



March 29, 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:** 50 Tiffany Street, Brooklyn, CT 06234  
**Applicant:** AT&T Mobility, LLC

Dear Ms. Bachman:

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

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 131-feet on an existing 130-foot Water Tank, owned by DMP PALMER ASSOCIATES LLC at 9 Old Derry Road, Hudson, NH 03051-2535. AT&T now intends to remove three (3) 8' KMW AM-X-CD-17-65-00T-RET Antennas, each currently installed in position [1], and remove three (3) 4' Powerwave 7770 Panel Antennas, all currently installed in position [4]. AT&T will then add one (1) 8' CCI TPA65R-BU8DA-K Panel Antennas, each to be installed in position [3] as well as one (1) 8' CCI DMP65R-BU8DA Panel Antennas, each to be installed in position [4] for all sectors. In addition, AT&T intends to remove six (6) Remote Radio Units and add one (1) RRUS-8843 B2/B66A and one (1) RRU 4478 B14 in position [3], all sectors. As well as, one (1) RRUS-4415 B30, and (1) RRUS-4449 B5/B12 in positions [4], all sectors, for a total of nine (12) new RRUs. AT&T is also proposing to replace (3) existing Raycap Squids with (3) new Raycap Squids, as well as, three (3) fiber lines and (6) 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. § 16-50j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to John A. Berard – Town Building Official, Town of Brooklyn, CT at 69 South Main Street, Suite 22, Brooklyn, CT 06234 and Austin Tanner – First Selectman, Town of Brooklyn, CT at 4 Wolf Den Road, PO Box 356, Brooklyn, CT 06234. A copy of this letter is being sent to the property owner DMP PALMER ASSOCIATES LLC at 9 Old Derry Road, Hudson, NH 03051-2535 and the tower owner Landmark Infrastructure Partners at 400 Continental Blvd., Suite 500, El Segundo, CA 90245.

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

- **EM-CING-019-090403** - New Cingular Wireless PCS LLC notice of intent to modify an existing telecommunications facility located at 50 Tiffany Road, Brooklyn, Connecticut.
- **EM-CING-019-121025** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 50 Tiffany Street, Brooklyn, Connecticut.
- **EM-CING-019-210524** - New Cingular Wireless PCS ("AT&T") notice of intent to modify an existing telecommunications facility located at 50 Tiffany Street, Brooklyn, Connecticut.

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





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

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

Sincerely,

*Evan Giannakas*

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

CC w/ enclosures:

John A. Berard – Town Building Official, Town of Brooklyn, CT  
Austin Tanner – First Selectman, Town of Brooklyn, CT  
DMP PALMER ASSOCIATES LLC at 9 Old Derry Road, Hudson, NH 03051-2535  
Landmark Infrastructure Partners at 400 Continental Blvd., Suite 500, El Segundo, CA 90245.





3/29/2022

**Memo: No Initial Zoning Decision Found**

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

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





**Smartlink on behalf of  
AT&T Mobility, LLC**

**Site FA – 10035125**

**Site ID – CTV2139**

**USID – 71312**

**Site Name – BROOKLYN H2O**

**MRCTB057002-MRCTB057050-**

**MRCTB057059-MRCTB056964-**

**MRCTB056926-MRCTB056983**

**50 TIFFANY STREET  
BROOKLYN, CT 06234**

Latitude: N41-47-50.67

Longitude: W71-53-12.10

Structure Type: Water Tank

Report generated date: March 28, 2022

Report by: Benjamin Schnable

Customer Contact: Evan Giannakas

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

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# 1 General Site Summary

## 1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Water Tank	3,298.7% General Public Limit 1" in front of AT&T Mobility, LLC's Beta Sector Antenna 6
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:** 10035125\_PM201\_220114\_CTL02139

**CD's:** 10035125\_AE201\_220309\_CTV2139\_Rev1\_LTE 3C\_4C\_5C\_5G NR 1DR






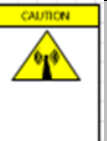



**RF Powers Used:** Max RRH powers.

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








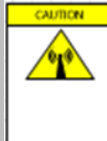



1.3 Signage Summary

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









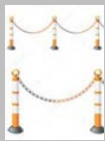
AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Ladder	1								1									
Access Gate 1	1																	
Equipment	1																	
Alpha																		
Beta																		
Gamma																		
Status	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A	Existing	N/A

Note: All existing signage was documented during a previous site visit 08/07/2017.

b. Proposed AT&T Signage

AT&T Signage Locations																		
	Information 1		Information 2		Notice		Notice 2		Caution		Caution 2		Warning		Warning 2		Barriers	
Access Ladder		1								1	1							
Access Gate 1		1																
Equipment		1																
Alpha																		
Beta																		
Gamma																		
Status	N/A	Remove	N/A	Remove	N/A	Remove	Install	Remove	N/A	Remove	Install	Remove	N/A	Remove	Install	Remove	Install	Remove

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 Ladder												1						
Access Gate 1																		
Equipment																		
Alpha																		
Beta																		
Gamma																		
Status	N/A	N/A	N/A	N/A	N/A	N/A	Existing	Proposed	N/A	N/A	Existing	Proposed	N/A	N/A	Existing	Proposed	Existing	Proposed

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

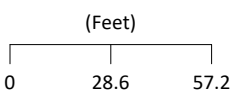


## 2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram – Composite View
- RF Exposure Diagram – AT&T Mobility, LLC Contribution







### 3 Antenna Inventory

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

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (ft)	AGL (ft)
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	20	82.0	4.6	40	TPO	Watt	1	424.68	11.51	127.7	127.71
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	763	LTE	20	73.0	8	160	TPO	Watt	1	2661.46	13.46	126	126
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	1900	LTE	20	66.0	8	160	TPO	Watt	1	4732.82	15.96	126	126
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	2100	LTE/AWS1	20	66.0	8	160	TPO	Watt	1	4955.87	16.16	126	126
3	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	737	LTE	20	70.6	8	160	TPO	Watt	1	2018.92	12.26	126	126
3	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	850	5G	20	71.4	8	160	TPO	Watt	1	2163.32	12.56	126	126
3	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	2300	LTE	20	50.6	8	100	TPO	Watt	1	2094.11	14.46	126	126
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	130	82.0	4.6	40	TPO	Watt	1	424.68	11.51	129.7	129.71
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	763	LTE	130	73.0	8	160	TPO	Watt	1	2661.46	13.46	126	126
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	1900	LTE	130	66.0	8	160	TPO	Watt	1	4732.82	15.96	126	126
5	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	2100	LTE/AWS1	130	66.0	8	160	TPO	Watt	1	4955.87	16.16	126	126
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	737	LTE	130	70.6	8	160	TPO	Watt	1	2018.92	12.26	126	126
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	850	5G	130	71.4	8	160	TPO	Watt	1	2163.32	12.56	126	126
6	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	2300	LTE	130	50.6	8	100	TPO	Watt	1	2094.11	14.46	126	126
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	UMTS	255	82.0	4.6	40	TPO	Watt	1	424.68	11.51	129.7	129.71
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	763	LTE	255	73.0	8	160	TPO	Watt	1	2661.46	13.46	126	126
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	1900	LTE	255	66.0	8	160	TPO	Watt	1	4732.82	15.96	126	126
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA65R-BU8DA-K	Panel	2100	LTE/AWS1	255	66.0	8	160	TPO	Watt	1	4955.87	16.16	126	126
9	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	737	LTE	255	70.6	8	160	TPO	Watt	1	2018.92	12.26	126	126



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)
9	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	850	5G	255	71.4	8	160	TPO	Watt	1	2163.32	12.56	126	126
9	AT&T MOBILITY LLC (Proposed)	Cci DMP65R-BU8DA	Panel	2300	LTE	255	50.6	8	100	TPO	Watt	1	2094.11	14.46	126	126
10	T-MOBILE	Generic	Panel	2100	LTE	30	65.0	4.6	160	TPO	Watt	1	5334.82	15.23	114.7	114.7
11	T-MOBILE	Generic	Panel	1900	LTE	30	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	113.9	113.86
12	T-MOBILE	Generic	Panel	2100	LTE	180	65.0	4.6	160	TPO	Watt	1	5334.82	15.23	114.7	114.7
13	T-MOBILE	Generic	Panel	1900	LTE	180	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	113.9	113.86
14	T-MOBILE	Generic	Panel	2100	LTE	270	65.0	4.6	160	TPO	Watt	1	5334.82	15.23	114.7	114.7
15	T-MOBILE	Generic	Panel	1900	LTE	270	65.0	6.3	160	TPO	Watt	1	6762.7	16.26	113.9	113.86

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



## 4 Emission Predictions

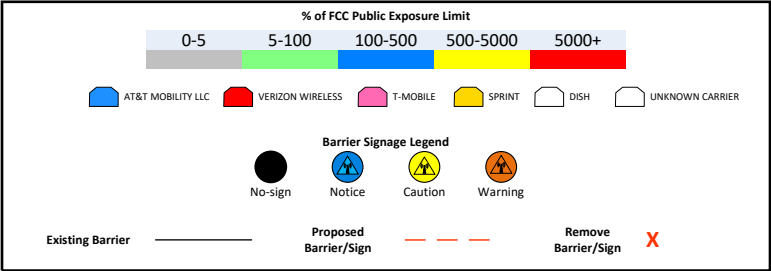
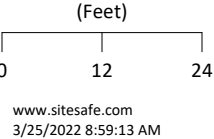
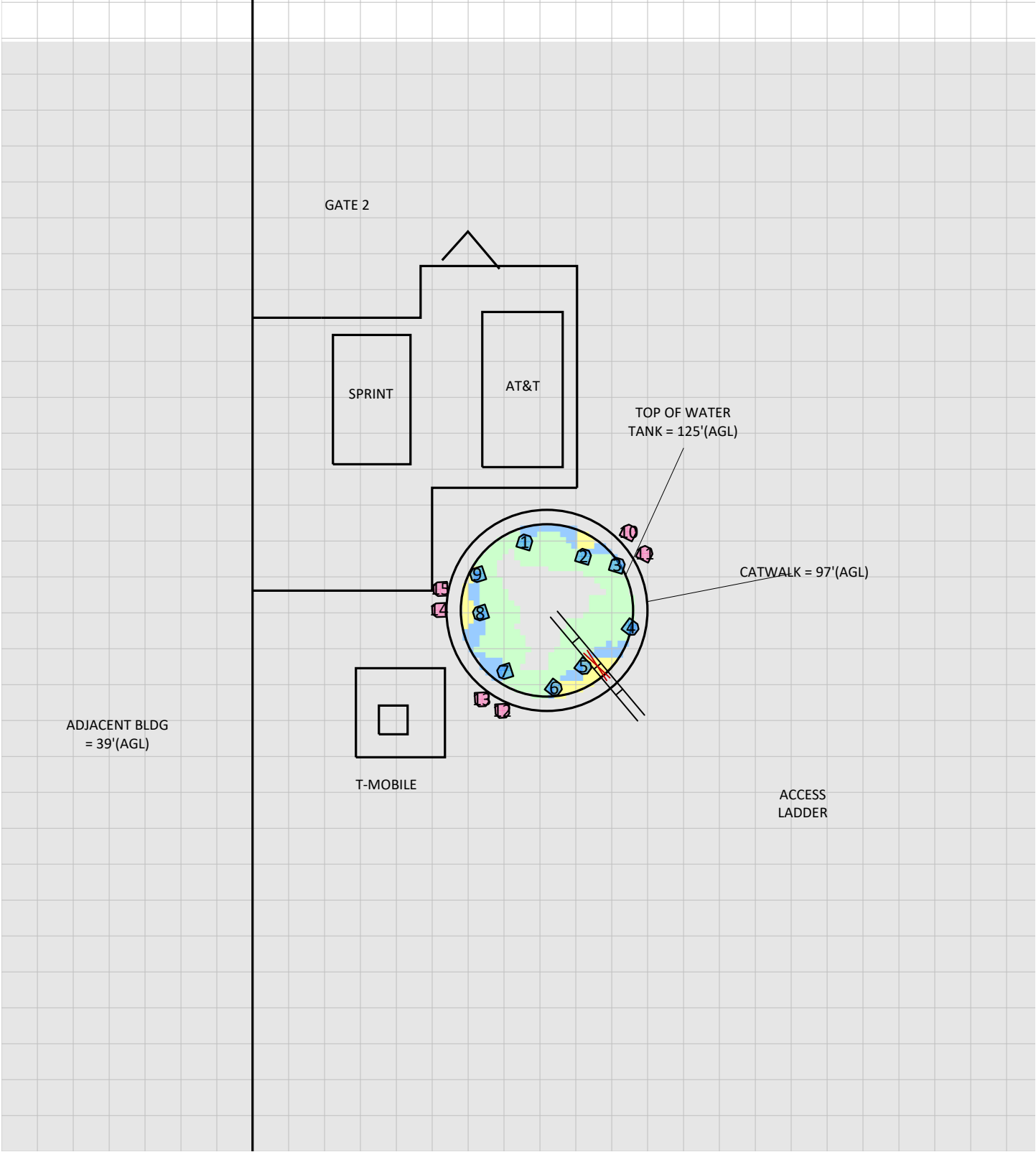
In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main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

- GROUND LEVEL = 0'
- CATWALK = 97'
- TOP OF WATER TANK = 125'
- ADJACENT BUILDING = 39'

The Antenna Inventory heights are referenced to the same level.



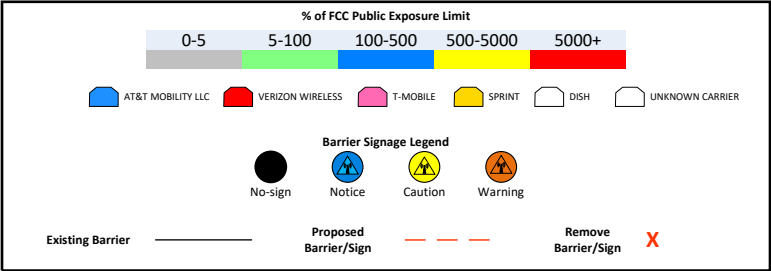
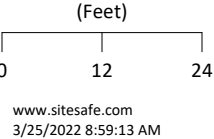
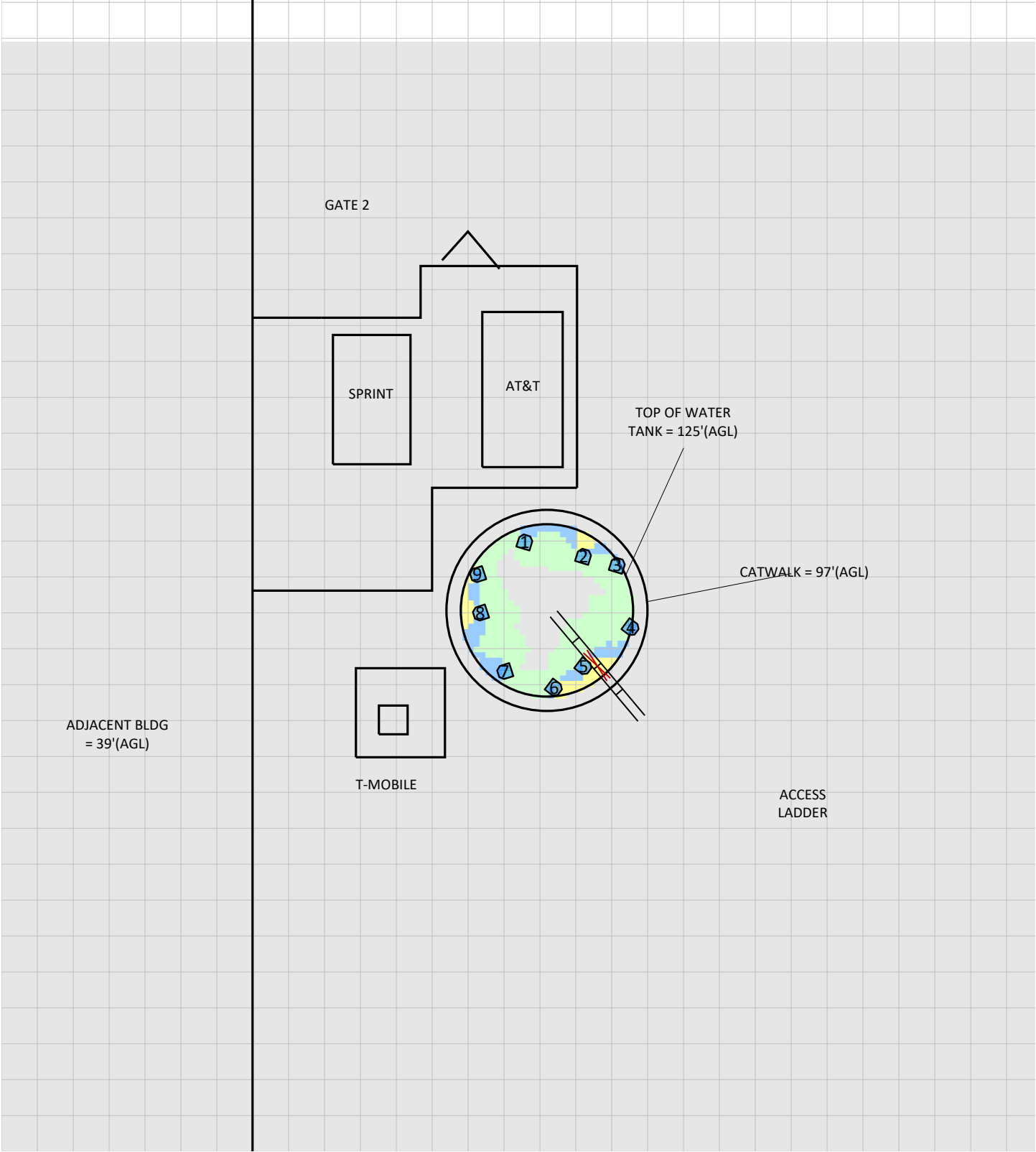
RF Exposure Simulation For: BROOKLYN H2O  
Composite View



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



RF Exposure Simulation For: BROOKLYN H2O  
AT&T Mobility, LLC Contribution



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



## 5 Site Compliance

### 5.1 Site Compliance Statement

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

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

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

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

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

### 5.2 Actions for Site Compliance

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

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

#### **Site Access Location (Access Ladder)**

(1) Caution 2 sign required at the access ladder.

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

#### **Site Access Location (Access Ladder)**

Remove the Information sign and the Caution 1 sign from the access ladder.



## 6 Reviewer Certification

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

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

The reviewer whose signature appears below hereby certifies and affirms:

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

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

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

March 28, 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.

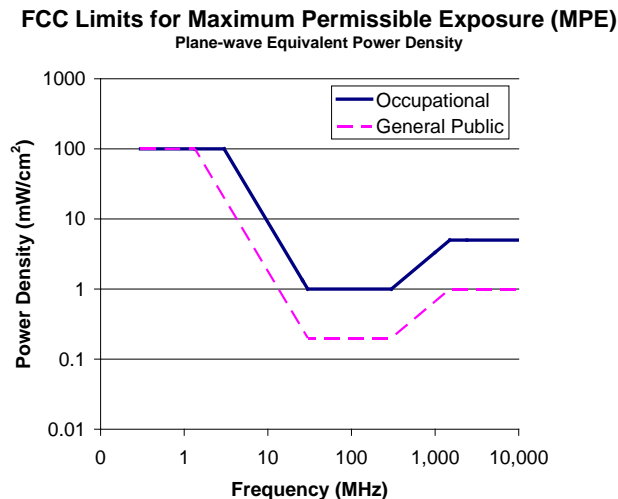
FCC regulations define two separate tiers of exposure limits: Occupational or “Controlled environment” and General Public or “Uncontrolled environment”. The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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](http://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](http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?sitearea=PED)

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

[http://ec.europa.eu/health/ph\\_risk/committees/04\\_scenihp/docs/scenihp\\_o\\_022.pdf](http://ec.europa.eu/health/ph_risk/committees/04_scenihp/docs/scenihp_o_022.pdf)

Fairfax County, Virginia Public School Survey

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

UK Health Protection Agency Advisory Group on Non-Ionizing Radiation

[http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb\\_C/1317133826368](http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368)

Norwegian Institute of Public Health

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



50 TIFFANY ST

Location 50 TIFFANY ST

Mblu 47/ / 46/ /

Acct# 00295500

Owner DMP PALMER ASSOCIATES  
LLC

Assessment \$905,800

Appraisal \$1,294,100

PID 3288

Building Count 2

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$1,031,100	\$263,000	\$1,294,100
Assessment			
Valuation Year	Improvements	Land	Total
2020	\$721,700	\$184,100	\$905,800

Owner of Record

Owner DMP PALMER ASSOCIATES LLC  
Co-Owner  
Care Of  
Address 9 OLD DERRY RD  
HUDSON, NH 03051-2535

Sale Price \$1,200,000  
Certificate  
Book 0432  
Page 0307  
Sale Date 01/25/2008  
Instrument 07  
Qualified U

Ownership History

Ownership History						
Owner	Sale Price	Certificate	Instrument	Sale Date	Book	Page
DMP PALMER ASSOCIATES LLC	\$1,200,000		07	01/25/2008	0432	0307
TIFFANY INDUSTRIAL PARK LLC	\$0			01/17/2002	0257	0186
YELLIN MARK C	\$0			11/23/1987	0089	0186
YELLIN MARK C	\$0			11/23/1987	0089	0185
YELLIN MARK C	\$565,000			08/01/1986	0083	0507

Building Information

Building 1 : Section 1



**Year Built:** 1880  
**Living Area:** 90,384  
**Replacement Cost:** \$2,508,067  
**Building Percent Good:** 18  
**Replacement Cost Less Depreciation:** \$451,500

Building Attributes	
Field	Description
Style:	Light Indust
Model	Comm/Ind
Grade	Minimum
Stories:	2
Occupancy	1.00
Exterior Wall 1	Stone/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	None
Struct Class	
Bldg Use	FACTORY MDL-96
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	8.00
% Comn Wall	

**Building 2 : Section 1**

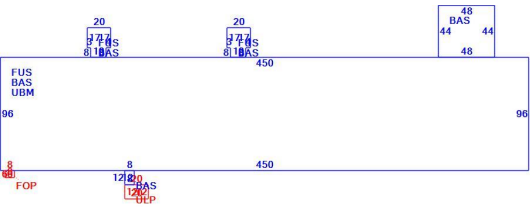
**Year Built:** 1880  
**Living Area:** 36,024  
**Replacement Cost:** \$865,685  
**Building Percent Good:** 9

**Building Photo**



(<http://images.vgsi.com/photos/BrooklynCTPhotos/\00\00\26\52.JPG>)

**Building Layout**



(ParcelSketch.ashx?pid=3288&bid=3288)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	46,296	46,296
FUS	Upper Story, Finished	44,088	44,088
FOP	Porch, Open	48	0
UBM	Basement, Unfinished	43,200	0
ULP	Loading Platform, Unfinished	240	0
		133,872	90,384



Replacement Cost  
Less Depreciation: \$77,900

Building Attributes : Bldg 2 of 2	
Field	Description
Style:	Light Indust
Model	Ind/Comm
Grade	Minimum
Stories:	3
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	Minim/Masonry
Interior Floor 1	Dirt/None
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Steam
AC Type	None
Struct Class	
Bldg Use	IND WHSES
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & MIN WL
Rooms/Prtns	AVERAGE
Wall Height	8.00
% Comn Wall	

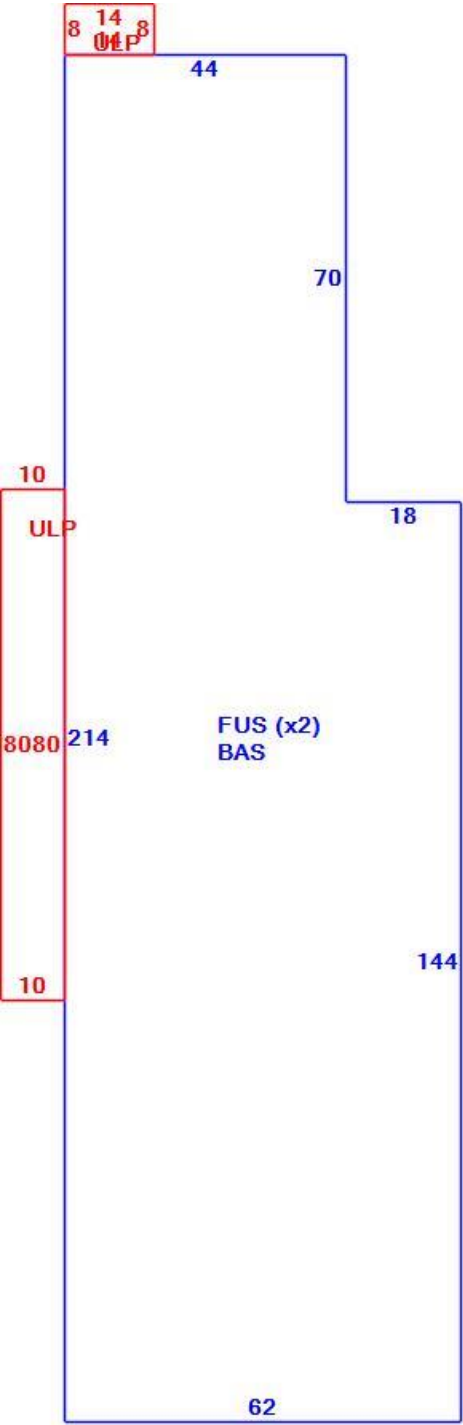
Building Photo



(<http://images.vgsi.com/photos/BrooklynCTPhotos/\00\00\32\72.jpg>)



Building Layout



(ParcelSketch.ashx?pid=3288&bid=3528)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
FUS	Upper Story, Finished	24,016	24,016
BAS	First Floor	12,008	12,008



ULP	Loading Platform, Unfinished	912	0
		36,936	36,024

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	SPRINKLERS-WET	36298.00 S.F.	\$2,600	2
SPR1	SPRINKLERS-WET	133588.00 S.F.	\$19,200	1

Land

Land Use		Land Line Valuation	
Use Code	4000	Size (Acres)	15.2
Description	FACTORY MDL-96	Frontage	
Zone	MMUD	Depth	
Neighborhood	200	Assessed Value	\$184,100
Alt Land Appr	No	Appraised Value	\$263,000
Category			

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FGR1	GARAGE-AVE			864.00 S.F.	\$11,200	1
SHD5	Cell Shed			220.00 SF	\$49,500	1
SHD5	Cell Shed			312.00 SF	\$70,200	1
MSC2	CELL SITE			2.00 UNIT	\$349,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$1,043,100	\$278,600	\$1,321,700
2018	\$1,043,100	\$278,600	\$1,321,700
2017	\$1,043,100	\$278,600	\$1,321,700

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$730,100	\$195,000	\$925,100
2018	\$730,100	\$195,000	\$925,100
2017	\$730,100	\$195,000	\$925,100

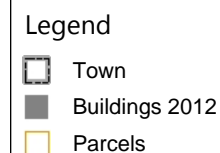






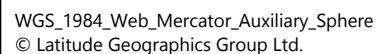


Neccog GIS Site



Notes

Enter Map Description



This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION



# STRUCTURAL ANALYSIS REPORT

For

**CT2139**

**BROOKLYN H2O**

50 Tiffany Street  
Brooklyn, CT 06234

## Antennas Mounted on Water Tank Lid



Prepared for:



Dated: February 4, 2022

Prepared by:



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

[www.hudsondesigngroupllc.com](http://www.hudsondesigngroupllc.com)







#### SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed AT&T equipment located in the areas depicted in the latest HDG construction drawings.

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

This office's subconsultant, Provertic LLC, conducted a mount mapping of the above area on November 9, 2021.

The following documents were used for our reference:

- Previous HDG Structural Analysis Report dated April 7, 2009.
- Mount Mapping Report prepared by Provertic LLC, dated November 18, 2021.

#### CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing structure **IS CAPABLE** of supporting the proposed equipment loading.

	Controlling Load Case	Stress Ratio	Pass/Fail
Water Tank Lid	Bending	46%	PASS

Based on our evaluation, we have determined that the proposed antenna mounts **ARE CAPABLE** of supporting the proposed equipment loading.

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Antenna Mount	1	LC1	85%	PASS

Previous HDG Structural Analysis Reports recommended that rust removal be performed on the existing tank as well as new paint to maintain its structural integrity. HDG recommends that a third party conduct a conditions assessment on the existing water tank prior to the installation of any appurtenances. The existing water tank exhibits a significant amount of surface rust and peeled paint. HDG recommends periodic inspections of the existing tower in accordance with the ANSI/TIA-G section 14.0 and Annex J. A localized lid bending check was performed at the location of the proposed installations.

\*Reference documents attached.





**APPURTENANCE CONFIGURATION (BASED ON RFDS DATED 1/12/2022):**

<b>Appurtenances</b>	<b>Dimensions</b>	<b>Weight</b>	<b>**Elevation</b>	<b>Mount</b>
(3) 7770 Antennas	55.0"x11.0"x5.0"	35 lbs	131'	Tripod Ballast
(6) LGP21401 TMA's	14.4"x9.0"x2.7"	19 lbs	-	Tripod Ballast
<b>(3) TPA65R-BU8DA Antennas</b>	96.0"x20.7"x7.7"	88 lbs	131'	Tripod Ballast
<b>(3) DMP65R-BU8DA Antennas</b>	96.0"x20.7"x7.7"	119 lbs	131'	Tripod Ballast
<b>(3) B14 4478 RRH's</b>	18.1"x13.4"x8.3"	60 lbs	-	Tripod Ballast
<b>(3) B2/B66A 8843 RRH's</b>	14.9"x13.2"x10.9"	72 lbs	-	Tripod Ballast
<b>(3) B5/B12 4449 RRH's</b>	17.9"x13.2"x9.4"	73 lbs	-	Tripod Ballast
<b>(3) 4415 B30 RRH's</b>	16.5"x13.4"x5.9"	46 lbs	-	Tripod Ballast
<b>(3) DC6-48-60-18 Surge Arrestors</b>	31.4"x10.2"Ø	29 lbs	-	Tripod Ballast

\* Proposed equipment shown in bold.

\*\* Elevation to antenna centerline.





**DESIGN CRITERIA:**

<b>International Building Code (IBC) 2015 with 2018 Connecticut State Building Code Amendments, and ASCE 7-10 (Minimum Design Loads for Buildings and Other Structures).</b>		
<b>Wind</b>		
Reference Wind Speed:	140 mph	(2018 CSBC Appendix N)
Exposure Category:	B	(ASCE 7-10 Chapter 26)
Risk Category:	IV	(ASCE 7-10 Table 1.5-1)
<b>Snow</b>		
Ground Snow, $P_g$ :	35	(2018 CSBC Appendix N)
Importance Factor ( $I_s$ ):	1.2	(ASCE 7-10 Table 1.5-2)
Exposure Factor ( $C_e$ ):	0.9	(Fully Exposed, Table 7-2)
Thermal Factor ( $C_t$ ):	1.0	(ASCE 7-10 Table 7-3)
Flat Roof Snow Load:	26 psf	(ASCE 7-10 Equation 7.3-1)
Min. Flat Roof Snow Load:	30 psf	
<b>EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures</b>		
<b>Wind</b>		
City/Town:	Brooklyn	
County:	Windham	
Wind Load:	140 mph	(TIA-222-H Figure B-2)
<b>Ice</b>		
Design Ice Thickness ( $t_i$ ):	1.0 in	(TIA-222-H Figure B-9)
Structure Class:	IV	(TIA-222-H Table 2-1)
Importance Factor ( $I_l$ ):	1.25	(TIA-222-H Table 2-3)
Factored Thickness of Radial Ice ( $t_{iz}$ ):	1.43 in	(TIA-222-H Sec. 2.6.10)



### **ANTENNA/RRH/SURGE ARRESTOR SUPPORT RECOMMENDATIONS:**

The new antennas and RRH's are proposed to be mounted on proposed pipe masts installed on existing tripod ballast frames welded to the existing water tank lid.

#### Limitations and assumptions:

1. Reference the latest HDG construction drawings for all the equipment locations and details.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
4. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
5. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.
6. A condition assessment on the existing water tank was not part of the scope of work.





**HUDSON**  
Design Group LLC

**FIELD PHOTOS:**



**Photo 1:** Sample photo illustrating the existing antennas and RRH's.



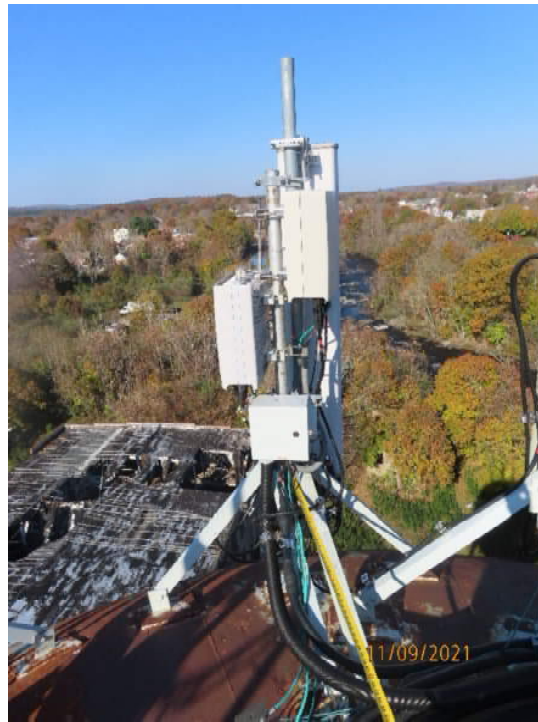
**Photo 2:** Sample photo illustrating the existing antennas and RRH's.





**HUDSON**  
Design Group LLC

**FIELD PHOTOS (CONT'D.):**



**Photo 3:** Sample photo illustrating the existing antenna mount.



**Photo 4:** Sample photo illustrating the existing welded connection.





**HUDSON**  
Design Group LLC

## Wind and Ice Calculations



Date: 2/2/2022  
 Project Name: BROOKLYN H2O  
 Project No.: CT2139  
 Designed By: LBW Checked By: MSC



### 2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$  **1.067**

$z =$  **131** (ft)  
 $z_g =$  **1200** (ft)  
 $\alpha =$  **7.0**

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

Table 2-4

Exposure	$z_g$	$\alpha$	$K_{zmin}$	$K_c$
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

### 2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

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

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

Category = **1**

$K_h =$  **1**  
 $K_c =$  **0.9** (from Table 2-4)  
 $K_t =$  **0** (from Table 2-5)  
 $f =$  **0** (from Table 2-5)  
 $z =$  **131**  
 $z_s =$  **177** (Mean elevation of base of structure above sea level)  
 $H =$  **0** (Ht. of the crest above surrounding terrain)  
 $K_{zt} =$  **1.00** (from 2.6.6.2.1)  
 $K_e =$  **0.99** (from 2.6.8)

### 2.6.10 Design Ice Thickness

Max Ice Thickness =  
 Importance Factor =

$t_i =$  **1.00** in  
 $I =$  **1.25** (from Table 2-3)  
 $K_{iz} =$  **1.15** (from Sec. 2.6.10)

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

$t_{iz} =$  **1.43** in



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## 2.6.9 Gust Effect Factor

### 2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$  Latticed Structures > 600 ft

$G_h = 0.85$  Latticed Structures 450 ft or less

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

$h =$  ht. of structure

$h =$  130

$G_h =$  0.85

### 2.6.9.2 Guyed Masts

$G_h =$  0.85

### 2.6.9.3 Pole Structures

$G_h =$  1.1

### 2.6.9 Appurtenances

$G_h =$  1.0

### 2.6.9.4 Structures Supported on Other Structures

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

$G_h =$  1.35

$G_h =$  1.00

## 2.6.11.2 Design Wind Force on Appurtenances

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

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

$$K_z = 1.067 \text{ (from 2.6.5.2)}$$

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

$$K_s = 1.0 \text{ (from 2.6.7)}$$

$$K_e = 0.99 \text{ (from 2.6.8)}$$

$$K_d = 0.95 \text{ (from Table 2-2)}$$

$$V_{max} = 140 \text{ mph (Ultimate Wind Speed)}$$

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

$$V_{30} = 30 \text{ mph}$$

$$q_z = 50.56$$

$$q_{z(ice)} = 6.45$$

$$q_{z(30)} = 2.32$$

Table 2-2

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



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**Determine  $C_a$ :**

**Table 2-9**

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

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

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

Ice Thickness = **1.43 in**      Angle = **0 (deg)**      Equivalent Angle = **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	$C_a$	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	279	47	13
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	904	135	41
TPA65R-BU8DA Antenna (Side)	96.0	7.7	20.7	5.13	12.47	1.58	411	74	19
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	904	135	41
DMP65R-BU8DA Antenna (Side)	96.0	7.7	20.7	5.13	12.47	1.58	411	74	19
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	102	18	5
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	63	13	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	34	8	2
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	83	15	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	68	13	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	35	8	2
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.36	1.20	100	18	5
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	71	14	3
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	37	9	2
4415 B30 RRH	16.5	13.4	5.9	1.54	1.23	1.20	93	17	4
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	41	9	2
4415 B30 RRH (Shielded)	16.5	3.0	13.4	0.34	5.59	1.34	23	7	1
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	18	6	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	57	11	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	12		
2-1/2x2-1/2 Angle	2.5	12.0		0.21	0.21	2.00	21		



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Designed By: LBW Checked By: MSC



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### ICE WEIGHT CALCULATIONS

Thickness of ice: 1.43 in.

Density of ice: 56 pcf

#### 7770 Antenna

Weight of ice based on total radial SF area:

Height (in): 55.0

Width (in): 11.0

Depth (in): 5.0

Total weight of ice on object: 108 lbs

Weight of object: 35.0 lbs

Combined weight of ice and object: 143 lbs

#### TPA65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in): 96.0

Width (in): 20.7

Depth (in): 7.7

Total weight of ice on object: 329 lbs

Weight of object: 87.0 lbs

Combined weight of ice and object: 416 lbs

#### DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in): 96.0

Width (in): 20.7

Depth (in): 7.7

Total weight of ice on object: 329 lbs

Weight of object: 96.0 lbs

Combined weight of ice and object: 425 lbs

#### B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in): 18.1

Width (in): 13.4

Depth (in): 8.3

Total weight of ice on object: 45 lbs

Weight of object: 60.0 lbs

Combined weight of ice and object: 105 lbs

#### B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in): 14.9

Width (in): 13.2

Depth (in): 10.9

Total weight of ice on object: 40 lbs

Weight of object: 72.0 lbs

Combined weight of ice and object: 112 lbs

#### B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in): 17.9

Width (in): 13.2

Depth (in): 9.4

Total weight of ice on object: 46 lbs

Weight of object: 73.0 lbs

Combined weight of ice and object: 119 lbs

#### 4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in): 16.5

Width (in): 13.4

Depth (in): 5.9

Total weight of ice on object: 39 lbs

Weight of object: 46.0 lbs

Combined weight of ice and object: 85 lbs

#### LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in): 14.4

Width (in): 2.7

Depth (in): 9.0

Total weight of ice on object: 23 lbs

Weight of object: 19.0 lbs

Combined weight of ice and object: 42 lbs

#### Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in): 24.0

Diameter(in): 9.7

Total weight of ice on object: 39 lbs

Weight of object: 33 lbs

Combined weight of ice and object: 72 lbs

#### 2" pipe

Per foot weight of ice:

diameter (in): 2.38

Per foot weight of ice on object: 7 plf

#### L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in): 2.5

Width (in): 2.5

Per foot weight of ice on object: 9 plf





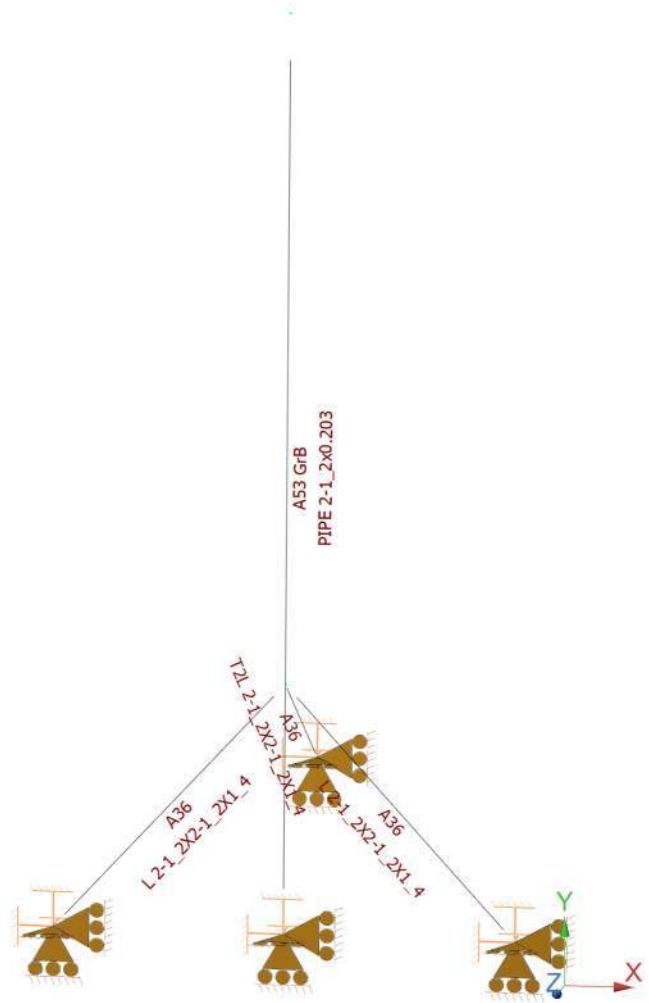
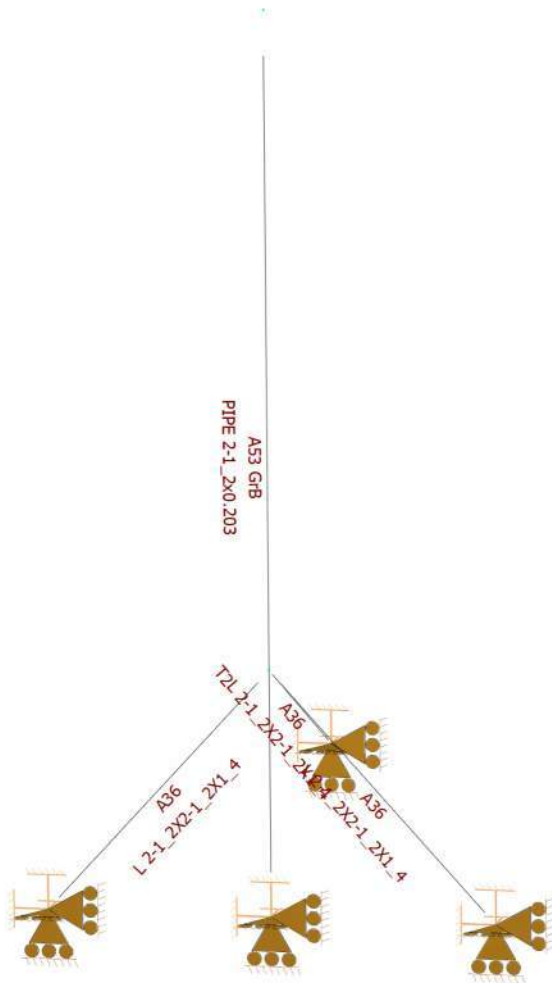
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## **Antenna Mount Calculations**







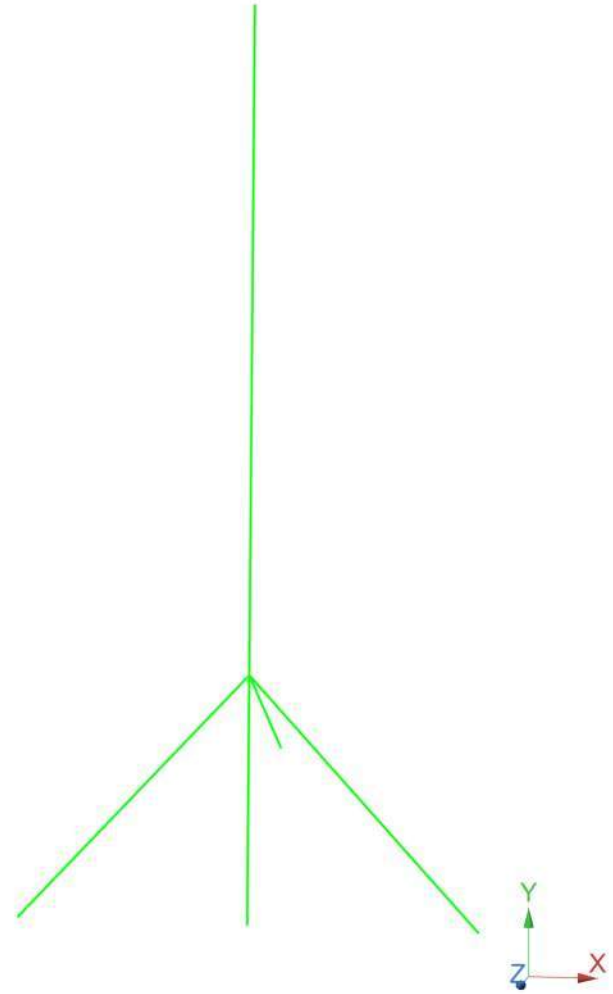
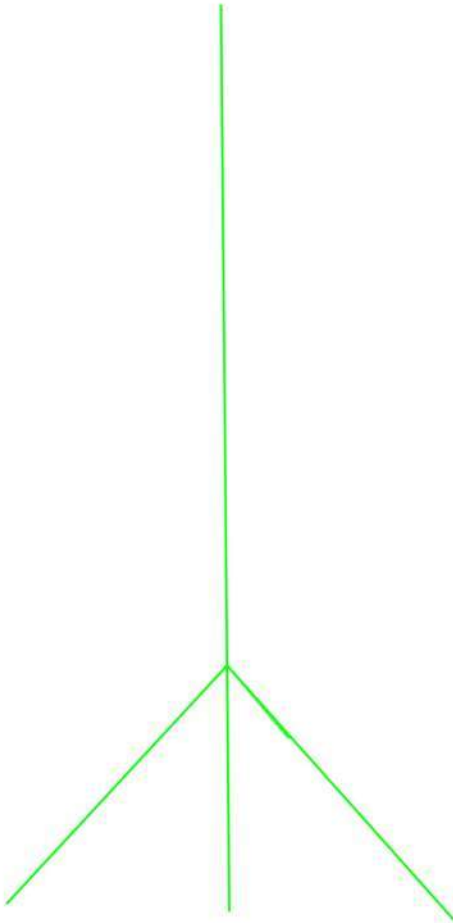




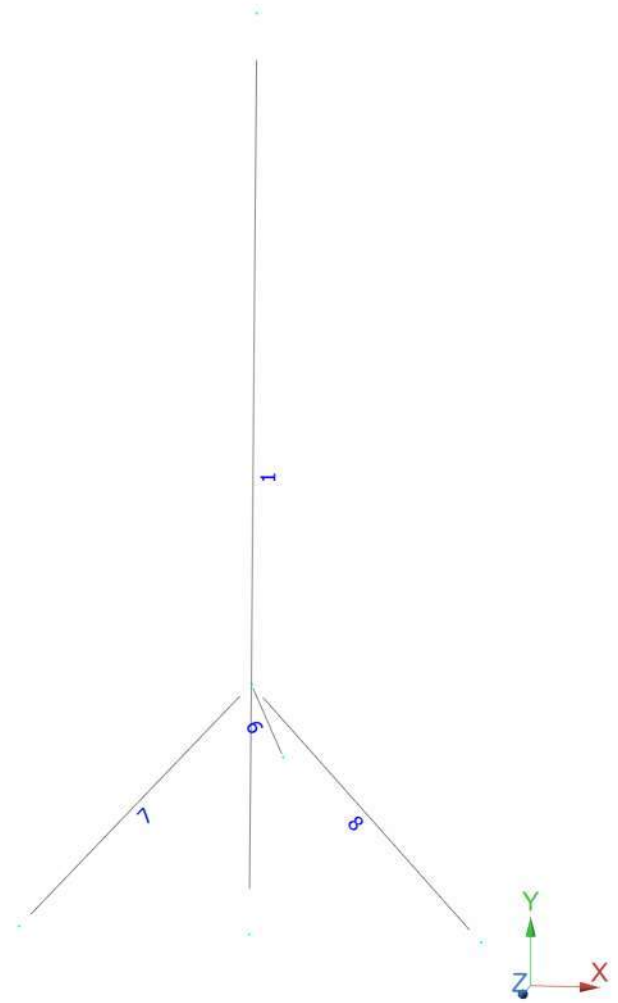
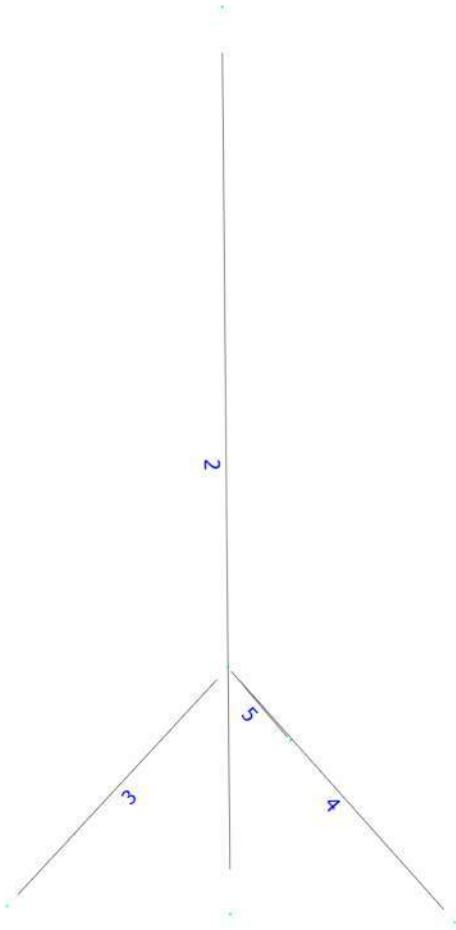


Design status

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









Current Date: 2/2/2022 12:35 PM  
 Units system: English

## Load data

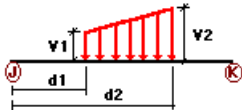
### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wf	Wind Load (FRONT)	No	WIND
Ws	Wind Load (SIDE)	No	WIND
Wfice	Wind ICE (FRONT)	No	WIND
Wside	Wind ICE (SIDE)	No	WIND
Di	Ice Load	No	LL

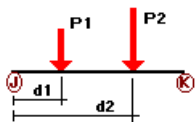
### Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wf	3	z	-0.021	0.00	0.00	No	0.00	No
	4	z	-0.021	0.00	0.00	No	0.00	No
	5	z	-0.021	0.00	0.00	No	0.00	No
	6	z	-0.021	0.00	0.00	No	0.00	No
	7	z	-0.021	0.00	0.00	No	0.00	No
	8	z	-0.021	0.00	0.00	No	0.00	No
	1	x	-0.012	0.00	0.00	No	0.00	No
	2	x	-0.012	0.00	0.00	No	0.00	No
Ws	3	x	-0.021	0.00	0.00	No	0.00	No
	4	x	-0.021	0.00	0.00	No	0.00	No
	5	x	-0.021	0.00	0.00	No	0.00	No
	6	x	-0.021	0.00	0.00	No	0.00	No
	7	x	-0.021	0.00	0.00	No	0.00	No
	8	x	-0.021	0.00	0.00	No	0.00	No
	1	y	-0.007	0.00	0.00	No	0.00	No
	2	y	-0.007	0.00	0.00	No	0.00	No
Di	3	y	-0.009	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.009	0.00	0.00	No	0.00	No
	7	y	-0.009	0.00	0.00	No	0.00	No
	8	y	-0.009	0.00	0.00	No	0.00	No



## Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	1	y	-0.044	1.00	No
		y	-0.044	8.00	No
		y	-0.06	4.50	No
		y	-0.072	4.50	No
	2	y	-0.048	1.00	No
		y	-0.048	8.00	No
		y	-0.073	4.50	No
Wf	1	y	-0.046	4.50	No
		z	-0.452	1.00	No
		z	-0.452	8.00	No
		z	-0.034	4.50	No
	2	z	-0.035	4.50	No
		z	-0.452	1.00	No
		z	-0.452	8.00	No
Ws	1	z	-0.037	4.50	No
		z	-0.023	4.50	No
	2	x	-0.206	1.50	No
		x	-0.206	8.50	No
		x	-0.102	4.50	No
	2	x	-0.206	1.50	No
		x	-0.206	8.50	No
Wfice	1	x	-0.10	4.50	No
		z	-0.068	1.50	No
		z	-0.068	8.50	No
		z	-0.008	4.50	No
	2	z	-0.008	4.50	No
		z	-0.068	1.50	No
		z	-0.068	8.50	No
Wsice	1	z	-0.009	4.50	No
		z	-0.007	4.50	No
	2	x	-0.038	1.50	No
		x	-0.038	8.50	No
		x	-0.018	4.50	No
	2	x	-0.038	1.50	No
		x	-0.038	8.50	No
Di	1	x	-0.018	4.50	No
		y	-0.164	1.00	No
		y	-0.164	8.00	No
		y	-0.045	4.50	No
	2	y	-0.04	4.50	No
		y	-0.164	1.00	No
		y	-0.164	8.00	No
		y	-0.046	4.50	No
		y	-0.039	4.50	No

## Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wf	Wind Load (FRONT)	No	0.00	0.00	0.00
Ws	Wind Load (SIDE)	No	0.00	0.00	0.00
Wfice	Wind ICE (FRONT)	No	0.00	0.00	0.00
Wsice	Wind ICE (SIDE)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00



## Earthquake (Dynamic analysis only)

---

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wf	0.00	0.00	0.00
Ws	0.00	0.00	0.00
Wfice	0.00	0.00	0.00
Wsice	0.00	0.00	0.00
Di	0.00	0.00	0.00



Current Date: 2/2/2022 12:35 PM  
 Units system: English

## Steel Code Check

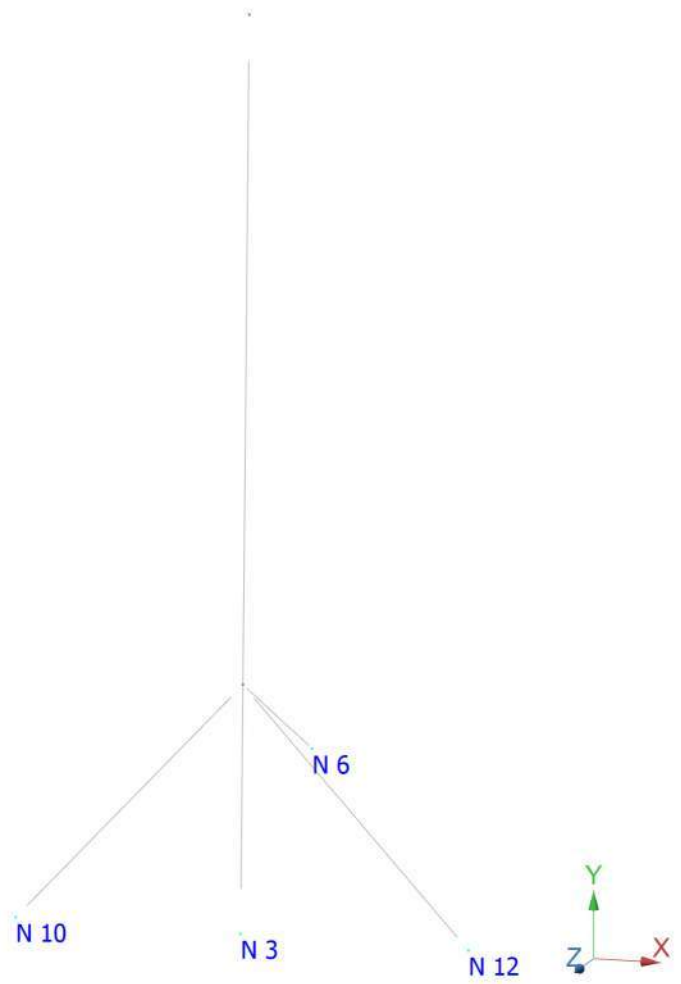
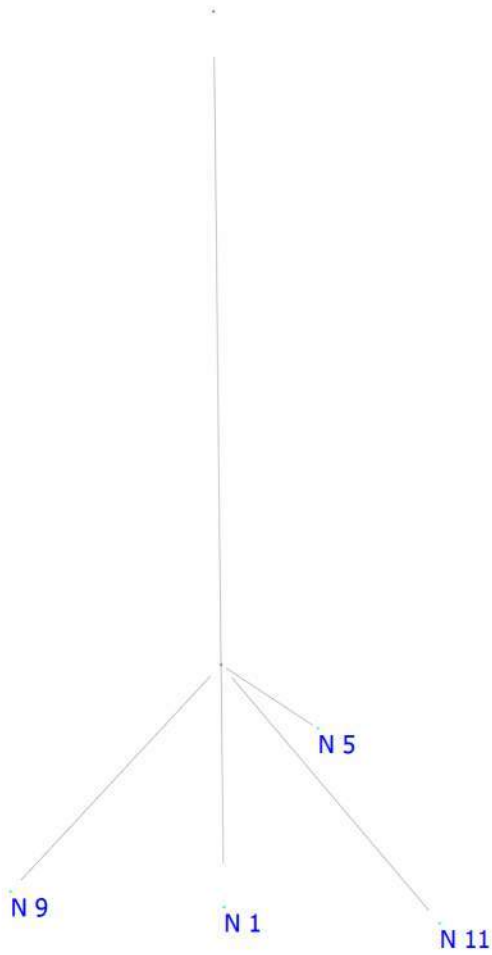
Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+Wf  
 LC2=1.2DL+Ws  
 LC3=0.9DL+Wf  
 LC4=0.9DL+Ws  
 LC5=1.2DL+Wfice+Di  
 LC6=1.2DL+Wsice+Di  
 LC7=1.4DL  
 LC8=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
<i>L 2-1_2X2-1_2X1_4</i>		3	LC1 at 100.00%	0.38	OK	
		4	LC1 at 0.00%	0.38	OK	
		7	LC1 at 100.00%	<b>0.38</b>	<b>OK</b>	
		8	LC1 at 0.00%	0.38	OK	
<i>PIPE 2-1_2x0.203</i>		1	LC1 at 71.88%	<b>0.85</b>	<b>OK</b>	
		2	LC1 at 71.88%	0.84	OK	
<i>T2L 2-1_2X2-1_2X1_4</i>		5	LC1 at 0.00%	0.38	OK	
		6	LC1 at 0.00%	<b>0.39</b>	<b>OK</b>	



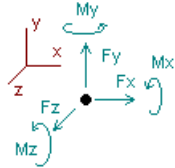




Current Date: 2/2/2022 12:36 PM  
 Units system: English

## Analysis result

### Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition <b>LC1=1.2DL+Wf</b>						
5	0.00000	1.16373	1.75798	0.00000	0.00000	0.00000
1	0.00000	-0.35276	-0.42717	-0.38671	0.00000	0.00000
9	-0.10998	-0.22033	-0.08961	0.00136	0.00150	0.00000
11	0.10998	-0.22033	-0.08961	0.00136	-0.00150	0.00000
3	0.00000	-0.35523	-0.43184	-0.39088	0.00000	0.00000
10	-0.11000	-0.22133	-0.09070	0.00138	0.00151	0.00000
12	0.11000	-0.22133	-0.09070	0.00138	-0.00151	0.00000
6	0.00000	1.17419	1.77383	0.00000	0.00000	0.00000
SUM	0.00000	0.74660	2.31219	-0.77211	0.00000	0.00000
Condition <b>LC2=1.2DL+Ws</b>						
5	0.06606	0.01722	0.00386	0.00000	-0.00243	-0.00540
1	-0.35514	0.18261	-0.00305	-0.00297	-0.08811	0.33849
9	0.62908	0.84537	0.03647	-0.00069	-0.00076	0.00000
11	0.48420	-0.67490	-0.03728	0.00071	-0.00078	0.00000
3	-0.35679	0.18502	-0.00306	-0.00298	-0.08842	0.33996
10	0.63248	0.84973	0.03661	-0.00069	-0.00076	0.00000
12	0.48433	-0.67567	-0.03741	0.00071	-0.00078	0.00000
6	0.06617	0.01722	0.00386	0.00000	-0.00244	-0.00542
SUM	1.65039	0.74660	0.00000	-0.00593	-0.18449	0.66763
Condition <b>LC3=0.9DL+Wf</b>						
5	0.00000	1.15629	1.75361	0.00000	0.00000	0.00000
1	0.00000	-0.39694	-0.42414	-0.38391	0.00000	0.00000
9	-0.12758	-0.24081	-0.08894	0.00136	0.00149	0.00000
11	0.12758	-0.24081	-0.08894	0.00136	-0.00149	0.00000
3	0.00000	-0.39998	-0.42877	-0.38802	0.00000	0.00000
10	-0.12801	-0.24224	-0.09002	0.00137	0.00150	0.00000
12	0.12801	-0.24224	-0.09002	0.00137	-0.00150	0.00000
6	0.00000	1.16668	1.76940	0.00000	0.00000	0.00000
SUM	0.00000	0.55995	2.31219	-0.76648	0.00000	0.00000
Condition <b>LC4=0.9DL+Ws</b>						
5	0.06593	0.01294	0.00287	0.00000	-0.00242	-0.00538
1	-0.35315	0.13704	-0.00234	-0.00227	-0.08774	0.33667
9	0.61018	0.82227	0.03644	-0.00069	-0.00076	0.00000
11	0.50124	-0.69452	-0.03697	0.00070	-0.00077	0.00000
3	-0.35476	0.13885	-0.00234	-0.00228	-0.08804	0.33811
10	0.61315	0.82614	0.03657	-0.00069	-0.00076	0.00000
12	0.50177	-0.69570	-0.03710	0.00070	-0.00077	0.00000
6	0.06603	0.01294	0.00287	0.00000	-0.00243	-0.00539
SUM	1.65039	0.55995	0.00000	-0.00453	-0.18370	0.66401



Condition **LC5=1.2DL+Wfice+Di**

5	0.00000	0.19317	0.24320	0.00000	0.00000	0.00000
1	0.00000	0.36043	-0.05323	-0.05319	0.00000	0.00000
9	0.13992	0.15233	-0.01899	0.00022	0.00024	0.00000
11	-0.13992	0.15233	-0.01899	0.00022	-0.00024	0.00000
3	0.00000	0.36283	-0.05325	-0.05322	0.00000	0.00000
10	0.14155	0.15412	-0.01899	0.00022	0.00024	0.00000
12	-0.14155	0.15412	-0.01899	0.00022	-0.00024	0.00000
6	0.00000	0.19320	0.24323	0.00000	0.00000	0.00000

SUM	0.00000	1.72254	0.30400	-0.10554	0.00000	0.00000
-----	---------	---------	---------	----------	---------	---------

Condition **LC6=1.2DL+Wfice+Di**

5	0.00478	0.03163	0.00733	0.00000	-0.00038	-0.00085
1	-0.05627	0.43526	-0.00536	-0.00534	-0.01354	0.05302
9	0.23746	0.30291	0.00503	-0.00010	-0.00011	0.00000
11	-0.09197	0.08847	-0.00700	0.00012	-0.00013	0.00000
3	-0.05629	0.43767	-0.00536	-0.00535	-0.01354	0.05303
10	0.23909	0.30472	0.00503	-0.00010	-0.00011	0.00000
12	-0.09359	0.09024	-0.00700	0.00012	-0.00013	0.00000
6	0.00478	0.03163	0.00733	0.00000	-0.00038	-0.00085

SUM	0.18800	1.72254	0.00000	-0.01065	-0.02831	0.10436
-----	---------	---------	---------	----------	----------	---------

Condition **LC7=1.4DL**

5	0.00000	0.01998	0.00462	0.00000	0.00000	0.00000
1	0.00000	0.21266	-0.00333	-0.00326	0.00000	0.00000
9	0.08387	0.09969	-0.00064	0.00001	0.00001	0.00000
11	-0.08387	0.09969	-0.00064	0.00001	-0.00001	0.00000
3	0.00000	0.21547	-0.00334	-0.00327	0.00000	0.00000
10	0.08577	0.10178	-0.00064	0.00001	0.00001	0.00000
12	-0.08577	0.10178	-0.00064	0.00001	-0.00001	0.00000
6	0.00000	0.01999	0.00463	0.00000	0.00000	0.00000

SUM	0.00000	0.87103	0.00000	-0.00651	0.00000	0.00000
-----	---------	---------	---------	----------	---------	---------

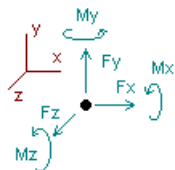
Condition **LC8=0.9DL**

5	0.00000	0.01285	0.00297	0.00000	0.00000	0.00000
1	0.00000	0.13671	-0.00214	-0.00210	0.00000	0.00000
9	0.05392	0.06409	-0.00041	0.00000	0.00001	0.00000
11	-0.05392	0.06409	-0.00041	0.00000	-0.00001	0.00000
3	0.00000	0.13852	-0.00215	-0.00210	0.00000	0.00000
10	0.05514	0.06543	-0.00041	0.00000	0.00001	0.00000
12	-0.05514	0.06543	-0.00041	0.00000	-0.00001	0.00000
6	0.00000	0.01285	0.00297	0.00000	0.00000	0.00000

SUM	0.00000	0.55995	0.00000	-0.00418	0.00000	0.00000
-----	---------	---------	---------	----------	---------	---------

## Envelope for nodal reactions

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



Direction of positive forces and moments



Envelope of nodal reactions for :

LC1=1.2DL+Wf  
 LC2=1.2DL+Ws  
 LC3=0.9DL+Wf  
 LC4=0.9DL+Ws  
 LC5=1.2DL+Wfice+Di  
 LC6=1.2DL+Wsice+Di  
 LC7=1.4DL  
 LC8=0.9DL

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
5	Max	0.066	LC2	1.164	LC1	1.758	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.013	LC8	0.003	LC4	0.00000	LC1	-0.00243	LC2	-0.00540	LC2
1	Max	0.000	LC1	0.435	LC6	-0.002	LC8	-0.00210	LC8	0.00000	LC1	0.33849	LC2
	Min	-0.355	LC2	-0.397	LC3	-0.427	LC1	-0.38671	LC1	-0.08811	LC2	0.00000	LC1
9	Max	0.629	LC2	0.845	LC2	0.036	LC2	0.00136	LC1	0.00150	LC1	0.00000	LC1
	Min	-0.128	LC3	-0.241	LC3	-0.090	LC1	-0.00069	LC2	-0.00076	LC2	0.00000	LC1
11	Max	0.501	LC4	0.152	LC5	0.000	LC8	0.00136	LC1	-0.00001	LC8	0.00000	LC1
	Min	-0.140	LC5	-0.695	LC4	-0.090	LC1	0.00000	LC8	-0.00150	LC1	0.00000	LC1
3	Max	0.000	LC1	0.438	LC6	-0.002	LC8	-0.00210	LC8	0.00000	LC1	0.33996	LC2
	Min	-0.357	LC2	-0.400	LC3	-0.432	LC1	-0.39088	LC1	-0.08842	LC2	0.00000	LC1
10	Max	0.632	LC2	0.850	LC2	0.037	LC2	0.00138	LC1	0.00151	LC1	0.00000	LC1
	Min	-0.128	LC3	-0.242	LC3	-0.091	LC1	-0.00069	LC2	-0.00076	LC2	0.00000	LC1
12	Max	0.502	LC4	0.154	LC5	0.000	LC8	0.00138	LC1	-0.00001	LC8	0.00000	LC1
	Min	-0.142	LC5	-0.696	LC4	-0.091	LC1	0.00000	LC8	-0.00151	LC1	0.00000	LC1
6	Max	0.066	LC2	1.174	LC1	1.774	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.013	LC8	0.003	LC4	0.00000	LC1	-0.00244	LC2	-0.00542	LC2





**HUDSON**  
Design Group LLC

## Water Tank Lid Calculations



Date: 2/2/2022  
 Project Name: BROOKLYN H2O  
 Project No.: CT2139  
 Designed By: LBW      Checked By: MSC



**CHECK BENDING ON THE WATER TANK:**

\*Water tank plans were not available. ProVertic conducted an on-site survey and mapping of the existing AT&T antenna mounts on November 9, 2021.

Lid Thickness, $t_l$	0.280667 in.	
Assumed Effective Width, $b$	12 in.	
Span, $L$	12 in.	
Horizontal Reaction, $P$	1174 lbs.	(See Bentley Output)

$$M_u = PL/4$$

$$= \boxed{3522.00 \text{ lb-in}}$$

$$S = (b \times t_l^2)/6$$

$$= \boxed{0.158 \text{ in}^3}$$

$$Z = (b \times t_l^2)/4$$

$$= \boxed{0.236 \text{ in}^3}$$

$$\phi M_{n_z} = 0.9 \times 36000 \text{ psi} \times Z$$

$$= \boxed{7656.81 \text{ lb-in}}$$

$$\phi M_{n_s} = 36000 \text{ psi} \times 1.6 \times S$$

$$= \boxed{8167.27 \text{ lb-in}}$$

$$\phi M_{n_z} > M_{\max}$$

7656.81	lb-in	>	3522.00	lb-in	OK !
---------	-------	---	---------	-------	------

**Conclusion**

The water tank lid is capable of supporting the proposed loads.



## Evan Giannakas

---

**From:** TrackingUpdates@fedex.com  
**Sent:** Wednesday, March 30, 2022 1:26 PM  
**To:** Evan Giannakas  
**Subject:** FedEx Shipment 776433479240: Your package has been delivered



Hi. Your package was  
delivered Wed, 03/30/2022 at  
1:24pm.



Delivered to Clifford B. Green Memorial Center, BROOKLYN, CT 06234  
Received by J.BOLIN

**OBTAIN PROOF OF DELIVERY**

**TRACKING NUMBER** [776433479240](#)

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

**TO** Town of Brooklyn CT  
John A. Berard - Building Official  
Clifford B. Green Memorial Center



## Evan Giannakas

---

**From:** TrackingUpdates@fedex.com  
**Sent:** Thursday, March 31, 2022 11:37 AM  
**To:** Evan Giannakas  
**Subject:** FedEx Shipment 776433606023: Your package has been delivered



Hi. Your package was  
delivered Thu, 03/31/2022 at  
11:35am.



Delivered to 9 Old Derry Road, HUDSON, NH 03051  
Received by S.IGNATURE NOT REQ

**OBTAIN PROOF OF DELIVERY**

**TRACKING NUMBER** [776433606023](#)

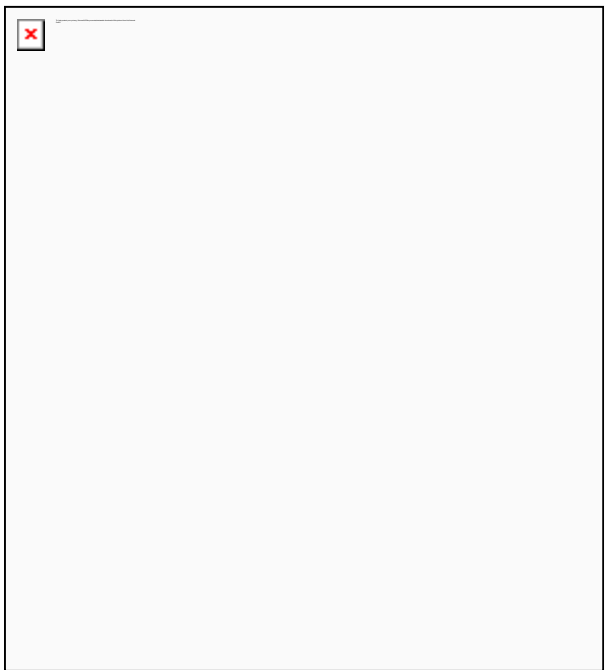
**FROM** Smartlink LLC  
85 Rangeway Road, Bldg 3, Suite 102  
NORTH BILLERICA, MA, US, 01862

**TO** DMP PALMER ASSOCIATES LLC  
9 Old Derry Road  
HUDSON, NH, US, 03051

**REFERENCE** CTL02139 - 50 Tiffany Street  
1



<b>SHIPPER REFERENCE</b>	CTL02139 - 50 Tiffany Street
<b>SHIP DATE</b>	Tue 3/29/2022 06:46 PM
<b>DELIVERED TO</b>	Shipping/Receiving
<b>PACKAGING TYPE</b>	FedEx Envelope
<b>ORIGIN</b>	NORTH BILLERICA, MA, US, 01862
<b>DESTINATION</b>	HUDSON, NH, US, 03051
<b>SPECIAL HANDLING</b>	Deliver Weekday
<b>NUMBER OF PIECES</b>	1
<b>TOTAL SHIPMENT WEIGHT</b>	0.50 LB
<b>SERVICE TYPE</b>	FedEx Express Saver




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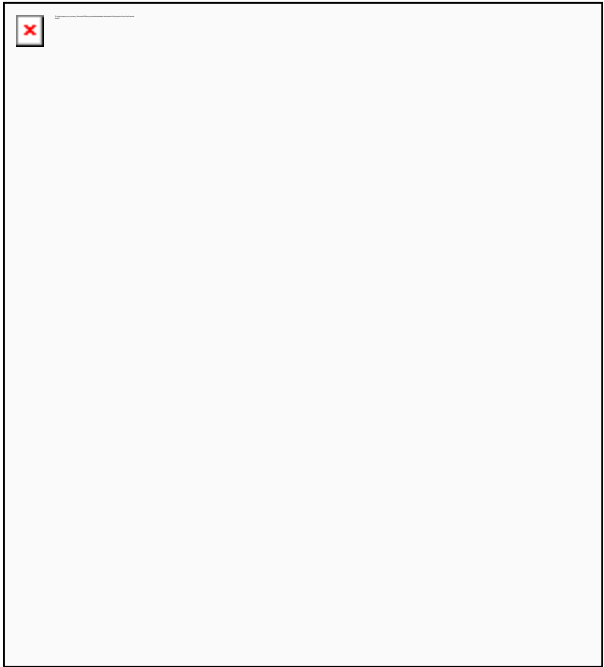
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Thank you for your business.



69 South Main Street, Suite 22  
BROOKLYN, CT, US, 06234


<b>REFERENCE</b>	CTL02139 - 50 Tiffany Street
<b>SHIPPER REFERENCE</b>	CTL02139 - 50 Tiffany Street
<b>SHIP DATE</b>	Tue 3/29/2022 06:46 PM
<b>DELIVERED TO</b>	Shipping/Receiving
<b>PACKAGING TYPE</b>	FedEx Envelope
<b>ORIGIN</b>	NORTH BILLERICA, MA, US, 01862
<b>DESTINATION</b>	BROOKLYN, CT, US, 06234
<b>SPECIAL HANDLING</b>	Deliver Weekday
<b>NUMBER OF PIECES</b>	1
<b>TOTAL SHIPMENT WEIGHT</b>	0.50 LB
<b>SERVICE TYPE</b>	FedEx Express Saver



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Thank you for your business.



## Evan Giannakas

---

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**Sent:** Thursday, March 31, 2022 2:48 PM  
**To:** Evan Giannakas  
**Subject:** FedEx Shipment 776433667600: Your package has been delivered



Hi. Your package was  
delivered Thu, 03/31/2022 at  
11:46am.



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

**OBTAIN PROOF OF DELIVERY**

**TRACKING NUMBER** [776433667600](#)

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

**TO** Landmark Infrastructure Partners  
ATTN: Ellen Bacho  
400 Continental Blvd, Suite 500  
EL SEGUNDO, CA, US, 90245

**REFERENCE** CTL02139 - 50 Tiffany Road



Track Another Package +

Tracking Number: 9500110019672089490342

Remove X

Your item has been delivered and is available at a PO Box at 9:47 am on April 1, 2022 in BROOKLYN, CT 06234.

USPS Tracking Plus® Available ✓

✓ Delivered, PO Box

April 1, 2022 at 9:47 am  
BROOKLYN, CT 06234

Feedback

Text & Email Updates	✓
Tracking History	✓
USPS Tracking Plus®	✓
Product Information	✓

See Less ^

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Go to our FAQs section to find answers to your tracking questions.


## FAQs

Feedback



PROJECT INFORMATION		
SCOPE OF WORK:	<u>ITEMS TO BE MOUNTED ON THE EXISTING WATER TANK:</u>	
	•INSTALL ANTENNA (TPA65R-BU8DA-K) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•INSTALL ANTENNA (DMP65R-BU8DA) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•INSTALL RRUS-4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•INSTALL RRUS-4449 B5/B12 (700/850) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ADD "Y" CABLE)	
	•INSTALL RRUS-8843 B2/B66A (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ADD "Y" CABLE)	
	•INSTALL RRUS-4415 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•INSTALL SURGE ARRESTOR DC6-48-60-18 (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•INSTALL (3) 18 PAIR FIBER AND (6) 6AWG DC TRUNKS.	
	•RELOCATED EXISTING ANTENNA (7770) @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	<u>ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:</u>	
	•ADD 2ND 6630, (1) XMU, AND IDLe CABLE.	
	•ADD (2) DC12S IN RACK (TOTAL OF 3)	
	•PROPOSED (3) RECTIFIERS INSIDE EXISTING POWER PLANT.	
	•PROPOSED BATTERY RACK WITH (2) STRINGS OF BATTERIES.	
	•FINAL BBU=2X6630+1XXMU+IDLE.	
	<u>ITEMS TO BE REMOVED:</u>	
	•EXISTING LTE AT&T ANTENNA (AM-X-CD-17-65-00T-RET) @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3).	
	•EXISTING LTE AT&T ANTENNA (7770) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).	
	•EXISTING RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).	
	•EXISTING RRUS-12 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).	
	•EXISTING SURGE ARRESTOR DC2-48-60-0-9E (TYP. OF 1 PER SECTOR, TOTAL OF 3)	
	•EXISTING FC12-PC6-10E (TYP. OF 1)	
	•EXISTING DIPLEXERS LGP21901 (TYP. OF 4 PER SECTOR, TOTAL OF 12)(GROUND).	
	•EXISTING DIPLEXERS LGP21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6)(TOP).	
	•EXISTING (2) DC TRUNKS AND (1) FIBER LINES	
	<u>ITEMS TO REMAIN:</u>	
	•(3) ANTENNAS, (6) TMAS, (12) 1-1/4" COAX CABLES.	
	FINAL APPROVED V2 RFDS 01/12/22	
RFDS:		
SITE ADDRESS:	50 TIFFANY STREET BROOKLYN, CT 06234	
LATITUDE:	41.7974089°, 41° 47' 50.6720" N	
LONGITUDE:	-71.8866939°, 71° 53' 12.09804" W	
TYPE OF SITE:	WATER TANK / INDOOR EQUIPMENT	
STRUCTURE HEIGHT:	130'-0"±	
RAD CENTER:	131'-0"±	
CURRENT USE:	TELECOMMUNICATIONS FACILITY	
PROPOSED USE:	TELECOMMUNICATIONS FACILITY	

DRAWING INDEX		
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA PLANS	1
A-3	ELEVATION	1
A-4	DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1



SITE NUMBER: CTV2139

SITE NAME: BROOKLYN H2O

FA CODE: 10035125

PACE ID: MRCTB056926, MRCTB056964, MRCTB056983, MRCTB057002

PROJECT: LTE 3C, 4C, 5C, 5G NR RADIO, 5G NR 1DR-1

VICINITY MAP

DIRECTIONS TO SITE: (FROM AT&T ADDRESS)

HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT LANE TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 N, MERGE WITH I-91 N, USE THE LEFT LANE TO TAKE EXIT 29 FOR U.S.5 N/CONNECTICUT 15 N/I-84 E TOWARD E HARTFORD/BOSTON, MERGE WITH US-5 N, CONTINUE ONTO CT-15 N, TAKE THE EXIT ON THE LEFT ONTO I-84 E TOWARD BOSTON, TAKE EXIT 59 FOR I-384 E TOWARD PROVIDENCE, CONTINUE ONTO I-384, CONTINUE ONTO US-44 E/US-6 E, KEEP RIGHT AT THE Y JUNCTION TO CONTINUE ON US-6 E, FOLLOW SIGNS FOR WILLIMANTIC/PROVIDENCE, TURN LEFT TO STAY ON US-6 E, USE THE RIGHT 2 LANES TO TURN RIGHT TO STAY ON US-6 E, BROOKLYN, CT 06234



GENERAL NOTES

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2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS



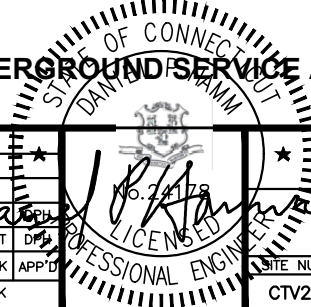
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OR CALL 811

UNDERGROUND SERVICE ALERT





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

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

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

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



SMARTLINK  
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200  
ANNAPOLIS, MD 21401

**SITE NUMBER: CTV2139**  
**SITE NAME: BROOKLYN H2O**

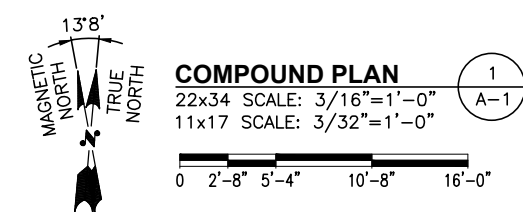
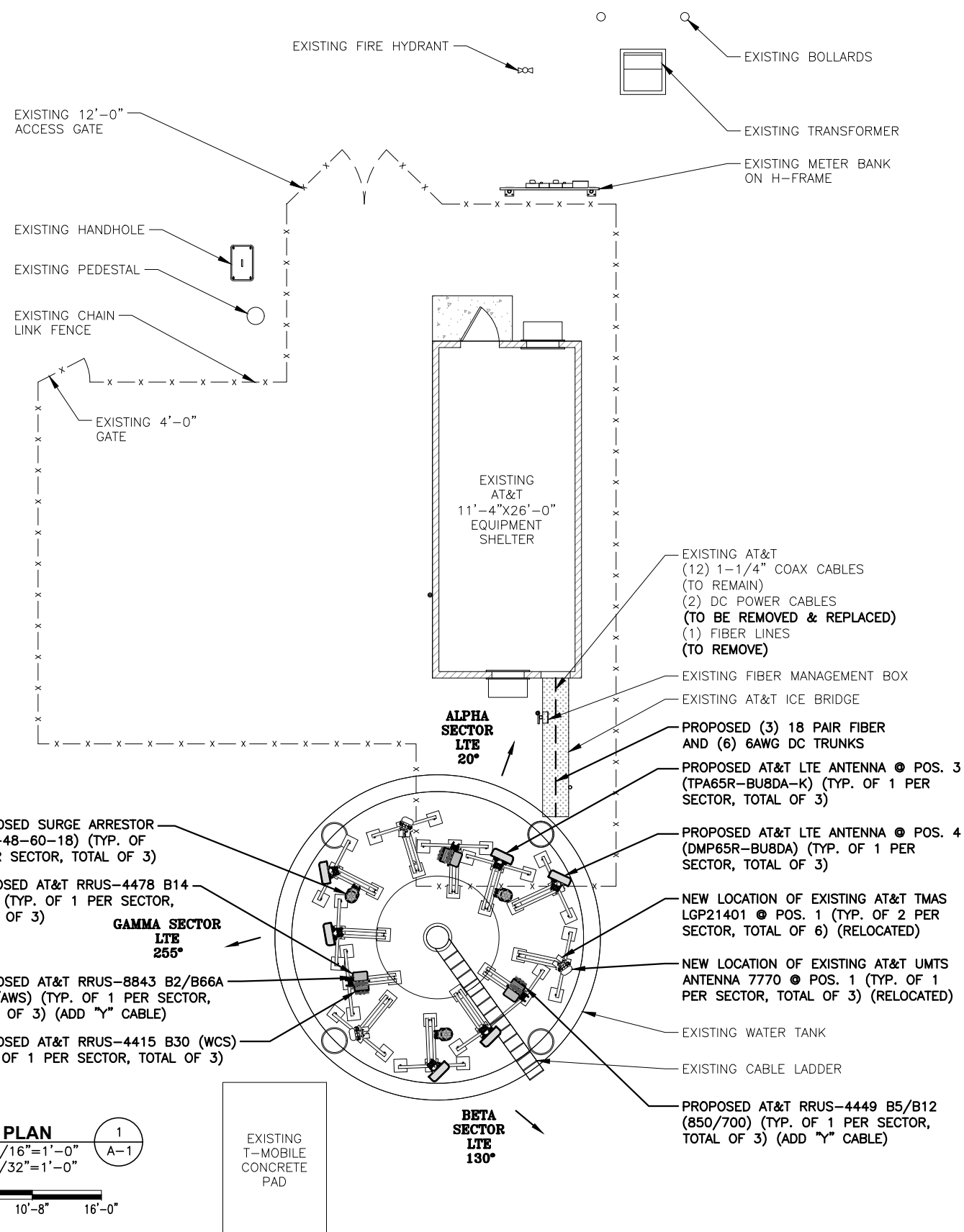
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BROOKLYN, CT 06234  
WINDHAM COUNTY



500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

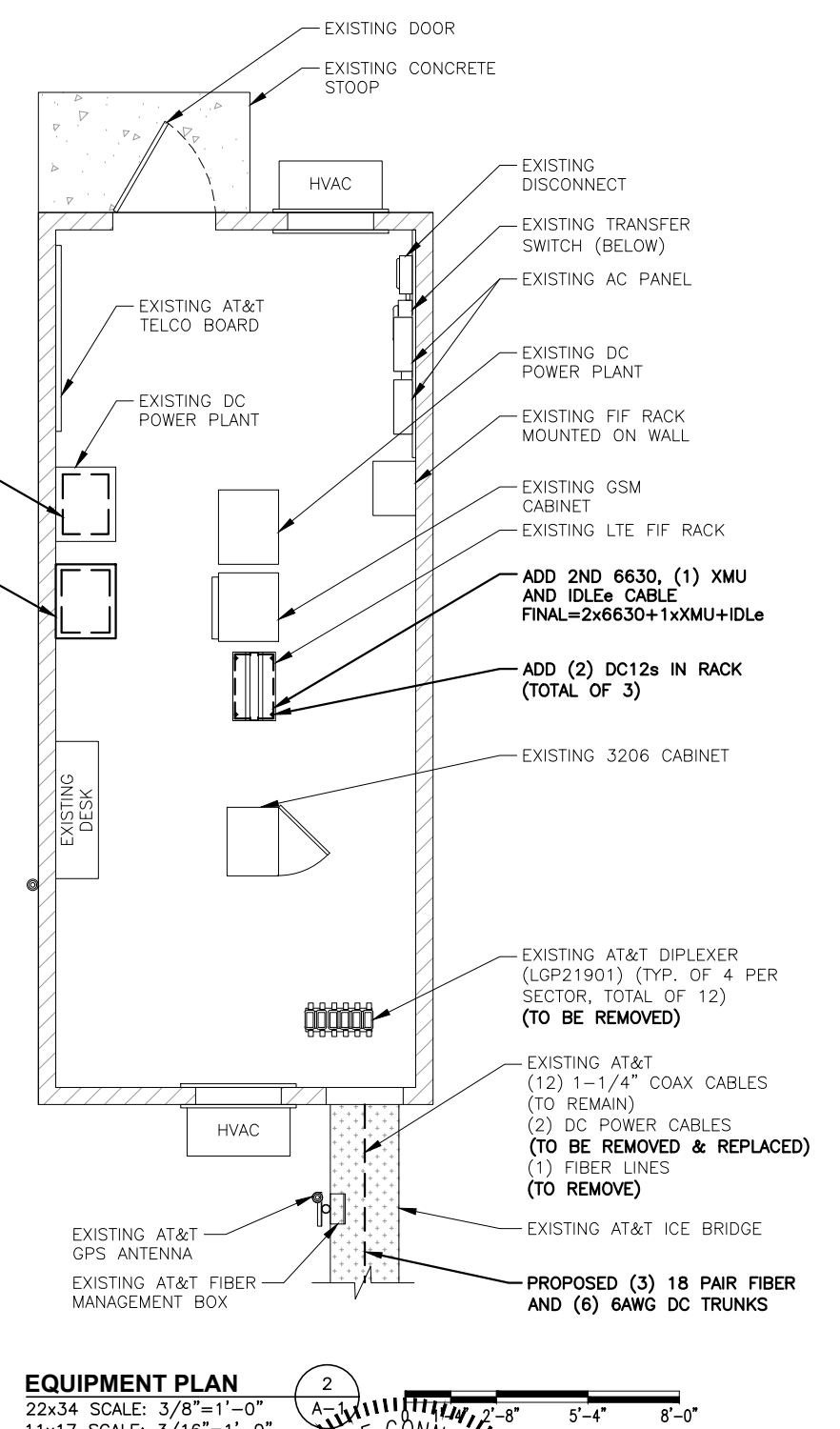
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PROPOSED (3) RECTIFIERS INSIDE EXISTING POWER PLANT

PROPOSED BATTERY RACK WITH (2) STRINGS OF BATTERIES



**NOTE:**

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 04, 2022, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

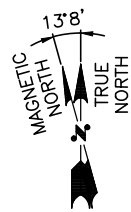
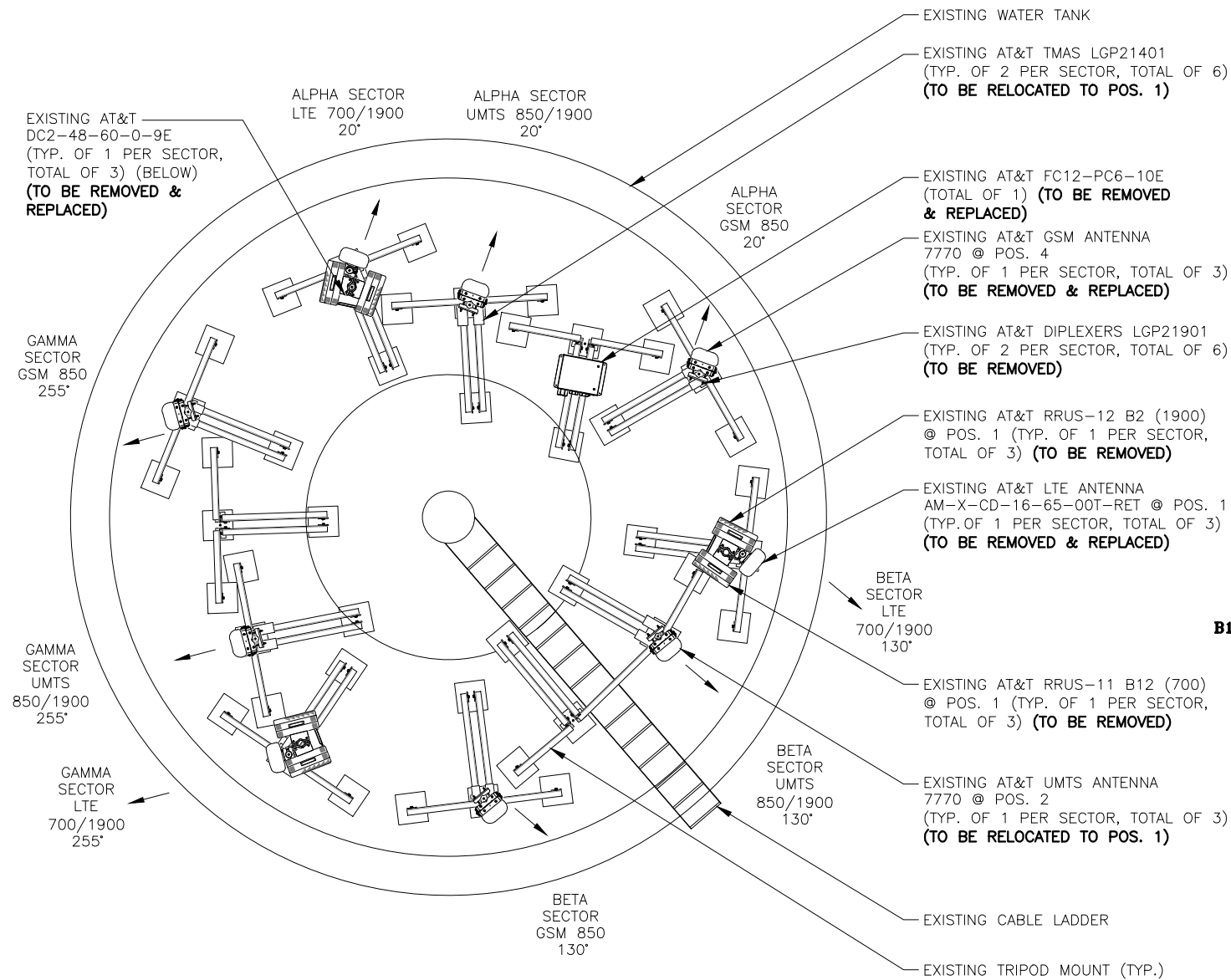
**NOTE:**

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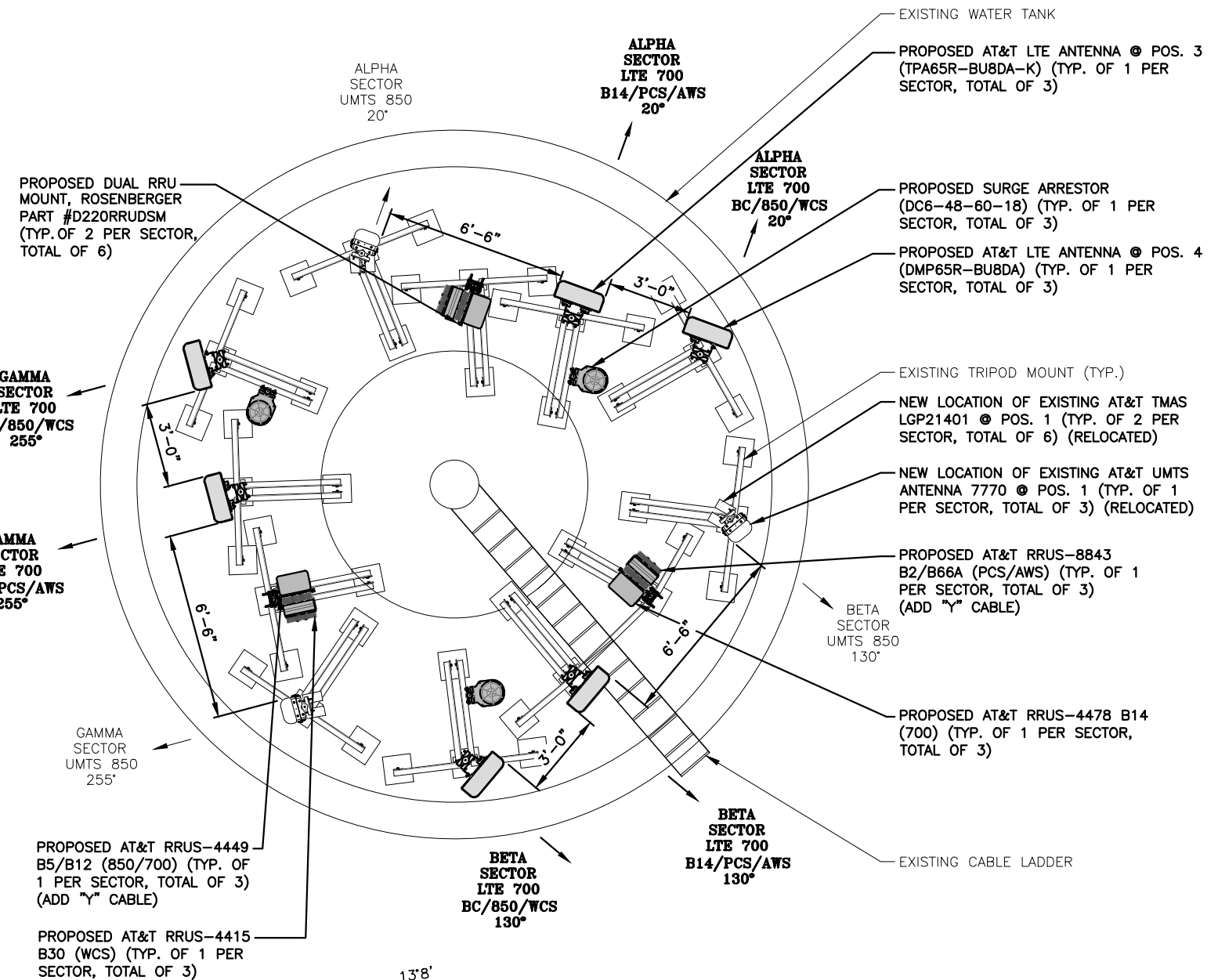
NOTE:  
REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC,  
DATED: FEBRUARY 04, 2022,  
FOR THE CAPACITY OF THE EXISTING  
STRUCTURES TO SUPPORT THE  
PROPOSED EQUIPMENT.

NOTE:  
REFER TO FINAL APPROVED V2 RFDS  
01/12/22



EXISTING ANTENNA LAYOUT  
SCALE: N.T.S

1  
A-2



PROPOSED ANTENNA LAYOUT  
SCALE: N.T.S

2  
A-2



45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



SMARTLINK  
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200  
ANNAPOLIS, MD 21401

SITE NUMBER: CTV2139  
SITE NAME: BROOKLYN H2O

50 TIFFANY STREET  
BROOKLYN, CT 06234  
WINDHAM COUNTY



500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

REVISIONS				AT&T			
NO.	DATE	REVISIONS	BY	CHK	APP'D	SITE NUMBER	DRAWING NUMBER
1	03/09/22	ISSUED FOR CONSTRUCTION	ASK	MKT	DP	CTV2139	A-2
0	01/25/22	ISSUED FOR REVIEW	ASK	MKT	DP		
SCALE: AS SHOWN				DESIGNED BY: AT			
DRAWN BY: ASK				ANTENNA LAYOUTS LTE 3C, 4C, 5C, 5G NR RADIO, 5G NR 1DR-1			
				REV			
				1			







# ANTENNA SCHEDULE

FINAL APPROVED V2 RFDS 01/12/22

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA $\phi$ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55"x11"x5"	131'-0"±	20°	(E)(2) LGP21401	-	-	(E)(2) 1-1/4" COAX CABLE	(P) (1) RAYCAP DC6-48-60-18
A2	-	-	-	-	-	-	-	-	-	(E)(2) 1-1/4" COAX CABLE	
A3	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU8DA-K	96"x20.7"x7.7"	131'-0"±	20°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	16.5"x13.4"x5.9" 14.9"x13.2"x10.9"	(P)(1) Y-CABLE	
A4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	131'-0"±	20°	-	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4415 B30 (WCS)	17.9"x13.2"x10.4" 16.5"x13.4"x5.9"	(P)(1) 18 PAIR FIBER (P)(2) 6AWG DC TRUNKS (APX. LENGTH 280'±) (P)(1) Y-CABLE	
B1	EXISTING	UMTS 850	7770	55"x11"x5"	131'-0"±	130°	(E)(2) LGP21401	-	-	(E)(2) 1-1/4" COAX CABLE	(P) (1) RAYCAP DC6-48-60-18
B2	-	-	-	-	-	-	-	-	-	(E)(2) 1-1/4" COAX CABLE	
B3	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU8DA-K	96"x20.7"x7.7"	131'-0"±	130°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	16.5"x13.4"x5.9" 14.9"x13.2"x10.9"	(P)(1) Y-CABLE	
B4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	131'-0"±	130°	-	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4415 B30 (WCS)	17.9"x13.2"x10.4" 16.5"x13.4"x5.9"	(P)(1) 18 PAIR FIBER (P)(2) 6AWG DC TRUNKS (APX. LENGTH 280'±) (P)(1) Y-CABLE	
C1	EXISTING	UMTS 850	7770	55"x11"x5"	131'-0"±	255°	(E)(2) LGP21401	-	-	(E)(2) 1-1/4" COAX CABLE	(P) (1) RAYCAP DC6-48-60-18
C2	-	-	-	-	-	-	-	-	-	(E)(2) 1-1/4" COAX CABLE	
C3	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU8DA-K	96"x20.7"x7.7"	131'-0"±	255°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	16.5"x13.4"x5.9" 14.9"x13.2"x10.9"	(P)(1) Y-CABLE	
C4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU8DA	96"x20.7"x7.7"	131'-0"±	255°	-	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4415 B30 (WCS)	17.9"x13.2"x10.4" 16.5"x13.4"x5.9"	(P)(1) 18 PAIR FIBER (P)(2) 6AWG DC TRUNKS (APX. LENGTH 280'±) (P)(1) Y-CABLE	

## RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(P)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
3(P)	4478 B14 (700)	18.1"x13.4"x8.3"
3(P)	8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
3(P)	4415 B30 (1900)	16.5"x13.4"x5.9"

NOTE:  
MOUNT PER MANUFACTURER'S SPECIFICATIONS

## NOTE:

REFER TO FINAL APPROVED V2 RFDS  
01/12/22

## NOTE:

REFER TO STRUCTURAL ANALYSIS  
BY: HUDSON DESIGN GROUP, LLC,  
DATED: FEBRUARY 04, 2022,  
FOR THE CAPACITY OF THE EXISTING  
STRUCTURES TO SUPPORT THE  
PROPOSED EQUIPMENT.

## NOTE:

SEE RFDS FOR RRH  
FREQUENCY AND  
MODEL NUMBER

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

NOTE:  
MOUNT PER MANUFACTURER'S  
SPECIFICATIONS.

## PROPOSED RRUS DETAIL

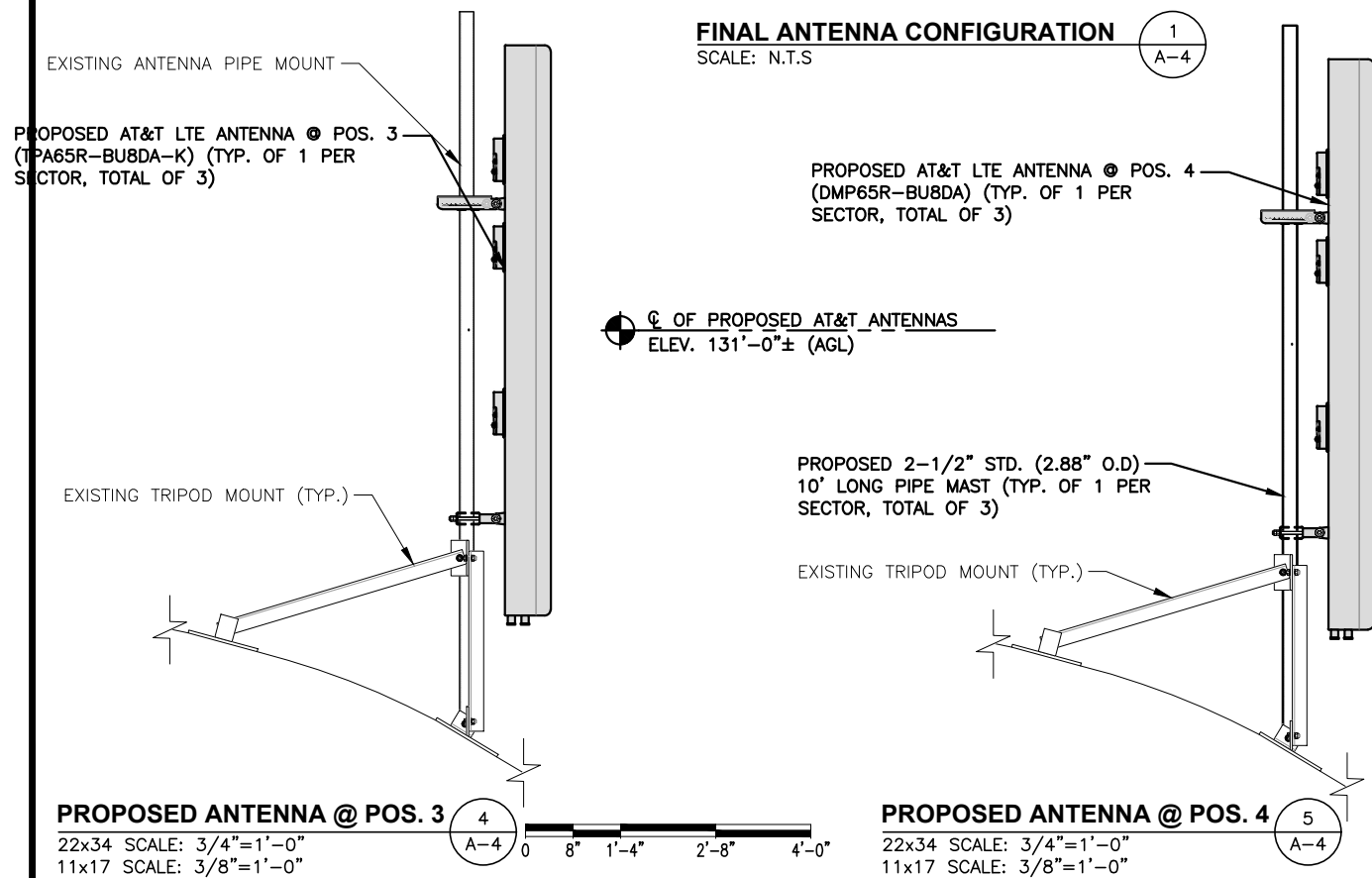
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## BACK TO BACK RRU MOUNT DETAIL

SCALE: N.T.S.

## FINAL ANTENNA CONFIGURATION

SCALE: N.T.S.



PROPOSED AT&T RRUS-8843  
B2/B66A (PCS/AWS) (TYP. OF  
1 PER SECTOR, TOTAL OF 3)  
(ADD "Y" CABLE) (BELOW)

PROPOSED AT&T BACK-TO-BACK  
MOUNTS (TYP. OF 2 PER  
SECTOR, TOTAL OF 6)

PROPOSED AT&T RRUS-4478 B14  
(700) (TYP. OF 1 PER SECTOR,  
TOTAL OF 3)

PROPOSED AT&T ANTENNAS  
ELEV. 131'-0"± (AGL)

PROPOSED AT&T RRUS-4449  
B5/B12 (700) (TYP. OF  
1 PER SECTOR, TOTAL OF 3)  
(ADD "Y" CABLE) (BELOW)

PROPOSED AT&T RRUS-4415 B30  
(WCS) (TYP. OF 1 PER SECTOR,  
TOTAL OF 3)

## PROPOSED RRU'S MOUNTING DETAIL

22x34 SCALE: 3/4"=1'-0"  
11x17 SCALE: 3/8"=1'-0"

EXISTING ANTENNA PIPE MOUNT

PROPOSED SURGE ARRESTOR  
(DC6-48-60-18) (TYP. OF  
1 PER SECTOR, TOTAL OF 3)

PROPOSED 2" STD. (2.38"  
O.D.) 4' LONG PIPE MAST  
(TYP. OF 1 PER SECTOR,  
TOTAL OF 3)

## PROPOSED SURGE ARRESTOR MOUNTING DETAIL

22x34 SCALE: 3/4"=1'-0"  
11x17 SCALE: 3/8"=1'-0"

PROPOSED SURGE  
SUPPRESSOR  
MODEL NUMBERS:  
DC6-48-60-18  
DIMENSIONS:  
H24.0"x9.7"φ  
WITH BRACKET:  
H31.25"x9.7"φ

STRIKESORB 30-V1  
SURGE PROTECTIVE DEVICE

NOTE:  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

## DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S.

## PROPOSED ANTENNA @ POS. 3

22x34 SCALE: 3/4"=1'-0"  
11x17 SCALE: 3/8"=1'-0"

## PROPOSED ANTENNA @ POS. 4

22x34 SCALE: 3/4"=1'-0"  
11x17 SCALE: 3/8"=1'-0"

**HDG** HUDSON  
Design Group LLC

45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

**smartlink**

SMARTLINK  
1997 ANNAPOLIS EXCHANGE PKWY SUITE 200  
ANNAPOLIS, MD 21401

SITE NUMBER: CTV2139  
SITE NAME: BROOKLYN H2O

50 TIFFANY STREET  
BROOKLYN, CT 06234  
WINDHAM COUNTY

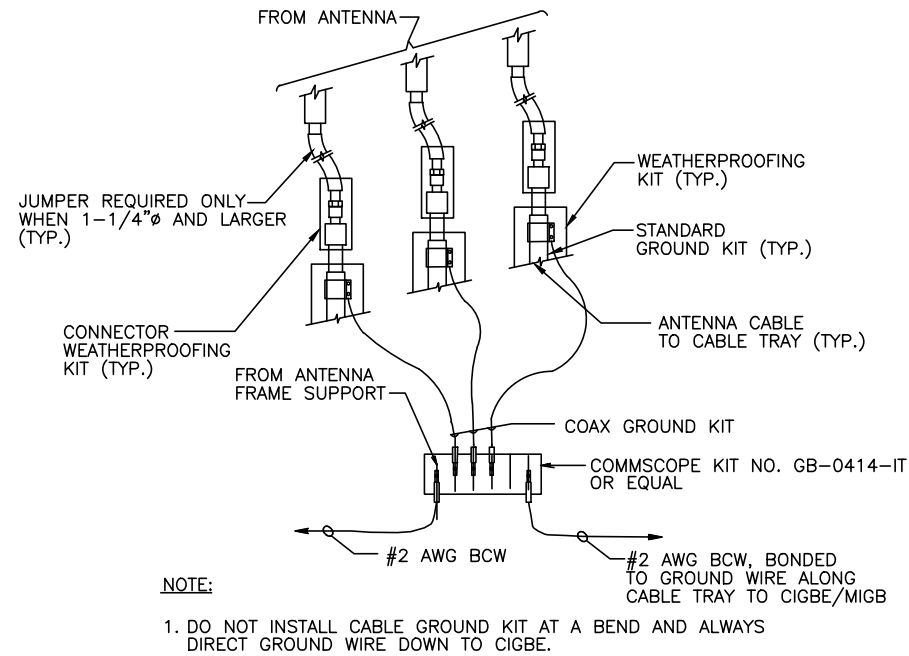
**at&t**

500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/09/22	ISSUED FOR CONSTRUCTION	MR. ASK	MR. ASK	MR. ASK
0	01/25/22	ISSUED FOR REVIEW	ASK	MKT	DP
SCALE: AS SHOWN					
DESIGNED BY: AT			DRAWN BY: ASK		

AT&T		
DETAILS LTE 3C, 4C, 5C, 5G NR RADIO, 5G NR 1DR-1		
SITE NUMBER	DRAWING NUMBER	REV
CTV2139	A-4	1

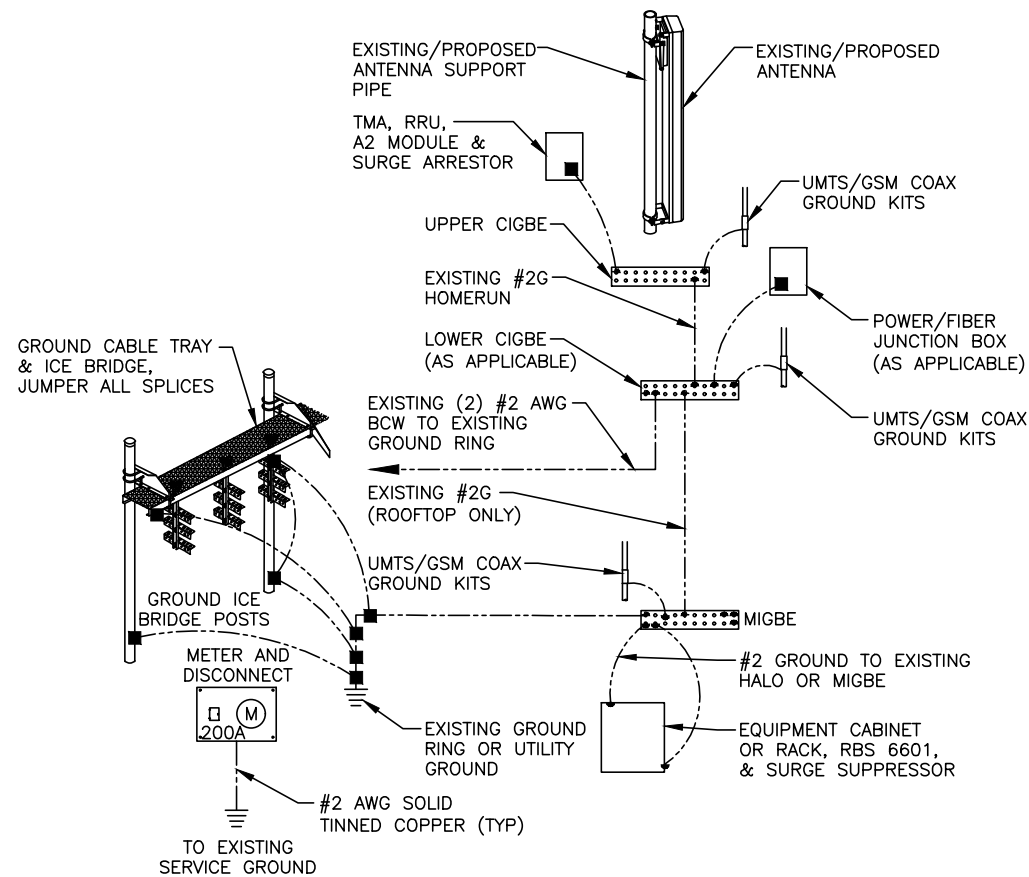




**GROUND WIRE TO GROUND BAR CONNECTION DETAIL**

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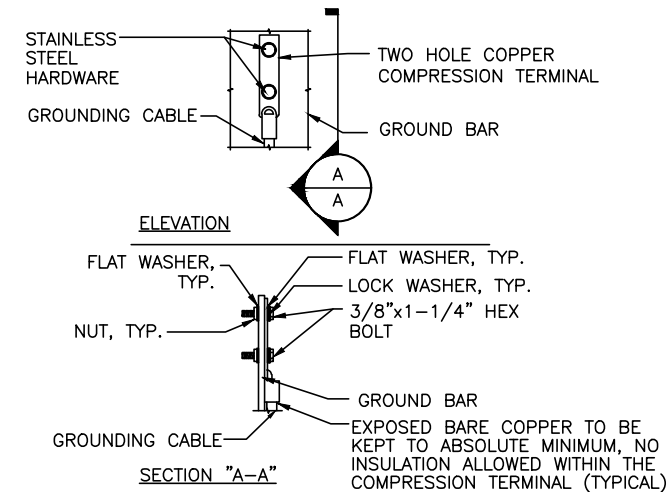
1  
G-1



**GROUNDING RISER DIAGRAM**

SCALE: N.T.S

2  
G-1



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

**TYPICAL GROUND BAR CONNECTION DETAIL**

SCALE: N.T.S

3  
G-1

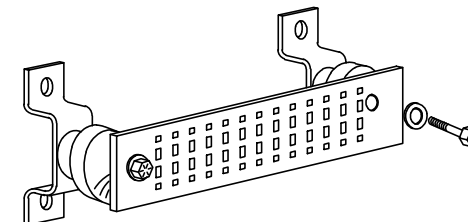
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**SECTION "P" - SURGE PRODUCERS**

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

**SECTION "A" - SURGE ABSORBERS**

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

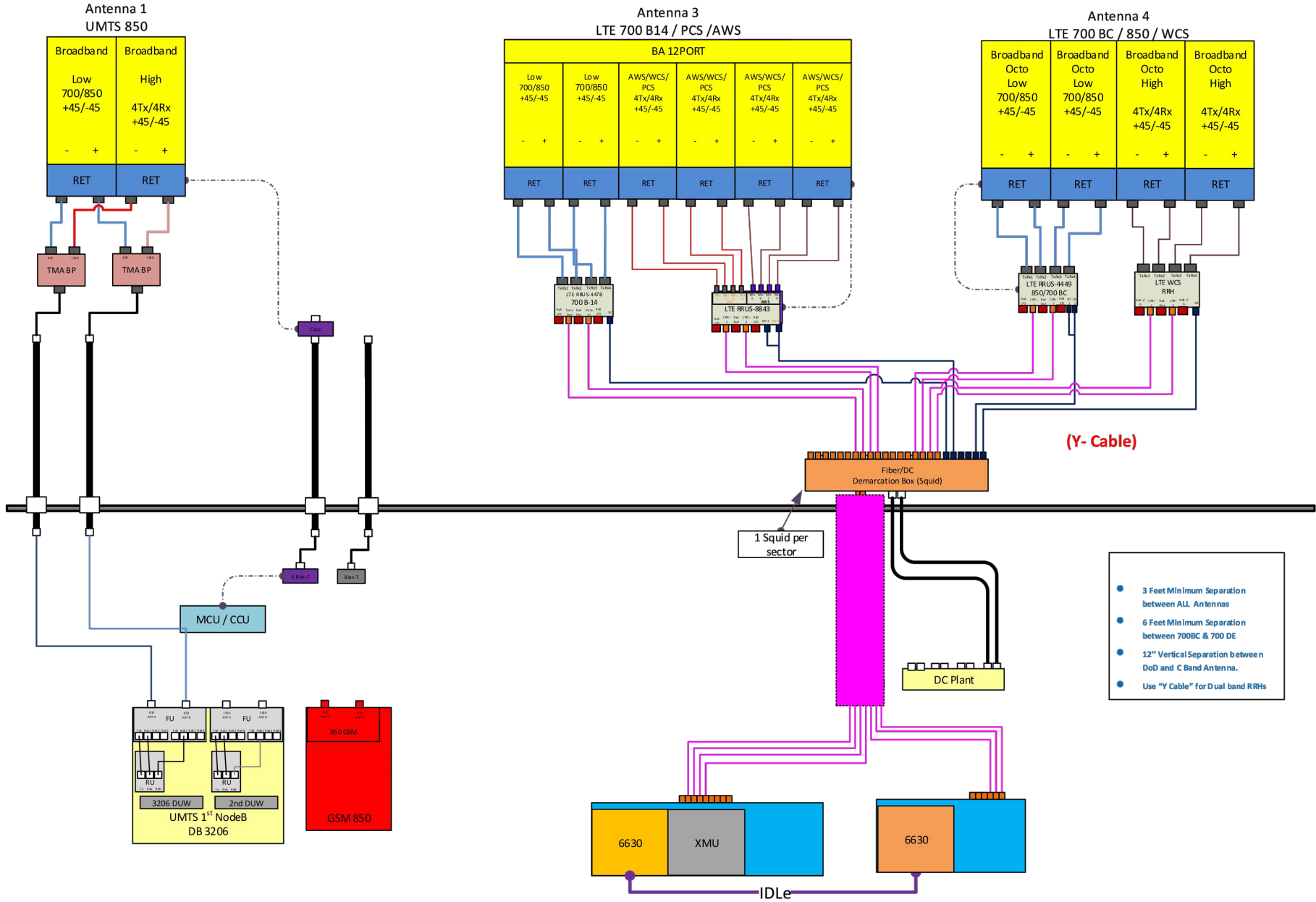


**GROUND BAR - DETAIL (AS REQUIRED)**

SCALE: N.T.S



FINAL APPROVED V2 RFDS 01/12/22



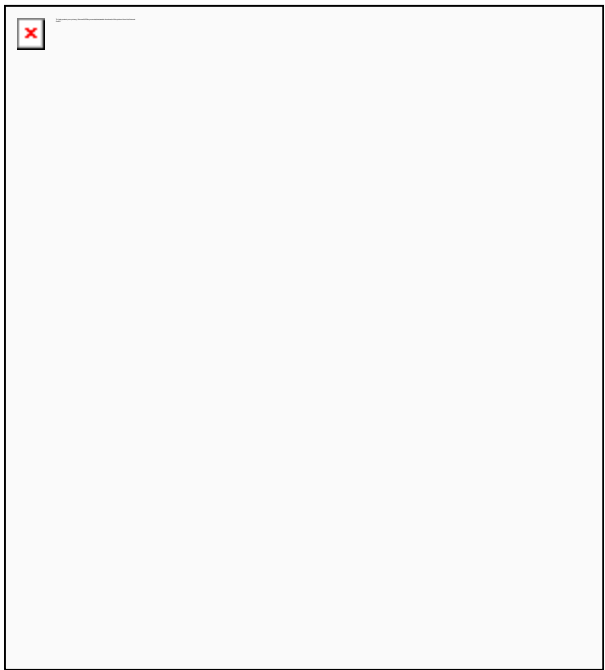
RF PLUMBING DIAGRAM 1 RF-1  
SCALE: N.T.S.

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

**NOTE:**  
REFER TO FINAL APPROVED V2 RFDS 01/12/22

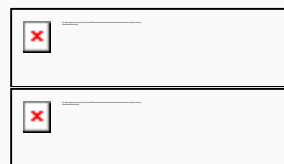


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<b>SPECIAL HANDLING</b>	Deliver Weekday
<b>NUMBER OF PIECES</b>	1
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<b>SERVICE TYPE</b>	FedEx Express Saver

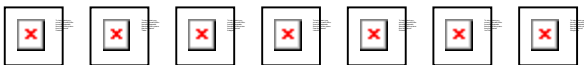



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