

December 12, 2016

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

RE: AT&T Wireless NOTICE OF EXEMPT MODIFICATION  
54 Waterbury Road, Prospect, CT 06712

Dear Ms. Bachman:

Enclosed please find an original and two (2) copies of a Notice of Exempt Modification including drawings, copies of the two (2) structural reports and RF report, and a check in the amount of six hundred twenty five (\$625.00) for the filing fee. In addition, I have included three (3) copies of each notification letter mailed this day to the municipality, and to the owner of both the property and the tower.

I have submitted electronic copies of this application package along with the Structural Analysis and the RF Emissions Report, to you this day via email, simultaneous with the mailing of this package.

Please feel free to contact me with any questions or comments. Thank you for your kind cooperation in this matter.

Respectfully submitted,

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144  
[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

Enclosures

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144  
jandrews@empiretelecomm.com

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

**NOTICE OF EXEMPT MODIFICATION**

54 Waterbury Road, Prospect, CT 06712

Lat: 41-30-40.43 (41.51123056)  
Long: 72-58-57.07 (-72.98251944)

Dear Ms. Bachman:

AT&T Wireless currently maintains seven (7) antennas at the 126 foot level of an existing 160 foot tall guyed tower located at 54 Waterbury Road in Prospect, CT. The tower is owned by Charles and Averyll Bradshaw. The property is likewise owned by Charles and Averyll Bradshaw. AT&T Wireless now seeks to replace three (3) existing antennas and replace three (3) remote radio units (“RRU”), with one (1) replacement antenna and RRU per sector, to the 126 foot level of the tower, and the RRUs to be mounted behind the antennas at 126 feet. In addition, the applicant proposes to install four (4) new structural reinforcement mounting bars to each sector.

The facility was approved by the Connecticut Siting Council in EM-CING-115-150220 on April 22, 2015. Six (6) conditions were enumerated in the Council’s decision: 1) any deviation from the modification as specified in the Notice and supporting materials shall render the acknowledgement invalid; 2) any material changes to the modification as proposed shall require the filing of a new Notice with the Council; 3) Within 45 days after the completion of construction the Council shall be notified in writing that the construction has been completed; 4) Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T Mobility shall be removed within 60 days of the date the antenna ceased to function; 5) the validity of the action shall expire one year from the date of the letter; and 7) the applicant may request an extension of time beyond the one year deadline provided that such a request is submitted to the Council not less than 60 days prior to the expiration.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies section 16-50j-73 for construction that constitutes an exempt modification pursuant to RCSA section 16-50j-

72(b)(2). In accordance with RCSA section 16-50j-73, a copy of this letter and attachments is being sent to the Honorable Robert J. Chatfield, Mayor of Prospect, as well as to Charles and Averyll Bradshaw, the property owners and the tower owners.

The planned modifications to the facility fall squarely within those activities expressly provided for in RCSA section 50j-72(b)(2).

1. The proposed modifications will not result in an increase in height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that will exceed state and local limits.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under RCSA section 16-50j-72(b)(2).

Respectfully submitted,

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144  
[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

Enclosures

cc: The Honorable Robert J. Chatfield, Mayor of Prospect  
Charles and Averyll Bradshaw, as Tower Owners and Property Owners

December 12, 2016

The Honorable Robert J. Chatfield, Mayor of Prospect  
Prospect Town Hall  
36 Center St.  
Prospect, CT 06712

RE: AT&T Wireless Modifications to Telecommunication Facility –  
54 Waterbury Road, Prospect, CT 06712

Dear Mayor Chatfield:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunication facility. AT&T Wireless currently maintains seven (7) antennas at the 126 foot level of an existing 160 foot tall guyed tower located at 54 Waterbury Road in Prospect, CT. The tower is owned by Charles and Averyll Bradshaw. The property is likewise owned by Charles and Averyll Bradshaw.

AT&T Wireless now seeks to replace three (3) existing antennas and replace three (3) remote radio units (“RRU”), with one (1) replacement antenna and RRU per sector, to the 126 foot level of the tower, and the RRUs to be mounted behind the antennas at 126 feet. In addition, the applicant proposes to install four (4) new structural reinforcement mounting bars to each sector.

This letter is intended to serve as the required notice to the municipality. As required by the Regulations of Connecticut State Agencies (“RCSA”) section 16-50j-73, the Connecticut Siting Council (“CSC”) has been notified of the proposed changes and will review AT&T’s proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144  
[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

December 12, 2016

Charles E. & Averyll B. Bradshaw  
54 Waterbury Rd.  
Prospect, CT 06712

RE: AT&T Wireless Modifications to Telecommunication Facility –  
54 Waterbury Road, Prospect, CT 06712  
CT2218  
New Cingular Wireless PCS, LLC; AT&T Mobility (AT&T)

Dear Messrs. Bradshaw:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunications facility.

AT&T Wireless currently maintains seven (7) antennas at the 126 foot level of an existing 160 foot tall guyed tower located at 54 Waterbury Road in Prospect, CT.

AT&T Wireless now seeks to replace three (3) existing antennas and replace three (3) remote radio units (“RRU”), with one (1) replacement antenna and RRU per sector, to the 126 foot level of the tower, and the RRUs to be mounted behind the antennas at 126 feet. In addition, the applicant proposes to install four (4) new structural reinforcement mounting bars to each sector.

This letter is intended to serve as the required notice to both the tower owner and the property owner. As required by the Regulations of Connecticut State Agencies (“RCSA”) section 16-50j-73, the Connecticut Siting Council (“CSC”) has been notified of the proposed changes and will review AT&T’s proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

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10130 Donleigh Drive  
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[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

Enclosures

cc: Melanie Bachman, Connecticut Siting Council



## RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2218

Prospect Bradshaw TWR  
54 Waterbury Road  
Prospect, CT 06712

**October 5, 2016**

**EBI Project Number: 6216004488**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>11.57 %</b>





October 5, 2016

AT&T Mobility – New England  
Attn: Cameron Syme, RF Manager  
550 Cochituate Road  
Suite 550 – 13&14  
Framingham, MA 06040

## Emissions Analysis for Site: **CT2218 – Prospect Bradshaw TWR**

EBI Consulting was directed to analyze the proposed AT&T facility located at **54 Waterbury Road, Prospect, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **54 Waterbury Road, Prospect, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (850 MHz) were considered for sectors A & C of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for sectors A & C of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 GSM channels (850 MHz) were considered for sectors A & C of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **KMW AM-X-CD-16-65-00T-RET**, **CCI HPA-65R-BUU-H6**, **CCI HPA-65R-BUU-H8** and the **Commscope SBNH-1D6565C** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **126 feet** above ground level (AGL) for **Sector A**, **126 feet** above ground level (AGL) for **Sector B** and **126 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	Commscope SBNH-1D6565C
Gain:	13.85 / 15.25 dBd	Gain:	11.95 / 14.75 dBd	Gain:	14.45 / 15.85 dBd
Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,465.76	ERP (W):	5,462.56	ERP (W):	3,979.22
Antenna A1 MPE%	<b>1.14 %</b>	Antenna B1 MPE%	<b>1.90 %</b>	Antenna C1 MPE%	<b>1.31 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	NOT USED	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:		Gain:	13.15 / 14.95 dBd
Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands		Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count		Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):		Total TX Power(W):	240 Watts
ERP (W):	6,229.75	ERP (W):		ERP (W):	6,229.75
Antenna A2 MPE%	<b>2.26 %</b>	Antenna B2 MPE%	<b>0.00 %</b>	Antenna C2 MPE%	<b>2.26 %</b>
Antenna #:	<b>3</b>	Antenna #:	<b>3</b>	Antenna #:	<b>3</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	NOT USED	Make / Model:	Commscope SBNH-1D6565C
Gain:	13.85 dBd	Gain:		Gain:	14.45 dBm
Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>	Height (AGL):	<b>126 feet</b>
Frequency Bands	850 MHz	Frequency Bands		Frequency Bands	850 MHz
Channel Count	2	Channel Count		Channel Count	2
Total TX Power(W):	60 Watts	Total TX Power(W):		Total TX Power(W):	60 Watts
ERP (W):	1,455.97	ERP (W):	0.00	ERP (W):	1,671.67
Antenna A3 MPE%	<b>0.64 %</b>	Antenna B3 MPE%	<b>0.00 %</b>	Antenna C3 MPE%	<b>0.74 %</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>4.31 %</b>
F&S Oil	0.10 %
New Haven Transit	0.10 %
US Post Office	0.11 %
Central Comm.	0.10 %
CT Motor Club	1.91 %
Sprint	2.10 %
Clearwire	0.09 %
Verizon Wireless	2.74 %
<b>Site Total MPE %:</b>	<b>11.57 %</b>

AT&T Sector A Total:	4.05 %
AT&T Sector B Total:	1.90 %
AT&T Sector C Total:	4.31 %
<b>Site Total:</b>	<b>11.57 %</b>



## AT&T Max Power Values Per Sector: Sector C

AT&T _ Frequency Band / Technology (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	835.84	126	4.17	850 MHz	567	0.74%
AT&T 1900 MHz (PCS) UMTS	2	1,153.78	126	5.76	1900 MHz (PCS)	1000	0.58%
AT&T 700 MHz LTE	2	1,239.23	126	6.19	700 MHz	467	1.32%
AT&T 1900 MHz (PCS) LTE	2	1,875.65	126	9.37	1900 MHz (PCS)	1000	0.94%
AT&T 850 MHz GSM	2	835.84	126	4.17	850 MHz	567	0.74%
						Total:	4.31%



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	4.05 %
Sector B:	1.90 %
Sector C:	4.31 %
AT&T Maximum Total (per sector):	4.31 %
Site Total:	11.57 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **11.57 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



# Trylon

Prepared For



Report

## Structural Analysis



**Michael F. Plahovinsak, P.E.**

*Sole Proprietor - Independent Engineer*

18301 SR 161, Plain City, Ohio

614-398-6250 / mike@mfpeng.com

**MFP Project #23216-059**

FA 10035230 -  
CT2218 - PROSPECT  
BRADSHAW TWR  
10/20/2016



## STRUCTURAL ANALYSIS REPORT

### EMPIRE TELECOM

16 Esquire Road  
Billerica, MA 01862

**Attention:** Mr. Dave Cooper

**Reference:** Guyed Tower Analysis – Engineering Assessment, 160-ft Guyed Lattice Tower located at 54 Waterbury Road, Prospect, New Haven County, CT 06712.

County:	New Haven
State:	Connecticut
FA Code.:	10035230
PACE Job:	MRCTB018764
USID:	61203
Site Code:	CT2218
AT&T Site Name:	<b>PROSPECT BRADSHAW TWR</b>
Trylon File:	119646

### Dear Sir:

We are pleased to provide you with our engineering analysis of the 160-ft guyed tower located at 54 Waterbury Road, Prospect, New Haven County, CT 06712. The existing and proposed antennas/lines are shown in drawing E-1 & E-7.

The following design parameters have been used in our analysis:

Design Standard:	TIA-222-G
Basic Design Wind Speed:	94.5 (mph)
Serviceability Wind Speed:	60.0 (mph)
Reliability Category:	Class II
Topographic Category:	Category 1
Exposure Category:	C
Ice Thickness:	0.75 (in)

### ASSUMPTIONS AND LIMITATIONS OF ANALYSIS ON EXISTING TOWER

Please note the following assumptions and limitations inherent in this analysis and report:

- A) Trylon has not obtained, reviewed, or carried out an inspection of this structure to determine its current condition. We have assumed that this tower is in good, undamaged and non-corroded condition. The tower geometry, guy cables characteristics and anchor positions were measured and determined by a field crew and provided to us in a *Steel & Antenna Mapping Report* by Structural Components dated 10-Oct-2016. The new analysis is in accordance with TIA-222-G.
- B) We considered the existing and proposed antennas/lines are as indicated in drawing E-1 & E-7.
- C) Existing loads are as per *Steel & Antenna Mapping Report* by Structural Components, dated 10-Oct-2016.
- D) Proposed loads are as per RFDS document dated 13-May-2016.





- E) Information regarding the foundations and ground anchors of the tower, as well as the soil parameters, could not be obtained through mapping, therefore we did not review the tower foundations and anchors.
- F) The steel grade of the tower members and the existing reinforcing could not be determined through mapping. We considered the tower members steel grade to be A572-50, as considered in the previous Analysis Report by Armor Tower Engineering, dated 22-Jun-2012.

**CONCLUSIONS & RECOMMENDATIONS:**

The proposed 160-ft guyed tower located at FA10035230, 54 Waterbury Road, Prospect, New Haven County, CT 06712 is **ADEQUATE** to support its overall and total load (tower rating is **99.1%** foundations not evaluated), subject to the attached Standard Conditions on page 3 and the above mentioned assumptions and limitations.

Should you have any questions, comments or require additional information, please do not hesitate to call.

Sincerely,

Analysis performed by:

Alexandru Fabian  
Trylon Engineer

Reviewed by:

Michael F. Plahovinsak, P.E.



### **Standard Conditions for Providing Structural Consulting Services on Existing Structures**

1. The following standard conditions are a general overview of key issues regarding the work product. Refer to document “Scope of Work – Existing Tower Structures” for a detailed explanation of the scope of work that we have performed.
2. If the existing conditions are not as represented in this structural report or attached sketches, we should be contacted to evaluate the significance of the deviation and revise the structural assessment accordingly.
3. The structural analysis has been performed assuming that the structure is in “like new” condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, etc. If there are any known deficiencies in the structure that potentially compromise structural integrity, we should be made aware of the deficiencies. If we are aware of a deficiency that exists in a structure at the time of our analysis, a general explanation of the structural concern due to the deficiency will be included in the structural report, but the deficiency will not be reflected in capacity calculations.
4. The structural analysis provided is an assessment of the primary load carrying capacity of the structure. We provide a limited scope of service, in that we have not verified the capacity of every weld, plate, connection detail, etc. In most cases, structural fabrication details are unknown at the time of our analysis, and the detailed field measurement of this information is beyond the scope of our services. In instances where we have not performed connection capacity calculations, it is assumed that existing manufactured connections develop the full capacity of the primary members being connected.
5. We will not accept any liability for the adequacy of the existing foundation system unless accurate structural foundation drawings are provided with a site-specific geotechnical report. Foundations will be assumed installed per the drawings with no construction deficiency due to initial installation or age.
6. Miscellaneous items such as antenna mounts, coax supports, etc. have not been designed, detailed, or specified as part of our work. It is assumed that material of adequate size and strength will be purchased from a reputable component manufacturer. The attached report and sketches are schematic in nature and should not be used to fabricate or purchase hardware and accessories to be attached to the structure. We recommend field measurement of the structure before fabricating or purchasing new hardware and accessories. We are not responsible for proper fit and clearance of hardware and accessory items in the field.
7. The structural analysis has been performed considering minimum code requirements or recommendations. If alternate wind, ice, or deflection criteria are to be considered, then we shall be made aware of the alternate criteria.



# Trylon

Prepared For



## Mount Analysis



**Michael F. Plahovinsak, P.E.**

*Sole Proprietor - Independent Engineer*

18301 SR 161, Plain City, Ohio

614-398-6250 / mike@mfpeng.com

**MFP Project #23216-042**

Prospect Bradshaw TWR

FA10035230

12/09/2016

PASS



## MOUNT ANALYSIS REPORT

### EMPIRE TELECOM

16 Esquire Road  
Billerica, MA 01862

**Attention:** Mr. Dave Cooper

**Reference:** Analysis of the existing 9' T-Frames mounted at 126-ft elevation. (Trylon job No. **119646-R**)

Site name: Prospect Bradshaw TWR  
PTN: -  
FA Code: 10035230  
Site Number: CTL2218  
Site Address: 54 Waterbury Road, New Haven County, CT 06712  
Tower Profile: 477-ft Guyed Tower

**Dear Sir:**

We have been provided with RF information, CD's, photos and sketches of the structure for above-referenced site. AT&T is proposing to change the equipment configuration on the existing mounting hardware.

A revised antenna, coax and miscellaneous equipment schematic have been provided to us. We have been asked to evaluate this information to determine whether or not the existing structures and mounting apparatus are adequate to safely support the proposed loading change. The structural evaluation refers to the 9' T-Frames mounted at 126-ft elevation on the existing 160-ft guyed tower located at 54 Waterbury Road, New Haven County, CT 06712.

The proposed changes were provided to us in a RFDS package (dated 05/13/2016). The antennas are located at 126-ft elevation on all sectors.

The structural member sizes and lengths of the mount were considered as per previous mount analysis by Destek Engineering, dated 5/12/2015.

The existing antenna configuration consists of:

#### **Sector Alpha:**

- (1) AM-X-CD-16-65-00T-RET antenna (72"x11.8"x7.4" – 48.5lbs) in position #1,
- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #3,
- (1) AM-X-CD-16-65-00T-RET antenna (72"x11.8"x7.4" – 48.5lbs) in position #4,
- Additional equipment: (1) RRUS-11, (1) RRUS-12, (2) DTMABP7819VG12A TMA's and (1) DC/Fiber Squids.

#### **Sector Beta:**

- (1) AM-X-CD-16-65-00T-RET antenna (72"x11.8"x7.4" – 48.5lbs) in position #3,
- Additional equipment: (1) RRUS-11 and (1) RRUS-12.

#### **Sector Gamma:**

- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #1,



- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #3,
- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #4,
- Additional equipment: (1) RRUS-11, (1) RRUS-12 and (2) DTMABP7819VG12A TMA's

The final antenna configuration considered in our analysis is:

**Sector Alpha:**

- (1) AM-X-CD-16-65-00T-RET antenna (72"x11.8"x7.4" – 48.5lbs) in position #1,
- (1) HPA-65R-BUU-H8 antenna (92.4"x14.8"x7.4" – 68lbs) in position #2,
- (1) AM-X-CD-16-65-00T-RET antenna (72"x11.8"x7.4" – 48.5lbs) in position #4,
- Additional equipment: (1) RRUS-11, (1) RRUS-32 B1, (2) DTMABP7819VG12A TMA's and (1) DC/Fiber Squids.

**Sector Beta:**

- (1) HPA-65R-BUU-H6 antenna (72"x14.8"x7.4" – 51lbs) in position #2,
- Additional equipment: (1) RRUS-11 and (1) RRUS-32 B2.

**Sector Gamma:**

- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #1,
- (1) HPA-65R-BUU-H8 antenna (92.4"x14.8"x7.4" – 68lbs) in position #2,
- (1) SBNH-1D6565C antenna (96.4"x11.9"x7.1" – 66.1lbs) in position #4,
- Additional equipment: (1) RRUS-11, (1) RRUS-32 B2 and (2) DTMABP7819VG12A TMA's

The existing equipment mount we have reviewed is a general 9' T-Frame with one tieback on each side of the frame. The mounts geometry and loadings differs between sectors. For a conservative approach, we have reviewed the most loaded structure.

We assume steel grade to be A36 for all members of the mounting hardware.

This is a re-run of our previous analysis Trylon Job no. 119646, dated 09/30/2016. The scope of this analysis re-run is to consider in our mount analysis the reinforcement described in Trylon Drawing No. S-1, dated 11/22/2016.

**CONCLUSIONS AND RECOMMENDATIONS**

Based on information provided, our calculations conclude that the existing AT&T 9' T-Frames located at 126-ft elevation on the guyed tower at the specified address, are **ADEQUATE** to safely support the proposed equipment, subject to the attached Standard Conditions on page 3.

**The reinforcement described in Trylon Drawing No. S-1, dated 11/22/2016 have been considered to be properly installed in order for this analysis results to be valid.**

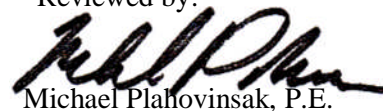
Should you have any questions, comments or require additional information, please do not hesitate to call.

Sincerely,

Analysis performed by:

Adrian Vintilescu  
Trylon Engineer

Reviewed by:

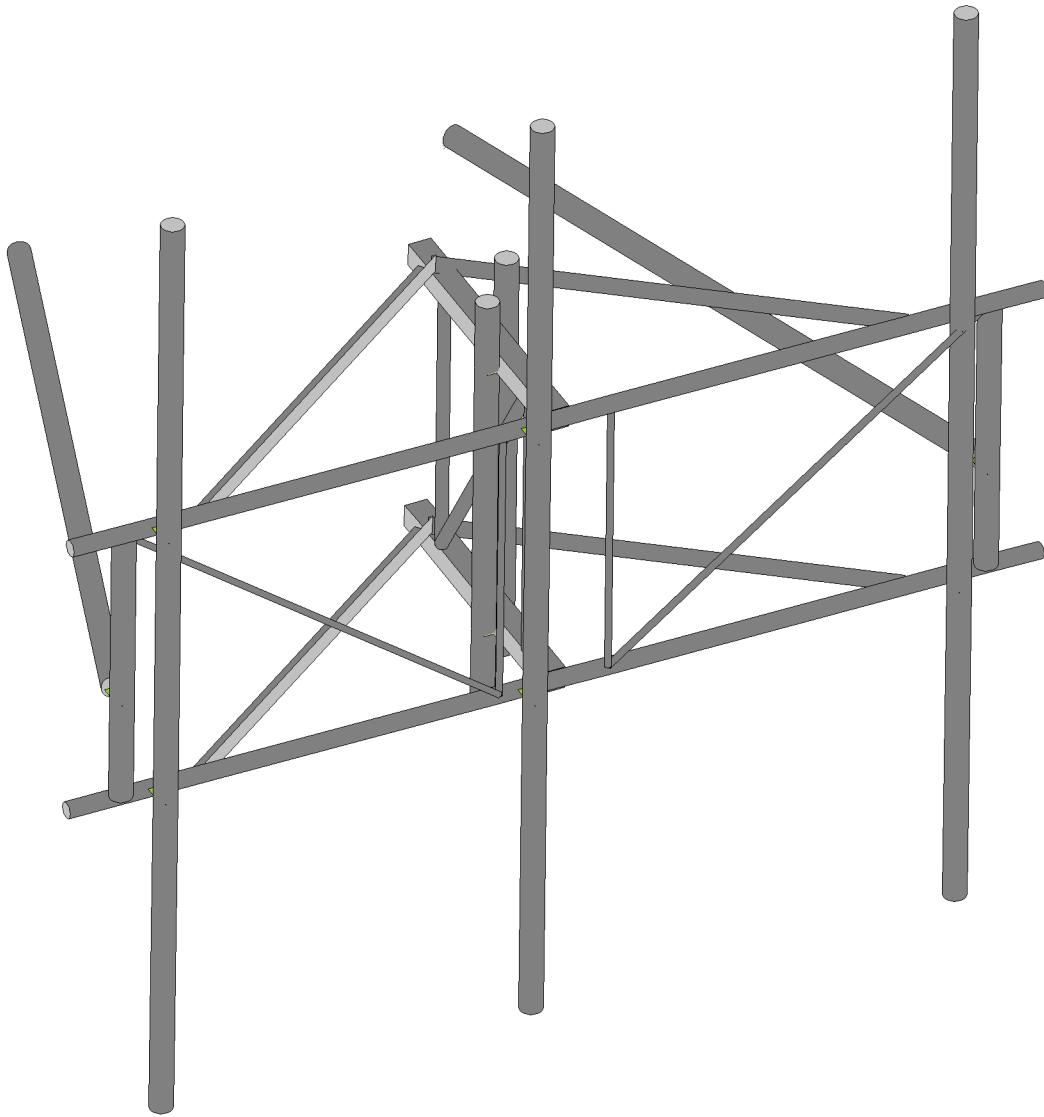


Michael Plahovinsak, P.E.



### **Standard Conditions for Providing Structural Consulting Services on Existing Structures**

1. Mounting hardware is analyzed to the best of our ability using all information that is provided or can be obtained during fieldwork (if authorized by client). If the existing conditions are not as we have represented in this analysis, we should be contacted to evaluate the significance of the deviation and revise the assessment accordingly.
2. The structural analysis has been performed assuming that hardware is in “like new” condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, misaligned parts, or any reduction in strength due to the age or fatigue of the product.
3. The structural analysis provided is an assessment of the primary load carrying capacity of the hardware. We provide a limited scope of service. In some cases we cannot verify the capacity of every weld, plate, connection detail, etc. In some cases, structural fabrication details are unknown at the time of our analysis, and the detailed field measurement of some of the required details may not be possible. In instances where we cannot perform connection capacity calculations, it is assumed that the existing manufactured connections develop the full capacity of the primary members being connected.
4. We cannot be held responsible for mounting hardware that is installed improperly or hardware that is loose or has a tendency of working loose over the lifetime of the mounting hardware. Our analysis has been performed assuming fully tightened connections, and proper installation and symmetry of the mounting hardware per manufacturer’s instructions.
5. The structural analysis has been performed using information currently provided by the client and potentially field verified. We have been provided with a mounting arrangement for all telecommunications equipment, including antennas RRH’s, TMA’s, RRU’s, diplexers, surge protection devices, etc. Our analysis has been based upon a particular mounting arrangement. We are not responsible for deviations in the mounting arrangement that may occur over time. If deviations in equipment type or mounting arrangements are proposed, then we should be contacted to revise the recommendations of this structural report.
6. We cannot be held responsible for temporary and unbalanced loads on mounting hardware. Our analysis is based on a particular mounting arrangement or as-built field condition. We are not responsible for the methods and means of how the mounting arrangement is accomplished by the contractor. These methods and means may include rigging of equipment or hardware to lift and locate, temporary hanging of equipment in locations other than the final arrangement, movement and tie off of tower riggers, personnel, and their equipment, etc.
7. Steel grade and strength is unknown and cannot be field tested. We cannot be held responsible for equipment manufactured from inferior steel or bolts. Our analysis assumes that standard structural grade steel has been used by the equipment manufacturer for all assembled parts of the mounting apparatus. Acceptable steels and connection components are specified by the American Institute of Steel Construction. It is assumed all welded connections are performed in the shop under the latest American Welding Society Code. No field welds are permitted or assumed for the existing pre-manufactured equipment.



Trylon

AV

119646-R

Mount Analysis-Reinforced

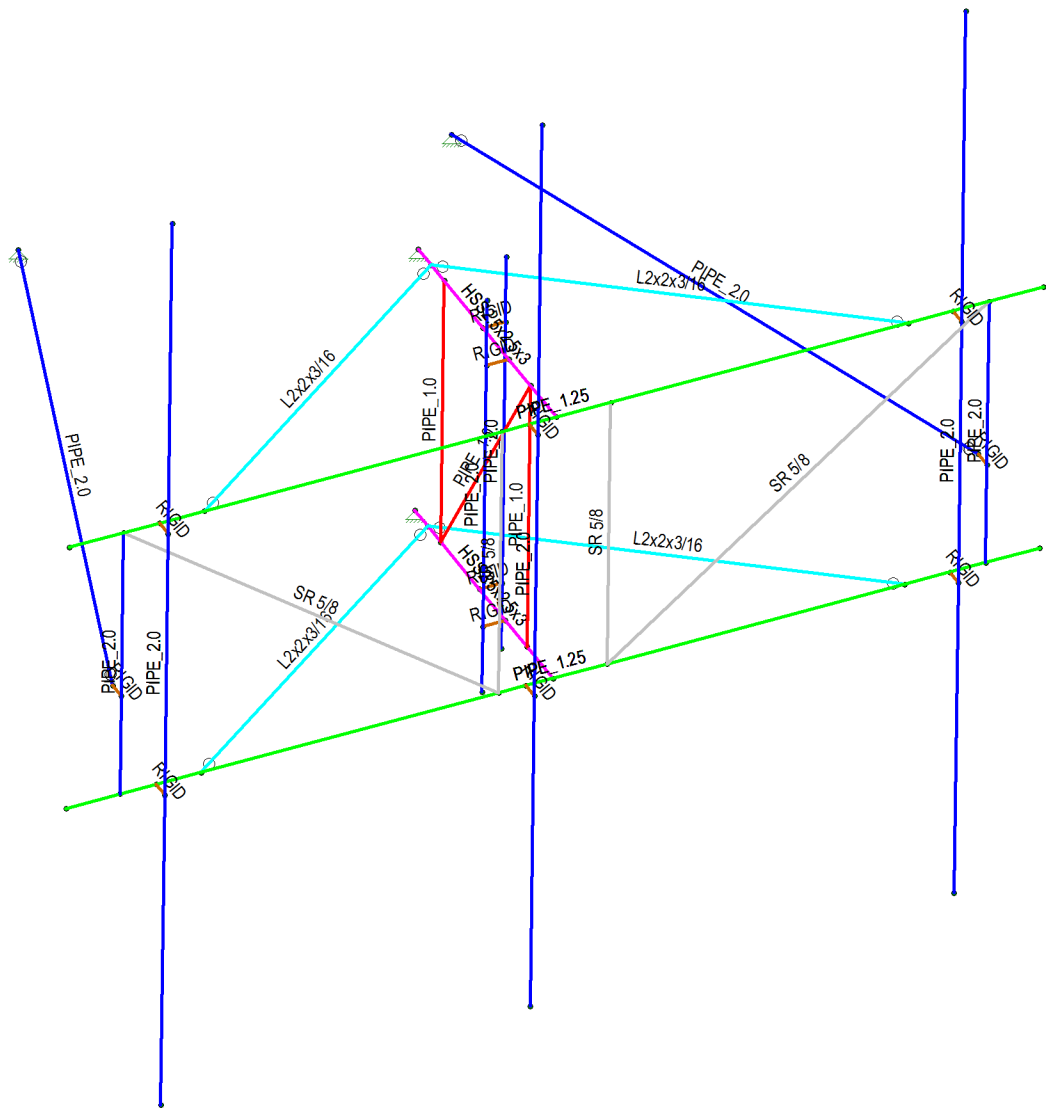
SK - 1

Dec 9, 2016 at 12:36 PM

119646-R.R3D



Section Sets	
PIPE_2.0	Blue
PIPE_1.25	Green
PIPE_1.0	Red
SR 5/8	Grey
HSS2.5x2.5x3	Pink
L2x2x3/16	Cyan
RIGID	Brown



Trylon  
AV  
119646-R

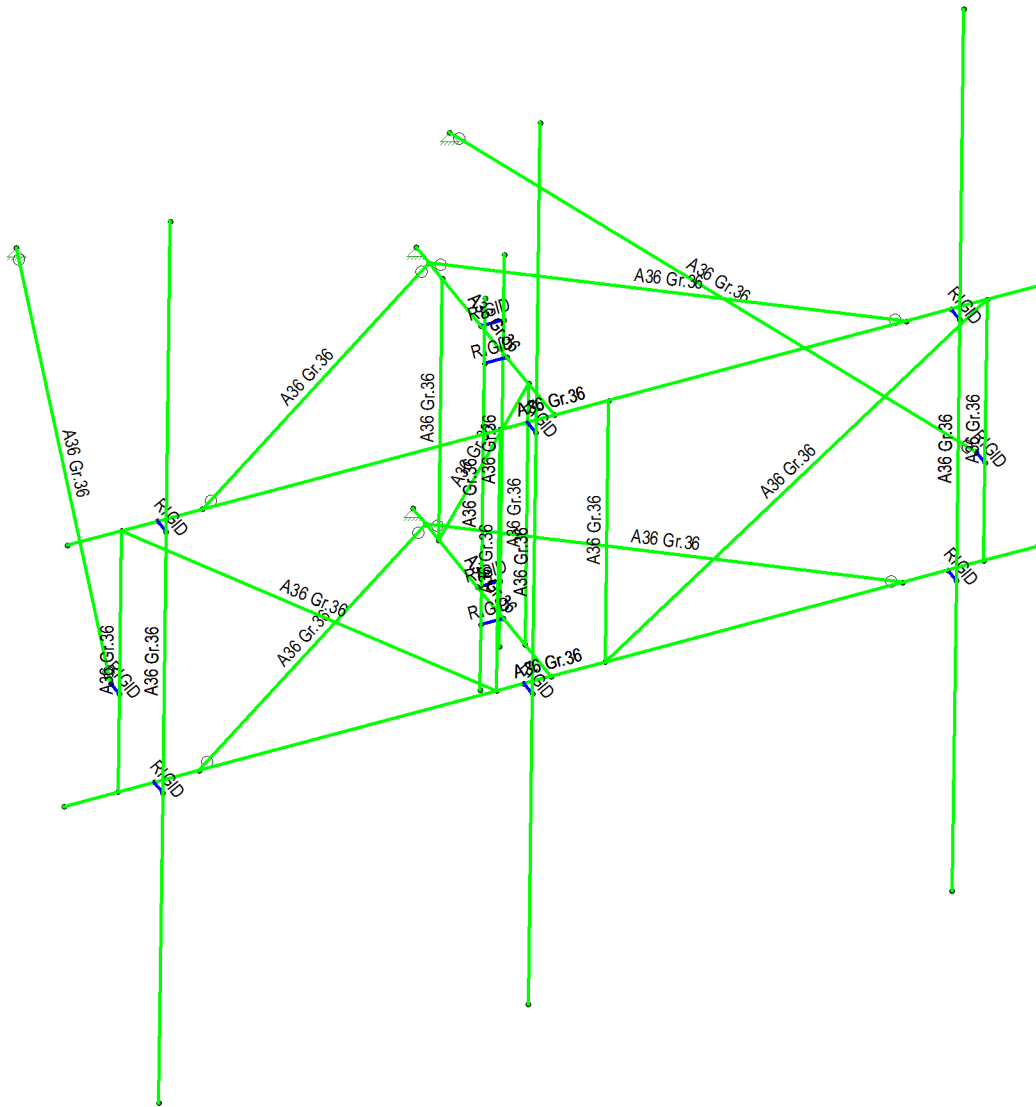
Mount Analysis-Reinforced

SK - 2  
Dec 9, 2016 at 12:37 PM  
119646-R.R3D





Material Sets  
RIGID  
A36 Gr.36



Trylon

AV

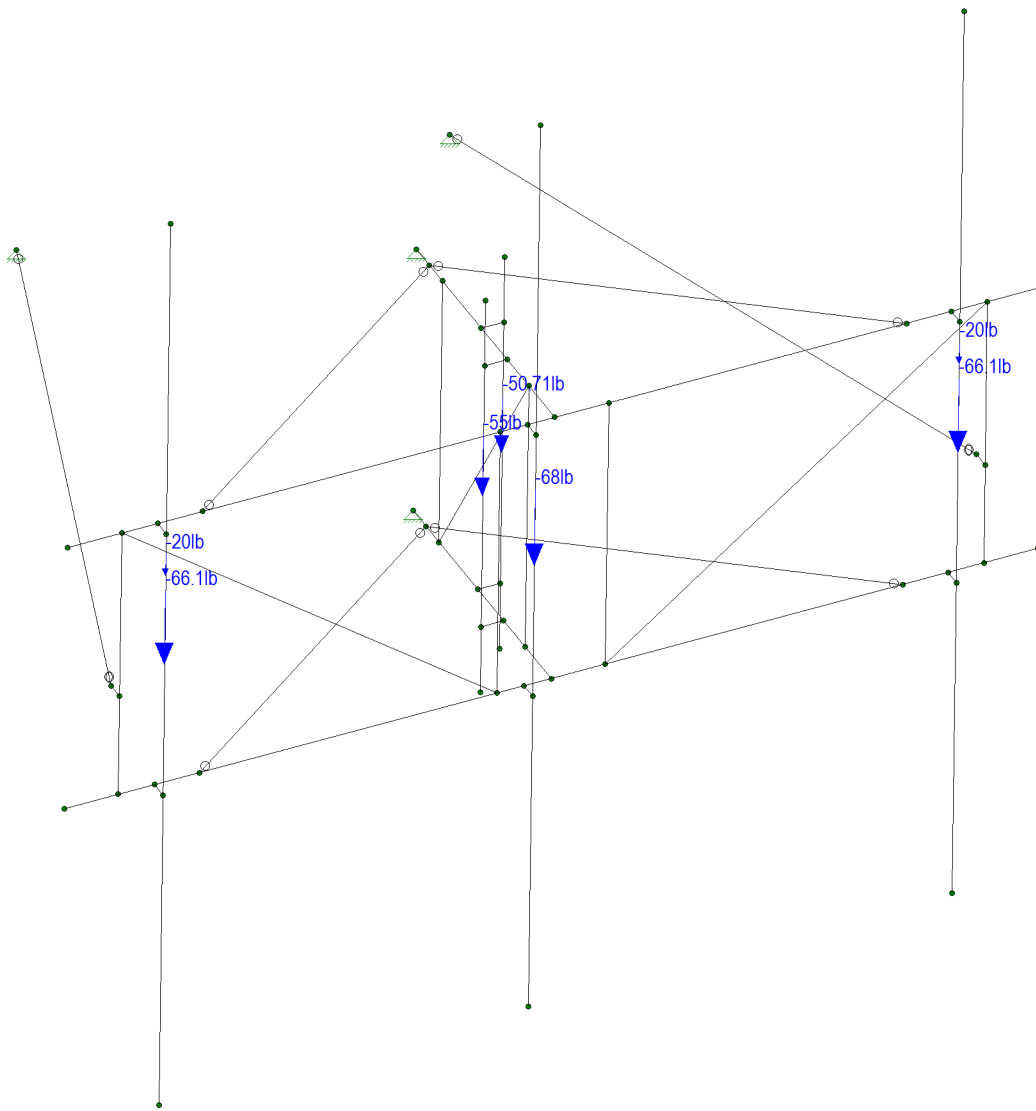
119646-R

Mount Analysis-Reinforced

SK - 3

Dec 9, 2016 at 12:37 PM

119646-R.R3D



Loads: BLC 2, Weight

Trylon

AV

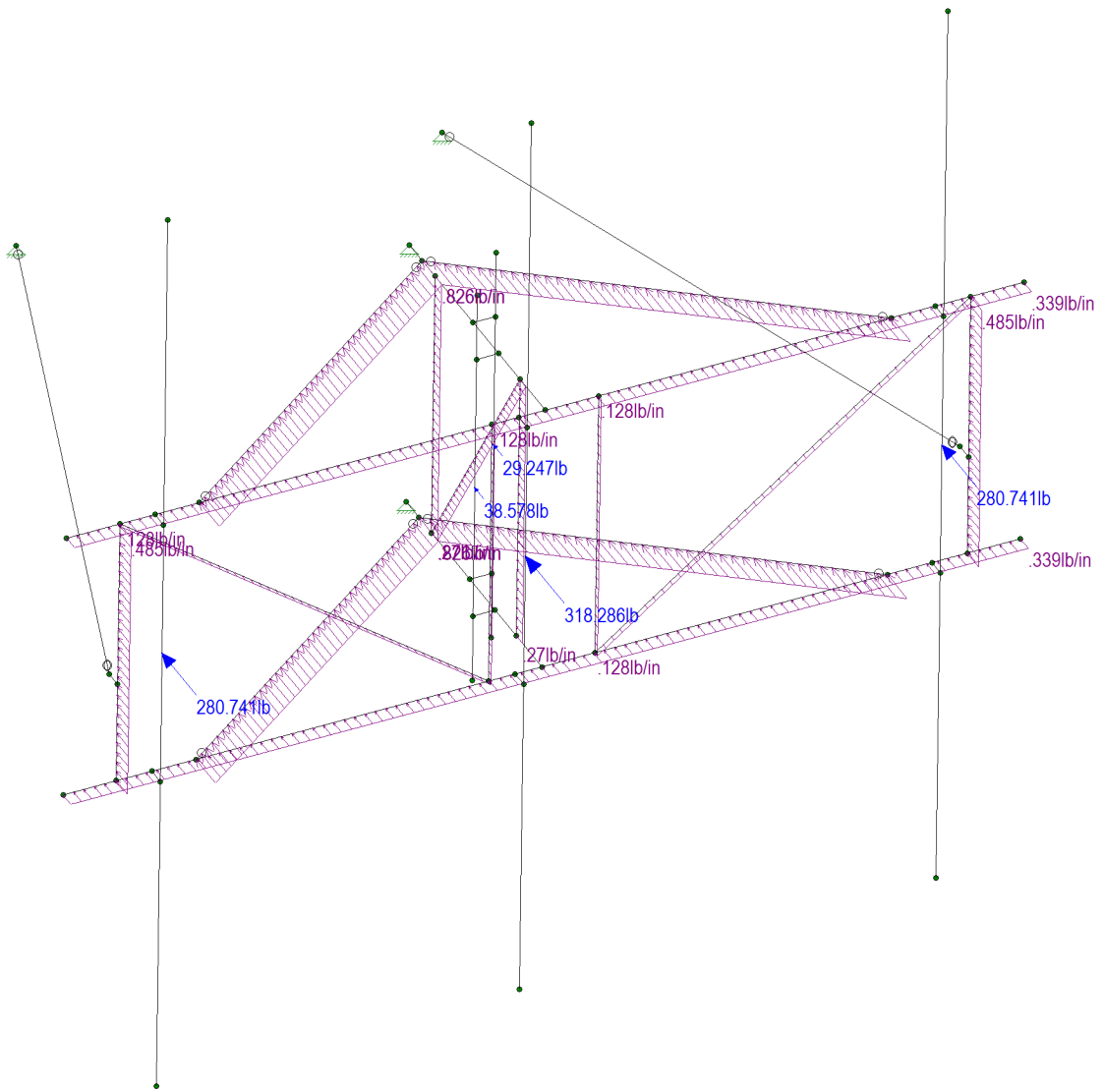
119646-R

Mount Analysis-Reinforced

SK - 4

Dec 9, 2016 at 12:38 PM

119646-R.R3D



Loads: BLC 3, Wind Front

Trylon

AV

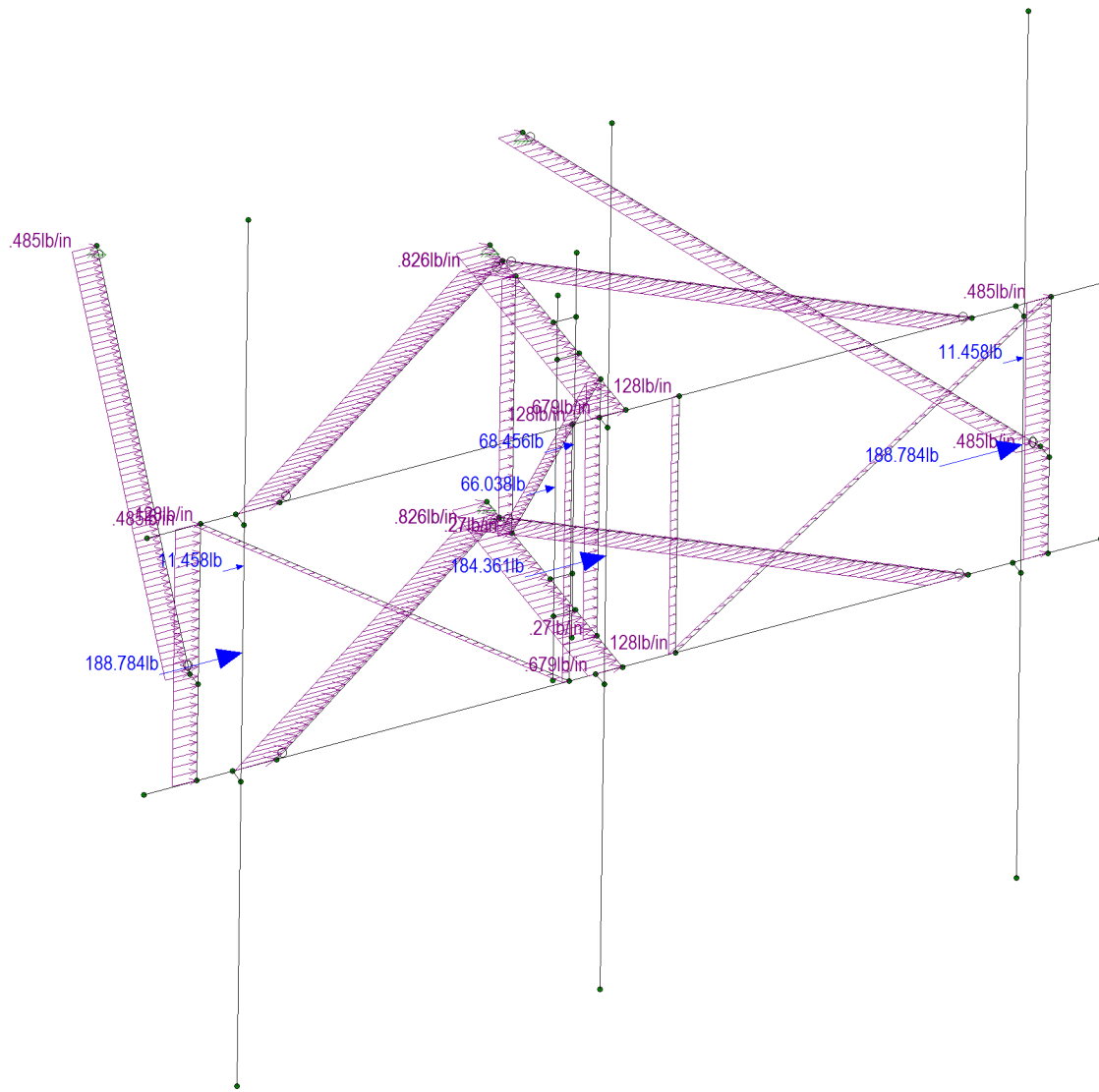
119646-R

Mount Analysis-Reinforced

SK - 5

Dec 9, 2016 at 12:38 PM

119646-R.R3D



Loads: BLC 4, Wind Lateral

Trylon

AV

119646-R

Mount Analysis-Reinforced

SK - 6

Dec 9, 2016 at 12:38 PM

119646-R.R3D





TRYLON JOB NO. : 119646  
 SITE NAME : Prospect Bradshaw TWR  
 FA CODE : 10035230  
 Design by : AV

State : Connecticut V = 94.5 mph  
 County : New Haven V<sub>i</sub> = 50 mph  
 t<sub>i</sub> = 0.75 in  
 Height above ground : z = 126 ft

STRUCTURE CLASS:	II	I for W <sub>o</sub>	I for W <sub>i</sub>	I for t <sub>iz</sub>	
	1	1	1	1	
EXPOSURE CATEGORY:	z <sub>g</sub> (ft)	α	K <sub>zmin</sub>	K <sub>e</sub>	K <sub>z</sub>
C	900	9.5	0.85	1	1.329
TOPOGRAPHIC CATEGORY:	K <sub>t</sub>	f	K <sub>h</sub>	K <sub>zt</sub>	
1	1	1	-	1.000	
Height of crest :	H =	0 ft --> only for cat. 2,3,4			
Wind direction prob. factor :	K <sub>d</sub> =	0.95			
Wind pressure without ice :	q <sub>z</sub> =	28.858 lb/ft <sup>2</sup>	0.200 lb/in <sup>2</sup>		
Wind pressure with ice :	q <sub>z</sub> =	8.079 lb/ft <sup>2</sup>	0.056 lb/in <sup>2</sup>		
Gust factor :	G <sub>h</sub> =	0.85			
Ice thickness :	t <sub>iz</sub> =	1.715 in			

**WIND FORCES FRONTAL DIRECTION - NO ICE**

ELEMENT TYPE	DESCRIPTION	Flat or Round	Length of Normal Face [in]	Width of Normal Face [in]	Length of Transversal Face [in]	Width of Transversal Face [in]	θ (wind direction from normal face) [°]	A <sub>N</sub> [in <sup>2</sup> ]	A <sub>T</sub> [in <sup>2</sup> ]	K <sub>a</sub>	Aspect Ratio Normal	Aspect Ratio Transversal	C <sub>aN</sub>	C <sub>aT</sub>	Wind Force Frontal [lbs]	Wind Force Frontal distributed [lbs/in]	Weight [lbs]
Antenna/RRU/TMA	AM-X-CD-16-65-00T-RET	F	72	11.8	72	5.9	0	849.60	424.80	1	6.102	12.203	1.360	1.573	196.832	-	48.50
Antenna/RRU/TMA	HPA-65R-BUU-H8	F	92.4	14.8	92.4	7.4	0	1367.52	683.76	1	6.243	12.486	1.366	1.583	318.286	-	68.00
Antenna/RRU/TMA	HPA-65R-BUU-H6	F	72	14.8	72	9	0	1065.60	648.00	1	4.865	8.000	1.305	1.433	236.896	-	51.00
Antenna/RRU/TMA	SBNH-1D6565C	F	96.4	11.9	96.4	7.1	0	1147.16	684.44	1	8.101	13.577	1.437	1.619	280.741	-	66.10
Antenna/RRU/TMA	RRUS-32 B2	F	26.7	12.1	26.7	6.7	0	323.07	178.89	1	2.207	3.985	1.200	1.266	66.038	-	55.00
Antenna/RRU/TMA	RRUS-11	F	19.7	17	19.7	7.2	0	334.90	141.84	1	1.159	2.736	1.200	1.210	68.456	-	50.70
Antenna/RRU/TMA	DTMABP7819VG12A	F	14.25	11.44	14.25	3.64	0	163.02	51.87	1	1.246	3.915	1.200	1.263	33.323	-	20.00
Square Pipe	2.5X2.5X0.188	F	32	2.5	32	2.5	0	80.00	80.00	1	12.800	12.800	1.593	1.593	21.713	0.679	-
Pipe	Pipe 2	R	108	2.375	108	2.375	0	256.50	256.50	1	45.474	45.474	1.200	1.200	52.431	0.485	-
Pipe	Pipe 1.25	R	108	1.66	108	1.66	0	179.28	179.28	1	65.060	65.060	1.200	1.200	36.646	0.339	-
Pipe	Pipe 1	R	38	1.32	38	1.32	0	50.16	50.16	1	28.788	28.788	1.200	1.200	10.253	0.270	-
Pipe	SR5/8	R	52.8	0.625	52.8	0.625	0	33.00	33.00	1	84.480	84.480	1.200	1.200	6.745	0.128	-
Equal Angle	L2x2x3/16	F	58	2.5	58	2.5	0	145.00	145.00	1	23.200	23.200	1.940	1.940	47.917	0.826	-

**WIND FORCES LATERAL DIRECTION - NO ICE**

ELEMENT TYPE	DESCRIPTION	Flat or Round	Length of Normal Face [in]	Width of Normal Face [in]	Length of Transversal Face [in]	Width of Transversal Face [in]	θ (wind direction from normal face) [°]	A <sub>N</sub> [in <sup>2</sup> ]	A <sub>T</sub> [in <sup>2</sup> ]	K <sub>a</sub>	Aspect Ratio Normal	Aspect Ratio Transversal	C <sub>aN</sub>	C <sub>aT</sub>	Wind Force Lateral [lbs]	Wind Force Lateral distributed [lbs/in]	Weight [lbs]
Antenna/RRU/TMA	AM-X-CD-16-65-00T-RET	F	72	11.8	72	5.9	90	849.60	424.80	1	6.102	12.203	1.360	1.573	113.855	-	48.50
Antenna/RRU/TMA	HPA-65R-BUU-H8	F	92.4	14.8	92.4	7.4	90	1367.52	683.76	1	6.243	12.486	1.366	1.583	184.361	-	68.00
Antenna/RRU/TMA	HPA-65R-BUU-H6	F	72	14.8	72	9	90	1065.60	648.00	1	4.865	8.000	1.305	1.433	158.212	-	51.00
Antenna/RRU/TMA	SBNH-1D6565C	F	96.4	11.9	96.4	7.1	90	1147.16	684.44	1	8.101	13.577	1.437	1.619	188.784	-	66.10
Antenna/RRU/TMA	RRUS-32 B2	F	26.7	12.1	26.7	6.7	90	323.07	178.89	1	2.207	3.985	1.200	1.266	38.578	-	55.00
Antenna/RRU/TMA	RRUS-11	F	19.7	17	19.7	7.2	90	334.90	141.84	1	1.159	2.736	1.200	1.210	29.247	-	50.70
Antenna/RRU/TMA	DTMABP7819VG12A	F	14.25	11.44	14.25	3.64	90	163.02	51.87	1	1.246	3.915	1.200	1.263	11.158	-	20.00
Square Pipe	2.5X2.5X0.188	F	32	2.5	32	2.5	90	80.00	80.00	1	12.800	12.800	1.593	1.593	21.713	0.679	-
Pipe	Pipe 2	R	108	2.375	108	2.375	90	256.50	256.50	1	45.474	45.474	1.200	1.200	52.431	0.485	-
Pipe	Pipe 1.25	R	108	1.66	108	1.66	90	179.28	179.28	1	65.060	65.060	1.200	1.200	36.646	0.339	-
Pipe	Pipe 1	R	38	1.32	38	1.32	90	50.16	50.16	1	28.788	28.788	1.200	1.200	10.253	0.270	-
Pipe	SR5/8	R	52.8	0.625	52.8	0.625	90	33.00	33.00	1	84.480	84.480	1.200	1.200	6.745	0.128	-
Equal Angle	L2x2x3/16	F	58	2.5	58	2.5	90	145.00	145.00	1	23.200	23.200	1.940	1.940	47.917	0.826	-


[ASCE 7 Windspeed](#)
[ASCE 7 Ground Snow Load](#)
[Related Resources](#)
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[About ATC](#)
[Contact](#)

## Search Results

**Query Date:** Thu Sep 29 2016

**Latitude:** 41.5112

**Longitude:** -72.9825

**ASCE 7-10 Windspeeds  
(3-sec peak gust in mph\*):**

**Risk Category I:** 111

**Risk Category II:** 122

**Risk Category III-IV:** 131

**MRI\*\* 10-Year:** 76

**MRI\*\* 25-Year:** 86

**MRI\*\* 50-Year:** 92

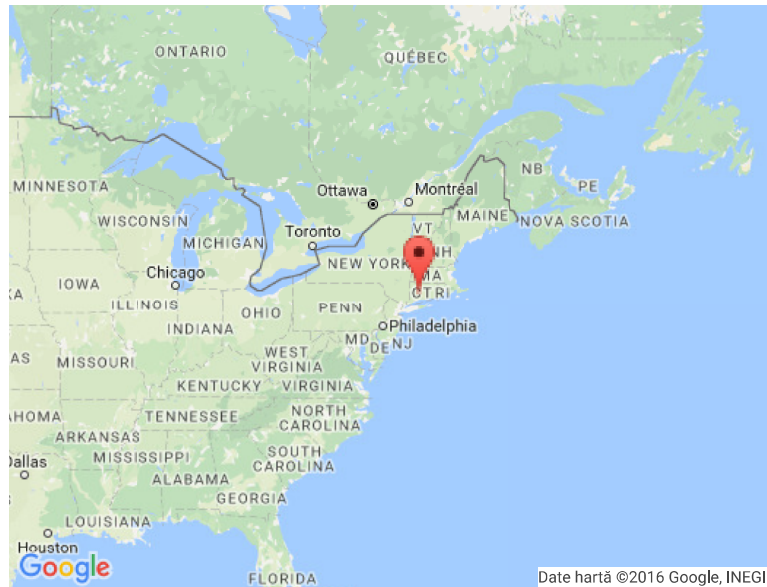
**MRI\*\* 100-Year:** 99

**ASCE 7-05 Windspeed:**

102 (3-sec peak gust in mph)

**ASCE 7-93 Windspeed:**

80 (fastest mile in mph)



\*Miles per hour

\*\*Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.



[Print your results](#)

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