December 17, 2019

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:	**1210 Highland Ave, Torrington, CT 06790**
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 243-feet on an existing 160-foot monopole, owned by SBA at 8051 Congress Ave, Boca Raton, FL 33487. AT&T now intends to remove three (3) 4' Kathrein 7770 Panel Antennas, each currently installed in position [4] all sectors, and swap these for two (2) 6' DMP65R-BU6DA Panel Antennas, each to be installed in position [4], In Alpha and Gamma, and one (1) 4' CCI DMP65R-BU6DA, in position [4] in Beta. We will also be adding three (3) 6' KMW EPBQ-654L8H6-L2 Panel Antennas in position [3] all sectors. In addition, AT&T intends to add one (1) RRUS-32, one (1) RRUS-4478 B14 in position [3], all sectors, one (1) RRUS-4449 B5/B12 and one (1) RRUS-8843 B2/B66A in position [4] all sectors, for a total of twelve (12) new RRUs. AT&T is also proposing to add (2) Raycap Squid, as well as one (1) fiber line and (4) DC Power Cables to their equipment configuration. All the changes will take place on a new antenna mount.

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

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Brett Zuraitis – Chief Building Official, City of Torrington, CT at 140 Main Street, Torrington, CT 06790 and Elinor Carbone – Mayor, City of Torrington, CT at 140 Main Street, Torrington, CT 06790. A copy of this letter is being sent to the property owner, SBA Properties Inc.at TAX DEPT 023034, 8051 Congress Ave, Boca Raton, FL 33487 and to the tower company, SBA at 8051 Congress Ave, Boca Raton, FL 33487.

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

- **EM-CING-143-050914** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.
- **EM-CING-143-130122** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.
- **EM-AT&T-143-140730 –** AT&T notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, 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 243-foot level of the 260-foot Guyed tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will

not require and extension of the site boundary.

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

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

Sincerely,

Kristina Cottone

CC w/enclosures:
Brett Zuraitis – Chief Building Official, City of Torrington, CT
Elinor Carbone – Mayor, City of Torrington, CT
SBA Properties Inc. – Property Owners
SBA– Tower Company

12/16/19

Memo: No Initial Zoning Decision Found

Upon consulting with the Building Inspector's Secretary for the City of Torrington, it was determined that no initial zoning decision for this tower could be found. Her phone number is (860) 489-2244.

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

CITY OF TORRINGTON
CONNECTICUT
GIS & Real Property Information

City Offices
140 Main Street
Torrington, CT 06790
ph 860 489-2228

Property Search

Name: ex. Smith

House No:
1210

Street:
HIGHLAND AVE

Unique Parcel Id: ex.90201

GO

Information Updates

GIS Parcels Updated September 2018

Property Info Data Updated Nightly

Current Parcel Count 12,720 +/-

Detailed Parcel Information

GIS ID
217/003/013/002

Parcel ID
217/003/013/002

Unique ID
4278

Owner
SBA PROPERTIES INC

Location
1210 HIGHLAND AVE

MAILING ADDRESS
TAX DEPT 02303A
BOCA RATON FL 33487

Quick Links: eQuality Property Card | Assessor Tax Map | FEMA Panels

Scroll Down For Complete Property Detail

PARCEL VALUATIONS

Appraised Value	Assessed Value

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CONNECTICUT
GIS & Real Property Information

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140 Main Street
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ph 860 489-2228

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House No:
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Street:
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Information Updates

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Property Info Data Updated Nightly

Current Parcel Count 12,720 +/-

PARCEL VALUATIONS

	Appraised Value	Assessed Value
Buildings	62096	43470
Land	92508	64760
TOTAL:	557109	389980

PROPERTY INFORMATION

Total Acres	6.16
GIS Acres	
Land Use	Warehouse
Land Class Code	Commercial
Zoning	R60
Census Tract	
Neighborhood	3
Lot Description	
Lot Utilities	

SALE INFORMATION

Sale Date	7/14/2000

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ph 860 489-2228

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Information Updates

GIS Parcels Updated September 2018

Property Info Data Updated Nightly

Current Parcel Count 12,720 +/-

SALE INFORMATION

Sale Date	7/14/2000
Sale Price	0
Book / Page	0725/0929

BUILDING AREA

Building Gross - sqft	0
Living Area - sqft	1484

CONSTRUCTION DETAILS

Building Style	
Building Condition	Average
Number of Rooms	0
Number of Bedrooms	0
Number of Bathrooms	0
Stories	1
Roof Structure	
Primary Exterior Wall Type	Pre-Cast Concrete
Heating/Cooling Type	
AC_Type	
Heating Fuel	

CITY OF TORRINGTON
CONNECTICUT
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Name: ex. Smith

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Building Style	
Building Condition	Average
Number of Rooms	0
Number of Bedrooms	0
Number of Bathrooms	0
Stories	1
Roof Structure	
Primary Exterior Wall Type	Pre-Cast Concrete
Heating/Cooling Type	
AC_Type	
Heating Fuel	
Roof Structure	
Primary Exterior Wall Type	Concrete Block
Heating/Cooling Type	
AC_Type	
Heating Fuel	
Roof Structure	
Primary Exterior Wall Type	Concrete Block
Heating/Cooling Type	Electric Baseboard
AC_Type	Central
Heating Fuel	Heat Pump

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2014.

Information on the Property Records for the Municipality of Torrington was last updated on 8/9/2019.

Parcel Information

Location:	1210 HIGHLAND AVE UNIT 2	Property Use:	Industrial	Primary Use:	Warehouse
Unique ID:	4278	Map Block Lot:	217/003/013/002	Acres:	6.16
490 Acres:	0.00	Zone:	R60	Volume / Page:	0725/0929
Developers Map / Lot:		Census:	3108-2N		

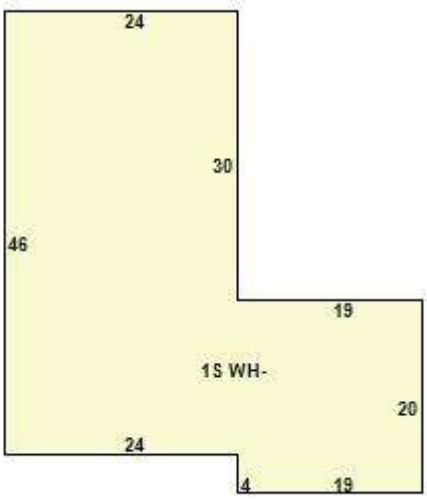
Value Information

	Appraised Value	Assessed Value
Land	92,508	64,760
Buildings	62,096	43,470
Detached Outbuildings	402,505	281,750
Total	557,109	389,980

Owner's Information

Owner's Data
SBA PROPERTIES INC TAX DEPT 02303A 805 CONGRESS AVE BOCA RATON FL 33487

Building 1



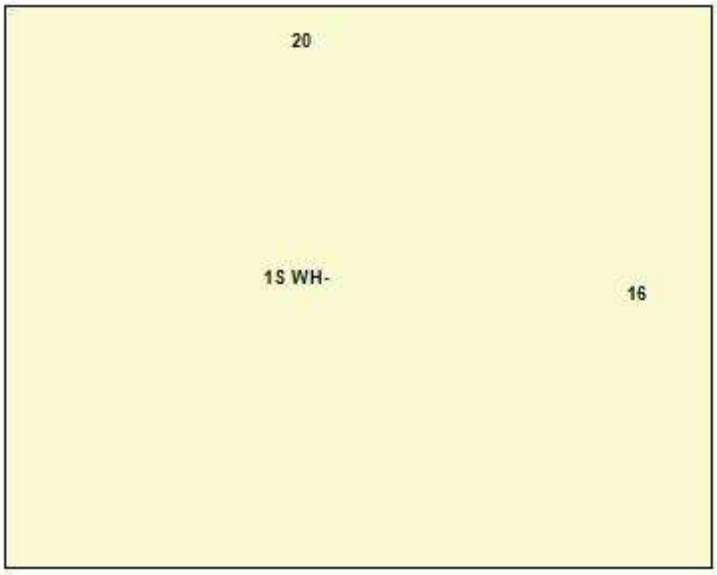
Category:	Industrial	Use:	Warehouse	GLA:	1,484
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1991

Heating:	Electric Baseboard	Fuel:	Heat Pump	Cooling Percent:	100
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Building 2

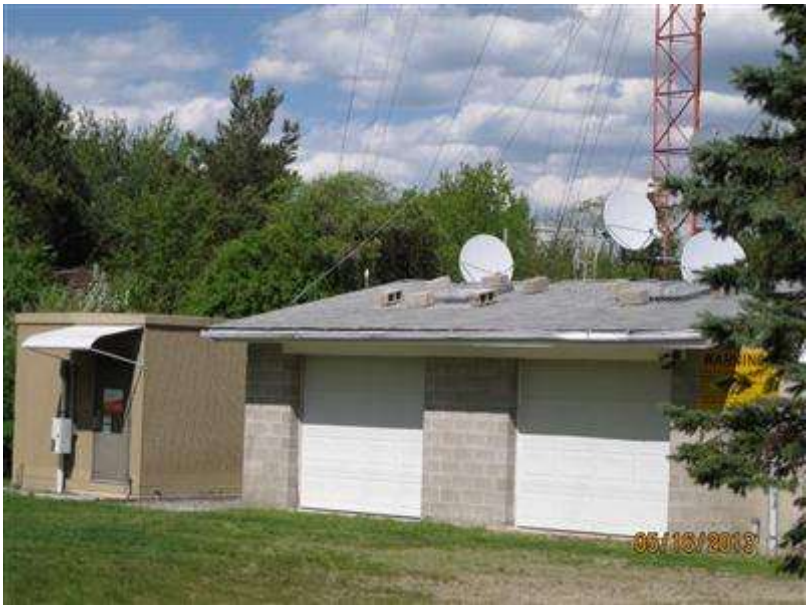


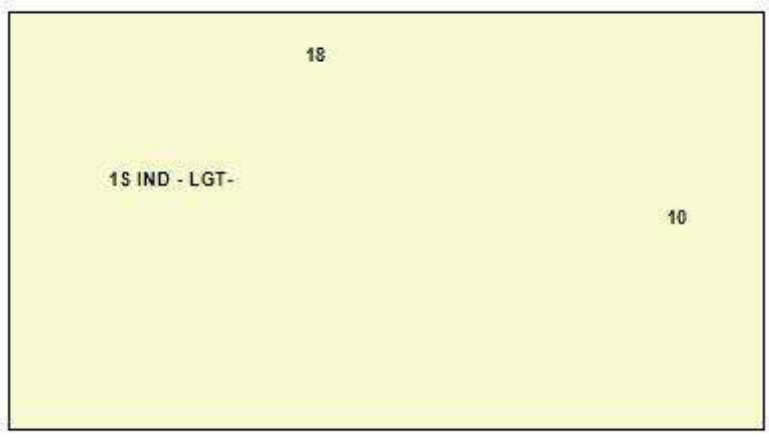
Category:	Industrial	Use:	Warehouse	GLA:	320
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1960
Heating:		Fuel:		Cooling Percent:	0
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Building 3





Category:	Industrial	Use:	Light Industrial	GLA:	180
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	2000
Heating:		Fuel:		Cooling Percent:	0

Siding:	Pre-Cast Concrete	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Metal Radio Tower	1991	0.00	0.00	241
Metal Radio Tower	1991	0.00	0.00	261
Metal Radio Tower	1991	0.00	0.00	102

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
SBA PROPERTIES INC	0725	0929	07/14/2000		No	$0
SBA TOWERS INC	0715	1038	02/03/2000		Yes	$185,000
GERBI HUGO S - TRUSTEE	0616	0026	05/16/1995		No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
14-1959	Building	10/02/2014		Closed	ADD 1 REMOTE RADIO UNIT=PP
14-702	Building	04/23/2014		Needs Visit	CABINET/8 KW GENERATOR/ANTENNA
13-5031	Certificate of Completion	06/05/2013		Closed	CERT OF COMPL- 9 ANTENNAS

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
13-4676	Commercial	04/24/2013		Closed	REPLC N ANTENNAS ON TWR
13-4008	Building	03/20/2013		Closed	REINFORCE EXISTING 260FT STEEL TOWER STRUCTURE
13-3796	Building	03/05/2013		Closed	3 NEW ANTENNA/SUPPORT EQUIP/ NEW CABINET
08-2294	Commercial	11/07/2008		Closed	REINFORCE TOWER FOND
05-543CO	Certificate of Occupancy	02/22/2006			CO PERMIT #05-543
05-543	Commercial	11/02/2005			ATTACH ANTENNAE
02-493	Commercial	12/18/2002			NEW ANTENNAS
02-206	Commercial	06/03/2002			ADD 2 ANTENNAS
00-334	Commercial	09/25/2000			TELECOMM SHELTER FOR EQUIP

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Post-Mod Structural Analysis Report

Existing 260 ft Pirod Guyed Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT02303-A-3

Customer Site Name: Torrington 2 CT

Carrier Name: AT&T (App#: 92475-3)

Carrier Site ID / Name: CT1253 / Torrington Highland Avenue

Site Location: 1210 Highland Ave

Torrington, Connecticut

Litchfield County

Latitude: 41.802597

Longitude: -73.164664

10/24/19

Analysis Result:

Max Structural Usage: 97.2% [Pass]

Max Foundation Usage: 82.4% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Tawfeeq Alajaj

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Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 260 ft Pirod Guyed Tower to support theproposed antennas and transmission lines in addition to those currently installed. Any existing modification isted under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by TES listed under Sources of Information was considered completed and wasincluded in this analysis.

Sources of Information

Tower Drawings	All-point Technology Cororation, P.C, Job # CT122160, Dated 01/21/02
Foundation Drawing	All-point Technology Cororation, P.C, Job # CT122160, Dated 01/21/02
Geotechnical Report	FDH Engineering, Inc. (Project No. 12-08779E G1) Geotechnical Evaluation of Subsurface Conditions, Dated 10/08/12
Modification Drawings	FDH Engineering, Inc. (Project No. 05-0827E) Modification Drawings for a 260' Guyed Tower, Dated 08/29/05
Proposed Modification	TES Job # 73511

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESTowers,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 116.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Basic Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	282.0	1	4" x 20' (8 Element) Dipole	(3) Standoff (8') at 263'	(1) 7/8"	Building 1
2		1	3" x 20' (16 Element) Dipole		(1) 1 1/4"	
3	275.0	1	2" x 15' Omni		(1) 7/8"	
4	257.0	1	2"x 18' Omnis		(1) 7/8"	
5	266.0	1	TWR 38" x 18"Ø Light	Direct Mount	(1) 0.59"	SBA
6	253.0	1	24" x 24" x 10" Box	Direct Mount	(1) 1/2"	Building 1
-	243.0	1	Kathrein 80010764V01 Panel	(3) T-Frames	(12) 1 5/8" (1) 2- 1/4" Flex	AT&T
-		1	14" x 14" x 3" TMA			
-		2	58" x 11" x 4" Panel			
-		2	KMW 68" x 12" x 6" Panel			
-		2	14" x 14" x 3" TMA			
-		4	58" x 11" x 4" Panel			
-		1	Raycap DC6-48-60-18-8F Squid			
-	242.5	2	Powerwave 18" x 10" x 2-1/2" TMA			
-		1	Ericsson 17" x 16" x 6" Radio			
-		4	Powerwave 18" x 10" x 2-1/2" TMA			
-		2	Ericsson 17" x 16" x 6" Radio			
25	233.0	1	2' Ø x 18' Omni	(1) Standoff (36")	(1) 1 5/8"	Building 1
26	222.5	1	2' x 8' Omni	(3) Standoff (8') at 218.5'	(1) 1 1/4"	Building 1
27		1	3" x15' Omni		(1) 7/8"	
28	210.0	1	3" x15' Omni		(1) 1 1/4"	
29		1	3" x15' Omni		(1) 7/8"	
30	222.5	1	2' Ø x 18' Omni		(1) 1 1/4"	Unknown
31	201.0	6	RFS 6" x 4" x 1" TMAs	(3) 10' T-Frames	(12) 1 5/8"	ITRON
32	200.0	3	Amphenal BXA-171063-8BF-EDIN-X - Panel			
33		3	Amphenal BXA-70063-6CF-EDIN-^ - Panel			
34		3	Amphenal BXA-80063-6CF-EDIN-5 - Panel			
35	180.0	4	Bay Broadcast antenna	(1) Standoff (41")	(1) 1 5/8"	Unknown
36	178.0	1	8'x1" Omni		(1) 1 1/4"	
37	177.0	1	Andrew 10' x 2" Ø Omni	(1) Standoff (2')	(1) 7/8"	Building 1
38	173.0	1	21" x 4" x 7" Box	Direct Mount		
39	166.5	1	Andrew 14' x 3" Ø Omni	(1) Standoff (14")	(1) 7/8"	
40	118.0	3	3' x 2' Bay Broadcast antenna	(1) Standoff 20"	(1) 1 5/8"	Unknown
41	83.8	1	3' x 2' Bay Broadcast antenna	(1) Standoff 20"	(1) 7/8"	WAPJ

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
7	245.0	3	Powerwave - 7770 - Panel	(3) T- Frame	(12) 1 5/8" 3" Conduit*	AT&T
8		2	KMW - AM-X-CD-16-65-00T-RET - Panel			
9		1	Kathrein - 800 10764 - Panel			
10		3	KMW - EPBQ-654L8H6-L2 - Panel			
11		2	CCI - DMP65R-BU6DA - Panel			
12		1	CCI - DMP65R-BU4DA - Panel			
13		12	Powerwave LGP21401 TMA - TMA/TTA			
14		3	Ericsson RRUS 4478 B14			
15		3	Ericsson RRUS 32 B30			
16		3	Ericsson RRUS 4449 B5/B12			
17		3	Ericsson RRUS 8843 B2 B66A			
18		3	Raycap DC6-48-60-18-8F - OVP			
19		3	Andrew ABT-DFDM-ADBH			

Conduit 1: Holds (1) 7/16" existing Fiber Cable + (2) existing 3/4" DC Cables
Conduit 2: Holds (1) Proposed 7/16" Fiber Cable + (2) proposed 3/4" DC Cable
Conduit 3: Holds (2) proposed 3/4" DC Cable

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

Tower Component	Legs	Diagonals	Horizontals	Guy Wires
Max. Usage:	**97.2%**	**94.1%**	**75.9%**	**87.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Base Reactions		Inner Anchors	
Reactions (kips)	Axial	Shear	Uplift	Shear
Analysis Reactions	184.4	1.9	43.8	55.7

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2407 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the design ANSI/TIA/EIA 222-G standards under a basic wind speed of 93 mph no ice and 50 mph with 3/4" radial ice after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 73511

Pre-Mod Installation Determination

We have also checked this tower to determine if the proposed AT&T equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6 month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT02303-A-3-SBA

Site Name:	Torrington 2 CT			**Code:**	EIA/TIA-222-G	10/17/2019
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	93.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 1

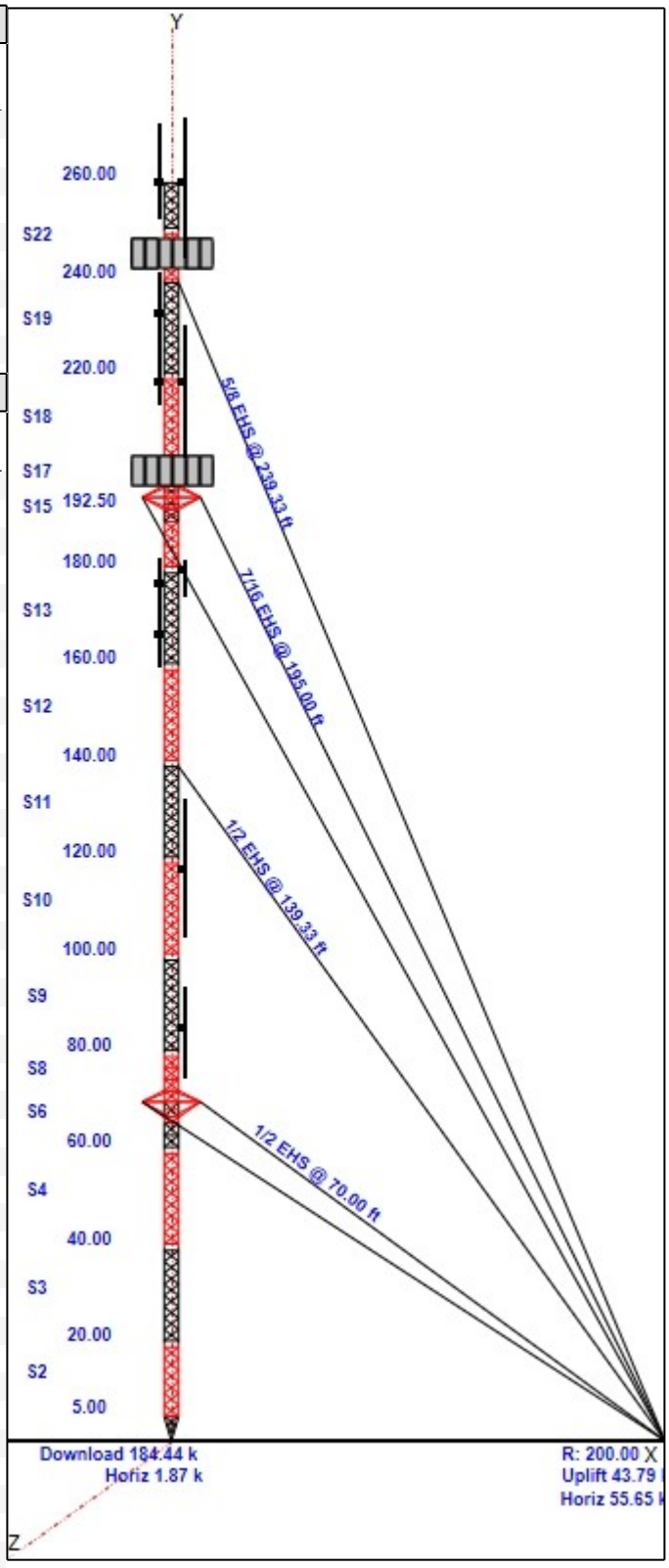
Tower Engineering Solutions

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	MOD 1.5"SR+2x2x.375L	SOL 5/8" SOLID	SOL 3/4" SOLID
2-5	SOL 1 3/4" SOLID	SOL 5/8" SOLID	SOL 3/4" SOLID
6	SOL 1 3/4" SOLID	SOL 5/8" SOLID	PLT 3" x 1/2"
7-9	SOL 1 3/4" SOLID	SOL 5/8" SOLID	SOL 3/4" SOLID
10-15	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID
16	SOL 1 1/2" SOLID	SOL 9/16" SOLID	CHN C3 x 6
17-20	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID
21	SOL 1 1/2" SOLID	SOL 9/16" SOLID	CHN C3 x 6
22-23	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
260.00	263.00	1	2" x 15' Omni
260.00	263.00	1	3" x 20' (16 Element) Dipole
260.00	260.00	1	38" x 18"Ø Light
260.00	262.00	1	4" x 20' (8 Element) Dipole
260.00	260.00	3	Stand-Off
257.00	253.00	1	2"x 18' Omnis
253.00	253.00	1	24" x 24" x 10" Box
245.00	245.00	3	T- Frame
245.00	245.00	3	7770
245.00	245.00	2	AM-X-CD-16-65-00T-RET
245.00	245.00	1	800 10764
245.00	245.00	3	EPBQ-654L8H6-L2
245.00	245.00	2	DMP65R-BU6DA
245.00	245.00	1	DMP65R-BU4DA
245.00	245.00	12	Powerwave LGP21401 TMA
245.00	245.00	3	Ericsson RRUS 4478 B14
245.00	245.00	3	Ericsson RRUS 32 B30
245.00	245.00	3	Ericsson RRUS 4449 B5/B12
245.00	245.00	3	Ericsson RRUS 8843 B2 B66A
245.00	245.00	3	Raycap DC6-48-60-18-8F
245.00	245.00	3	Andrew ABT-DFDM-ADBH
233.00	233.00	1	3' Standoff
223.00	232.00	1	2' Ø x 18' Omni
218.50	222.50	1	2" x 18' Omni
218.50	218.50	3	Stand-Off
218.50	210.00	1	3" x15' Omni
218.50	222.50	1	3" x15' Omni
218.50	210.00	1	3" x15' Omni
218.50	222.50	1	2' x 8' Omni
201.00	201.00	6	RFS 6" x 4" x 1" TMAs
200.00	200.00	3	Amphenal BXA-171063-8BF-EDIN-X
200.00	200.00	3	Amphenal BXA-70063-6CF-EDIN-^
200.00	200.00	3	Amphenal BXA-80063-6CF-EDIN-5
200.00	200.00	3	10' T-Frames
180.00	180.00	1	Standoff (41")
180.00	180.00	4	Bay Broadcast antenna
178.00	178.00	1	8'x1" Omni
177.00	177.00	1	Andrew 10' x 2" Omni
177.00	177.00	1	Standoff (2')
173.00	173.00	1	21" x 4" x 7" Box



166.50	166.50	1	Andrew 14' x 3" Omni
166.50	166.50	1	Standoff (17")
118.00	118.00	1	Standoff 20"
118.00	118.00	3	Bay Broadcast antenna
85.00	85.00	1	Standoff 20"
83.80	83.80	1	Bay Broadcast Antenna

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	260.00	1	1 1/4"
0.00	260.00	1	7/8"
0.00	260.00	1	7/8"
0.00	260.00	1	7/8"
0.00	260.00	1	Safety Climb
0.00	253.00	1	1/2"
0.00	245.00	12	1 5/8" Coax
0.00	243.00	3	3" Conduit
0.00	233.00	1	1 5/8"
0.00	222.50	1	1-1/4"
0.00	222.50	1	1-1/4"
0.00	210.00	1	1-1/4"
0.00	210.00	1	7/8"
0.00	200.00	6	1 5/8"
0.00	200.00	6	1 5/8"
0.00	180.00	1	1 5/8"
0.00	178.00	1	1 1/4"
0.00	177.00	1	7/8"
0.00	166.50	1	7/8"
0.00	118.00	1	1 5/8"
0.00	83.80	1	7/8"

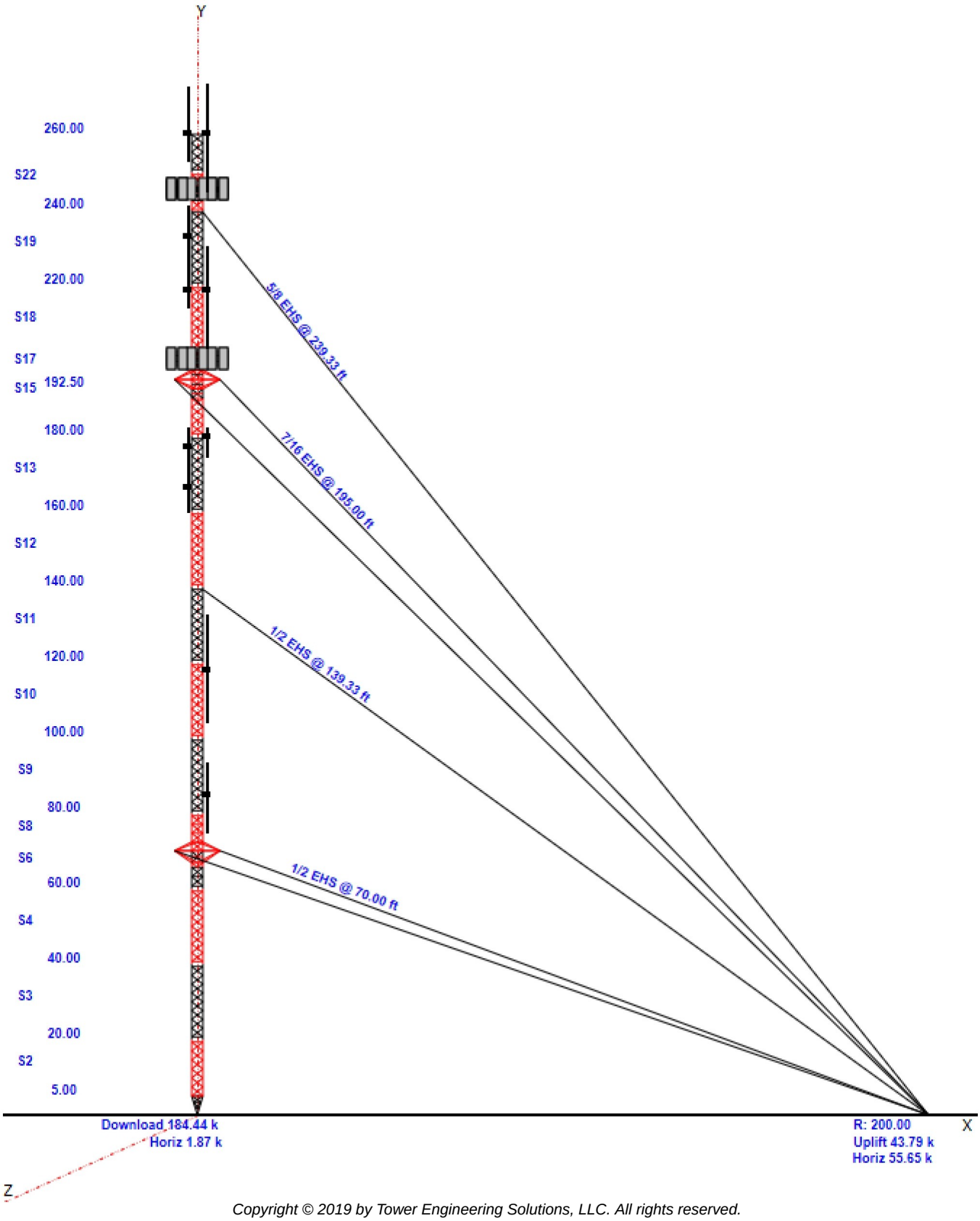
Max Guy Wire

87.43% @ 239.333 ft - 5/8 EHS

Structure: CT02303-A-3-SBA

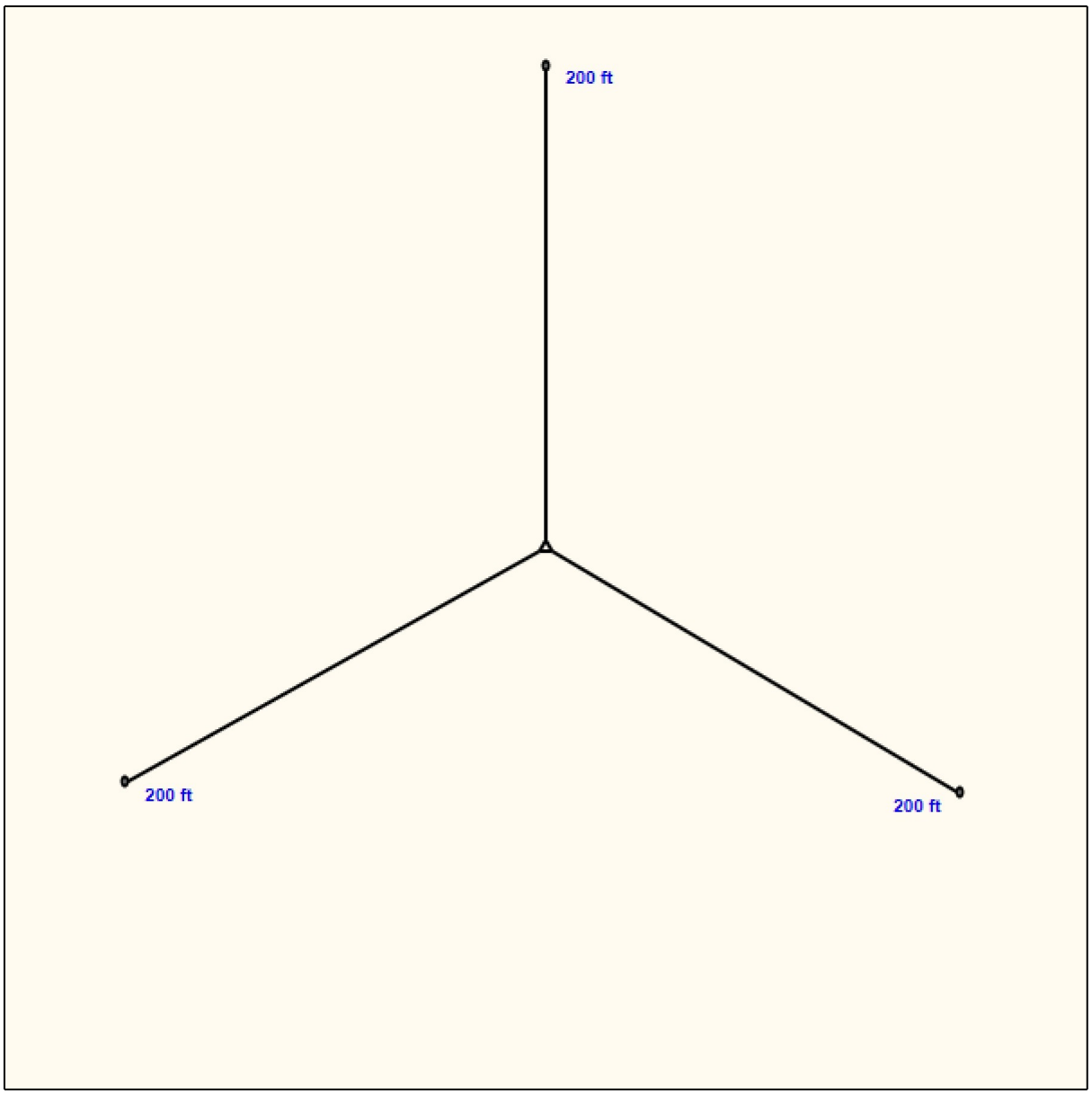
Site Name:	Torrington 2 CT			**Code:**	EIA/TIA-222-G	10/17/2019
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	93.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 3

Tower Engineering Solutions



Anchor Drops with Guy Radius - Structure: CT02303-A-3-SBA

Site Name:	Torrington 2 CT			**Code:**	EIA/TIA-222-G	10/17/2019
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	93.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 4

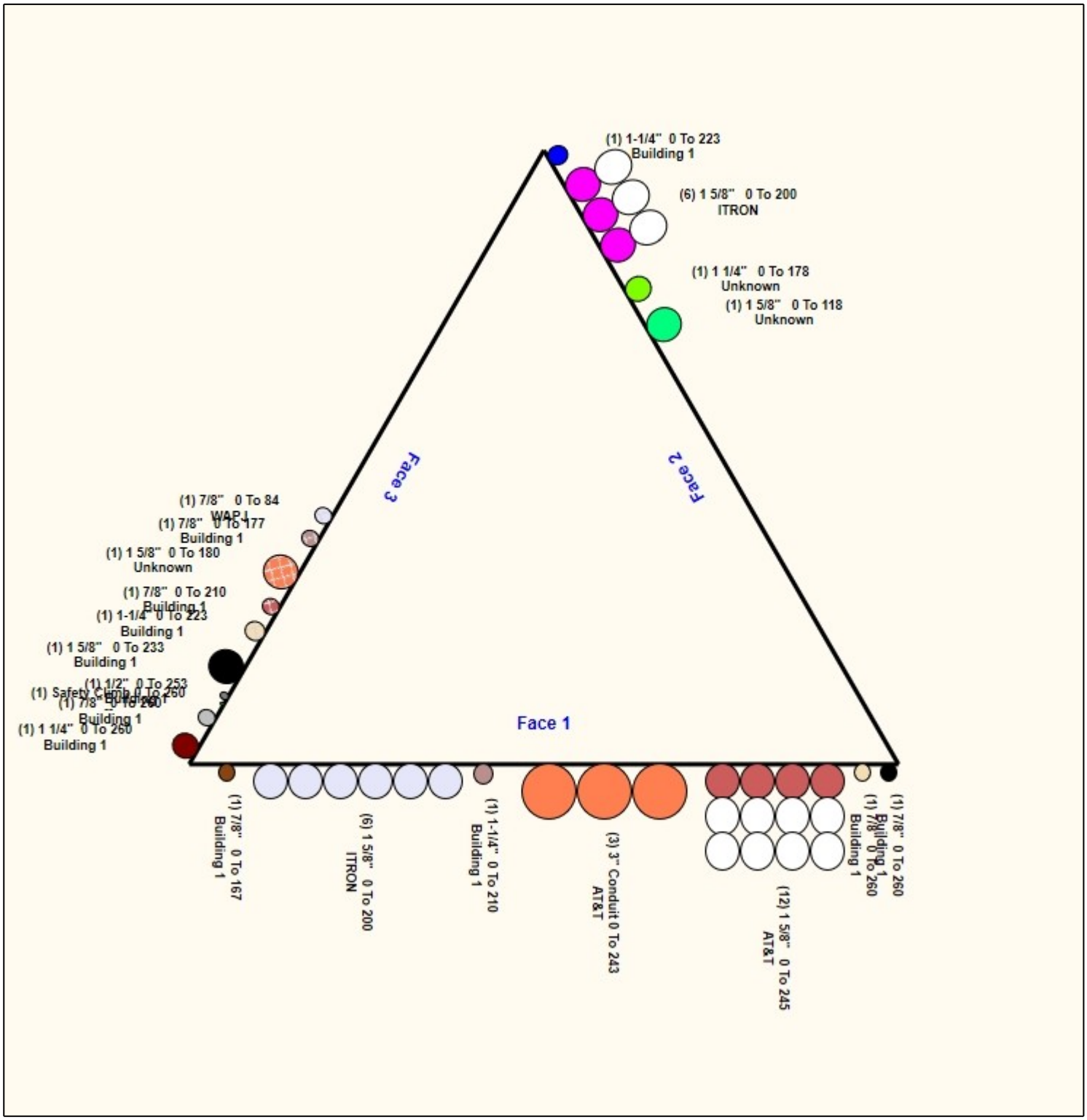


Structure: CT02303-A-3-SBA - Coax Line Placement

Type: Guyed
Site Name: Torrington 2 CT
Height: 260.00 (ft)

10/17/2019

Tower Engineering Solutions



Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
260.00	2" x 15' Omni	1	40.00	4.500	159.55	10.145	180.000	3.000	3.000	1.00	1.00	3.000
260.00	3" x 20' (16 Element) Dipole	1	60.00	7.520	293.82	20.053	240.000	3.000	3.000	1.00	1.00	3.000
260.00	38" x 18"Ø Light	1	5.00	6.000	27.08	28.084	72.000	1.000	1.000	1.00	1.00	0.000
260.00	4" x 20' (8 Element) Dipole	1	60.00	7.520	293.82	20.053	240.000	3.000	3.000	1.00	1.00	2.000
260.00	Stand-Off	3	400.00	10.000	694.45	19.202	0.000	0.000	0.000	0.75	0.75	0.000
257.00	2"x 18' Omnis	1	55.00	5.400	198.16	12.150	216.000	3.000	3.000	1.00	1.00	-4.000
253.00	24" x 24" x 10" Box	1	20.00	5.600	141.31	7.352	24.000	24.000	10.000	1.00	1.00	0.000
245.00	T- Frame	3	500.00	17.500	1232.81	36.736	0.000	0.000	0.000	0.75	0.75	0.000
245.00	7770	3	35.00	5.500	178.51	6.622	55.000	11.000	5.000	0.80	0.73	0.000
245.00	AM-X-CD-16-65-00T-RET	2	48.50	8.020	218.85	10.953	72.000	11.800	5.900	0.80	0.75	0.000
245.00	800 10764	1	40.80	5.880	174.66	8.129	55.200	11.800	6.000	0.80	1.00	0.000
245.00	EPBQ-654L8H6-L2	3	72.80	13.240	396.68	14.666	73.000	21.000	6.300	0.80	0.69	0.000
245.00	DMP65R-BU6DA	2	63.30	12.710	367.26	14.276	71.200	20.700	7.700	0.80	0.73	0.000
245.00	DMP65R-BU4DA	1	34.00	6.080	249.63	9.569	48.000	20.700	7.700	0.80	1.00	0.000
245.00	Powerwave LGP21401 TMA	12	14.10	1.290	40.34	2.167	14.400	9.200	2.600	0.80	1.00	0.000
245.00	Ericsson RRUS 4478 B14	3	59.40	1.650	102.93	2.194	15.000	13.200	7.300	0.80	0.67	0.000
245.00	Ericsson RRUS 32 B30	3	53.00	2.740	146.49	3.508	27.200	12.100	7.000	0.80	0.67	0.000
245.00	Ericsson RRUS 4449 B5/B12	3	71.00	1.970	127.04	2.545	17.900	13.200	9.400	0.80	0.67	0.000
245.00	Ericsson RRUS 8843 B2 B66A	3	72.00	1.640	121.17	2.162	14.900	13.200	10.900	0.80	0.67	0.000
245.00	Raycap DC6-48-60-18-8F	3	31.80	0.920	96.70	1.380	24.000	11.000	11.000	0.80	1.00	0.000
245.00	Andrew ABT-DFDM-ADBH	3	1.10	0.050	3.44	0.252	3.200	1.700	1.600	0.80	1.00	0.000
233.00	3' Standoff	1	40.00	2.630	123.79	8.859	0.000	0.000	0.000	1.00	1.00	0.000
223.00	2' Ø x 18' Omni	1	55.00	5.400	196.69	12.080	216.000	3.000	3.000	1.00	1.00	9.000
218.50	2" x 18' Omni	1	55.00	5.400	195.41	12.020	216.000	3.000	3.000	1.00	1.00	4.000
218.50	Stand-Off	3	350.00	10.000	891.48	23.668	0.000	0.000	0.000	0.75	0.75	0.000
218.50	3" x15' Omni	1	40.00	4.500	157.25	10.036	180.000	3.000	3.000	1.00	1.00	-8.500
218.50	3" x15' Omni	1	40.00	4.500	157.25	10.036	180.000	3.000	3.000	1.00	1.00	4.000
218.50	3" x15' Omni	1	40.00	4.500	157.25	10.036	180.000	3.000	3.000	1.00	1.00	-8.500
218.50	2' x 8' Omni	1	25.00	2.400	88.21	5.247	96.000	3.000	3.000	1.00	1.00	4.000
201.00	RFS 6" x 4" x 1" TMAs	6	8.40	0.360	27.48	0.653	6.000	4.000	1.000	0.80	0.67	0.000
200.00	Amphenal BXA-171063-8BF-EDIN-X	3	10.50	2.940	96.98	3.836	48.500	6.100	4.100	0.80	0.84	0.000
200.00	Amphenal BXA-70063-6CF-EDIN-^	3	17.00	7.570	197.25	8.869	71.000	11.200	5.200	0.80	0.73	0.000
200.00	Amphenal BXA-80063-6CF-EDIN-5	3	17.00	7.570	197.25	8.869	71.000	11.200	5.200	0.80	0.73	0.000
200.00	10' T-Frames	3	450.00	15.500	811.88	23.513	0.000	0.000	0.000	0.75	0.75	0.000
180.00	Standoff (41")	1	40.00	3.200	121.29	10.554	0.000	0.000	0.000	1.00	1.00	0.000
180.00	Bay Broadcast antenna	4	162.00	1.080	476.80	2.694	13.000	10.000	0.000	1.00	1.00	0.000
178.00	8'x1" Omni	1	25.00	2.400	86.89	5.187	96.000	3.000	3.000	1.00	1.00	0.000
177.00	Andrew 10' x 2" Omni	1	25.00	3.000	102.01	6.652	120.000	3.000	3.000	1.00	1.00	0.000
177.00	Standoff (2')	1	40.00	2.200	121.29	7.256	0.000	0.000	0.000	1.00	1.00	0.000
173.00	21" x 4" x 7" Box	1	15.00	1.250	71.70	1.884	21.000	7.000	4.000	1.00	1.00	0.000
166.50	Andrew 14' x 3" Omni	1	40.00	4.200	147.22	9.265	168.000	3.000	3.000	1.00	1.00	0.000
166.50	Standoff (17")	1	40.00	2.200	121.29	7.256	0.000	0.000	0.000	1.00	1.00	0.000
118.00	Standoff 20"	1	40.00	2.200	117.83	7.040	0.000	0.000	0.000	1.00	1.00	0.000
118.00	Bay Broadcast antenna	3	162.00	7.200	463.39	17.501	348.000	36.000	2.500	1.00	1.00	0.000
85.00	Standoff 20"	1	40.00	2.200	116.28	6.944	0.000	0.000	0.000	1.00	1.00	0.000
83.80	Bay Broadcast Antenna	1	105.00	7.200	243.60	20.439	228.000	12.000	12.000	1.00	1.00	0.000
	Totals:	**99**	**9,018.80**		**24,867.11**						**Number of Appurtenances :**	**46**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	260.00	1 1/4"	1	1.55	0.66	100.00	3	Individual NR		N	1.00	1.00	
0.00	260.00	7/8"	1	1.11	0.52	100.00	3	Individual IR		N	1.00	1.00	
0.00	260.00	7/8"	1	1.11	0.52	100.00	1	Individual NR		N	1.00	1.00	
0.00	260.00	7/8"	1	1.11	0.52	100.00	1	Individual NR		N	1.00	1.00	
0.00	260.00	Safety Climb	1	0.38	0.27	100.00	3	Individual NR		N	1.00	1.00	
0.00	253.00	1/2"	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	
0.00	245.00	1 5/8" Coax	12	1.98	1.04	33.30	1	Block		Y	0.50	1.00	
0.00	243.00	3" Conduit	3	3.00	1.78	100.00	1	Individual IR		N	1.00	1.00	
0.00	233.00	1 5/8"	1	1.98	1.04	100.00	3	Individual NR		N	1.00	1.00	
0.00	222.50	1-1/4"	1	1.25	0.95	100.00	2	Individual NR		N	1.00	1.00	
0.00	222.50	1-1/4"	1	1.25	0.95	100.00	3	Individual NR		N	1.00	1.00	
0.00	210.00	1-1/4"	1	1.25	0.95	100.00	1	Individual IR		N	1.00	1.00	
0.00	210.00	7/8"	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	200.00	1 5/8"	6	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	
0.00	200.00	1 5/8"	6	1.98	1.04	50.00	2	Block		N	0.50	1.00	
0.00	180.00	1 5/8"	1	1.98	1.04	100.00	3	Individual NR		N	1.00	1.00	
0.00	178.00	1 1/4"	1	1.55	0.66	100.00	2	Individual NR		N	1.00	1.00	
0.00	177.00	7/8"	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	166.50	7/8"	1	1.11	0.52	100.00	1	Individual NR		N	1.00	1.00	
0.00	118.00	1 5/8"	1	1.98	1.04	100.00	2	Individual NR		N	1.00	1.00	
0.00	83.80	7/8"	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 93 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	16.00	0.000	3.75	0.00	0.42	2.02	1.00	1.00	0.00	2.50	24.51	0.00	524.8	0.0	109.82	395.31	406.11
2	12.5	16.00	0.000	7.02	0.00	0.15	2.78	1.00	1.00	0.00	4.06	73.53	0.00	1,397.6	0.0	244.90	1231.91	1,476.82
3	30.0	18.49	0.000	9.24	0.00	0.15	2.78	1.00	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	372.13	1898.11	2,270.25
4	50.0	20.59	0.000	9.24	0.00	0.15	2.78	1.00	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	414.38	2113.62	2,528.01
5	62.8	21.60	0.000	2.97	0.00	0.17	2.71	1.00	1.00	0.00	1.72	27.78	0.00	557.8	0.0	137.36	628.40	765.77
6	66.3	21.84	0.000	0.54	0.00	0.14	2.80	1.00	1.00	0.00	0.31	5.92	0.00	138.0	0.0	26.05	135.46	161.52
7	68.5	21.99	0.750	1.36	0.00	0.21	2.56	1.00	1.00	0.00	1.54	15.52	0.00	339.6	0.0	118.10	357.58	475.68
8	75.0	22.42	0.000	4.96	0.00	0.16	2.74	1.00	1.00	0.00	2.87	48.81	0.00	954.2	0.0	239.83	1146.22	1,386.05
9	90.0	23.30	0.000	9.24	0.00	0.15	2.78	1.00	1.00	0.00	5.32	96.54	0.00	1,840.4	0.0	468.97	2357.86	2,826.83
10	110.0	24.30	0.000	8.12	0.00	0.13	2.85	1.00	1.00	0.00	4.65	95.86	0.00	1,635.7	0.0	437.78	2443.39	2,881.16
11	130.0	25.17	0.000	8.16	0.00	0.13	2.84	1.00	1.00	0.00	4.67	92.89	0.00	1,619.1	0.0	454.83	2457.64	2,912.47
12	150.0	25.94	0.000	8.12	0.00	0.13	2.85	1.00	1.00	0.00	4.65	92.89	0.00	1,613.3	0.0	467.32	2532.81	3,000.12
13	170.0	26.63	0.000	8.12	0.00	0.13	2.85	1.00	1.00	0.00	4.65	91.11	0.00	1,601.4	0.0	479.79	2553.89	3,033.69
14	185.0	27.11	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	41.65	0.00	790.0	0.0	253.58	1196.36	1,449.94
15	191.3	27.30	0.000	1.23	0.00	0.16	2.74	1.00	1.00	0.00	0.71	10.41	0.00	218.9	0.0	71.87	301.19	373.06
16	195.0	27.41	0.383	2.46	0.00	0.18	2.66	1.00	1.00	0.00	1.80	20.83	0.00	502.6	0.0	178.52	604.85	783.36
17	198.8	27.53	0.000	1.41	0.00	0.18	2.66	1.00	1.00	0.00	0.82	10.41	0.00	235.1	0.0	81.34	303.64	384.98
18	210.0	27.85	0.000	8.12	0.00	0.13	2.85	1.00	1.00	0.00	4.65	49.98	0.00	1,230.3	0.0	501.62	1469.68	1,971.30
19	230.0	28.38	0.000	8.12	0.00	0.13	2.85	1.00	1.00	0.00	4.65	43.21	0.00	1,163.8	0.0	511.24	1310.00	1,821.25
20	241.3	28.67	0.000	1.16	0.00	0.15	2.78	1.00	1.00	0.00	0.67	5.07	0.00	155.5	0.0	72.40	156.05	228.45
21	243.8	28.73	0.767	0.98	0.00	0.22	2.52	1.00	1.00	0.00	1.34	3.57	0.00	256.1	0.0	131.96	114.18	246.14
22	247.5	28.83	0.000	2.10	0.00	0.13	2.83	1.00	1.00	0.00	1.21	2.46	0.00	185.4	0.0	133.82	69.45	203.27
23	255.0	29.01	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	4.54	0.00	372.0	0.0	271.30	129.00	400.31
														21,032.7	**0.0**			**31,986.52**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

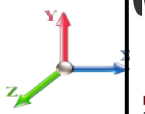
Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 93 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 1.20
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	16.00	0.000	3.75	0.00	0.42	2.02	0.80	1.00	0.00	2.50	24.51	0.00	524.8	0.0	109.82	395.31	505.13
2	12.5	16.00	0.000	7.02	0.00	0.15	2.78	0.80	1.00	0.00	4.06	73.53	0.00	1,397.6	0.0	244.90	1231.91	1,476.82
3	30.0	18.49	0.000	9.24	0.00	0.15	2.78	0.80	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	372.13	1898.11	2,270.25
4	50.0	20.59	0.000	9.24	0.00	0.15	2.78	0.80	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	414.38	2113.62	2,528.01
5	62.8	21.60	0.000	2.97	0.00	0.17	2.71	0.80	1.00	0.00	1.72	27.78	0.00	557.8	0.0	137.36	628.40	765.77
6	66.3	21.84	0.000	0.54	0.00	0.14	2.80	0.80	1.00	0.00	0.31	5.92	0.00	138.0	0.0	26.05	135.46	161.52
7	68.5	21.99	0.750	1.36	0.00	0.21	2.56	0.80	1.00	0.00	1.39	15.52	0.00	339.6	0.0	106.64	357.58	464.22
8	75.0	22.42	0.000	4.96	0.00	0.16	2.74	0.80	1.00	0.00	2.87	48.81	0.00	954.2	0.0	239.83	1146.22	1,386.05
9	90.0	23.30	0.000	9.24	0.00	0.15	2.78	0.80	1.00	0.00	5.32	96.54	0.00	1,840.4	0.0	468.97	2357.86	2,826.83
10	110.0	24.30	0.000	8.12	0.00	0.13	2.85	0.80	1.00	0.00	4.65	95.86	0.00	1,635.7	0.0	437.78	2443.39	2,881.16
11	130.0	25.17	0.000	8.16	0.00	0.13	2.84	0.80	1.00	0.00	4.67	92.89	0.00	1,619.1	0.0	454.83	2457.64	2,912.47
12	150.0	25.94	0.000	8.12	0.00	0.13	2.85	0.80	1.00	0.00	4.65	92.89	0.00	1,613.3	0.0	467.32	2532.81	3,000.12
13	170.0	26.63	0.000	8.12	0.00	0.13	2.85	0.80	1.00	0.00	4.65	91.11	0.00	1,601.4	0.0	479.79	2553.89	3,033.69
14	185.0	27.11	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	41.65	0.00	790.0	0.0	253.58	1196.36	1,449.94
15	191.3	27.30	0.000	1.23	0.00	0.16	2.74	0.80	1.00	0.00	0.71	10.41	0.00	218.9	0.0	71.87	301.19	373.06
16	195.0	27.41	0.383	2.46	0.00	0.18	2.66	0.80	1.00	0.00	1.72	20.83	0.00	502.6	0.0	170.92	604.85	775.77
17	198.8	27.53	0.000	1.41	0.00	0.18	2.66	0.80	1.00	0.00	0.82	10.41	0.00	235.1	0.0	81.34	303.64	384.98
18	210.0	27.85	0.000	8.12	0.00	0.13	2.85	0.80	1.00	0.00	4.65	49.98	0.00	1,230.3	0.0	501.62	1469.68	1,971.30
19	230.0	28.38	0.000	8.12	0.00	0.13	2.85	0.80	1.00	0.00	4.65	43.21	0.00	1,163.8	0.0	511.24	1310.00	1,821.25
20	241.3	28.67	0.000	1.16	0.00	0.15	2.78	0.80	1.00	0.00	0.67	5.07	0.00	155.5	0.0	72.40	156.05	228.45
21	243.8	28.73	0.767	0.98	0.00	0.22	2.52	0.80	1.00	0.00	1.19	3.57	0.00	256.1	0.0	116.86	114.18	231.05
22	247.5	28.83	0.000	2.10	0.00	0.13	2.83	0.80	1.00	0.00	1.21	2.46	0.00	185.4	0.0	133.82	69.45	203.27
23	255.0	29.01	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	4.54	0.00	372.0	0.0	271.30	129.00	400.31
														21,032.7	**0.0**			**32,051.37**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	



Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 93 mph Wind at 90° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

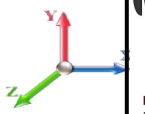
Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	16.00	0.000	3.75	0.00	0.42	2.02	0.85	1.00	0.00	2.50	24.51	0.00	524.8	0.0	109.82	395.31	505.13
2	12.5	16.00	0.000	7.02	0.00	0.15	2.78	0.85	1.00	0.00	4.06	73.53	0.00	1,397.6	0.0	244.90	1231.91	1,476.82
3	30.0	18.49	0.000	9.24	0.00	0.15	2.78	0.85	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	372.13	1898.11	2,270.25
4	50.0	20.59	0.000	9.24	0.00	0.15	2.78	0.85	1.00	0.00	5.32	98.04	0.00	1,850.5	0.0	414.38	2113.62	2,528.01
5	62.8	21.60	0.000	2.97	0.00	0.17	2.71	0.85	1.00	0.00	1.72	27.78	0.00	557.8	0.0	137.36	628.40	765.77
6	66.3	21.84	0.000	0.54	0.00	0.14	2.80	0.85	1.00	0.00	0.31	5.92	0.00	138.0	0.0	26.05	135.46	161.52
7	68.5	21.99	0.750	1.36	0.00	0.21	2.56	0.85	1.00	0.00	1.43	15.52	0.00	339.6	0.0	109.50	357.58	467.08
8	75.0	22.42	0.000	4.96	0.00	0.16	2.74	0.85	1.00	0.00	2.87	48.81	0.00	954.2	0.0	239.83	1146.22	1,386.05
9	90.0	23.30	0.000	9.24	0.00	0.15	2.78	0.85	1.00	0.00	5.32	96.54	0.00	1,840.4	0.0	468.97	2357.86	2,826.83
10	110.0	24.30	0.000	8.12	0.00	0.13	2.85	0.85	1.00	0.00	4.65	95.86	0.00	1,635.7	0.0	437.78	2443.39	2,881.16
11	130.0	25.17	0.000	8.16	0.00	0.13	2.84	0.85	1.00	0.00	4.67	92.89	0.00	1,619.1	0.0	454.83	2457.64	2,912.47
12	150.0	25.94	0.000	8.12	0.00	0.13	2.85	0.85	1.00	0.00	4.65	92.89	0.00	1,613.3	0.0	467.32	2532.81	3,000.12
13	170.0	26.63	0.000	8.12	0.00	0.13	2.85	0.85	1.00	0.00	4.65	91.11	0.00	1,601.4	0.0	479.79	2553.89	3,033.69
14	185.0	27.11	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	41.65	0.00	790.0	0.0	253.58	1196.36	1,449.94
15	191.3	27.30	0.000	1.23	0.00	0.16	2.74	0.85	1.00	0.00	0.71	10.41	0.00	218.9	0.0	71.87	301.19	373.06
16	195.0	27.41	0.383	2.46	0.00	0.18	2.66	0.85	1.00	0.00	1.74	20.83	0.00	502.6	0.0	172.82	604.85	777.67
17	198.8	27.53	0.000	1.41	0.00	0.18	2.66	0.85	1.00	0.00	0.82	10.41	0.00	235.1	0.0	81.34	303.64	384.98
18	210.0	27.85	0.000	8.12	0.00	0.13	2.85	0.85	1.00	0.00	4.65	49.98	0.00	1,230.3	0.0	501.62	1469.68	1,971.30
19	230.0	28.38	0.000	8.12	0.00	0.13	2.85	0.85	1.00	0.00	4.65	43.21	0.00	1,163.8	0.0	511.24	1310.00	1,821.25
20	241.3	28.67	0.000	1.16	0.00	0.15	2.78	0.85	1.00	0.00	0.67	5.07	0.00	155.5	0.0	72.40	156.05	228.45
21	243.8	28.73	0.767	0.98	0.00	0.22	2.52	0.85	1.00	0.00	1.23	3.57	0.00	256.1	0.0	120.64	114.18	234.82
22	247.5	28.83	0.000	2.10	0.00	0.13	2.83	0.85	1.00	0.00	1.21	2.46	0.00	185.4	0.0	133.82	69.45	203.27
23	255.0	29.01	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	4.54	0.00	372.0	0.0	271.30	129.00	400.31
														21,032.7	**0.0**			**32,059.91**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	



Tower Engineering Solutions

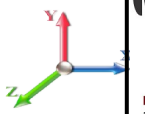
Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	9.00	5.24	0.91	1.94	1.00	1.00	1.16	8.89	28.45	19.31	1,450.7	925.9	67.90	21.22	89.12
2	12.5	4.62	0.000	25.63	18.61	0.51	1.89	1.00	1.00	1.36	17.73	92.77	57.85	4,666.2	3268.6	131.85	388.77	520.62
3	30.0	5.34	0.000	35.68	26.45	0.53	1.87	1.00	1.00	1.49	25.05	125.35	84.19	6,703.8	4853.3	212.62	599.35	811.97
4	50.0	5.95	0.000	37.07	27.84	0.54	1.85	1.00	1.00	1.56	26.41	126.39	88.61	7,043.7	5193.2	247.02	657.38	904.40
5	62.8	6.24	0.000	12.56	9.59	0.65	1.78	1.00	1.00	1.60	9.79	35.95	25.69	2,154.6	1596.8	92.56	152.00	244.57
6	66.3	6.31	0.000	2.22	1.68	0.54	1.85	1.00	1.00	1.61	1.58	7.67	5.50	513.0	374.9	15.71	43.19	58.90
7	68.5	6.36	0.750	5.41	4.05	0.57	1.83	1.00	1.00	1.61	4.69	20.12	14.48	1,276.3	936.7	46.23	106.56	152.78
8	75.0	6.48	0.000	21.05	16.09	0.62	1.79	1.00	1.00	1.63	15.97	63.36	45.94	3,771.0	2816.8	157.78	304.34	462.12
9	90.0	6.73	0.000	38.76	29.52	0.57	1.83	1.00	1.00	1.66	28.12	126.15	89.49	7,370.2	5529.8	294.33	710.77	1,005.10
10	110.0	7.02	0.000	38.23	30.12	0.56	1.83	1.00	1.00	1.69	27.60	125.92	89.67	7,226.3	5590.6	302.10	750.37	1,052.47
11	130.0	7.28	0.000	38.78	30.63	0.57	1.83	1.00	1.00	1.72	28.16	123.33	86.02	7,201.1	5581.9	318.14	744.74	1,062.88
12	150.0	7.50	0.000	39.18	31.07	0.57	1.82	1.00	1.00	1.75	28.58	123.66	87.26	7,303.2	5689.9	332.00	763.66	1,095.66
13	170.0	7.70	0.000	39.57	31.46	0.58	1.82	1.00	1.00	1.77	28.99	122.17	82.91	7,273.2	5671.8	344.98	755.58	1,100.56
14	185.0	7.84	0.000	20.99	16.75	0.61	1.80	1.00	1.00	1.78	15.84	57.29	32.67	3,487.4	2697.4	189.52	314.04	503.56
15	191.3	7.89	0.000	5.05	3.82	0.59	1.81	1.00	1.00	1.79	3.73	14.33	8.20	929.4	710.5	45.30	84.03	129.33
16	195.0	7.92	0.383	11.00	8.55	0.67	1.78	1.00	1.00	1.79	9.06	28.67	16.42	2,014.8	1512.2	108.51	137.81	246.32
17	198.8	7.96	0.000	6.14	4.73	0.72	1.78	1.00	1.00	1.80	5.07	14.34	8.23	999.6	764.5	60.97	58.52	119.49
18	210.0	8.05	0.000	40.25	32.13	0.59	1.81	1.00	1.00	1.80	29.69	65.34	60.16	5,350.9	4120.6	368.19	464.15	832.34
19	230.0	8.20	0.000	40.55	32.42	0.59	1.81	1.00	1.00	1.82	30.01	58.68	41.89	4,886.9	3723.1	378.73	383.46	762.19
20	241.3	8.29	0.000	5.98	4.82	0.70	1.78	1.00	1.00	1.83	4.86	7.01	4.58	648.3	492.7	60.76	33.31	94.07
21	243.8	8.31	0.767	6.72	5.74	0.87	1.89	1.00	1.00	1.83	7.12	4.57	4.58	820.9	564.8	94.96	10.71	105.67
22	247.5	8.33	0.000	10.60	8.50	0.62	1.79	1.00	1.00	1.83	8.03	2.46	9.17	787.5	602.0	102.04	37.77	139.80
23	255.0	8.38	0.000	21.54	17.30	0.63	1.79	1.00	1.00	1.84	16.45	4.54	16.26	1,555.9	1183.9	209.78	66.24	276.02
														85,434.7	**64402.0**			**11,769.95**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	9.00	5.24	0.91	1.94	0.80	1.00	1.16	8.89	28.45	19.31	1,450.7	925.9	67.90	21.22	89.12
2	12.5	4.62	0.000	25.63	18.61	0.51	1.89	0.80	1.00	1.36	17.73	92.77	57.85	4,666.2	3268.6	131.85	388.77	520.62
3	30.0	5.34	0.000	35.68	26.45	0.53	1.87	0.80	1.00	1.49	25.05	125.35	84.19	6,703.8	4853.3	212.62	599.35	811.97
4	50.0	5.95	0.000	37.07	27.84	0.54	1.85	0.80	1.00	1.56	26.41	126.39	88.61	7,043.7	5193.2	247.02	657.38	904.40
5	62.8	6.24	0.000	12.56	9.59	0.65	1.78	0.80	1.00	1.60	9.79	35.95	25.69	2,154.6	1596.8	92.56	152.00	244.57
6	66.3	6.31	0.000	2.22	1.68	0.54	1.85	0.80	1.00	1.61	1.58	7.67	5.50	513.0	374.9	15.71	43.19	58.90
7	68.5	6.36	0.750	5.41	4.05	0.57	1.83	0.80	1.00	1.61	4.54	20.12	14.48	1,276.3	936.7	44.75	106.56	151.30
8	75.0	6.48	0.000	21.05	16.09	0.62	1.79	0.80	1.00	1.63	15.97	63.36	45.94	3,771.0	2816.8	157.78	304.34	462.12
9	90.0	6.73	0.000	38.76	29.52	0.57	1.83	0.80	1.00	1.66	28.12	126.15	89.49	7,370.2	5529.8	294.33	710.77	1,005.10
10	110.0	7.02	0.000	38.23	30.12	0.56	1.83	0.80	1.00	1.69	27.60	125.92	89.67	7,226.3	5590.6	302.10	750.37	1,052.47
11	130.0	7.28	0.000	38.78	30.63	0.57	1.83	0.80	1.00	1.72	28.16	123.33	86.02	7,201.1	5581.9	318.14	744.74	1,062.88
12	150.0	7.50	0.000	39.18	31.07	0.57	1.82	0.80	1.00	1.75	28.58	123.66	87.26	7,303.2	5689.9	332.00	763.66	1,095.66
13	170.0	7.70	0.000	39.57	31.46	0.58	1.82	0.80	1.00	1.77	28.99	122.17	82.91	7,273.2	5671.8	344.98	755.58	1,100.56
14	185.0	7.84	0.000	20.99	16.75	0.61	1.80	0.80	1.00	1.78	15.84	57.29	32.67	3,487.4	2697.4	189.52	314.04	503.56
15	191.3	7.89	0.000	5.05	3.82	0.59	1.81	0.80	1.00	1.79	3.73	14.33	8.20	929.4	710.5	45.30	84.03	129.33
16	195.0	7.92	0.383	11.00	8.55	0.67	1.78	0.80	1.00	1.79	8.98	28.67	16.42	2,014.8	1512.2	107.59	137.81	245.40
17	198.8	7.96	0.000	6.14	4.73	0.72	1.78	0.80	1.00	1.80	5.07	14.34	8.23	999.6	764.5	60.97	58.52	119.49
18	210.0	8.05	0.000	40.25	32.13	0.59	1.81	0.80	1.00	1.80	29.69	65.34	60.16	5,350.9	4120.6	368.19	464.15	832.34
19	230.0	8.20	0.000	40.55	32.42	0.59	1.81	0.80	1.00	1.82	30.01	58.68	41.89	4,886.9	3723.1	378.73	383.46	762.19
20	241.3	8.29	0.000	5.98	4.82	0.70	1.78	0.80	1.00	1.83	4.86	7.01	4.58	648.3	492.7	60.76	33.31	94.07
21	243.8	8.31	0.767	6.72	5.74	0.87	1.89	0.80	1.00	1.83	6.97	4.57	4.58	820.9	564.8	92.92	10.71	103.63
22	247.5	8.33	0.000	10.60	8.50	0.62	1.79	0.80	1.00	1.83	8.03	2.46	9.17	787.5	602.0	102.04	37.77	139.80
23	255.0	8.38	0.000	21.54	17.30	0.63	1.79	0.80	1.00	1.84	16.45	4.54	16.26	1,555.9	1183.9	209.78	66.24	276.02
														85,434.7	**64402.0**			**11,765.50**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

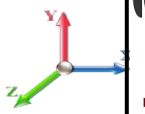
Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	9.00	5.24	0.91	1.94	0.85	1.00	1.16	8.89	28.45	19.31	1,450.7	925.9	67.90	21.22	89.12
2	12.5	4.62	0.000	25.63	18.61	0.51	1.89	0.85	1.00	1.36	17.73	92.77	57.85	4,666.2	3268.6	131.85	388.77	520.62
3	30.0	5.34	0.000	35.68	26.45	0.53	1.87	0.85	1.00	1.49	25.05	125.35	84.19	6,703.8	4853.3	212.62	599.35	811.97
4	50.0	5.95	0.000	37.07	27.84	0.54	1.85	0.85	1.00	1.56	26.41	126.39	88.61	7,043.7	5193.2	247.02	657.38	904.40
5	62.8	6.24	0.000	12.56	9.59	0.65	1.78	0.85	1.00	1.60	9.79	35.95	25.69	2,154.6	1596.8	92.56	152.00	244.57
6	66.3	6.31	0.000	2.22	1.68	0.54	1.85	0.85	1.00	1.61	1.58	7.67	5.50	513.0	374.9	15.71	43.19	58.90
7	68.5	6.36	0.750	5.41	4.05	0.57	1.83	0.85	1.00	1.61	4.57	20.12	14.48	1,276.3	936.7	45.12	106.56	151.67
8	75.0	6.48	0.000	21.05	16.09	0.62	1.79	0.85	1.00	1.63	15.97	63.36	45.94	3,771.0	2816.8	157.78	304.34	462.12
9	90.0	6.73	0.000	38.76	29.52	0.57	1.83	0.85	1.00	1.66	28.12	126.15	89.49	7,370.2	5529.8	294.33	710.77	1,005.10
10	110.0	7.02	0.000	38.23	30.12	0.56	1.83	0.85	1.00	1.69	27.60	125.92	89.67	7,226.3	5590.6	302.10	750.37	1,052.47
11	130.0	7.28	0.000	38.78	30.63	0.57	1.83	0.85	1.00	1.72	28.16	123.33	86.02	7,201.1	5581.9	318.14	744.74	1,062.88
12	150.0	7.50	0.000	39.18	31.07	0.57	1.82	0.85	1.00	1.75	28.58	123.66	87.26	7,303.2	5689.9	332.00	763.66	1,095.66
13	170.0	7.70	0.000	39.57	31.46	0.58	1.82	0.85	1.00	1.77	28.99	122.17	82.91	7,273.2	5671.8	344.98	755.58	1,100.56
14	185.0	7.84	0.000	20.99	16.75	0.61	1.80	0.85	1.00	1.78	15.84	57.29	32.67	3,487.4	2697.4	189.52	314.04	503.56
15	191.3	7.89	0.000	5.05	3.82	0.59	1.81	0.85	1.00	1.79	3.73	14.33	8.20	929.4	710.5	45.30	84.03	129.33
16	195.0	7.92	0.383	11.00	8.55	0.67	1.78	0.85	1.00	1.79	9.00	28.67	16.42	2,014.8	1512.2	107.82	137.81	245.63
17	198.8	7.96	0.000	6.14	4.73	0.72	1.78	0.85	1.00	1.80	5.07	14.34	8.23	999.6	764.5	60.97	58.52	119.49
18	210.0	8.05	0.000	40.25	32.13	0.59	1.81	0.85	1.00	1.80	29.69	65.34	60.16	5,350.9	4120.6	368.19	464.15	832.34
19	230.0	8.20	0.000	40.55	32.42	0.59	1.81	0.85	1.00	1.82	30.01	58.68	41.89	4,886.9	3723.1	378.73	383.46	762.19
20	241.3	8.29	0.000	5.98	4.82	0.70	1.78	0.85	1.00	1.83	4.86	7.01	4.58	648.3	492.7	60.76	33.31	94.07
21	243.8	8.31	0.767	6.72	5.74	0.87	1.89	0.85	1.00	1.83	7.01	4.57	4.58	820.9	564.8	93.43	10.71	104.14
22	247.5	8.33	0.000	10.60	8.50	0.62	1.79	0.85	1.00	1.83	8.03	2.46	9.17	787.5	602.0	102.04	37.77	139.80
23	255.0	8.38	0.000	21.54	17.30	0.63	1.79	0.85	1.00	1.84	16.45	4.54	16.26	1,555.9	1183.9	209.78	66.24	276.02
														85,434.7	**64402.0**			**11,766.61**

Force/Stress Compression Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



TES Tower Engineering Solutions

LEG MEMBERS

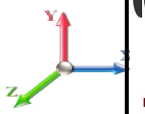
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5	MOD - 1.5"SR+2x2x.375L	-66.67	1.2D + 1.0Di + 1.0Wi 60° Wind	1.76	100	100	100	41.28	50.00	124.16	53.7	Member X
2	20	SOL - 1 3/4" SOLID	-64.85	1.2D + 1.0Di + 1.0Wi 60° Wind	2.39	100	100	100	65.52	50.00	79.08	82.0	Member X
3	40	SOL - 1 3/4" SOLID	-64.63	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	80.6	Member X
4	60	SOL - 1 3/4" SOLID	-59.85	1.2D + 1.0Di + 1.0Wi Normal	2.33	100	100	100	64.00	50.00	80.23	74.6	Member X
5	65.66	SOL - 1 3/4" SOLID	-67.43	1.2D + 1.6W Normal Wind	2.50	100	100	100	68.57	50.00	76.75	87.9	Member X
6	66.87	SOL - 1 3/4" SOLID	-67.42	1.2D + 1.6W Normal Wind	1.21	100	100	100	33.13	50.00	99.89	67.5	Member X
7	70.04	SOL - 1 3/4" SOLID	-64.53	1.2D + 1.6W Normal Wind	3.17	50	50	50	43.43	50.00	94.29	68.4	Member X
8	80	SOL - 1 3/4" SOLID	-68.62	1.2D + 1.6W Normal Wind	2.32	100	100	100	63.71	50.00	80.44	85.3	Member X
9	100	SOL - 1 3/4" SOLID	-51.52	1.2D + 1.0Di + 1.0Wi Normal	2.33	100	100	100	64.00	50.00	80.23	64.2	Member X
10	120	SOL - 1 1/2" SOLID	-51.42	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	74.66	50.00	52.90	97.2	Member X
11	140	SOL - 1 1/2" SOLID	-47.70	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	74.66	50.00	52.90	90.2	Member X
12	160	SOL - 1 1/2" SOLID	-37.28	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	74.66	50.00	52.90	70.5	Member X
13	180	SOL - 1 1/2" SOLID	-37.64	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	74.66	50.00	52.90	71.2	Member X
14	190	SOL - 1 1/2" SOLID	-35.34	1.2D + 1.0Di + 1.0Wi Normal	2.33	100	100	100	74.66	50.00	52.90	66.8	Member X
15	192.5	SOL - 1 1/2" SOLID	-41.07	1.2D + 1.6W Normal Wind	2.50	50	50	50	40.00	50.00	70.74	58.1	Member X
16	197.5	SOL - 1 1/2" SOLID	-48.58	1.2D + 1.6W Normal Wind	2.50	50	50	50	40.00	50.00	70.74	68.7	Member X
17	200	SOL - 1 1/2" SOLID	-47.68	1.2D + 1.6W Normal Wind	2.50	65	65	65	52.00	50.00	65.25	73.1	Member X
18	220	SOL - 1 1/2" SOLID	-39.47	1.2D + 1.6W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	74.6	Member X
19	240	SOL - 1 1/2" SOLID	-33.11	1.2D + 1.6W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	62.6	Member X
20	242.5	SOL - 1 1/2" SOLID	-32.59	1.2D + 1.6W Normal Wind	2.50	100	100	100	80.00	50.00	49.80	65.4	Member X
21	245	SOL - 1 1/2" SOLID	-23.45	1.2D + 1.6W Normal Wind	2.50	100	100	100	80.00	50.00	49.80	47.1	Member X
22	250	SOL - 1 1/2" SOLID	-13.71	1.2D + 1.6W Normal Wind	2.17	100	100	100	69.33	50.00	55.96	24.5	Member X
23	260	SOL - 1 1/2" SOLID	-7.93	1.2D + 1.6W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	15.0	Member X

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5										0.00	0	0				
2	20	SOL - 3/4" SOLID	-0.14	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			3	Member X
3	40	SOL - 3/4" SOLID	-0.37	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			7	Member X
4	60	SOL - 3/4" SOLID	-1.32	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			24	Member X
5	65.6	SOL - 3/4" SOLID	-4.19	1.2D + 1.6W 90° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			76	Member X
6	66.8	PLT - 3" x 1/2"	-0.01	1.2D + 1.6W 90° Wind	1.50	100	100	100	87.50	36.00	32.48	0	0			0	Member Y
7	70.0										0.00	0	0				
8	80	SOL - 3/4" SOLID	-3.67	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	36.00	5.53	0	0			66	Member X
9	100	SOL - 3/4" SOLID	-1.62	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			29	Member X
10	120	SOL - 3/4" SOLID	-0.54	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			10	Member X
11	140	SOL - 3/4" SOLID	-0.68	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			12	Member X
12	160	SOL - 3/4" SOLID	-1.19	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			22	Member X
13	180	SOL - 3/4" SOLID	-0.80	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			15	Member X
14	190	SOL - 3/4" SOLID	-1.32	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			24	Member X
15	192.										0.00	0	0				
16	197.	CHN - C3 x 6	-3.37	1.2D + 1.6W Normal Wind	3.00	100	100	100	87.17	36.00	38.22	0	0			9	Member Y
17	200	SOL - 3/4" SOLID	-2.24	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			40	Member X
18	220	SOL - 3/4" SOLID	-0.65	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			12	Member X
19	240	SOL - 3/4" SOLID	-0.15	1.2D + 1.6W 90° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			3	Member X
20	242.	SOL - 3/4" SOLID	-3.01	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			54	Member X
21	245	CHN - C3 x 6	-5.70	1.2D + 1.6W 90° Wind	3.00	100	100	100	87.17	36.00	38.22	0	0			15	Member Y
22	250	SOL - 3/4" SOLID	-0.68	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			12	Member X
23	260	SOL - 3/4" SOLID	-0.71	1.2D + 1.6W 90° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			13	Member X

Force/Stress Compression Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	



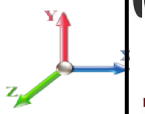
Tower Engineering Solutions

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5	SOL - 5/8" SOLID	-3.05	1.2D + 1.0Di + 1.0Wi Normal	2.26	50	50	50	78.26	50.00	8.82	0	0			35	Member X
2	20	SOL - 5/8" SOLID	-0.80	1.2D + 1.6W 90° Wind	3.83	50	50	50	132.75	50.00	3.93	0	0			20	Member X
3	40	SOL - 5/8" SOLID	-1.30	1.2D + 1.6W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			32	Member X
4	60	SOL - 5/8" SOLID	-2.88	1.2D + 1.6W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			72	Member X
5	65.6	SOL - 5/8" SOLID	-0.68	1.2D + 1.6W Normal Wind	3.91	50	50	50	135.18	50.00	3.79	0	0				T-Only
6	66.8	SOL - 5/8" SOLID	-0.02	1.2D + 1.6W 90° Wind	1.93	100	100	100	103.70	50.00	6.29	0	0			0	Member X
7	70.0	SOL - 5/8" SOLID	-2.20	1.2D + 1.6W Normal Wind	4.36	50	50	50	151.00	50.00	3.04	0	0				T-Only
8	80	SOL - 5/8" SOLID	-0.73	1.2D + 1.6W Normal Wind	3.79	50	50	50	131.33	50.00	4.02	0	0				T-Only
9	100	SOL - 5/8" SOLID	-3.77	1.2D + 1.6W Normal Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			94	Member X
10	120	SOL - 9/16" SOLID	-1.60	1.2D + 1.6W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			61	Member X
11	140	SOL - 9/16" SOLID	-1.91	1.2D + 1.6W 90° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			73	Member X
12	160	SOL - 9/16" SOLID	-2.46	1.2D + 1.6W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			94	Member X
13	180	SOL - 9/16" SOLID	-1.80	1.2D + 1.6W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			68	Member X
14	190	SOL - 9/16" SOLID	-1.96	1.2D + 1.6W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			75	Member X
15	192.	SOL - 9/16" SOLID	-1.13	1.2D + 1.6W Normal Wind	3.91	50	50	50	149.98	50.00	2.50	0	0				T-Only
16	197.	SOL - 9/16" SOLID	-0.56	1.2D + 1.6W Normal Wind	3.91	50	50	50	149.98	50.00	2.50	0	0				T-Only
17	200	SOL - 9/16" SOLID	-0.99	1.2D + 1.6W 60° Wind	3.91	50	50	50	149.98	50.00	2.50	0	0				T-Only
18	220	SOL - 9/16" SOLID	-1.45	1.2D + 1.6W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			55	Member X
19	240	SOL - 9/16" SOLID	-1.16	1.2D + 1.6W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			44	Member X
20	242.	SOL - 9/16" SOLID	-0.63	1.2D + 1.6W 60° Wind	3.91	50	50	50	149.98	50.00	2.50	0	0				T-Only
21	245	SOL - 9/16" SOLID	-0.68	1.2D + 1.6W 60° Wind	3.91	50	50	50	149.98	50.00	2.50	0	0				T-Only
22	250	SOL - 9/16" SOLID	-1.51	1.2D + 1.6W 90° Wind	3.70	50	50	50	142.12	50.00	2.78	0	0			54	Member X
23	260	SOL - 9/16" SOLID	-1.56	1.2D + 1.6W 90° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			59	Member X

Force/Stress Tension Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	



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LEG MEMBERS

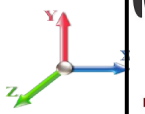
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5				0	0.00		
2	20				0	0.00		
3	40				0	0.00		
4	60				0	0.00		
5	65.667				0	0.00		
6	66.875				0	0.00		
7	70.042	SOL - 1 3/4" SOLID	6.49	1.2D + 1.6W 60° Wind	50	108.24	6.0	Member
8	80	SOL - 1 3/4" SOLID	8.43	1.2D + 1.6W 60° Wind	50	108.24	7.8	Member
9	100				0	0.00		
10	120				0	0.00		
11	140				0	0.00		
12	160				0	0.00		
13	180				0	0.00		
14	190				0	0.00		
15	192.5				0	0.00		
16	197.5	SOL - 1 1/2" SOLID	8.79	1.2D + 1.6W 60° Wind	50	79.52	11.1	Member
17	200	SOL - 1 1/2" SOLID	14.88	1.2D + 1.6W 60° Wind	50	79.52	18.7	Member
18	220	SOL - 1 1/2" SOLID	12.45	1.2D + 1.6W 60° Wind	50	79.52	15.7	Member
19	240	SOL - 1 1/2" SOLID	27.44	1.2D + 1.6W 60° Wind	50	79.52	34.5	Member
20	242.5	SOL - 1 1/2" SOLID	18.37	1.2D + 1.6W 60° Wind	50	79.52	23.1	Member
21	245	SOL - 1 1/2" SOLID	11.33	1.2D + 1.6W 60° Wind	50	79.52	14.3	Member
22	250	SOL - 1 1/2" SOLID	11.54	1.2D + 1.6W 60° Wind	50	79.52	14.5	Member
23	260	SOL - 1 1/2" SOLID	7.35	1.2D + 1.6W 60° Wind	50	79.52	9.2	Member

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	5	SOL - 3/4" SOLID	6.27	1.2D + 1.0Di + 1.0Wi N(	50	19.88	0	0				31.5	Member
2	20	SOL - 3/4" SOLID	6.27	1.2D + 1.0Di + 1.0Wi N(	50	19.88	0	0				31.5	Member
3	40	SOL - 3/4" SOLID	0.60	1.2D + 1.6W 60° Wind	50	19.88	0	0				3.0	Member
4	60	SOL - 3/4" SOLID	1.46	1.2D + 1.6W 60° Wind	50	19.88	0	0				7.3	Member
5	65.667	SOL - 3/4" SOLID	3.14	1.2D + 1.0Di + 1.0Wi 6(	50	19.88	0	0				15.8	Member
6	66.875	PLT - 3" x 1/2"	0.05	1.2D + 1.6W Normal Wi	36	48.60	0	0				0.1	Member
7	70.042	SOL - 3/4" SOLID			36	0.00	0	0					
8	80	SOL - 3/4" SOLID	2.66	1.2D + 1.0Di + 1.0Wi 6(	36	14.31	0	0				18.5	Member
9	100	SOL - 3/4" SOLID	1.66	1.2D + 1.6W 60° Wind	50	19.88	0	0				8.3	Member
10	120	SOL - 3/4" SOLID	0.65	1.2D + 1.6W 60° Wind	50	19.88	0	0				3.3	Member
11	140	SOL - 3/4" SOLID	0.78	1.2D + 1.6W Normal Wi	50	19.88	0	0				3.9	Member
12	160	SOL - 3/4" SOLID	1.31	1.2D + 1.6W 60° Wind	50	19.88	0	0				6.6	Member
13	180	SOL - 3/4" SOLID	0.89	1.2D + 1.6W 60° Wind	50	19.88	0	0				4.5	Member
14	190	SOL - 3/4" SOLID	1.15	1.2D + 1.6W Normal Wi	50	19.88	0	0				5.8	Member
15	192.5	SOL - 3/4" SOLID			50	0.00	0	0					
16	197.5	CHN - C3 x 6	2.24	1.2D + 1.6W 60° Wind	36	57.02	0	0				3.9	Member
17	200	SOL - 3/4" SOLID	0.92	1.2D + 1.6W Normal Wi	50	19.88	0	0				4.6	Member
18	220	SOL - 3/4" SOLID	0.70	1.2D + 1.6W 60° Wind	50	19.88	0	0				3.5	Member
19	240	SOL - 3/4" SOLID	0.24	1.2D + 1.6W Normal Wi	50	19.88	0	0				1.2	Member
20	242.5	SOL - 3/4" SOLID	1.79	1.2D + 1.6W 60° Wind	50	19.88	0	0				9.0	Member
21	245	CHN - C3 x 6	0.78	1.2D + 1.6W Normal Wi	36	57.02	0	0				1.4	Member
22	250	SOL - 3/4" SOLID	0.73	1.2D + 1.6W Normal Wi	50	19.88	0	0				3.7	Member
23	260	SOL - 3/4" SOLID	0.77	1.2D + 1.6W 60° Wind	50	19.88	0	0				3.9	Member

Force/Stress Tension Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	



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DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	5	SOL - 5/8" SOLID	0.00		50	0.00	0	0					
2	20	SOL - 5/8" SOLID	0.88	1.2D + 1.6W 90° Wind	50	13.81	0	0				6.4	Member
3	40	SOL - 5/8" SOLID	0.87	1.2D + 1.6W 90° Wind	50	13.81	0	0				6.3	Member
4	60	SOL - 5/8" SOLID	2.53	1.2D + 1.6W 90° Wind	50	13.81	0	0				18.4	Member
5	65.667	SOL - 5/8" SOLID	5.68	1.2D + 1.6W 90° Wind	50	13.81	0	0				41.2	Member
6	66.875	SOL - 5/8" SOLID	0.08	1.2D + 1.0Di + 1.0Wi 90	50	13.81	0	0				0.6	Member
7	70.042	SOL - 5/8" SOLID	0.00	1.2D + 1.0Di + 1.0Wi No	50	13.81	0	0					Member
8	80	SOL - 5/8" SOLID	7.32	1.2D + 1.6W 90° Wind	50	13.81	0	0				53.0	Member
9	100	SOL - 5/8" SOLID	3.23	1.2D + 1.6W 90° Wind	50	13.81	0	0				23.4	Member
10	120	SOL - 9/16" SOLID	1.11	1.2D + 1.6W 90° Wind	50	11.18	0	0				9.9	Member
11	140	SOL - 9/16" SOLID	1.95	1.2D + 1.6W 90° Wind	50	11.18	0	0				17.4	Member
12	160	SOL - 9/16" SOLID	2.31	1.2D + 1.6W 60° Wind	50	11.18	0	0				20.6	Member
13	180	SOL - 9/16" SOLID	1.43	1.2D + 1.6W 60° Wind	50	11.18	0	0				12.8	Member
14	190	SOL - 9/16" SOLID	2.21	1.2D + 1.6W Normal Wi	50	11.18	0	0				19.8	Member
15	192.5	SOL - 9/16" SOLID	3.76	1.2D + 1.6W Normal Wi	50	11.18	0	0				33.6	Member
16	197.5	SOL - 9/16" SOLID	3.48	1.2D + 1.6W 90° Wind	50	11.18	0	0				31.1	Member
17	200	SOL - 9/16" SOLID	4.85	1.2D + 1.6W 90° Wind	50	11.18	0	0				43.4	Member
18	220	SOL - 9/16" SOLID	1.25	1.2D + 1.6W 60° Wind	50	11.18	0	0				11.2	Member
19	240	SOL - 9/16" SOLID	0.94	1.2D + 1.6W 60° Wind	50	11.18	0	0				8.4	Member
20	242.5	SOL - 9/16" SOLID	8.23	1.2D + 1.6W 90° Wind	50	11.18	0	0				73.6	Member
21	245	SOL - 9/16" SOLID	6.48	1.2D + 1.6W 90° Wind	50	11.18	0	0				57.9	Member
22	250	SOL - 9/16" SOLID	1.58	1.2D + 1.6W 90° Wind	50	11.18	0	0				14.1	Member
23	260	SOL - 9/16" SOLID	1.47	1.2D + 1.6W 60° Wind	50	11.18	0	0				13.1	Member

Support Forces Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 18	

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	110.47	-1.15	
	A1	0.00	-1.30	1.26	
	A1b	-40.22	-37.30	-24.80	
	A1a	40.22	-37.32	-24.79	
1.2D + 1.6W 60° Wind	1	-1.62	89.69	-0.95	
	A1	-1.05	-6.63	8.70	
	A1b	-47.25	-42.50	-27.28	
	A1a	7.00	-6.65	-5.25	
1.2D + 1.6W 90° Wind	1	-1.46	103.45	-0.30	
	A1	-1.48	-23.11	29.14	
	A1b	-48.58	-43.79	-27.16	
	A1a	1.98	-2.32	-1.69	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	184.44	-0.17	
	A1	0.00	-8.29	16.39	
	A1b	-30.75	-22.99	-19.38	
	A1a	30.75	-23.01	-19.38	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.18	183.70	-0.11	
	A1	-1.38	-13.22	22.59	
	A1b	-36.83	-27.98	-21.27	
	A1a	18.87	-13.23	-12.48	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.21	183.87	0.00	
	A1	-1.74	-18.02	29.35	
	A1b	-35.74	-26.55	-19.87	
	A1a	15.17	-9.59	-9.49	

Max Reactions (kips)	Base	Anchor 1
Vertical	184.44	43.79
Horizontal	1.87	55.65

Cable Forces Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-G	10/17/2019	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 19	

Load Case	Elevation (ft)	Cable	Node 1	Node 2	Allow Tension (kips)	Applied Tension (kips)	Use %
1.2D + 1.6W Normal	70.04	1/2 EHS	A1	T1	16.02	0.31	2
			A1b	T1b	16.02	7.01	44
			A1a	T1a	16.02	7.20	45
			A1a	T1	16.02	6.90	43
			A1b	T1a	16.02	7.12	44
			A1	T1b	16.02	0.31	2
	139.33		A1	70	16.02	0.14	1
			A1a	70a	16.02	11.01	69
			A1b	70b	16.02	11.02	69
	195.00	7/16 EHS	A1	T3	12.48	0.42	3
			A1b	T3b	12.48	8.92	71
			A1a	T3a	12.48	8.93	72
			A1a	T3	12.48	8.84	71
			A1b	T3a	12.48	8.83	71
			A1	T3b	12.48	0.42	3
	239.33	5/8 EHS	A1	119	25.44	0.82	3
			A1a	119a	25.44	19.08	75
			A1b	119b	25.44	19.05	75
1.2D + 1.6W 60° Wind	70.04	1/2 EHS	A1	T1	16.02	1.82	11
			A1b	T1b	16.02	8.42	53
			A1a	T1a	16.02	1.75	11
			A1a	T1	16.02	1.80	11
			A1b	T1a	16.02	8.40	52
			A1	T1b	16.02	1.76	11
	139.33		A1	70	16.02	1.69	11
			A1a	70a	16.02	1.67	10
			A1b	70b	16.02	13.13	82
	195.00	7/16 EHS	A1	T3	12.48	1.82	15
			A1b	T3b	12.48	9.97	80
			A1a	T3a	12.48	1.73	14
			A1a	T3	12.48	1.79	14
			A1b	T3a	12.48	9.87	79
			A1	T3b	12.48	1.71	14
	239.33	5/8 EHS	A1	119	25.44	2.99	12
			A1a	119a	25.44	3.03	12
			A1b	119b	25.44	21.31	84
1.2D + 1.6W 90° Wind	70.04	1/2 EHS	A1	T1	16.02	4.44	28
			A1b	T1b	16.02	8.38	52
			A1a	T1a	16.02	0.49	3
			A1a	T1	16.02	0.54	3
			A1b	T1a	16.02	8.20	51
			A1	T1b	16.02	4.58	29
	139.33		A1	70	16.02	6.49	41
			A1a	70a	16.02	0.51	3
			A1b	70b	16.02	13.30	83
	195.00	7/16 EHS	A1	T3	12.48	5.74	46
			A1b	T3b	12.48	10.36	83
			A1a	T3a	12.48	0.66	5
			A1a	T3	12.48	0.71	6
			A1b	T3a	12.48	10.29	82
			A1	T3b	12.48	5.62	45
	239.33	5/8 EHS	A1	119	25.44	11.64	46
			A1a	119a	25.44	1.22	5

1.2D + 1.6W 90° Wind	239.33	5/8 EHS	A1b	119b	25.44	22.24	87
1.2D + 1.0Di + 1.0Wi	70.04	1/2 EHS	A1	T1	16.02	4.42	28
			A1b	T1b	16.02	7.16	45
			A1a	T1a	16.02	7.17	45
			A1a	T1	16.02	7.10	44
			A1b	T1a	16.02	7.14	45
			A1	T1b	16.02	4.40	27
	139.33		A1	70	16.02	3.79	24
			A1a	70a	16.02	8.17	51
			A1b	70b	16.02	8.18	51
	195.00	7/16 EHS	A1	T3	12.48	3.31	26
			A1b	T3b	12.48	7.28	58
			A1a	T3a	12.48	7.21	58
			A1a	T3	12.48	7.26	58
			A1b	T3a	12.48	7.18	58
			A1	T3b	12.48	3.29	26
	239.33	5/8 EHS	A1	119	25.44	4.00	16
			A1a	119a	25.44	11.49	45
			A1b	119b	25.44	11.47	45
1.2D + 1.0Di + 1.0Wi	70.04	1/2 EHS	A1	T1	16.02	5.21	33
			A1b	T1b	16.02	7.85	49
			A1a	T1a	16.02	5.19	32
			A1a	T1	16.02	5.20	32
			A1b	T1a	16.02	7.85	49
			A1	T1b	16.02	5.19	32
	139.33		A1	70	16.02	5.01	31
			A1a	70a	16.02	4.98	31
			A1b	70b	16.02	9.74	61
	195.00	7/16 EHS	A1	T3	12.48	4.76	38
			A1b	T3b	12.48	8.37	67
			A1a	T3a	12.48	4.63	37
			A1a	T3	12.48	4.74	38
			A1b	T3a	12.48	8.34	67
			A1	T3b	12.48	4.61	37
	239.33	5/8 EHS	A1	119	25.44	6.49	26
			A1a	119a	25.44	6.53	26
			A1b	119b	25.44	14.30	56
1.2D + 1.0Di + 1.0Wi	70.04	1/2 EHS	A1	T1	16.02	6.17	39
			A1b	T1b	16.02	7.70	48
			A1a	T1a	16.02	4.59	29
			A1a	T1	16.02	4.57	29
			A1b	T1a	16.02	7.67	48
			A1	T1b	16.02	6.16	38
	139.33		A1	70	16.02	6.51	41
			A1a	70a	16.02	4.04	25
			A1b	70b	16.02	9.32	58
	195.00	7/16 EHS	A1	T3	12.48	6.08	49
			A1b	T3b	12.48	8.07	65
			A1a	T3a	12.48	3.63	29
			A1a	T3	12.48	3.68	29
			A1b	T3a	12.48	8.03	64
			A1	T3b	12.48	5.91	47
	239.33	5/8 EHS	A1	119	25.44	8.88	35
			A1a	119a	25.44	4.70	18
			A1b	119b	25.44	13.46	53

Max Reactions

Base:	184.44 (Vertical)	1.87 (Horizontal)
Anchor 1:	43.79 (Vertical)	55.65 (Horizontal)

Max Usages

Max Leg: 97.2% (1.2D + 1.0Di + 1.0Wi 60° Wind - Sect 10)
Max Diag: 94.1% (1.2D + 1.6W Normal Wind - Sect 9)
Max Horiz: 75.9% (1.2D + 1.6W 90° Wind - Sect 5)
Max Cable: 87.4% (1.2D + 1.6W 90° Wind) - Elev: 239 ft

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	83.00	0.2605	0.0060	0.1949
	85.33	0.2727	0.0069	0.3024
	117.00	0.4142	0.0279	0.2392
	165.33	0.5435	0.0406	0.1149
	172.33	0.5554	0.0407	0.0902
	177.00	0.5617	0.0404	0.1553
	180.00	0.5574	0.0405	0.4042
	200.00	0.5788	0.0443	0.2665
	200.67	0.5821	0.0455	0.2663
	219.33	0.6436	0.0827	0.3611
	223.00	0.6573	0.0840	0.2985
	232.33	0.6958	0.0554	0.2572
	245.00	0.7654	0.0246	0.3502
	253.00	0.8214	0.0519	0.3063
	257.67	0.8503	0.0121	0.4731
	260.00	0.8650	0.0752	0.3692
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	83.00	0.2642	0.0037	0.1916
	85.33	0.2761	0.0046	0.3015
	117.00	0.4158	0.0241	0.2292
	165.33	0.5162	0.0603	0.0833
	172.33	0.5228	0.0681	0.0647
	177.00	0.5258	0.0728	0.1228
	180.00	0.5171	0.0749	0.4810
	200.00	0.5307	0.0923	0.2599
	200.67	0.5339	0.0925	0.2588
	219.33	0.5918	0.0983	0.4373
	223.00	0.6070	0.0898	0.0980
	232.33	0.6451	0.0931	0.2585
	245.00	0.7144	0.0982	0.3506
	253.00	0.7699	0.0987	0.3107
	257.67	0.7949	0.0991	0.5433
	260.00	0.8132	0.0989	0.1251

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	83.00	0.2856	0.0380	0.1931
	85.33	0.2972	0.0403	0.3098
	117.00	0.4416	0.0914	0.2274
	165.33	0.5050	0.0873	0.0241
	172.33	0.5094	0.0737	0.0102
	177.00	0.5094	0.0650	0.1014
	180.00	0.5026	0.0585	0.6344
	200.00	0.5027	0.0390	0.2495
	200.67	0.5058	0.0387	0.2572
	219.33	0.5644	0.0313	0.2765
	223.00	0.5766	0.0280	0.5573
	232.33	0.6186	0.0250	0.2745
	245.00	0.6951	0.0222	0.3790
	253.00	0.7551	0.0224	0.3284
	257.67	0.7867	0.0218	0.1978
	260.00	0.8028	0.0227	0.7437
1.2D + 1.6W 93 mph Wind at 60° From Face	83.00	0.5171	0.0145	0.4245
	85.33	0.5414	0.0168	0.6306
	117.00	0.8423	0.0629	0.4916
	165.33	1.1444	0.0943	0.3056
	172.33	1.1765	0.0945	0.2474
	177.00	1.1945	0.0933	0.3682
	180.00	1.1895	0.0930	0.7145
	200.00	1.2584	0.1142	0.6560
	200.67	1.2665	0.1235	0.6581
	219.33	1.4231	0.3879	0.8398
	223.00	1.4556	0.4009	0.7295
	232.33	1.5508	0.2320	0.6286
	245.00	1.7299	0.0442	0.8698
	253.00	1.8617	0.1839	0.7550
	257.67	1.9307	-0.0267	1.1451
	260.00	1.9664	0.2998	0.8594
1.2D + 1.6W 93 mph Wind at 90° From Face	83.00	0.6804	-0.0489	0.6043
	85.33	0.7125	-0.0508	0.8369
	117.00	1.1468	-0.0832	0.7574
	165.33	1.6595	-0.0405	0.5657
	172.33	1.7229	-0.0228	0.5074
	177.00	1.7623	-0.0114	0.6420
	180.00	1.7748	0.0062	0.5945
	200.00	1.9383	0.0374	1.0262
	200.67	1.9503	0.0377	1.0164
	219.33	2.2056	-0.1913	1.3329
	223.00	2.2611	-0.2088	0.2556
	232.33	2.4071	-0.1469	0.9467
	245.00	2.6577	-0.1299	1.1818
	253.00	2.8325	-0.1794	1.0814
	257.67	2.9280	-0.0946	1.6253
	260.00	2.9753	-0.2204	0.7109
1.2D + 1.6W 93 mph Wind at Normal To Face	83.00	0.7822	0.1058	0.6710
	85.33	0.8170	0.1115	0.9213
	117.00	1.3019	0.2299	0.8520
	165.33	1.8713	0.2000	0.6418
	172.33	1.9510	0.1644	0.5934
	177.00	1.9973	0.1409	0.7565
	180.00	2.0134	0.1246	0.6349
	200.00	2.2076	0.0635	1.1871
	200.67	2.2212	0.0632	1.1778
	219.33	2.5223	0.0607	1.0667
	223.00	2.5788	0.0576	1.8418
	232.33	2.7534	0.0565	1.1015
	245.00	3.0449	0.0622	1.3834
	253.00	3.2482	0.0637	1.2477
	257.67	3.3597	0.0533	0.9008
	260.00	3.4161	0.0654	2.1052

Guyed Tower Base Design

			Date: 10/17/2019
Customer Name:	SBA Communications Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	260
Site Nmber:	CT02303-A-3-SBA	**Engineer Name:**	T. Alajaj
Engr. Number:	87835	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Guyed Tower

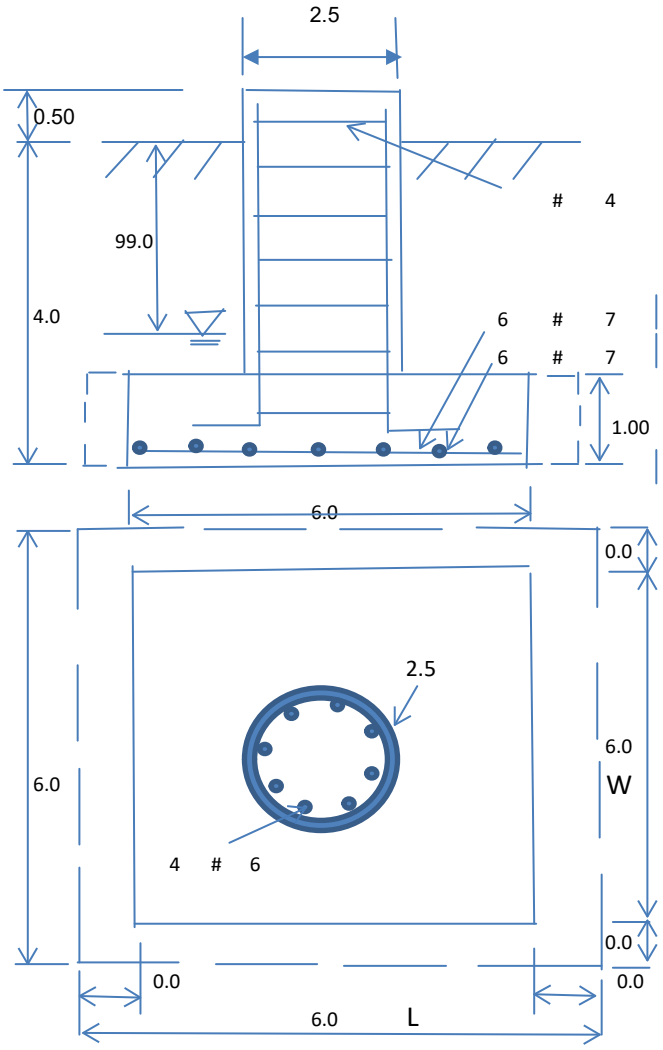
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	184.4	Shear Force (Kips):	1.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	2.5	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	1.00
Length of Pad (ft.):	6	Width of Pad (ft.):	6
Final Length of pad (ft)	6.0	Final width of pad (ft):	6.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4500	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	6	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	4	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	7	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	6	Qty. of Rebar in Pad (W):	6	

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
					Angle from Bottm of Pad:	25

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.6

Total Dry Soil Volume (cu. Ft.):	93.27	Total Dry Soil Weight (Kips):	11.66
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	11.66	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	53.18	Total Dry Concrete Weight (Kips):	7.98
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	7.98	Total Vertical Load on Base (Kips):	204.08

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	5335.4	<	Allowable Factored Soil Bearing (psf):	18000	0.30	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	648.0	>	Design Factored Axial Load (Kips):	186	0.29	OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	0.44	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	92.1	>	Design Factored Moment (Mu, Kips-Ft	6.6	0.07	OK!
Calculated Shear Capacity (Kips):	167.1	>	Design Factored Shear (Kips):	1.9	0.01	OK!
Calculated Tension Capacity (Tn, Kips):	95.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	1402.4	>	Design Factored Axial Load (Pu Kips):	184.4	0.13	OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.20	OK!				
Pier Reinforcement Ratio:	0.002					
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Dir. Kips);	62.0	>	One-Way Factored Shear (L-Dir Kips):	32.1	0.52	OK!
One-Way Design Shear Capacity (W-Dir. Kips):	62.0	>	One-Way Factored Shear (W-Dir Kips)	32.1	0.52	OK!
Two-Way Design Shear Capacity (Kips):	208.8	>	Two-Way Factored Shear (Kips):	143.5	0.69	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0058	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0058		OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	132.2	>	Moment at Bottom (L-Direct. K-Ft):	47.5	0.36	OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	132.2	>	Moment at Bottom (W-Dir. Kips-Ft):	47.5	0.36	OK!

Guy Anchor Analysis and Design

				Date
				43755
Customer Name:	SBA Comm unications C orp	**EIA/TIA Standard:**	EIA-222-G
Site Name:	0	**Structure Height (Ft.):**	260
Site Nmber:	CT02303-A-3- SBA	**Engineer Name:**	T. Alaj aj
Engr. Number:	87835	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calc ulations **Number of Anchors:** *1 Set*

Soil Design Parameters:

Soil nit Weight (pcf):	*127.0*	*Soil uoant Weight:*	*6.6*	*cf*	*Cohesion of Soils (psf):*		
Water Table . .S . (ft):	*99.0*	*nit W eight of Water:*	*62.*	*pcf*	Internal Angle of Friction (°)		
lti mate lateral ressure (psf):	*3000*	*ltimate Sin Fr iction:*	*200*	*sf*	*Coefficient of Shear Friction:*		*0.30*
Conical Failure Angle from Top:	*30*	*Failure Angle from ottm*	*20*				

Material Properties:

Concrete Strength (psi):	*3000*	*ni t Weight of Concrete:*	*150.0*	*psf*	*Horiontal Rebar Y ield (psi):*		*60000*
Shear Strength Reduction Factor:	*0.75*				*Fleure Streng th Reduction Factor:*		*0.9*

A. Inner Anchors:

Radius (ft.): *200*

1. Design Reactions (Factored):

plift (ips:)	*3.8*	*Shear (ips)*	*55.7*		*Angle of force resultant (Ø):*		*38.2*

2. Foundation Geometries:

loc ase Dept h .. S. (ft):	*8.0*	*loc with/without toe*	*o*		*Water Table below grade (ft):*		*99.00*
Length of Anchor loc (L ft .):	*10.0*	*Width of Anchor loc:*	*5.5*	*ft.*	*Thicness of Anchor loc (ft.) :*		*2.5*
Concrete loc top of Anchor	*o*						

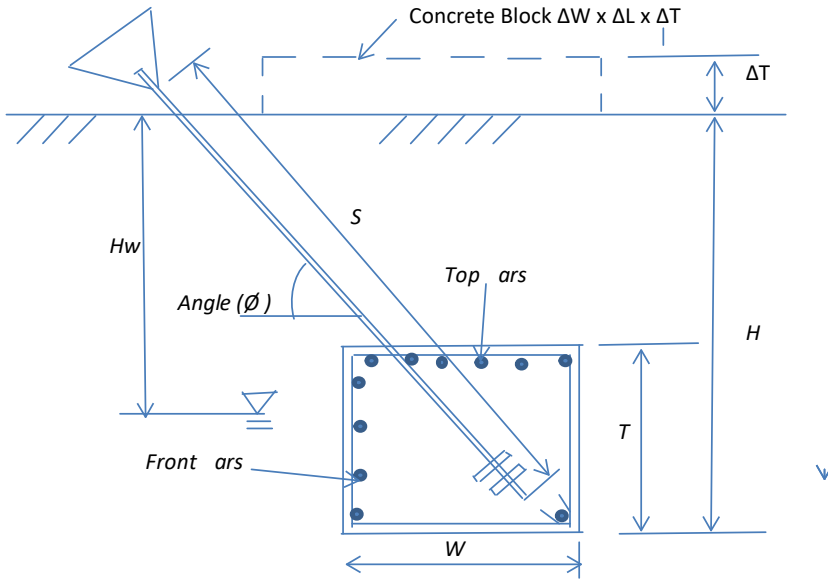
(1). Inner Anchors: Radius ft.): 200

H (ft.):	8.0	Hw (ft.):	99.0
L (ft.):	10.0	W (ft.):	5.5
T (ft.):	2.5	Angle (Ø)	38.2
S (ft):	13.75		

Top bars: 3 # 6

Front bars: 3 # 6

Concrete Volume (Cu. Yd.)/Each: 5.09



3. Foundation Ana lysis and Design:

Total Dry Soil Volume (cu. Ft.):	610.18	Total Dry Soil Weight (Kips):	90.01
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	77.49	Weight of the Concrete Block at Top (Kips):	0.00
Total Dry Concrete Volume (cu. Ft.):	137.50	Total Dry Concrete Weight (Kip):	20.63
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	20.63	Weight Reduction Factor:	0.9
Uplift Strength Reduction Factor on Soil:	0.75	Shear Strength Reduction Factor on Soil:	0.75

4. Check Soil and Foundat ion Capacities:

Nominal Factored Uplift Resistance:	82.44	Kips >	Design Uplift Force (Kips):	43.8	OK!
Ultimate Shear Friction Resistance at base:	9.59	Kips	Ultimate Resistance Pressure:	3000.0	Psf
Factored Shear Resistance:	67.57	Kips >	Design Shear Force (Kips):	55.7	OK!

5. Design Concrete Block:

Rebar Size (#):	6	Wind Load Factor on Concrete Design:	1.00	
Qty. of the Rebar at top of the block:	3	Qty. of the Rebar in the front of the block:	3	
Area of Single Rebar (sq. in.):	0.44	Factor for concrete compression zone:	0.85	
One Way Shear due to Shear Force (Kips):	27.8	One Way Shear Capacity for shear (kips):	152.8	OK!
One Way Shear due to Uplift (Kips):	21.9	One Way Shear Capacity for uplift (kips):	141.0	OK!
Moment due to Shear Load (Kips-ft):	69.6	Flexural Capacity for Shear Load (Kips-ft):	368.2	OK!
Moment due to uplift Load (Kips-ft):	54.7	Flexural Capacity for uplift Load (Kips-ft):	154.4	OK!
Ratio of Design Moment/Moment capacity:	0.35			
Max. Ratio of Shear Force/Shear capacity:	0.18	OK!		

PER THE INTERNATIONAL BUILDING CODE THIS STRUCTURE IS CLASSIFIED AS:

1. CONSTRUCTION TYPE V-B (TABLE 601)
2. GROUP U OCCUPANCY (SECTION 312.1 UNOCCUPIED TOWER SITE)

MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 260' PIROD GUYED TOWER

PROPOSED CARRIER: AT&T

SITE: CT02303-A-3-SBA / TORRINGTON 2 CT

COORDINATES (LATITUDE: 41.8026°, LONGITUDE: -73.16466°)

CONSTRUCTION CLASS

TES HAS DETERMINED THIS AS A CLASS **IV** CONSTRUCTION PROJECT PER ANSI/ASSP A10.48

PLEASE NOTE THIS SET OF DRAWINGS IS FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. 64398, DATED 04/08/19.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	1
BOM	BILL OF MATERIALS	1
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	1
A-2	36FWGT (1 3/4" LEG), HORIZONTAL ASSEMBLY-X BRACE (6 BAYS)	0
A-3	36FWGT (1 3/4" LEG), ANGLE HORIZONTAL ASSEMBLY-X BRACE (1 BAY)	1
A-4	36FWGT (1 1/2" LEG), MID-PANEL HORIZONTAL ASSEMBLY-X BRACE (2 BAYS)	1
HC-1	STANDARD GUY HARDWARE CHART	1
TC-1	GUY TENSION CHART	1

TES
Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
73511

CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
TORRINGTON 2 CT
1210 HIGHLAND AVE
TORRINGTON, CT 06790

Exp.01/31/2020

STATE OF CONNECTICUT
MUSTAPHA ASSI
No. 23865
LICENSED
PROFESSIONAL ENGINEER

07/24/2019

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

SHEET TITLE:
TITLE SHEET

SHEET NUMBER: T-1
REV #: 1

BILL OF MATERIALS (PAGE 1 OF 1)

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PIECE WEIGHT	WEIGHT (lb)	NOTES
			MATERIAL & HARDWARE					
1	1	320104	7/16" EHS GUY STRAND (IN FT.) (VALMONT OR EQUIVALENT)	1796 FT.	HC-1	716.6	716.6	GALVANIZED
6	6	1032117	TURNBUCKLE 3/4" X 18" (JAW & EYE) (CROSBY OR EQUIVALENT)	-	HC-1	7	42	GALVANIZED
12	12	GC-65265	DEAD-END SLEEVE, 7/16" (PREFORMED OR EQUIVALENT)	-	HC-1	-		GALVANIZED
6	6	GC-65266	DEAD-END SLEEVE, 1/2" (PREFORMED OR EQUIVALENT)	-	HC-1	-		
1	1	GC-65268	DEAD-END SLEEVE, 5/8" (PREFORMED OR EQUIVALENT)	-	HC-1	-		
12	12	1037693	EXTRA HEAVY WIRE ROPE THIMBLE, FOR 7/16" GUY WIRE (CROSBY OR EQUIVALENT)	-	HC-1	0.35	4.2	GALVANIZED
6	6	1037719	EXTRA HEAVY WIRE ROPE THIMBLE, FOR 1/2" or 9/16" GUY WIRES (CROSBY OR EQUIVALENT)	-	HC-1	0.51	3.1	
1	1	1037755	EXTRA HEAVY WIRE ROPE THIMBLE, FOR 5/8" GUY WIRE (CROSBY OR EQUIVALENT)	-	HC-1	0.76	0.8	
12	12	1018455	G-209 SCREW PIN SHACKLE, 1/2" (CROSBY OR EQUIVALENT)	-	HC-1	0.72	8.7	GALVANIZED
6	6	1018473	G-209 SCREW PIN SHACKLE, 5/8" (CROSBY OR EQUIVALENT)	-	HC-1	1.37	8.3	
1	1	1018491	G-209 SCREW PIN SHACKLE, 3/4" (CROSBY OR EQUIVALENT)	-	HC-1	2.35	2.4	
12	12	BG-2148	BIG-GRIP DEAD-END 7/16" EHS (PREFORMED OR EQUIVALENT)	-	HC-1	1.88	22.6	GALVANIZED
6	6	BG-2115	BIG-GRIP DEAD-END 1/2" EHS (PREFORMED OR EQUIVALENT)	-	HC-1	3.15	18.9	
1	1	BG-2111	BIG-GRIP DEAD-END 5/8" EHS (PREFORMED OR EQUIVALENT)	-	HC-1	6.5	6.5	
			FOR ADDITIONAL MEMBERS AND HARDWARE, PLEASE ENTER INFO BELOW:					
30	30	36FW175L-HR1	1" DIA. SOLID ROD A36 WELDMENT		A-2, A-4, F-1	9.90	297	GALVANIZED
75	79	MS02-500-200-300	RU-BOLT 1/2" X 2" I.W X 3" I.L A36 OR EQUIV.		A-2, A-4, RBC-1	0.55	43.5	(2) HHN & LKW-EA GALVANIZED
6	6	AL-1	L 1 3/4" X 1 3/4" X 3/16" X 3'-0" A36		A-3, F-2	6.54	39.3	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
3	3	BR-1	WELDMENT BRACKET		A-3, F-2	14.86	44.6	GALVANIZED
3	3	CP-1	PL 3/8" X 5 1/4" X 6 3/4" A36		A-3, F-2	3.64	11	GALVANIZED
12	13	--	BOLT 5/8" X 1 3/4" A325 W/HHN & LW		A-3	0.36	4.7	GALVANIZED
9	10	MS02-500-250-400	RU-BOLT 1/2" X 2 1/2" I.W X 4" I.L A36 OR EQUIV.		A-4, RBC-1	0.70	7	(2) HHN & LKW-EA GALVANIZED
9	10	SP375-300CC	SPACER PL 3/8" X 2" X 4 1/2" A36		A-4, GT-SHIM	1.00	10	GALVANIZED
3	4	SP250-300CC	SPACER PL 1/4" X 2" X 4 1/2" A36		A-4, GT-SHIM	0.70	2.8	GALVANIZED
3	4	SP500-300CC	SPACER PL 1/2" X 2" X 4 1/2" A36		A-4, GT-SHIM	1.30	5.2	GALVANIZED
12	13	SP250-250CC	SPACER PL 1/4" X 2" X 4" A36		A-4, GT-SHIM	0.60	7.8	GALVANIZED
6	6	UTL8	CABLE SUPPORT BRACKET		A-4			
1	1	---	LANCO /HENRY 287 WHITE ACRYLIC ELASTOMERIC COATING AND SEALER OR EQUIV (GALLON)		A-1			
6	6	---	FLAT WASHER FOR 1/2" DIA BOLT					

NOTE: ALL MATERIALS REQUIRED FOR FOUNDATION MODIFICATIONS THAT ARE NOT LISTED IN THE BILL OF MATERIALS WILL BE PROVIDED BY CONTRACTOR. REFERENCE MODIFICATION SHEETS.

NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

NOTE: ALL F SHEETS ARE NOT INCLUDED IN THIS DRAWING PACKET.
CONTACT TES FOR THE F SHEETS.

TOTAL WEIGHT (lb) = 1,307

PAGE 1 OF 1

TES
Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
73511

CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
TORRINGTON 2 CT
1210 HIGHLAND AVE
TORRINGTON, CT 06790

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER: BOM
REV #: 1

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 - FOR STEEL CONSTRUCTION & TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:

1. CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD.
2. FOLLOW MANUFACTURER'S REQUIREMENTS FOR CURE TIME VS. AMBIENT TEMPERATURE.
3. DRILL HOLE TO REQUIRED DIAMETER AND DEPTH. ALL WATER, DIRT, OIL, DEBRIS, GREASE OR DUST MUST BE REMOVED FROM EACH CORE HOLE. FOLLOW MANUFACTURER'S RECOMMENDATION FOR CORRECT TYPE OF CORE BIT. AVOID DAMAGING EXISTING REINFORCING STEEL OR OTHER EMBEDDED ITEMS. NOTIFY TES ENGINEERING IF VOIDS IN THE CONCRETE, REINFORCING STEEL OR OTHER EMBEDDED ITEMS ARE ENCOUNTERED. STOP CORING IMMEDIATELY IF THIS OCCURS.
4. A HOLE ROUGHENING DEVICE FROM EITHER HILTI OR ALLFASTENERS SHALL BE USED WITH ALL HOLES. FOLLOW ALL MANUFACTURER'S RECOMMENDED CORING AND INSTALLATION INSTRUCTIONS.
5. AFTER CORING AND ROUGHENING, FLUSH EACH HOLE WITH RUNNING WATER TO REMOVE ANY SLURRY OR DEBRIS. REMOVE ALL WATER FROM THE HOLE BY MECHANICAL PUMPING.
6. BRUSH EACH HOLE WITH AN APPROPRIATE SIZED NYLON BRUSH AND FLUSH WITH RUNNING WATER A SECOND TIME. REMOVE ALL WATER FROM THE HOLE.
7. AFTER THE SECOND WATER FLUSH BRUSH THE HOLE AGAIN WITH THE APPROPRIATE SIZED NYLON BRUSH.
8. BLOW EACH HOLE WITH COMPRESSED AIR TWO TIMES MINIMUM.
9. CONFIRM THAT EACH HOLE IS PROPERLY ROUGHED AND DRY.
10. NO EPOXY INJECTION SHALL TAKE PLACE IN RAINY CONDITIONS.
11. EPOXY SHOULD BE VISIBLE AT THE TOP OF THE CORE HOLE AFTER INSTALLATION.
12. CONTRACTOR TO SUPPLY ONE PHOTO OF EACH ROUGHED AND CLEANED HOLE IN CLOSEOUT PHOTO PACKAGE.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING [a,b]

BOLT LENGTH [c]	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 [d]	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS [d]
NOT MORE THAN $4d_b$	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN $4d_b$ BUT NOT MORE THAN $8d_b$	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN $8d_b$ BUT NOT MORE THAN $12d_b$	2/3 TURN	5/6 TURN	1 TURN

[a] NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

[b] APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

[c] WHEN THE BOLT LENGTH EXCEEDS $12d_b$, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

[d] BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.

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TES JOB NO:
73511

CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
TORRINGTON 2 CT
1210 HIGHLAND AVE
TORRINGTON, CT 06790

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19

SHEET TITLE:
GENERAL NOTES

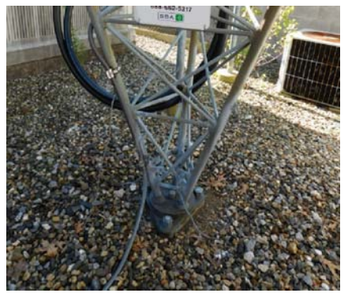
SHEET NUMBER: GN-1
REV #: 0

PLUMB AND TENSION NOTES:

1. RE-TENSION OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND NO ICE.
2. PLUMB THE TOWER WHILE RE-TENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINE AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN THE TWO ELEVATIONS (EXAMPLE, NOT TO EXCEED 0.6 INCHES FOR 20 FEET VERTICAL DISTANCE). SEE NOTE #5.
3. THE TWIST BETWEEN ANY TWO ELEVATIONS SHALL NOT EXCEED 0.5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES. SEE NOTE #5.
4. THE TENSIONING OF THE GUY WIRES TO BE PERFORMED AFTER THE INSTALLATION OF ALL OTHER MODIFICATIONS OUTLINED IN THESE DRAWINGS ARE COMPLETED.
5. IF THERE ARE ANY EXISTING MICROWAVE DISHES ON THE TOWER, PLEASE MAINTAIN THE EXISTING TWIST/PLUMB WHEN RE-TENSIONING GUY WIRES SO THAT THE DISH WILL NOT BE OUT OF THE OPERATION
6. PROVIDE TEMPORARY GUYING TO SECURE THE TOWER WHILE REPLACING OR RELOCATING GUY WIRES.

SCOPE OF WORK

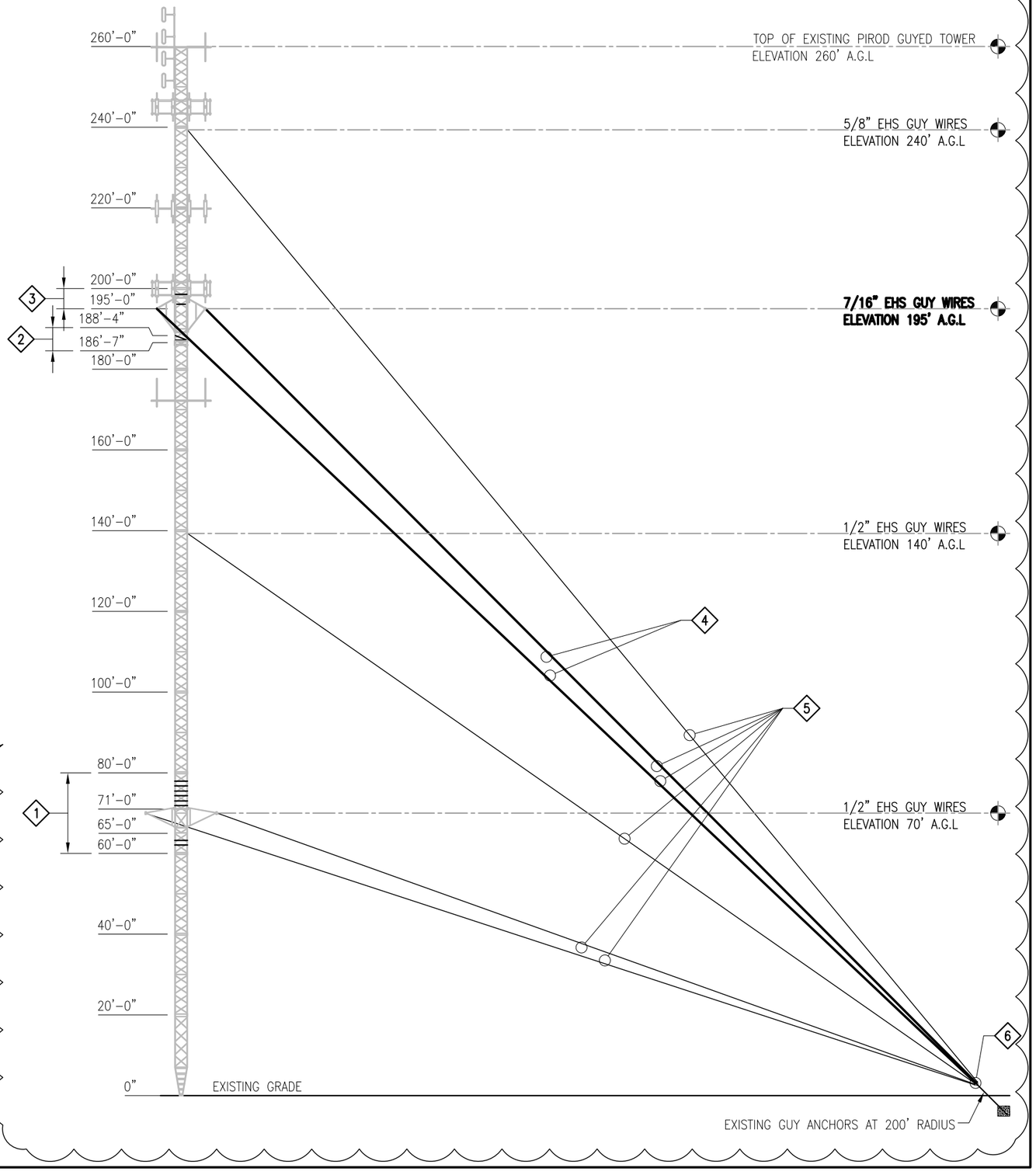
1. INSTALL NEW 1" DIA. SOLID ROD HORIZONTALS FROM 60'-0" TO 65'-0" ELEV. AND ± 71'-0" TO 80'-0" ELEV. SEE SHEET A-2 FOR DETAILS.
2. INSTALL NEW BOLT-ON BRACING FROM ± 186'-7" TO 188'-4" ELEV. SEE SHEET A-3 FOR DETAILS.
3. INSTALL NEW MID-PANEL HORIZONTAL 1" DIA. SOLID RODS FROM ± 195' TO 200' ELEV. SEE SHEET A-4 FOR DETAILS.
4. REPLACE EXISTING 1/2" EHS GUY WIRES WITH NEW 7/16" EHS GUY WIRES AT 195' ELEV. SEE SHEET HC-1 FOR DETAILS.
5. TENSION NEW GUY WIRES FROM 195' ELEV. AND RE-TENSION EXISTING GUY WIRES FROM 70', 140', 240' ELEV. PER TENSION CHARTS ON SHEET TC-1.
6. ON FULLY EXTENDED TURNBUCKLES ON LEVEL 1 AT ALL ANCHORS, AND ON FULLY RETRACTED TURNBUCKLE ON LEVEL 5 AT ANCHOR A, IF DESIGNED GUY TENSION CAN'T BE REACHED, PLEASE INSTALL NEW PREFORM, SHACKLE AND ADJUST GUY WIRE LENGTH AS SHOWN ON SHEET HC-1.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.



1

FOUNDATION COATING NOTES:

1. THE COATING MATERIALS SHALL BE LANCO WHITE ACRYLIC ELASTOMERIC COATING AND SEALER, OR HYDRO ARMOR COATING.
2. THE COATING CAN BE PLACED AT LEAST (2) DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR FOUNDATION REINFORCEMENT, AND MINIMUM (4) DAYS FOR NEW FOUNDATION CONSTRUCTION.
3. THE CONCRETE SURFACE SHALL BE CLEAN AND DRY PRIOR TO THE APPLICATION OF THE COATING.
4. THE COATING SHALL BE APPLIED TO ALL THE SURFACES OF THE CONCRETE ABOVE THE GROUND AND 6" BELOW THE GRADE SURFACE IF APPLICABLE.
5. MINIMUM 30 MILS COATING IS REQUIRED.



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TES JOB NO:
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CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
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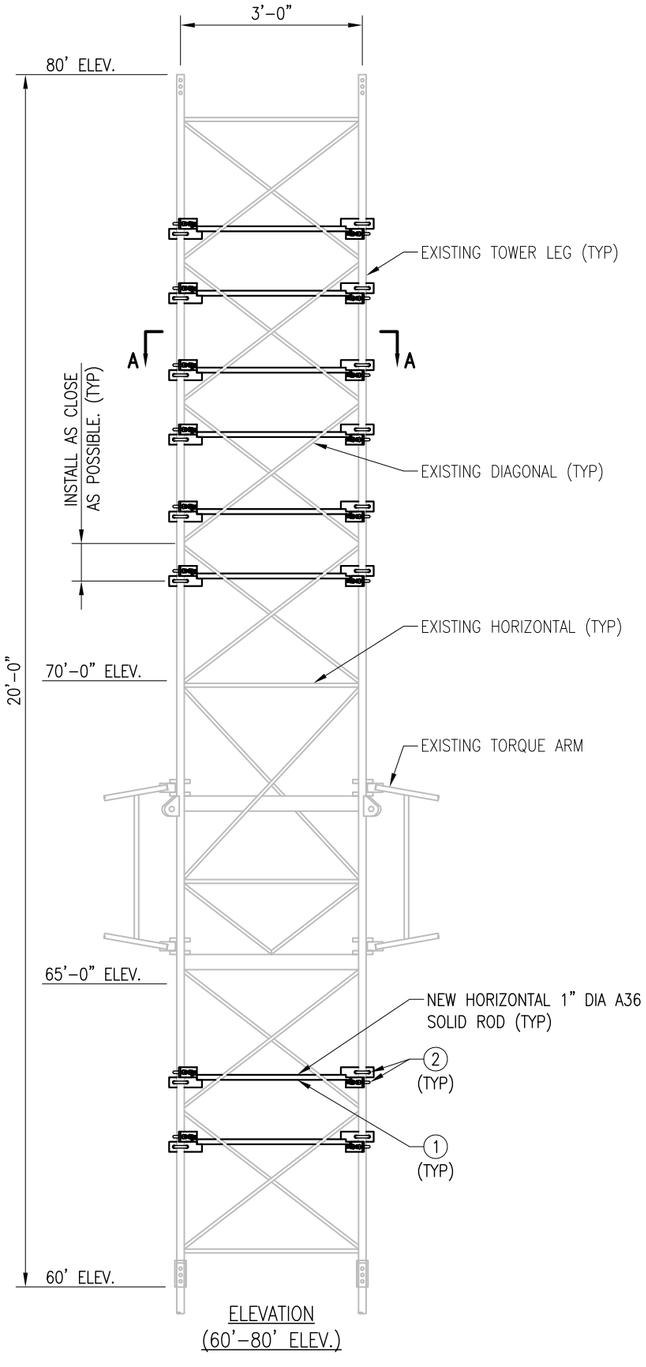
DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

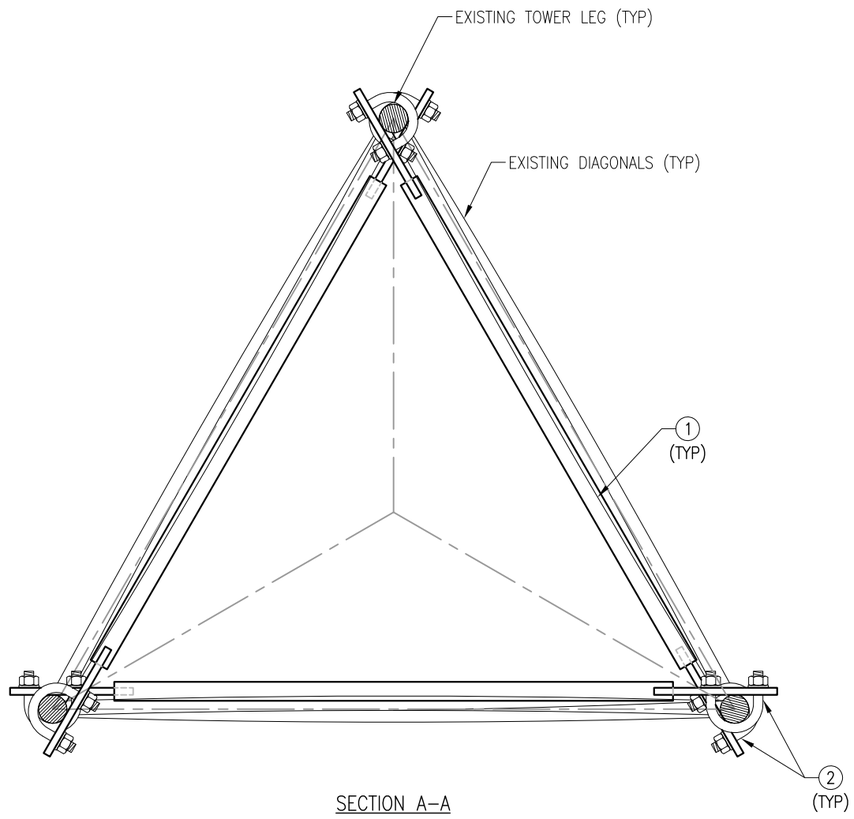
SHEET TITLE:

TOWER PROFILE

SHEET NUMBER: A-1 | REV #: 1



ELEVATION
(60'-80' ELEV.)



SECTION A-A

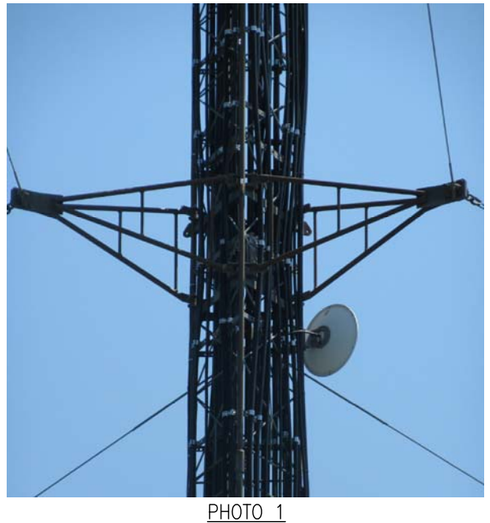


PHOTO 1

NOTES:

1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. MID PANEL HORIZONTAL ASSEMBLY CAN BE INSTALLED INSIDE OR OUTSIDE OF THE TOWER LEG.
4. THIS MODIFICATION FOR 5/8" DIAGONALS ONLY.

NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	24	36FW175L-HR1	1" DIA. SOLID ROD A36 WELDMENT
2	48	MS02-500-200-300	RU-BOLT 1/2" X 2" I.W X 3" I.L A36 OR EQUIV.

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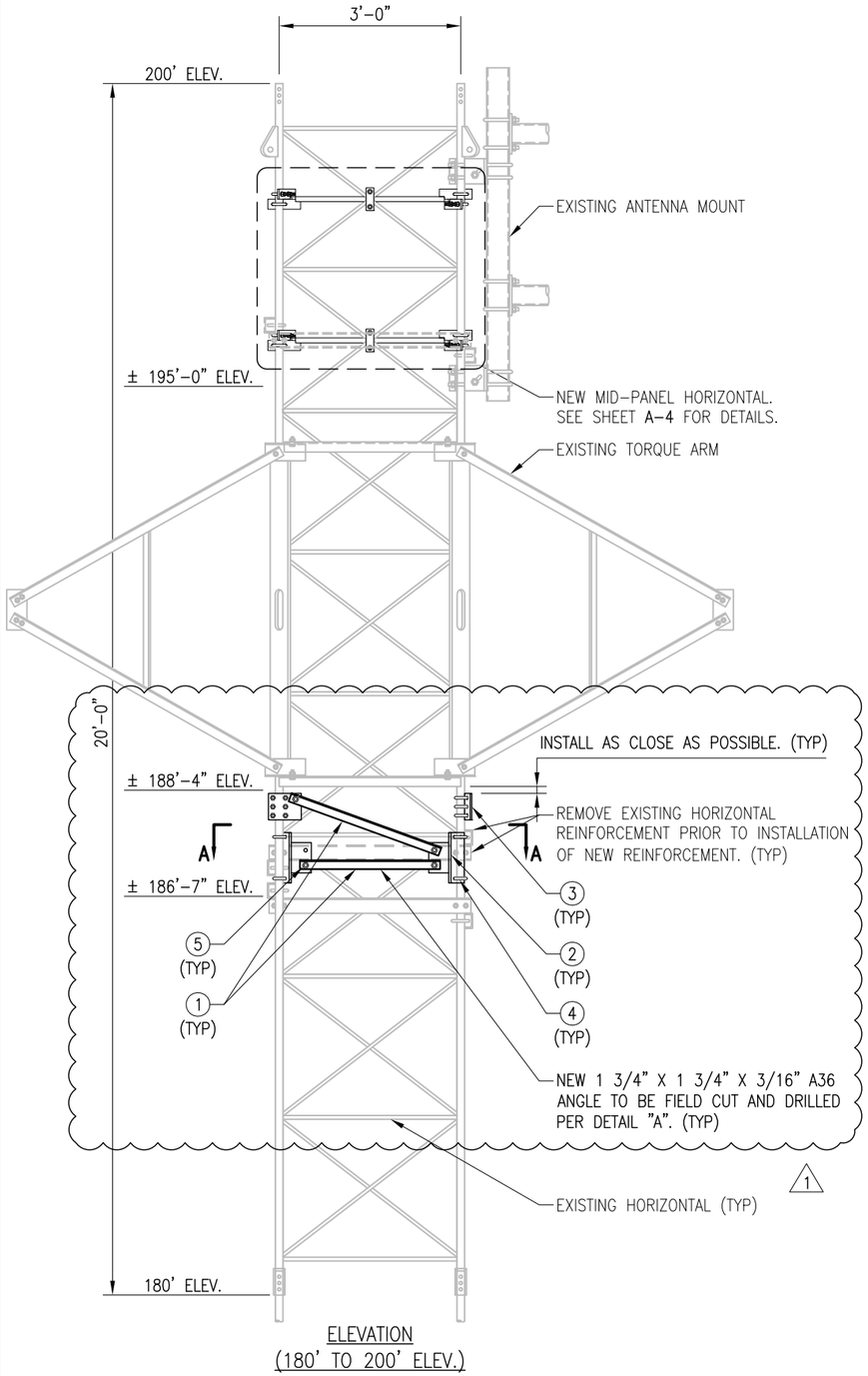
TORRINGTON, CT 06790

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19

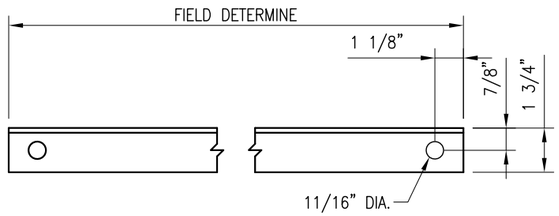
SHEET TITLE:
36FWGT (1 3/4" LEG), HORIZONTAL ASSEMBLY-X BRACE (6 BAYS)

SHEET NUMBER: A-2
REV #: 0

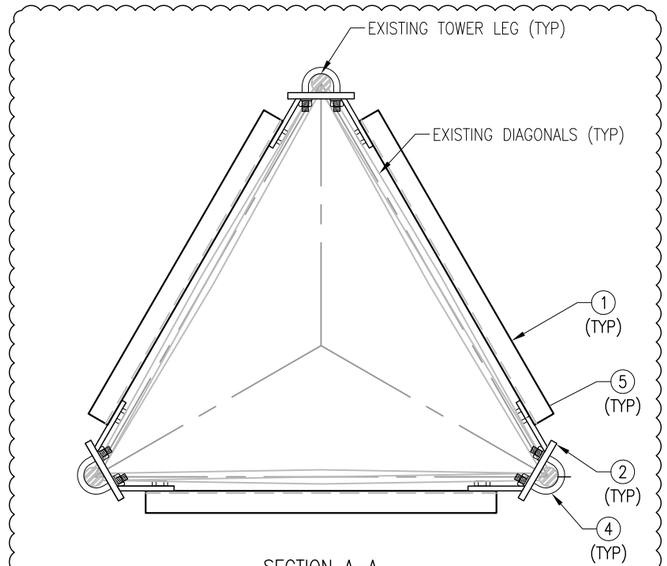


ELEVATION
(180' TO 200' ELEV.)

NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.



DETAIL "A"



SECTION A-A

1

REMOVE EXISTING HORIZONTAL
REINFORCEMENT PRIOR TO INSTALLATION
OF NEW REINFORCEMENT. (TYP)

PHOTO 1

1

NOTES:

1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.

2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	6	AL-1	L 1 3/4" X 1 3/4" X 3/16" X 3'-0" A36
2	3	BR-1	WELDMENT BRACKET
3	3	CP-1	PL 3/8" X 5 1/4" X 6 3/4" A36
4	15	MS02-500-200-300	RU-BOLT 1/2" X 2" I.W X 3" I.L A36 OR EQUIV
5	12	--	BOLT 5/8" X 1 3/4" A325 W/HHN & LW

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TES JOB NO:
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CUSTOMER SITE NO:
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CUSTOMER SITE NAME:
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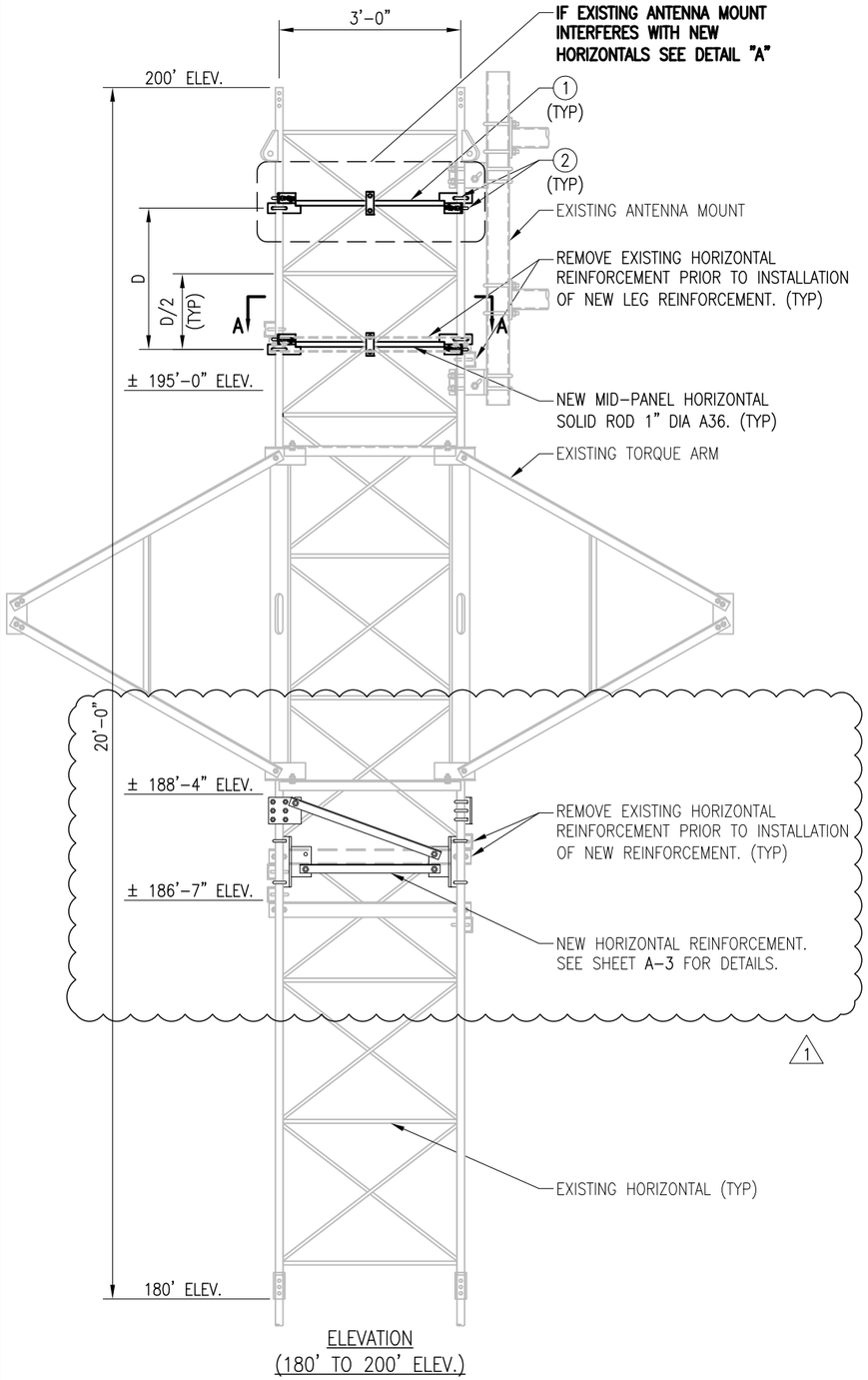
DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

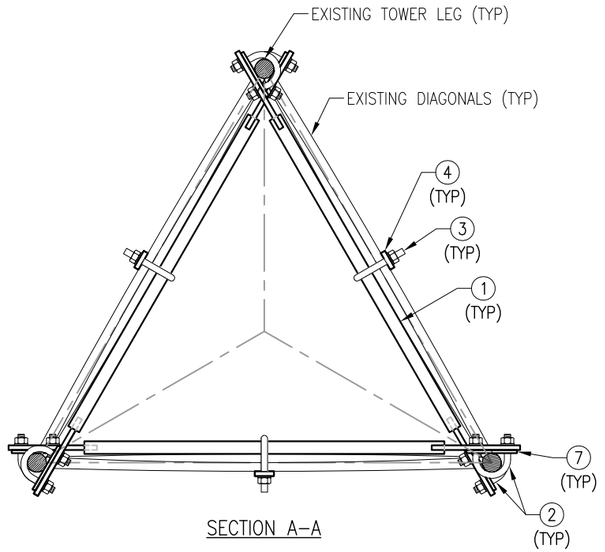
SHEET TITLE:
36FWGT (1 1/2" LEG),
ANGLE HORIZONTAL
ASSEMBLY-X BRACE (1 BAY)

SHEET NUMBER: A-3
REV #: 1

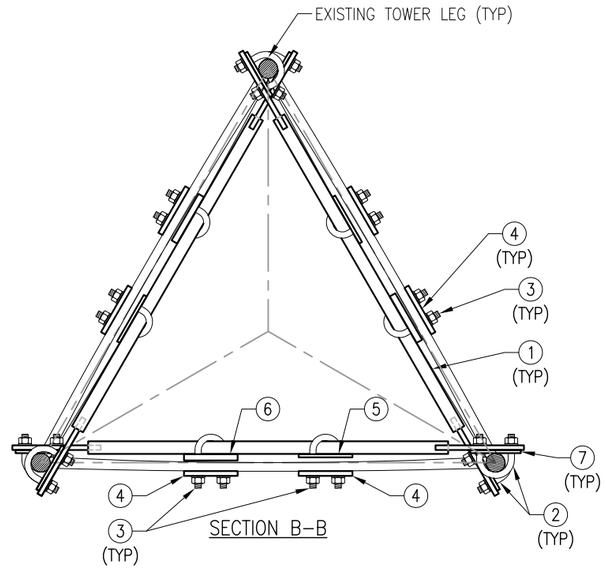


ELEVATION
(180' TO 200' ELEV.)

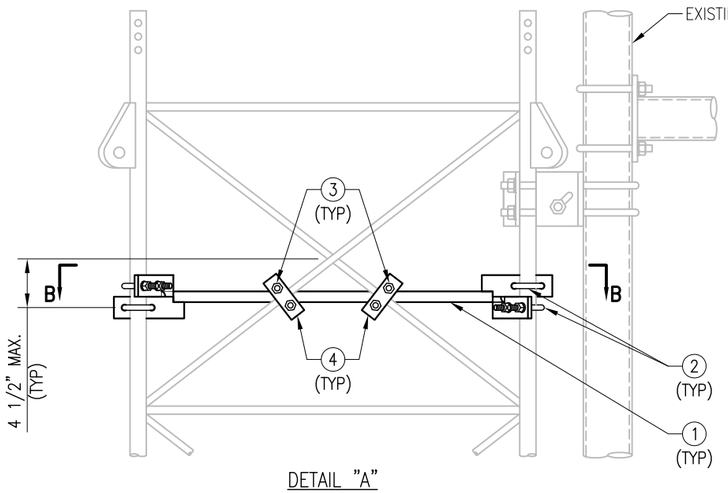
NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.



SECTION A-A



SECTION B-B



DETAIL "A"

EXISTING WAVE GUIDE COAX MAY BE REMOVED TO ACCOMMODATE INSTALLATION OF NEW HORIZONTAL. USE PROVIDED HARDWARE AS REQUIRED. (TYP)

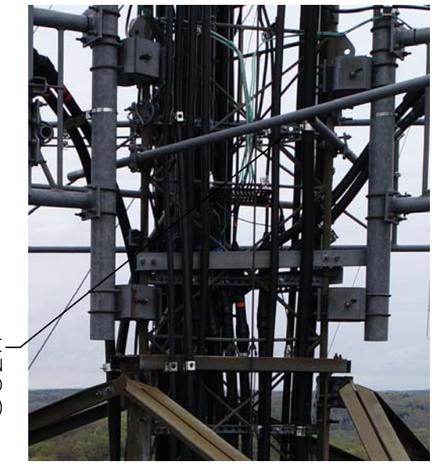


PHOTO 1

NOTES:

1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. MID PANEL HORIZONTAL ASSEMBLY CAN BE INSTALLED INSIDE OR OUTSIDE OF THE TOWER LEG.
4. THIS MODIFICATION FOR 9/16"-3/4" DIAGONALS ONLY.

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	6	36FW175L-HR1	1" DIA. SOLID ROD A36 WELDMENT
2	12	MS02-500-200-300	RU-BOLT 1/2" X 2" I.W X 3" I.L A36 OR EQUIV.
3	9	MS02-500-250-400	RU-BOLT 1/2" X 2 1/2" I.W X 4" I.L A36 OR EQUIV.
4	9	SP375-300CC	SPACER PL 3/8" X 2" X 4 1/2" A36
5	3	SP250-300CC	SPACER PL 1/4" X 2" X 4 1/2" A36
6	3	SP500-300CC	SPACER PL 1/2" X 2" X 4 1/2" A36
7	12	SP250-250CC	SPACER PL 1/4" X 2" X 4" A36
8	6	UTL8	CABLE SUPPORT BRACKET

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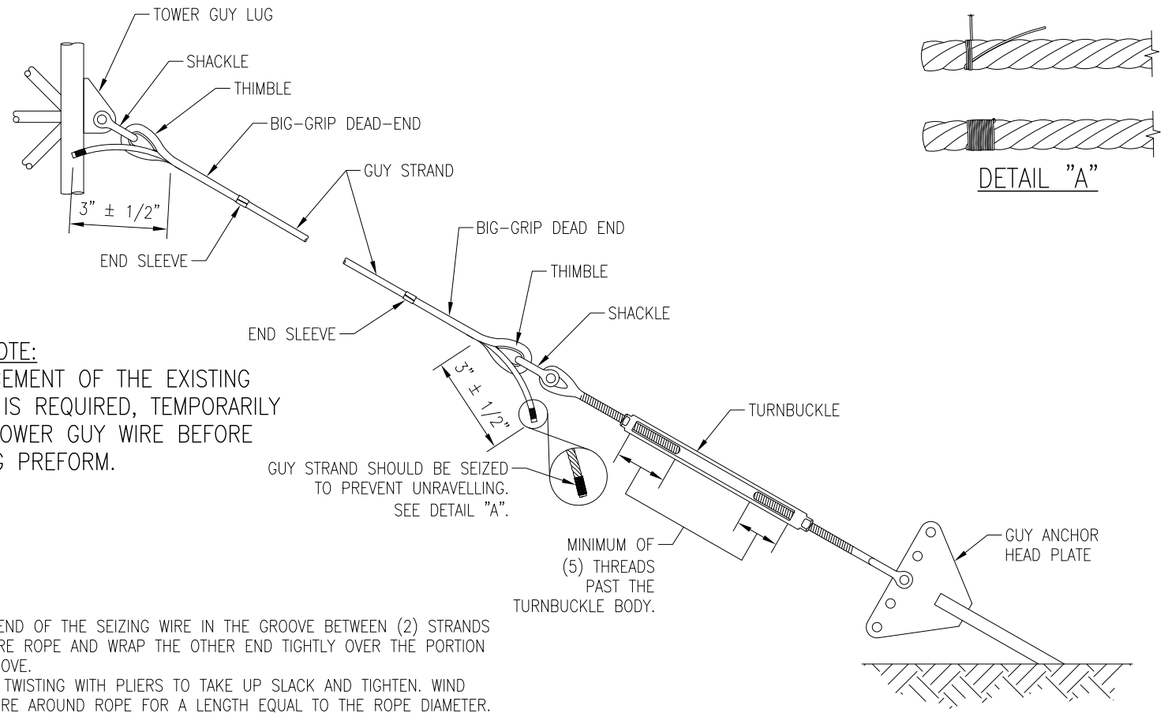
DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

SHEET TITLE:
36FWGT (1 1/2" LEG), MID-PANEL HORIZONTAL ASSEMBLY-X BRACE (2 BAYS)

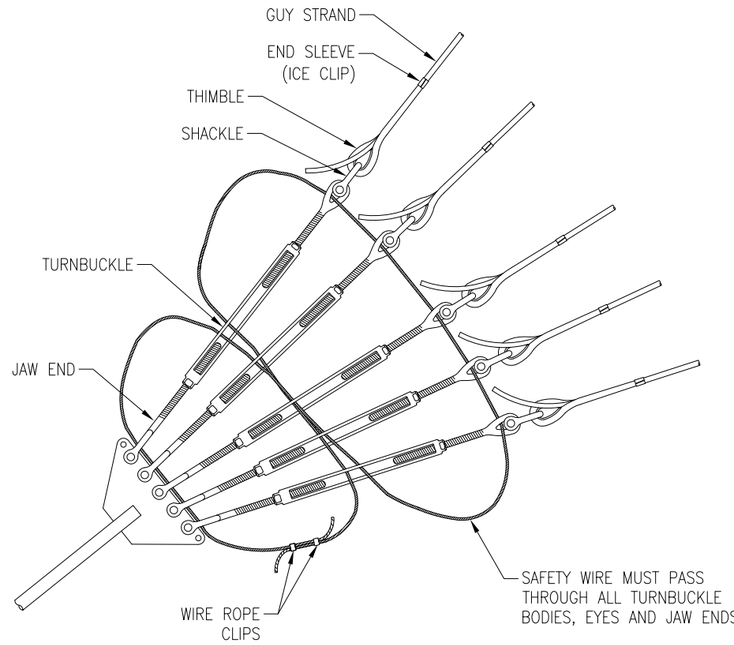
SHEET NUMBER: A-4
REV #: 1



SAFETY NOTE:
IF REPLACEMENT OF THE EXISTING PERFORM IS REQUIRED, TEMPORARILY SECURE TOWER GUY WIRE BEFORE REPLACING PREFORM.

1. LAY ONE END OF THE SEIZING WIRE IN THE GROOVE BETWEEN (2) STRANDS IN THE WIRE ROPE AND WRAP THE OTHER END TIGHTLY OVER THE PORTION IN THE GROVE.
2. CONTINUE TWISTING WITH PLIERS TO TAKE UP SLACK AND TIGHTEN. WIND SEIZING WIRE AROUND ROPE FOR A LENGTH EQUAL TO THE ROPE DIAMETER.
3. TWIST WIRE TIGHTLY AGAINST SERVING, WINDING TWISTED WIRE INTO KNOT BEFORE CUTTING OFF ENDS OF THE WIRE. POUND KNOT SNUGGLY AGAINST THE ROPE.

NOTE:
USE (2) 3/8" WIRE ROPE CLIP PER ANCHOR WITH 3/8" EHS GUY STRAND X 20'-0" FOR TURNBUCKLE SAFETY WIRE INSTALLATION.



TYPICAL TURNBUCKLE SAFETY WIRE INSTALLATION

GUY STRAND HARDWARE CHART

		GUY STRAND INFORMATION								JAW & EYE TURNBUCKLE (CROSBY OR EQUIVALENT, 1 REQ'D PER GUY)					DEAD END GRIP REQ'D PER GUY: 2			DEAD END SLEEVE (2 REQ'D PER GUY)		THIMBLE (2 REQ'D PER GUY)		SCREW PIN ANCHOR SHACKLE (CROSBY BOLT TYPE OR EQUIVALENT) (2 REQ'D PER GUY)				
GUY STRAND SIZE	GUY ELEV. (FT)	GUY ANCHOR RADIUS (FT)	GUY ANCH-OR DROP (+/- FT)	NUMBER OF GUY WIRES	REUSE EXISTING GUY WIRES (YES/NO)	NEW GUY WIRE CUT LENGTH (FT)	TOTAL LENGTH (FT)	ULTIMA-TE LOAD (KIPS)	ALLOWA BLE LOAD (KIPS)	SIZE	ULTIM-ATE LOAD (KIPS)	ALLOWA BLE LOAD (KIPS)	PIN DIA.	QTY REQ'D	SIZE	COLOR	QTY REQ'D	SIZE	QTY REQ'D	SIZE	QTY REQ'D	SIZE	ULTIM-ATE LOAD (KIPS)	ALLOWA BLE LOAD (KIPS)	PIN DIA.	QTY REQ'D
1/2" EHS	70	200	0	6	YES	N/A	N/A	N/A	N/A						1/2"	BLUE	3	1/2"	3	1/2"	3	5/8"	39	23.4	3/4"	3
1/2" EHS	140	200	0	3	YES																					
7/16" EHS	195	200	0	6	NO	299	1,796	20.8	12.5	3/4 X 18	26.0	15.6	5/8"	6	7/16"	GREEN	12	7/16"	12	7/16"	12	1/2"	24	14.4	5/8"	12
5/8" EHS	240	200	0	3	YES	N/A	N/A	N/A	N/A						5/8"	BLACK	1	5/8"	1	5/8"	1	3/4"	57	34.2	7/8"	1

NOTE:
1. THE GUY STRAND CUT LENGTHS INCLUDE A 5% INCREASE, OR 20', WHICHEVER IS GREATER.

TES
Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607

SBA

5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
73511

CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
TORRINGTON 2 CT
1210 HIGHLAND AVE
TORRINGTON, CT 06790

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

SHEET TITLE:
STANDARD GUY HARDWARE CHART

SHEET NUMBER: HC-1
REV #: 1

GUY STRAND TENSION CHART

GUY STRAND INFORMATION							GUY STRAND TENSION CALCULATED UNDER DIFFERENT TEMPERATURES																				
GUY WIRE SIZE	GUY ELEV. (FT)	GUY ANCHOR RADIUS (FT)	GUY ANCH-OR DROP (+/- FT)	GUY WIRE LENGTH (FT)	Guy Initial Tension (%)	Tension Due To Temp (Lbs/Deg)	0° F	5° F	10° F	15° F	20° F	25° F	30° F	35° F	40° F	45° F	50° F	55° F	60° F	65° F	70° F	75° F	80° F	85° F	90° F	95° F	100° F
							LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS	LBS
1/2" EHS	70	200	0	212	10	25.22	4203	4077	3951	3825	3699	3573	3447	3321	3194	3068	2942	2816	**2,690.0**	2564	2438	2312	2186	2060	1933	1807	1681
1/2" EHS	140	200	0	244	10	25.22	4203	4077	3951	3825	3699	3573	3447	3321	3194	3068	2942	2816	**2,690.0**	2564	2438	2312	2186	2060	1933	1807	1681
7/16" EHS	195	200	0	279	10	19.63	3258	3160	3062	2963	2865	2767	2669	2571	2473	2374	2276	2178	**2,080.0**	1982	1884	1786	1687	1589	1491	1393	1295
5/8" EHS	240	200	0	312	10	39.39	6603	6406	6210	6013	5816	5619	5422	5225	5028	4831	4634	4437	**4,240.0**	4043	3846	3649	3452	3255	3058	2861	2664

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TES JOB NO:
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CUSTOMER SITE NO:
CT02303-A-3-SBA
CUSTOMER SITE NAME:
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1210 HIGHLAND AVE
TORRINGTON, CT 06790

DRAWN BY: RR | CHECKED BY: LC/AD

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	RR	06/19/19
1	REVISED	RR	07/24/19

SHEET TITLE:
GUY TENSION CHART

SHEET NUMBER: TC-1
REV #: 1

MASER CONSULTING
CONNECTICUT

Engineers Planners Surveyors Landscape Architects Environmental Scientists

Mount Modification Report

FOR

CTL01253

FA #: 10071282
1210 Highland Avenue
Torrington, CT 06790
Litchfield County
Lat/Long: 41.8026169, -73.1633961

Modified Mount Utilization: 88.5%*

***Sufficient upon completion of the modifications listed in the 'Recommendations' section of this report.**

December 5, 2019

Prepared For

AT&T
550 Cochituate Road
Framingham, MA 01701

Prepared By

Maser Consulting Connecticut
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
732.383.1950

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED
PROFESSIONAL ENGINEER

Dejian Xu, P.E.
Technical Specialist
Connecticut License No. 33733

MC Project No. 18946009A

Objective:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has reviewed the following documents in completing this report:

Document Type	Remarks	Source
Mount Mapping Report	*Tower Engineering Professionals #: 25696.174174 Dated October 24, 2017*	*Maser Consulting Connecticut*
Radio Frequency Data Sheet (RFDS)	*RFDS ID: 3377580 Version 3.00 Dated November 14, 2019*	*Smartlink, LLC*
Mount Analysis	*Maser Consulting Project #: 18946009A, Dated November 26, 2019*	*Maser Consulting Connecticut*
Crossover Plate	*Site Pro 1 Part #: SCX1-L*	*Site Pro 1*
Sector Frame Reinforcement Kit	*Site Pro 1 Part #: SFR-K-L*	*Site Pro 1*
Sector Frame Stiff Arm Kit	*Site Pro 1 part #: STK-U*	*Site Pro 1*

Codes, Standards and Loading:

Jurisdictional adopted codes and standards:

- 2018 Connecticut State Building Code, Incorporating the 2015 IBC

Maser Consulting Connecticut utilized the following codes and standards:

- Structural Standards for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures ANSI/TIA-222-H
    - Ultimate Wind Speed – 115 mph (3-Second Gust)
    - Exposure Category – C
    - Risk Category – II
    - Topographic Factor, K_{zt} – 1.0
    - Mean Base Elevation (AMSL) – 1224.81’
    - Ice Wind Speed – 50 mph (3-Second Gust)
    - Design Ice Thickness – 1.00”
    - Maintenance Wind Speed – 30 mph
        - Maintenance Live Load – 250 lbs. at the worst-case location on the mount
        - Maintenance Live Load – 500 lbs. at the worst-case antenna location

The following equipment has been considered for the analysis of the antenna mounts:

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	POWERWAVE	7770	Existing	Alpha, Beta, & Gamma
3	**KMW**	**EPBQ-654L8H6-L2**	**Proposed**	**Alpha, Beta, & Gamma**
2	**CCI**	**DMP65R-BU6DA**	**Proposed**	**Alpha & Gamma**
2	KMW	AM-X-CD-16-65-00T-RET	Existing	Alpha & Gamma
1	KATHREIN	80010764	Existing	Beta
1	**CCI**	**DMP65R-BU4DA**	**Proposed**	**Beta**
3	**ERICSSON**	**RRUS E2 B29**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 4478 B14**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 32 B30**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 4449 B5/B12**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 8843 B2/B66A**	**Proposed**	**Alpha, Beta, & Gamma**
3	**RAYCAP**	**DC6-48-60-18-8C**	**Proposed**	**Alpha & Gamma**
6	POWERWAVE	LGP 21401	Existing	Alpha, Beta, & Gamma

Analysis Approach:

The antenna mount has been modeled in RISA-3D (V17), a comprehensive structural analysis program. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes and standards. The program performs an analysis based on the applicable steel code to determine the adequacy of the members and produces the reactions at the connection points of the mounts to the existing structure.

The scope of this assessment does not include analysis of the supporting tower structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent engineer.

Assumptions:

General Site Design Assumptions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct.
2. The mounting frames were properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
3. The connection from the tower to the mount is in good condition and has been analyzed and found sufficient assuming it will achieve its theoretical strength.
4. It is the responsibility of the client to ensure that the information provided to Maser Consulting Connecticut and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that the original design, material production, fabrication, and erection of the existing structure was performed in accordance with accepted industry design standards and in accordance with all applicable codes. Further, it is assumed that the existing structure and appurtenances have been properly maintained in accordance with all applicable codes and manufacturer's specifications and no structural defects and/or deterioration to the structural members has occurred.
5. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
6. The existing equipment loading has been applied at locations determined from the supplied documentation and field observations. Should the existing equipment configuration differ from what is utilized in this analysis, the results of this analysis are invalid.
7. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

Site Specific Assumptions and Design Parameters:

1. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
    - Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
    - Pipe — ASTM A53 (Gr. B-35)
    - Threaded Rod — F1554 (Gr. 36)
    - Bolts — ASTM A325
2. All proposed equipment locations are to be as depicted in the rendered diagram in Appendix A of this report. Any changes made to the proposed equipment locations will render this report invalid.
3. Due to site specific analysis parameters, it is assumed that wind forces will control over seismic forces and as such, seismic forces have not been considered in this analysis.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut

Calculations:

Selected calculations and analysis output can be found in Appendix A of this report.

Analysis Results and Conclusion:

Component	Utilization %	Pass/Fail
Antenna Pipe	*36.2*	*Pass*
Empty Pipe	*69.1*	*Pass*
Face Horizontal	*44.0*	*Pass*
Standoff Vertical	*24.4*	*Pass*
Face Vertical Brace	*71.4*	*Pass*
Standoff Diagonal	*38.0*	*Pass*
Standoff Horizontal	*77.5*	*Pass*
Plate Member	*55.5*	*Pass*
Tower Connection Plate	*54.5*	*Pass*
Mod Face	*77.1*	*Pass*
SFRK	*51.5*	*Pass*
Tieback	*11.0*	*Pass*
Mount Connection	*11.6*	*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**77.5%**

Recommendation:

In order for the results of this analysis to be considered valid, the modifications listed below and shown in Appendix B shall be complete on all sectors

- Install **two (2)** tieback (Site Pro 1 Part#: STK-U or EOR approved equivalent) on existing face vertical braces. Connect other end to adjacent tower leg. [Tie-back location sketch and specification sheet attached]
- Install **one (1)** sector frame reinforcement kit (Site Pro 1 Part #: SFR-K-L or EOR approved equivalent) to new 150" long P2.0 X-STR face horizontals. Connect new horizontals to existing mount pipes with crossover plates (Site Pro 1 Part #: SCX1-K or EOR approved equivalent) (typical per sector) [mount modification sketch and specification sheets attached].

The conclusions reached by Maser Consulting Connecticut in this evaluation are only applicable for the structural members supporting the **AT&T** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure. The mount was checked up to, and including, the bolts that fasten it to the mount attachment. However, no structural qualifications are made or implied by this document for the mount attachment.

Maser Consulting Connecticut reserves the right to amend this report if additional information regarding the members is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,
Maser Consulting Connecticut

Dejian Xu, P.E.
Technical Specialist

Grant Walters
Senior Engineer

\\maserconsulting.com\BWE\AllOffices\MtLaurel\Projects\2018\18946000A\18946009A\Structural\Mount Modifications\for Current Mod 2019\Word\Antenna Mount Analysis - H Code final.docx

Disclaimer of Warranties:

The engineering services rendered by Maser Consulting Connecticut in connection with this structural analysis are limited to a computer analysis of the mounting frame structure and theoretical capacity of its main structural members. No allowance has been made for any damaged, bent, missing, loose, or rusted members or connections.

Maser Consulting Connecticut will accept no liability which may arise due to any deficiency in design, material, fabrication, erection, construction, or lack of maintenance. Maser Consulting Connecticut has not performed a site visit of the mounting frame to verify member sizes or equipment loading. Contractor should inspect the condition of the existing structure, mounting frames and connections and notify Maser Consulting Connecticut of any discrepancies or deficiencies before proceeding with installation.

The attached sketch is a schematic representation of the analyzed mounting frames. The contractor shall be responsible for field verifying the existing conditions, proper fit, and clearances in the field.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable manufacturer.

Maser Consulting Connecticut makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of the mounting frames. Maser Consulting Connecticut will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

MASER CONSULTING
— CONNECTICUT—

APPENDIX A

Client:	AT&T	Date:	12/5/2019
Site Name:	CTL01253		
Project No.	18946009A		
Title:	Antenna Mount Analysis	Page:	1

Version 3.3

I. LOADING SUMMARY

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	POWERWAVE	7770	Existing	Alpha, Beta, & Gamma
3	**KMW**	**EPBQ-654L8H6-L2**	**Proposed**	**Alpha, Beta, & Gamma**
2	**CCI**	**DMP65R-BU6DA**	**Proposed**	**Alpha & Gamma**
2	KMW	AM-X-CD-16-65-00T-RET	Existing	Alpha & Gamma
1	KATHREIN	80010764	Existing	Beta
1	**CCI**	**DMP65R-BU4DA**	**Proposed**	**Beta**
3	**ERICSSON**	**RRUS E2 B29**	**Proposed**	**Alpha, Beta, & Gamma** (Ground Mounted)
3	**ERICSSON**	**RRUS 4478 B14**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 32 B30**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRU 4449 B5 + B12**	**Proposed**	**Alpha, Beta, & Gamma**
3	**ERICSSON**	**RRUS 8843 B2 B66A**	**Proposed**	**Alpha, Beta, & Gamma**
3	**RAYCAP**	**DC6-48-60-18-8C**	**Proposed**	**Alpha & Gamma**
6	POWERWAVE	LGP 21401	Existing	Alpha, Beta, & Gamma

Analysis completed for Alpha Sector

Quantity	Manufacturer	Antenna/ Appurtenance	Status
1	POWERWAVE	7770	Existing
1	**KMW**	**EPBQ-654L8H6-L2**	**Proposed**
1	**CCI**	**DMP65R-BU6DA**	**Proposed**
1	KMW	AM-X-CD-16-65-00T-RET	Existing
1	**ERICSSON**	**RRUS E2 B29**	**Proposed**
1	**ERICSSON**	**RRUS 4478 B14**	**Proposed**
1	**ERICSSON**	**RRUS 32 B30**	**Proposed**
1	**ERICSSON**	**RRU 4449 B5 + B12**	**Proposed**
1	**ERICSSON**	**RRUS 8843 B2 B66A**	**Proposed**
2	**RAYCAP**	**DC6-48-60-18-8C**	**Proposed**
2	POWERWAVE	LGP 21401	Existing

II. DESIGN CRITERIA

Basic Site Criteria:

TIA Standard:		***TIA-222-H***	
Antenna Centerline:	z	***245***	*ft*
Supporting Structure Type:		***Guyed Tower***	
Risk Category:		***II***	
Basic Wind Speed (3 sec. Gust, 700-Year MRI):	V	***115***	*mph*
Basic Wind Speed with ice (3 sec. Gust):	V_i	***50***	*mph*
Maintenance Wind Speed:	V_m	***30***	*mph*
Design Ice Thickness (500-Year MRI):	t_i	***1.0***	*in*
Exposure Category:		***C***	
Topographic Category:		***1***	
Topographic Factor:	K_{zt}	***1.00***	
Ground Elevation (AMSL):		***1224.81***	*ft*
Ground Elevation Factor:	K_e	***0.96***	
Shielding Factor:	K_a	***0.90***	
Gust Effect Factor:	G_h	***1.00***	
Wind Directionality Factor:	K_d	***0.95***	
Velocity Pressure Coefficient:	K_z	***1.53***	
Importance Factor$_{\text{Wind, no ice}}$:	I_{wind}	***1.00***	
Importance Factor$_{\text{Wind, with ice}}$:	$I_{wind\ w/ice}$	***1.00***	
Importance Factor$_{\text{Ice}}$:	I_{ice}	***1.00***	
Ice Velocity Pressure Exposure Coefficient:	K_{iz}	***1.22***	

Wind and Ice Design Criteria:

Velocity Pressure:	q_z	***42.32***	*psf*
Velocity Pressure (With Ice):	q_{zi}	***8.00***	*psf*
Velocity Pressure (Maintenance):	q_{zm}	***2.88***	*psf*
Factored Ice Thickness:	t_{iz}	***1.22***	*in*

III. CALCULATIONS

- ***Load on Appurtenances***

Antenna/ Appurtenance	Non-Iced Condition									Iced Condition						
	Mounting Pipe		Equipment					Force Coefficient		Mounting Pipe		Equipment			Force Coefficient	
	Length (in)	Diameter (in)	Shape Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)	$C_{a\ Front}$	$C_{a\ Side}$	Length (in)	Diameter (in)	Height (in)	Width (in)	Depth (in)	$C_{a\ Front}$	$C_{a\ Side}$
7770	72.0	2.375	Rect	55.00	11.00	5.00	35.00	1.31	1.53	74.4	4.8	57.44	13.44	7.44	1.28	1.42
EPBQ-654L8H6-L2	96.0	2.375	Rect	73.00	21.00	6.30	82.20	1.24	1.55	98.4	4.8	75.44	23.44	8.74	1.23	1.45
DMP65R-BU6DA	96.0	2.375	Rect	71.20	20.70	7.70	79.40	1.24	1.47	98.4	4.8	73.64	23.14	10.14	1.23	1.41
AM-X-CD-16-65-00T-RET	72.0	2.375	Rect	72.00	11.80	5.90	63.50	1.36	1.57	74.4	4.8	74.44	14.24	8.34	1.32	1.46
RRUS 4478 B14	0.0	0.000	Rect	18.10	13.40	8.30	59.40	1.20	1.20	0.0	0.0	20.54	15.84	10.74	1.20	1.20
RRUS 32 B30	0.0	0.000	Rect	27.20	12.00	7.00	52.90	1.20	1.26	0.0	0.0	29.64	14.44	9.44	1.20	1.23
RRU 4449 B5 + B12	0.0	0.000	Rect	14.96	13.19	10.43	73.00	1.20	1.20	0.0	0.0	17.40	15.63	12.87	1.20	1.20
RRUS 8843 B2 B66A	0.0	0.000	Rect	14.90	13.20	10.90	77.00	1.20	1.20	0.0	0.0	17.34	15.64	13.34	1.20	1.20
DC6-48-60-18-8C	0.0	0.000	Round	31.40	10.20	10.20	26.20	0.71	0.71	0.0	0.0	33.84	12.64	12.64	0.70	0.70
LGP 21401	0.0	0.000	Rect	13.80	14.40	3.70	30.00	1.20	1.25	0.0	0.0	16.24	16.84	6.14	1.20	1.21

Antenna/ Appurtenance	# of Brackets	Turned 90°?	% Shield Front	% Shield Side	Non-Iced Condition			Iced Condition			Maintenance Condition		Seismic Condition	
					Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Vertical (lbs.)	Horizontal (lbs.)
					F_N	F_T		F_N	F_T		F_N	F_T	E_V	E_H
7770	2	No	0%	0%	123.7	92.1	**17.5**	30.2	28.9	**47.5**	8.4	6.3	0.0	0.0
EPBQ-654L8H6-L2	2	No	0%	0%	289.7	145.1	**41.1**	64.2	42.5	**108.6**	19.7	9.9	0.0	0.0
DMP65R-BU6DA	2	Yes	0%	0%	159.0	279.3	**39.7**	45.0	62.2	**106.8**	10.8	19.0	0.0	0.0
AM-X-CD-16-65-00T-RET	2	Yes	0%	0%	128.4	169.8	**31.8**	37.2	38.9	**66.8**	8.7	11.6	0.0	0.0
RRUS 4478 B14	1	Yes	0%	100%	53.0	0.0	**59.4**	15.1	0.0	**43.4**	3.6	0.0	0.0	0.0
RRUS 32 B30	1	Yes	0%	0%	70.6	115.1	**52.9**	19.5	28.5	**55.7**	4.8	7.8	0.0	0.0
RRU 4449 B5 + B12	1	Yes	0%	0%	55.0	69.6	**73.0**	15.3	18.1	**39.1**	3.7	4.7	0.0	0.0
RRUS 8843 B2 B66A	1	Yes	0%	0%	57.3	69.4	**77.0**	15.8	18.1	**39.6**	3.9	4.7	0.0	0.0
DC6-48-60-18-8C	1	No	0%	0%	67.1	67.1	**26.2**	16.7	17.1	**48.1**	4.6	4.6	0.0	0.0
LGP 21401	1	No	100%	0%	0.0	18.8	**30.0**	0.0	7.1	**32.5**	0.0	1.3	0.0	0.0

** ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS*

- ***Load on Framing Members***

Optimize Ca Factors by Member Length? No

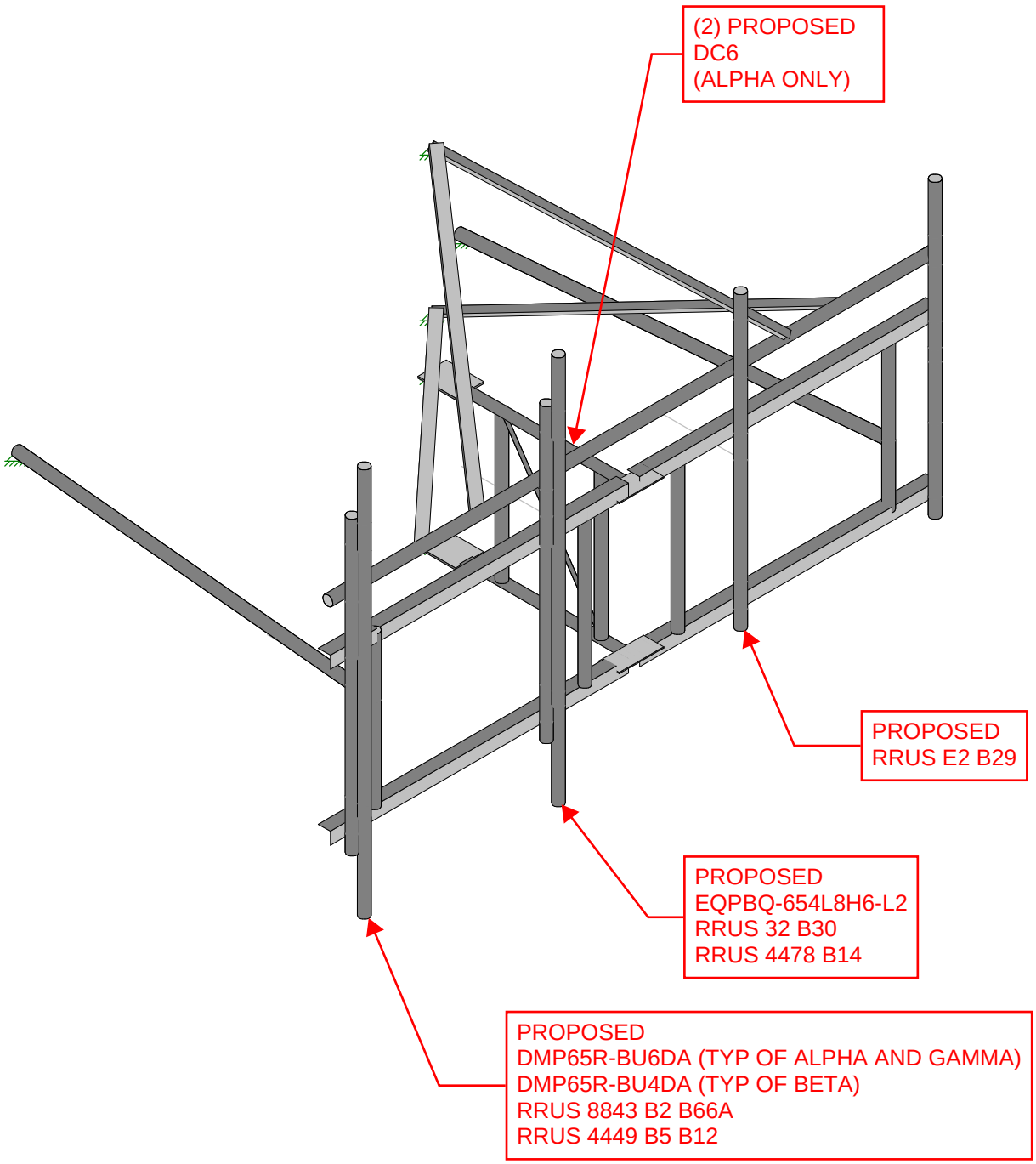
RISA Section Set Name	RISA Shape	Member Category	AISC Member Label	Member Surface	Non-Iced Condition			Iced Condition					Maintenance Condition
					Exposed Wind Height (in)	Force Coefficient C_a	Wind Load (plf)	Exposed Wind Height (in)	D_C (in)	Force Coefficient C_a	Wind Load (plf)	Ice Weight (plf)	Wind Load (plf)
Antenna Pipe	PIPE_2.0	Pipe	Pipe 2.0	Round	0.00	1.20	0.00	2.44	2.38	1.20	0.00	5.37	0.00
Empty Pipe	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68
Face Horizontal	L3X3X6	Equal Angle	L3x3	Square	3.00	2.00	21.16	5.44	4.24	2.00	7.26	8.16	1.44
Standoff Vertical	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68
Face Vertical Brace	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68
Standoff Diagonal	3/4"	Solid Round Bar	0.75	Round	0.75	1.20	3.17	3.19	0.75	1.20	2.56	2.94	0.22
Standoff Horizontal	L3X3X6	Equal Angle	L3x3	Square	3.00	2.00	21.16	5.44	4.24	2.00	7.26	8.16	1.44
Proposed Tie Back	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68
Plate Member	PL5x.25	Solid Flat Bar	5x.25	Square	5.00	2.00	35.27	7.44	5.01	2.00	9.93	9.30	2.40
Tower Connection Plate	PL7x3/8	Solid Flat Bar	7x.375	Square	7.00	2.00	49.38	9.44	7.01	2.00	12.59	12.29	3.36
Mod Face	PIPE_2.0X	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68
SFRK	L2.5x2.5x3	Equal Angle	L2.5x2.5	Square	2.50	2.00	17.63	4.94	3.54	2.00	6.59	7.10	1.20
Tieback	PIPE_2.0	Pipe	Pipe 2.0	Round	2.38	1.20	10.05	4.82	2.38	1.20	3.86	5.37	0.68

IV. RISA INPUT

▪ ***Joint Load Input Data***

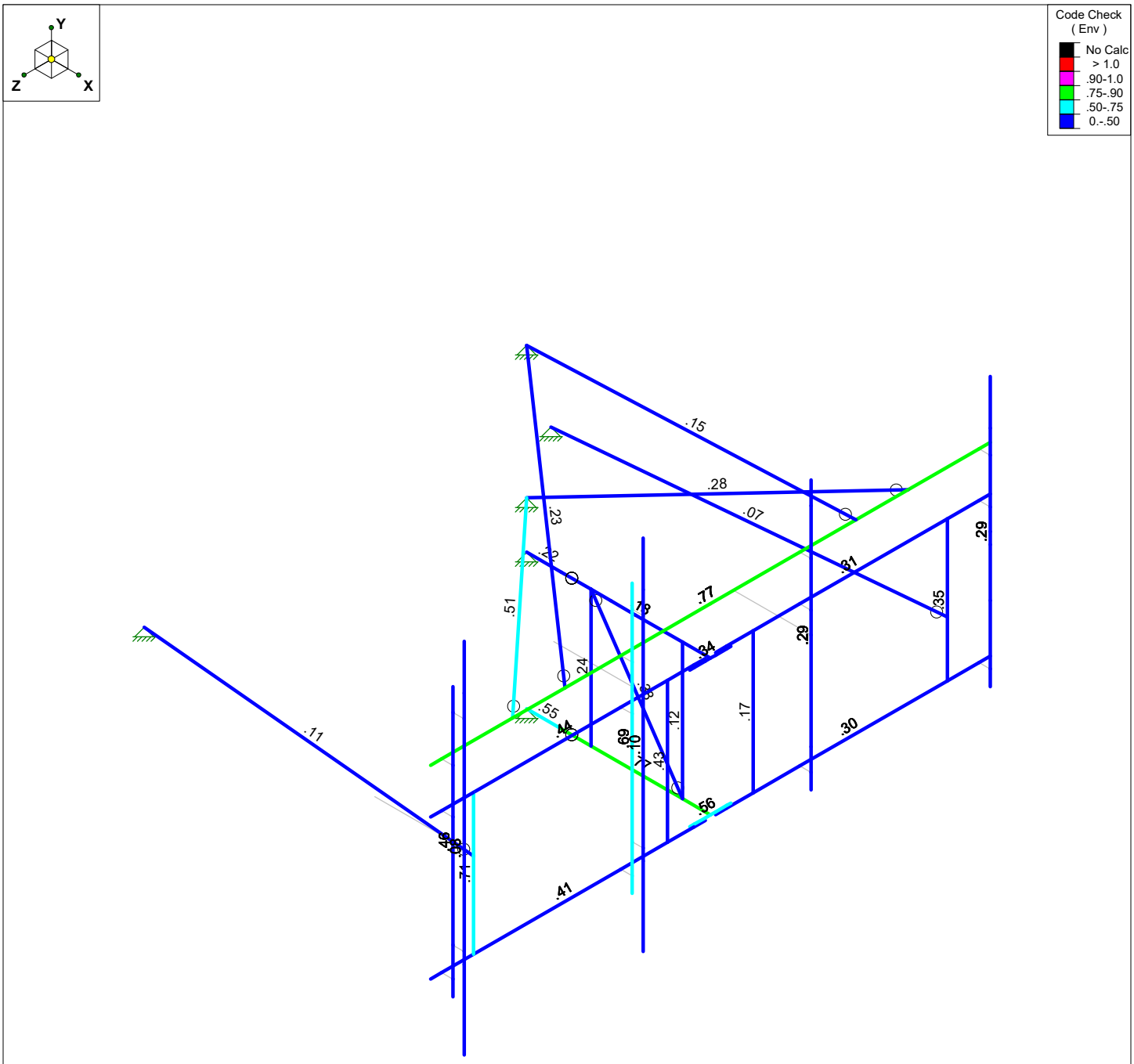
			Non-Iced Condition, Wind Force (lbs.)												Iced Condition, Wind Force (lbs.)												Maintenance Condition, Wind Force (lbs.)											
			Global Azimuth												Global Azimuth												Global Azimuth											
Loaded Joints by Name	Associated Appurtenance	Relative Azimuth	0	30	60	90	120	150	180	210	240	270	300	330	0	30	60	90	120	150	180	210	240	270	300	330	0	30	60	90	120	150	180	210	240	270	300	330
TMA+2	LGP 21401	0	0.0	4.7	14.1	18.8	14.1	4.7	0.0	4.7	14.1	18.8	14.1	4.7	0.0	1.8	5.3	7.1	5.3	1.8	0.0	1.8	5.3	7.1	5.3	1.8	0.0	0.3	1.0	1.3	1.0	0.3	0.0	0.3	1.0	1.3	1.0	0.3
TMA+1	LGP 21401	0	0.0	4.7	14.1	18.8	14.1	4.7	0.0	4.7	14.1	18.8	14.1	4.7	0.0	1.8	5.3	7.1	5.3	1.8	0.0	1.8	5.3	7.1	5.3	1.8	0.0	0.3	1.0	1.3	1.0	0.3	0.0	0.3	1.0	1.3	1.0	0.3
RRUS-32B30	RRUS 32 B30	0	70.6	81.7	104.0	115.1	104.0	81.7	70.6	81.7	104.0	115.1	104.0	81.7	19.5	21.8	26.3	28.5	26.3	21.8	19.5	21.8	26.3	28.5	26.3	21.8	4.8	5.6	7.1	7.8	7.1	5.6	4.8	5.6	7.1	7.8	7.1	5.6
EPBQ+2	EPBQ-654L8H6-L2	0	289.7	253.6	181.3	145.1	181.3	253.6	289.7	253.6	181.3	145.1	181.3	253.6	64.2	58.8	47.9	42.5	47.9	58.8	64.2	58.8	47.9	42.5	47.9	58.8	19.7	17.3	12.3	9.9	12.3	17.3	19.7	17.3	12.3	9.9	12.3	17.3
EPBQ+1	EPBQ-654L8H6-L2	0	289.7	253.6	181.3	145.1	181.3	253.6	289.7	253.6	181.3	145.1	181.3	253.6	64.2	58.8	47.9	42.5	47.9	58.8	64.2	58.8	47.9	42.5	47.9	58.8	19.7	17.3	12.3	9.9	12.3	17.3	19.7	17.3	12.3	9.9	12.3	17.3
DMP+2	DMP65R-BU6DA	0	159.0	189.1	249.3	279.3	249.3	189.1	159.0	189.1	249.3	279.3	249.3	189.1	45.0	49.3	57.9	62.2	57.9	49.3	45.0	49.3	57.9	62.2	57.9	49.3	10.8	12.9	17.0	19.0	17.0	12.9	10.8	12.9	17.0	19.0	17.0	12.9
DMP+1	DMP65R-BU6DA	0	159.0	189.1	249.3	279.3	249.3	189.1	159.0	189.1	249.3	279.3	249.3	189.1	45.0	49.3	57.9	62.2	57.9	49.3	45.0	49.3	57.9	62.2	57.9	49.3	10.8	12.9	17.0	19.0	17.0	12.9	10.8	12.9	17.0	19.0	17.0	12.9
DC6+2	DC6-48-60-18-8C	0	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	16.7	16.8	17.0	17.1	17.0	16.8	16.7	16.8	17.0	17.1	17.0	16.8	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
DC6+1	DC6-48-60-18-8C	0	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	16.7	16.8	17.0	17.1	17.0	16.8	16.7	16.8	17.0	17.1	17.0	16.8	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
AMX-2	AM-X-CD-16-65-00T-RET	0	128.4	138.7	159.4	169.8	159.4	138.7	128.4	138.7	159.4	169.8	159.4	138.7	37.2	37.6	38.5	38.9	38.5	37.6	37.2	37.6	38.5	38.9	38.5	37.6	8.7	9.4	10.9	11.6	10.9	9.4	8.7	9.4	10.9	11.6	10.9	9.4
AMX-1	AM-X-CD-16-65-00T-RET	0	128.4	138.7	159.4	169.8	159.4	138.7	128.4	138.7	159.4	169.8	159.4	138.7	37.2	37.6	38.5	38.9	38.5	37.6	37.2	37.6	38.5	38.9	38.5	37.6	8.7	9.4	10.9	11.6	10.9	9.4	8.7	9.4	10.9	11.6	10.9	9.4
8843	RRUS 8843 B2 B66A	0	57.3	60.3	66.3	69.4	66.3	60.3	57.3	60.3	66.3	69.4	66.3	60.3	15.8	16.4	17.5	18.1	17.5	16.4	15.8	16.4	17.5	18.1	17.5	16.4	3.9	4.1	4.5	4.7	4.5	4.1	3.9	4.1	4.5	4.7	4.5	4.1
7770-2	7770	0	123.7	115.8	100.0	92.1	100.0	115.8	123.7	115.8	100.0	92.1	100.0	115.8	30.2	29.8	29.2	28.9	29.2	29.8	30.2	29.8	29.2	28.9	29.2	29.8	8.4	7.9	6.8	6.3	6.8	7.9	8.4	7.9	6.8	6.3	6.8	7.9
7770-1	7770	0	123.7	115.8	100.0	92.1	100.0	115.8	123.7	115.8	100.0	92.1	100.0	115.8	30.2	29.8	29.2	28.9	29.2	29.8	30.2	29.8	29.2	28.9	29.2	29.8	8.4	7.9	6.8	6.3	6.8	7.9	8.4	7.9	6.8	6.3	6.8	7.9
4478B14	RRUS 4478 B14	0	53.0	39.7	13.2	0.0	13.2	39.7	53.0	39.7	13.2	0.0	13.2	39.7	15.1	11.3	3.8	0.0	3.8	11.3	15.1	11.3	3.8	0.0	3.8	11.3	3.6	2.7	0.9	0.0	0.9	2.7	3.6	2.7	0.9	0.0	0.9	2.7
4449	RRU 4449 B5 + B12	0	55.0	58.7	66.0	69.6	66.0	58.7	55.0	58.7	66.0	69.6	66.0	58.7	15.3	16.0	17.4	18.1	17.4	16.0	15.3	16.0	17.4	18.1	17.4	16.0	3.7	4.0	4.5	4.7	4.5	4.0	3.7	4.0	4.5	4.7	4.5	4.0

Note: Azimuths determined with the mount face parallel with z-axis in model as 0 degrees and sequential orientations clockwise in 30 degree increments.



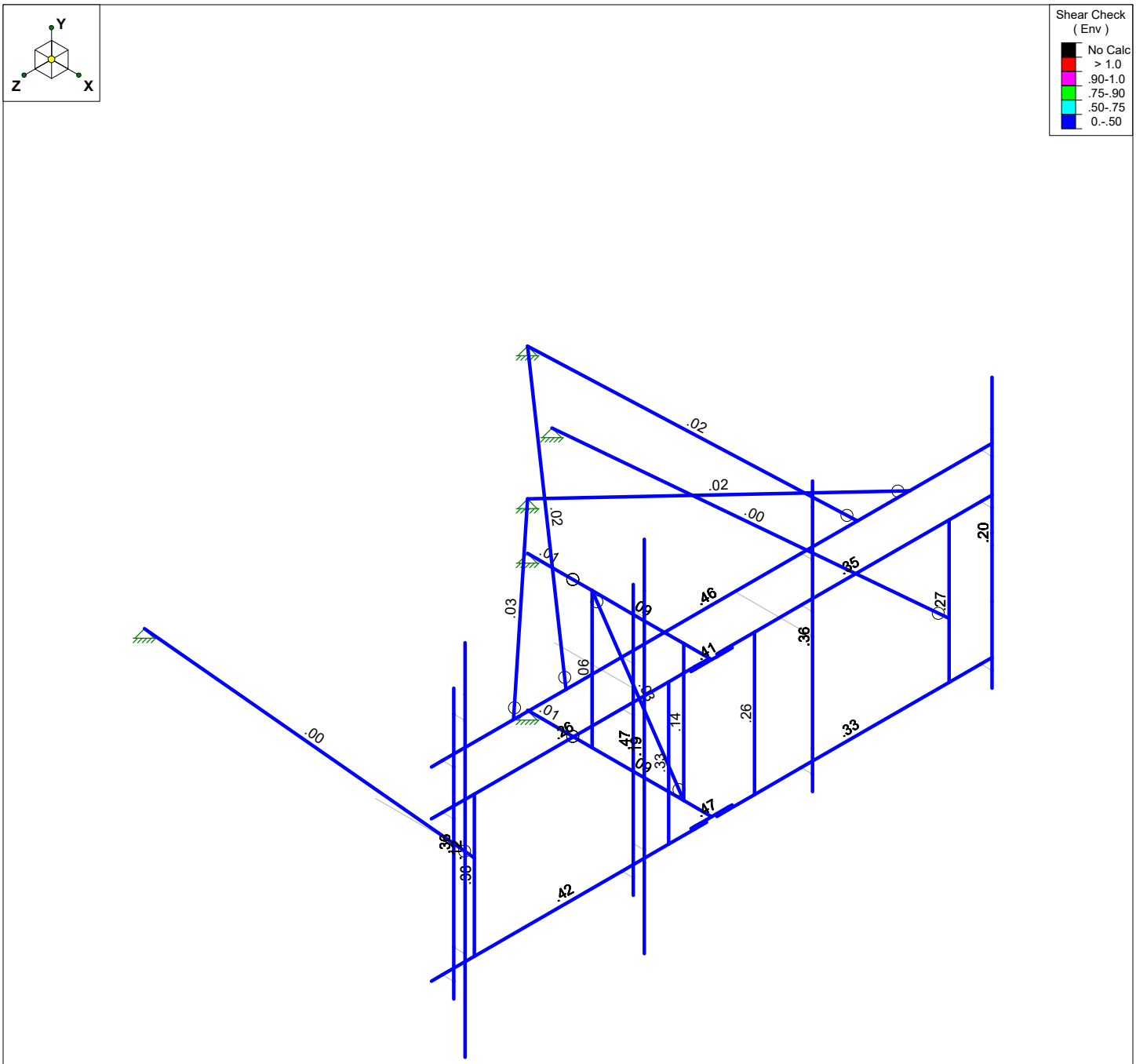
Envelope Only Solution

Maser Consulting Connect...	Mount Analysis	
GHW		Dec 5, 2019 at 9:46 AM
18946009A		mount - LOADED.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting Connect...		
GHW	Mount Analysis	Dec 5, 2019 at 9:46 AM
18946009A		mount - LOADED.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting Connect...		
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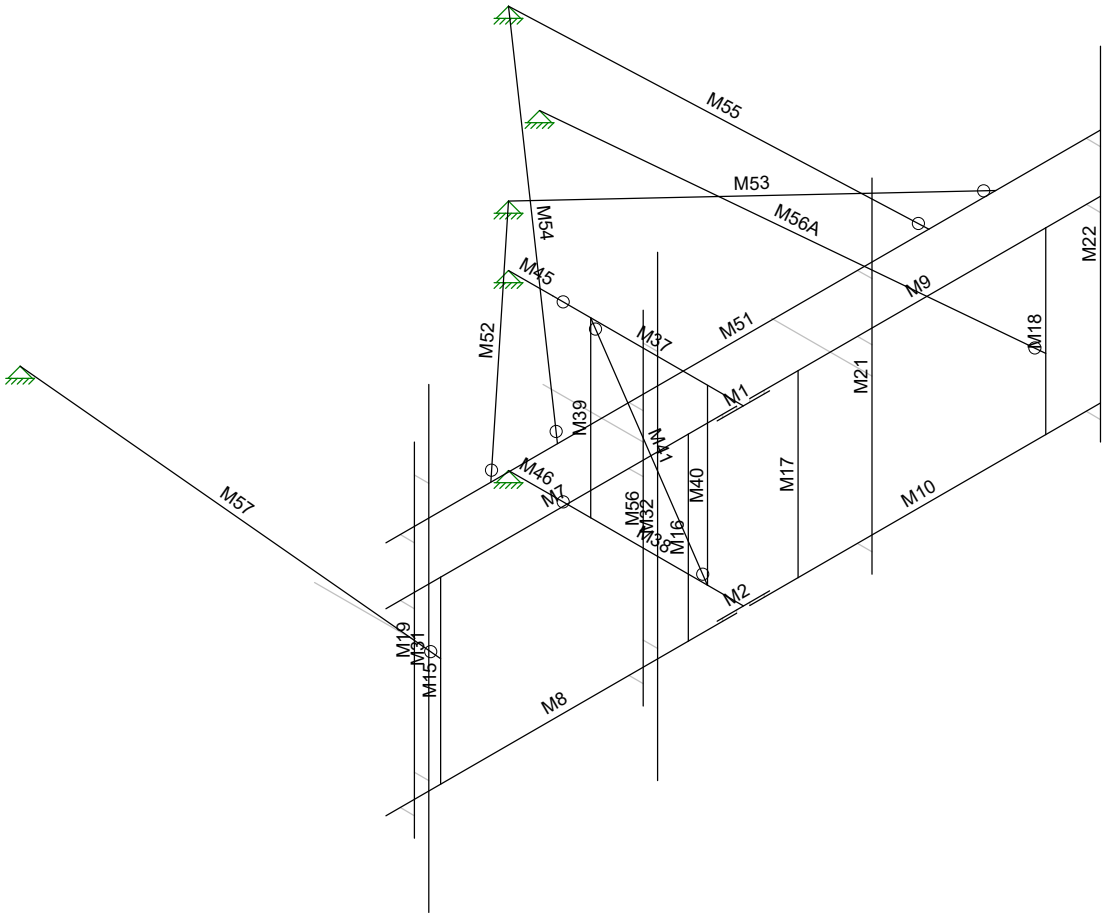
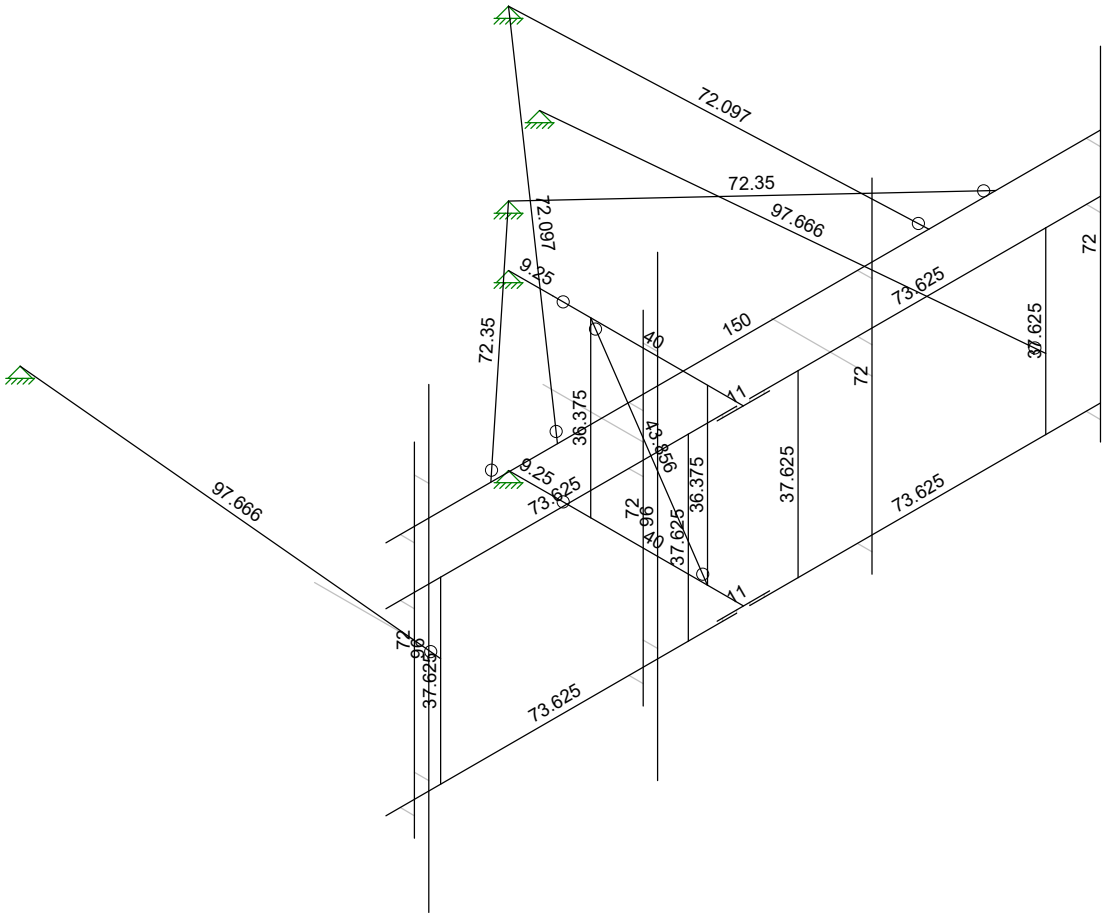


Envelope Only Solution

Maser Consulting Connect...	Mount Analysis	
GHW		Dec 5, 2019 at 9:46 AM
18946009A		mount - LOADED.r3d



Member Length (in) Displayed
Envelope Only Solution

Maser Consulting Connect...	Mount Analysis	
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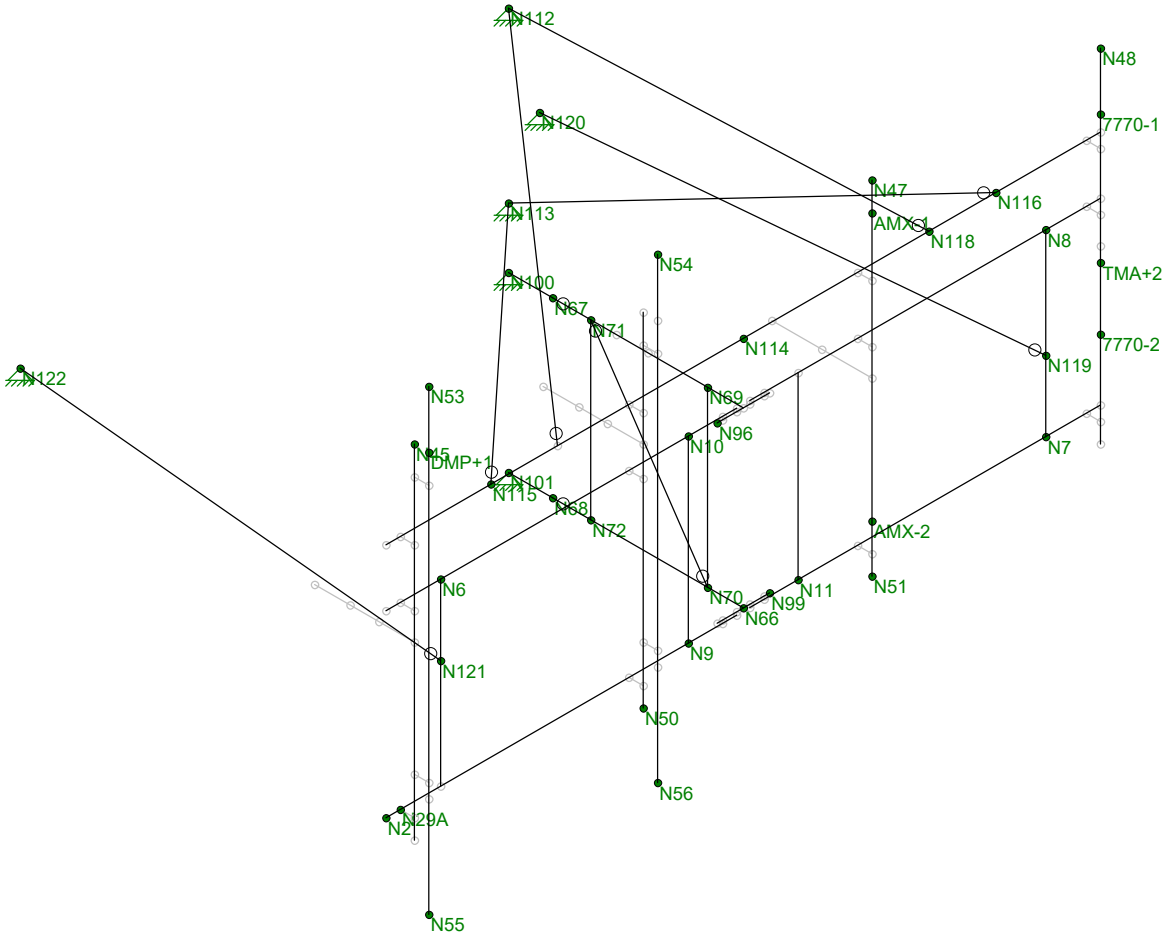
18946009A		mount - LOADED.r3d



Envelope Only Solution

Maser Consulting Connect...	Mount Analysis	
GHW		Dec 5, 2019 at 9:47 AM
18946009A		mount - LOADED.r3d

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N96	N98		90	Plate Member	Beam	BAR	A36 Gr.36	Typical
2	M2	N97	N99		90	Plate Member	Beam	BAR	A36 Gr.36	Typical
3	M3	N17	N20			RIGID	None	None	RIGID	Typical
4	M4	N15	N19			RIGID	None	None	RIGID	Typical
5	M5	N22	N18			RIGID	None	None	RIGID	Typical
6	M6	N21	N16			RIGID	None	None	RIGID	Typical
7	M7	N4	N17		180	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N2	N18		180	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N15	N3		180	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N16	N1		180	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N29	N23			RIGID	None	None	RIGID	Typical
12	M12	N30	N25			RIGID	None	None	RIGID	Typical
13	M13	N24	N31			RIGID	None	None	RIGID	Typical
14	M14	N26	N32			RIGID	None	None	RIGID	Typical
15	M15	N6	N5			Face Vertical ...	Column	Pipe	A53 Gr. B	Typical
16	M16	N10	N9			Face Vertical ...	Column	Pipe	A53 Gr. B	Typical
17	M17	N12	N11			Face Vertical ...	Column	Pipe	A53 Gr. B	Typical
18	M18	N8	N7			Face Vertical ...	Column	Pipe	A53 Gr. B	Typical
19	M19	N49	N45			Empty Pipe	Column	Pipe	A53 Gr. B	Typical
20	M56	N50	N46			Empty Pipe	Column	Pipe	A53 Gr. B	Typical
21	M21	N51	N47			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
22	M22	N52	N48			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
23	M23	N30A	N38			RIGID	None	None	RIGID	Typical
24	M24	N29A	N37			RIGID	None	None	RIGID	Typical
25	M25	N31A	N39			RIGID	None	None	RIGID	Typical
26	M26	N32A	N40			RIGID	None	None	RIGID	Typical
27	M27	N34	N42			RIGID	None	None	RIGID	Typical
28	M28	N33	N41			RIGID	None	None	RIGID	Typical
29	M29	N35	N43			RIGID	None	None	RIGID	Typical
30	M30	N36	N44			RIGID	None	None	RIGID	Typical
31	M31	N55	N53			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
32	M32	N56	N54			Antenna Pipe	Column	Pipe	A53 Gr. B	Typical
33	M33	N57	N61			RIGID	None	None	RIGID	Typical
34	M34	N58	N62			RIGID	None	None	RIGID	Typical
35	M35	N59	N63			RIGID	None	None	RIGID	Typical
36	M36	N60	N64			RIGID	None	None	RIGID	Typical
37	M37	N65	N67		180	Standoff Horiz...	Beam	Single Angle	A36 Gr.36	Typical
38	M38	N66	N68		180	Standoff Horiz...	Beam	Single Angle	A36 Gr.36	Typical
39	M39	N72	N71			Standoff Vertical	Column	Pipe	A53 Gr. B	Typical
40	M40	N70	N69			Standoff Vertical	Column	Pipe	A53 Gr. B	Typical
41	M41	N71	N70			Standoff Diago...	Beam	BAR	A36 Gr.36	Typical
42	M42	N75	N73			RIGID	None	None	RIGID	Typical
43	M43	N76	N74			RIGID	None	None	RIGID	Typical
44	M44	N81	N79			RIGID	None	None	RIGID	Typical
45	M45	N100	N67		90	Tower Connec...	Beam	BAR	A36 Gr.36	Typical
46	M46	N101	N68		90	Tower Connec...	Beam	BAR	A36 Gr.36	Typical
47	M47	N104	N108			RIGID	None	None	RIGID	Typical
48	M48	N105	N109			RIGID	None	None	RIGID	Typical
49	M49	N106	N110			RIGID	None	None	RIGID	Typical
50	M50	N107	N111			RIGID	None	None	RIGID	Typical
51	M51	N103	N102			Mod Face	Beam	Pipe	A53 Gr. B	Typical
52	M52	N115	N113		90	SFRK	Beam	Single Angle	A36 Gr.36	Typical
53	M53	N116	N113		180	SFRK	Beam	Single Angle	A36 Gr.36	Typical
54	M54	N117	N112		90	SFRK	Beam	Single Angle	A36 Gr.36	Typical
55	M55	N118	N112		180	SFRK	Beam	Single Angle	A36 Gr.36	Typical
56	M56A	N119	N120			Tieback	Beam	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N121	N122			Tieback	Beam	Pipe	A53 Gr. B	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL		-1.05		16				
2	0	WL				32		114		
3	30	WL				32		114		
4	60	WL				32		114		
5	90	WL				32		114		
6	120	WL				32		114		
7	150	WL				32		114		
8	180	WL				32		114		
9	210	WL				32		114		
10	240	WL				32		114		
11	270	WL				32		114		
12	300	WL				32		114		
13	330	WL				32		114		
14	Ice	None				16		57		
15	0Ice	None				32		114		
16	30Ice	None				32		114		
17	60Ice	None				32		114		
18	90Ice	None				32		114		
19	120Ice	None				32		114		
20	150Ice	None				32		114		
21	180Ice	None				32		114		
22	210Ice	None				32		114		
23	240Ice	None				32		114		
24	270Ice	None				32		114		
25	300Ice	None				32		114		
26	330Ice	None				32		114		
27	0M	None				32		114		
28	30M	None				32		114		
29	60M	None				32		114		
30	90M	None				32		114		
31	120M	None				32		114		
32	150M	None				32		114		
33	180M	None				32		114		
34	210M	None				32		114		
35	240M	None				32		114		
36	270M	None				32		114		
37	300M	None				32		114		
38	330M	None				32		114		
39	L_M	None				1				
40	L_V	None				1				
41	E_V	ELY				16				
42	E_Hx	ELX				16				
43	E_Hz	ELZ				16				

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
1	1.4D	Yes	Y		1	1.4																				
2	1.2D+1.0W1	Yes	Y		1	1.2	2	1																		
3	1.2D+1.0W2	Yes	Y		1	1.2	3	1																		
4	1.2D+1.0W3	Yes	Y		1	1.2	4	1																		

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
5	1.2D+1.0W4	Yes	Y		1	1.2	5	1																
6	1.2D+1.0W5	Yes	Y		1	1.2	6	1																
7	1.2D+1.0W6	Yes	Y		1	1.2	7	1																
8	1.2D+1.0W7	Yes	Y		1	1.2	8	1																
9	1.2D+1.0W8	Yes	Y		1	1.2	9	1																
10	1.2D+1.0W9	Yes	Y		1	1.2	10	1																
11	1.2D+1.0W10	Yes	Y		1	1.2	11	1																
12	1.2D+1.0W11	Yes	Y		1	1.2	12	1																
13	1.2D+1.0W12	Yes	Y		1	1.2	13	1																
14	0.9D+1.0W1	Yes	Y		1	.9	2	1																
15	0.9D+1.0W2	Yes	Y		1	.9	3	1																
16	0.9D+1.0W3	Yes	Y		1	.9	4	1																
17	0.9D+1.0W4	Yes	Y		1	.9	5	1																
18	0.9D+1.0W5	Yes	Y		1	.9	6	1																
19	0.9D+1.0W6	Yes	Y		1	.9	7	1																
20	0.9D+1.0W7	Yes	Y		1	.9	8	1																
21	0.9D+1.0W8	Yes	Y		1	.9	9	1																
22	0.9D+1.0W9	Yes	Y		1	.9	10	1																
23	0.9D+1.0W10	Yes	Y		1	.9	11	1																
24	0.9D+1.0W11	Yes	Y		1	.9	12	1																
25	0.9D+1.0W12	Yes	Y		1	.9	13	1																
26	1.2D+1.0 Ice	Yes	Y		1	1.2	14	1																
27	1.2D+1.0ICE+1.0W1I...	Yes	Y		1	1.2	14	1	15	1														
28	1.2D+1.0ICE+1.0W2I...	Yes	Y		1	1.2	14	1	16	1														
29	1.2D+1.0ICE+1.0W3I...	Yes	Y		1	1.2	14	1	17	1														
30	1.2D+1.0ICE+1.0W4I...	Yes	Y		1	1.2	14	1	18	1														
31	1.2D+1.0ICE+1.0W5I...	Yes	Y		1	1.2	14	1	19	1														
32	1.2D+1.0ICE+1.0W6I...	Yes	Y		1	1.2	14	1	20	1														
33	1.2D+1.0ICE+1.0W7I...	Yes	Y		1	1.2	14	1	21	1														
34	1.2D+1.0ICE+1.0W8I...	Yes	Y		1	1.2	14	1	22	1														
35	1.2D+1.0ICE+1.0W9I...	Yes	Y		1	1.2	14	1	23	1														
36	1.2D+1.0ICE+1.0W1...	Yes	Y		1	1.2	14	1	24	1														
37	1.2D+1.0ICE+1.0W1...	Yes	Y		1	1.2	14	1	25	1														
38	1.2D+1.0ICE+1.0W1...	Yes	Y		1	1.2	14	1	26	1														
39	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	27	1														
40	1.2D+1.5LM1+1.0W2...	Yes	Y		1	1.2	39	1.5	28	1														
41	1.2D+1.5LM1+1.0W3...	Yes	Y		1	1.2	39	1.5	29	1														
42	1.2D+1.5LM1+1.0W4...	Yes	Y		1	1.2	39	1.5	30	1														
43	1.2D+1.5LM1+1.0W5...	Yes	Y		1	1.2	39	1.5	31	1														
44	1.2D+1.5LM1+1.0W6...	Yes	Y		1	1.2	39	1.5	32	1														
45	1.2D+1.5LM1+1.0W7...	Yes	Y		1	1.2	39	1.5	33	1														
46	1.2D+1.5LM1+1.0W8...	Yes	Y		1	1.2	39	1.5	34	1														
47	1.2D+1.5LM1+1.0W9...	Yes	Y		1	1.2	39	1.5	35	1														
48	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	36	1														
49	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	37	1														
50	1.2D+1.5LM1+1.0W1...	Yes	Y		1	1.2	39	1.5	38	1														
51																								
52	1.2D+1.5LV	Yes	Y		1	1.2	40	1.5																
53																								
54	1.2D + Ev + Ehx	Yes	Y		1	1.2	41	1	42	1	43													
55	1.2D + Ev + Ehz	Yes	Y		1	1.2	41	1	42		43	1												
56	1.2D + Ev - Ehx	Yes	Y		1	1.2	41	1	42	-1	43													
57	1.2D + Ev - Ehz	Yes	Y		1	1.2	41	1	42		43	-1												
58	0.9D - Ev + Ehx	Yes	Y		1	.9	41	-1	42	1	43													
59	0.9D - Ev + Ehz	Yes	Y		1	.9	41	-1	42		43	1												
60	0.9D - Ev - Ehx	Yes	Y		1	.9	41	-1	42	-1	43													
61	0.9D - Ev - Ehz	Yes	Y		1	.9	41	-1	42		43	-1												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N100	max	2329.138	28	185.94	11	117.615	17	0	61	0	61	0	61
2		min	-435.071	21	-191.923	5	-201.631	11	0	1	0	1	0	1
3	N101	max	580.307	24	448.665	11	453.728	17	0	61	0	61	0	61
4		min	-890.728	6	-372.755	17	-442.302	11	0	1	0	1	0	1
5	N112	max	-679.473	24	3541.84	30	157.994	23	0	61	0	61	0	61
6		min	-4804.023	30	516.919	23	-2116.534	42	0	1	0	1	0	1
7	N113	max	3683.605	28	54.901	35	3441.868	5	0	61	0	61	0	61
8		min	-375.524	21	8.089	41	-2453.218	23	0	1	0	1	0	1
9	N120	max	714.857	16	40.299	35	47.251	9	0	61	0	61	0	61
10		min	-785.832	10	13.254	15	-45.675	15	0	1	0	1	0	1
11	N122	max	1593.745	24	42.173	31	130.266	24	0	61	0	61	0	61
12		min	-1674.292	6	11.615	25	-117.766	7	0	1	0	1	0	1
13	Totals:	max	3137.907	14	3534.956	36	2821.06	5						
14		min	-3137.925	8	1185.654	17	-2821.047	23						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Che...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [l...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M1	PL5x.25	.342	4.125	40	.408	6.875	y	28	12154.454	40500	210.938	4218.75	1....	H1-1b
2	M2	PL5x.25	.555	5.5	11	.470	1.146	y	11	12154.454	40500	210.938	4218.75	1....	H1-1b
3	M7	L3X3X6	.440	50.617	38	.263	62.888	z	39	29355.168	68364	2307.398	5203.624	1....	H2-1
4	M8	L3X3X6	.413	11.504	6	.424	71.324	z	11	29355.168	68364	2307.398	5322.329	2....	H2-1
5	M9	L3X3X6	.310	3.068	27	.352	2.301	z	28	29355.168	68364	2307.398	5322.329	1....	H2-1
6	M10	L3X3X6	.305	62.121	11	.333	2.301	z	12	29355.168	68364	2307.398	5266.547	1....	H2-1
7	M15	PIPE_2.0	.714	14.501	6	.377	14.501		6	28557.514	32130	1871.625	1871.625	1....	H3-6
8	M16	PIPE_2.0	.432	37.625	11	.328	0		12	28557.514	32130	1871.625	1871.625	2....	H3-6
9	M17	PIPE_2.0	.166	0	5	.259	0		5	28557.514	32130	1871.625	1871.625	2....	H3-6
10	M18	PIPE_2.0	.347	23.124	11	.265	37.625		11	28557.514	32130	1871.625	1871.625	1....	H3-6
11	M19	PIPE_2.0	.459	53.25	48	.357	4.5		5	20866.733	32130	1871.625	1871.625	1....	H1-1b
12	M56	PIPE_2.0	.691	53.25	5	.475	4.5		11	20866.733	32130	1871.625	1871.625	3....	H3-6
13	M21	PIPE_2.0	.290	53.25	6	.362	42		12	20866.733	32130	1871.625	1871.625	2....	H3-6
14	M22	PIPE_2.0	.292	53.25	12	.203	4.5		11	20866.733	32130	1871.625	1871.625	4....	H1-1b
15	M31	PIPE_2.0	.083	78	5	.124	78		5	14916.096	32130	1871.625	1871.625	1....	H1-1b
16	M32	PIPE_2.0	.096	78	2	.186	78		11	14916.096	32130	1871.625	1871.625	1....	H1-1b
17	M37	L3X3X6	.177	32.083	5	.091	0	z	5	53267.045	68364	2307.398	5322.329	1....	H2-1
18	M38	L3X3X6	.775	0	12	.086	7.5	y	23	53267.045	68364	2307.398	5322.329	1....	H2-1
19	M39	PIPE_2.0	.244	0	11	.059	36.375		5	28778.307	32130	1871.625	1871.625	2....	H1-1b
20	M40	PIPE_2.0	.116	0	11	.141	36.375		12	28778.307	32130	1871.625	1871.625	2....	H1-1b
21	M41	3/4"	.380	22.385	5	.033	43.856		12	3723.091	14313.866	178.929	178.929	1....	H1-1a
22	M45	PL7x3/8	.222	9.25	11	.006	0	y	11	57908.737	85050	664.454	12403.125	1....	H1-1b
23	M46	PL7x3/8	.545	9.25	11	.014	0	y	11	57908.737	85050	664.454	12403.125	1....	H1-1b
24	M51	PIPE_2.0X	.771	35.938	30	.460	35.938		5	8303.532	44100	2530.5	2530.5	1....	H1-1b
25	M52	L2.5x2.5x3	.515	70.089	4	.030	72.35	y	12	9033.963	29192.4	872.574	1905.098	2....	H2-1
26	M53	L2.5x2.5x3	.278	35.421	37	.023	72.35	z	4	9033.963	29192.4	872.574	1522.799	1....	H2-1
27	M54	L2.5x2.5x3	.227	33.795	29	.020	72.097	y	6	9097.59	29192.4	872.574	1523.18	1....	H2-1
28	M55	L2.5x2.5x3	.147	33.795	37	.016	0	z	4	9097.59	29192.4	872.574	1523.056	1....	H2-1
29	M56A	PIPE_2.0	.072	48.833	5	.005	0		11	14520.819	32130	1871.625	1871.625	1....	H1-1b
30	M57	PIPE_2.0	.110	97.666	24	.005	0		11	14520.819	32130	1871.625	1871.625	1....	H1-1b*

Client:	AT&T	Date:	12/5/2019
Site Name:	CTL01253		
Project No.	18946009A		
Title:	Antenna Mount Analysis	Page:	1

Version 2.5

I. Mount-to-Tower Connection Check

RISA Model Data

Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N100	0
N101	0

Tower Connection Bolt Checks

Any moment resistance?:	no
Bolt Quantity per Reaction:	2
d_x (in) *(Delta X of typ. bolt config. sketch)* :	
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	
Bolt Type:	A307
Bolt Diameter (in):	0.625
Required Tensile Strength (kips):	2.3
Required Shear Strength (kips):	0.6
Tensile Strength / bolt (kips):	10.0
Shear Strength / bolt (kips):	6.0
Tensile Capacity Overall:	**11.6%***
Shear Capacity Overall:	**5.2%**

**Note: Tension reduction not required if tension or shear capacity < 30%*

MASER CONSULTING
— CONNECTICUT—

APPENDIX B

MASER CONSULTING — CONNECTICUT —

PROJECT NO: 18946009A PROJECT MANAGER: N. OBER DESIGNED: G. WALTERS CHECKED: D. XU	DRAWING TITLE: SITE #: CTL01253 SITE NAME: TORRINGTON HIGHLAND AVENUE MODIFICATION NOTES	PROJECT TITLE: FA #: 10071282 DRAWING NO: SK-001

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD ANSI/TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK AND ORDERING MATERIAL. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
7. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
8. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.
9. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA-322, ANSI A10.48 (LATEST EDITIONS), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322, ANSI A10.48 (LATEST EDITION) INLCUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

DESIGN LOADS

WIND LOADS

a. BASIC WIND SPEED (ULTIMATE 3 SECOND GUST), V = 115 MPH

ICE LOADS

a. ICE WIND SPEED (3 SECOND GUST), V = 50 MPH

b. ICE THICKNESS, t = 1.00 IN

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE

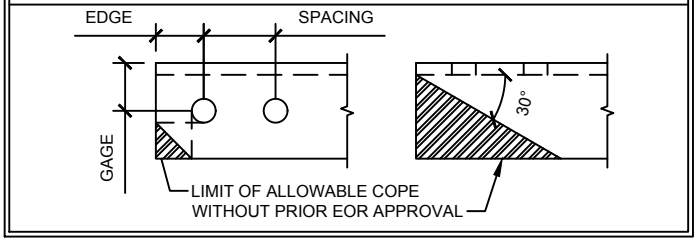
STRUCTURAL STEEL (CONTINUED)

2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

3. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
4. ALL BOLT HOLES SHALL BE STANDARD SIZE U.N.O.
5. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
6. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
8. ALL BOLT ASSEMBLES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.

ALLOWABLE COPING

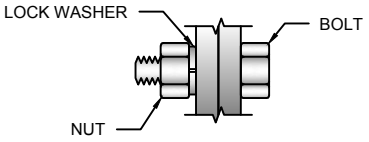


BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8



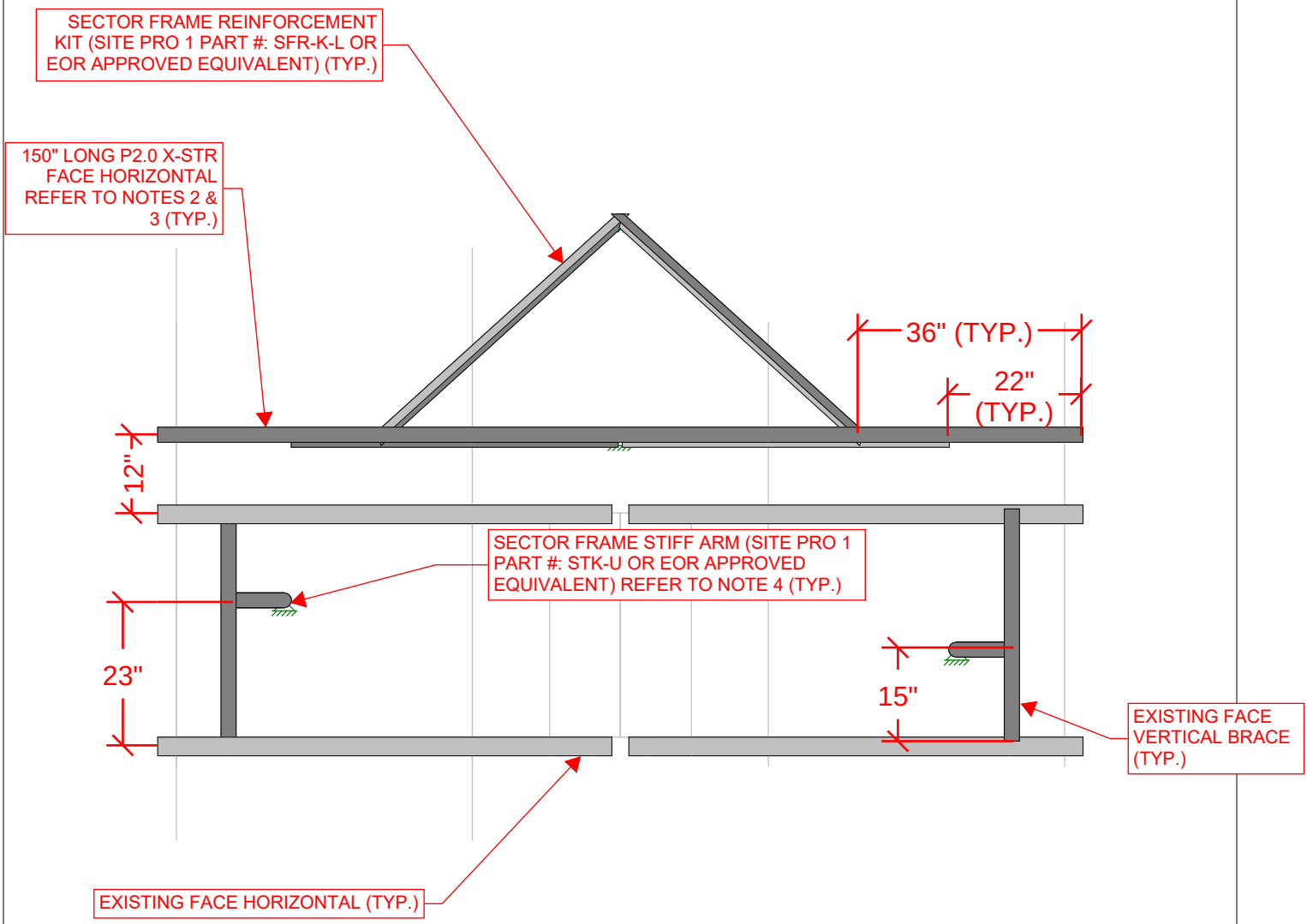
TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS.
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.

MOUNT MODIFICATION SKETCH (1 OF 2)

OVERALL MOUNT VIEW (TYP. ALL SECTORS)

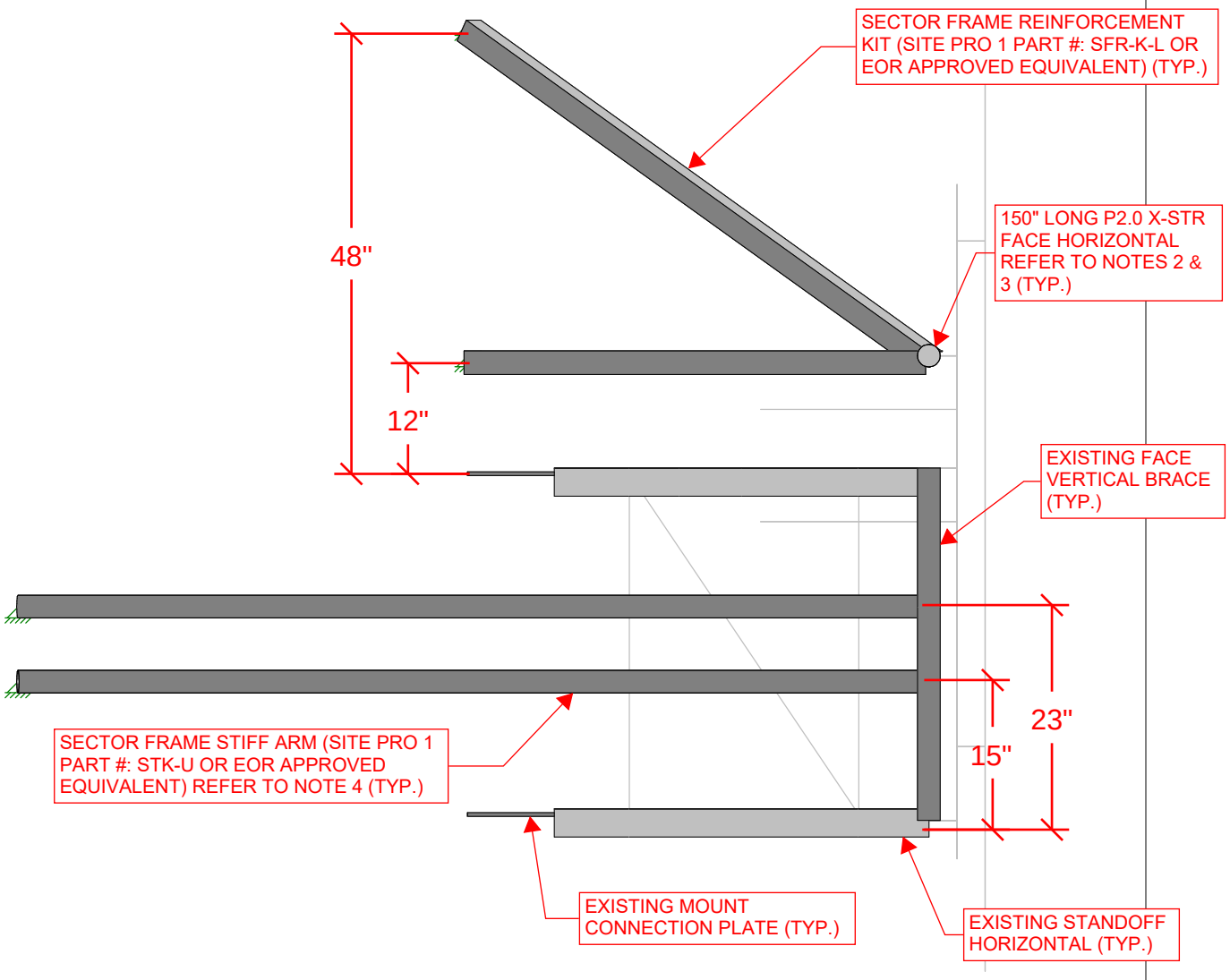


NOTES:
1) MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2) EXIST. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE.
3) CONNECT NEW PIPE HORIZONTAL TO EXISTING MOUNT PIPES WITH CROSSOVER PLATES (SITE PRO 1 PART #: SCX1-K OR EOR APPROVED EQUIVALENT).
4) CONNECT OTHER END OF TIEBACK TO ADJACENT TOWER LEG.

Maser Consulting Connect...		
GHW	Mount Analysis	Dec 5, 2019 at 9:50 AM
18946009A		mount - LOADED.r3d

MOUNT MODIFICATION SKETCH (2 OF 2)

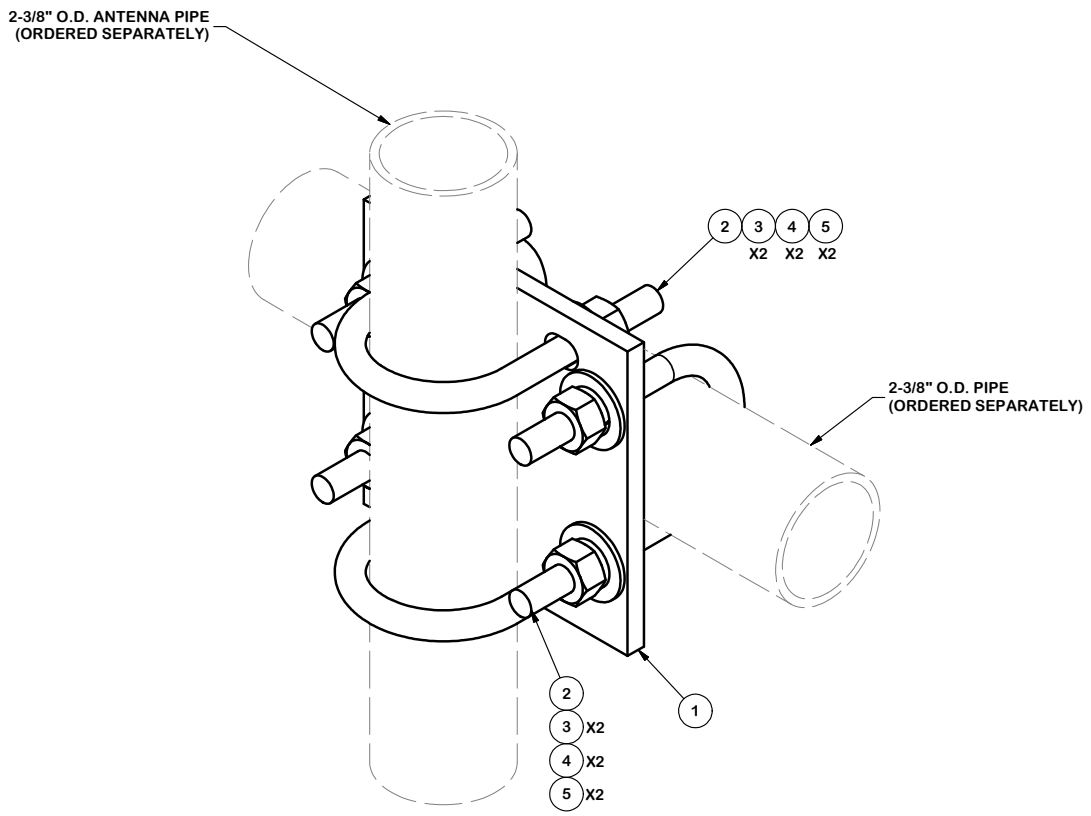
SIDE ELEVATION VIEW (TYP. ALL SECTORS)



NOTES:
1) MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2) EXIST. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE.
3) CONNECT NEW PIPE HORIZONTAL TO EXISTING MOUNT PIPES WITH CROSSOVER PLATES (SITE PRO 1 PART #: SCX1-K OR EOR APPROVED EQUIVALENT).
4) CONNECT OTHER END OF TIEBACK TO ADJACENT TOWER LEG.

Maser Consulting Connect...		
GHW	Mount Analysis	Dec 5, 2019 at 9:51 AM
18946009A		mount - LOADED.r3d

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"		3.71	3.71
2	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	2.50
3	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
4	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
5	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	7.16



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED MISSING U-BOLT AND HRDWE		KC8	7/5/2012

REVISION HISTORY

DESCRIPTION: CROSSOVER PLATE

CPD NO.:

DRAWN BY: CEK 6/30/2011

ENG. APPROVAL:

CLASS: 81 SUB: 01

DRAWING USAGE: CUSTOMER

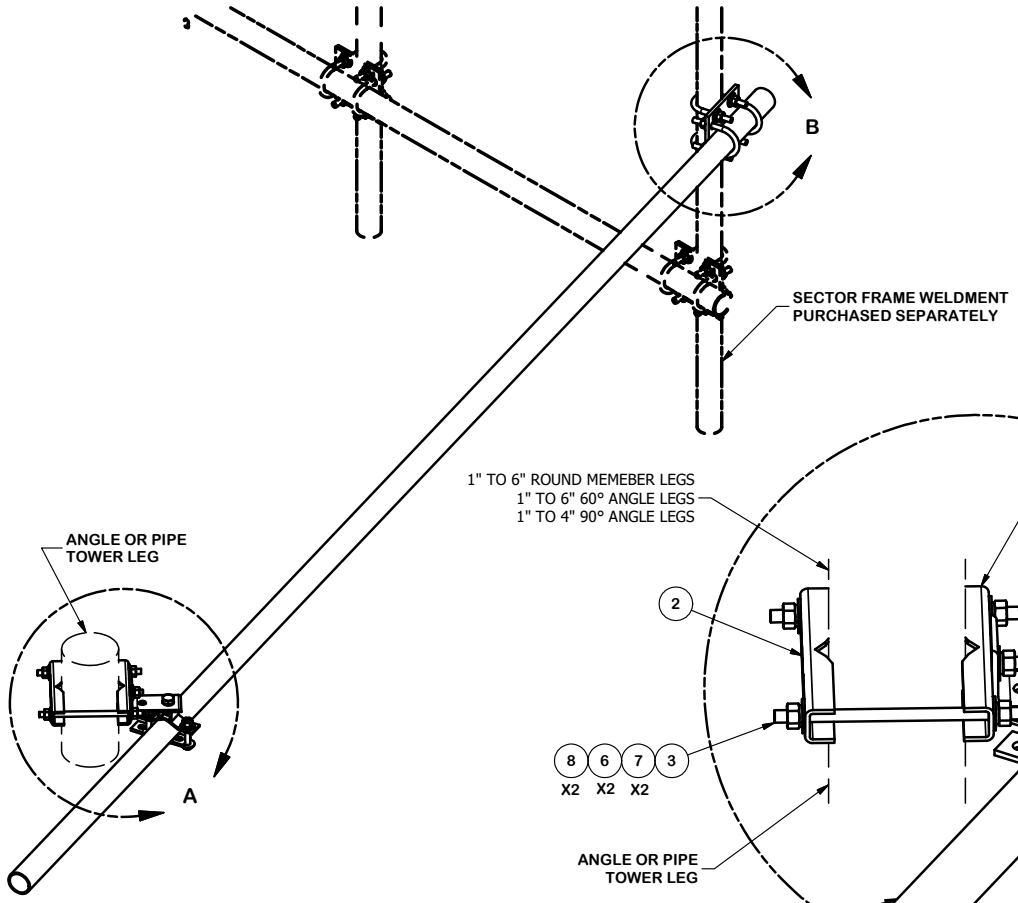
CHECKED BY: CEK 8/23/2012

PART NO.: SCX1-K

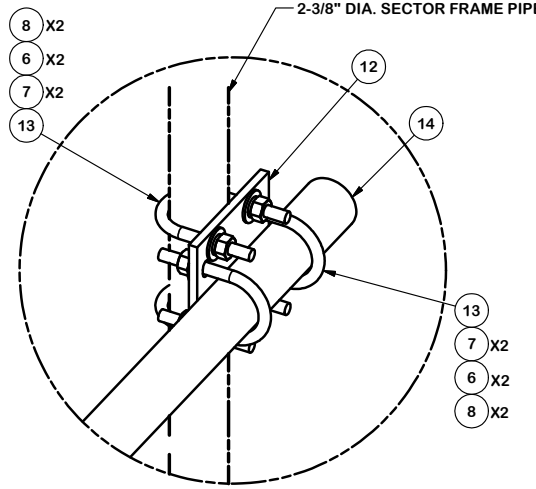
DWG. NO.: SCX1-K

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-STA3	STIFF ARM ANGLE BRACKET	2 1/2 in	1.39	1.39
2	2	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	2.74
3	2	G12R-10	1/2" x 10" THREADED ROD (HDG.)		0.40	0.80
4	1	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	0.15
5	2	G1203	1/2" x 3" HDG HEX BOLT GR5 FULL THREAD	3 in	0.22	0.43
6	15	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.21
7	17	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.58
8	15	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.07
9	1	G58112	5/8" x 1-1/2" HDG BOLT	1 1/2 in	0.25	0.25
10	1	G58LW	5/8" HDG LOCKWASHER		0.03	0.03
11	1	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.13
12	1	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	3.71
13	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	2.50
14	1	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	45.77
15	1	ACP	4-1/16" CLAMP HALF, 1/4" THK.	5 3/4 in	0.65	0.65
16	1	SAM	STIFF ARM MOUNT CLAMP		0.77	0.77
					TOTAL WT. #	63.79



DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: SECTOR FRAME STIFF ARM KIT

SITE PRO 1 — A valmont COMPANY

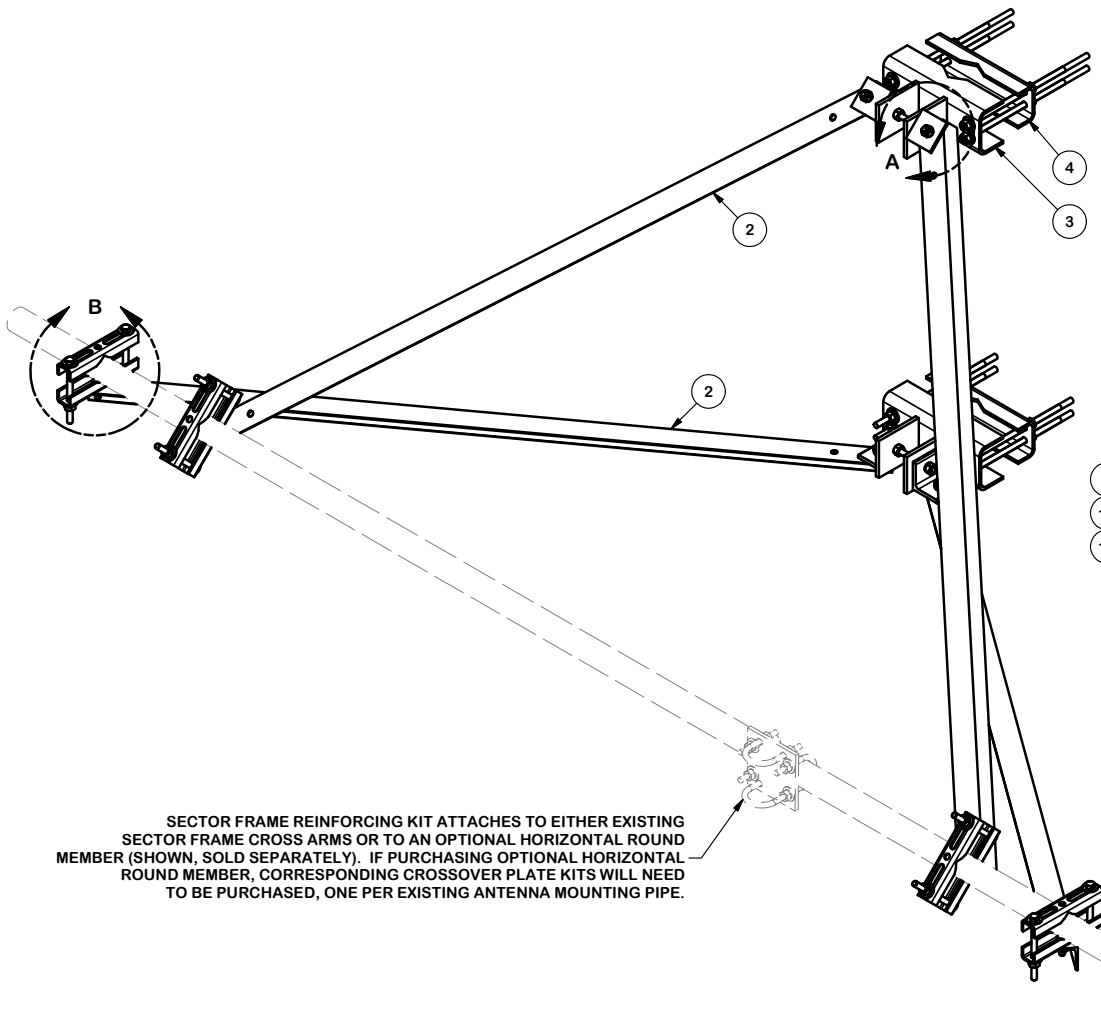
Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

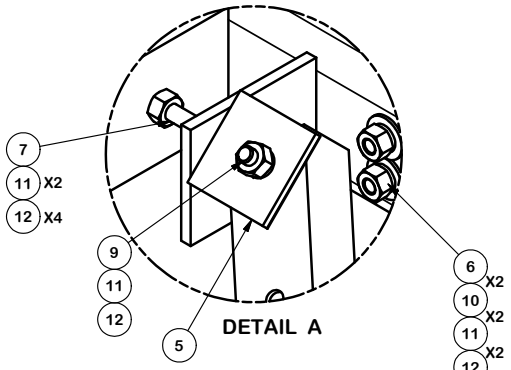
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
4647	KC8 8/16/2012		STK-U	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	CEK 2/18/2013	STK-U

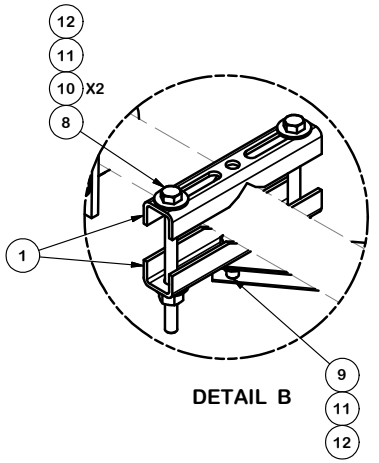
PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	10.98
2	4	X-254924	DIAGONAL ANGLE - SITE PRO 1	72 in	19.71	78.83
3	2	CFS	LOWER GATE FOOT WELDMENT		12.72	25.45
4	2	GBB	GATE BACKING BAR	11 1/2 in	4.53	9.06
5	4	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	7.43
6	8	G12R-15	1/2" x 15" THREADED ROD (HDG.)		0.84	6.69
6	8	G12R-12	1/2" x 12" THREADED ROD (HDG.)		0.67	5.35
7	2	G12R-6	1/2" x 6" GALV. THREADED ROD		0.33	0.67
8	8	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	5 1/2 in	0.41	3.28
9	8	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.18
10	32	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	1.09
11	36	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.50
12	40	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	2.87
					TOTAL WT. #	153.37



SECTOR FRAME REINFORCING KIT ATTACHES TO EITHER EXISTING SECTOR FRAME CROSS ARMS OR TO AN OPTIONAL HORIZONTAL ROUND MEMBER (SHOWN, SOLD SEPARATELY). IF PURCHASING OPTIONAL HORIZONTAL ROUND MEMBER, CORRESPONDING CROSSOVER PLATE KITS WILL NEED TO BE PURCHASED, ONE PER EXISTING ANTENNA MOUNTING PIPE.



DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	5563	BC	10/25/2017

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
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LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: SECTOR FRAME REINFORCEMENT KIT

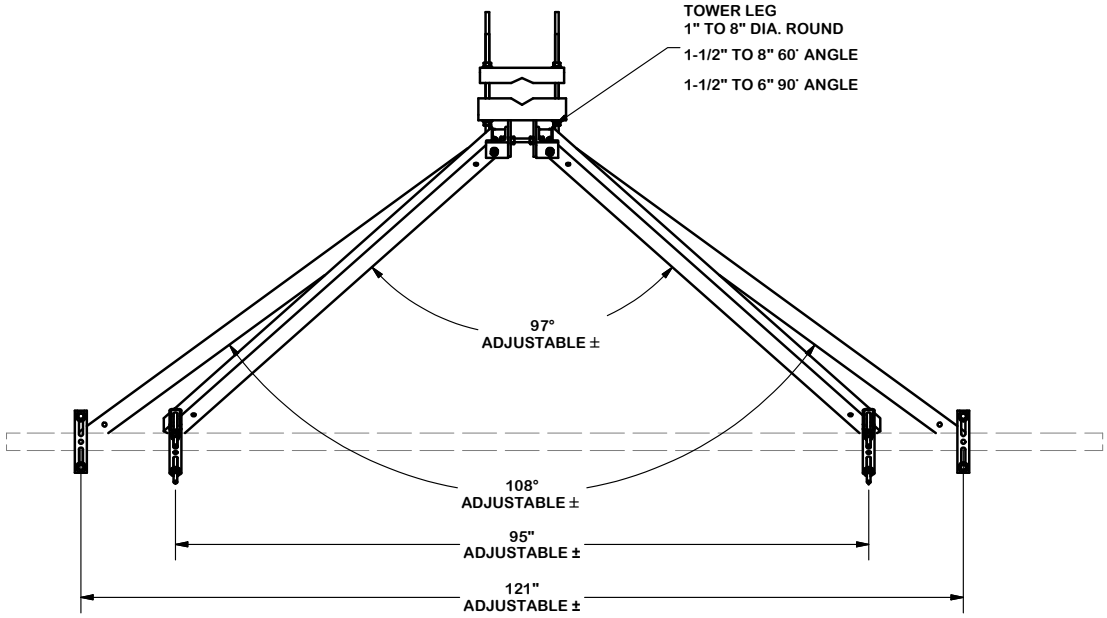
SITE PRO 1 — A valmont COMPANY

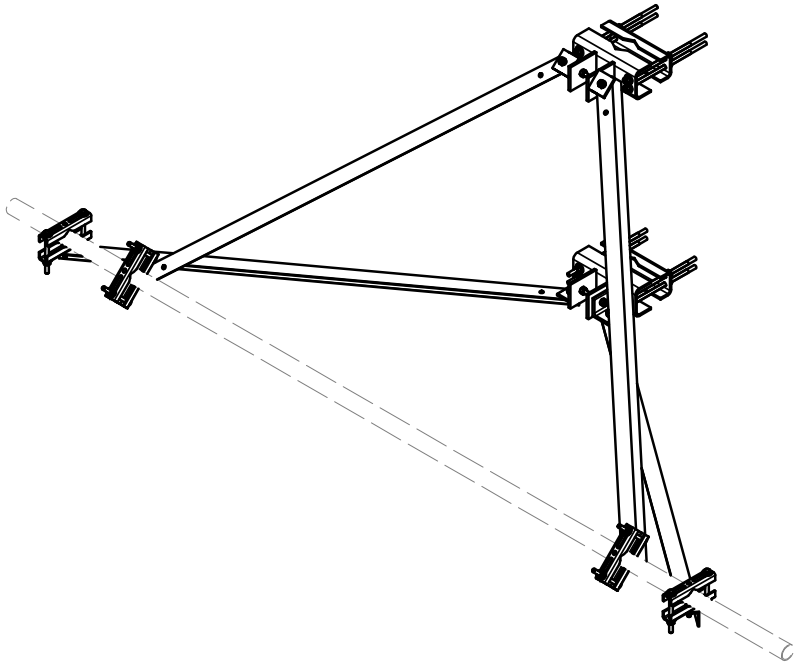
Engineering Support Team: 1-888-753-7446

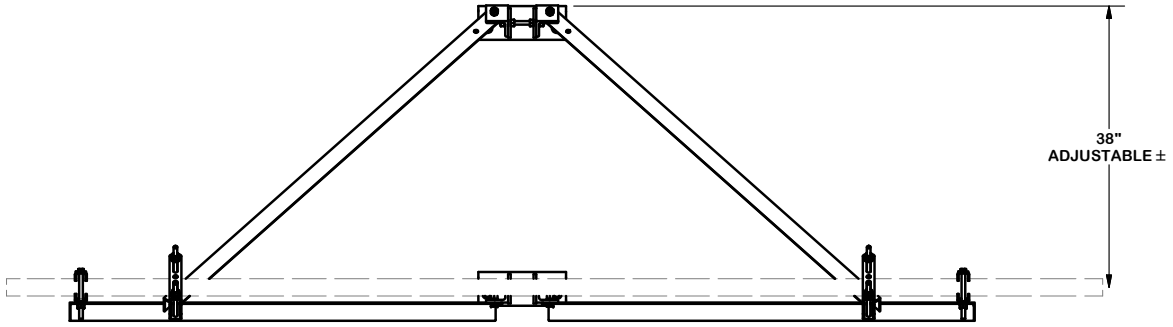
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

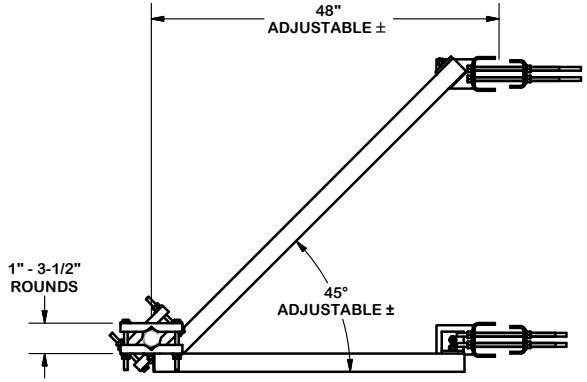
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
5563	CEK 4/25/2014		SFR-K-L

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/23/2014	SFR-K-L









TOLERANCE NOTES

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BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	5563	BC	10/25/2017

DESCRIPTION: SECTOR FRAME REINFORCEMENT KIT

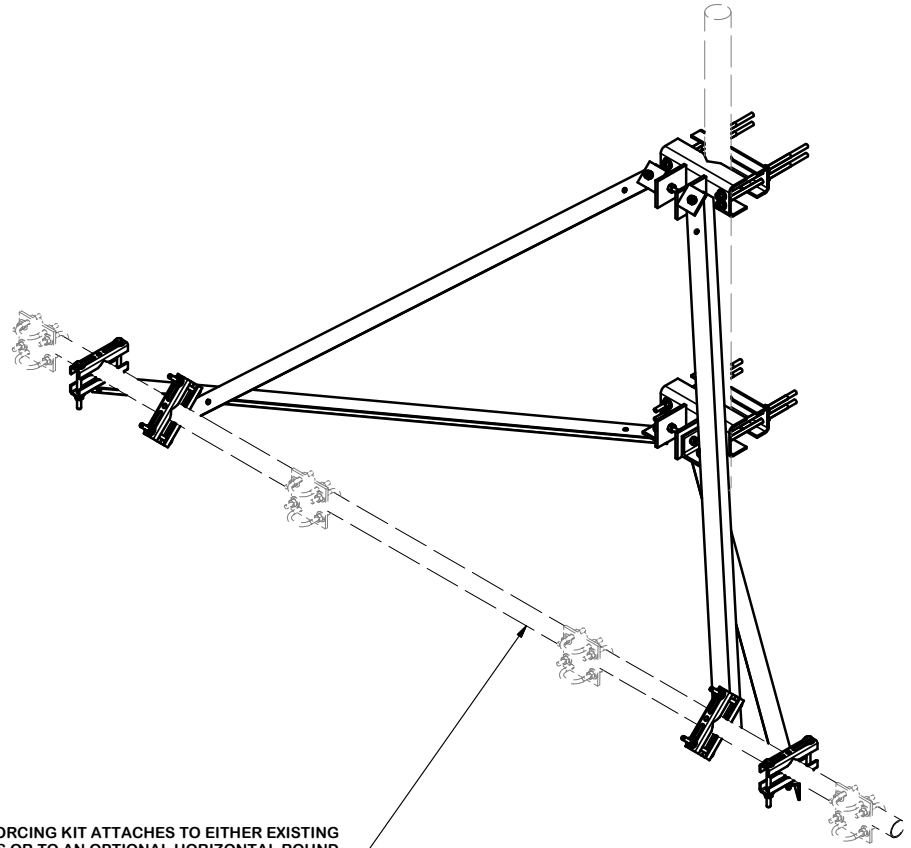
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
5563	CEK 4/25/2014		SFR-K-L	2 OF 3

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/23/2014	SFR-K-L



SECTOR FRAME REINFORCING KIT ATTACHES TO EITHER EXISTING SECTOR FRAME CROSS ARMS OR TO AN OPTIONAL HORIZONTAL ROUND MEMBER (SHOWN, SOLD SEPARATELY). IF PURCHASING OPTIONAL HORIZONTAL ROUND MEMBER, CORRESPONDING CROSSOVER PLATE KITS WILL NEED TO BE PURCHASED, ONE PER EXISTING ANTENNA MOUNTING PIPE.

TOLERANCE NOTES

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BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	5563	BC	10/25/2017

REVISION HISTORY

DESCRIPTION: SECTOR FRAME REINFORCEMENT KIT

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
5563	CEK 4/25/2014		SFR-K-L

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/23/2014	SFR-K-L

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

SITESAFE
RF COMPLIANCE EXPERTS

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

Smartlink on behalf of AT&T Mobility, LLC Site FA – 10071282 Site ID – CT1253 (MRCTB032165-MRCTB018441-MRCTB032153-MRCTB032164-MRCTB032163) USID – 82710 Site Name – Torrington Highland Avenue

1210 Highland Avenue
Torrington, CT 06790

Latitude: N41-48-09.42
Longitude: W73-9-48.23
Structure Type: Self-Support

Report generated date: August 22, 2018
Report by: Leo Romero
Customer Contact: Haleluya Haile

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

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
FCC & AT&T Compliant?	Will Be Compliant
Optional AT&T Mitigation Items?	No

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

RFDS: CTV1253_2018-LTE-Next-Carrier_LTE_sp656b_2051A0GQJM_10071282_82710_04-24-2018_Final-Approved_v2.00

CD's: 10071282_AE201_180712_CTL01253_CD_Rev 1_4C-5C-6C-7C-5G NR UPGRADE

RF Powers Used: RFDS ERP Values

1.2 Signage Summary

AT&T Signage Locations	 Information 1	 Information 2	 Notice	 Notice 2	 Caution	 Caution 2	 Warning	 Warning 2	 Barriers
Access Point(s)	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐
Alpha	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐
Beta	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐
Gamma	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐ [#]	☐

1.3 Fall Arrest Anchor Point Summary

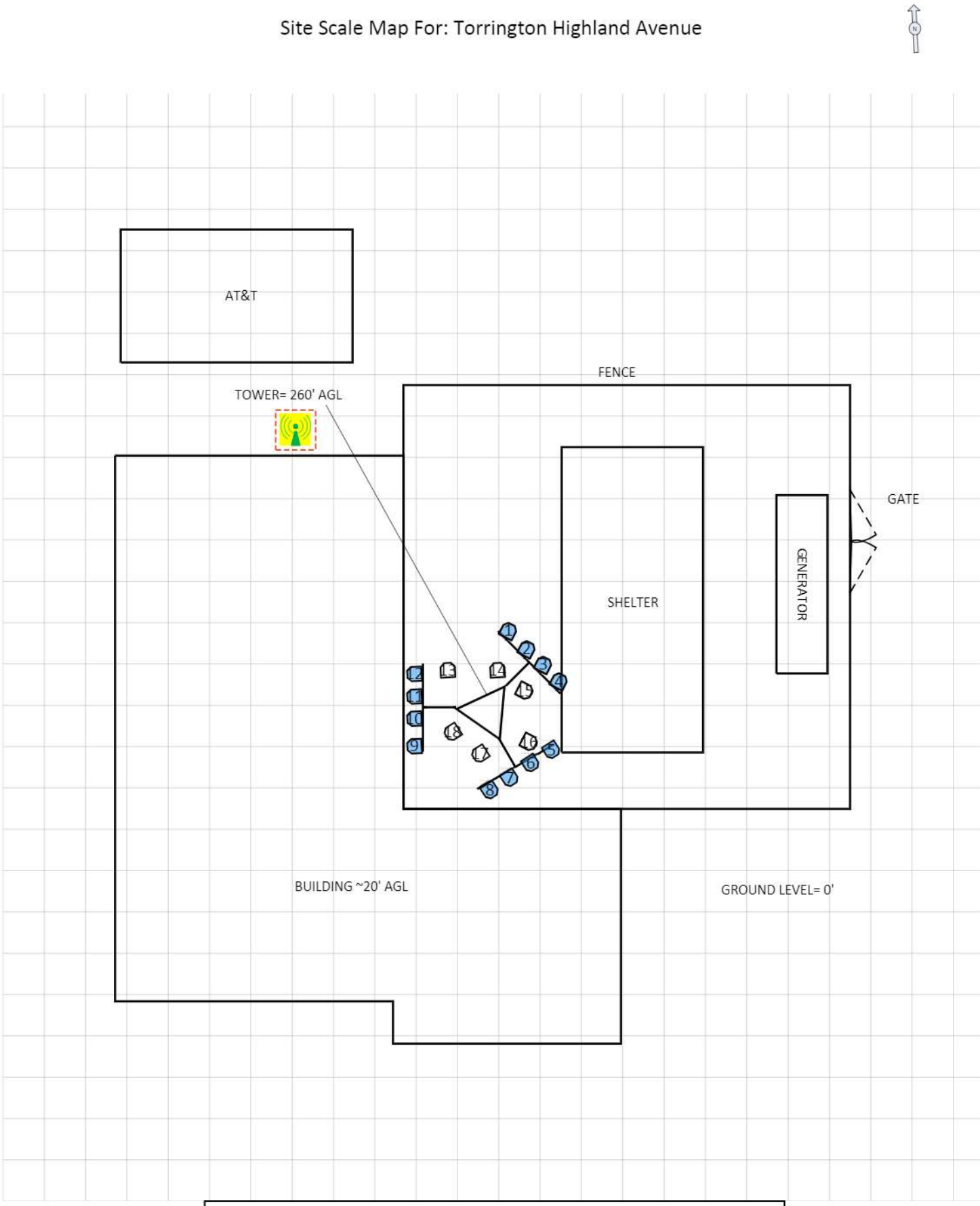
Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

2 Scale Maps of Site

The following diagrams are included:

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

Site Scale Map For: Torrington Highland Avenue



(Feet)

0 5.9 11.8

www.sitesafe.com
Site Name:Torrington Highland Avenue
8/20/2018 5:28:00 PM

Carrier Identification

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

Sign Legend

Caution 1 | Caution 2 | Notice 2 | Notice 1 | Warning | Warning 2 | Info 1 | Info 2 | RF Safety Plan

Barrier

Proposed Barriers/ Signs

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)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	30	82	4.6	11.51	1	0	250.6	62.4'	87'	242.7'
2	AT&T MOBILITY LLC	Kmw AM-X-CD-16-65-00T	Panel	737	30	65	6	13.36	0	1	1475.7	64'	85.3'	242'
3	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	763	30	68	6.4	12.36	0	1	2951.4	65.5'	83.9'	241.8'
3	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	850	30	64	6.4	12.46	0	1	500	65.5'	83.9'	241.8'
3	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	5G 850	30	64	6.4	12.46	0	1	500	65.5'	83.9'	241.8'
3	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2100	30	61	6.4	15.36	0	1	5070.3	65.5'	83.9'	241.8'
3	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2300	30	57	6.4	15.66	0	1	1285.3	65.5'	83.9'	241.8'
4	AT&T MOBILITY LLC (Proposed)	Cci Antennas HPA-65R-BUU-H6	Panel	737	30	66.2	6	11.68	0	1	1475.7	67'	82.4'	242'
4	AT&T MOBILITY LLC (Proposed)	Cci Antennas HPA-65R-BUU-H6	Panel	1900	30	61.1	6	14.53	0	1	3664.4	67'	82.4'	242'
5	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	150	82	4.6	11.51	1	0	250.6	66.3'	76.1'	242.7'
6	AT&T MOBILITY LLC	Kathrein-Scala 800-10764	Panel	737	150	68	4.6	12.14	0	1	1475.7	64.4'	74.9'	242.7'
7	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	763	150	68	6.4	12.36	0	1	2951.4	62.5'	73.6'	241.8'
7	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	850	150	64	6.4	12.46	0	1	500	62.5'	73.6'	241.8'
7	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	5G 850	150	64	6.4	12.46	0	1	500	62.5'	73.6'	241.8'
7	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2100	150	61	6.4	15.36	0	1	5070.3	62.5'	73.6'	241.8'
7	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2300	150	57	6.4	15.66	0	1	1285.3	62.5'	73.6'	241.8'
8	AT&T MOBILITY LLC (Proposed)	Andrew SBNHH-1D65A	Panel	737	150	66	4.6	11.29	0	1	1475.7	60.7'	72.5'	242.7'
8	AT&T MOBILITY LLC (Proposed)	Andrew SBNHH-1D65A	Panel	1900	150	65	4.6	14.65	0	1	3664.4	60.7'	72.5'	242.7'
9	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	270	82	4.6	11.51	1	0	250.6	53.9'	76.5'	242.7'
10	AT&T MOBILITY LLC	Kmw AM-X-CD-16-65-00T	Panel	737	270	65	6	13.36	0	1	1475.7	53.9'	79'	242'
11	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	763	270	68	6.4	12.36	0	1	2951.4	53.9'	81'	241.8'

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
11	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	850	270	64	6.4	12.46	0	1	500	53.9'	81'	241.8'
11	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	5G 850	270	64	6.4	12.46	0	1	500	53.9'	81'	241.8'
11	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2100	270	61	6.4	15.36	0	1	5070.3	53.9'	81'	241.8'
11	AT&T MOBILITY LLC (Proposed)	Kmw EPBQ-654L8H6	Panel	2300	270	57	6.4	15.66	0	1	1285.3	53.9'	81'	241.8'
12	AT&T MOBILITY LLC (Proposed)	Cci Antennas HPA-65R-BUU-H6	Panel	737	270	66.2	6	11.68	0	1	1475.7	53.9'	83.1'	242'
12	AT&T MOBILITY LLC (Proposed)	Cci Antennas HPA-65R-BUU-H6	Panel	1900	270	61.1	6	14.53	0	1	3664.4	53.9'	83.1'	242'
13	UNKNOWN CARRIER	Generic Panel	Panel	850	0	65	4.6	12.77	-	-	1135.4	56.9'	83.4'	202.7'
14	UNKNOWN CARRIER	Generic Panel	Panel	1900	0	65	4.6	15.43	-	-	2094.8	61.4'	83.4'	202.7'
15	UNKNOWN CARRIER	Generic Panel	Panel	850	120	65	4.6	12.77	-	-	1135.4	63.9'	81.5'	202.7'
16	UNKNOWN CARRIER	Generic Panel	Panel	1900	120	65	4.6	15.43	-	-	2094.8	64.2'	76.9'	202.7'
17	UNKNOWN CARRIER	Generic Panel	Panel	850	240	65	4.6	12.77	-	-	1135.4	59.8'	75.8'	202.7'
18	UNKNOWN CARRIER	Generic Panel	Panel	1900	240	65	4.6	15.43	-	-	2094.8	57.3'	77.8'	202.7'

NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height **above the ground level (AGL)**. The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline. 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.

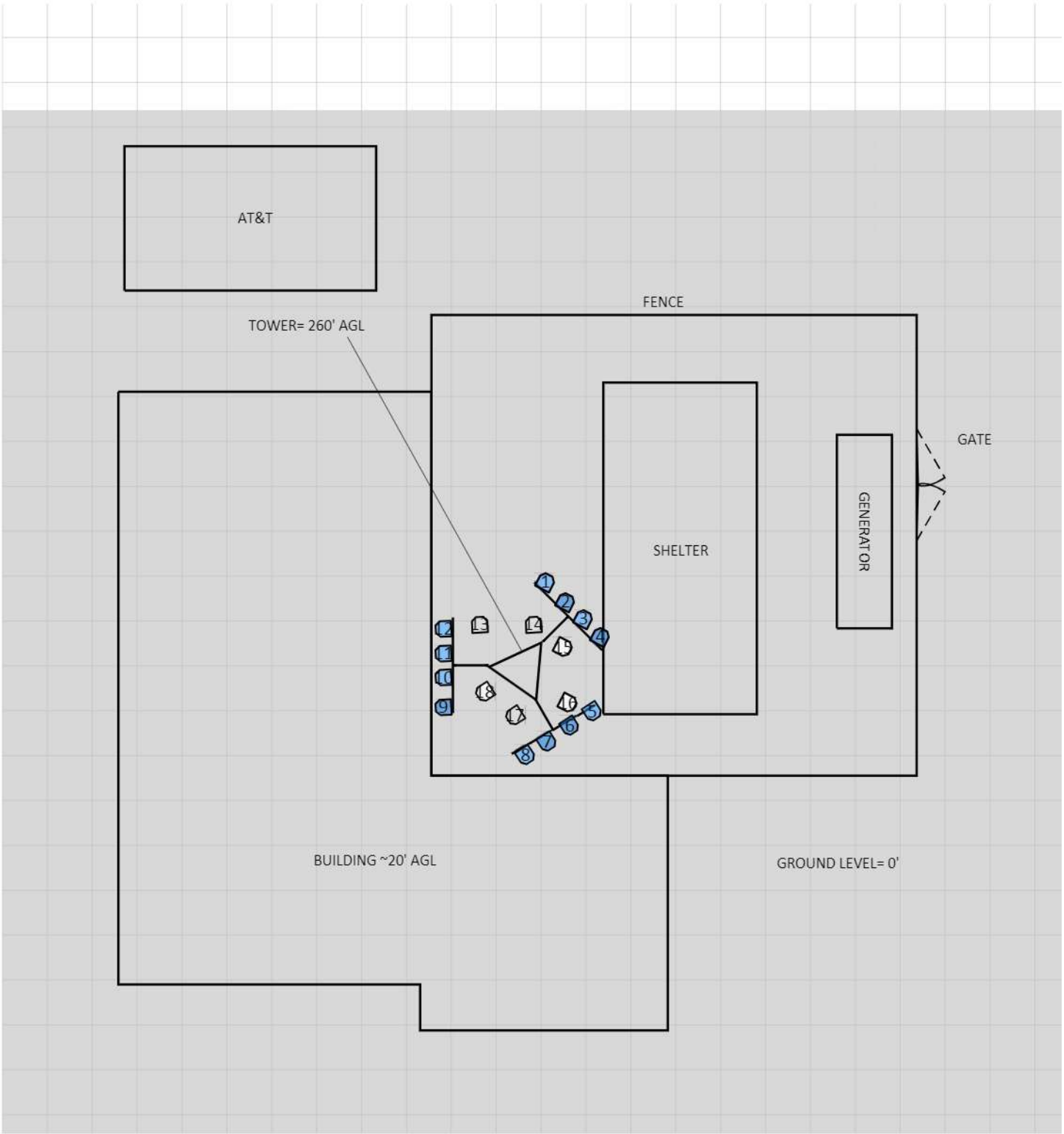
4 Emission Predictions

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.

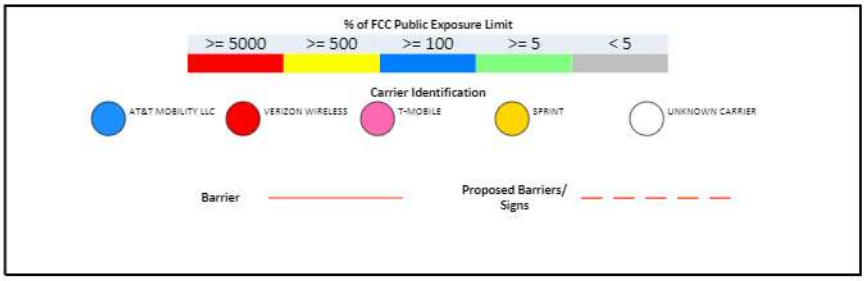
- Ground Level = 0'
- Building ~20'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: Torrington Highland Avenue



% of FCC Public Exposure Limit
Spatial average 0' - 6'



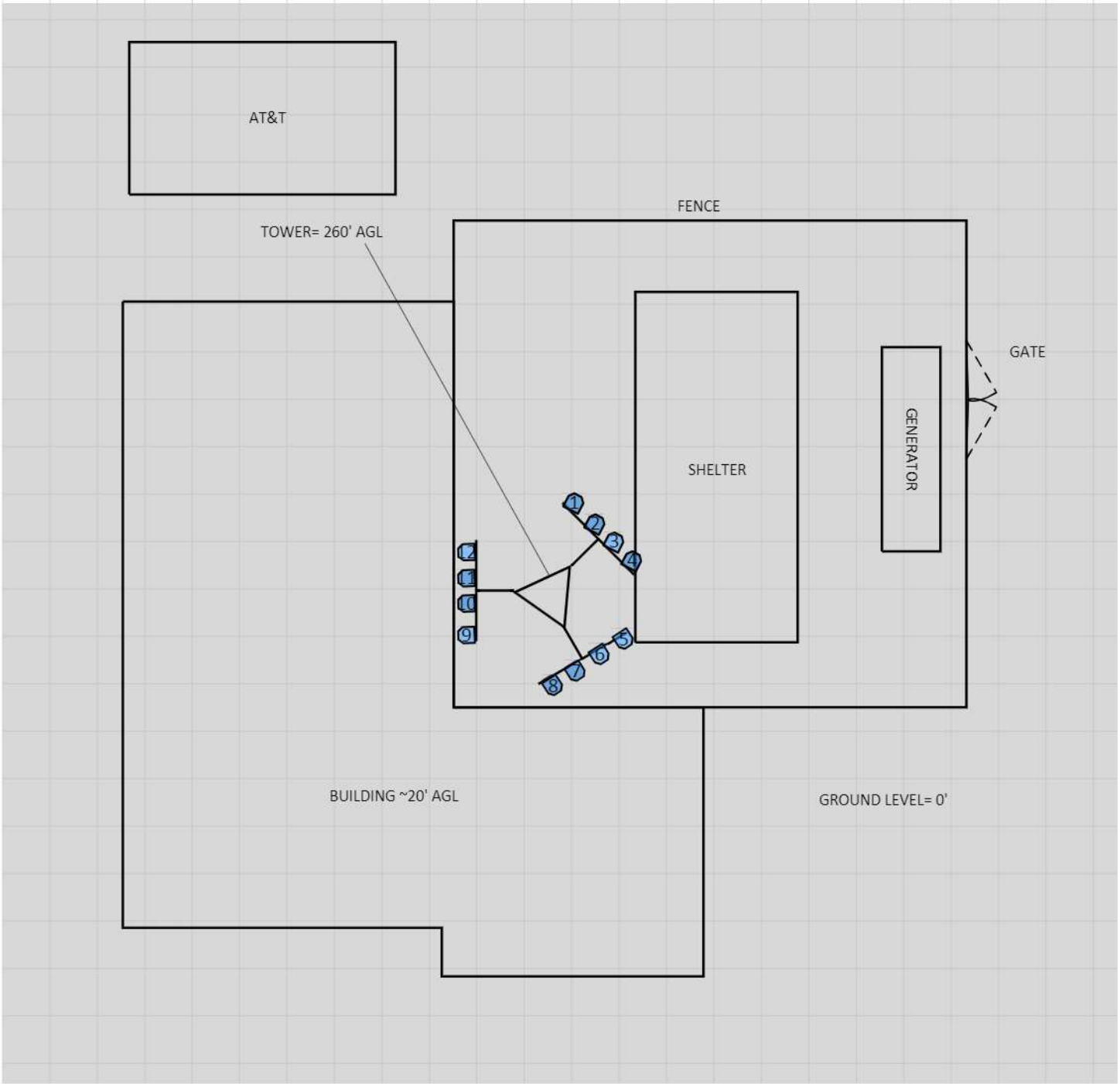
(Feet)

0 5.9 11.8

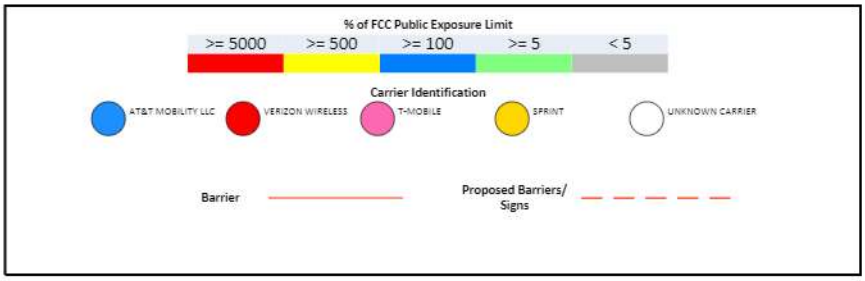
www.sitesafe.com
Site Name:Torrington Highland Avenue
8/20/2018 5:26:33 PM

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

RF Exposure Simulation For: Torrington Highland Avenue
AT&T Mobility, LLC Contribution



% of FCC Public Exposure Limit
Spatial average 0' - 6'



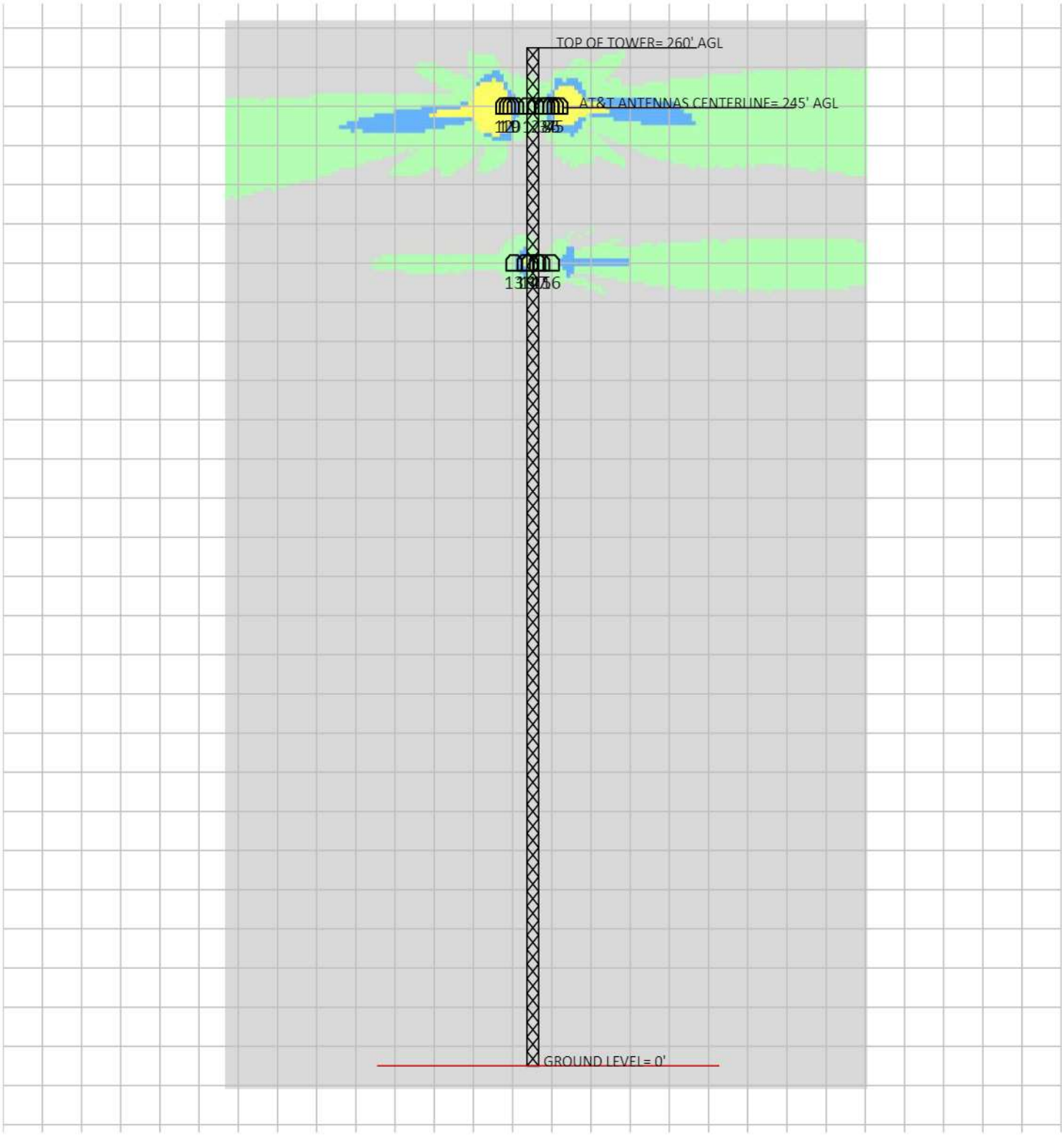
(Feet)

0 5.9 11.8

www.sitesafe.com
Site Name:Torrington Highland Avenue
8/20/2018 5:27:12 PM

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

RF Exposure Simulation For: Torrington Highland Avenue
Elevation View



% of FCC Public Exposure Limit

% of FCC Public Exposure Limit
>= 5000 | >= 500 | >= 100 | >= 5 | < 5

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

Barrier | Proposed Barriers/ Signs

(Feet)
0 19.1 38.3

www.sitesafe.com
Site Name:Torrington Highland Avenue
8/20/2018 5:33:28 PM

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

5 Site Compliance

5.1 Site Compliance Statement

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

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

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

Install a Caution 2B sign.

Notes:

- Signage may already be in place. Sitesafe does not have record of any existing signage because there were no previous visits or data supplied regarding them. All remediation is based on a worst-case scenario.

6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Sitesafe, 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 Radiation; 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 Leo Romero.

August 22, 2018

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

FCC Rules and Regulations

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

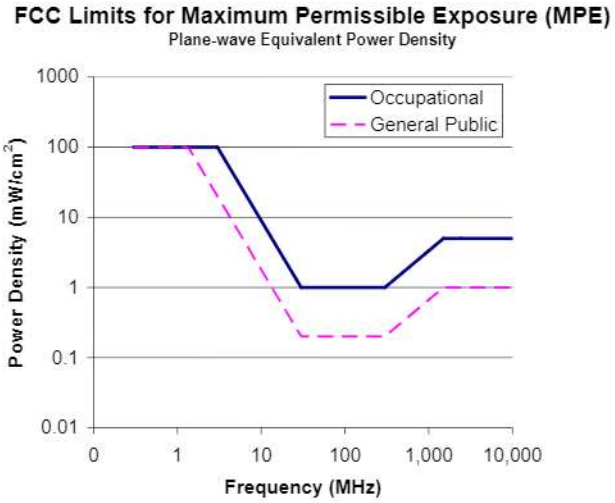
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible*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

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

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

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

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



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

f = frequency in MHz *Plane-wave equivalent power density

OSHA Statement

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

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

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

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up 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 workers 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. 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.
- 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.

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 further assumed a 100% duty cycle and maximum radiated power.

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.

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 taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation 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) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

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

General Population/Uncontrolled Environment – Defined by the FCC, as an area where exposure to RF energy may occur to persons who are **unaware** of the potential for exposure and who have no control of 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 our 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 maximum levels of RF exposure a person may be exposed to without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) 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 Radio Frequency radiation on Humans. The guideline was published in August 1997.

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

Radio Frequency (RF) – The frequencies of electromagnetic waves which are used for radio communications. Approximately 3 kHz to 300 GHz.

Radio Frequency Exposure (RFE) – The amount of RF power density that a person is or might be exposed to.

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 power density an average sized human will be exposed to at a location.

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 F – References

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

Sitesafe, 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?siteareа=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf
Fairfax County, Virginia Public School Survey
http://www.fcps.edu/fts/safety-security/RFEESurvey/
UK Health Protection Agency Advisory Group on Non-ionising Radiation
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368
Norwegian Institute of Public Health
http://www.fhi.no/dokumenter/545eea7147.pdf

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Tuesday, December 17, 2019 2:47 PM
To: Kristina Cottone
Subject: FedEx Shipment 776927308092 Delivered

Your package has been delivered

Tracking # 776927308092

Ship date:
Tue, 12/10/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivered

Delivery date:
Tue, 12/17/2019 2:45 pm

ATTN: Elinor Carbone
ATTN: ELINOR CARBONE
140 MAIN ST
TORRINGTON, CT
06790520140
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	776927308092
Status:	Delivered: 12/17/2019 2:45 PM Signed for By: Signature on File
Door Tag number:	DT745647479725
Reference:	CTL01253- Torrington
Signed for by:	Signature on File
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	12/11/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 1:46 PM CST on 12/17/2019.

All weights are estimated.

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Tuesday, December 17, 2019 2:47 PM
To: Kristina Cottone
Subject: FedEx Shipment 776927271275 Delivered

Your package has been delivered

Tracking # 776927271275

Ship date:
Tue, 12/10/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivered

Delivery date:
Tue, 12/17/2019 2:45 pm

ATTN: Brett Zuraitis
CITY OF TORRINGTON
140 MAIN ST
TORRINGTON, CT
06790520140
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	776927271275
Status:	Delivered: 12/17/2019 2:45 PM Signed for By: Signature on File
Door Tag number:	DT745647479725
Reference:	CTL01253- Torrington
Signed for by:	Signature on File
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	12/11/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 1:46 PM CST on 12/17/2019.

All weights are estimated.

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Friday, December 13, 2019 3:07 PM
To: Kristina Cottone
Subject: FedEx Shipment 776927343028 Delivered

Your package has been delivered

Tracking # 776927343028

Ship date:
Tue, 12/10/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivered

Delivery date:
Fri, 12/13/2019 2:50 pm

ATTN: Tax Department
SBA PROPERTIES
8051 CONGRESS AVE
BOCA RATON, FL
33487131099
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	776927343028
Status:	Delivered: 12/13/2019 2:50 PM Signed for By: OBROWN
Reference:	CTL01253- Torrington
Signed for by:	OBROWN
Delivery location:	Boca Raton, FL
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	12/13/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 2:06 PM CST on 12/13/2019.

All weights are estimated.

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

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Friday, December 13, 2019 3:06 PM
To: Kristina Cottone
Subject: FedEx Shipment 776927357355 Delivered

Your package has been delivered

Tracking # 776927357355

Ship date:
Tue, 12/10/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivered

Delivery date:
Fri, 12/13/2019 2:50 pm

Carla Shorter
SBA COMMUNICATIONS CORP.
8051 CONGRESS AVE
BOCA RATON, FL
33487131099
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	776927357355
Status:	Delivered: 12/13/2019 2:50 PM Signed for By: OBROWN
Reference:	CTL01253- Torrington
Signed for by:	OBROWN
Delivery location:	Boca Raton, FL
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	12/13/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 2:06 PM CST on 12/13/2019.

All weights are estimated.

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

SITE NAME: TORRINGTON HIGHLAND AVE

FA NUMBER: 10071282
SITE NUMBER: CTL01253
4C - MRCTB032165
5C - MRCTB018441
6C - MRCTB032164
7C - MRCTB032163
5G NR UPGRADE - MRCTB032153
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790
LITCHFIELD COUNTY

PROJECT NOTES

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
   A. PLAN ENTITLED "TORRINGTON HIGHLAND AVE" PREPARED BY FULLERTON ENGINEERING-DESIGN OF SCHAUMBURG, IL LAST REVISED 05/03/2017.
   B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 05/16/2018.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF, THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-G AS PER IBC REQUIREMENTS.
16. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
17. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
18. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.

VICINITY MAP

CODE COMPLIANCE

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

1. 2015 INTERNATIONAL BUILDING CODE
2. 2014 NATIONAL ELECTRICAL CODE - NFPA 70
3. NFPA 1 FIRE CODE, 2015 EDITION
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10
5. AMERICAN CONCRETE INSTITUTE
6. TIA-222-G
7. TIA 607 FOR GROUNDING
8. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81 IEEE C2 LATEST EDITION
9. TELCORDIA GR-1275
10. ANSI T1.311
11. PROPOSED USE: UNMANNED TELECOM FACILITY
12. HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
13. CONSTRUCTION TYPE: IIB
14. USE GROUP: U

PROJECT INFORMATION

SITE INFORMATION

LATITUDE:	41.8026169° N
LONGITUDE:	73.1633961° W
JURISDICTION:	LITCHFIELD COUNTY

APPLICANT/LESSEE

COMPANY:	NEW CINGULAR WIRELESS PCS, LLC
ADDRESS:	550 COCHITUATE ROAD
CITY, STATE, ZIP:	FRAMINGHAM, MA 01701

TOWER OWNER

TOWER:	SBA COMMUNICATIONS CORP.
ADDRESS:	8051 CONGRESS AVENUE
CITY, STATE, ZIP:	BOCA RATON, FL 33487

CLIENT REPRESENTATIVE

COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, STE. 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862
CONTACT:	TODD OLIVER
E-MAIL:	TODD.OLIVER@SMARTLINKLLC.COM

SITE ACQUISITION

COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, STE. 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862
CONTACT:	SHARON KEEFE
E-MAIL:	SHARON.KEEFE@SMARTLINKLLC.COM

CONSTRUCTION MANAGER

COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, STE. 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862
CONTACT:	MARK DONELLY
E-MAIL:	MARK.DONELLY@SMARTLINKLLC.COM

ENGINEER

COMPANY:	MASER CONSULTING P.A.
ADDRESS:	2000 MIDLANTIC DRIVE, SUITE 100
CITY, STATE, ZIP:	MT. LAUREL, NJ 08054
CONTACT:	NATHANIEL OBER
PHONE:	(856) 797-0412
E-MAIL:	NOBER@MASERCONSULTING.COM

PROJECT DESCRIPTION/ SCOPE OF WORK

- INSTALL (3) NEW RRH'S & SURGE ARRESTORS AT GRADE
- REMOVE (3) EXISTING RRH'S AT GRADE
- INSTALL (12) NEW RRH'S, (4) PER SECTOR
- INSTALL (6) NEW PANEL ANTENNAS, (2) PER SECTOR
- REMOVE (3) EXISTING PANEL ANTENNAS, (1) PER SECTOR
- INSTALL (6) LOW BAND COMBINERS, (2) PER SECTOR
- INSTALL (2) NEW DC-6 DOMES
- INSTALL (1) NEW 18-PAIR FIBER CABLE
- INSTALL (4) NEW DC CABLES
- SWAP DUS's WITH (1) 5216
- INSTALL 2ND 5216, 2ND XMU AND (1) IDLe
- ADD (1) 6630
- INSTALL (6) SITE PRO 1 (PART #: STK-U), (2) PER SECTOR
- INSTALL (6) SITE PRO 1 (PART #: SFR-K-L), (2) PER SECTOR
- INSTALL (3) FACE HORIZONTALS (P2.0 X STR) USING (4) SITE PRO 1 (PART #: SCX1-K), (1) PER SECTOR
- DECOMMISSION AND REMOVE EXISTING POWER PLANT
- DECOMMISSION AND REMOVE EXISTING BATTERY STRING
- INSTALL NEW POWER PLANT WITH BATTERY RACK

PROPOSED PROJECT SCOPE BASED ON RFDS ID# 3377580, VERSION 3.0, LAST UPDATED 11/14/19.

SHEET INDEX

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GN-1	GENERAL NOTES
C-1	COMPOUND PLAN
C-2	EQUIPMENT LAYOUT AND ELEVATION VIEW
C-3	ANTENNA LAYOUTS AND ANTENNA SCHEDULE
A-1	CONSTRUCTION DETAILS
A-2	CONSTRUCTION DETAILS
A-3	CONSTRUCTION DETAILS
A-4	CONSTRUCTION DETAILS
A-5	RF PLUMBING DIAGRAM
G-1	GROUNDING DETAILS AND NOTES
S-1	MODIFICATION DETAILS

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AS SHOWN	18946009A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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4	12/06/19	REVISED PER COMMENTS	CDH	NO
3	10/17/18	REVISED PER COMMENTS	AJC	RA
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STATE OF CONNECTICUT — PETROS TSOUKALAS — CONNECTICUT PROFESSIONAL ENGINEER — LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:
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FA# 10071282
SITE# CTL01253

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MT. LAUREL OFFICE
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SHEET TITLE : TITLE SHEET

SHEET NUMBER : T-1

GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

    CONTRACTOR - SMARTLINK
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)

23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
30. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
49. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION, ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
50. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

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4	12/06/19	REVISED PER COMMENTS	CDH	NO
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0	07/09/18	ISSUED FOR REVIEW	AJC	RA

STATE OF CONNECTICUT · PETROS TSOUKALAS · LICENSED PROFESSIONAL ENGINEER

PETROS TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32597

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SITE NAME:
TORRINGTON HIGHLAND AVENUE
FA# 10071282
SITE# CTL01253

1210 HIGHLAND AVENUE
TORRINGTON, CT 06790
LITCHFIELD COUNTY

MT. LAUREL OFFICE
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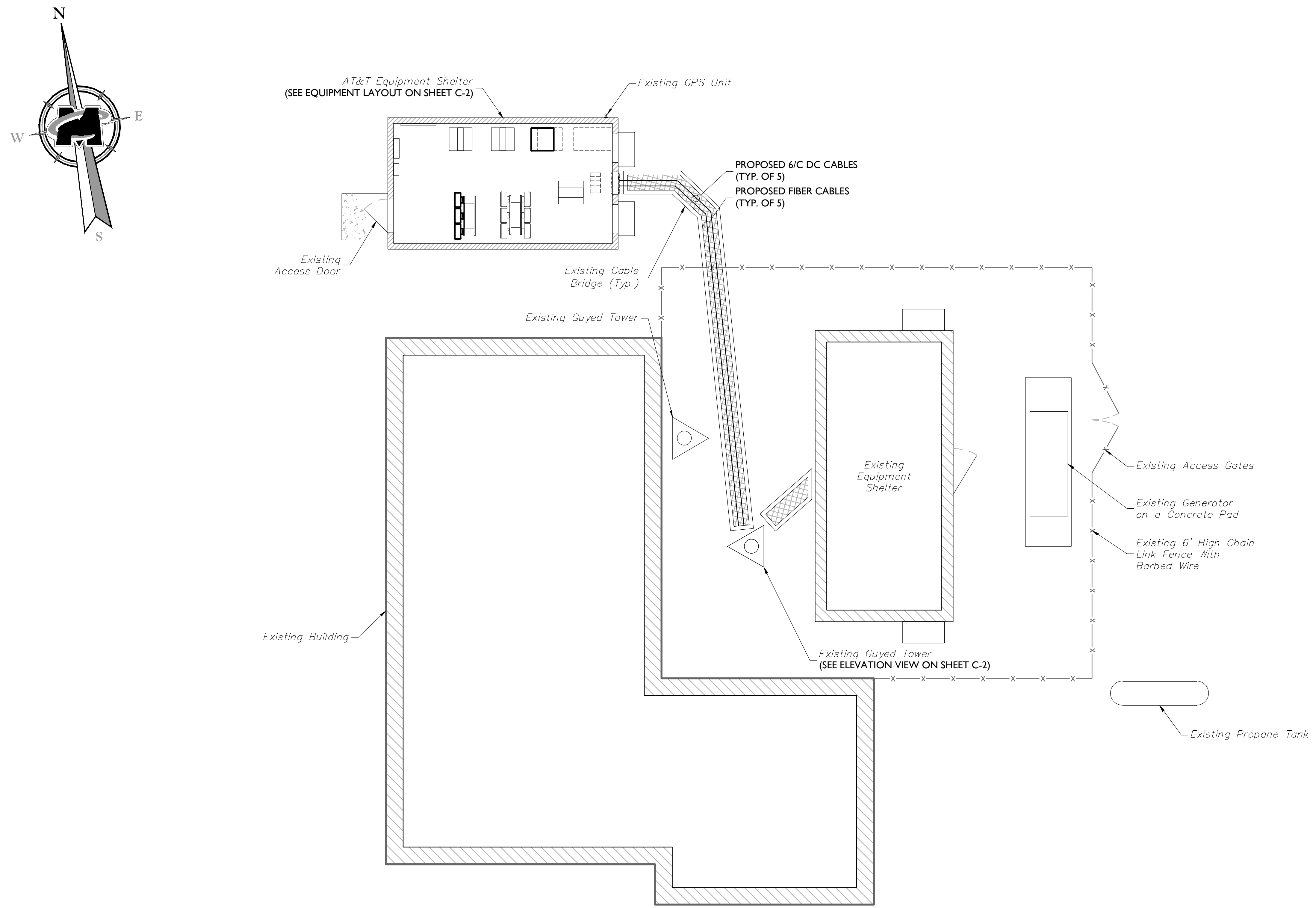
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE: GENERAL NOTES

SHEET NUMBER: GN-1



COMPOUND PLAN

SCALE : 1" = 5' FOR 22"X34"
(SCALE : 1" = 10' FOR 11"X17")

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0	07/09/18	[illegible]	AJC	RA

PETROS TSOUKALAS
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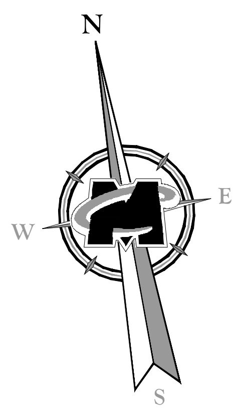
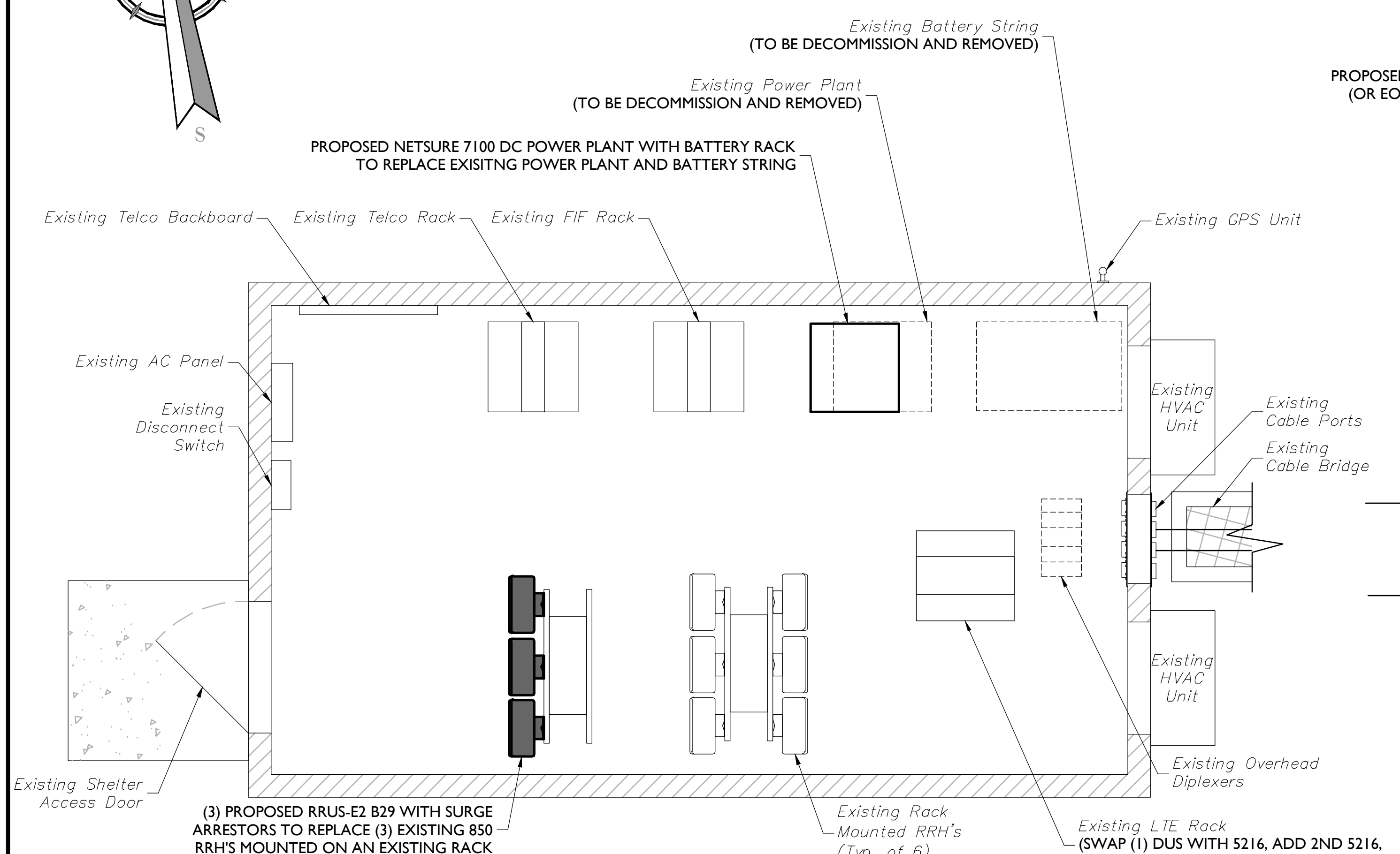
SHEET TITLE :
COMPOUND PLAN

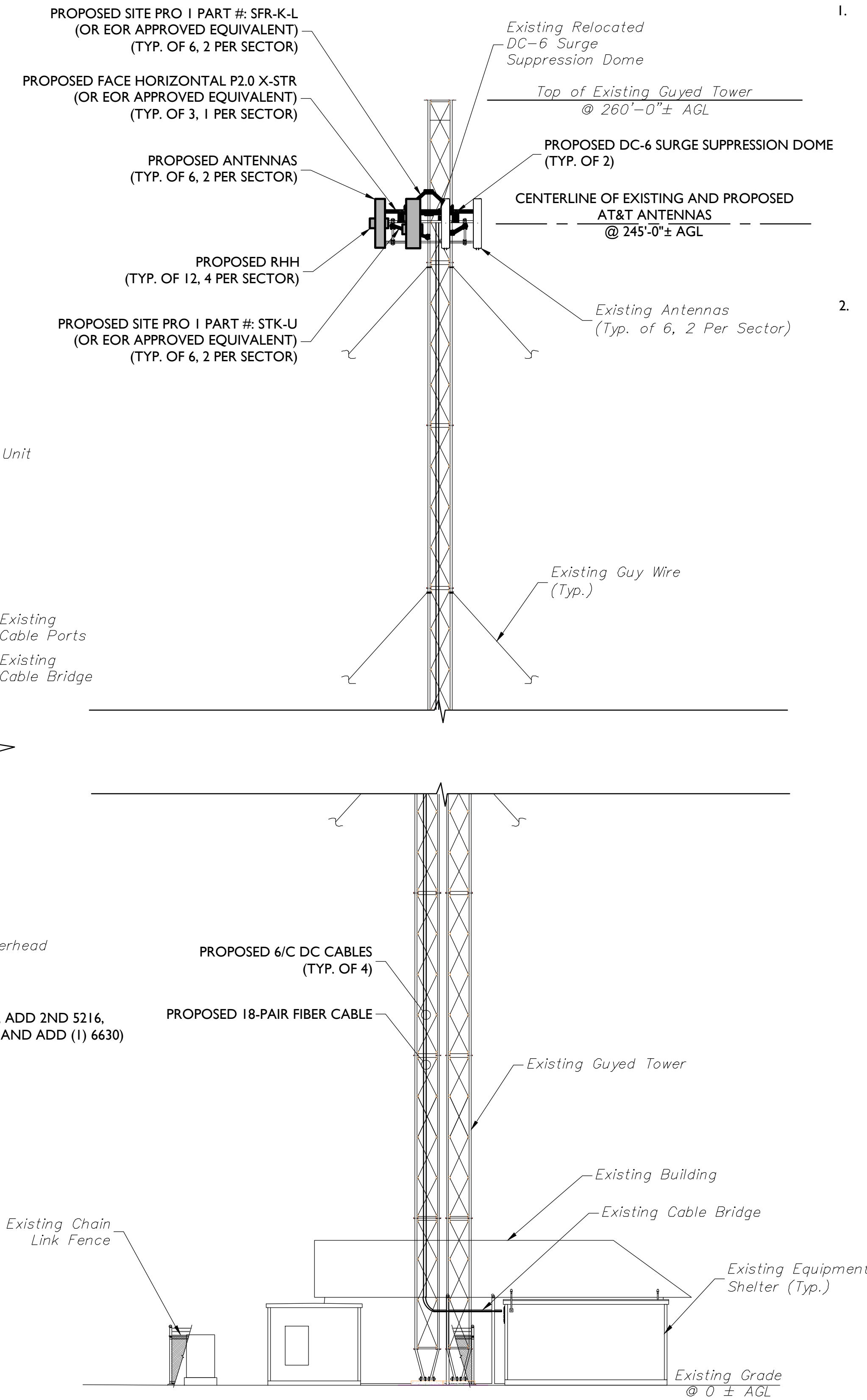
SHEET NUMBER :
C-1





EQUIPMENT LAYOUT

SCALE : 1" = 2' FOR 22"X34"
(SCALE : 1" = 4' FOR 11"X17")



ELEVATION VIEW

SCALE : 1" = 10' FOR 22"X34"
(SCALE : 1" = 20' FOR 11"X17")

STRUCTURAL NOTES:

1. A MOUNT MODIFICATION REPORT PREPARED BY MASER CONSULTING P.A., DATED 12/05/19 HAS BEEN PREPARED TO CHECK THE STRUCTURAL CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED ANTENNA AND EQUIPMENT CONFIGURATION AS DEPICTED WITHIN THESE CONSTRUCTION DRAWINGS. BASED ON THE CONCLUSIONS OF THIS REPORT, THE ANTENNA MOUNT HAS BEEN DETERMINED TO HAVE SUFFICIENT CAPACITY. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.
2. MASER CONSULTING P.A. HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY AS REQUIRED UNDER THE MOST CURRENT LOCAL, STATE AND FEDERAL CODES. A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION MUST BE PREPARED BY AN APPROPRIATE LICENSED STRUCTURAL ENGINEER CERTIFYING THAT THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, SUPPORTS, CABLES AND APPURTENANCES COMPLIES WITH THE MOST CURRENT LOCAL, STATE AND FEDERAL CODES.

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32597
LICENSED PROFESSIONAL ENGINEER

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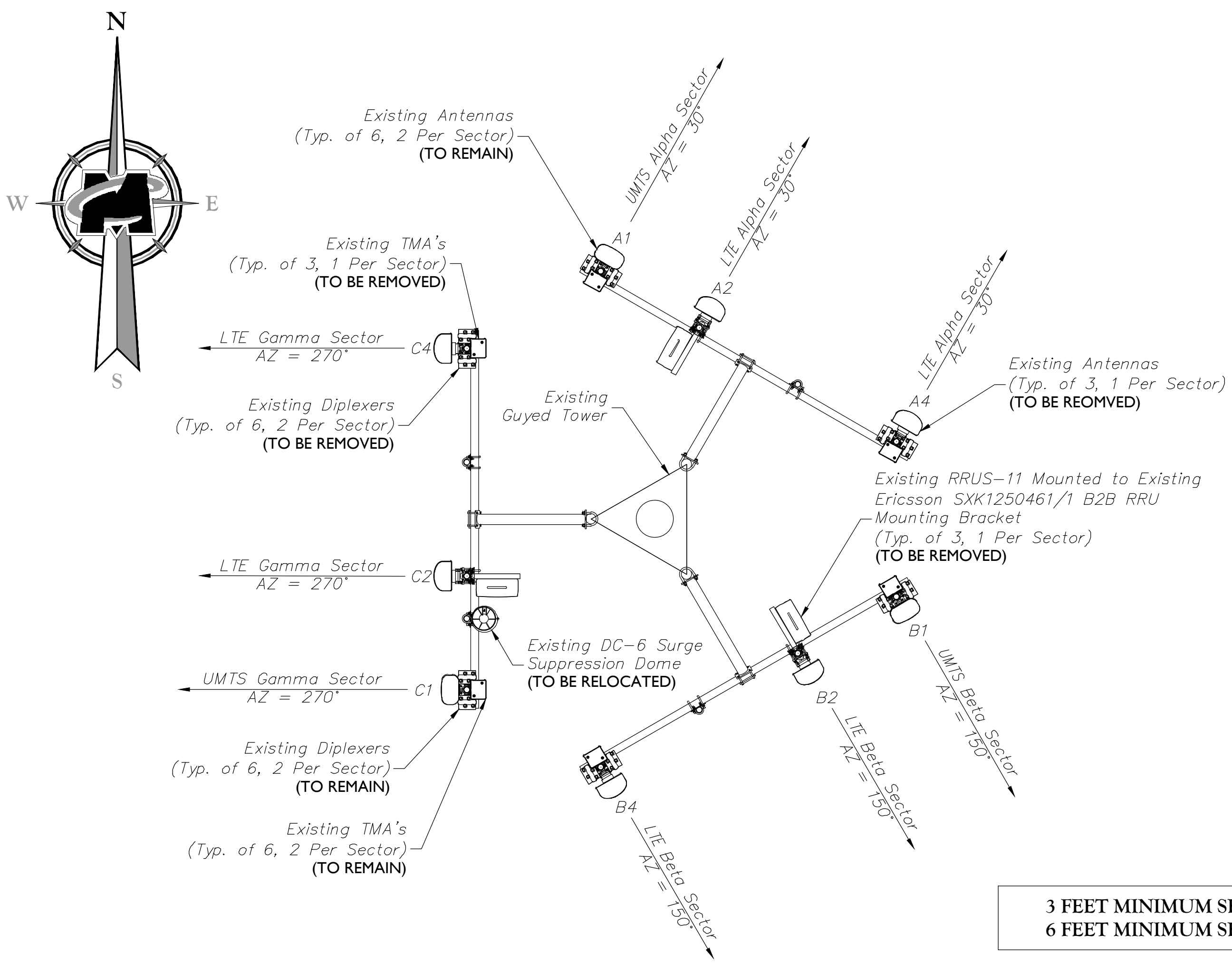
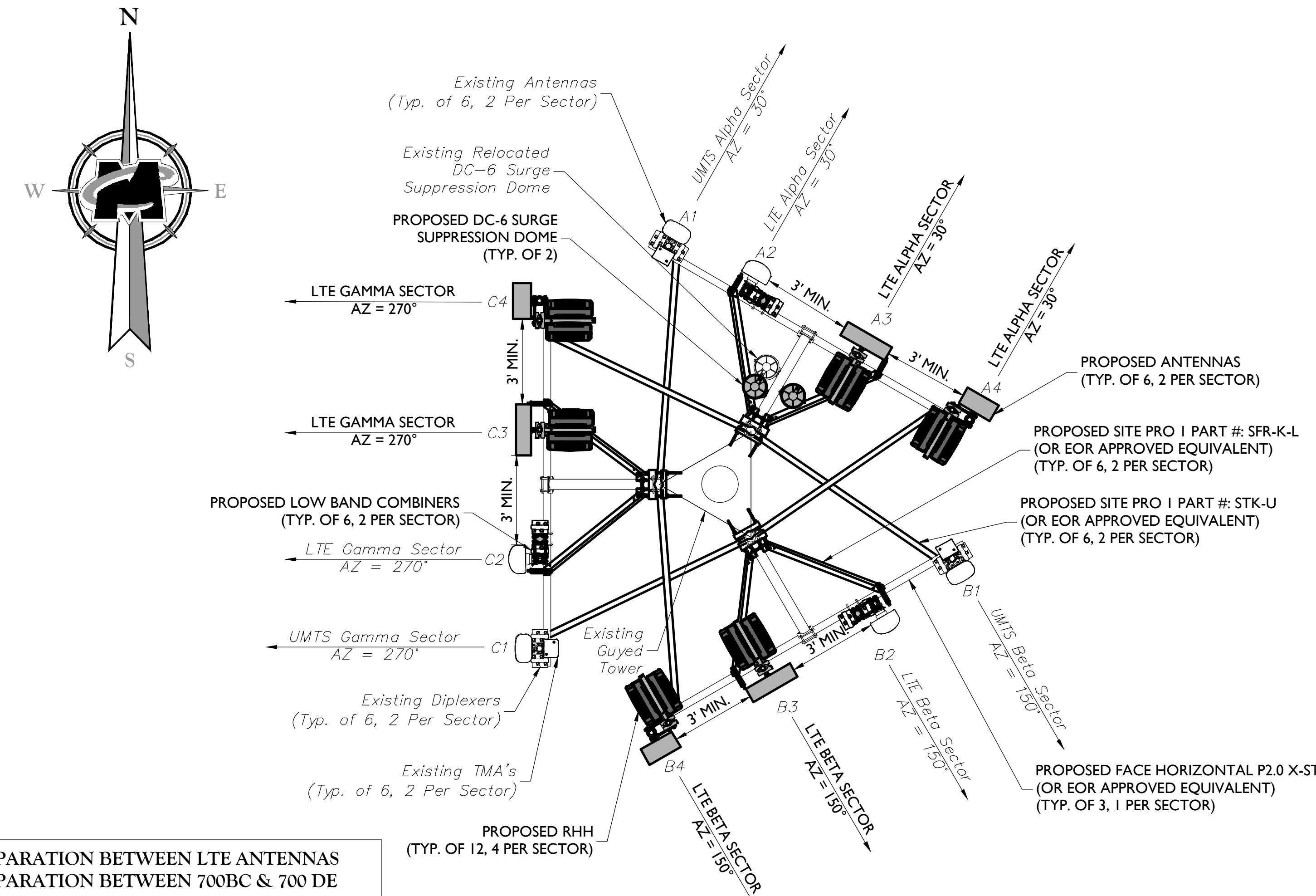
SHEET TITLE :
EQUIPMENT LAYOUT AND ELEVATION VIEW

SHEET NUMBER :
C-2



3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
6 FEET MINIMUM SEPARATION BETWEEN 700BC & 700 DE

EXISTING ANTENNA LAYOUT
NOT TO SCALE



PROPOSED ANTENNA LAYOUT
NOT TO SCALE

ANTENNA SCHEDULE

SECTOR		EXISTING ANTENNA	PROPOSED ANTENNA	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH (DEG.)	ANT. CL. ELEV. (ft.)	REMOTE RADIO/TMA CONFIGURATION	TRANSMISSION CABLE QUANTITY	TRANSMISSION CABLE LENGTH	TRANSMISSION CABLE TYPE	TRANSMISSION CABLE STATUS
Sector 1	1	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	30	245	(2) LGP 21901 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	2	290'	1 5/8" COAX	EXISTING
	2	KMW AM-X-CD-16-65-00T-RET	KMW AM-X-CD-16-65-00T-RET	LTE	EXISTING	72.00	11.80	5.80	60.50	30	245	(1) RRUS-E2 B29 (AT GRADE) (2) APTDC-BDFDM (PROPSOED)	1/2	290'	FIBER/DC	EXISTING
	3	- -	KMW EPBQ-654L8H6-L2	LTE	PROPOSED	73.00	21.00	6.30	82.20	30	245	(1) RRUS B14 4478 (PROPOSED) (1) RRUS-E2 B30 (PROPOSED) (2) DBCT108F1V92-1 (PROPOSED)	1/4	-	FIBER/DC	PROPOSED
	4	POWERWAVE 7770	CCI DMP65R-BU6DA	UMTS	PROPOSED	71.20	20.70	7.70	79.40	30	245	(1) RRUS 4449 B5/B12 (PROPOSED) (1) 8843 B2/B66A (PROPOSED) (1) DBCT108F1V92-1 (EXISTING RELOCATED)	2	290'	1 5/8" COAX	EXISTING
Sector 2	5	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	150	245	(2) LGP 21901 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	2	290'	1 5/8" COAX	EXISTING
	6	KATHREIN 80010764	KATHREIN 80010764	LTE	EXISTING	55.20	11.80	6.00	45.20	150	245	(1) RRUS-E2 B29 (AT GRADE) (2) APTDC-BDFDM (PROPSOED)	-	-	-	-
	7	- -	KMW EPBQ-654L8H6-L2	LTE	PROPOSED	73.00	21.00	6.30	82.20	150	245	(1) RRUS B14 4478 (PROPOSED) (1) RRUS-E2 B30 (PROPOSED)	-	-	-	-
	8	POWERWAVE 7770	CCI DMP65R-BU4DA	UMTS	PROPOSED	48.00	20.70	7.70	67.90	150	245	(1) RRUS 4449 B5/B12 (PROPOSED) (1) 8843 B2/B66A (PROPOSED)	2	290'	1 5/8" COAX	EXISTING
Sector 3	9	POWERWAVE 7770	POWERWAVE 7770	UMTS	EXISTING	55.00	11.00	5.00	35.00	270	245	(2) LGP 21901 DIPLEXER (EXISTING) (2) LGP 21401 TMA (EXISTING)	-	-	-	-
	10	KMW AM-X-CD-16-65-00T-RET	KMW AM-X-CD-16-65-00T-RET	LTE	EXISTING	72.00	11.80	5.80	60.50	270	245	(1) RRUS-E2 B29 (AT GRADE) (2) APTDC-BDFDM (PROPSOED)	-	-	-	-
	11	- -	KMW EPBQ-654L8H6-L2	LTE	PROPOSED	73.00	21.00	6.30	82.20	270	245	(1) RRUS B14 4478 (PROPOSED) (1) RRUS-E2 B30 (PROPOSED)	-	-	-	-
	12	POWERWAVE 7770	CCI DMP65R-BU6DA	UMTS	PROPOSED	71.20	20.70	7.70	79.40	270	245	(1) RRUS 4449 B5/B12 (PROPOSED) (1) 8843 B2/B66A (PROPOSED)	2	290'	1 5/8" COAX	EXISTING

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SCALE : AS SHOWN
JOB NUMBER : 18946009A

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4	12/06/19	REVISED PER COMMENTS	CDH	NO
3	10/17/18	REVISED PER COMMENTS	AJC	RA
2	10/15/18	STRUCTURAL REVISION	AJC	RA
1	07/12/18	REVISED PER COMMENTS	AJC	RA
0	07/09/18	ISSUED FOR REVIEW	AJC	RA

PETROS TSOUKALAS
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FA# 10071282
SITE# CTL01253

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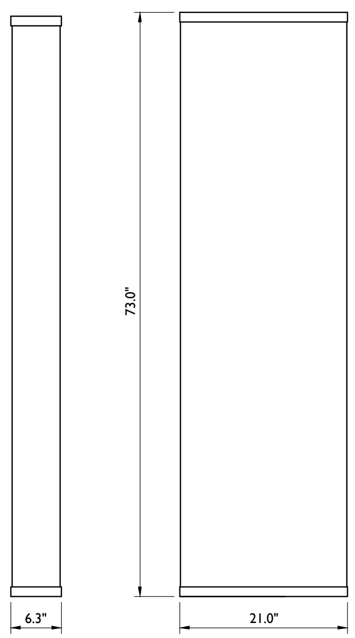
Phone: .856.797.0412
Fax: .856.722.1120
email: solutions@maserconsulting.com

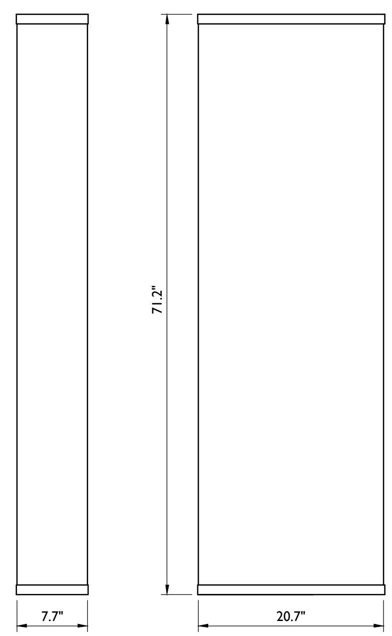
SHEET TITLE : ANTENNA LAYOUTS AND ANTENNA SCHEDULE

SHEET NUMBER : C-3



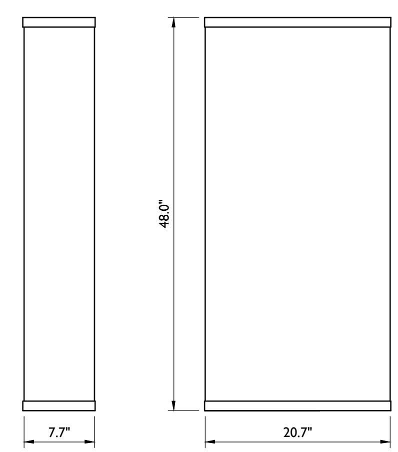
WEIGHT = 72.8 LBS

EPBQ-654L8H6-L2



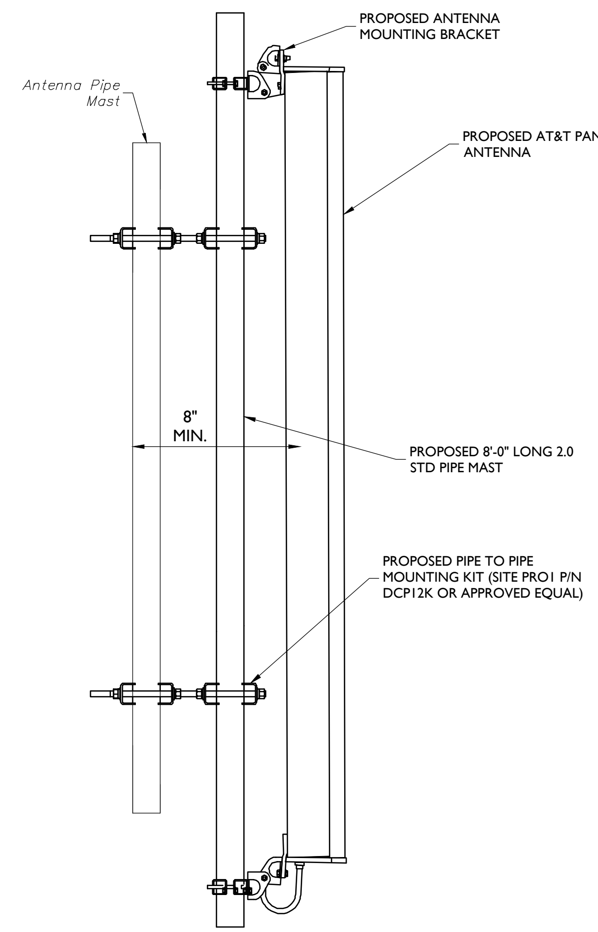
WEIGHT = 53.0 LBS

CCI DMP65R-BU6DA



WEIGHT = 67.9 LBS

CCI DMP65R-BU4DA

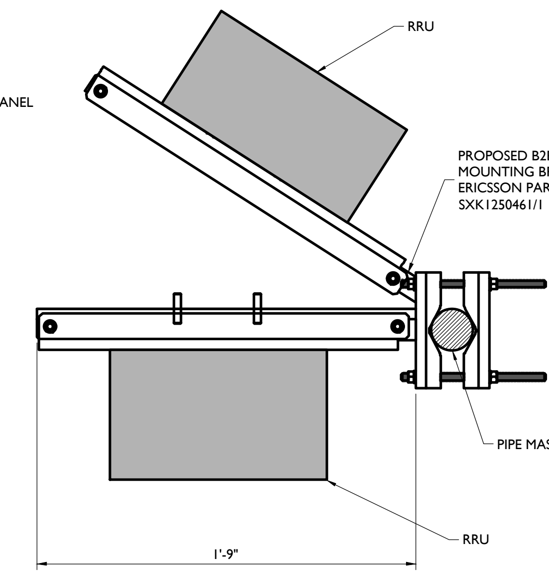


ANTENNA MOUNTING DETAIL

NOT TO SCALE

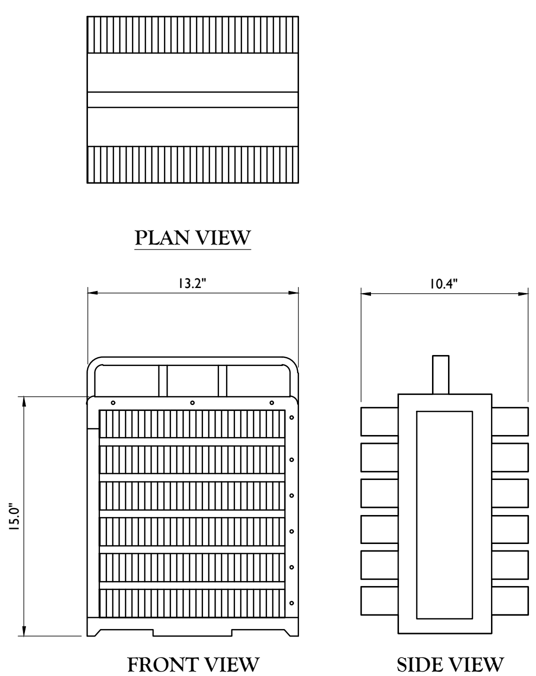
NOTE:

RRU's MOUNTED TO ANTENNA PIPE MASTS MUST MAINTAIN A MINIMUM DISTANCE OF 8" FROM BACK OF EXISTING/PROPOSED PANEL ANTENNA



RRU MOUNTING DETAIL

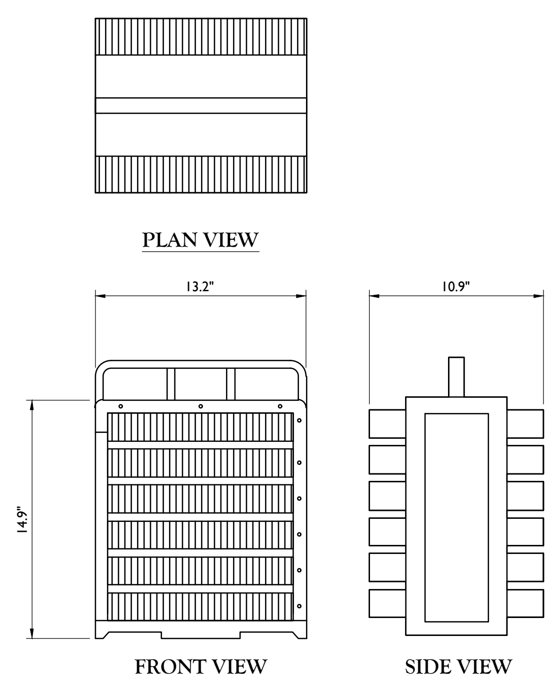
NOT TO SCALE



WEIGHT = 73.0 LBS (INCLUDES SUNSHIELD AND DOUBLE FILTER CHASSIS)

ERICSSON DUAL BAND RRU4449 B5+B12 DETAIL

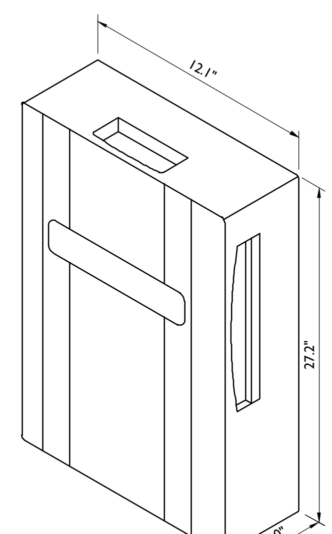
NOT TO SCALE



WEIGHT = 72.0 LBS (INCLUDES SUNSHIELD AND DOUBLE FILTER CHASSIS)

ERICSSON DUAL BAND RRU-8843 B2+B66A DETAIL

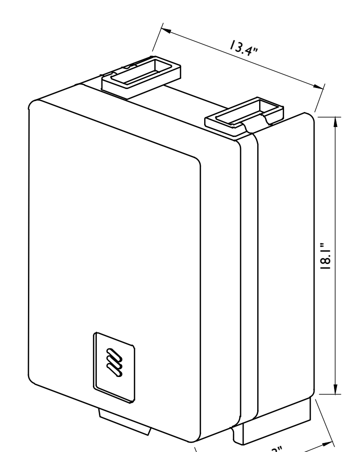
NOT TO SCALE



RRUS-32 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0" (INCLUDES SUNSHIELD)
WEIGHT: 53 LBS

RRUS-32 DETAIL

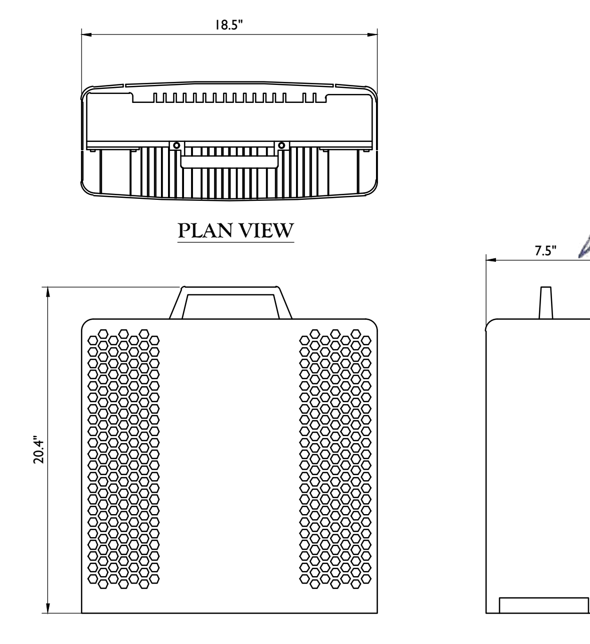
NOT TO SCALE



DIMENSIONS (H X W X D): 18.1"H X 13.4"W X 8.3"D (INCLUDES SUNSHIELD)
WEIGHT: 59.4 LBS

RRUS-4478 B14 DETAIL

NOT TO SCALE



WEIGHT = <60 LBS WITHOUT MOUNTING HARDWARE

ERICSSON RRUS E2 B29 DETAIL

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SCALE :	JOB NUMBER :
AS SHOWN	18946009A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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4	12/06/19	REVISED PER COMMENTS	CDH	NO
3	10/17/18	REVISED PER COMMENTS	AJC	RA
2	10/15/18	STRUCTURAL REVISION	AJC	RA
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PETROS TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577

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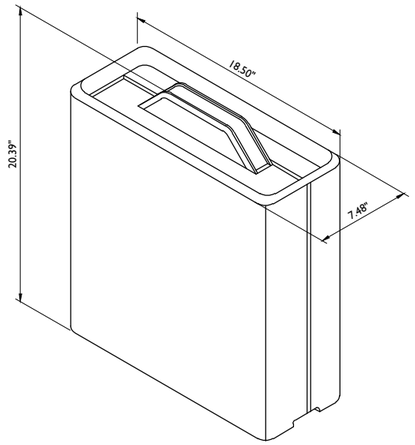
Fax: .856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE :
CONSTRUCTION DETAILS

SHEET NUMBER :
A-1

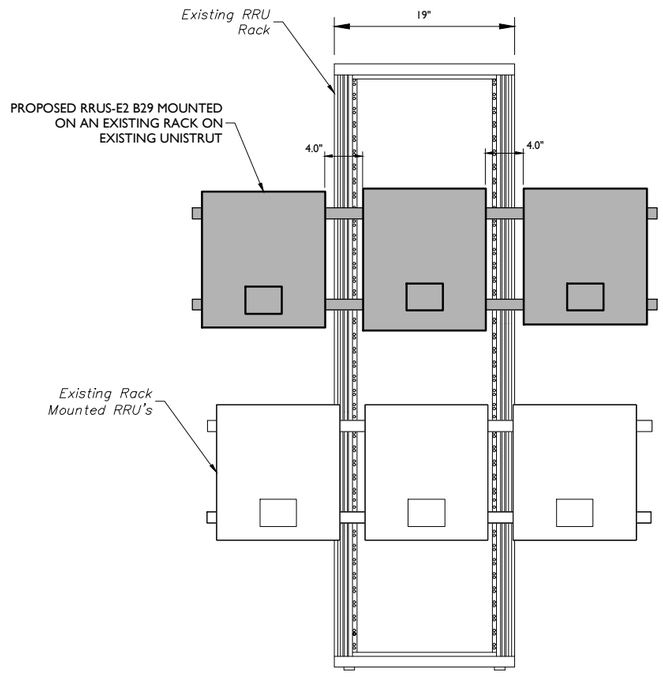


RRUS-E2 B29 DIMENSIONS (H X W X D): 20.39" X 18.5" X 7.48"
(INCLUDES HANDLES)

WEIGHT: 53 LBS

RRUS E2 B29 DETAIL

NOT TO SCALE

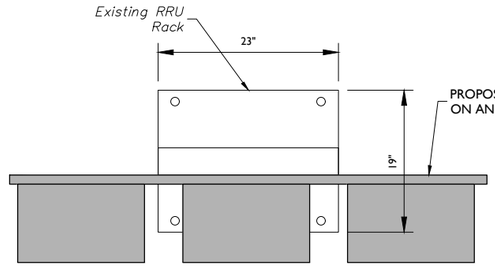


NOTE:

MOUNT RRU'S TO UNISTRUT WITH 3/8"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS THROUGH EQUIPMENT MOUNTING HOLES. SUBCONTRACTOR SHALL SUPPLY.

RRU RACK MOUNTED DETAIL

NOT TO SCALE



PLAN VIEW

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1	07/12/18	REVISED PER COMMENTS	AJC	RA
0	07/09/18		AJC	RA

STATE OF CONNECTICUT · PETROS TSOUKALAS · LICENSED PROFESSIONAL ENGINEER

PETROS G. TSOUKALAS
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SHEET TITLE :
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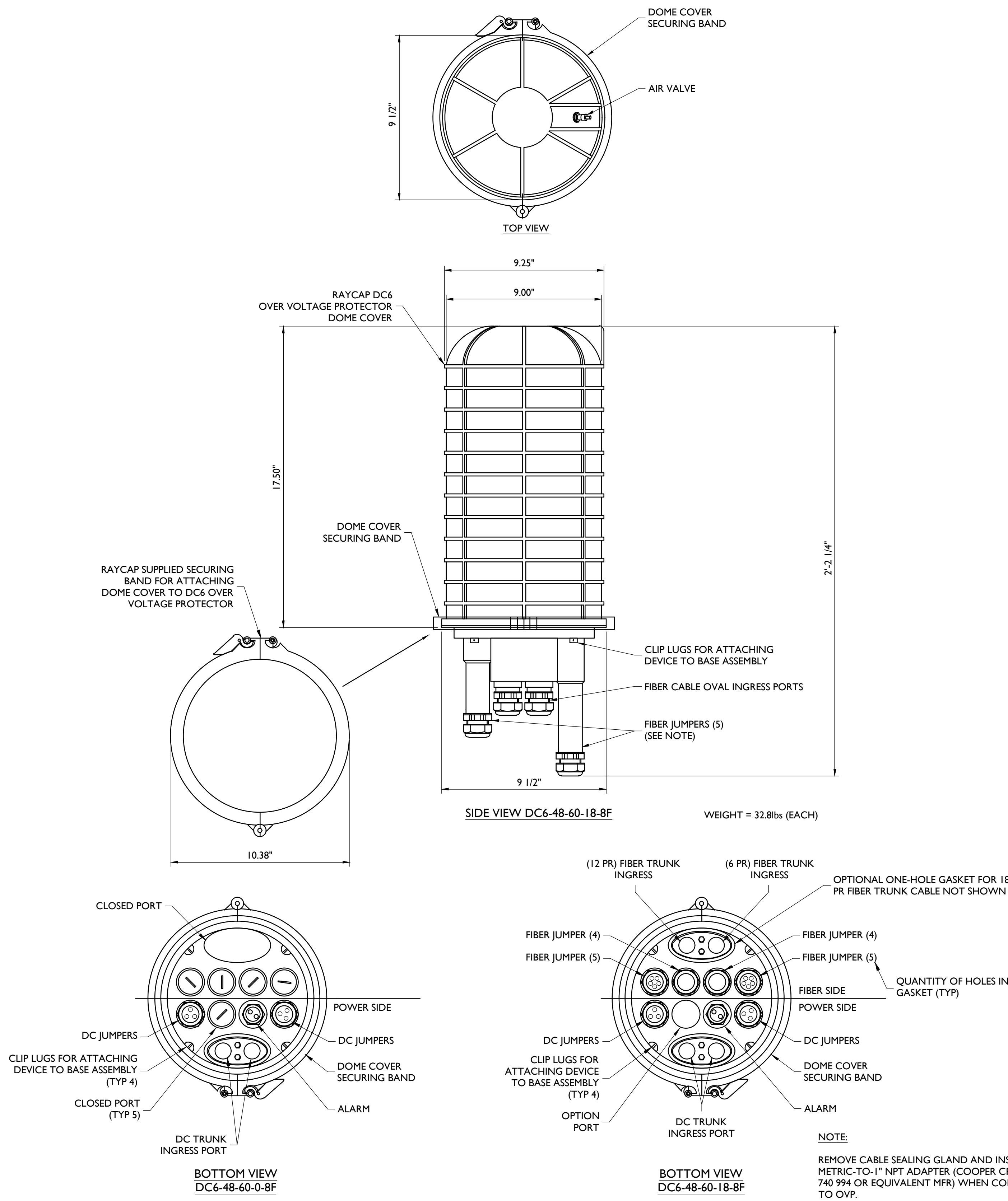
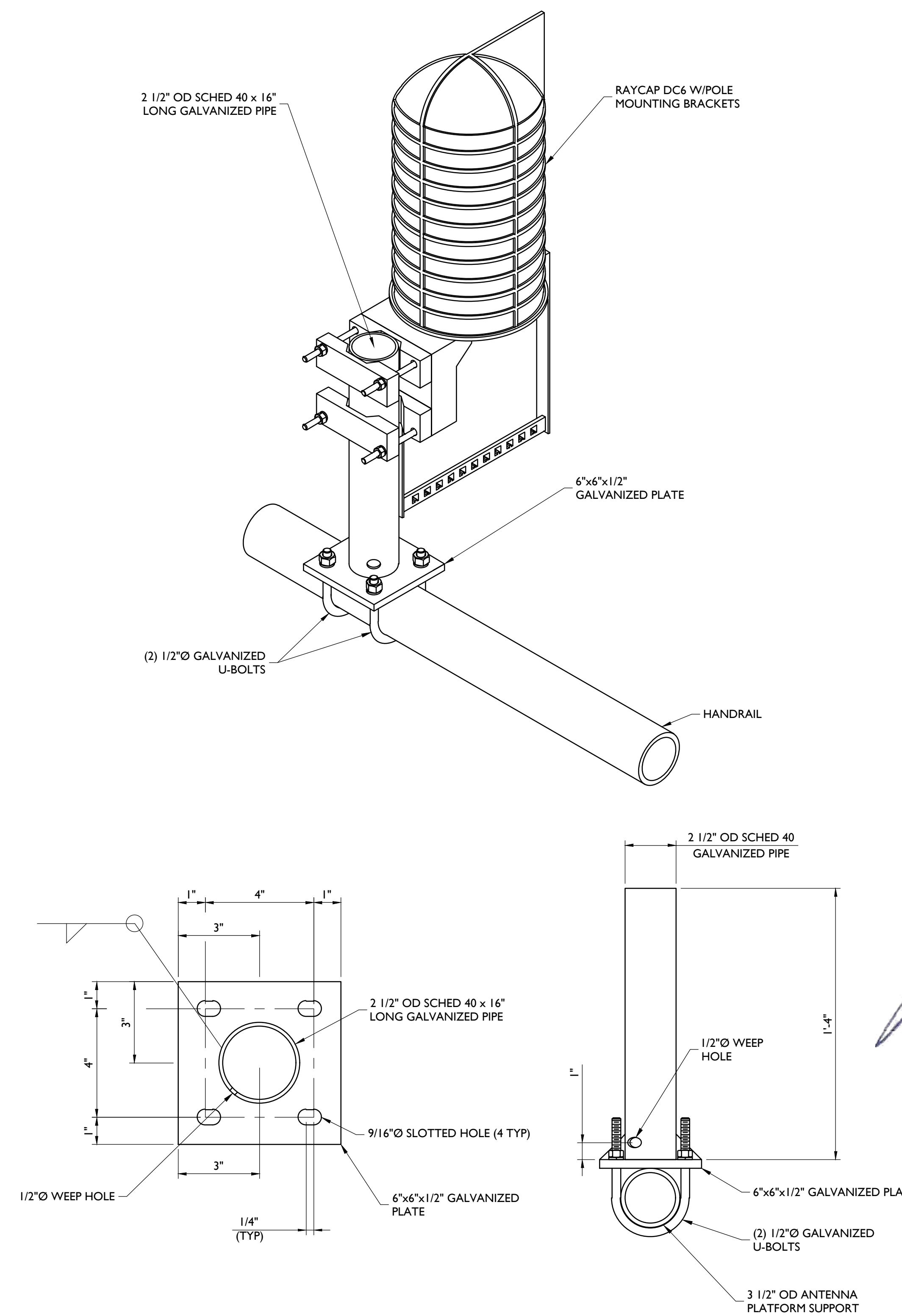


NOTE:

REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

DC6 SURGE SUPPRESSION DOME DETAIL

NOT TO SCALE



DC6 SURGE SUPPRESSION DOME MOUNTING DETAIL (PIPE)

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3	10/17/18	REVISED PER COMMENTS	AJC	RA
2	10/15/18	STRUCTURAL REVISION	AJC	RA
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0	07/09/18	ISSUED FOR REVIEW	AJC	RA

STATE OF CONNECTICUT
PETROS TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32597
LICENSED PROFESSIONAL ENGINEER

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SHEET TITLE :
CONSTRUCTION DETAILS

SHEET NUMBER :
A-3

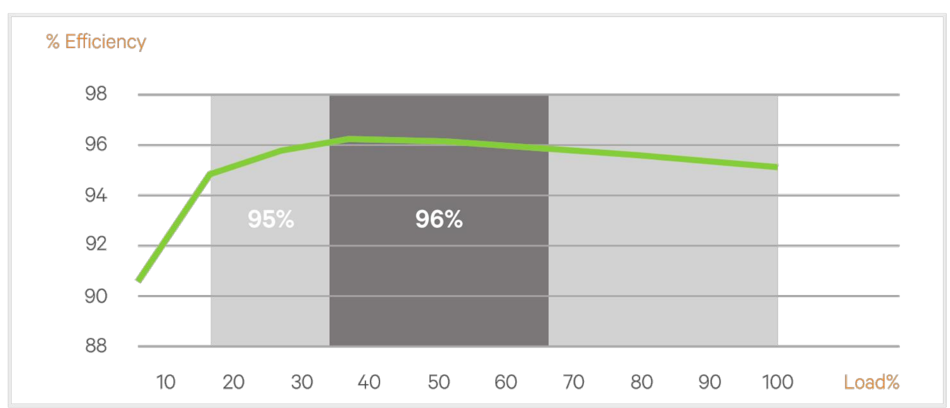
Technical Specifications (System)

SYSTEM FEATURES	
System Voltage, Nominal	-48 VDC (-42.0 VDC to -58.0 VDC range)
Output Voltage, Secondary	+24 VDC (+24.0 VDC to +28.0 VDC range)
Input Voltage	Single Phase: 208/240/277 VAC (277 VAC for 3500 W rectifiers only) Three Phase: 208 VAC or 277/480 VAC (277/480 VAC for 3500 W rectifiers only)
Control	Microprocessor (NCU)
RATED OUTPUT CAPACITY	
Bay, Rectifier/ Converter	2500 amps (48VDC) and 520 amps (24VDC)
Bay, Distribution	2000 amps (48 VDC) and 520 amps (24 VDC)
Rectifier	3500 W (R48-3500e3 or R48-3500) or 2000 W (R48-2000e3)
Shelf	438 amps (3500W rectifiers) or 250 amps (2000W rectifiers)
Distribution Panel	600 amps
PHYSICAL CHARACTERISTICS	
Framework Type	Rail-mount (can be mounted in an enclosure or relay rack)
Mounting Width	23 inches
Mounting Depth	20 inches, 9 inch front projection
Access	Front access for installation, operation and maintenance

ENVIRONMENTAL	
Operating Temperature	-40 °F to 104 °F (-40 °C to 40 °C) continuous operation
Storage	-40 °F to 185 °F (-40 °C to 85 °C)
Humidity	0% to 95% relative humidity, non-condensing
Ventilation	Rectifiers and converters are fan-cooled front to rear
EMI/RFI Suppression	Conforms to FCC rules Part 15, Subpart B, Class B and EN55022 Class B, radiated and conducted
Safety Compliance	UL Listed 1801, cUL, NEBS Level 3

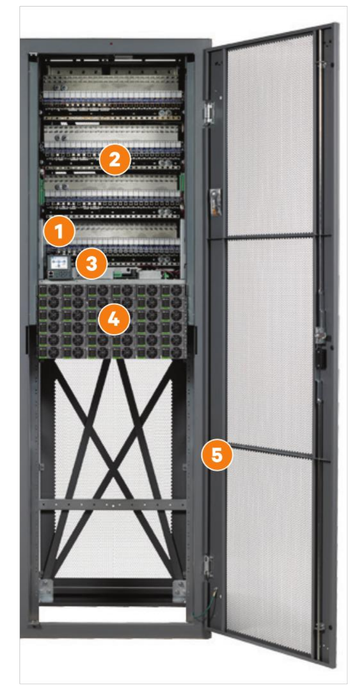
Ordering Information

PART NUMBER	DESCRIPTION
582127000	NetSure™ 7100 DC power system
1M830DNA	NCU controller
1R483500E3	3500 W eSure rectifier, 1RU height
588705400	Power shelf for 1RU 3500W rectifiers
1R483500E	3500 W eSure™ rectifier, 3RU height
588705000	Power shelf for 3 RU 3500 W rectifiers
1R482000E3	2000 W eSure rectifier, 1RU height
1C48241500	1500 W -48 VDC to +24 VDC converter
588705300	Power shelf for 1 RU (2000 W) rectifiers and converters



R48-2000e3 Efficiency Curve at 250 VAC Nominal

SYSTEM ELEMENTS



-48 VDC NetSure 7100

1. AC Connection Panel (both sides)
2. DC Distribution Cabinet
3. NetSure Control Unit
4. Rectifiers/Converters
5. Relay Rack or Enclosure

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STATE OF CONNECTICUT
PETROS TSOUKALAS
PETROS E. TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577
LICENSED PROFESSIONAL ENGINEER

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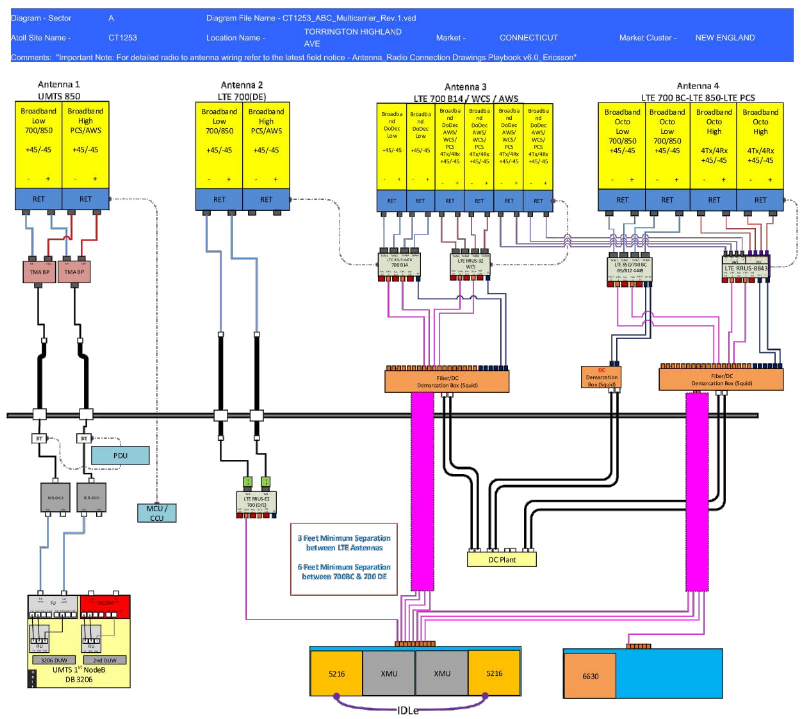
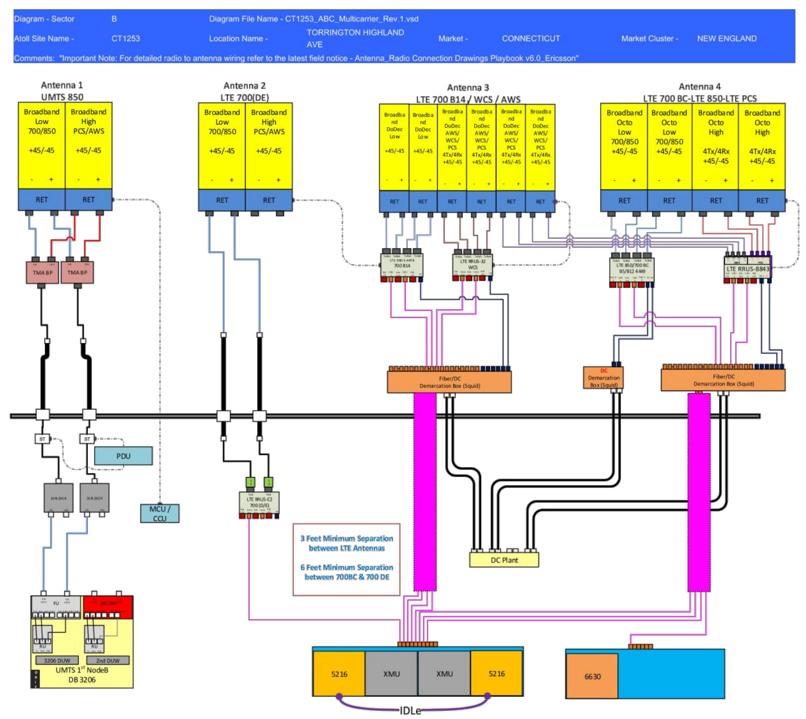
email: solutions@maserconsulting.com

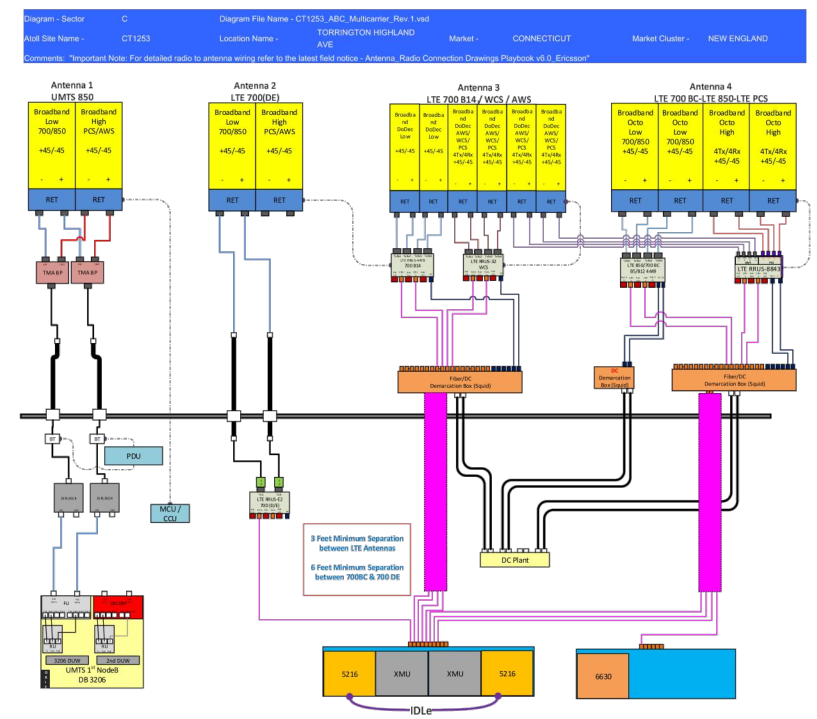
SHEET TITLE :
CONSTRUCTION DETAILS

SHEET NUMBER :
A-4





BETA SECTOR



ALPHA SECTOR

GAMMA SECTOR

BASED ON: RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CT1253_2018-LTE-Multi-Carrier_LTE_mh705r_2051A0GQJM_10071282_82710_08-27-2019_Final-Approved_v3.00" LAST REVISED 11/14/19

RF PLUMBING DIAGRAMS

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4	12/06/19	REVISED PER COMMENTS	CDH	NO
3	10/17/18	REVISED PER COMMENTS	AJC	RA
2	10/15/18	STRUCTURAL REVISION	AJC	RA
1	07/12/18	REVISED PER COMMENTS	AJC	RA
0	07/09/18	ISSUED FOR REVIEW	AJC	RA

STATE OF CONNECTICUT
PETROS TSOUKALAS
LICENSED PROFESSIONAL ENGINEER
PETROS TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: 32577

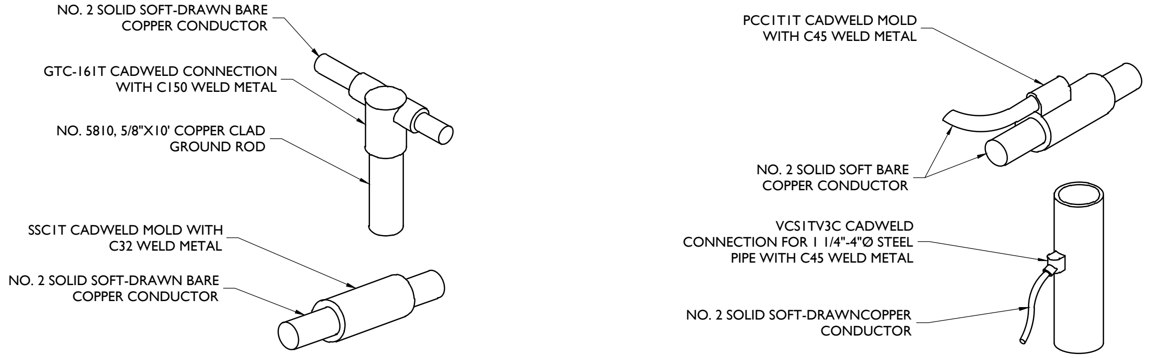
SITE NAME:
TORRINGTON HIGHLAND AVENUE
FA# 10071282
SITE# CTL01253

1210 HIGHLAND AVENUE
TORRINGTON, CT 06790
LITCHFIELD COUNTY

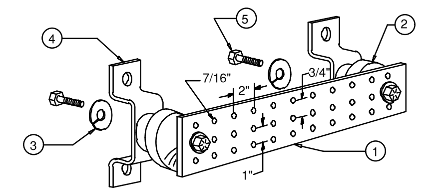
MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: .856.797.0412
Fax: .856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE :
RF PLUMBING DIAGRAM

SHEET NUMBER :
A-5



CADWELD DETAILS
NOT TO SCALE



LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

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

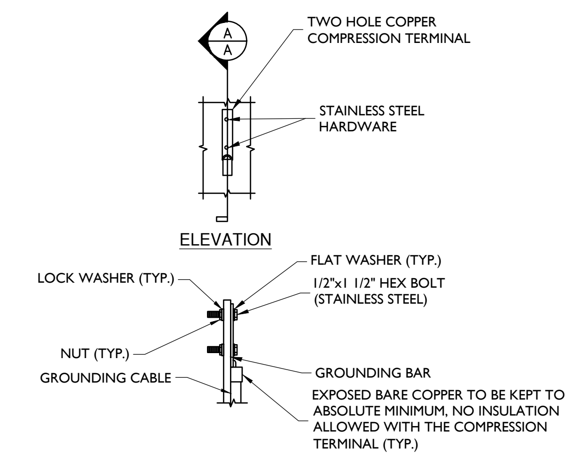
SECTION "P" - SURGE PRODUCERS

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

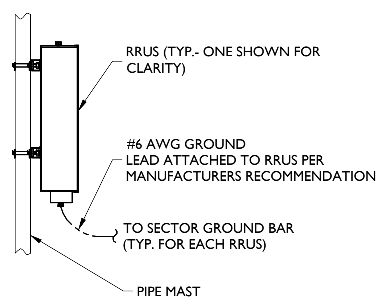
SECTION "A" - SURGE ABSORBERS

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

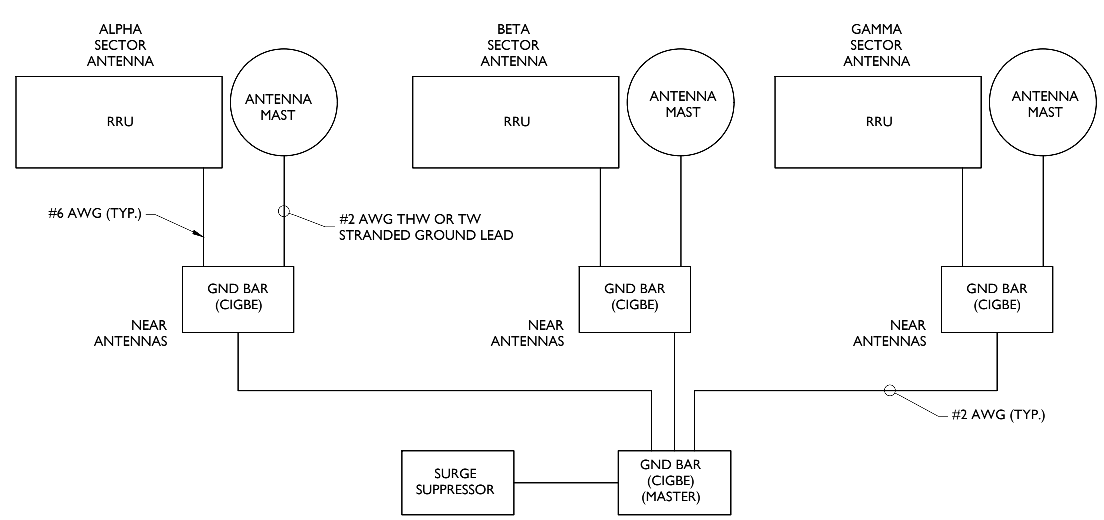
MASTER GROUND BAR
NOT TO SCALE



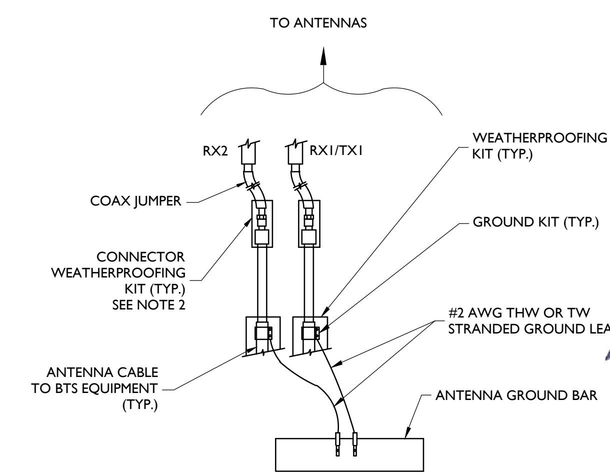
TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



RRU GROUNDING
NOT TO SCALE



SCHEMATIC DIAGRAM GROUNDING SYSTEM

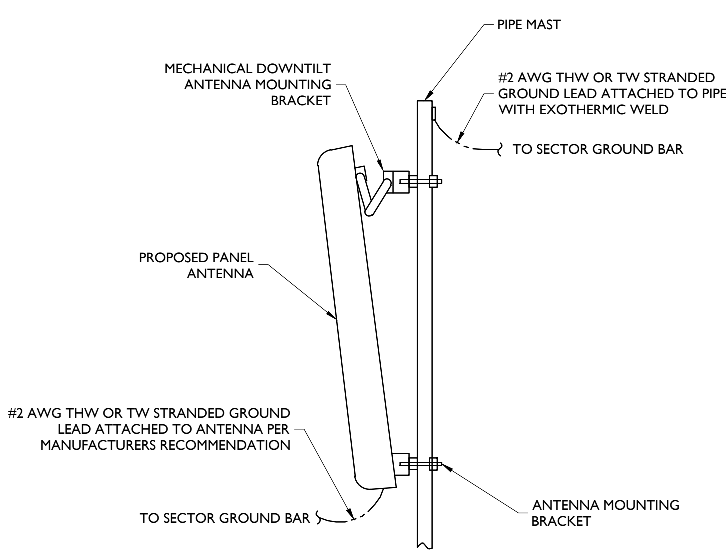


NOTES:

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

2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE



ANTENNA GROUNDING

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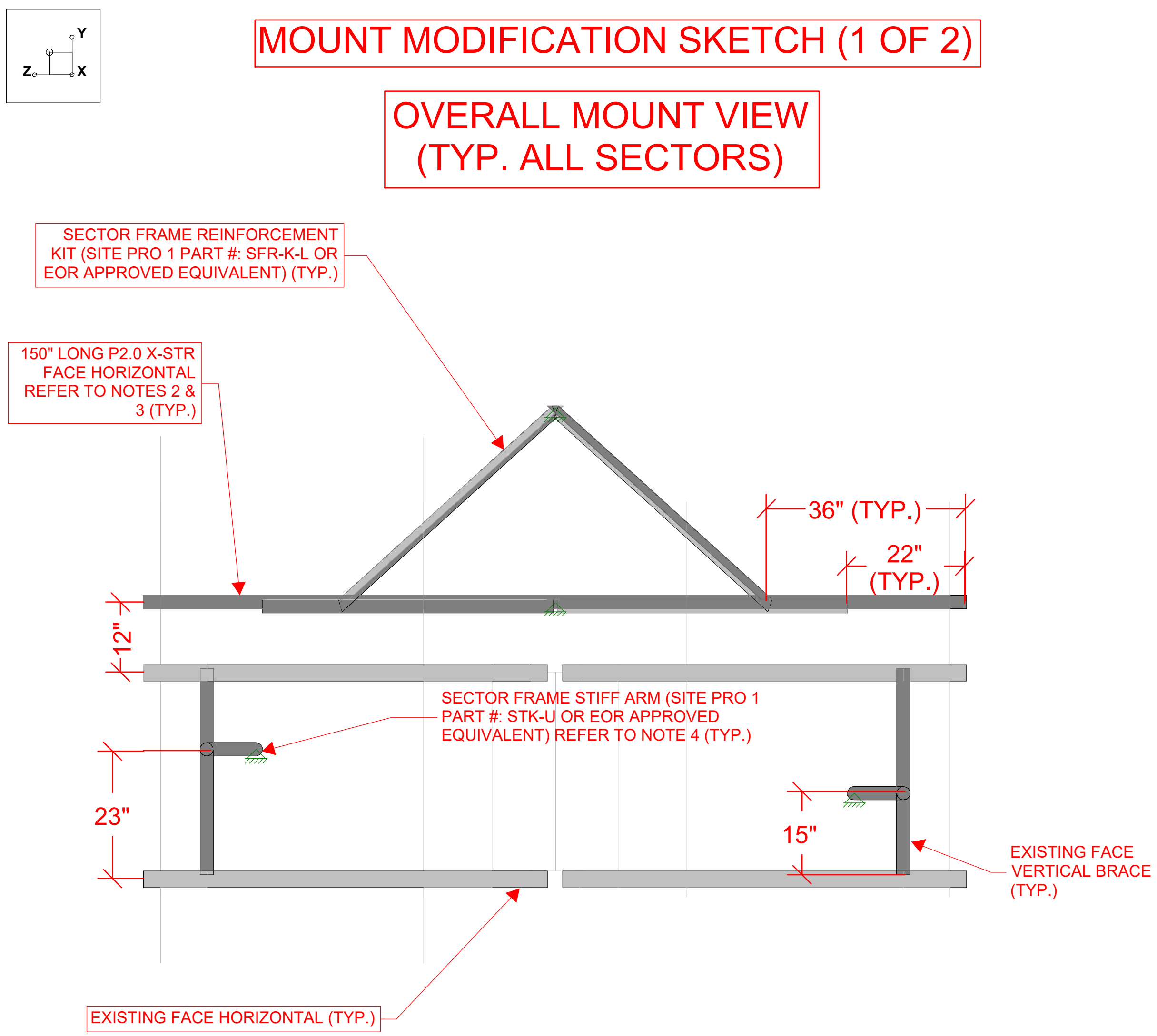
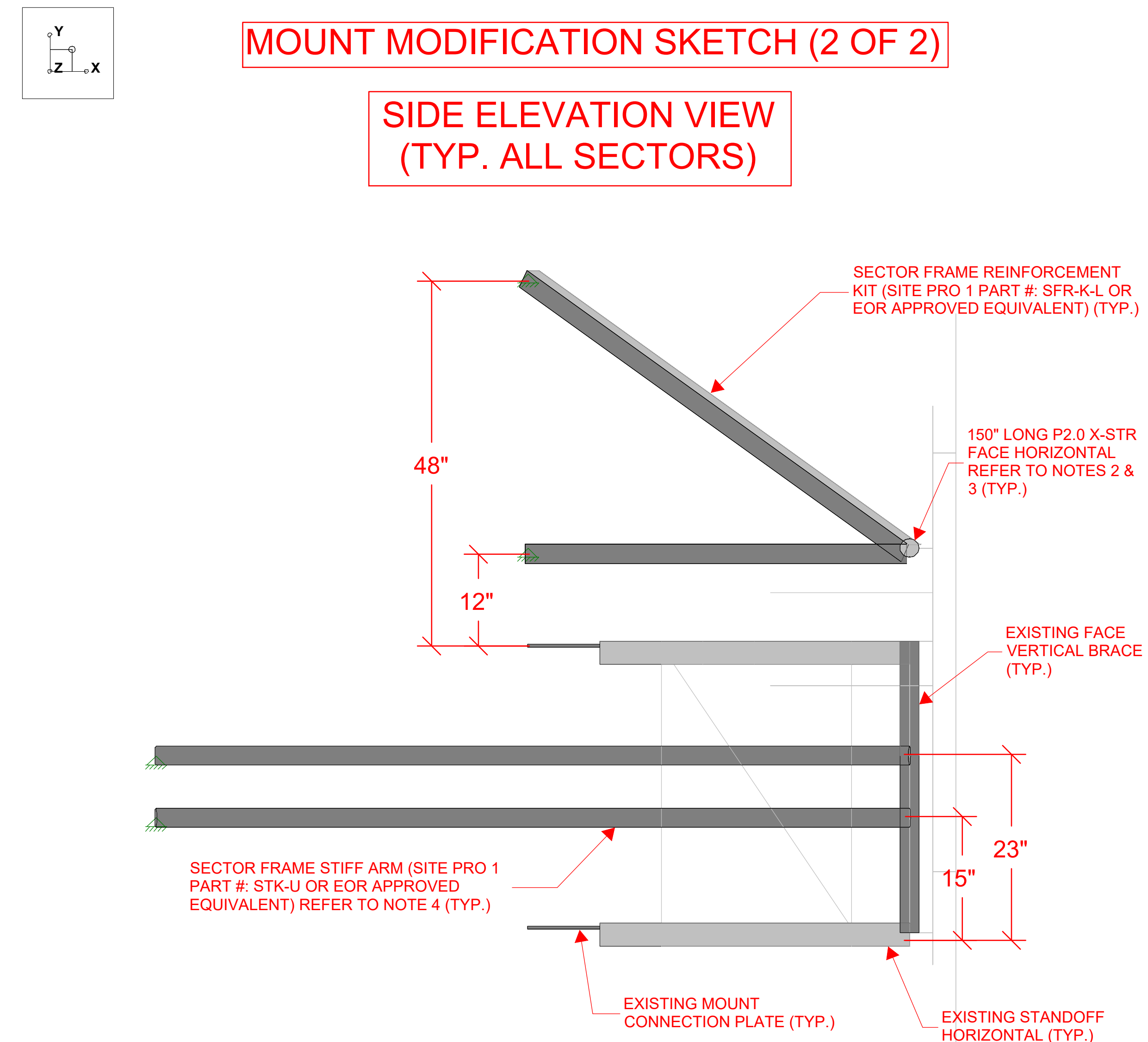
SHEET TITLE : GROUNDING DETAILS

SHEET NUMBER : G-1





NOTES:

1) MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2) EXIST. RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE.
3) CONNECT NEW PIPE HORIZONTAL TO EXISTING MOUNT PIPES WITH CROSSOVER PLATES (SITE PRO 1 PART #: SCX1-K OR EOR APPROVED EQUIVALENT).
4) CONNECT OTHER END OF TIEBACK TO ADJACENT TOWER LEG.

MOUNT MODIFICATION DETAIL-1

NOT TO SCALE

NOTES:

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MOUNT MODIFICATION DETAIL-2

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SITE# CTL01253

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SHEET TITLE :
MODIFICATION DETAILS

SHEET NUMBER :
S-1