	N/A
Site Lease Application	AT&T Application dated, 5/19/2012	Siterra
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	GPD Project #: 2012801.84, dated 11/15/2012	Siterra
Foundation Mapping	GPD Project #: 2012801.84 Rev 1, dated 8/9/2013	Siterra
Previous Structural Analysis	GPD Project #: 2013723.4.01 Rev 1, dated 8/12/2013	Siterra
Tower Mapping	GPD Project #: 2013723.4.01 Rev 1, dated 8/12/2013	Siterra
Modification Drawings	GPD Project #: 2013723.4.02, dated 8/21/2013	GPD

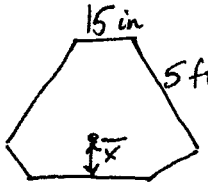
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2013723.4.02 SNET004 Brooklyn
Sheet No. 1 of 1
Calculated by BB Date 8/21/2013
Checked by _____ Date _____

Foundation Calcs



P = 37.222 k
M = 49.303 k·ft
V = 2.847 k
(from tnx)



$\bar{x}$ = 2.165'
(from CAD)

$M_{resist} = P(2.165\,ft) + W_c(2.165\,ft)$

$W_c = V_c \times 150\,pcf = (22.33\,ft^2)(4\,ft)(150\,pcf)$

$= 13.398\,k$

$M_{resist} = 37.222\,k(2.165\,ft) + 13.398\,k(2.165\,ft)$

$= 109.59\,k\cdot ft$

$M_{overturn} = M + V(4\,ft) = 49.303\,k\cdot ft + 2.847\,k(4\,ft)$

$= 60.691\,k\cdot ft$

$F.S. = \frac{109.59\,k\cdot ft}{60.691\,k\cdot ft} = 1.81$

F.S. req'd = 1.5

$\frac{1.5}{1.81} = \underline{82.9\%}$ ∴ O.K.

Guyed Tower Anchor Foundation TIA/EIA-222-F
SNET004 BROOKLYN
2013723.4.02

Guy Anchor Location	
Azimuth/Leg	*30*
Radius	*80'*

Tower Reactions		
Vertical	13.28	k
Horizontal	14.503	k

Anchor Block Geometry		
Width	4	ft
Height	5	ft
Length	5	ft
Depth	6.5	ft

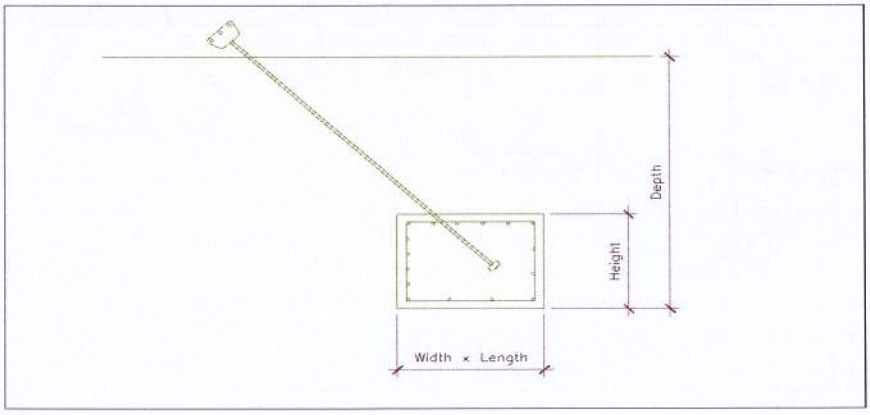
Soil Capacity Calcualtions		
W_s	5.40 k	
W_c	15.00 k	
$(W_s+W_c)/1.5$	13.60 k	
$(W_s/2)+(W_c/1.25)$	14.70 k	
Uplift Resistance	13.60 k	
Horizontal Resistance	22.45 k	
Uplift Capacity=	97.7%	OK
Horizontal Capacity=	64.6%	OK

Anchor Block Reinformement	
Is Reinforcement Known?	no

Capacity Summary		
Soil Capacity=	97.7%	OK
Controlling Capacity=	**97.7%**	**OK**

<--- Reinforcement capacity not verified

Soil Properties						
Layer	C, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	μ	d, ft
1	0	0	125	150	0	1.5
2	0	36	125	150	0	5
3	0	0	0	0	0	0
4	0	0	0	0	0	0
Add'l Horizontal Frictional Resistance (Ultimate)				0	k	



[redacted]

[redacted]

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Friday, April 15, 2022 12:16 PM
To: Kristina Cottone
Subject: FedEx Shipment 776587388830: Your package has been delivered

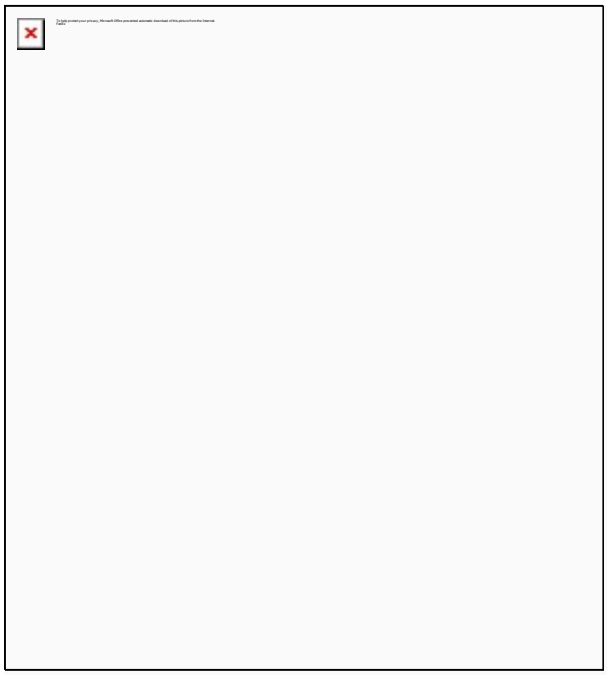
Hi. Your package was delivered Fri, 04/15/2022 at 12:00pm.

Delivered to 550 Cochituate Road, FRAMINGHAM, MA 01701

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	776587388830
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	AT&T Maricela City 550 Cochituate Road FRAMINGHAM, MA, US, 01701

REFERENCE	CTL02075 - Broklyn
SHIPPER REFERENCE	CTL02075 - Broklyn
SHIP DATE	Thu 4/14/2022 07:09 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	FRAMINGHAM, MA, US, 01701
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver



Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Saturday, April 16, 2022 1:31 PM
To: Kristina Cottone
Subject: FedEx Shipment 776587295038: Your package has been delivered

Hi. Your package was delivered Sat, 04/16/2022 at 1:29pm.

Delivered to 69 Spouth Main Street, BROOKLYN, CT 06234
Received by S.IGNATURE ON FILE

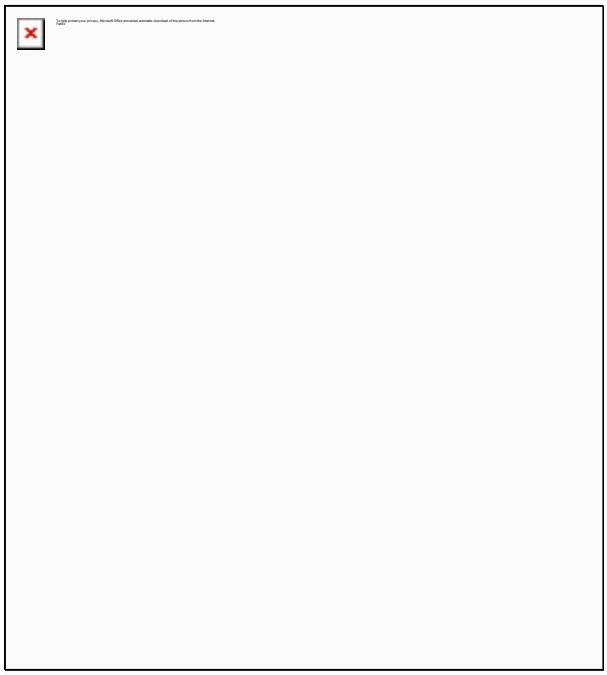
OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 776587295038

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

TO
Town of Brooklyn
ATTN: Building Department John A. B
69 Spouth Main Street

	Suite 22 BROOKLYN, CT, US, 06234
REFERENCE	CTL02075 - Brooklyn
SHIPPER REFERENCE	CTL02075 - Brooklyn
SHIP DATE	Thu 4/14/2022 07:09 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	BROOKLYN, CT, US, 06234
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver



FOLLOW FEDEX

Kristina Cottone

From: auto-reply@usps.com
Sent: Wednesday, April 20, 2022 10:22 AM
To: Kristina Cottone
Subject: USPS® Item Delivered, PO Box 9505512163232105175492

UNITED STAT
POSTAL SERV

Hello **Kristina Cottone**,

Your item has been delivered and is available at a PO Box at 5:47 pm on April 18, 2022 in BROOKLYN, CT 06234.

Tracking Number: **9505512163232105175492**

Delivered, PO Box

Tracking & Delivery Options

My Account

Visit **USPS Tracking**® to check the most up-to-date status of your package. Sign up for **Informed Delivery**® to digitally preview the address side of your incoming letter-sized mail and manage your packages scheduled to arrive soon! To update how frequently you receive emails from USPS, log in to your **USPS.com** account.

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Sign up to view your mail online or via email.

Kristina Cottone

From: auto-reply@usps.com
Sent: Wednesday, April 20, 2022 10:23 AM
To: Kristina Cottone
Subject: USPS® Item Delivered, PO Box 9505512163232105175508

UNITED STATES POSTAL SERVICE

Hello **Kristina Cottone**,

Your item has been delivered and is available at a PO Box at 1:43 pm on April 18, 2022 in ADDISON, TX 75001.

Tracking Number: **9505512163232105175508**

Delivered, PO Box

Tracking & Delivery Options

My Account

Visit **USPS Tracking**® to check the most up-to-date status of your package. Sign up for **Informed Delivery**® to digitally preview the address side of your incoming letter-sized mail and manage your packages scheduled to arrive soon! To update how frequently you receive emails from USPS, log in to your **USPS.com** account.

Want regular updates on your package? **Set up text alerts**.

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Sign up to view your mail online or via email.

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING GUYED: • INSTALL AT&T SECTOR FRAME SITEPRO #VFA14-H10-2120 (TYP. OF 1 PER SECTOR, TOTAL OF 3) • NEW AT&T ANTENNAS: OPA65R-BU8DA (TYP. OF 1 PER ALPHA & GAMMA SECTORS, TOTAL OF 2). • NEW AT&T ANTENNAS: DMP65R-BU8EA-KG (TYP. OF 1 PER ALPHA & GAMMA SECTORS, TOTAL OF 2). • NEW AT&T ANTENNAS: OPA65R-BU4DA (TYP. OF 1 PER BETA SECTOR). • NEW AT&T ANTENNAS: DMP65R-BU4EA-K (TYP. OF 1 PER BETA SECTOR). • NEW AT&T RRUS: RRUS-8843 B2/B66A (AWS/PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: RRUS-4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: RRUS-4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1). • NEW AT&T (6) Y-CABLES • NEW AT&T (1) 6AWG DC TRUNKS & (1) 24 PAIRS OF FIBER RUNS. ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • INSTALL (2) 6630+IDLE IN EXISTING LTE RACK FINAL: 2x6630+1xXMU+IDLE • INSTALL (3) 48V RECTIFIERS • INSTALL (1) BATTERY STRING • INSTALL (1) INDOOR DC-12-48-60-RM ITEMS TO BE REMOVED: • EXISTING AT&T ANTENNA: TPA-65R-LCUUUU-H8 (TYP. OF 1 PER ALPHA & GAMMA SECTORS, TOTAL OF 2). • EXISTING AT&T ANTENNA: QS46512-2 (TOTAL OF 1 FOR BETA SECTOR). • EXISTING AT&T RRUS: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T RRUS: RRUS-12 B2 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T (1) SURGE ARRESTOR, (1) FIBER • EXISTING BASEBAND UNIT IN EXISTING LTE RACK. ITEMS TO REMAIN: • (3) ANTENNAS, (6) 1-5/8" COAX CABLE, (6) TMAS., (2) DC TRUNKS
RFDS:	FINAL APPROVED V4 RFDS 03/02/22
SITE ADDRESS:	TATNIC HILL ROAD BROOKLYN, CT 06234
LATITUDE:	41.768131 N, 41° 46' 05.27" N
LONGITUDE:	71.971416 W, 71° 58' 17.10' W
TYPE OF SITE:	GUYED / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	82'-0"±
RAD CENTER:	81'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN
FA CODE: 10035010
PACE ID: MRCTB056974, MRCTB056968, MRCTB056945, MRCTB057039, MRCTB057034, MRCTB049966
PROJECT: 4TX4RX_ANTENNA MODS_5G NR 1DR-1_LTE 4C_LTE 3C_RF MODS

VICINITY MAP

DIRECTIONS TO SITE: (FROM AT&T ADDRESS)

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. MERGE ONTO CT-3 N VIA EXIT 25 TOWARD GLASTONBURY. MERGE ONTO CT-2 E TOWARD NORWICH. TAKE THE CT-66 EXIT, EXIT 13, TOWARD WILLIMANTIC/MARLBOROUGH. TURN LEFT ONTO HEBRON RD/CT-66. CONTINUE TO FOLLOW CT-66. CT-66 BECOMES US-6 E. TURN RIGHT ONTO WINDHAM RD. TURN LEFT ONTO TATNIC RD. TURN RIGHT ONTO TRIPP HOLLOW RD. TURN LEFT ONTO TATNIC HILL RD. END AT TATNIC HILL RD BROOKLYN, CT 06234.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

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SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

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BROOKLYN, CT 06234
WINDHAM COUNTY

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ROCKY HILL, CT 06067

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1	03/09/22	ISSUED FOR CONSTRUCTION	MB	AT	DHH
0	01/19/22	ISSUED FOR REVIEW	MRK	AT	DHH

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

COMMONWEALTH OF MASSACHUSETTS
DANIEL P. HAMM
CIVIL
No. 40720
REGISTERED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
4TX4RX_ANTENNA MODS_5G NR
1DR-1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	T-1	2

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

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

ABBREVIATIONS

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

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COMMONWEALTH OF MASSACHUSETTS
DANIEL P. HAMM
CIVIL
No. 40720
REGISTERED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

4TX4RX_ANTENNA MODS_5G NR
1DR-1_LTE 4C_LTE 3C_RF MODS

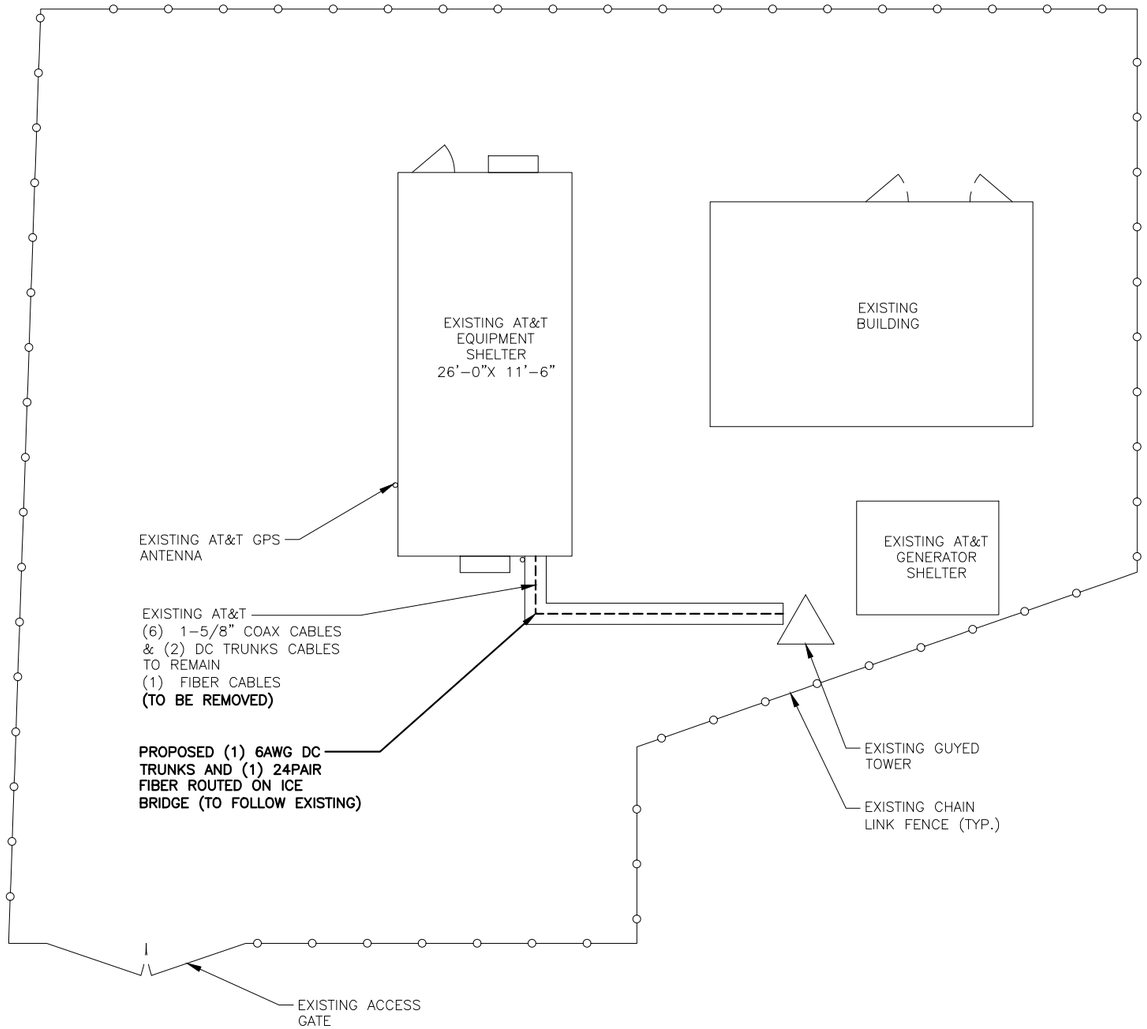
SITE NUMBER	DRAWING NUMBER	REV
CTL02075	GN-1	2

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/02/22

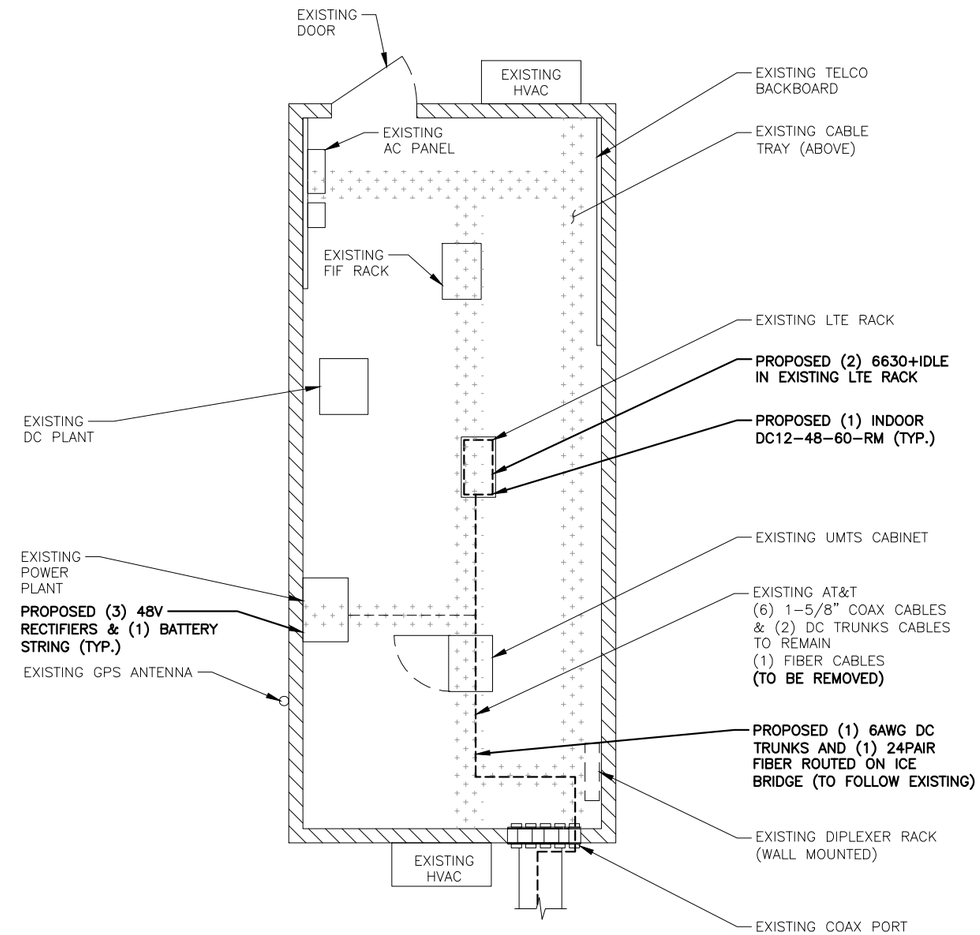
NOTE:

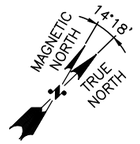
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT HAS BEEN COMPLETED BY HUDSON DESIGN GROUP LLC, DATED: 02/15/2022



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

0 2'-8" 5'-4" 10'-8" 16'-0"





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

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

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COMMONWEALTH OF MASSACHUSETTS
DANIEL P. HAMM
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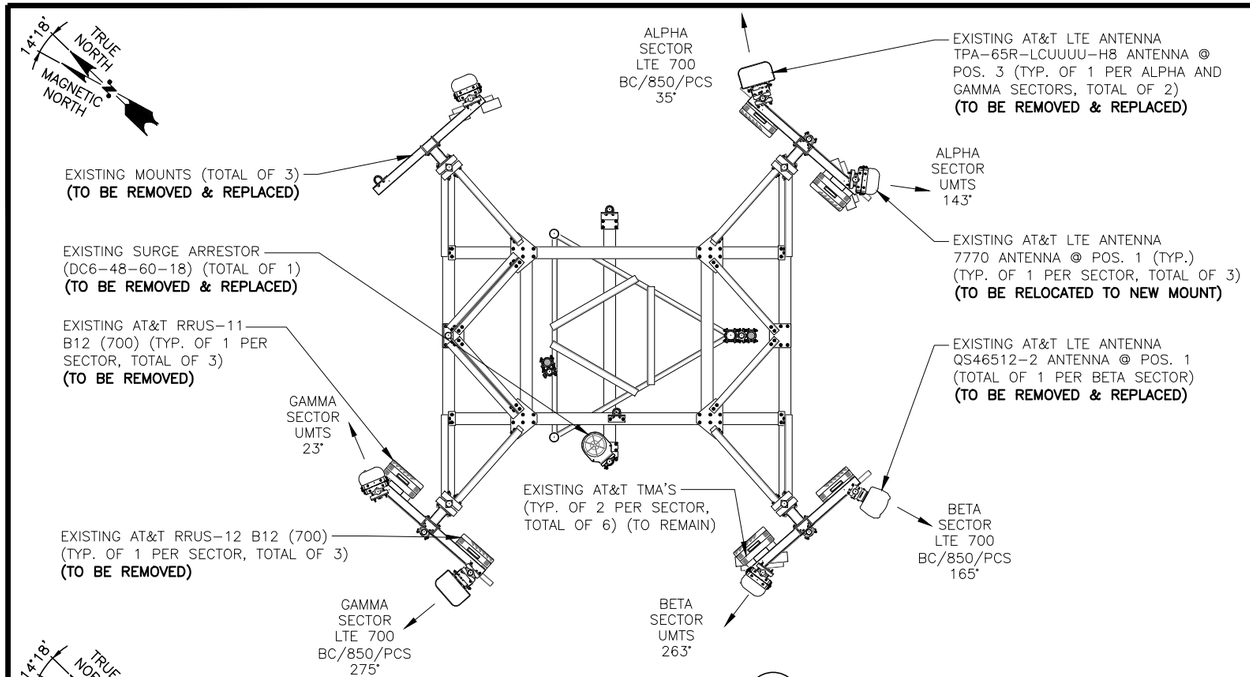
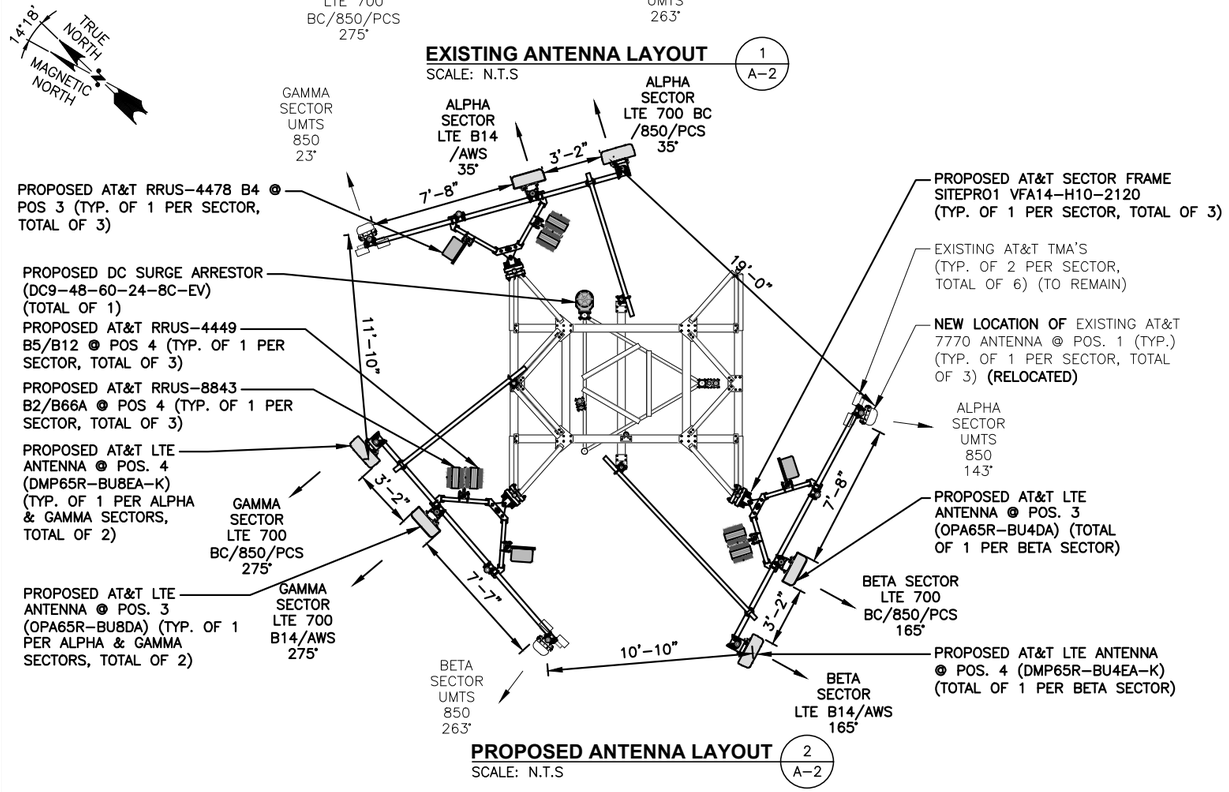
No. 40720
REGISTERED PROFESSIONAL ENGINEER

AT&T
COMPOUND & EQUIPMENT PLANS
4TX4RX_ANTENNA MODS_5G NR
1DR-1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-1	2



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/02/22

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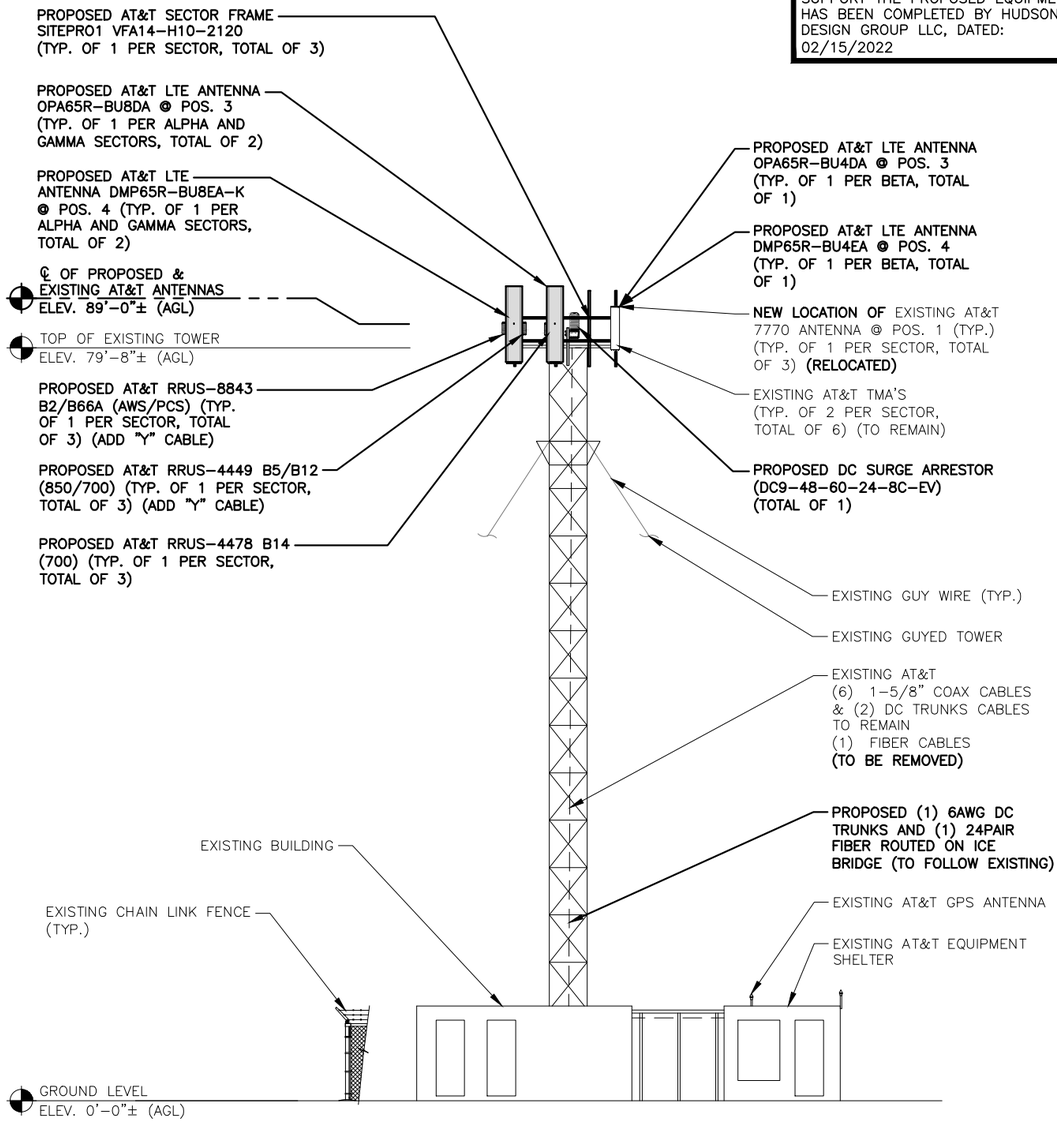

ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

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COMMONWEALTH OF MASSACHUSETTS — DANIEL P. HAMM — CIVIL — No. 40720 — REGISTERED PROFESSIONAL ENGINEER

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ANTENNA LAYOUTS & ELEVATION

4TX4RX_ANTENNA MODS_5G NR 1DR-1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-2	2

ANTENNA SCHEDULE

FINAL APPROVED V4 RFDS 03/02/22

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55"X11"X5"	81'-0"±	143°	(E)(2) LGP17201	–	–	(2)1-5/8" COAX	(P) (1) RAYCAP DC9-48-60-24-8C-EV
–	–	–	–	–	–	–	–	–	–	–	
A3	PROPOSED	LTE B14/AWS	OPA65R-BU8DA	96"X21"X7.8"	81'-0"±	35°	–	(P)(1) 4478 B14 (700)	16.5"x13.4"x5.9"	(P)(1) 6AWG DC TRUNKS (P)(1) 24PAIR FIBER (E)(2) 8AWG DC TRUNKS	
A4	PROPOSED	LTE 700BC/850/PCS	DMP65R-BU8EA-K	96x20.7x7.7	81'-0"±	35°	–	(P)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (AWS/PCS)	17.9"x13.2"x10.4" 14.9"x13.2"x10.9"	(2)(P) Y-CABLE	
B1	EXISTING	UMTS 850	7770	55"X11"X5"	81'-0"±	263°	(E)(2) LGP17201	–	–	(2)1-5/8" COAX	I
–	–	–	–	–	–	–	–	–	–	–	
B3	PROPOSED	LTE B14/AWS	OPA65R-BU4DA	71.2X21X7.8	81'-0"±	165°	–	(P)(1) 4478 B14 (700)	16.5"x13.4"x5.9"	–	
B4	PROPOSED	LTE 700 BC/850/PCS	DMP65R-BU4EA-K	48X20.7X9.7	81'-0"±	165°	–	(P)(1) 4449 B5/B12 (700) (P)(1) 8843 B2/B66A (1900)	17.9"x13.2"x10.4" 14.9"x13.2"x10.9"	(2)(P) Y-CABLE	
C1	EXISTING	UMTS 850	7770	92.4"X14.8"X7.4"	81'-0"±	23°	(E)(2) LGP17201	–	–	(2)1-5/8" COAX	I
–	–	–	–	–	–	–	–	–	–	–	
C3	PROPOSED	LTE B14/AWS	OPA65R-BU8DA	96"X21"X7.8"	81'-0"±	275°	–	(P)(1) 4478 B14 (700)	16.5"x13.4"x5.9"	–	
C4	PROPOSED	LTE 700 BC/850/PCS	DMP65R-BU8EA-K	96x20.7x7.7	81'-0"±	275°	–	(P)(1) 4449 B5/B12 (700) (P)(1) 8843 B2/B66A (1900)	17.9"x13.2"x10.4" 14.9"x13.2"x10.9"	(2)(P) Y-CABLE	

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/02/22

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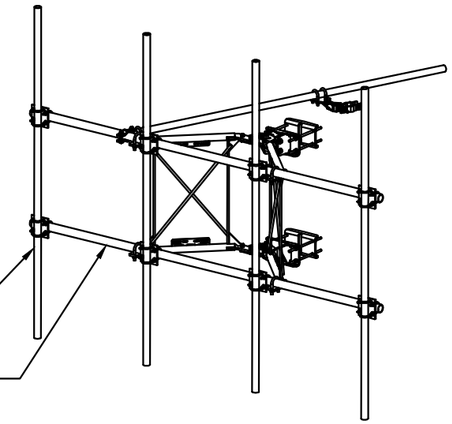
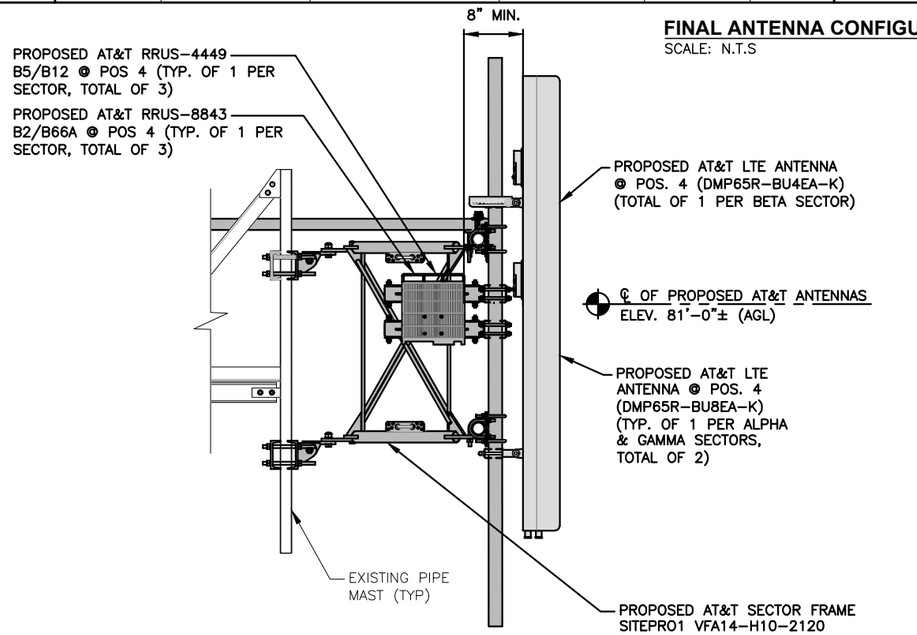


PROPOSED MOUNT (SITEPRO1 #VFA14-H10-2120) DETAIL (2 / A-3)
SCALE: N.T.S

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



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

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

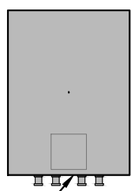
RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(P)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
3(P)	4478 B14 (700)	18.1"X13.4"X8.3"
3(P)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

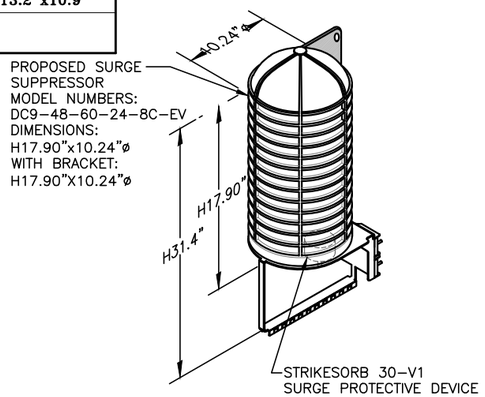
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

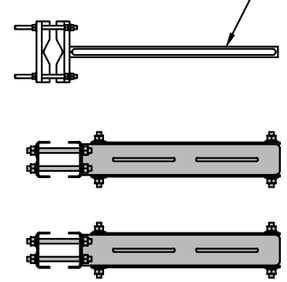
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (4 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S



BACK TO BACK RRU MOUNT DETAIL (6 / A-3)
SCALE: N.T.S

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1997 ANNAPOLIS EXCHANGE PKWY SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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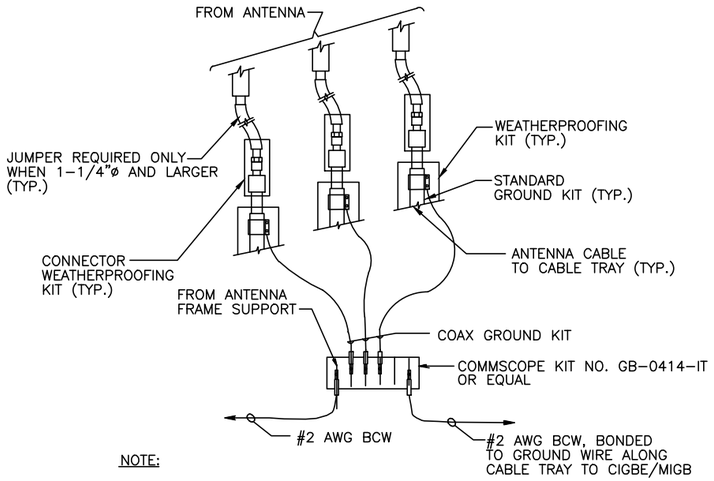
1	03/09/22	ISSUED FOR CONSTRUCTION	MB	AT	DRH
0	01/19/22	ISSUED FOR REVIEW	MRK	AT	DRH

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

COMMONWEALTH OF MASSACHUSETTS
DANIEL P. HAMM
CIVIL
No. 40720
REGISTERED PROFESSIONAL ENGINEER

AT&T
DETAILS
4TX4RX_ANTENNA MODS_5G NR 1DR-1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-3	2



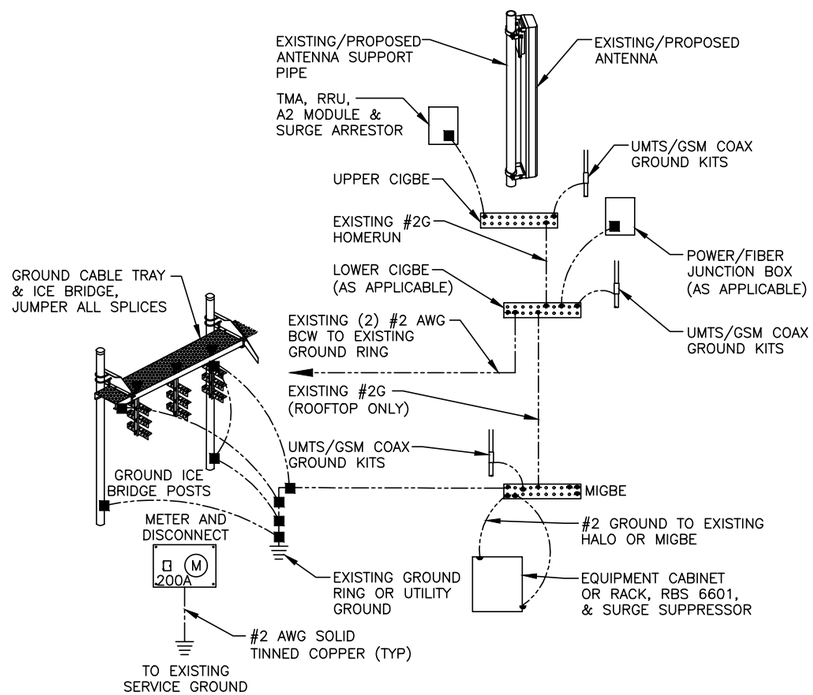
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

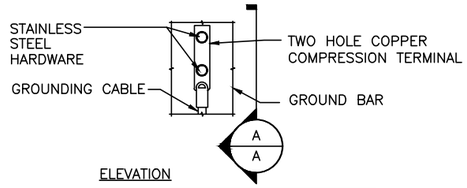
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

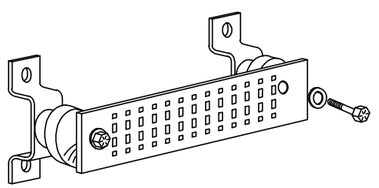
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

4

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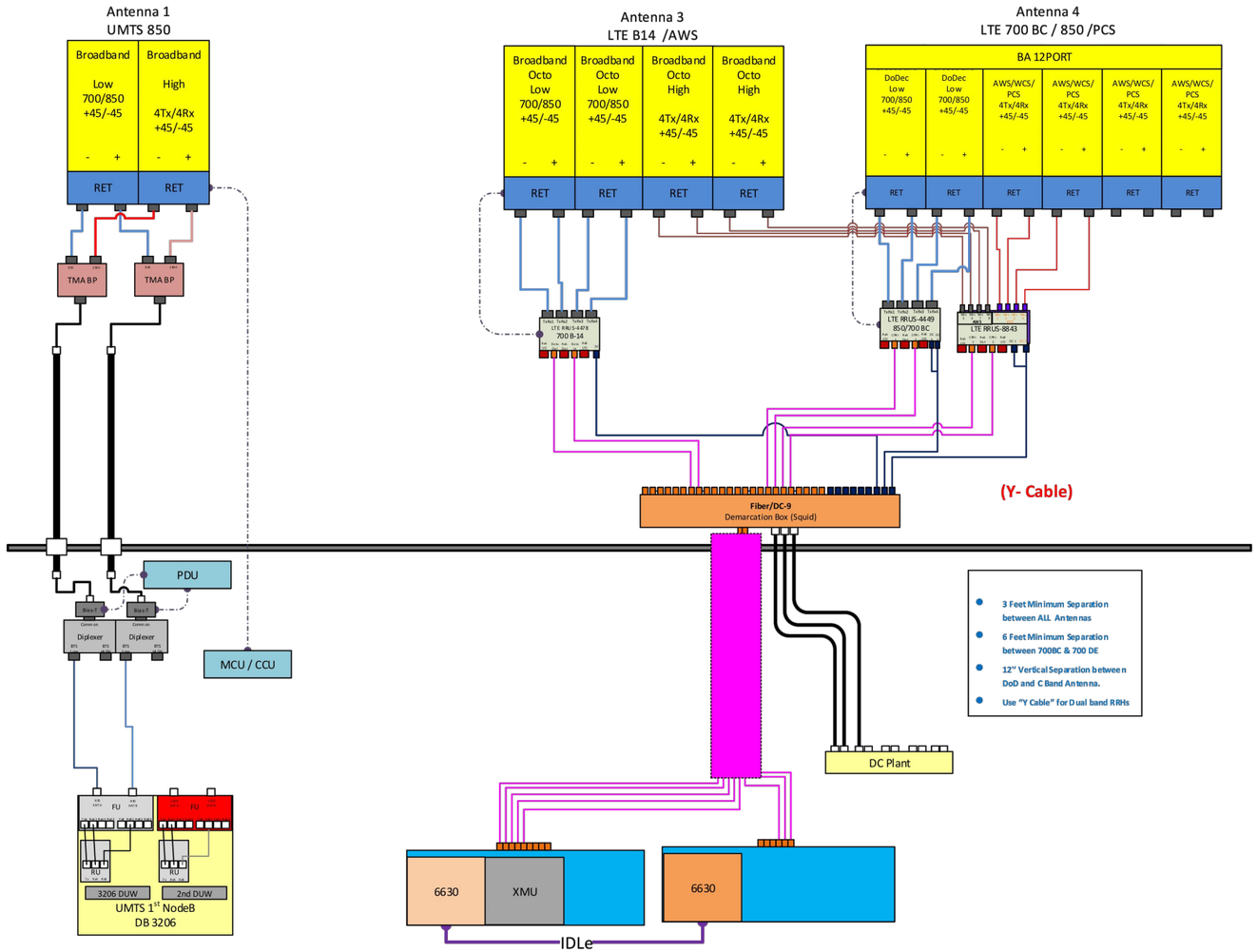
GROUNDING DETAILS

4TX4RX_ANTENNA MODS_5G NR
1DR-1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	G-1	2

FINAL APPROVED V4 RFDS 03/02/22



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

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

NOTE:

REFER TO FINAL APPROVED V4 RFDS 03/02/22

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

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RF PLUMBING DIAGRAM

4TX4RX_ANTENNA MODS_5G NR
1DR–1_LTE 4C_LTE 3C_RF MODS

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	RF–1	2