April 12, 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:	**2074 Park Street Hartford, CT 06106**
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 nine (9) wireless telecommunication antennas at an antenna center line height of 83-feet on an existing 85-foot Smokestack, owned by 2074-2100 Park Street LLC, located at 2074 Park Street, Suite 100, Hartford, CT, 06106. AT&T now intends to remove two (2) 8' CCI OPA65R-BU8DA Panel Antennas on Alpha and Gamma Sector, as well as one (1) 6' CCI OPA65R-BU6DA on Beta sector, each currently installed in position [2]. AT&T also intends to remove two (2) 8' CCI TPA-65R-LCUUU-H8 Panel Antennas on Alpha and Gamma Sector, as well as one (1) 6' Kathrein 800-10798 Panel Antenna on Beta Sector, each currently installed in position [3]. AT&T proposes to then swap these for two (2) 8' Quintel QD8616-7 Panel Antennas on Alpha and Gamma Sector, and one (1) 6' Quintel QD6616-7 on Beta Sector, each to be installed in position [2], as well as three (3) 3' Ericsson AIR 6449 Panel Antennas and three (3) 2' Ericsson AIR 6419 Panel Antenna, both to be installed in position [3] all sectors. In addition, AT&T intends to replace (3) existing Raycap Squids with (3) new Raycap Squids and install three (3) fiber lines and three (3) DC Power 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 Luke Bronin – Mayor, Hartford City Hall, 550 Main Street, 2nd Floor, Room 200 06103 and John Collins – Chief Building Official at 260 Constitution Plaza, 1st Floor, Hartford, CT 06103. A copy of this letter is being sent to the property owner 2074-2100 Park Street LLC, at 2074 Park Street, Suite 100, Hartford, CT, 06106.

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

- **EM-CING-064-090227** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 2074 Park Street, Hartford, Connecticut.
- **EM-CING-064-120612** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 2074 Park Street, Hartford, Connecticut.
- **EM-CING-064-170417** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 2074 Park Street, Hartford, Connecticut.
- **EM-AT&T-064-180201** - AT&T notice of intent to modify an existing telecommunications facility located at 2074 Park Street, Hartford, Connecticut.
- **EM-AT&T-064-210106** - AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 2074 Park Street, Hartford, 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 83-foot level of the 85-foot smokestack.
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,

Evan Giannakas

Evan Giannakas

CC w/enclosures:
Luke Bronin – Mayor, City of Hartford.
John Collins – Chief Building Official, City of Hartford.
2074-2100 Park Street LLC - Property Owner.

4/12/2022

Memo: No Initial Zoning Decision Found

Upon consulting with the Building Inspector for the City of Hartford, it was determined that no initial zoning decision for this tower could be found. The building department phone number is 860-757-9040.

Evan Giannakas
Real Estate Project Manager | Smartlink LLC
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 – 10035106
Site ID – CTL01199
USID – 59402
Site Name – HARTFORD PARK ST MRCTB051328-MRCTB052255

2074 PARK STREET
HARTFORD, CT 06106

Latitude: N41-45-24.37
Longitude: W72-42-50.00
Structure Type: Self Support

Report generated date: April 6, 2022
Report by: Sophie Thein
Customer Contact: Evan Giannakas

AT&T Mobility, LLC is compliant based on AT&T Mobility, LLC policies.

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: 10035106_PM201_220309_CTL01199_CBAND

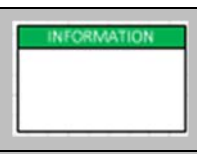
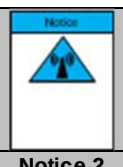
CD's: 10035106_AE201_220322_CTL01199_Rev2_Cband

RF Powers Used: Max RRH Powers

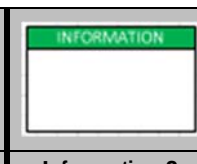
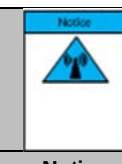
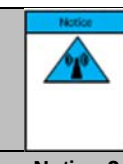
AT&T Mobility, LLC Duty Cycle: MPE Calculations are modeled with "75% Downlink Duty Cycle" for LTE and 5G.

1.3 Signage Summary

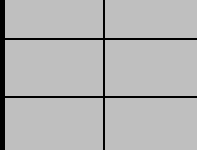
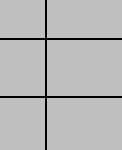
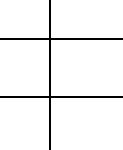
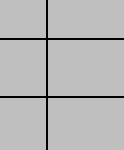
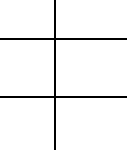
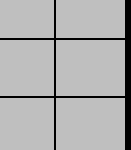
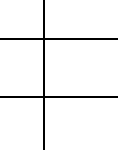
a. Pre-Site Visit AT&T Signage (Existing Signage)

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

b. Proposed AT&T Signage

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

c. Final Compliance Configuration Signage Summary (Required)

AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Point(s)											1							
Alpha																		
Beta																		
Gamma																		
Delta																		
AT&T																		
Gate																		
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

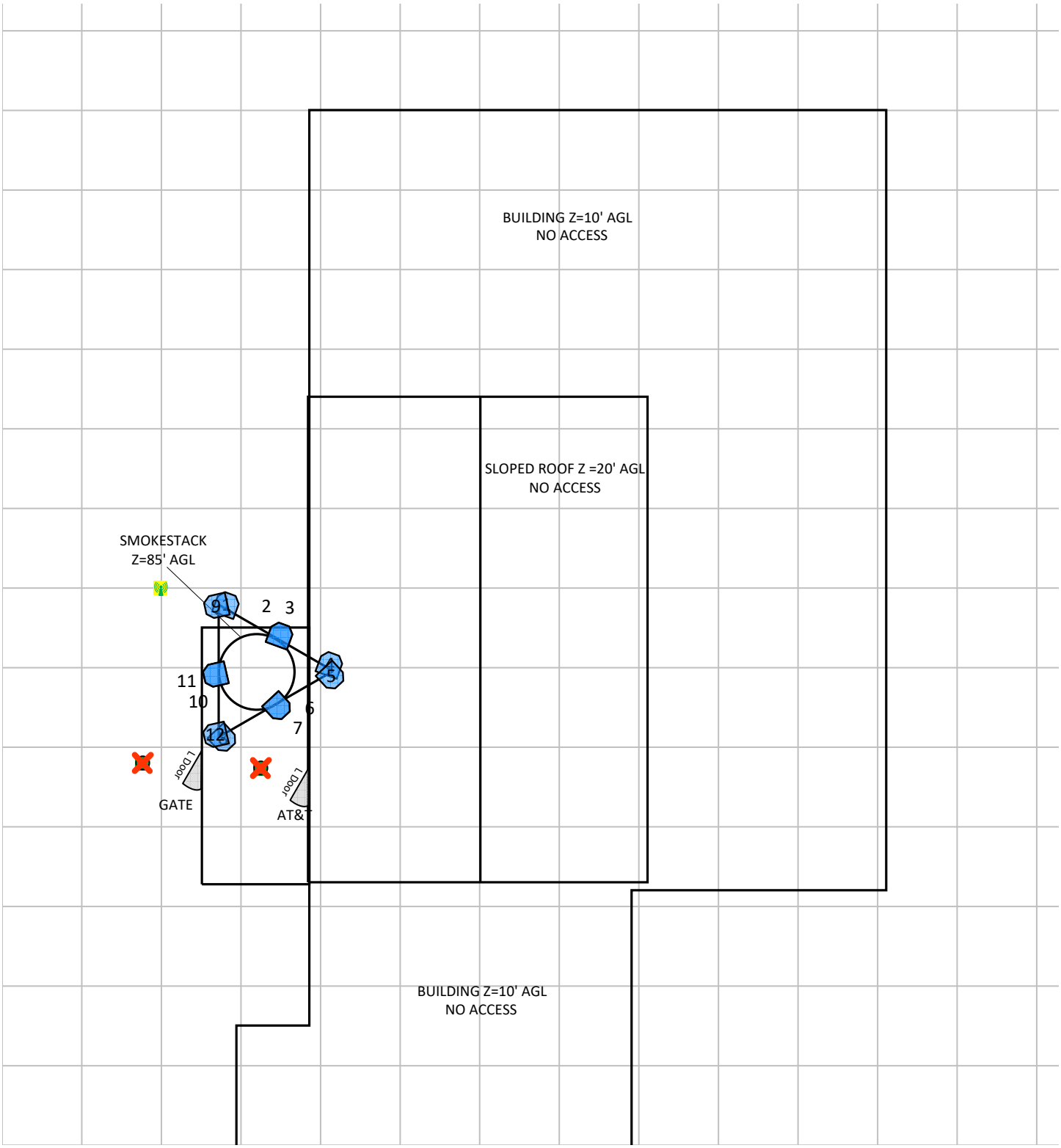
Note: The table above represents EVERY compliance item that MUST be implemented at this location.

2 Scale Maps of Site

The following diagrams are included:

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

Site Scale Map For: HARTFORD PARK ST



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

Sign Legend

Notice | Notice 2 | Caution | Warning | Warning 2 | Info | Info 2 | Caution 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 8.9 17.7

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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 Proposed	Quintel QD8616-7	Panel	722	LTE	23	76.0	8	80	TPO	Watt	1	1094.64	12.61	79	79
1	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	763	LTE	23	76.0	8	160	TPO	Watt	1	2189.27	12.61	79	79
1	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	1900	LTE	23	68.0	8	80	TPO	Watt	1	1793.7	14.76	79	79
1	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	1900	5G	23	68.0	8	80	TPO	Watt	1	1793.7	14.76	79	79
1	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	2100	LTE/AWS1	23	68.0	8	80	TPO	Watt	1	1814.76	14.81	79	79
1	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	2100	5G	23	68.0	8	80	TPO	Watt	1	1814.76	14.81	79	79
2	AT&T MOBILITY LLC Proposed	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	23	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
3	AT&T MOBILITY LLC Proposed	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	23	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
4	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	737	LTE	23	70.6	8	160	TPO	Watt	1	2018.92	12.26	79	79
4	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	850	5G	23	71.4	8	160	TPO	Watt	1	2163.32	12.56	79	79
4	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	2300	LTE	23	50.6	8	100	TPO	Watt	1	2094.11	14.46	79	79
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	722	LTE	140	73.0	6	80	TPO	Watt	1	887.34	11.70	80	80
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	763	LTE	140	73.0	6	160	TPO	Watt	1	1774.68	11.70	80	80
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	1900	LTE	140	66.0	6	80	TPO	Watt	1	1807.55	14.79	80	80
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	1900	5G	140	66.0	6	80	TPO	Watt	1	1807.55	14.79	80	80
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	2100	LTE/AWS1	140	61.0	6	80	TPO	Watt	1	2188.21	15.62	80	80
5	AT&T MOBILITY LLC Proposed	Quintel QD6616-7	Panel	2100	5G	140	61.0	6	80	TPO	Watt	1	2188.21	15.62	80	80
6	AT&T MOBILITY LLC Proposed	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	140	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
7	AT&T MOBILITY LLC Proposed	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	140	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
8	AT&T MOBILITY LLC	Cci DMP65R-BU6D	Panel	737	LTE	140	65.7	5.9	160	TPO	Watt	1	1799.37	11.76	80	80.04

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (ft)	AGL (ft)
8	AT&T MOBILITY LLC	Cci DMP65R-BU6D	Panel	850	5G	140	70.9	5.9	160	TPO	Watt	1	1679.27	11.46	80	80.04
8	AT&T MOBILITY LLC	Cci DMP65R-BU6D	Panel	2300	LTE	140	51.8	5.9	100	TPO	Watt	1	1954.34	14.16	80	80.04
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	2100	LTE/AWS1	260	68.0	8	80	TPO	Watt	1	1814.76	14.81	79	79
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	722	LTE	260	76.0	8	80	TPO	Watt	1	1094.64	12.61	79	79
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	763	LTE	260	76.0	8	160	TPO	Watt	1	2189.27	12.61	79	79
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	1900	LTE	260	68.0	8	80	TPO	Watt	1	1793.7	14.76	79	79
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	1900	5G	260	68.0	8	80	TPO	Watt	1	1793.7	14.76	79	79
9	AT&T MOBILITY LLC Proposed	Quintel QD8616-7	Panel	2100	5G	260	68.0	8	80	TPO	Watt	1	1814.76	14.81	79	79
10	AT&T MOBILITY LLC Proposed	Ericsson AIR6419 (AT&T C-band)	Panel	3450	5G	260	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
11	AT&T MOBILITY LLC Proposed	Ericsson AIR6449 (AT&T C-band)	Panel	3700	5G	260	11.0	2.6	108.48	TPO	Watt	1	24285.65	23.50	81.7	81.73
12	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	737	LTE	260	70.6	8	160	TPO	Watt	1	2018.92	12.26	79	79
12	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	850	5G	260	71.4	8	160	TPO	Watt	1	2163.32	12.56	79	79
12	AT&T MOBILITY LLC	Cci DMP65R-BU8D	Panel	2300	LTE	260	50.6	8	100	TPO	Watt	1	2094.11	14.46	79	79

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.

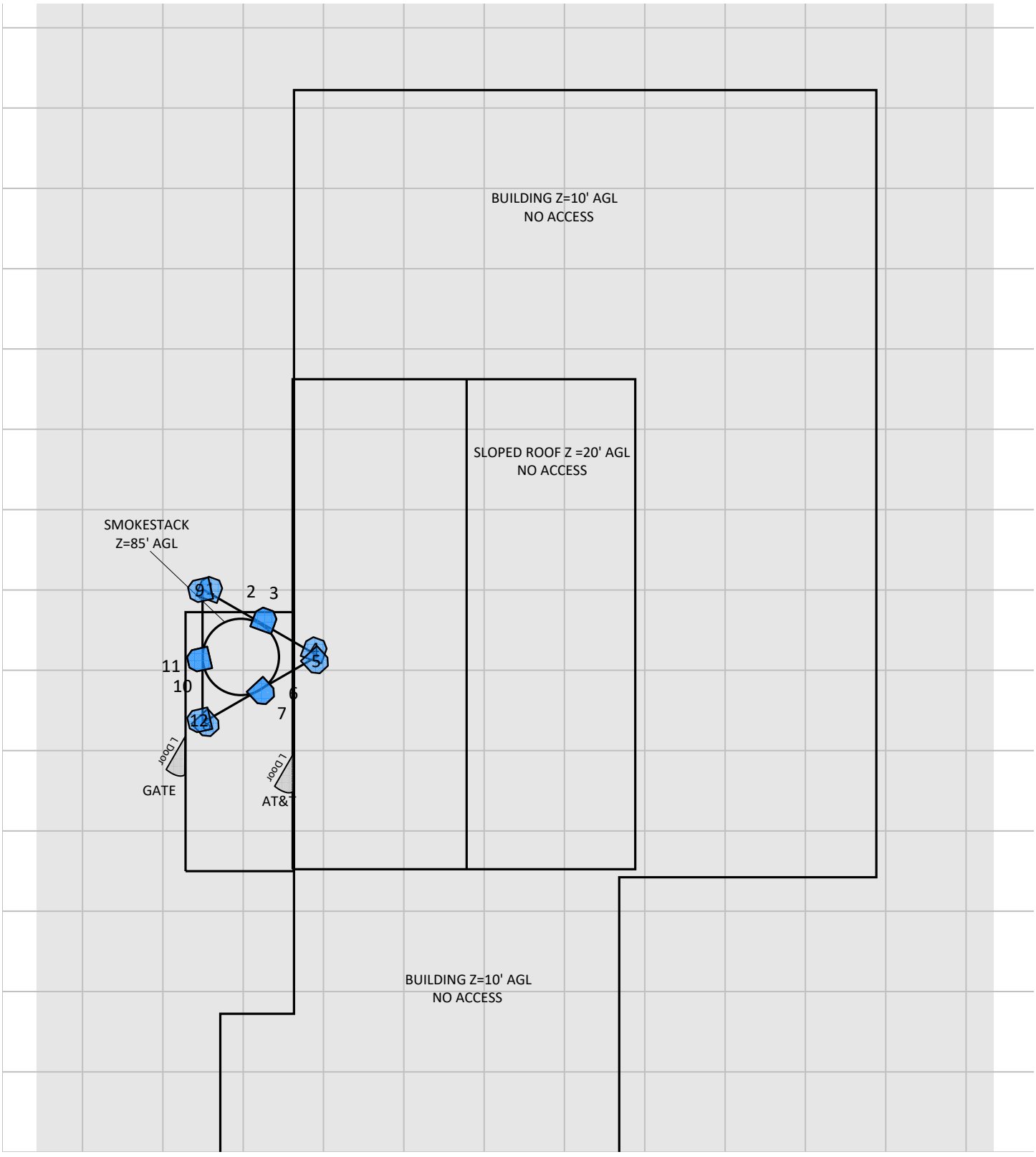
4 Emission Predictions

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'
- SMOKESTACK = 85'
- BUILDING Z = 10'
- SLOPED ROOF Z = 20'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: HARTFORD PARK ST
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 8.6 17.1

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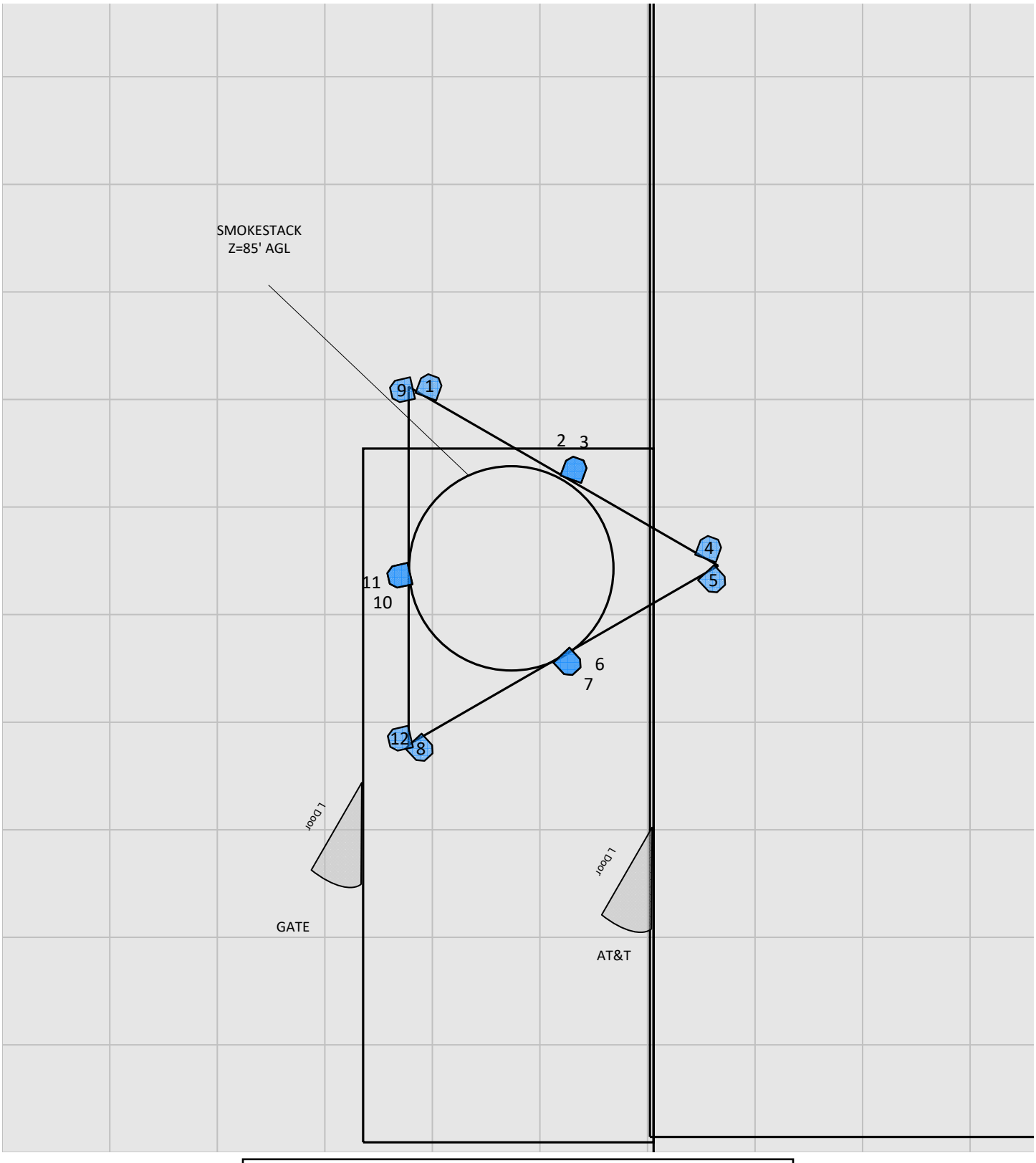
Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HARTFORD PARK ST
Detailed 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 3.2 6.4

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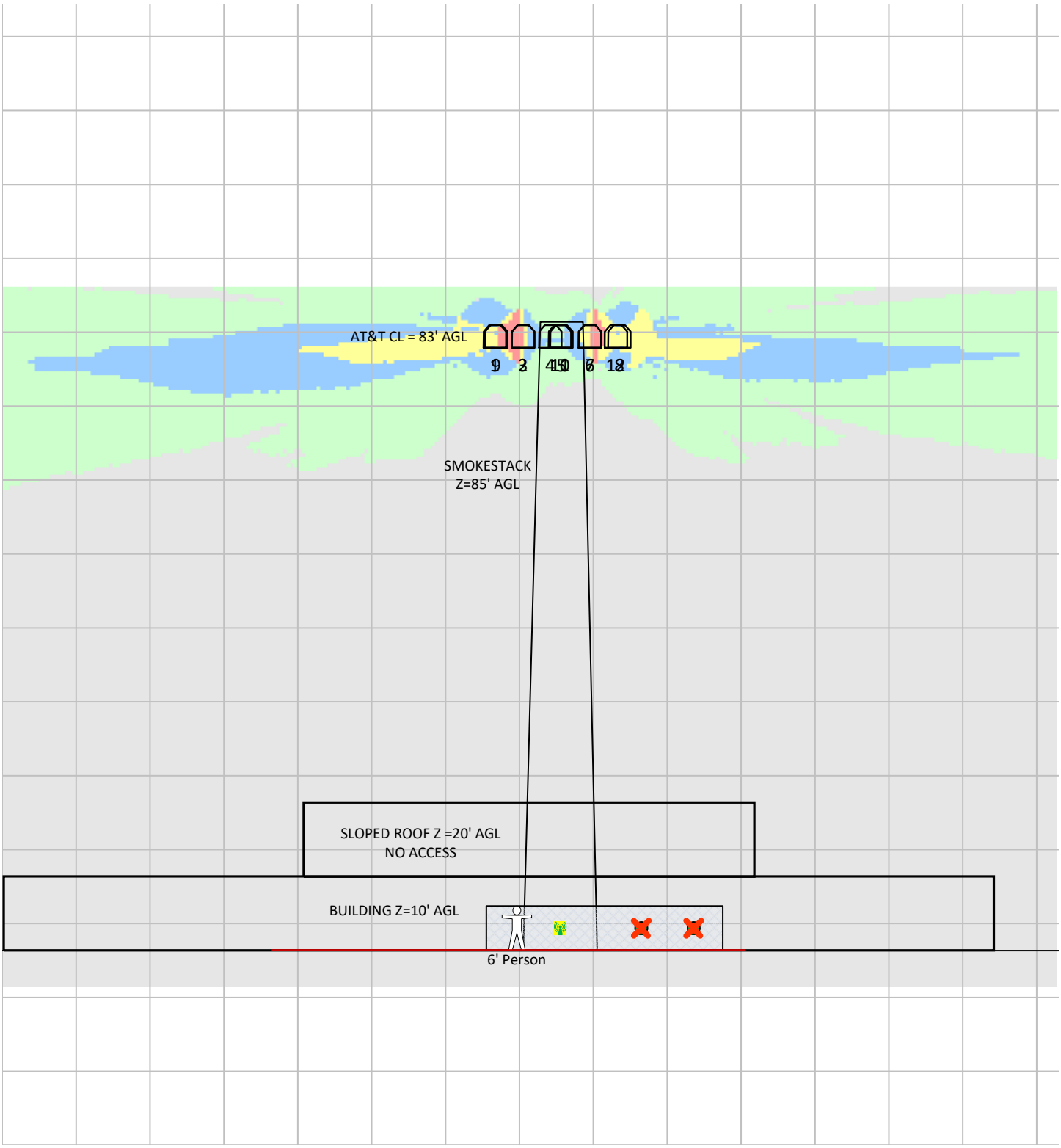
Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HARTFORD PARK ST
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

Sign Legend

Notice | Notice 2 | Caution | Warning | Warning 2 | Info | Info 2 | Caution 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 9.5 19.1

www.sitesafe.com
4/6/2022 2:3:56 PM

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, and the level of restricted access to the antennas at the site.

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

5.2 Actions for Site Compliance

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

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

Recommended per AT&T Mobility, LLC's Policy:

Gate Access Locations

The existing Info 1 sign(s) should be removed from Gate Access points.

Notes:

- There are no adjacent structures within the potential exposure areas of the AT&T Mobility, LLC C-Band antennas.
- Any existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.
- Ensure all existing signage and barriers documented in this report still exist at the site, unless otherwise indicated.

6 Reviewer Certification

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

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

The reviewer whose signature appears below hereby certifies and affirms:

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

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

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

April 6, 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.

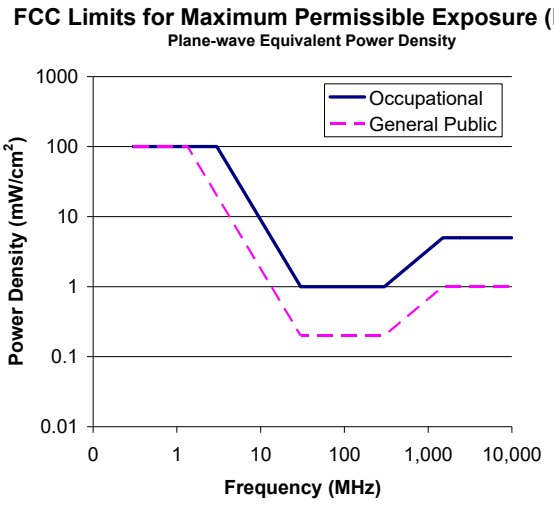
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible*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

March 15, 2022

Evan Giannakas
SmartLink
85 Rangeway Road, Bldg. # 3, Suite 102
North Billerica, MA 01862

SUBJECT:	**STRUCTURAL ASSESSMENT** **85-FOOT SMOKESTACK**
CARRIER:	**AT&T MOBILITY**
SITE:	**HARTFORD PARK ST (CTL01199)**
ADDRESS:	**2074 PARK STREET** **HARTFORD, HARTFORD COUNTY, CONNECTICUT 06106**
LATITUDE:	**41.7567700°**
LONGITUDE:	**-72.7138881°**
FA LOCATION CODE:	**10035106**
SCOPE:	**5C / 6C**
PACE NUMBER:	**MRCTB048656 / MRCTB048677 / MRCTB048715 / MRCTB048689 / MRCTB048683**
PTN NUMBER:	**2051A0WGRA / 2051A0WGM4 / 2051A0WGY1 / 2051A0WH21 / 2051A0WGSR**

RAMAKER & ASSOCIATES PROJECT NUMBER: 51607

RESULTS:	**TOWER:**	**97.0%**	**PASS**
	FOUNDATION:		**NOT ANALYZED**

Dear Evan Giannakas

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this structural assessment for the above-mentioned site. The purpose of this report is to determine the structural integrity of the existing structure with the existing and proposed loading. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a model of the structure using accepted engineering practices. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Thomas E. Moore
Project Engineer

James R. Skowronski, P.E.
Supervising Engineer

STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

(608) 643-4100
ramaker.com
855 Community Drive
Sauk City, WI 53583

TABLE OF CONTENTS

ANALYSIS CRITERIA

State Code	2018 CT State Building Code
Building Code	2015 IBC
TIA-222 Revision	TIA-222-G
Structure Class	II
Ultimate Design Wind Speed, V_{ult}	125 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	97 mph (3 sec. gust)
Exposure Category	B
Topographic Feature	None

SUPPORTING DOCUMENTATION

- Mount mapping by HighTower Solutions, site number 10035106, dated 9/30/2020
- Structural analysis by Maser Consulting, job number 17946065A, dated 1/11/2018
- Final RFDS version 5.00 by AT&T, RFDS ID: 4397238, dated March 8, 2022
- Construction drawings by RAMAKER, project number 51607
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

TOWER LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antenna equipment, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
83	**(2) CCI TPA-65R-LCUUUU-H8**	(3) SitePro1 VFA12-HD & (2) SitePro1 RCM911	**(12) 7/8 (2) Fiber**	AT&T	**Remove**
	(1) Kathrein 800-10798				
	(2) CCI OPA65R-BU8DA				
	(1) CCI OPA65R-BU6DA				
	(3) Raycap DC6-48-60-18-8F				
	(2) Quintel QD8616-7		**(3) 24-Pair Fiber (3) 6AWG DC**		**Proposed**
	(1) Quintel QD6616-7				
	(3) AIR 6419 N77G (Top)				
	(3) AIR 6449 N77D (Bot.)				
	(3) Raycap DC9-48-60-24-8C-EV				
	(2) CCI DMP65R-BU8DA		(6) Power		Existing
	(1) CCI DMP65R-BU6DA				
	(3) Ericsson 4449 B5/B12				
	(3) Ericsson 8843 B2/B66A				
	(3) Ericsson 4478 B14				
	(3) Ericsson RRUS-32 B30				
	(3) Ericsson RRUS-E2 B29				

TOWER RESULTS

The maximum tower member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Section 1	38.9	Pass
Section 2	85.5	Pass
Section 3	97.0	Pass
Section 4	87.6	Pass
Section 5	79.2	Pass
Section 6	81.5	Pass
RATING	**97.0**	**PASS**

Results of the analysis show that the existing tower will be stressed to a maximum of 97.0 percent of capacity. Therefore, the existing tower will pass the ACI 530-13 and TIA-222-G analysis requirements under proposed loading conditions.

FOUNDATION REACTIONS

The maximum tower reactions correlated to maximum moment are as follows:

Load Type	Original Design	Proposed Model
Axial (k)	--	239.5
Shear (k)	--	12.53
Moment (k-ft)	--	556.5

Foundation and soils data were not available for this analysis. Therefore, the foundation was not analyzed. However, the base overturning is at 81.5 percent of capacity.

ASSUMPTIONS

This analysis is based on the theoretical design capacity of the members and is not a condition assessment of the structure. This analysis is based on the information supplied and the results are only as accurate as the data obtained from this information. The Scope of Work for RAMAKER did not require verification of the provided information. The following assumptions were made for this structural analysis.

1) The structures were built and maintained in accordance with the manufacturer's drawings and specifications and including the TIA Standards.
2) All structural members and foundations are in good condition and can achieve their full design capacity. All welds and connections can develop the full member capacity unless determined otherwise and explicitly stated in this report.
3) No physical deterioration has occurred in any of the structural and foundation components. No allowance was made for any damaged, missing, or rusted members, nor loose bolts or cracked welds.
4) All prior structural modifications, if any, are assumed to be properly installed and fully effective.
5) All structural material grades conform to the documentation as supplied, or meet the values as stated.
6) Information provided by the client regarding the structure, appurtenances, transmission cables, and other relevant information is assumed to be current and correct. Appurtenance sizes and weights as specified in the loading tables are best estimates and based on available information, if explicit documentation is not provided to RAMAKER. If the loading configuration is different than stated, then this analysis is invalid.
7) All antenna mounts are considered adequate to support the applied loading. No analysis of the mounts is performed, as this analysis is limited to analyzing the tower only.

This analysis may be affected if any assumptions are not valid or have been made in error. RAMAKER should be notified to determine the effect on the structural integrity of the tower.

SCOPE AND LIMITATIONS

The engineering services performed by RAMAKER regarding this report are limited to an analysis of the tower and the capacity of its members. RAMAKER will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, or lack of maintenance. RAMAKER makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the "as-built" condition of this structure.

ATTACHMENTS

- Analysis Calculations

RAMAKER employee-owned

Job:	Hartford Park St (CTL01199)
Project:	51607
By:	TEM
Date:	1/14/2022

Appurtenance Code : TIA-222-G
Occupancy : II
Exposure Category: B
Wind Speed, V: 125 mph

Elev.: ft Ground Elevation
Load Factor: 0.60

Appurtenance	Qty.	Elev.	Height	Width	Depth	Indiv. Weight	% Wind Applied	(Front) Total Wind Z	(Side) Total Wind X	Z,X,Avg Wind	Total Shear	Total OTM
		ft	*in*	*in*	*in*	*lb*		*lb*	*lb*		*lb*	*lb-ft*
QD8616-7	3	83.0	96.0	22.0	9.6	68.2	0.67	1,144.6	584.0	Avg	518.6	43,041
Air 6449 B77D	3	83.0	30.6	15.9	10.6	83.8	0.67	246.4	166.3	Avg	123.8	10,275
Air 6419 N77G	3	83.0	31.1	16.1	7.3	55.4	0.67	253.8	122.6	Avg	112.9	9,373
DMP65R-BU8D	2	83.0	96.0	20.7	7.7	95.7	0.67	724.8	329.4	Avg	316.2	26,249
DMP65R-BU6D	1	83.0	71.2	20.7	7.7	79.4	0.67	257.7	113.9	Avg	111.5	9,252
4449	3	83.0	17.9	13.2	9.5	70.0	0.67	119.8	85.8	Avg	61.7	5,118
8843	3	83.0	17.9	13.2	11.3	75.0	0.67	119.8	102.6	Avg	66.7	5,537
RRUS 4478 B14	3	83.0	16.5	13.4	7.7	59.9	0.67	112.1	64.4	Avg	52.9	4,395
RRUS-32 B30	3	83.0	27.2	12.1	7.0	53.0	0.67	166.8	101.5	Avg	80.5	6,681
RRUS E2 B29	3	83.0	20.4	18.5	7.5	60.0	0.67	191.3	78.2	Avg	80.9	6,711
DC9-48-60-24-PC16-EV	3	83.0	16.6	14.6	8.2	34.9	0.67	122.5	68.5	Avg	57.3	4,754
4' x 2" Horizontal Face Mount Pipe	6	83.0	0.0	0.0	0.0	14.6	0.67	105.8	1.2	Z	63.5	5,271
Pipe2STD x 8 ft	15	83.0	96.0	2.4	2.4	29.3	0.67	577.9	577.9	Z	346.7	28,780
SitePro1 VFA12-HD (3)	1	83.0	0.0	0.0	0.0	1974.0	0.80	610.1	610.1	Z	366.1	30,385
	52					4.45 k		4.75 k	3.01 k		2.36 k	196 k-ft

RAMAKER employee-owned

Job:	Hartford Park St (CTL01199)
Project:	51607
By:	TEM
Date:	1/14/2022

Wind Load on Antennas TIA-222-G

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	125	mph	Basic Wind Speed (Annex B)
I:	1.00		Importance Factor (Table 2-3)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
G_h:	0.85		Gust Effect Factor (2.6.7)

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

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

Mount & Antenna Wind Loads

Appurtenance	Qty	Elev.	Height	Width	h/D	Shape	C_a	A_A	q_z	Indiv. F_Z	Total F_Z	Total OTM_Z
		ft	*in*	*in*				*sq ft*	*psf*	*lb*	*lb*	*lb-ft*
QD8616-7	3	83	96.0	22.0	4.4	Flat	1.28	14.67	35.61	569.4	1,708.3	141,788
Air 6449 B77D	3	83	30.6	15.9	1.9	Flat	1.20	3.37	35.61	122.6	367.7	30,519
Air 6419 N77G	3	83	31.1	16.1	1.9	Flat	1.20	3.48	35.61	126.3	378.8	31,445
DMP65R-BU8D	2	83	96.0	20.7	4.6	Flat	1.30	13.80	35.61	540.9	1,081.7	89,784
DMP65R-BU6D	1	83	71.2	20.7	3.4	Flat	1.24	10.24	35.61	384.7	384.7	31,926
4449	3	83	17.9	13.2	1.4	Flat	1.20	1.64	35.61	59.6	178.7	14,835
8843	3	83	17.9	13.2	1.4	Flat	1.20	1.64	35.61	59.6	178.7	14,835
RRUS 4478 B14	3	83	16.5	13.4	1.2	Flat	1.20	1.54	35.61	55.8	167.3	13,885
RRUS-32 B30	3	83	27.2	12.1	2.2	Flat	1.20	2.29	35.61	83.0	249.0	20,669
RRUS E2 B29	3	83	20.4	18.5	1.1	Flat	1.20	2.62	35.61	95.2	285.6	23,701
DC9-48-60-24-PC16-EV	3	83	16.6	14.6	1.1	Flat	1.20	1.68	35.61	60.9	182.8	15,172
4' x 2" Horizontal Face Mount Pipe	6	83	0.0	0.0	0.0	Generic	1.00	0.87	35.61	26.3	158.0	13,113
Pipe2STD x 8 ft	15	83	96.0	2.4	40.4	Round	1.20	1.58	35.61	57.5	862.6	71,592
SitePro1 VFA12-HD (3)	1	83	0.0	0.0	0.0	Generic	1.00	25.20	35.61	762.7	762.7	63,302

RAMAKER employee-owned

Job:	Hartford Park St (CTL01199)
Project:	51607
By:	TEM
Date:	1/14/2022

Wind Load on Antennas TIA-222-G

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	125	mph	Basic Wind Speed (Annex B)
I:	1.00		Importance Factor (Table 2-3)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
G_h:	0.85		Gust Effect Factor (2.6.7)

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

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

Mount & Antenna Wind Loads

Appurtenance	Qty	Elev.	Height	Depth	h/D	Shape	C_a	A_f	q_z	Indiv. F_X	Total F_X	Total OTM_X
		ft	*in*	*in*				*sq ft*	*psf*	*lb*	*lb*	*lb-ft*
QD8616-7	3	83	96.0	9.6	10.0	Flat	1.50	6.40	35.61	290.5	871.6	72,345
Air 6449 B77D	3	83	30.6	10.6	2.9	Flat	1.22	2.24	35.61	82.7	248.2	20,599
Air 6419 N77G	3	83	31.1	7.3	4.3	Flat	1.28	1.58	35.61	61.0	183.0	15,187
DMP65R-BU8D	2	83	96.0	7.7	12.5	Flat	1.58	5.13	35.61	245.8	491.6	40,806
DMP65R-BU6D	1	83	71.2	7.7	9.2	Flat	1.47	3.81	35.61	169.9	169.9	14,105
4449	3	83	17.9	9.5	1.9	Flat	1.20	1.18	35.61	42.7	128.1	10,629
8843	3	83	17.9	11.3	1.6	Flat	1.20	1.41	35.61	51.0	153.1	12,710
RRUS 4478 B14	3	83	16.5	7.7	2.1	Flat	1.20	0.88	35.61	32.0	96.1	7,979
RRUS-32 B30	3	83	27.2	7.0	3.9	Flat	1.26	1.32	35.61	50.5	151.5	12,571
RRUS E2 B29	3	83	20.4	7.5	2.7	Flat	1.21	1.06	35.61	38.9	116.7	9,687
DC9-48-60-24-PC16-EV	3	83	16.6	8.2	2.0	Flat	1.20	0.94	35.61	34.1	102.2	8,481
4' x 2" Horizontal Face Mount Pipe	6	83	0.0	0.0	0.0	Generic	1.00	0.01	35.61	0.3	1.8	151
Pipe2STD x 8 ft	15	83	96.0	2.4	40.4	Round	1.20	1.58	35.61	57.5	862.6	71,592
SitePro1 VFA12-HD (3)	1	83	0.0	0.0	0.0	Generic	1.00	25.20	35.61	762.7	762.7	63,302

RAMAKER employee-owned

Job: Hartford Park St (CTL01199)
Project: 51607
By: TEM
Date: 1/14/2022

Structure Loading Data

Importance Factor:	1.00		Ground Elevation:		ft	IBC:	2015
Exposure Category:	B		K_e:	1.00		ASCE:	7-10
Wind Speed, V:	125	mph	K_s:	1.00		ACI:	530-13
Gust Effect Factor, G_h:	1.10		Aspect Ratio:	10.50		Compression:	1.0 D + 0.6 W
Directionality Factor, K_d:	0.95					Tension:	0.6 D + 0.6 W

Structure Description	Qty	Centroid Elev.	Code	Shape	Height	Width	h/D	Area	K_z	K_{zt}	C_f	q_z	Total Shear	Total OTM
		ft			*ft*	*ft*		*sq ft*				*psf*	*k*	*k-ft*
Section 1	1	82.49	ASCE 7	R. Smo	5	6.105	10.5	30.5	0.94	1.00	0.62	35.54	0.739	61.0
Section 2	1	72.35	ASCE 7	R. Smo	15	6.605	10.5	99.1	0.90	1.00	0.62	34.24	2.311	167.2
Section 3	1	57.36	ASCE 7	R. Smo	15	7.4	10.5	111.0	0.84	1.00	0.62	32.04	2.423	139.0
Section 4	1	39.79	ASCE 7	R. Smo	20	8.33	10.5	166.6	0.76	1.00	0.62	28.86	3.276	130.3
Section 5	1	23.93	ASCE 7	R. Smo	12	9.18	10.5	110.2	0.70	1.00	0.62	26.62	1.998	47.8
Section 6	1	9.00	ASCE 7	Hex/Oct	18	9.5	10.5	171.0	0.70	1.00	1.24	26.62	6.204	55.8
					85								16.952	601.2

RAMAKER employee-owned

Job: Hartford Park St (CTL01199)
Project: 51607
By: TEM
Date: 1/14/2022

Structure Loading Data

Importance Factor:	1.00		Ground Elevation:		ft	IBC:	2015
Exposure Category:	B		K_e:	1.00		ASCE:	7-10
Wind Speed, V:	125	mph	K_s:	1.00		ACI:	530-13
Gust Effect Factor, G_h:	1.10		Aspect Ratio:	10.50		Compression:	1.0 D + 0.6 W
Directionality Factor, K_d:	0.95					Tension:	0.6 D + 0.6 W

Structure Description	Top	Bottom	Top Thick.	Bottom Thick.	Top Width	Bottom Width	Bottom Area	Section Vol.	1.0 D Appurt Weight	1.0 D Chimney Weight	1.0 D Total Weight	0.6 D Total Weight	0.6 W Total Shear	0.6 W Total OTM
	ft	*ft*	*ft*	*ft*	*ft*	*ft*	*ft^2*	*ft^3*	*k*	*k*	*k*	*k*	*k*	*k-ft*
Section 1	85	80	0.667	0.667	6.00	6.21	11.61	56.9	4.45	6.8	11.3	6.8	2.80	8.2
Section 2	80	65	0.667	0.667	6.21	7.00	13.26	186.4	4.45	29.2	33.7	20.2	4.19	60.4
Section 3	65	50	0.667	0.667	7.00	7.80	14.94	211.4	4.45	54.6	59.0	35.4	5.64	134.0
Section 4	50	30	1.000	1.000	7.80	8.86	24.69	460.2	4.45	109.8	114.2	68.5	7.61	266.1
Section 5	30	18	1.333	1.333	8.86	9.50	34.21	394.3	4.45	157.1	161.6	96.9	8.81	364.5
Section 6	18	0	1.333	1.333	9.50	9.50	36.08	649.5	4.45	235.0	239.5	143.7	12.53	556.5

Determine ASD Capacities per ACI 530-13:

Structure Description	Bottom R. of Gyr.	Bottom Sect. M.	Bottom Inertia	h	h/r	1.0 D fa	0.6 D fa	0.6 W fb	0.6 W fv	Fa	Fb	1.0 D e	0.6 D e
	ft	*ft^3*	*ft^4*	*ft*		*psi*	*psi*	*psi*	*psi*	*psi*	*psi*	*ft*	*ft*
Section 1	1.97	14.6	45.2	5	2.53	6.75	4.05	3.90	2.51	249.9	333.3	0.725	1.208
Section 2	2.25	19.2	67.2	20	8.88	17.62	10.57	21.84	3.29	249.0	333.3	1.795	2.992
Section 3	2.53	24.6	95.9	35	13.82	27.44	16.46	37.85	3.93	247.6	333.3	2.270	3.783
Section 4	2.80	43.7	193.8	55	19.63	32.13	19.28	42.24	3.21	245.1	333.3	2.329	3.882
Section 5	2.93	61.6	292.8	67	22.90	32.80	19.68	41.06	2.68	243.3	333.3	2.256	3.760
Section 6	3.01	68.7	326.5	85	28.26	46.09	27.66	56.23	3.62	239.8	333.3	2.324	3.873

RAMAKER employee-owned

Job:	Hartford Park St (CTL01199)
Project:	51607
By:	TEM
Date:	1/14/2022

Structure Loading Data

Importance Factor:	1.00		Ground Elevation:		ft	IBC:	2015	
Exposure Category:	B		K_e:	1.00		ASCE:	7-10	
Wind Speed, V:	125	mph	K_s:	1.00		ACI:	530-13	
Gust Effect Factor, G_h:	1.10		Aspect Ratio:	10.50		Compression:	1.0 D + 0.6 W	
Directionality Factor, K_d:	0.95					Tension:	0.6 D + 0.6 W	

Determine ASD Capacities per ACI 530-13:

Structure Description	1.0 D Pe	0.6 D Pe	0.6 D fa - fb	1.0 D OTM Capacity	0.6 D OTM Capacity	0.6 D Tensile Capacity	1.0 D Compr. Capacity	1.0 D 1/4 P_e Capacity	0.6 W Shear Capacity	Stability Capacity	Structural Capacity
	kip	*kip*	*psi*								
Section 1	881306	487310	0.15	35.0%	38.9%	-	3.9%	0.0%	5.3%	38.9%	5.3%
Section 2	26331	2124	-11.27	76.9%	85.5%	28.2%	13.6%	0.5%	6.9%	85.5%	28.2%
Section 3	8771	206	-21.39	87.3%	97.0%	53.5%	22.4%	2.7%	8.3%	97.0%	53.5%
Section 4	8976	514	-22.96	78.9%	87.6%	57.4%	25.8%	5.1%	6.8%	87.6%	57.4%
Section 5	11096	1120	-21.39	71.2%	79.2%	53.5%	25.8%	5.8%	5.7%	79.2%	53.5%
Section 6	7655	764	-28.57	73.4%	81.5%	71.4%	36.1%	12.5%	7.6%	81.5%	71.4%
				87.3%	97.0%	71.4%	36.1%	12.5%	8.3%		
				< 1.0, OK	< 1.0, OK	< 1.0, OK	< 1.0, OK	< 1.0, OK	< 1.0, OK		

Masonry Weight:	120	pcf	Modulus of Elasticity, Em:	700000	psi	Flexural Tensile Stress, Fb:	40	psi
Masonry Strength, f'm:	1000	psi	Modulus of Elasticity, Em:	100800	ksf	ACI 530-16 -- Table 8.2.4.2		
						Normal / Solid / Mortar / Type N		
Shear Capacity, Fv:	47.4	psi	a)	47.4	psi			
Shear Stress, fv:	3V/2A		b)	120	psi	1.0 D Required OTM FOS:	1.5	
			e)	60 + 0.45 x Nv/An	psi	0.6 D Required OTM FOS:	1.0	
			Running bond masonry fully grouted					

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions**[1]		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
East Hampton	30	0.177	0.062	120	130	140	93	101	108			Yes
East Hartford	30	0.180	0.064	115	125	135	89	97	105			Yes
East Haven	30	0.182	0.062	120	130	140	93	101	108		Type B	Yes
East Lyme	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Easton	30	0.215	0.066	110	120	130	85	93	101			Yes
East Windsor	35	0.177	0.064	115	125	135	89	97	105			Yes
Ellington	35	0.176	0.064	115	125	135	89	97	105			Yes
Enfield	35	0.176	0.065	110	125	130	85	97	101			Yes
Essex	30	0.168	0.059	120	135	145	93	105	112		Type A	Yes
Fairfield	30	0.215	0.065	115	125	135	89	97	105		Type B	Yes
Farmington	35	0.183	0.064	115	125	135	89	97	105			Yes
Franklin	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Glastonbury	30	0.180	0.063	115	125	135	89	97	105			Yes
Goshen	40	0.181	0.065	105	115	125	81	89	97			
Granby	35	0.176	0.065	110	120	130	85	93	101			Yes
Greenwich	30	0.259	0.070	110	120	130	85	93	101			Yes
Griswold	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Groton	30	0.160	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Guilford	30	0.176	0.061	120	130	140	93	101	108		Type B	Yes
Haddam	30	0.175	0.061	120	130	140	93	101	108			Yes
Hamden	30	0.185	0.063	115	125	135	89	97	105			Yes
Hampton	35	0.172	0.062	120	130	140	93	101	108			Yes
Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
Hartland	40	0.175	0.065	110	120	125	85	93	97			Yes
Harwinton	35	0.183	0.065	110	120	130	85	93	101			Yes
Hebron	30	0.177	0.063	120	130	140	93	101	108			Yes
Kent	40	0.188	0.065	105	115	120	81	89	93			
Killingly	40	0.171	0.062	120	130	140	93	101	108			Yes
Killingworth	30	0.173	0.061	120	130	140	93	101	108			Yes
Lebanon	30	0.173	0.062	120	130	140	93	101	108			Yes
Ledyard	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Lisbon	30	0.169	0.061	125	135	145	97	105	112		Type A	Yes
Litchfield	40	0.184	0.065	110	120	125	85	93	97			Yes
Lyme	30	0.164	0.059	125	135	145	97	105	112		Type A	Yes
Madison	30	0.173	0.060	120	130	140	93	101	108		Type B	Yes
Manchester	30	0.178	0.064	115	125	135	89	97	105			Yes
Mansfield	35	0.173	0.062	120	130	140	93	101	108			Yes
Marlborough	30	0.177	0.062	120	130	140	93	101	108			Yes
Meriden	30	0.183	0.063	115	125	135	89	97	105			Yes
Middlebury	35	0.191	0.064	110	120	130	85	93	101			Yes
Middlefield	30	0.181	0.063	115	125	135	89	97	105			Yes
Middletown	30	0.180	0.063	115	130	135	89	101	105			Yes
Milford	30	0.194	0.063	115	125	135	89	97	105		Type B	Yes
Monroe	30	0.205	0.065	110	120	130	85	93	101			Yes

Unofficial Property Record Card - Hartford, CT

General Property Data

Parcel ID	113-370-033	**Account Number**	
Prior Parcel ID			
Property Owner	2074-2100 PARK STREET LLC	**Property Location**	2074 PARK ST
		Property Use	COMM & APART
Mailing Address	2074 PARK ST SUITE 101	**Most Recent Sale Date**	5/23/2016
		Legal Reference	07074-0270
City	HARTFORD	**Grantor**	2074-2100 PARK STREET LLC
Mailing State	CT Zip 06106-2051	**Sale Price**	10
ParcelZoning	MS-2	**Land Area**	50,726.000 acres

Current Property Assessment

Card 1 Value	Building Value	Xtra Features Value	Land Value	Total Value
	1,279,180	6,790	158,900	1,444,870

Building Description

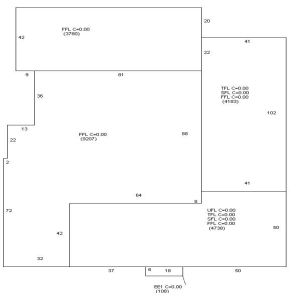
Building Style	MIXED USE	**Foundation Type**	Concrete	**Flooring Type**	COMBINATION
# of Living Units	6	**Frame Type**	Wood Frame	**Basement Floor**	N/A
Year Built	1920	**Roof Structure**	FLAT	**Heating Type**	Unit Heat
Building Grade	Average +	**Roof Cover**	Tar & Gravel	**Heating Fuel**	Gas
Building Condition	N/A	**Siding**	Brick	**Air Conditioning**	100%
Finished Area (SF)	N/A	**Interior Walls**	AVERAGE	**# of Bsmt Garages**	0
Number Rooms	18	**# of Bedrooms**	6	**# of Full Baths**	0
# of 3/4 Baths	0	**# of 1/2 Baths**	0	**# of Other Fixtures**	0

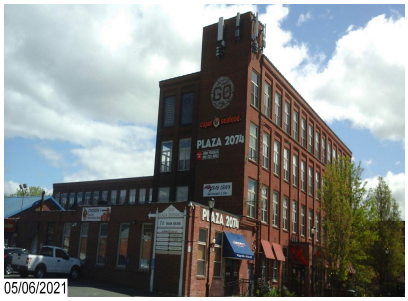
Legal Description

Narrative Description of Property

This property contains 50,726.000 acres of land mainly classified as COMM & APART with a(n) MIXED USE style building, built about 1920 , having Brick exterior and Tar & Gravel roof cover, with 0 commercial unit(s) and 6 residential unit(s), 18 room(s), 6 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images





Disclaimer: This information is believed to be correct but is subject to change and is not warranteed.

PROJECT NOTES:

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
   A. PLAN ENTITLED "HARTFORD PARK ST" PREPARED BY RAMAKER OF SAUK CITY, WI LAST REVISED 08/12/2021.
   B. LIMITED FIELD OBSERVATION BY RAMAKER ON 04/27/2021.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE NO INCREASE IN STORM WATER RUNOFF, THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-G AS PER IBC REQUIREMENTS.
16. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
17. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
18. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER.
19. CONTRACTOR SHALL CONTACT STATE SPECIFIC ONE CALL SYSTEM THREE WORKING DAYS PRIOR TO ANY EARTH MOVING ACTIVITIES.

at&t

SITE NAME: HARTFORD PARK ST
FA NUMBER: 10035106
SITE NUMBER: CTL01199
ADDRESS: 2074 PARK STREET
HARTFORD, CT 06106
SCOPE: 5G NR ACTIVATION - MRCTB057978 (-)
5G NR ACTIVATION - MRCTB057988 (-)
5G NR 1SR CBAND - MRCTB052255 (2051A101SE),
5G NR 1SR CBAND - MRCTB051328 (2051A0Z705)

AERIAL MAP:

CODE COMPLIANCE:

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

1. INTERNATIONAL BUILDING CODE
2. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. NATIONAL ELECTRIC CODE

811 Know what's below. Call before you dig. www.call811.com

PROJECT INFORMATION:

SITE INFORMATION:
LATITUDE: 41.7567700° N
LONGITUDE: -72.7138881° W
JURISDICTION: HARTFORD COUNTY

APPLICANT/LESSEE:
COMPANY: AT&T
ADDRESS: NEW ENGLAND MARKET

PROPERTY OWNER:
PROPERTY OWNER: 2074-2100 PARK STREET, LLC
2074 PARK ST. SUITE 100
HARTFORD, CT 06106

REAL ESTATE SPECIALIST:
COMPANY: SMARTLINK, LLC
ADDRESS: 85 RANGEWAY ROAD
BUILDING 3, SUITE 102
CITY, STATE, ZIP: NORTH BILLERICA, MA 01862
CONTACT: EVAN GIANNAKIS
E-MAIL: EVAN.GIANNAKIS
@SMARTLINKGROUP.COM

CONSTRUCTION MANAGER:
COMPANY: SMARTLINK, LLC
ADDRESS: 85 RANGEWAY ROAD
BUILDING 3, SUITE 102
CITY, STATE, ZIP: NORTH BILLERICA, MA 01862
CONTACT: EVAN GIANNAKIS
E-MAIL: EVAN.GIANNAKIS
@SMARTLINKGROUP.COM

ENGINEER:
COMPANY: RAMAKER
ADDRESS: 855 COMMUNITY DRIVE
CITY, STATE, ZIP: SAUK CITY, WI 53583
CONTACT: ANGELA KVALHEIM
E-MAIL: AKVALHEIM@RAMAKER.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- REMOVE (2) EXISTING CCI OPA65R-BU8DA ANTENNAS, (1) PER ALPHA & GAMMA SECTOR
- REMOVE (1) EXISTING CCI OPA65R-BU6DA ANTENNAS, (1) PER BETA SECTOR
- REMOVE (2) EXISTING CCI TPA-65R-LCUUUU-H8 ANTENNAS, (1) PER ALPHA & GAMMA SECTOR
- REMOVE (1) EXISTING KATHREIN 800-10798 ANTENNA, (1) PER BETA SECTOR
- INSTALL (2) NEW QUINTEL QD8616-7 ANTENNAS, (1) PER ALPHA & GAMMA SECTOR
- INSTALL (1) NEW QUINTEL QD6616-7 ANTENNAS, (1) PER BETA SECTOR
- INSTALL (3) NEW ERICSSON AIR6449 B77D ANTENNAS, (1) PER SECTOR
- INSTALL (3) NEW ERICSSON AIR6419 B77G ANTENNAS, (1) PER SECTOR
- REMOVE (3) EXISTING RAYCAP DC6-48-60-18-8F SQUID, (1) PER SECTOR
- REMOVE (6) UMTS COAX AND REMOVE UNUSED LINE ELEMENTS
- REMOVE (3) FIBER TRUNKS
- INSTALL (3) NEW RAYCAP DC9-48-60-24-8C-EV SQUID, (1) PER SECTOR
- INSTALL (3) NEW 24-PAIR FIBER TRUNKS
- INSTALL (3) NEW 6AWG6 DC TRUNKS
- ADD FRONTHAUL GATEWAY (FHG) 6648
- ADD IDLe Xcede
- ADD 6630
- ADD XMU
- ADD IDLe

PROPOSED PROJECT SCOPE BASED ON RFDS
ID# 4397238, VERSION 5.0, LAST UPDATED 03/08/2022.

SHEET INDEX

SHEET NUMBER	SHEET DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
C-1	COMPOUND PLAN
C-2	EQUIPMENT LAYOUT PLAN
C-3	ANTENNA LAYOUTS AND ANTENNA SCHEDULE
A-1	CONSTRUCTION DETAILS
A-2	CONSTRUCTION DETAILS
A-3	RF PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS

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SMARTLINKLLC.COM

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(608) 643-4100 www.ramaker.com

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

James R Skowronski 3/22/2022
Signature: Date:

MARK	DATE	DESCRIPTION
2	03/22/22	FOR CONSTRUCTION
1	03/15/22	FINAL CDs ISSUED
0	01/27/22	CDs ISSUED FOR REVIEW

ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: T-1

GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING 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 FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. 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.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" 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.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
    CONTRACTOR - SMARTLINK
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)
23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. 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.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. 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.
30. 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.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. 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.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. 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 = 35 KSI). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. 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.
49. 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.
50. 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 ALERT OF DANGEROUS EXPOSURE LEVELS.

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85 RANGEWAY ROAD - BLDG 3, SUITE 102
NORTH BILLERICA, MA 01862
SMARTLINKLLC.COM

RAMAKER
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(608) 643-4100 www.ramaker.com

Certification & Seal:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

Signature: 3/22/2022 Date:

MARK	DATE	DESCRIPTION
2	03/22/22	FOR CONSTRUCTION
1	03/15/22	FINAL CDs ISSUED
0	01/27/22	CDs ISSUED FOR REVIEW

ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
NOTES

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: GN-1

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.

DRAWN BY: AEM CHECKED BY: AJK

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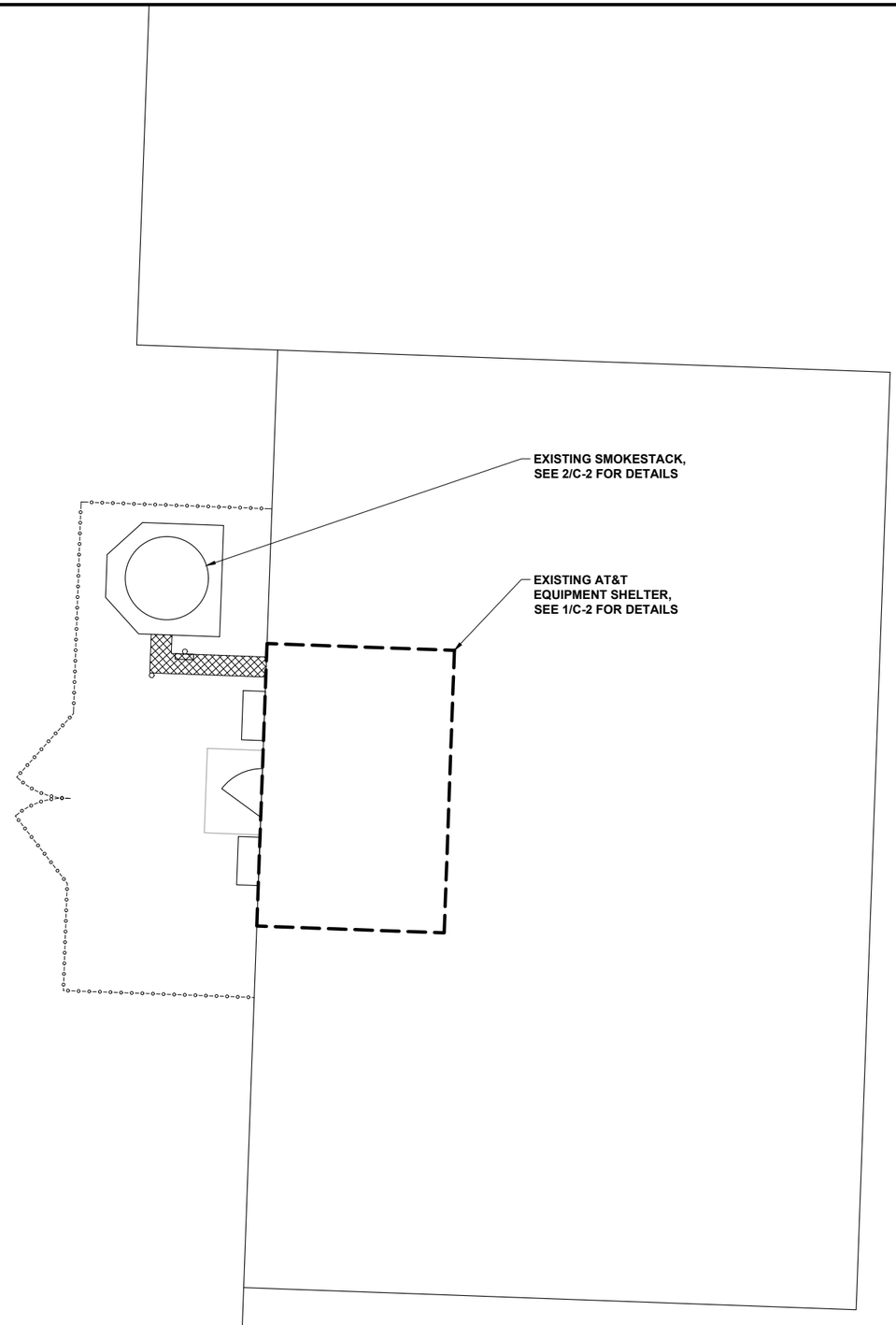
NORTH



COMPOUND PLAN
SCALE: 1" = 10'
1

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PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

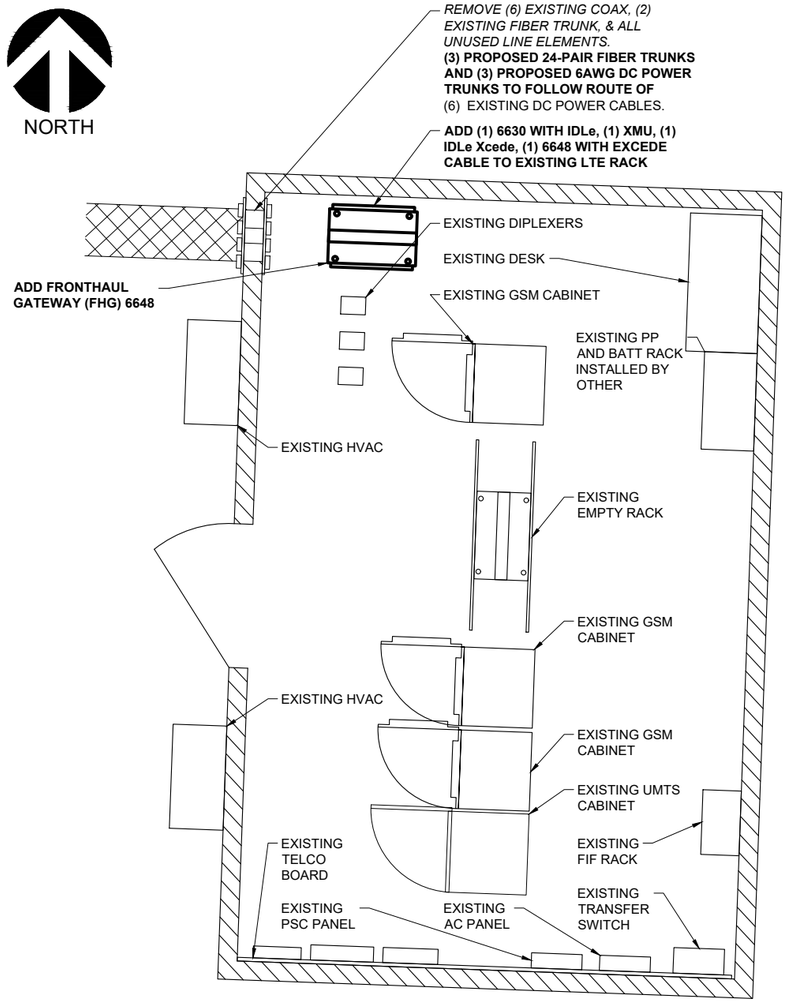
PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
COMPOUND PLAN

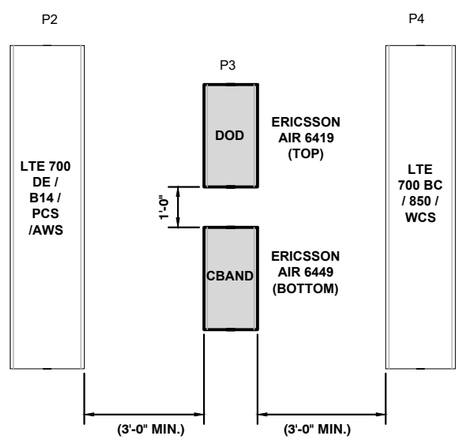
0 5' 10' 20'
11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

PROJECT NUMBER: 51607
SHEET NUMBER: C-1

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.



EQUIPMENT LAYOUT (1)
SCALE: 1" = 3.75'

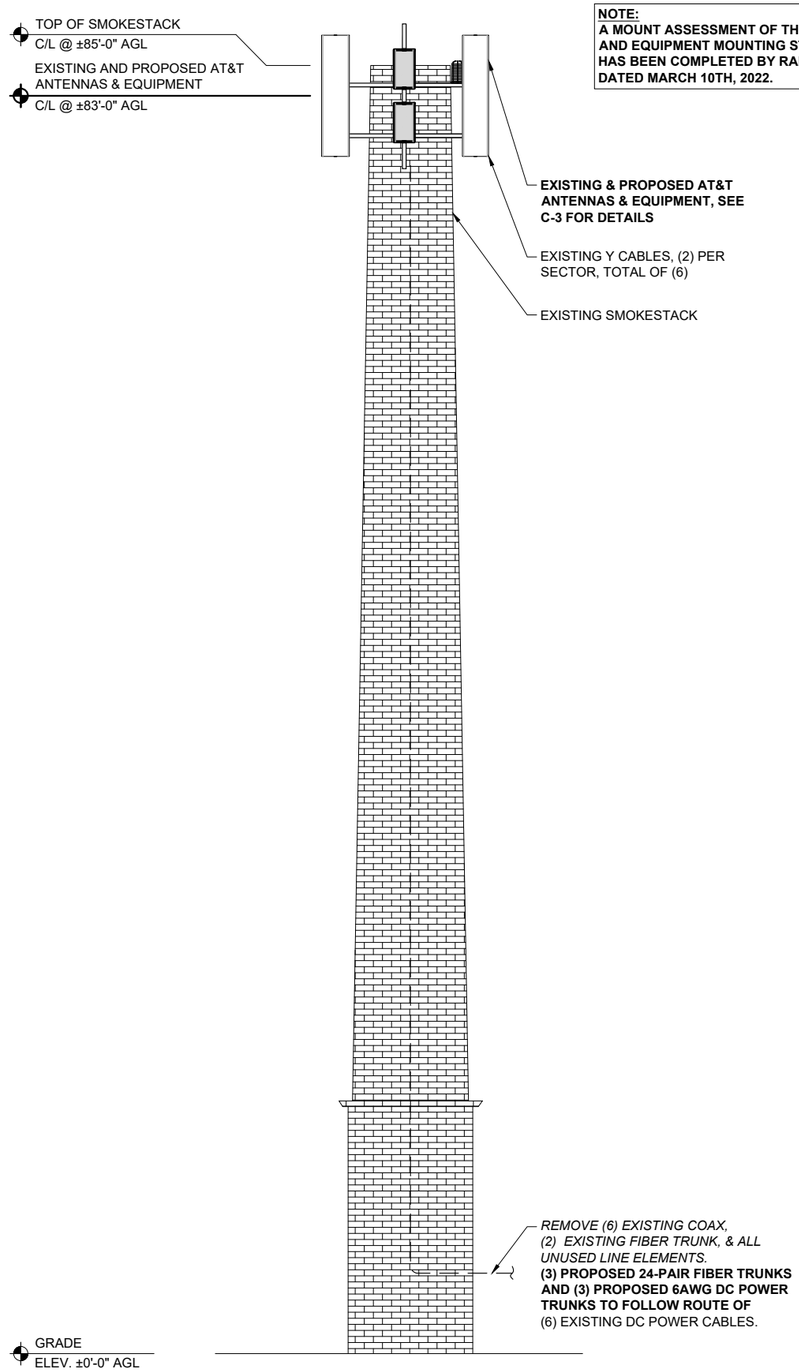


ELEVATION OF BACK OF ANTENNA LAYOUT (2)
SCALE: NTS

NOTES:
-ALL EQUIPMENT SHOULD BE PAINTED TO MATCH EXISTING

NOTE:
A STRUCTURAL ASSESSMENT OF THE ANTENNA AND EQUIPMENT MOUNTING STRUCTURE HAS BEEN COMPLETED BY RAMAKER, DATED MARCH 15TH, 2022.

NOTE:
A MOUNT ASSESSMENT OF THE ANTENNA AND EQUIPMENT MOUNTING STRUCTURE HAS BEEN COMPLETED BY RAMAKER, DATED MARCH 10TH, 2022.



ELEVATION VIEW (3)
SCALE: 1" = 10'

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LICENSED PROFESSIONAL ENGINEER

James R Skowronski 3/22/2022
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HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

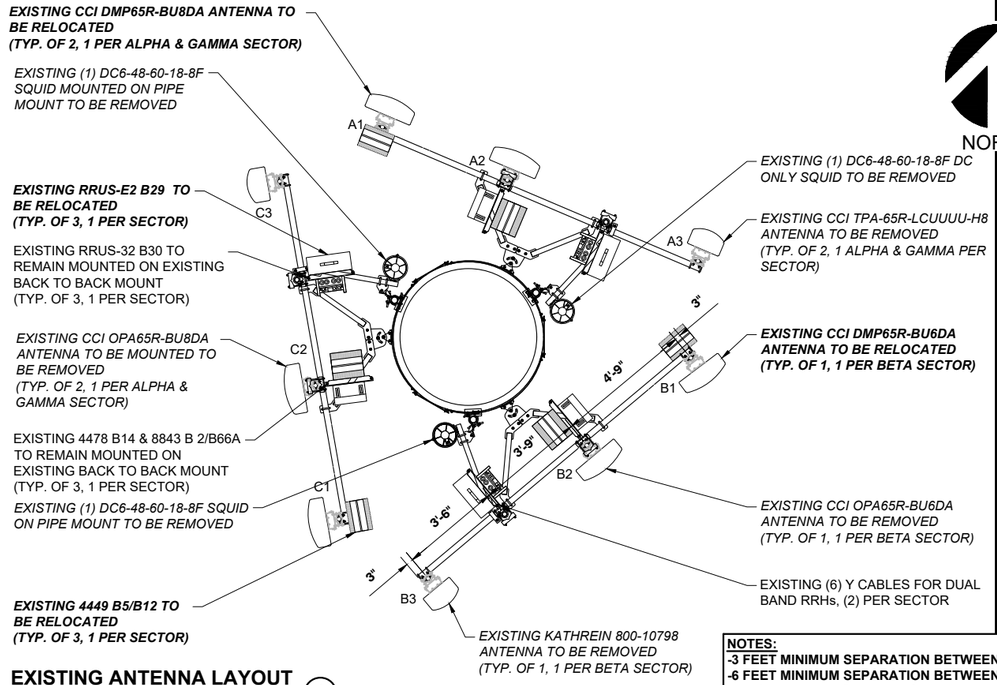
PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
EQUIPMENT LAYOUT AND ELEVATION VIEW

SCALE:
AS NOTED

PROJECT NUMBER: 51607
SHEET NUMBER: C-2

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.

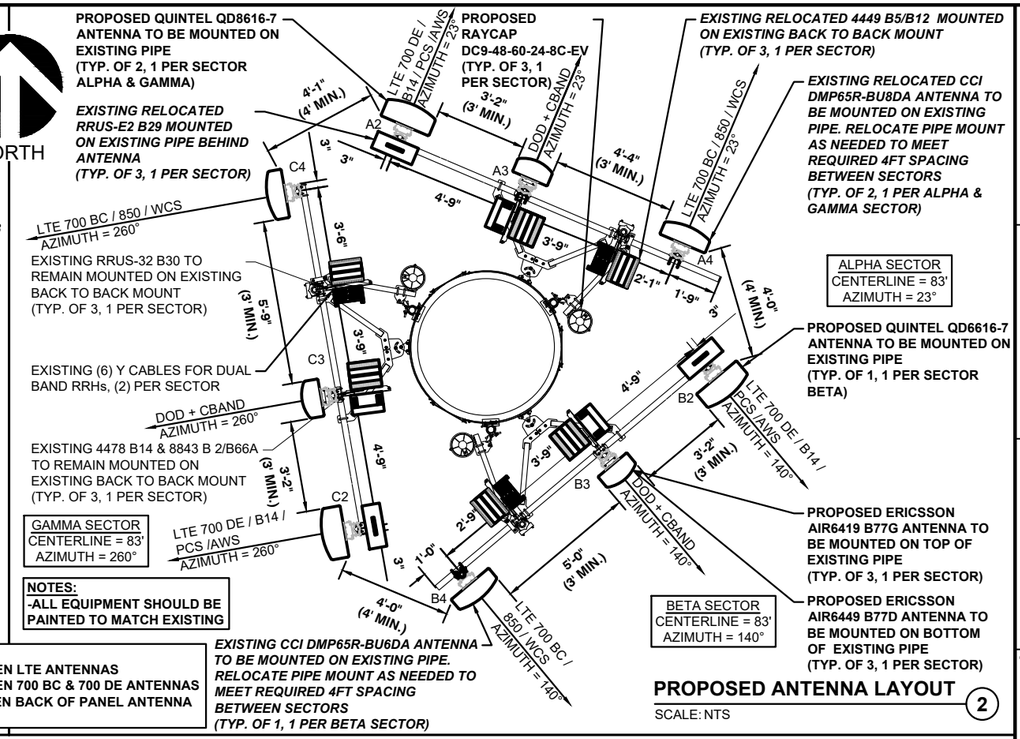


EXISTING ANTENNA LAYOUT (1)

SCALE: NTS

NORTH

NOTES:
-3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
-6 FEET MINIMUM SEPARATION BETWEEN 700 BC & 700 DE ANTENNAS
-8 INCH MINIMUM SEPARATION BETWEEN BACK OF PANEL ANTENNA AND EXISTING/PROPOSED EQUIPMENT



PROPOSED ANTENNA LAYOUT (2)

SCALE: NTS

SECTOR		EXISTING ANTENNA	PROPOSED ANTENNA	TECHNOLOGY	ANTENNA STATUS	HEIGHT (IN.)	WIDTH (IN.)	DEPTH (IN.)	WEIGHT (LBS.)	ANTENNA AZIMUTH (DEG.)	ANT. C/L ELEV. (FT.)	REMOTE RADIO/TMA CONFIGURATION	TRANSMISSION CABLE QUANTITY	TRANSMISSION CABLE TYPE	TRANSMISSION CABLE LENGTH	TRANSMISSION CABLE STATUS	RAYCAP UNIT
SECTOR 1	1	***CCI DMP65R-BU8DA***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(3) PROPOSED RAYCAP DC9-48-60-24-8C-EV
	2	CCI OPA65R-BU8DA	**QUINTEL QD8616-7**	**LTE 700 DE / B14 / PCS /AWS**	**PROPOSED**	**96.0**	**22.0**	**9.6**	**68**	**23**	**83**	(1) 4478 B14 (1) 8843 B2/B66A (1) RRUS-E2 B29	2 2 **1** **1**	DC CABLE Y-CABLE **24-PAIR FIBER TRUNK** **6AWG DC TRUNK**	**±105'**	EXISTING EXISTING **PROPOSED** **PROPOSED**	
	3	CCI TPA-65R-LCUUUU-H8	**ERICSSON AIR6419** **ERICSSON AIR6449**	**DOD + CBAND**	**PROPOSED**	**30.4**	**15.9**	**8.1**	**81**	**23**	**83**	-					
	4	-	***CCI DMP65R-BU8DA***	***LTE 700 BC / 850 / WCS***	***RELOCATED***	***96***	***20.7***	***7.7***	***95.7***	**23**	**83**	(1) 4449 B5/B12 (1) RRUS-32 B30					
SECTOR 2	1	***CCI DMP65R-BU6DA***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	2	CCI OPA65R-BU6DA	**QUINTEL QD6616-7**	**LTE 700 DE / B14 / PCS /AWS**	**PROPOSED**	**96.0**	**22.0**	**9.6**	**68**	**140**	**83**	(1) 4478 B14 (1) 8843 B2/B66A (1) RRUS-E2 B29	2 2 **1** **1**	DC CABLE Y-CABLE **24-PAIR FIBER TRUNK** **6AWG DC TRUNK**	**±105'**	EXISTING EXISTING **PROPOSED** **PROPOSED**	
	3	KATHREIN 80010798	**ERICSSON AIR6419** **ERICSSON AIR6449**	**DOD + CBAND**	**PROPOSED**	**30.4**	**15.9**	**8.1**	**81**	**140**	**83**	-					
	4	-	***CCI DMP65R-BU6DA***	***LTE 700 BC / 850 / WCS***	***RELOCATED***	***71.2***	***20.7***	***7.7***	***79.4***	**140**	**83**	(1) 4449 B5/B12 (1) RRUS-32 B30					
SECTOR 3	1	***CCI DMP65R-BU8DA***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	2	CCI OPA65R-BU8DA	**QUINTEL QD8616-7**	**LTE 700 DE / B14 / PCS /AWS**	**PROPOSED**	**96.0**	**22.0**	**9.6**	**68**	**260**	**83**	(1) 4478 B14 (1) 8843 B2/B66A (1) RRUS-E2 B29	2 2 **1** **1**	DC CABLE Y-CABLE **24-PAIR FIBER TRUNK** **6AWG DC TRUNK**	**±105'**	EXISTING EXISTING **PROPOSED** **PROPOSED**	
	3	CCI TPA-65R-LCUUUU-H8	**ERICSSON AIR6419** **ERICSSON AIR6449**	**DOD + CBAND**	**PROPOSED**	**30.4**	**15.9**	**8.1**	**81**	**260**	**83**	-					
	4	-	***CCI DMP65R-BU8DA***	***LTE 700 BC / 850 / WCS***	***RELOCATED***	***96***	***20.7***	***7.7***	***95.7***	**260**	**83**	(1) 4449 B5/B12 (1) RRUS-32 B30					

ANTENNA SCHEDULE (3)

SCALE: NTS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED PROFESSIONAL ENGINEER

Signature: 3/22/2022 Date:

MARK	DATE	DESCRIPTION
2	03/22/22	FOR CONSTRUCTION
1	03/15/22	FINAL CDs ISSUED
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ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
ANTENNA LAYOUTS AND ANTENNA SCHEDULE

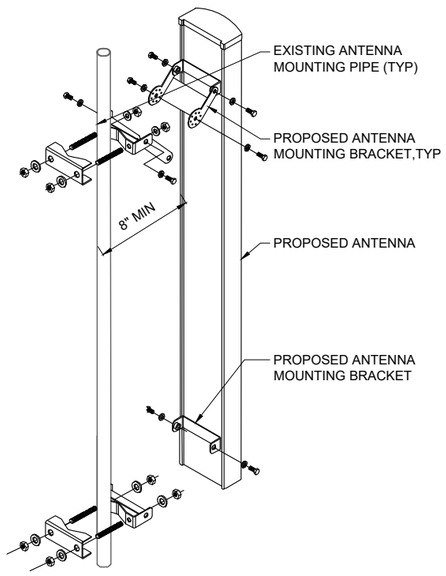
SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: C-3

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.

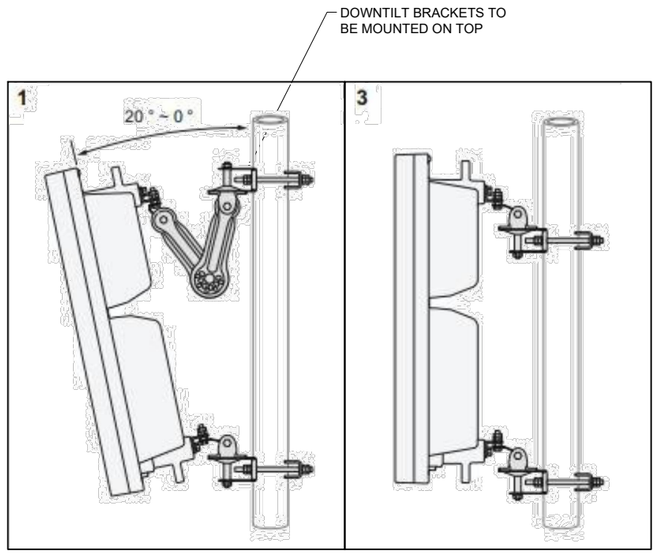
NOTES:
-3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS

-8 INCH MINIMUM SEPARATION BETWEEN BACK OF PANEL ANTENNA AND EXISTING/PROPOSED EQUIPMENT

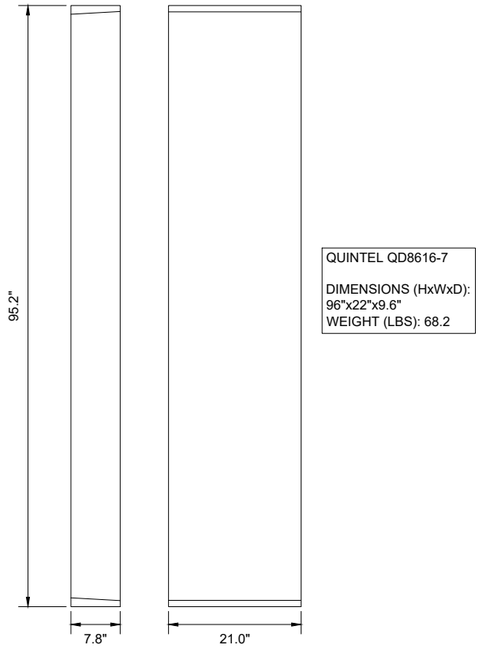


ANTENNA MOUNTING DETAIL 1
SCALE: NTS

NOTES:
-ALL EQUIPMENT SHOULD BE PAINTED TO MATCH EXISTING



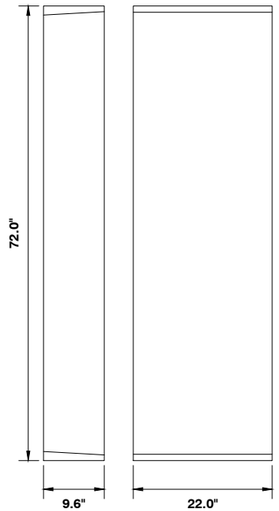
ANTENNA MOUNT DETAIL 2
SCALE: NTS



QUINTEL QD8616-7

DIMENSIONS (HxWxD):
96"x22"x9.6"
WEIGHT (LBS): 68.2

ANTENNA DETAIL 3
SCALE: NTS



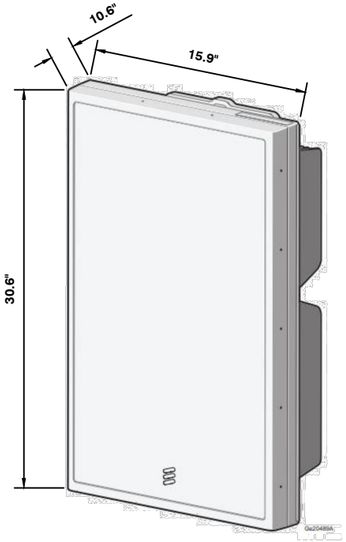
QUINTEL QD6616-7

DIMENSIONS (HxWxD):
72"x22"x9.6"
WEIGHT (LBS): 130

ANTENNA DETAIL 4
SCALE: NTS

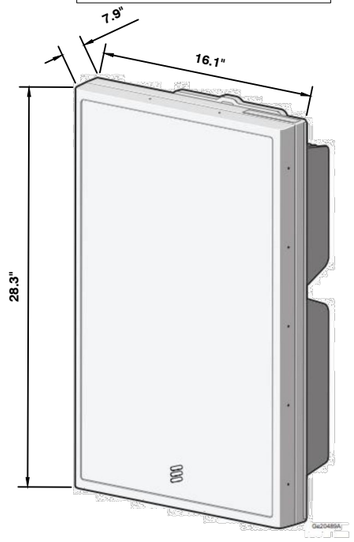
MANUFACTURER: ERICSSON
MODEL: AIR 6449
DIMENSIONS: 30.6"x15.9"x10.6"
WEIGHT: 83.8 LBS
FREQUENCY: REFER TO RFDS SHEET

NOTE:
1FT TIP TO TIP SEPARATION BETWEEN AIR ANTENNAS REQUIRED.



ANTENNA DETAIL 5
SCALE: NTS

MANUFACTURER: ERICSSON
MODEL: AIR 6419
DIMENSIONS: 28.3"x16.1"x7.9"
WEIGHT: 77 LBS
FREQUENCY: REFER TO RFDS SHEET



ANTENNA DETAIL 6
SCALE: NTS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

Signature: 3/22/2022 Date:

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ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

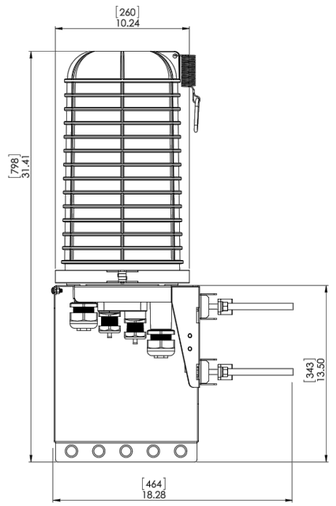
SHEET TITLE:
CONSTRUCTION DETAILS

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: A-1

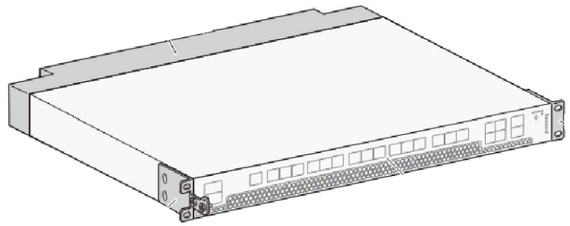
BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.

MANUFACTURER: RAYCAP
MODEL: DC9-48-60-24-8C-EV
DIMENSIONS: 18.28" × 10.24" × 31.4"
WEIGHT: 16 LBS
FREQUENCY: REFER TO RFDS SHEET



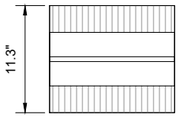
DC9-48-60-24-8C-EV DETAIL (1)
SCALE: NTS

MANUFACTURER: ERICSSON
MODEL: ROUTER 6648
DIMENSIONS: 1.75"x19"x13.858"
WEIGHT: 16.585 LBS
FREQUENCY: REFER TO RFDS SHEET



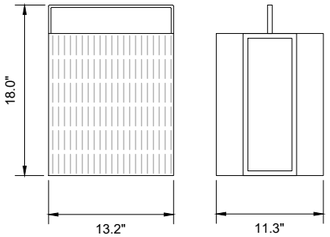
6648 FRONT HAUL GATEWAY DETAIL (2)
SCALE: NTS

NOTES:
-ALL EQUIPMENT SHOULD BE PAINTED TO MATCH EXISTING

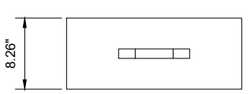


ERICSSON B2/B66A 8843

DIMENSIONS (HxWxD):
18.0"x13.2"x11.3"
WEIGHT (LBS): 70

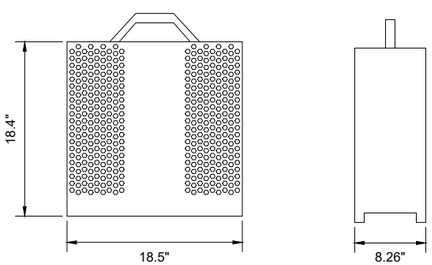


ERICSSON RRUS 8843 (3)
SCALE: NTS

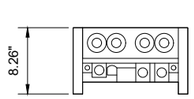


ERICSSON RRUS-E2

DIMENSIONS (HxWxD):
18.4"x18.5"x8.26"

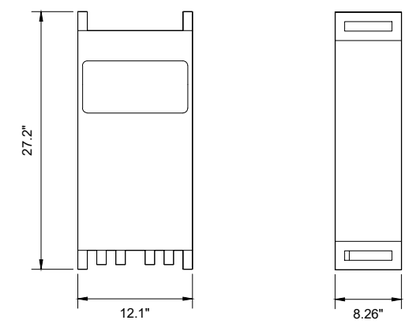


ERICSSON RRUS E2 B29 (4)
SCALE: NTS

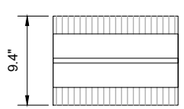


ERICSSON RRUS-32

DIMENSIONS (HxWxD):
27.2"x12.1"x8.26"

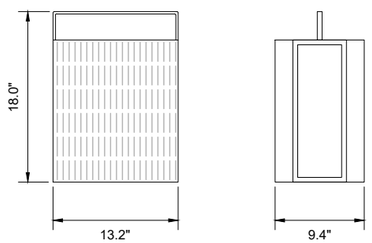


ERICSSON RRUS 32 B2 (5)
SCALE: NTS

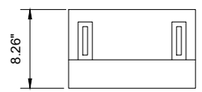


ERICSSON B5/B12 4449

DIMENSIONS (HxWxD):
18.0"x13.2"x9.4"
WEIGHT (LBS): 75

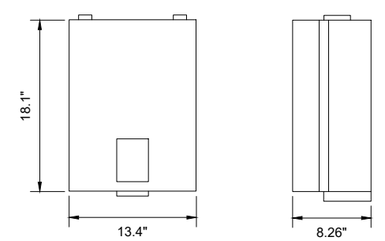


ERICSSON RRUS 4449 (6)
SCALE: NTS



ERICSSON B14 4478

DIMENSIONS (HxWxD):
18.1"x13.4"x8.26"
WEIGHT (LBS): 59.4



ERICSSON RRUS 4478 (7)
SCALE: NTS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

Signature: 3/22/2022 Date:

MARK	DATE	DESCRIPTION
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ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
CONSTRUCTION DETAILS

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: A-2

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTL01199_2021-5G-NR-RADIO_5G-NR-1SR-CBAND_MM093Q_PTN_10035106_59402_03-04-2021_FINAL-APPROVED_V5.00" LAST REVISED 03/08/2022.

NOTES:
-ALL EQUIPMENT SHOULD BE PAINTED TO MATCH EXISTING

Diagram - Sector: A | Diagram File Name - Cband_3Ant_Q7_DoD_CB_DMP_DETop_8843__1DC9FIB_1x5216_1xXMU_1x6630_1x6848.vsd
Atoll Site Name - CTL01199 | Location Name - HARTFORD PARK ST | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"

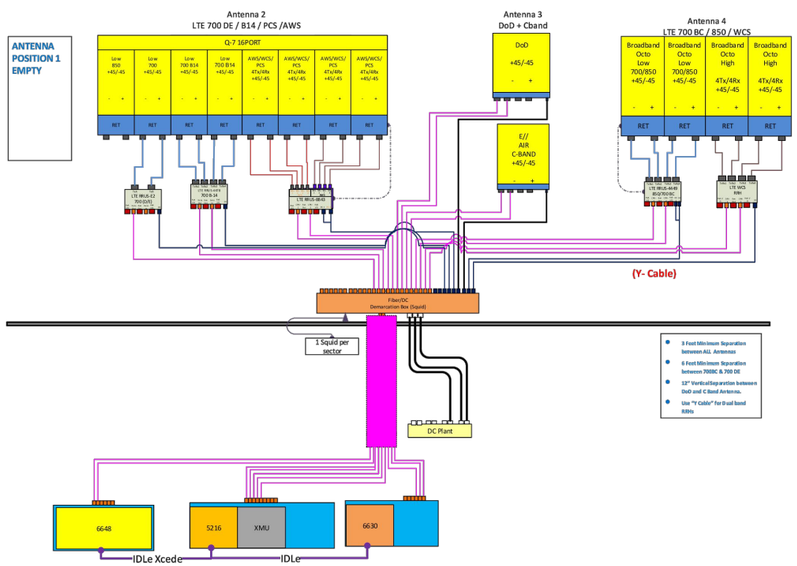


Diagram - Sector: B | Diagram File Name - Cband_3Ant_Q7_DoD_CB_DMP_DETop_8843__1DC9FIB_1x5216_1xXMU_1x6630_1x6848.vsd
Atoll Site Name - CTL01199 | Location Name - HARTFORD PARK ST | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"

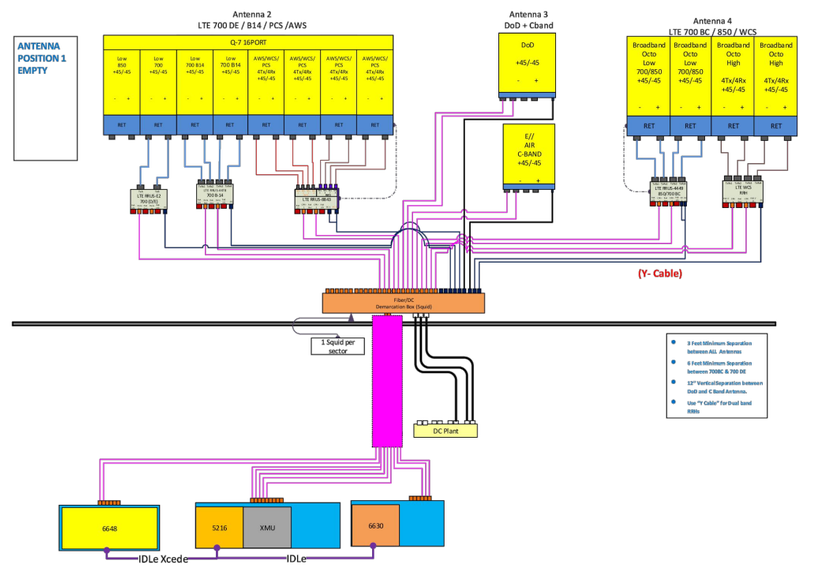
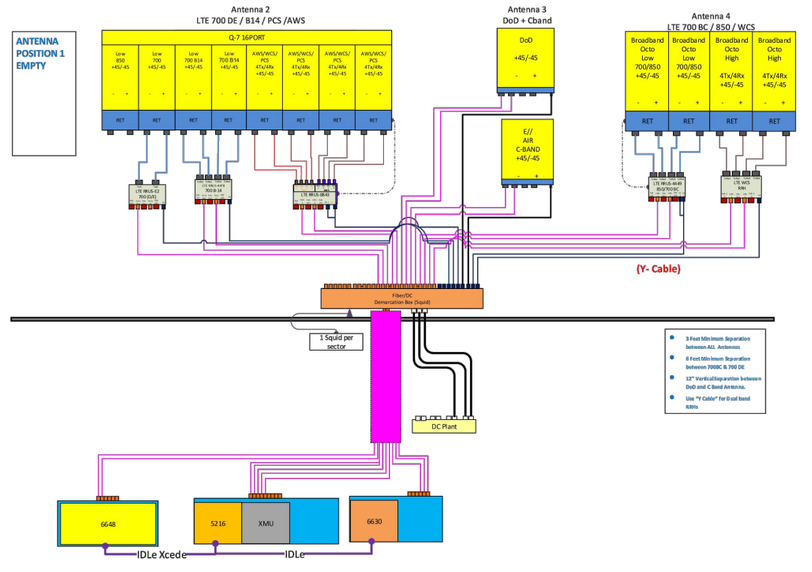


Diagram - Sector: C | Diagram File Name - Cband_3Ant_Q7_DoD_CB_DMP_DETop_8843__1DC9FIB_1x5216_1xXMU_1x6630_1x6848.vsd
Atoll Site Name - CTL01199 | Location Name - HARTFORD PARK ST | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"



RF PLUMBING DIAGRAMS

SCALE: NTS

1

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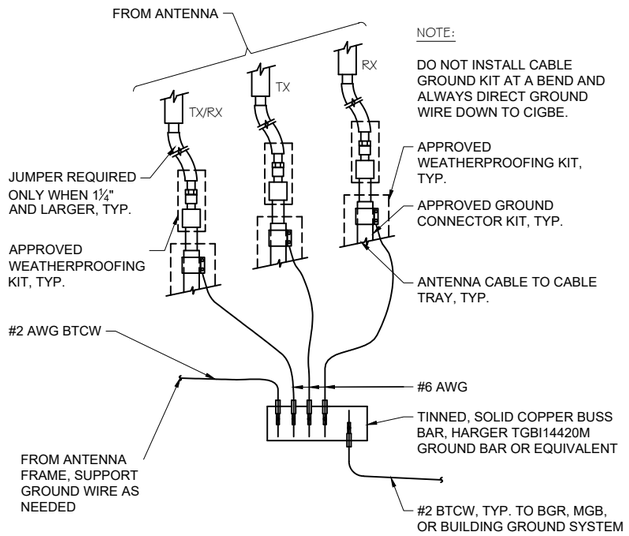
PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
RF PLUMBING DIAGRAMS

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: A-3

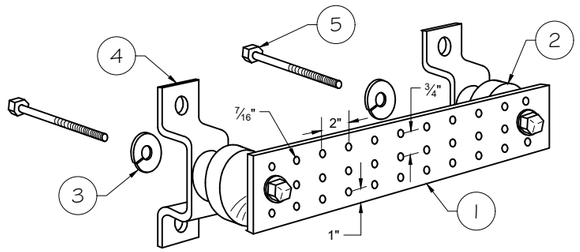


GROUND WIRE TO GROUND BAR DETAIL (1)

SCALE: NTS

NOTES:

1. ALL MOUNTING HARDWARE CAN BE USED ON 6", 12", 18", ETC. GROUND BARS.
2. ENTIRE ASSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGBI14420M.

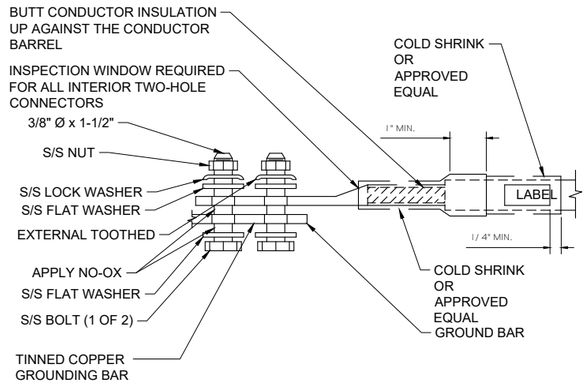


LEGEND

1. TINNED COPPER GROUND BAR, ¼" x 4" x 20", NEWTON CO., HARGER TGBI14420M, OR EQUIVALENT. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS. INSTRUMENT CO. CAT. NO. 3061-4 OR HARGER EQUIVALENT.
3. ⅝" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUIVALENT.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056 OR HARGER EQUIVALENT.
5. ⅝" x 1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT. NO. 3012-1 OR HARGER EQUIVALENT.

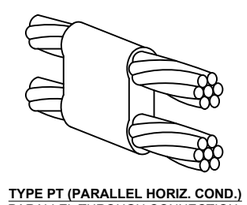
TYPICAL GROUND BAR DETAIL (2)

SCALE: NTS

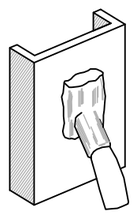


TYPICAL GROUND BAR CONNECTION DETAIL (3)

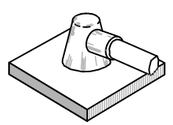
SCALE: NTS



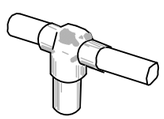
TYPE PT (PARALLEL HORIZ. COND.)
PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES



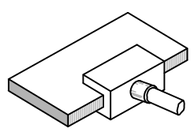
TYPE VS (VERT. STEEL SURFACE)
CABLE TAP DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE



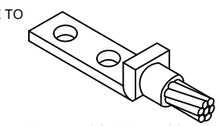
TYPE HS (HORIZ. STEEL SURFACE)
TO FLAT STEEL SURFACE OR HORIZONTAL PIPE



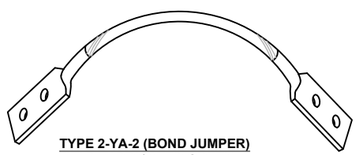
TYPE GT (THROUGH CABLE TO GROUND ROD)
THROUGH CABLE TO TOP OF GROUND ROD



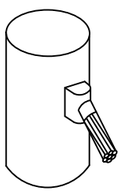
TYPE LJ (FLAT BUSBAR)
TAP OF HORIZONTAL CABLE TO EDGE OF HORIZONTAL



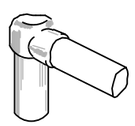
TYPE YA-2 (COPPER LUGS)
TWO HOLE- LONG BARREL LENGTH



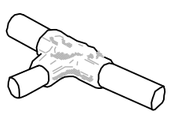
TYPE 2-YA-2 (BOND JUMPER)
FIELD FABRICATED GREEN STRANDED INSULATED



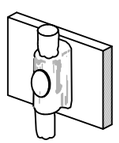
TYPE VS (VERTICAL PIPE)
CABLE TAP DOWN AT 45° TO RANGE OF VERTICAL PIPES



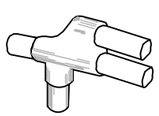
TYPE GR
CABLE TAP TO TOP OF GROUND ROD



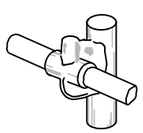
TYPE TA
TEE OF HORIZONTAL RUN AND TAP CABLES



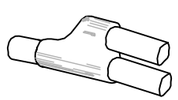
TYPE W
THROUGH VERTICAL CABLE TO VERTICAL STEEL SURFACE OR TO THE SIDE OF EITHER HORIZONTAL OR VERTICAL PIPE



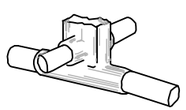
TYPE NC
THROUGH AND TAP CABLES TO GROUND ROD



TYPE GY
THROUGH CABLE TO SIDE OF GROUND ROD



TYPE PC
PARALLEL TAP CABLES



TYPE XB
CROSS OF HORIZONTAL CABLES. LAPPED AND NOT CUT.

TYPICAL CADWELD TYPES DETAIL (4)

SCALE: NTS

at&t

smartlink
85 RANGEWAY ROAD - BLDG 3, SUITE 102
NORTH BILLERICA, MA 01862
SMARTLINKLLC.COM

RAMAKER
employee-owned
(608) 643-4100 www.ramaker.com

Certification & Seal:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

Signature: 3/22/2022 Date:

MARK	DATE	DESCRIPTION
2	03/22/22	FOR CONSTRUCTION
1	03/15/22	FINAL CDs ISSUED
0	01/27/22	CDs ISSUED FOR REVIEW

ISSUE PHASE: FOR CONSTRUCTION DATE ISSUED: 03/22/2022

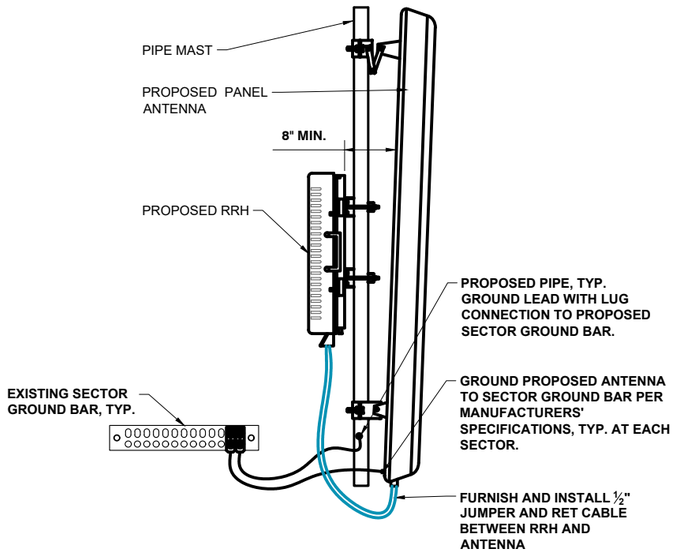
PROJECT TITLE:
HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

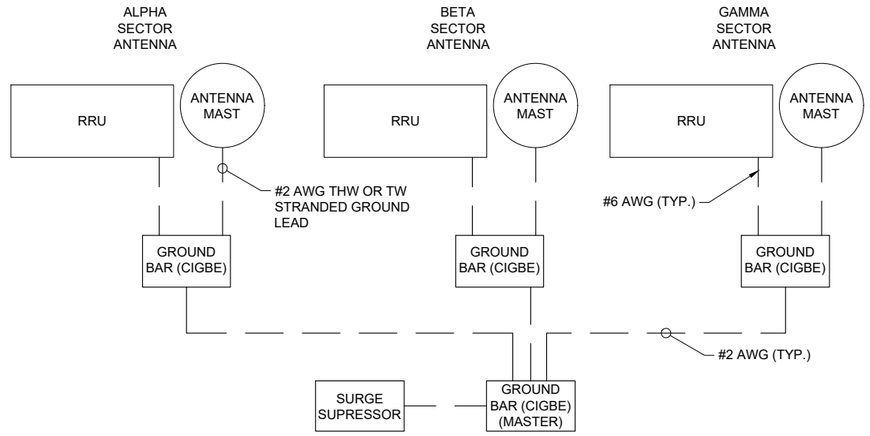
SHEET TITLE:
GROUNDING DETAILS

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: G-1



ANTENNA & RRU GROUNDING DETAIL (1)
SCALE: NTS



SCHEMATIC DIAGRAM GROUNDING SYSTEM (2)
SCALE: NTS

NOTES:
-ALL EQUIPMENT SHOULD BE PAINTED TO MATCH EXISTING

at&t

smartlink
85 RANGEWAY ROAD - BLDG 3, SUITE 102
NORTH BILLERICA, MA 01862
SMARTLINKLLC.COM

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
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LICENSED
PROFESSIONAL ENGINEER

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DATE ISSUED: 03/22/2022

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HARTFORD PARK ST
FA# 10035106
SITE# CTL01199

PROJECT INFORMATION:
2074 PARK STREET
HARTFORD, CT 06106
HARTFORD COUNTY

SHEET TITLE:
GROUNDING DETAILS

SCALE: NONE

PROJECT NUMBER: 51607
SHEET NUMBER: G-2

March 10, 2022

Mark Donnelly
Smartlink
85 Rangeway Road, Bldg. # 3, Suite 102
North Billerica, MA 01862

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **MOUNT ANALYSIS REPORT**

CARRIER: **AT&T MOBILITY**

SITE: **HARTFORD PARK ST (CTL01199)**
ADDRESS: **2074 PARK STREET**
HARTFORD, HARTFORD COUNTY, CONNECTICUT 06106
LATITUDE: **41.7567700°**
LONGITUDE: **-72.7138881°**
FA LOCATION CODE: **10035106**
SCOPE: **5G NR RADIO / 5G NR RADIO**
PACE NUMBER: **MRCTB052255 / MRCTB051328**
PTN NUMBER: **2051A101SE/ 2051A0Z705**

RAMAKER & ASSOCIATES PROJECT NUMBER: 51607

RESULTS: **MOUNT:** **PASS** **71.5%**

Dear Mark Donnelly:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this mount assessment for the above-mentioned site. The purpose of this report is to determine the structural integrity of the mounting structure with the proposed loading configurations. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the mount(s) using RISA analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the mount loading occur.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Gerardo Nunez Jr.
Structural Designer

James R. Skowronski, P.E.
Supervising Engineer

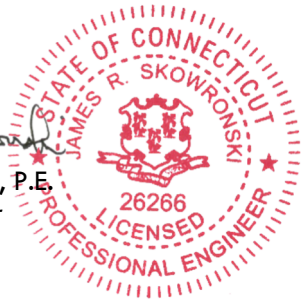


TABLE OF CONTENTS

ANALYSIS CRITERIA

State Code	2018 CT State Building Code
Building Code	2015 IBC
TIA-222 Revision	TIA-222-G
Structure Class	II
Ultimate Design Wind Speed, V_{ult}	125 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	97 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	1 inch
Exposure Category	B
Topographic Feature	None

SUPPORTING DOCUMENTATION

- Final RFDS version 5.00 by AT&T, RFDS ID: 4397238, dated March 8, 2022
- Structural analysis by RAMAKER, job number 49451, dated 12/15/2020
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

MOUNT LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antennas and equipment configurations as shown in the following chart(s):

Equipment Loading Summary			
Elevation	**Appurtenance**	**Mount Type**	**Status**
83	**(2) CCI OPA65R-BU8DA**	(3) Site Pro VFA12-HD-NLB w/ (2) Site Pro1 RCM911	**Remove**
	(1) CCI OPA65R-BU6DA		
	(2) CCI TPA-65R-LCUUUU-H8		
	(1) Kathrien 800-10798		
	(3) Raycap DC6-48-60-18-8F		
	(2) CCI DMP65R-BU8DA		**Relocated**
	(1) CCI DMP65R-BU6DA		
	(3) Ericsson RRUS-E2 B29		
	(3) Ericsson 4449 B5/B12		
	(3) Ericsson 4478 B14		Existing
	(3) Ericsson 8843 B2/B66A		
	(3) Ericsson RRUS-32 B30		
	(2) Quintel QD8616-7		**Proposed**
	(1) Quintel QD6616-7		
	(3) Ericsson AIR 6419 (TOP) **(3) Ericsson AIR 6449 (BOTTOM)**		
	(3) Raycap DC9-48-60-24-8C-EV		

MOUNT RESULTS

The maximum mount member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Mount Pipe	43.9	Pass
Standoff Arm	59.1	Pass
Face Horizontal	34.8	Pass
Diagonal	71.5	Pass
Vertical	5.1	Pass
Tie Back	9.3	Pass
RATING	**71.5**	**PASS**

By engineering calculation and inspection, the antenna and equipment mounting structure(s) are capable of supporting the proposed loading configurations without causing an overstress condition in the antenna and equipment mounting structure(s).

ASSUMPTIONS

This analysis is based on the theoretical design capacity of the members and is not a condition assessment of the structure. This analysis is based on the information supplied and the results are only as accurate as the data obtained from this information. The Scope of Work for RAMAKER did not require verification of the provided information. The following assumptions were made for this structural analysis.

1) The mounts were built and maintained in accordance with the manufacturer's drawings and specifications and including the TIA Standards.
2) All structural members are in good condition and can achieve their full design capacity. All welds and connections can develop the full member capacity unless determined otherwise and explicitly stated in this report.
3) No physical deterioration has occurred in any of the structural components. No allowance was made for any damaged, missing, or rusted members, nor loose bolts or cracked welds.
4) All prior structural modifications, if any, are assumed to be properly installed and fully effective.
5) Information provided by the client regarding the structure, appurtenances, transmission cables, and other relevant information is assumed to be current and correct. Appurtenance sizes and weights as specified in the loading tables are best estimates and based on available information, if explicit documentation is not provided to RAMAKER. If the loading configuration is different than stated, then this analysis is invalid.
6) Mount steel grades meet the values as stated, unless noted otherwise:
    - Channel, Solid Round, Angle, Plate — ASTM A36 (GR 36)
    - HSS (Rectangular) — ASTM 500 (GR B-46)
    - Pipe — ASTM A53 (GR 35)
    - Unistrut — ASTM A653 SS (GR 33)
    - Threaded Rod — ASTM F1554 (GR 36)
    - Connection Bolt — ASTM A325

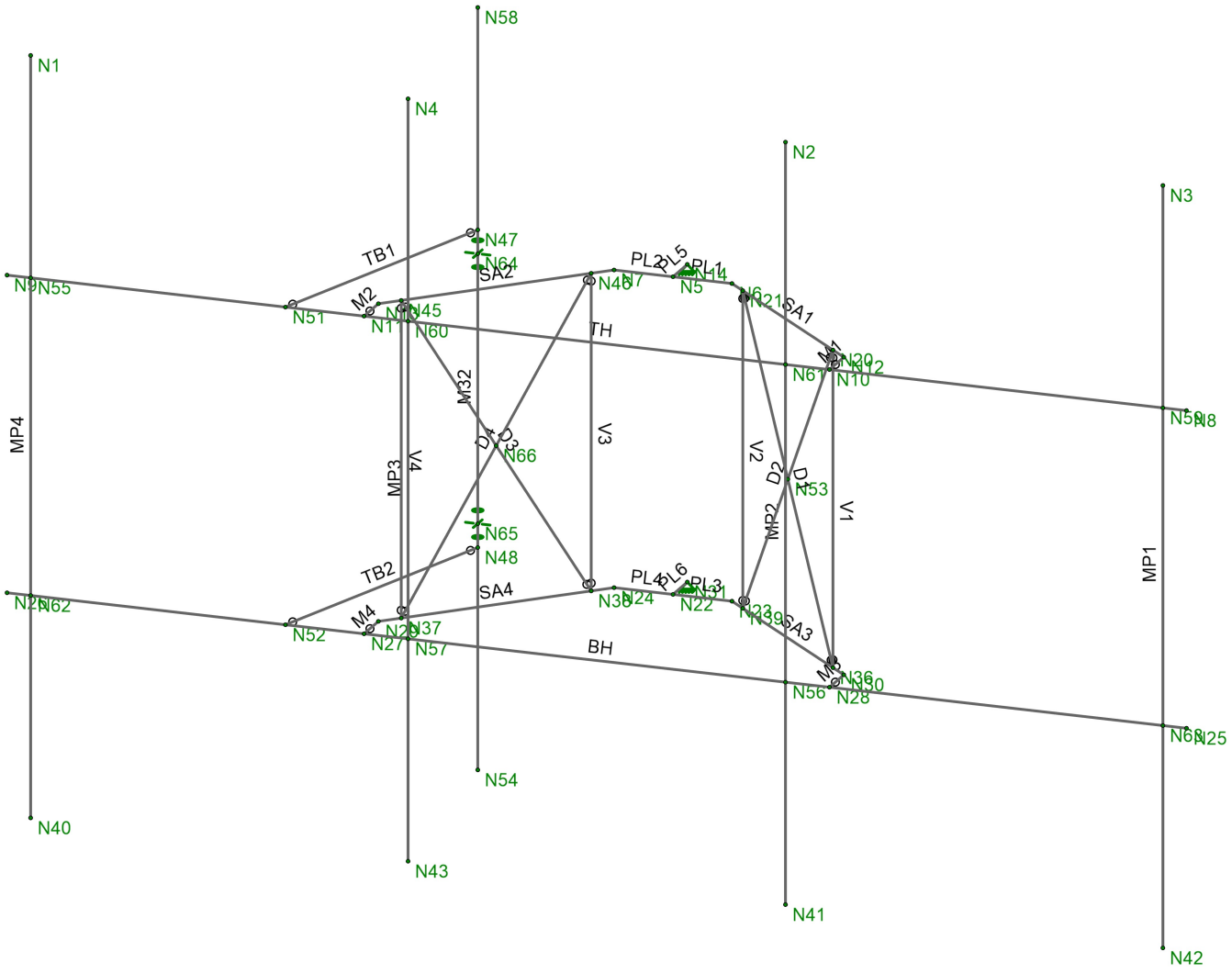
This analysis may be affected if any assumptions are not valid or have been made in error. RAMAKER should be notified to determine the effect on the structural integrity of the mount.

SCOPE AND LIMITATIONS

The engineering services performed by RAMAKER regarding this report are limited to an analysis of the mount and the capacity of its members. RAMAKER will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, or lack of maintenance. RAMAKER makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the "as-built" condition of this structure.

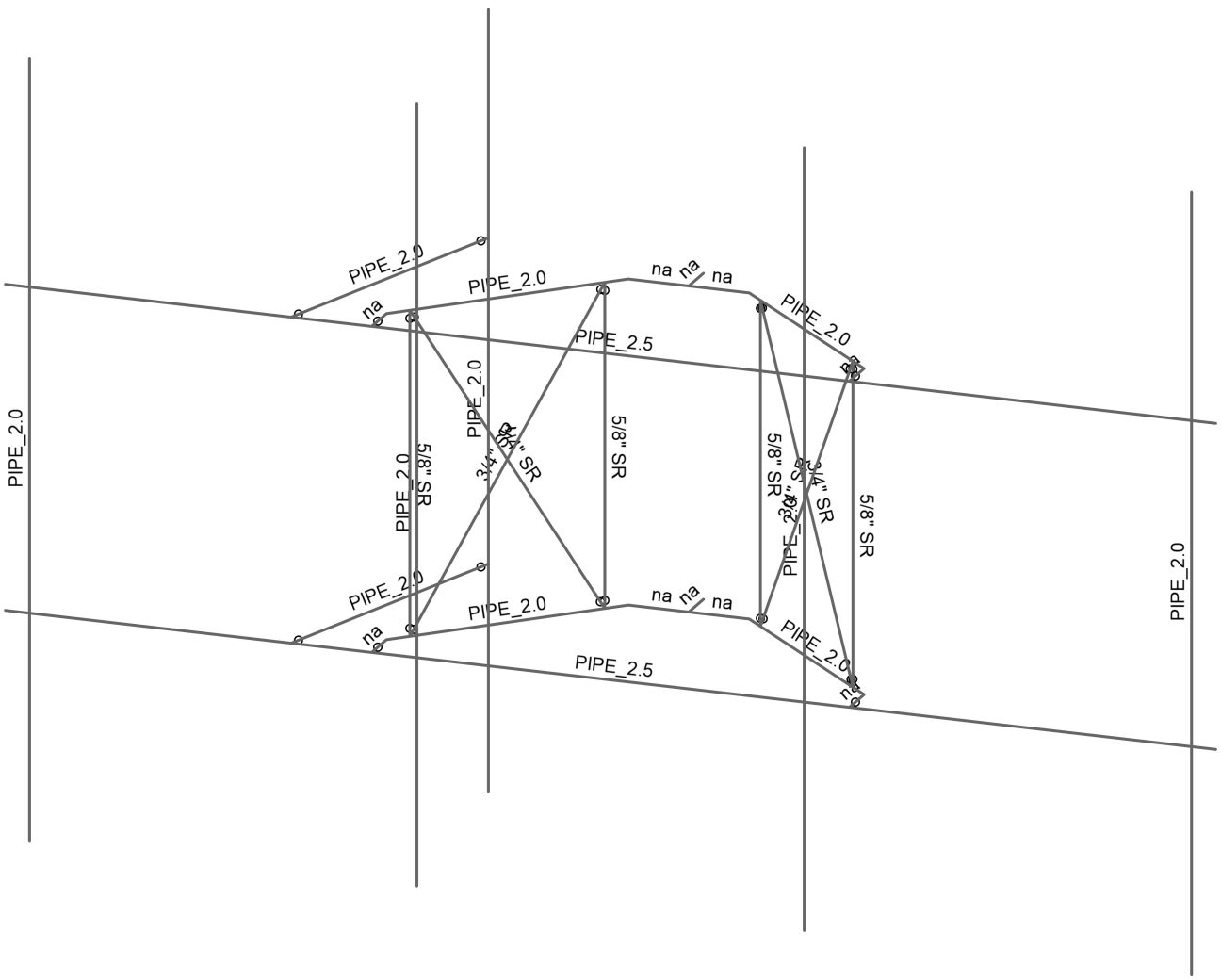
ATTACHMENTS

- Analysis Figures
- Analysis Calculations



Envelope Only Solution

Ramaker & Associates	Hartford Park St (CTL01199)	SK-1
SVB		Mar 09, 2022
51607		51607 VFA12 HD Mount Rev1.r3d



Envelope Only Solution

Ramaker & Associates	Hartford Park St (CTL01199)	SK-2
SVB		Mar 09, 2022
51607		51607 VFA12 HD Mount Rev1.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	Gr. 33	29000	11154	0.3	0.65	0.49	33	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
5	A500 Gr.B RND	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
6	A500 Gr.B Rect	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3
7	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
8	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Pipe 2.5	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	PL5/8"x3.5"	PL5/8"x3.5"	Beam	RECT	A36 Gr.36	Typical	2.188	0.071	2.233	0.253
3	PL5/8"x7.5"	PL5/8"x7.5"	Beam	RECT	A36 Gr.36	Typical	4.688	0.153	21.973	0.578
4	Pipe 2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
5	SR3/4"	3/4" SR	Beam	BAR	A36 Gr.36	Typical	0.442	0.016	0.016	0.031
6	SR5/8"	5/8" SR	Beam	BAR	A36 Gr.36	Typical	0.307	0.007	0.007	0.015

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	TH	N8	N9		Pipe 2.5	Beam	Pipe	A53 Gr.B	Typical
2	BH	N25	N26		Pipe 2.5	Beam	Pipe	A53 Gr.B	Typical
3	PL5	N5	N14	90	RIGID	None	None	RIGID	Typical
4	PL6	N22	N31	90	RIGID	None	None	RIGID	Typical
5	PL2	N7	N5	90	RIGID	None	None	RIGID	Typical
6	PL1	N5	N6	90	RIGID	None	None	RIGID	Typical
7	PL4	N24	N22	90	RIGID	None	None	RIGID	Typical
8	PL3	N22	N23	90	RIGID	None	None	RIGID	Typical
9	SA4	N29	N24		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
10	SA1	N12	N6		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
11	SA3	N30	N23		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
12	M2	N11	N13	90	RIGID	None	None	RIGID	Typical
13	M4	N27	N29	90	RIGID	None	None	RIGID	Typical
14	M1	N10	N12	90	RIGID	None	None	RIGID	Typical
15	M3	N28	N30	90	RIGID	None	None	RIGID	Typical
16	V4	N45	N37		SR5/8"	Beam	BAR	A36 Gr.36	Typical
17	V3	N46	N38		SR5/8"	Beam	BAR	A36 Gr.36	Typical
18	V1	N20	N36		SR5/8"	Beam	BAR	A36 Gr.36	Typical
19	V2	N21	N39		SR5/8"	Beam	BAR	A36 Gr.36	Typical
20	D3	N45	N38		SR3/4"	Beam	BAR	A36 Gr.36	Typical
21	D4	N46	N37		SR3/4"	Beam	BAR	A36 Gr.36	Typical
22	D1	N21	N36		SR3/4"	Beam	BAR	A36 Gr.36	Typical
23	D2	N20	N39		SR3/4"	Beam	BAR	A36 Gr.36	Typical
24	MP4	N40	N1		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
25	MP3	N43	N4		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
26	MP2	N41	N2		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
27	MP1	N42	N3		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
28	SA2	N13	N7		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
29	TB1	N47	N51		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
30	M32	N54	N58		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
31	TB2	N52	N48		Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Antenna Dead	None		14	
2	Antenna Wind 0	None		28	
3	Antenna Wind 30	None		28	
4	Antenna Wind 45	None		28	
5	Antenna Wind 60	None		28	
6	Antenna Wind 90	None		28	
7	Antenna Wind 120	None		28	
8	Antenna Wind 135	None		28	
9	Antenna Wind 150	None		28	
10	Antenna Wind 180	None		28	
11	Antenna Wind 210	None		28	
12	Antenna Wind 225	None		28	
13	Antenna Wind 240	None		28	
14	Antenna Wind 270	None		28	
15	Antenna Wind 300	None		28	
16	Antenna Wind 315	None		28	
17	Antenna Wind 330	None		28	
18	Antenna Ice Dead	None		14	
19	Antenna Wind w/Ice 0	None		28	
20	Antenna Wind w/Ice 30	None		28	
21	Antenna Wind w/Ice 45	None		28	
22	Antenna Wind w/Ice 60	None		28	
23	Antenna Wind w/Ice 90	None		28	
24	Antenna Wind w/Ice 120	None		28	
25	Antenna Wind w/Ice 135	None		28	
26	Antenna Wind w/Ice 150	None		28	
27	Antenna Wind w/Ice 180	None		28	
28	Antenna Wind w/Ice 210	None		28	
29	Antenna Wind w/Ice 225	None		28	
30	Antenna Wind w/Ice 240	None		28	
31	Antenna Wind w/Ice 270	None		28	
32	Antenna Wind w/Ice 300	None		28	
33	Antenna Wind w/Ice 315	None		28	
34	Antenna Wind w/Ice 330	None		28	
35	Member Dead	None	-1		
36	Member Wind 0	None			42
37	Member Wind 30	None			42
38	Member Wind 45	None			42
39	Member Wind 60	None			42
40	Member Wind 90	None			42
41	Member Wind 120	None			42
42	Member Wind 135	None			42
43	Member Wind 150	None			42
44	Member Wind 180	None			42
45	Member Wind 210	None			42
46	Member Wind 225	None			42
47	Member Wind 240	None			42
48	Member Wind 270	None			42
49	Member Wind 300	None			42
50	Member Wind 315	None			42
51	Member Wind 330	None			42
52	Member Ice Dead	None			21
53	Member Wind w/Ice 0	None			42
54	Member Wind w/Ice 30	None			42
55	Member Wind w/Ice 45	None			42

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
56	Member Wind w/Ice 60	None			42
57	Member Wind w/Ice 90	None			42
58	Member Wind w/Ice 120	None			42
59	Member Wind w/Ice 135	None			42
60	Member Wind w/Ice 150	None			42
61	Member Wind w/Ice 180	None			42
62	Member Wind w/Ice 210	None			42
63	Member Wind w/Ice 225	None			42
64	Member Wind w/Ice 240	None			42
65	Member Wind w/Ice 270	None			42
66	Member Wind w/Ice 300	None			42
67	Member Wind w/Ice 315	None			42
68	Member Wind w/Ice 330	None			42
69	LV-1	None		1	
70	LV-2	None		1	
71	LV-3	None		1	
72	LV-4	None		1	
73	LV-5	None		1	
74	LV-6	None		1	
75	LV-7	None			
76	LV-8	None			
77	LV-9	None			
78	LV-10	None			
79	LV-11	None			
80	LV-12	None			
81	LV-13	None			
82	LV-14	None			
83	LV-15	None			
84	LM-1	None		1	
85	LM-2	None		1	
86	LM-3	None		1	
87	LM-4	None		1	
88	LM-5	None			
89	LM-6	None			
90	LM-7	None			
91	LM-8	None			
92	LM-9	None			
93	LM-10	None			
94	LM-11	None			
95	LM-12	None			
96	LM-13	None			
97	LM-14	None			
98	LM-15	None			

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	1	1.4	35	1.4								
2	0.9D + 1.6 (0-Wind)	Yes	Y	1	0.9	35	0.9	2	1.6	36	1.6				
3	0.9D + 1.6 (30-Wind)	Yes	Y	1	0.9	35	0.9	3	1.6	37	1.6				
4	0.9D + 1.6 (45-Wind)	Yes	Y	1	0.9	35	0.9	4	1.6	38	1.6				
5	0.9D + 1.6 (60-Wind)	Yes	Y	1	0.9	35	0.9	5	1.6	39	1.6				
6	0.9D + 1.6 (90-Wind)	Yes	Y	1	0.9	35	0.9	6	1.6	40	1.6				
7	0.9D + 1.6 (120-Wind)	Yes	Y	1	0.9	35	0.9	7	1.6	41	1.6				
8	0.9D + 1.6 (135-Wind)	Yes	Y	1	0.9	35	0.9	8	1.6	42	1.6				
9	0.9D + 1.6 (150-Wind)	Yes	Y	1	0.9	35	0.9	9	1.6	43	1.6				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
10	0.9D + 1.6 (180-Wind)	Yes	Y	1	0.9	35	0.9	10	1.6	44	1.6				
11	0.9D + 1.6 (210-Wind)	Yes	Y	1	0.9	35	0.9	11	1.6	45	1.6				
12	0.9D + 1.6 (225-Wind)	Yes	Y	1	0.9	35	0.9	12	1.6	46	1.6				
13	0.9D + 1.6 (240-Wind)	Yes	Y	1	0.9	35	0.9	13	1.6	47	1.6				
14	0.9D + 1.6 (270-Wind)	Yes	Y	1	0.9	35	0.9	14	1.6	48	1.6				
15	0.9D + 1.6 (300-Wind)	Yes	Y	1	0.9	35	0.9	15	1.6	49	1.6				
16	0.9D + 1.6 (315-Wind)	Yes	Y	1	0.9	35	0.9	16	1.6	50	1.6				
17	0.9D + 1.6 (330-Wind)	Yes	Y	1	0.9	35	0.9	17	1.6	51	1.6				
18	1.2D + 1.6 (0-Wind)	Yes	Y	1	1.2	35	1.2	2	1.6	36	1.6				
19	1.2D + 1.6 (30-Wind)	Yes	Y	1	1.2	35	1.2	3	1.6	37	1.6				
20	1.2D + 1.6 (45-Wind)	Yes	Y	1	1.2	35	1.2	4	1.6	38	1.6				
21	1.2D + 1.6 (60-Wind)	Yes	Y	1	1.2	35	1.2	5	1.6	39	1.6				
22	1.2D + 1.6 (90-Wind)	Yes	Y	1	1.2	35	1.2	6	1.6	40	1.6				
23	1.2D + 1.6 (120-Wind)	Yes	Y	1	1.2	35	1.2	7	1.6	41	1.6				
24	1.2D + 1.6 (135-Wind)	Yes	Y	1	1.2	35	1.2	8	1.6	42	1.6				
25	1.2D + 1.6 (150-Wind)	Yes	Y	1	1.2	35	1.2	9	1.6	43	1.6				
26	1.2D + 1.6 (180-Wind)	Yes	Y	1	1.2	35	1.2	10	1.6	44	1.6				
27	1.2D + 1.6 (210-Wind)	Yes	Y	1	1.2	35	1.2	11	1.6	45	1.6				
28	1.2D + 1.6 (225-Wind)	Yes	Y	1	1.2	35	1.2	12	1.6	46	1.6				
29	1.2D + 1.6 (240-Wind)	Yes	Y	1	1.2	35	1.2	13	1.6	47	1.6				
30	1.2D + 1.6 (270-Wind)	Yes	Y	1	1.2	35	1.2	14	1.6	48	1.6				
31	1.2D + 1.6 (300-Wind)	Yes	Y	1	1.2	35	1.2	15	1.6	49	1.6				
32	1.2D + 1.6 (315-Wind)	Yes	Y	1	1.2	35	1.2	16	1.6	50	1.6				
33	1.2D + 1.6 (330-Wind)	Yes	Y	1	1.2	35	1.2	17	1.6	51	1.6				
34	1.2D + 1.0Di + 1.0 (0-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	19	1	53	1
35	1.2D + 1.0Di + 1.0 (30-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	20	1	54	1
36	1.2D + 1.0Di + 1.0 (45-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	21	1	55	1
37	1.2D + 1.0Di + 1.0 (60-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	22	1	56	1
38	1.2D + 1.0Di + 1.0 (90-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	23	1	57	1
39	1.2D + 1.0Di + 1.0 (120-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	24	1	58	1
40	1.2D + 1.0Di + 1.0 (135-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	25	1	59	1
41	1.2D + 1.0Di + 1.0 (150-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	26	1	60	1
42	1.2D + 1.0Di + 1.0 (180-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	27	1	61	1
43	1.2D + 1.0Di + 1.0 (210-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	28	1	62	1
44	1.2D + 1.0Di + 1.0 (225-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	29	1	63	1
45	1.2D + 1.0Di + 1.0 (240-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	30	1	64	1
46	1.2D + 1.0Di + 1.0 (270-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	31	1	65	1
47	1.2D + 1.0Di + 1.0 (300-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	32	1	66	1
48	1.2D + 1.0Di + 1.0 (315-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	33	1	67	1
49	1.2D + 1.0Di + 1.0 (330-Wind Ice)	Yes	Y	1	1.2	35	1.2	18	1	52	1	34	1	68	1
50	1.2D + 1.5LV-1	Yes	Y	1	1.2	35	1.2	69	1.5						
51	1.2D + 1.5LV-2	Yes	Y	1	1.2	35	1.2	70	1.5						
52	1.2D + 1.5LV-3	Yes	Y	1	1.2	35	1.2	71	1.5						
53	1.2D + 1.5LV-4	Yes	Y	1	1.2	35	1.2	72	1.5						
54	1.2D + 1.5LV-5	Yes	Y	1	1.2	35	1.2	73	1.5						
55	1.2D + 1.5LV-6	Yes	Y	1	1.2	35	1.2	74	1.5						
56	1.2D + 1.5LV-7	Yes	Y	1	1.2	35	1.2	75	1.5						
57	1.2D + 1.5LV-8	Yes	Y	1	1.2	35	1.2	76	1.5						
58	1.2D + 1.5LV-9	Yes	Y	1	1.2	35	1.2	77	1.5						
59	1.2D + 1.5LV-10	Yes	Y	1	1.2	35	1.2	78	1.5						
60	1.2D + 1.5LV-11	Yes	Y	1	1.2	35	1.2	79	1.5						
61	1.2D + 1.5LV-12	Yes	Y	1	1.2	35	1.2	80	1.5						
62	1.2D + 1.5LV-13	Yes	Y	1	1.2	35	1.2	81	1.5						
63	1.2D + 1.5LV-14	Yes	Y	1	1.2	35	1.2	82	1.5						
64	1.2D + 1.5LV-15	Yes	Y	1	1.2	35	1.2	83	1.5						

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
65	1.2D + 1.5LM-1 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	2	0.096	36	0.096		
66	1.2D + 1.5LM-1 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	3	0.096	37	0.096		
67	1.2D + 1.5LM-1 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	4	0.096	38	0.096		
68	1.2D + 1.5LM-1 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	5	0.096	39	0.096		
69	1.2D + 1.5LM-1 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	6	0.096	40	0.096		
70	1.2D + 1.5LM-1 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	7	0.096	41	0.096		
71	1.2D + 1.5LM-1 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	8	0.096	42	0.096		
72	1.2D + 1.5LM-1 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	9	0.096	43	0.096		
73	1.2D + 1.5LM-1 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	10	0.096	44	0.096		
74	1.2D + 1.5LM-1 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	11	0.096	45	0.096		
75	1.2D + 1.5LM-1 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	12	0.096	46	0.096		
76	1.2D + 1.5LM-1 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	13	0.096	47	0.096		
77	1.2D + 1.5LM-1 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	14	0.096	48	0.096		
78	1.2D + 1.5LM-1 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	15	0.096	49	0.096		
79	1.2D + 1.5LM-1 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	16	0.096	50	0.096		
80	1.2D + 1.5LM-1 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	84	1.5	17	0.096	51	0.096		
81	1.2D + 1.5LM-2 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	2	0.096	36	0.096		
82	1.2D + 1.5LM-2 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	3	0.096	37	0.096		
83	1.2D + 1.5LM-2 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	4	0.096	38	0.096		
84	1.2D + 1.5LM-2 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	5	0.096	39	0.096		
85	1.2D + 1.5LM-2 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	6	0.096	40	0.096		
86	1.2D + 1.5LM-2 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	7	0.096	41	0.096		
87	1.2D + 1.5LM-2 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	8	0.096	42	0.096		
88	1.2D + 1.5LM-2 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	9	0.096	43	0.096		
89	1.2D + 1.5LM-2 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	10	0.096	44	0.096		
90	1.2D + 1.5LM-2 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	11	0.096	45	0.096		
91	1.2D + 1.5LM-2 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	12	0.096	46	0.096		
92	1.2D + 1.5LM-2 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	13	0.096	47	0.096		
93	1.2D + 1.5LM-2 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	14	0.096	48	0.096		
94	1.2D + 1.5LM-2 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	15	0.096	49	0.096		
95	1.2D + 1.5LM-2 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	16	0.096	50	0.096		
96	1.2D + 1.5LM-2 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	85	1.5	17	0.096	51	0.096		
97	1.2D + 1.5LM-3 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	2	0.096	36	0.096		
98	1.2D + 1.5LM-3 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	3	0.096	37	0.096		
99	1.2D + 1.5LM-3 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	4	0.096	38	0.096		
100	1.2D + 1.5LM-3 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	5	0.096	39	0.096		
101	1.2D + 1.5LM-3 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	6	0.096	40	0.096		
102	1.2D + 1.5LM-3 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	7	0.096	41	0.096		
103	1.2D + 1.5LM-3 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	8	0.096	42	0.096		
104	1.2D + 1.5LM-3 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	9	0.096	43	0.096		
105	1.2D + 1.5LM-3 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	10	0.096	44	0.096		
106	1.2D + 1.5LM-3 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	11	0.096	45	0.096		
107	1.2D + 1.5LM-3 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	12	0.096	46	0.096		
108	1.2D + 1.5LM-3 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	13	0.096	47	0.096		
109	1.2D + 1.5LM-3 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	14	0.096	48	0.096		
110	1.2D + 1.5LM-3 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	15	0.096	49	0.096		
111	1.2D + 1.5LM-3 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	16	0.096	50	0.096		
112	1.2D + 1.5LM-3 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	86	1.5	17	0.096	51	0.096		
113	1.2D + 1.5LM-4 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	2	0.096	36	0.096		
114	1.2D + 1.5LM-4 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	3	0.096	37	0.096		
115	1.2D + 1.5LM-4 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	4	0.096	38	0.096		
116	1.2D + 1.5LM-4 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	5	0.096	39	0.096		
117	1.2D + 1.5LM-4 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	6	0.096	40	0.096		
118	1.2D + 1.5LM-4 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	7	0.096	41	0.096		
119	1.2D + 1.5LM-4 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	8	0.096	42	0.096		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
120	1.2D + 1.5LM-4 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	9	0.096	43	0.096		
121	1.2D + 1.5LM-4 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	10	0.096	44	0.096		
122	1.2D + 1.5LM-4 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	11	0.096	45	0.096		
123	1.2D + 1.5LM-4 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	12	0.096	46	0.096		
124	1.2D + 1.5LM-4 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	13	0.096	47	0.096		
125	1.2D + 1.5LM-4 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	14	0.096	48	0.096		
126	1.2D + 1.5LM-4 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	15	0.096	49	0.096		
127	1.2D + 1.5LM-4 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	16	0.096	50	0.096		
128	1.2D + 1.5LM-4 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	87	1.5	17	0.096	51	0.096		
129	1.2D + 1.5LM-5 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	2	0.096	36	0.096		
130	1.2D + 1.5LM-5 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	3	0.096	37	0.096		
131	1.2D + 1.5LM-5 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	4	0.096	38	0.096		
132	1.2D + 1.5LM-5 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	5	0.096	39	0.096		
133	1.2D + 1.5LM-5 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	6	0.096	40	0.096		
134	1.2D + 1.5LM-5 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	7	0.096	41	0.096		
135	1.2D + 1.5LM-5 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	8	0.096	42	0.096		
136	1.2D + 1.5LM-5 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	9	0.096	43	0.096		
137	1.2D + 1.5LM-5 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	10	0.096	44	0.096		
138	1.2D + 1.5LM-5 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	11	0.096	45	0.096		
139	1.2D + 1.5LM-5 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	12	0.096	46	0.096		
140	1.2D + 1.5LM-5 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	13	0.096	47	0.096		
141	1.2D + 1.5LM-5 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	14	0.096	48	0.096		
142	1.2D + 1.5LM-5 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	15	0.096	49	0.096		
143	1.2D + 1.5LM-5 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	16	0.096	50	0.096		
144	1.2D + 1.5LM-5 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	88	1.5	17	0.096	51	0.096		
145	1.2D + 1.5LM-6 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	2	0.096	36	0.096		
146	1.2D + 1.5LM-6 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	3	0.096	37	0.096		
147	1.2D + 1.5LM-6 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	4	0.096	38	0.096		
148	1.2D + 1.5LM-6 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	5	0.096	39	0.096		
149	1.2D + 1.5LM-6 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	6	0.096	40	0.096		
150	1.2D + 1.5LM-6 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	7	0.096	41	0.096		
151	1.2D + 1.5LM-6 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	8	0.096	42	0.096		
152	1.2D + 1.5LM-6 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	9	0.096	43	0.096		
153	1.2D + 1.5LM-6 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	10	0.096	44	0.096		
154	1.2D + 1.5LM-6 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	11	0.096	45	0.096		
155	1.2D + 1.5LM-6 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	12	0.096	46	0.096		
156	1.2D + 1.5LM-6 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	13	0.096	47	0.096		
157	1.2D + 1.5LM-6 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	14	0.096	48	0.096		
158	1.2D + 1.5LM-6 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	15	0.096	49	0.096		
159	1.2D + 1.5LM-6 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	16	0.096	50	0.096		
160	1.2D + 1.5LM-6 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	89	1.5	17	0.096	51	0.096		
161	1.2D + 1.5LM-7 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	2	0.096	36	0.096		
162	1.2D + 1.5LM-7 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	3	0.096	37	0.096		
163	1.2D + 1.5LM-7 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	4	0.096	38	0.096		
164	1.2D + 1.5LM-7 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	5	0.096	39	0.096		
165	1.2D + 1.5LM-7 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	6	0.096	40	0.096		
166	1.2D + 1.5LM-7 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	7	0.096	41	0.096		
167	1.2D + 1.5LM-7 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	8	0.096	42	0.096		
168	1.2D + 1.5LM-7 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	9	0.096	43	0.096		
169	1.2D + 1.5LM-7 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	10	0.096	44	0.096		
170	1.2D + 1.5LM-7 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	11	0.096	45	0.096		
171	1.2D + 1.5LM-7 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	12	0.096	46	0.096		
172	1.2D + 1.5LM-7 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	13	0.096	47	0.096		
173	1.2D + 1.5LM-7 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	14	0.096	48	0.096		
174	1.2D + 1.5LM-7 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	15	0.096	49	0.096		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
175	1.2D + 1.5LM-7 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	16	0.096	50	0.096		
176	1.2D + 1.5LM-7 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	90	1.5	17	0.096	51	0.096		
177	1.2D + 1.5LM-8 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	2	0.096	36	0.096		
178	1.2D + 1.5LM-8 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	3	0.096	37	0.096		
179	1.2D + 1.5LM-8 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	4	0.096	38	0.096		
180	1.2D + 1.5LM-8 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	5	0.096	39	0.096		
181	1.2D + 1.5LM-8 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	6	0.096	40	0.096		
182	1.2D + 1.5LM-8 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	7	0.096	41	0.096		
183	1.2D + 1.5LM-8 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	8	0.096	42	0.096		
184	1.2D + 1.5LM-8 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	9	0.096	43	0.096		
185	1.2D + 1.5LM-8 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	10	0.096	44	0.096		
186	1.2D + 1.5LM-8 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	11	0.096	45	0.096		
187	1.2D + 1.5LM-8 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	12	0.096	46	0.096		
188	1.2D + 1.5LM-8 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	13	0.096	47	0.096		
189	1.2D + 1.5LM-8 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	14	0.096	48	0.096		
190	1.2D + 1.5LM-8 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	15	0.096	49	0.096		
191	1.2D + 1.5LM-8 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	16	0.096	50	0.096		
192	1.2D + 1.5LM-8 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	91	1.5	17	0.096	51	0.096		
193	1.2D + 1.5LM-9 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	2	0.096	36	0.096		
194	1.2D + 1.5LM-9 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	3	0.096	37	0.096		
195	1.2D + 1.5LM-9 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	4	0.096	38	0.096		
196	1.2D + 1.5LM-9 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	5	0.096	39	0.096		
197	1.2D + 1.5LM-9 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	6	0.096	40	0.096		
198	1.2D + 1.5LM-9 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	7	0.096	41	0.096		
199	1.2D + 1.5LM-9 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	8	0.096	42	0.096		
200	1.2D + 1.5LM-9 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	9	0.096	43	0.096		
201	1.2D + 1.5LM-9 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	10	0.096	44	0.096		
202	1.2D + 1.5LM-9 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	11	0.096	45	0.096		
203	1.2D + 1.5LM-9 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	12	0.096	46	0.096		
204	1.2D + 1.5LM-9 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	13	0.096	47	0.096		
205	1.2D + 1.5LM-9 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	14	0.096	48	0.096		
206	1.2D + 1.5LM-9 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	15	0.096	49	0.096		
207	1.2D + 1.5LM-9 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	16	0.096	50	0.096		
208	1.2D + 1.5LM-9 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	92	1.5	17	0.096	51	0.096		
209	1.2D + 1.5LM-10 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	2	0.096	36	0.096		
210	1.2D + 1.5LM-10 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	3	0.096	37	0.096		
211	1.2D + 1.5LM-10 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	4	0.096	38	0.096		
212	1.2D + 1.5LM-10 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	5	0.096	39	0.096		
213	1.2D + 1.5LM-10 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	6	0.096	40	0.096		
214	1.2D + 1.5LM-10 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	7	0.096	41	0.096		
215	1.2D + 1.5LM-10 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	8	0.096	42	0.096		
216	1.2D + 1.5LM-10 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	9	0.096	43	0.096		
217	1.2D + 1.5LM-10 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	10	0.096	44	0.096		
218	1.2D + 1.5LM-10 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	11	0.096	45	0.096		
219	1.2D + 1.5LM-10 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	12	0.096	46	0.096		
220	1.2D + 1.5LM-10 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	13	0.096	47	0.096		
221	1.2D + 1.5LM-10 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	14	0.096	48	0.096		
222	1.2D + 1.5LM-10 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	15	0.096	49	0.096		
223	1.2D + 1.5LM-10 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	16	0.096	50	0.096		
224	1.2D + 1.5LM-10 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	93	1.5	17	0.096	51	0.096		
225	1.2D + 1.5LM-11 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	2	0.096	36	0.096		
226	1.2D + 1.5LM-11 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	3	0.096	37	0.096		
227	1.2D + 1.5LM-11 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	4	0.096	38	0.096		
228	1.2D + 1.5LM-11 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	5	0.096	39	0.096		
229	1.2D + 1.5LM-11 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	6	0.096	40	0.096		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
230	1.2D + 1.5LM-11 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	7	0.096	41	0.096		
231	1.2D + 1.5LM-11 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	8	0.096	42	0.096		
232	1.2D + 1.5LM-11 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	9	0.096	43	0.096		
233	1.2D + 1.5LM-11 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	10	0.096	44	0.096		
234	1.2D + 1.5LM-11 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	11	0.096	45	0.096		
235	1.2D + 1.5LM-11 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	12	0.096	46	0.096		
236	1.2D + 1.5LM-11 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	13	0.096	47	0.096		
237	1.2D + 1.5LM-11 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	14	0.096	48	0.096		
238	1.2D + 1.5LM-11 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	15	0.096	49	0.096		
239	1.2D + 1.5LM-11 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	16	0.096	50	0.096		
240	1.2D + 1.5LM-11 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	94	1.5	17	0.096	51	0.096		
241	1.2D + 1.5LM-12 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	2	0.096	36	0.096		
242	1.2D + 1.5LM-12 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	3	0.096	37	0.096		
243	1.2D + 1.5LM-12 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	4	0.096	38	0.096		
244	1.2D + 1.5LM-12 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	5	0.096	39	0.096		
245	1.2D + 1.5LM-12 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	6	0.096	40	0.096		
246	1.2D + 1.5LM-12 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	7	0.096	41	0.096		
247	1.2D + 1.5LM-12 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	8	0.096	42	0.096		
248	1.2D + 1.5LM-12 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	9	0.096	43	0.096		
249	1.2D + 1.5LM-12 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	10	0.096	44	0.096		
250	1.2D + 1.5LM-12 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	11	0.096	45	0.096		
251	1.2D + 1.5LM-12 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	12	0.096	46	0.096		
252	1.2D + 1.5LM-12 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	13	0.096	47	0.096		
253	1.2D + 1.5LM-12 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	14	0.096	48	0.096		
254	1.2D + 1.5LM-12 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	15	0.096	49	0.096		
255	1.2D + 1.5LM-12 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	16	0.096	50	0.096		
256	1.2D + 1.5LM-12 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	95	1.5	17	0.096	51	0.096		
257	1.2D + 1.5LM-13 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	2	0.096	36	0.096		
258	1.2D + 1.5LM-13 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	3	0.096	37	0.096		
259	1.2D + 1.5LM-13 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	4	0.096	38	0.096		
260	1.2D + 1.5LM-13 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	5	0.096	39	0.096		
261	1.2D + 1.5LM-13 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	6	0.096	40	0.096		
262	1.2D + 1.5LM-13 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	7	0.096	41	0.096		
263	1.2D + 1.5LM-13 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	8	0.096	42	0.096		
264	1.2D + 1.5LM-13 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	9	0.096	43	0.096		
265	1.2D + 1.5LM-13 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	10	0.096	44	0.096		
266	1.2D + 1.5LM-13 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	11	0.096	45	0.096		
267	1.2D + 1.5LM-13 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	12	0.096	46	0.096		
268	1.2D + 1.5LM-13 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	13	0.096	47	0.096		
269	1.2D + 1.5LM-13 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	14	0.096	48	0.096		
270	1.2D + 1.5LM-13 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	15	0.096	49	0.096		
271	1.2D + 1.5LM-13 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	16	0.096	50	0.096		
272	1.2D + 1.5LM-13 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	96	1.5	17	0.096	51	0.096		
273	1.2D + 1.5LM-14 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	2	0.096	36	0.096		
274	1.2D + 1.5LM-14 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	3	0.096	37	0.096		
275	1.2D + 1.5LM-14 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	4	0.096	38	0.096		
276	1.2D + 1.5LM-14 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	5	0.096	39	0.096		
277	1.2D + 1.5LM-14 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	6	0.096	40	0.096		
278	1.2D + 1.5LM-14 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	7	0.096	41	0.096		
279	1.2D + 1.5LM-14 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	8	0.096	42	0.096		
280	1.2D + 1.5LM-14 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	9	0.096	43	0.096		
281	1.2D + 1.5LM-14 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	10	0.096	44	0.096		
282	1.2D + 1.5LM-14 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	11	0.096	45	0.096		
283	1.2D + 1.5LM-14 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	12	0.096	46	0.096		
284	1.2D + 1.5LM-14 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	13	0.096	47	0.096		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
285	1.2D + 1.5LM-14 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	14	0.096	48	0.096		
286	1.2D + 1.5LM-14 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	15	0.096	49	0.096		
287	1.2D + 1.5LM-14 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	16	0.096	50	0.096		
288	1.2D + 1.5LM-14 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	97	1.5	17	0.096	51	0.096		
289	1.2D + 1.5LM-15 + Maintenance (0-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	2	0.096	36	0.096		
290	1.2D + 1.5LM-15 + Maintenance (30-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	3	0.096	37	0.096		
291	1.2D + 1.5LM-15 + Maintenance (45-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	4	0.096	38	0.096		
292	1.2D + 1.5LM-15 + Maintenance (60-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	5	0.096	39	0.096		
293	1.2D + 1.5LM-15 + Maintenance (90-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	6	0.096	40	0.096		
294	1.2D + 1.5LM-15 + Maintenance (120-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	7	0.096	41	0.096		
295	1.2D + 1.5LM-15 + Maintenance (135-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	8	0.096	42	0.096		
296	1.2D + 1.5LM-15 + Maintenance (150-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	9	0.096	43	0.096		
297	1.2D + 1.5LM-15 + Maintenance (180-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	10	0.096	44	0.096		
298	1.2D + 1.5LM-15 + Maintenance (210-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	11	0.096	45	0.096		
299	1.2D + 1.5LM-15 + Maintenance (225-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	12	0.096	46	0.096		
300	1.2D + 1.5LM-15 + Maintenance (240-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	13	0.096	47	0.096		
301	1.2D + 1.5LM-15 + Maintenance (270-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	14	0.096	48	0.096		
302	1.2D + 1.5LM-15 + Maintenance (300-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	15	0.096	49	0.096		
303	1.2D + 1.5LM-15 + Maintenance (315-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	16	0.096	50	0.096		
304	1.2D + 1.5LM-15 + Maintenance (330-Wind)	Yes	Y	1	1.2	35	1.2	98	1.5	17	0.096	51	0.096		

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N14	max	1276.097	31	2139.843	40	477.708	4	0	304	0	304	0	304
2		min	-1225.544	70	395.754	16	-3660.996	44	0	1	0	1	0	1
3	N31	max	1227.197	77	2096.352	47	3669.821	36	0	304	0	304	0	304
4		min	-1285.757	22	391.856	8	-515.858	12	0	1	0	1	0	1
5	N64	max	277.692	24	91.654	39	985.987	32	0	304	0	4	0	304
6		min	-256.997	16	16.502	16	-901.115	8	0	1	0	28	0	1
7	N65	max	250.221	8	92.905	39	882.502	16	0	304	0	4	0	304
8		min	-273.443	32	16.287	16	-970.792	24	0	1	0	28	0	1
9	Totals:	max	1610.069	14	4398.972	47	2303.804	18						
10		min	-1610.069	6	912.429	12	-2303.803	10						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	TH	PIPE_2.5	0.363	8.712	27	0.085	3.788	18	14558.792	50715	3596.25	3596.25	1.685	H1-1b
2	BH	PIPE_2.5	0.36	8.712	19	0.087	3.788	26	14558.792	50715	3596.25	3596.25	1.689	H1-1b
3	SA4	PIPE_2.0	0.58	2.343	37	0.164	2.577	48	29670.214	32130	1871.625	1871.625	1.989	H1-1b
4	SA1	PIPE_2.0	0.408	0.26	39	0.127	2.577	39	29670.214	32130	1871.625	1871.625	1.981	H1-1b
5	SA3	PIPE_2.0	0.41	0.26	47	0.127	2.577	48	29670.214	32130	1871.625	1871.625	1.981	H1-1b
6	V4	5/8" SR	0.033	1.683	25	0.015	3.333	76	2503.582	9940.19	103.542	103.542	1.14	H1-1b
7	V3	5/8" SR	0.052	1.683	13	0.002	3.333	68	2503.582	9940.19	103.542	103.542	1.14	H1-1b
8	V1	5/8" SR	0.053	1.683	24	0.014	3.333	77	2503.582	9940.19	103.542	103.542	1.14	H1-1b
9	V2	5/8" SR	0.044	1.683	12	0.001	3.333	68	2503.582	9940.19	103.542	103.542	1.14	H1-1b
10	D3	3/4" SR	0.706	1.944	40	0.027	1.944	46	3739.506	14313.866	178.929	178.929	1.361	H1-1a
11	D4	3/4" SR	0.176	0	45	0.028	1.983	38	3739.506	14313.866	178.929	178.929	1.363	H1-1b*
12	D1	3/4" SR	0.128	0	42	0.031	1.944	38	3739.506	14313.866	178.929	178.929	1.327	H1-1b*
13	D2	3/4" SR	0.528	1.983	36	0.031	1.983	47	3739.506	14313.866	178.929	178.929	1.327	H1-1a
14	MP4	PIPE_2.0	0.441	2.343	38	0.059	2.343	38	14916.096	32130	1871.625	1871.625	3	H1-1b
15	MP3	PIPE_2.0	0.204	2.343	18	0.014	5.657	45	14916.096	32130	1871.625	1871.625	3	H1-1b
16	MP2	PIPE_2.0	0.348	5.737	26	0.033	7.677	26	14916.096	32130	1871.625	1871.625	3	H1-1b
17	MP1	PIPE_2.0	0.381	2.343	77	0.044	2.343	76	14916.096	32130	1871.625	1871.625	3	H1-1b

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
18	SA2	PIPE_2.0	0.574	2.343	46	0.163	2.577	37	29670.214	32130	1871.625	1871.625	1.989	H1-1b
19	TB1	PIPE_2.0	0.035	0	32	0.092	3.101	35	28631.858	32130	1871.625	1871.625	1.14	H1-1b*
20	M32	PIPE_2.0	0.144	5.414	32	0.104	5.495	32	14916.096	32130	1871.625	1871.625	2.081	H1-1b
21	TB2	PIPE_2.0	0.032	3.101	16	0.092	3.101	43	28631.858	32130	1871.625	1871.625	1.14	H1-1b*

Job	Hartford Park St (CTL01199)
Project	51607
By	GN
Date	3/9/22

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V :	97	mph	Basic Wind Speed (Annex B)
z :	83	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	0.94		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	21.4	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
QD8616-7	96.0	22.0	4.4	Flat	1.283	14.67	402.0	
Air 6449 B77D	30.6	15.9	1.9	Flat	1.200	3.37	86.5	
Air 6419 N77G	31.1	16.1	1.9	Flat	1.200	3.48	89.1	
DMP65R-BU8D	96.0	20.7	4.6	Flat	1.295	13.80	381.8	
RRUS 4478 B14	16.5	13.4	1.2	Flat	1.200	1.54	39.4	
RRUS 8843 B2 B66A	15.0	13.2	1.1	Flat	1.200	1.37	35.1	
RRUS 4449 B5/B12	17.9	13.2	1.4	Flat	1.200	1.64	42.0	
RRUS-32 B30	27.2	12.1	2.2	Flat	1.200	2.29	58.6	
RRUS E2 B29	20.4	18.5	1.1	Flat	1.200	2.62	67.2	
DC9-48-60-24-8C-EV	31.4	10.2	3.1	Flat	1.225	2.23	58.5	
Pipe2-1/2STD x 12.5 ft	150.0	2.9	52.2	Round	1.200	2.99	76.8	6.1
Pipe2STD x 8 ft	96.0	2.4	40.4	Round	1.200	1.58	40.6	5.1
Pipe2STD x 8.5 ft	102.0	2.4	42.9	Round	1.200	1.68	43.1	5.1
Pipe2STD x 2.577 ft	30.9	2.4	13.0	Round	0.934	0.51	10.2	3.9
SR 3/4 x 3.927 ft	47.1	0.8	62.8	Round	1.200	0.25	6.3	1.6
SR 5/8 x 3.333 ft	40.0	0.6	64.0	Round	1.200	0.17	4.5	1.3
Pipe2STD x 5.323 ft	63.9	2.4	26.9	Round	1.200	1.05	27.0	5.1

RAMAKER employee-owned

Job	Hartford Park St (CTL01199)
Project	51607
By	GN
Date	3/9/22

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V :	97	mph	Basic Wind Speed (Annex B)
z :	83	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	0.94		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	21.4	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
QD8616-7	96.0	9.6	10.0	Flat	1.500	6.40	205.1	
Air 6449 B77D	30.6	10.6	2.9	Flat	1.218	2.24	58.4	
Air 6419 N77G	31.1	7.3	4.3	Flat	1.278	1.58	43.1	
DMP65R-BU8D	96.0	7.7	12.5	Flat	1.582	5.13	173.5	
RRUS 4478 B14	16.5	7.7	2.1	Flat	1.200	0.88	22.6	
RRUS 8843 B2 B66A	15.0	9.3	1.6	Flat	1.200	0.96	24.6	
RRUS 4449 B5/B12	17.9	9.4	1.9	Flat	1.200	1.17	30.1	
RRUS-32 B30	27.2	7.0	3.9	Flat	1.262	1.32	35.6	
RRUS E2 B29	20.4	7.5	2.7	Flat	1.210	1.06	27.5	
DC9-48-60-24-8C-EV	31.4	18.3	1.7	Flat	1.200	3.99	102.2	
Pipe2-1/2STD x 12.5 ft	150.0	2.9	52.2	Round	1.200	2.99	76.8	6.1
Pipe2STD x 8 ft	96.0	2.4	40.4	Round	1.200	1.58	40.6	5.1
Pipe2STD x 8.5 ft	102.0	2.4	42.9	Round	1.200	1.68	43.1	5.1
Pipe2STD x 2.577 ft	30.9	2.4	13.0	Round	0.934	0.51	10.2	3.9
SR 3/4 x 3.927 ft	47.1	0.8	62.8	Round	1.200	0.25	6.3	1.6
SR 5/8 x 3.333 ft	40.0	0.6	64.0	Round	1.200	0.17	4.5	1.3
Pipe2STD x 5.323 ft	63.9	2.4	26.9	Round	1.200	1.05	27.0	5.1

Job	Hartford Park St (CTL01199)
Project	51607
By	GN
Date	3/9/22

Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	83	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	0.94		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	5.70	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections
t_{iz} :	2.19	in	Design Thickness of Radial Ice at Height z (2.6.8)

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
QD8616-7	100.4	26.4	3.8	Flat	1.258	18.39	131.8	
Air 6449 B77D	35.0	20.3	1.7	Flat	1.200	4.92	33.7	
Air 6419 N77G	35.5	20.5	1.7	Flat	1.200	5.05	34.5	
DMP65R-BU8D	100.4	25.1	4.0	Flat	1.267	17.49	126.2	
RRUS 4478 B14	20.9	17.8	1.2	Flat	1.200	2.58	17.6	
RRUS 8843 B2 B66A	19.3	17.6	1.1	Flat	1.200	2.36	16.1	
RRUS 4449 B5/B12	22.3	17.6	1.3	Flat	1.200	2.72	18.6	
RRUS-32 B30	31.6	16.5	1.9	Flat	1.200	3.62	24.7	
RRUS E2 B29	24.8	22.9	1.1	Flat	1.200	3.94	26.9	
DC9-48-60-24-8C-EV	35.8	14.6	2.4	Flat	1.200	3.64	24.9	
Pipe2-1/2STD x 12.5 ft	154.4	7.3	21.3	Round	1.117	7.79	49.5	3.9
Pipe2STD x 8 ft	100.4	6.8	14.8	Round	0.974	4.71	26.2	3.1
Pipe2STD x 8.5 ft	106.4	6.8	15.7	Round	0.994	5.00	28.3	3.2
Pipe2STD x 2.577 ft	35.3	6.8	5.2	Round	0.760	1.66	7.2	2.4
SR 3/4 x 3.927 ft	51.5	5.1	10.0	Round	0.867	1.84	9.1	2.1
SR 5/8 x 3.333 ft	44.4	5.0	8.9	Round	0.841	1.54	7.4	2.0
Pipe2STD x 5.323 ft	68.3	6.8	10.1	Round	0.869	3.21	15.9	2.8

Job	Hartford Park St (CTL01199)
Project	51607
By	GN
Date	3/9/22

Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	83	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_z :	0.94		Velocity Pressure Coefficient (2.6.5.2)
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
K_d :	0.95		Wind Direction Probability Factor (Table 2-2)
q_z :	5.70	psf	Velocity Pressure at Height z
G_h :	1.00		Strength Design of Appurtenances and their Connections
t_{iz} :	2.19	in	Design Thickness of Radial Ice at Height z (2.6.8)

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_a	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
QD8616-7	100.4	14.0	7.2	Flat	1.406	9.75	78.1	
Air 6449 B77D	35.0	14.9	2.3	Flat	1.200	3.63	24.8	
Air 6419 N77G	35.5	11.7	3.0	Flat	1.224	2.88	20.1	
DMP65R-BU8D	100.4	12.1	8.3	Flat	1.444	8.43	69.3	
RRUS 4478 B14	20.9	12.1	1.7	Flat	1.200	1.75	12.0	
RRUS 8843 B2 B66A	19.3	13.6	1.4	Flat	1.200	1.83	12.5	
RRUS 4449 B5/B12	22.3	13.8	1.6	Flat	1.200	2.14	14.6	
RRUS-32 B30	31.6	11.4	2.8	Flat	1.212	2.50	17.2	
RRUS E2 B29	24.8	11.9	2.1	Flat	1.200	2.05	14.0	
DC9-48-60-24-8C-EV	35.8	22.7	1.6	Flat	1.200	5.63	38.5	
Pipe2-1/2STD x 12.5 ft	154.4	7.3	21.3	Round	1.117	7.79	49.5	3.9
Pipe2STD x 8 ft	100.4	6.8	14.8	Round	0.974	4.71	26.2	3.1
Pipe2STD x 8.5 ft	106.4	6.8	15.7	Round	0.994	5.00	28.3	3.2
Pipe2STD x 2.577 ft	35.3	6.8	5.2	Round	0.760	1.66	7.2	2.4
SR 3/4 x 3.927 ft	51.5	5.1	10.0	Round	0.867	1.84	9.1	2.1
SR 5/8 x 3.333 ft	44.4	5.0	8.9	Round	0.841	1.54	7.4	2.0
Pipe2STD x 5.323 ft	68.3	6.8	10.1	Round	0.869	3.21	15.9	2.8

RAMAKER employee-owned

Job	Hartford Park St (CTL01199)
Project	51607
By	GN
Date	3/9/22

Ice Load on Antennas TIA-222-G

Ice Weight :	56	pcf	Ice Density
t_i :	1.00		Design Ice Thickness
Occupancy :	II		Classification of Structures (Table 2-1)
Exposure :	B		Exposure Category
V_i :	50	mph	Basic Wind Speed (Annex B)
z :	83	ft	Height above ground level to the center of the antenna
I :	1.00		Importance Factor (Table 2-3)
K_{iz} :	1.10		Height Escalation Factor for Ice Thickness
K_{zt} :	1.00		Topographic Factor (2.6.6.4)
t_{iz} :	2.19	in	Design Thickness of Radial Ice at Height z (2.6.8)

Platform Grating :	None	
Ice Load :		psf

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	Depth	Diam.	Area	Perim.	Ice Weight	
	in	*in*	*in*	*in*	*sq in*	*in*	*lb*	*plf*
QD8616-7	100.4	26.4	14.0	24.00	180.50	71.97	561.6	
Air 6449 B77D	35.0	20.3	14.9	19.05	146.40	61.61	145.3	
Air 6419 N77G	35.5	20.5	11.7	17.68	136.92	55.57	138.0	
DMP65R-BU8D	100.4	25.1	12.1	22.09	167.29	65.57	520.5	
RRUS 4478 B14	20.9	17.8	12.1	15.45	121.60	50.97	65.0	
RRUS 8843 B2 B66A	19.3	17.6	13.6	16.11	126.12	53.65	61.1	
RRUS 4449 B5/B12	22.3	17.6	13.8	16.22	126.87	54.03	73.6	
RRUS-32 B30	31.6	16.5	11.4	13.98	111.43	46.97	98.2	
RRUS E2 B29	24.8	22.9	11.9	19.96	152.66	60.77	100.9	
DC9-48-60-24-8C-EV	35.8	14.6	22.7	20.95	159.48	65.81	162.3	
Pipe2-1/2STD x 12.5 ft	154.4	7.3	7.3	2.88	34.92	15.92	169.8	13.6
Pipe2STD x 8 ft	100.4	6.8	6.8	2.38	31.48	14.35	97.9	12.2
Pipe2STD x 8.5 ft	106.4	6.8	6.8	2.38	31.48	14.35	104.0	12.2
Pipe2STD x 2.577 ft	35.3	6.8	6.8	2.38	31.48	14.35	31.5	12.2
SR 3/4 x 3.927 ft	51.5	5.1	5.1	0.75	20.28	9.25	31.0	7.9
SR 5/8 x 3.333 ft	44.4	5.0	5.0	0.63	19.42	8.85	25.2	7.6
Pipe2STD x 5.323 ft	68.3	6.8	6.8	2.38	31.48	14.35	65.2	12.2

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Tuesday, April 19, 2022 4:11 PM
To: Evan Giannakas
Subject: FedEx Shipment 776608420910: Your package has been delivered

Hi. Your package was delivered Tue, 04/19/2022 at 2:27pm.

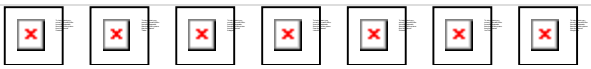
Delivered to 260 CONSTITUTION PLZ, HARTFORD, CT 06103
Received by S.IGNATURE ON FILE

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	776608420910
FROM	Smartlink LLC 85 Rangeway Road, Bldg 3, Suite 102 NORTH BILLERICA, MA, US, 01862
TO	City of Hartford John Collins, Ch. Building Official 260 Constitution Plaza, 1st Floor

	Building Department HARTFORD, CT, US, 06103
REFERENCE	CTL01199 - CSC Filing
SHIPPER REFERENCE	CTL01199 - CSC Filing
SHIP DATE	Mon 4/18/2022 06:11 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	HARTFORD, CT, US, 06103
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver

FOLLOW FEDEX



Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 3:11 PM CDT 04/19/2022.

All weights are estimated.

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

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

Thank you for your business.

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Tuesday, April 19, 2022 4:32 PM
To: Evan Giannakas
Subject: FedEx Shipment 776608375681: Your package has been delivered

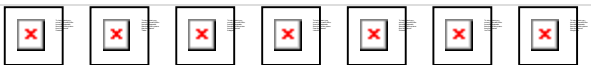
Hi. Your package was delivered Tue, 04/19/2022 at 3:50pm.

Delivered to 550 Main Street, 2nd Floor, HARTFORD, CT 06103
Received by M.ANDERSON

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	776608375681
FROM	Smartlink LLC 85 Rangeway Road, Bldg 3, Suite 102 NORTH BILLERICA, MA, US, 01862
TO	Hartford City Hall Luke Bronin, Mayor 550 Main Street, 2nd Floor

	Room 200 HARTFORD, CT, US, 06103
REFERENCE	CTL01199 - CSC Filing
SHIPPER REFERENCE	CTL01199 - CSC Filing
SHIP DATE	Mon 4/18/2022 06:11 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	HARTFORD, CT, US, 06103
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver



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All weights are estimated.

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

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Thank you for your business.

Evan Giannakas

From: TrackingUpdates@fedex.com
Sent: Tuesday, April 19, 2022 3:36 PM
To: Evan Giannakas
Subject: FedEx Shipment 776608546176: Your package has been delivered

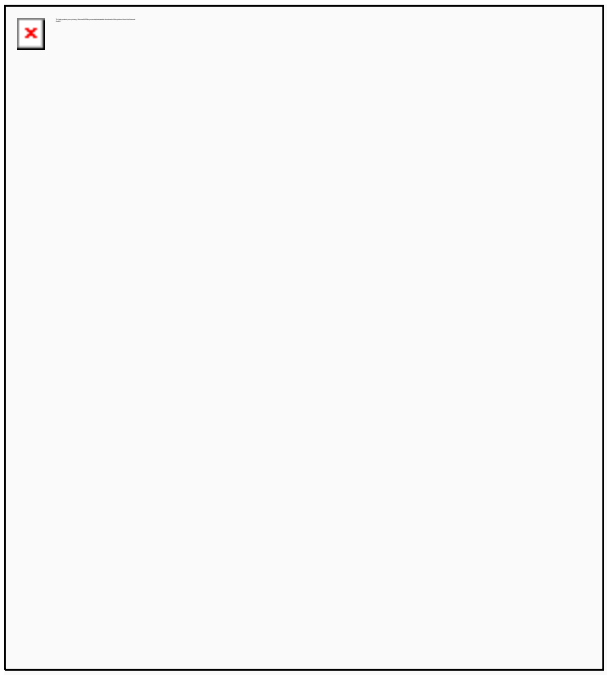
Hi. Your package was delivered Tue, 04/19/2022 at 12:10pm.

Delivered to 2074 PARK ST, HARTFORD, CT 06106

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	776608546176
FROM	Smartlink LLC 85 Rangeway Road, Bldg 3, Suite 102 NORTH BILLERICA, MA, US, 01862
TO	2074 - 2100 Park Street LLC 2074 Park Street, Suite 100 HARTFORD, CT, US, 06106
REFERENCE	CTL01199 - CSC Filing

SHIPPER REFERENCE	CTL01199 - CSC Filing
SHIP DATE	Mon 4/18/2022 06:11 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	HARTFORD, CT, US, 06106
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Express Saver



All weights are estimated.

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

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

Thank you for your business.