



Filed by:  
Kri Pelletier, Property Specialist - SBA Communications  
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February 6, 2017

Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

**Notice of Exempt Modification**  
**162 Birdseye Rd., Shelton, CT 06484**  
**41 19 32.8 N**  
**-73 8 55.3 W**  
**AT&T #: 10092045 – CT5441**

Dear Ms. Bachman:

AT&T currently maintains nine (6) antennas at the 108-foot level of the existing 118-foot Monopole Tower at 162 Birdseye Rd. The tower is owned by SBA 2012 TC Assets, LLC. The property is owned by Rudolph Hudak. AT&T now intends to replace (3) existing antennas at the 108' level of the tower. AT&T's full scope of proposed work is as follows:

Remove:

- None

Remove and Replace:

- Remove (3) Powerwave – P65-16-XLH-RR Panel Antennas and replace with (3) CCI – HPA-65R-BUU-H6 Panel Antennas
- Remove (3) Ericsson – RRUS 11 – RRUs and replace with (3) Ericsson – RRUS-32 B2 - RRUs

Install:

- (3) Kathrein – 860 10025 RET
- (1) Commscope P/N MT-195-14 Rail Kit

Existing Equipment to Remain (Entitlements):

- (3) Kathrein -- 800-10121 Panel Antennas
- (6) Powerwave -- LGP21401 TMAs
- (3) Ericsson – RRUS 11 – RRUs
- (3) REC/RET



- (1) Raycap – DC6-48-60-18-8F – SP
- (6) 1-1/4 inch Lines
- (1) ½ inch RET
- (1) 3/8 inch Fiber
- (2) 5/8 inch DC

This facility was approved prior to CT Siting Council's jurisdiction. While the original Decision is not on record with the City, records show that approval was given for a 120' monopole to be built under Building Permit #1652 issued October 26, 2000. The above modification complies with all known conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Mark A. Lauretti, Mayor of the City of Shelton, Rick Schultz, P&Z Administrator for the City of Shelton, and the property owner, Rudolph Hudak. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

Sincerely,

Kri Pelletier  
Property Specialist  
SBA COMMUNICATIONS CORPORATION  
134 Flanders Rd., Suite 125  
Westborough, MA 01581

508.251.0720 x3804 + T  
508.366.2610 + F  
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Attachments



cc: Mark A. Lauretti, Mayor of the City of Shelton—as elected official  
*City of Shelton, 54 Hill Street, Shelton, CT 06484*

Rick Schultz, P&Z Administrator— as representative for respective planning and zoning department  
*City of Shelton, 54 Hill Street – Third Floor, Shelton, CT 06484*

Rudolph Hudak— as property owner  
*162 Birdseye Rd. Shelton CT 06484*





**POWER DENSITY**

**AT&T Site Inventory and Power Data**

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector A Composite MPE%							<b>4.21</b>
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna B2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector B Composite MPE%							<b>4.21</b>
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector C Composite MPE%							<b>4.21</b>

*Table 3: AT&T Emissions*

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	<b>4.21 %</b>
Sprint	0.05 %
Nextel	0.43 %
Verizon Wireless	3.98 %
<b>Site Total MPE %:</b>	<b>8.67 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	4.21 %
AT&T Sector B Total:	4.21 %
AT&T Sector C Total:	4.21 %
<hr/>	
<b>Site Total:</b>	<b>8.67 %</b>

*Table 5: Site MPE Summary*



**Property Information**

Owner	HUDAK RUDOLPH&KAREN E MCGUIRE
Address	162 BIRDSEYE RD
Mailing Address	162 BIRDSEYE RD SHELTON , CT 06484
Land Use	- RESIDENTIAL
Land Class	1-3

Census Tract	1106
Neighborhood	
Zoning	R-1
Acreage	2.97
Utilities	ELECTRIC
Lot Setting/ Desc	/ EVEN

**Photo**



**PARCEL VALUATIONS** (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings		
Outbuildings		
Improvements		
Extras		
Land		
<b>Total</b>	<b>362300</b>	<b>253610</b>
Previous		

**Construction Details**

Year Built	1747
Stories	2.5
Building Style	COLONIAL
Building Use	AVERAGE
Building Condition	AVERAGE
Total Rooms	8
Bedrooms	3
Full Bathrooms	2
Half Bathrooms	
Bath Style	SEMI-MODERN
Kitchen Style	
Roof Style	
Roof Cover	

**EXTERIOR WALLS:**

Primary	
Secondary	

**INTERIOR WALLS:**

Primary	
Secondary	

**FLOORS:**

Primary	
Secondary	

**HEATING/AC:**

Heating Type	
Heating Fuel	OIL
AC Type	

**BUILDING AREA:**

Effective Building Area	
Gross Building Area	
Total Living Area	2075

**SALES HISTORY:**

Sale Date	20060206
Sale Price	0
Book/ Page	2651/94



**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

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## Structural Analysis Report

**Existing 118 ft SUMMIT Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT46133-A**

**Customer Site Name: Shelton-north**

**Carrier Name: AT&T**

**Carrier Site ID / Name: FA# 10092045 USID# CT5441 / Shelton-Birdseye Road**

**Site Location: 162 Birdseye Rd**

**Shelton, Connecticut**

**Fairfield County**

**Latitude: 41.325777**

**Longitude: -73.148694**

### Analysis Result:

**Max Structural Usage: 95.9% [Pass]**

**Max Foundation Usage: 81.0% [Pass]**

**Report Prepared by: Matthew Baker**



## Introduction

The purpose of this report is to summarize the analysis results on the 118 ft SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Paul J. Ford and Company, Job # 29200-1700 dated 11/15/2000.
<b>Foundation Drawing</b>	Paul J. Ford and Company, Job # 29200-1700 dated 11/15/2000.
<b>Geotechnical Report</b>	Dr. Clarence Welti, P.E., P.C. Project # CT-0921 dated 06/05/2000.
<b>Modification Drawings</b>	Vertocal Solutions, Project #130664.01, rev.1 As-Builts, dated 07/10/13.

## 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 **TESPoles**, 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.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA/EIA 222-G / 2016 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_5 = 0.199$ , $S_1 = 0.064$



## 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	118.0	3	RFS - APXVSP18-C-A20 - Panel	Platform w/ Hand Rails	(4) 1-1/4" Hybrid	Sprint
2		3	RFS - APXVC-120 - Panel			
3		4	RFS - ACU-A20-N – RET			
4		3	Ericsson – RRU (26.1"x18.6"x6.7") – RRU			
5		3	Alcatel Lucent - TD-RRH8x20-25 – RRH			
6		3	Alcatel Lucent - 800 MHz – RRH			
7		3	Alcatel Lucent - External Notch Filters			
-	108.0	3	Kathrein - 800-10121 - Panel	Low Profile Platform	(6) 1 1/4" (1) 1/2" (1) 3/8" (2) 5/8"	AT&T
-		3	Powerwave - P65-16-XLH-RR - Panel			
-		6	Powerwave - LGP21401 – TMA			
-		6	Ericsson - RRUS 11 - RRU			
-		3	REC/RET			
-		1	Raycap - DC6-48-60-18-8F – SA			
15	101.0	3	Alcatel Lucent - RRH2x60-AWS - RRH	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid	Verizon
16		3	Alcatel Lucent - RRH2X60-700 - RRH			
17		1	RFS - DB-T1-6Z-8AB-OZ – Distribution Box			
18	99.0	6	Andrew - SBNHH-1D65A - Panel	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid	Verizon
19		3	Andrew - LNX-6514DS-VTM - Panel			
20		3	Antel - BXA-171063-12BF - Panel			

## 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
8	108.0	3	Kathrein - 800-10121 - Panel	Platform w/ Handrail & V-Brace	(6) 1 1/4" (1) 1/2" RET (1) 3/8" Fiber (2) 5/8" DC	AT&T
9		3	CCI - HPA-65R-BUU-H6 - Panel			
10		6	Powerwave - LGP21401 - TMA			
11		6	Kathrein - 860 10025 - RET			
12		3	Ericsson - RRUS-11 - RRU			
13		3	Ericsson - RRUS-32 B2 - RRU			
14		1	Raycap - DC6-48-60-18-8F - SP			

All transmission lines are considered running inside of the pole shafts.



## **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:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>95.9%</b>	<b>82.6%</b>	<b>61.5%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2482.4	28.2	44.7

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 1.5566 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Note:

The structure capacity usage percentage (95.9%) on the cover sheet reflects the proposed antennas plus the new mount. The capacity usage considering the existing mount plus the proposed antennas is 87.3%. The new mount causes an additional 8.6% of overstress.

## 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 analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. 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.
7. 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.
8. 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.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

# Usage Diagram - Max Ratio 95.89% at 80.8ft

**Structure:** CT46133-A-SBA  
**Site Name:** Shelton-north  
**Height:** 118.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Gh:** 1.1

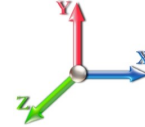
1/26/2017



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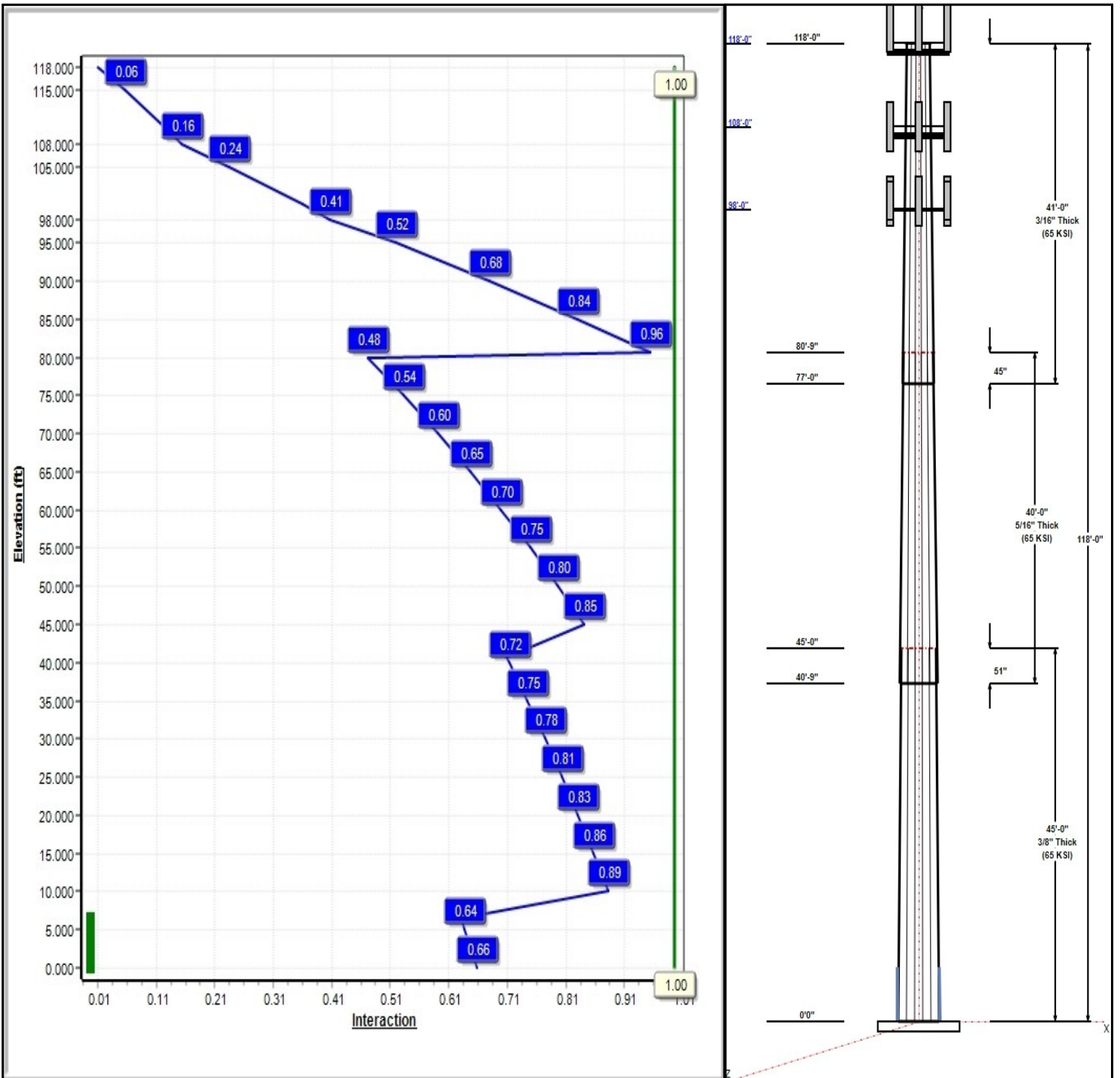
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 97 mph Wind**



**Iterations:** 23

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## Structure: CT46133-A-SBA

**Type:** Tapered  
**Site Name:** Shelton-north  
**Height:** 118.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 12 Sided  
**Taper:** 0.16500

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### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	33.05	40.47	0.375		0.16500	65
2	40.00	27.77	34.37	0.313	Slip	0.16500	65
3	41.00	22.00	28.77	0.188	Slip	0.16500	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
118.00	120.00	3	APXVC-120	Sprint
118.00	120.00	3	800 MHz RRH	Sprint
118.00	120.00	3	TD-RRH8x20-25	Sprint
118.00	120.00	4	ACU-A20-N	Sprint
118.00	120.00	3	APXVSP18-C-A20	Sprint
118.00	120.00	3	RRU	Sprint
118.00	118.00	1	Platform w/ Hand Rails	Sprint
118.00	120.00	3	ALU - External Notch	Sprint
108.00	108.00	3	800-10121	AT&T
108.00	108.00	6	LGP21401	AT&T
108.00	108.00	1	DC6-48-60-18-8F	AT&T
108.00	108.00	3	HPA-65R-BUU-H6	AT&T
108.00	108.00	6	860 10025	AT&T
108.00	108.00	3	RRUS-32 B2	AT&T
108.00	108.00	3	RRUS-11	AT&T
108.00	108.00	1	Platform + HR & V-Brace	AT&T
98.00	101.00	1	DB-T1-6Z-8AB-0Z	Verizon
98.00	99.00	3	LNx-6514DS-VTM	Verizon
98.00	99.00	3	BXA-171063-12BF	Verizon
98.00	98.00	1	Low Profile Platform	Verizon
98.00	99.00	6	SBNHH-1D65A	Verizon
98.00	101.00	3	RRH2X60-700	Verizon
98.00	101.00	3	RRH2X60-AWS	Verizon

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	118.00	Inside	1-1/4" Hybrid	Sprint
0.00	108.00	Inside	1 1/4" Coax	AT&T
0.00	108.00	Inside	1/2" RET	AT&T
0.00	108.00	Inside	3/8" Fiber	AT&T
0.00	108.00	Inside	5/8" DC	AT&T
0.00	99.00	Inside	1 5/8" Coax	Verizon
0.00	99.00	Inside	1 5/8" Hybrid	Verizon
0.00	9.25	Inside	1.5" Reinforcing Plate	

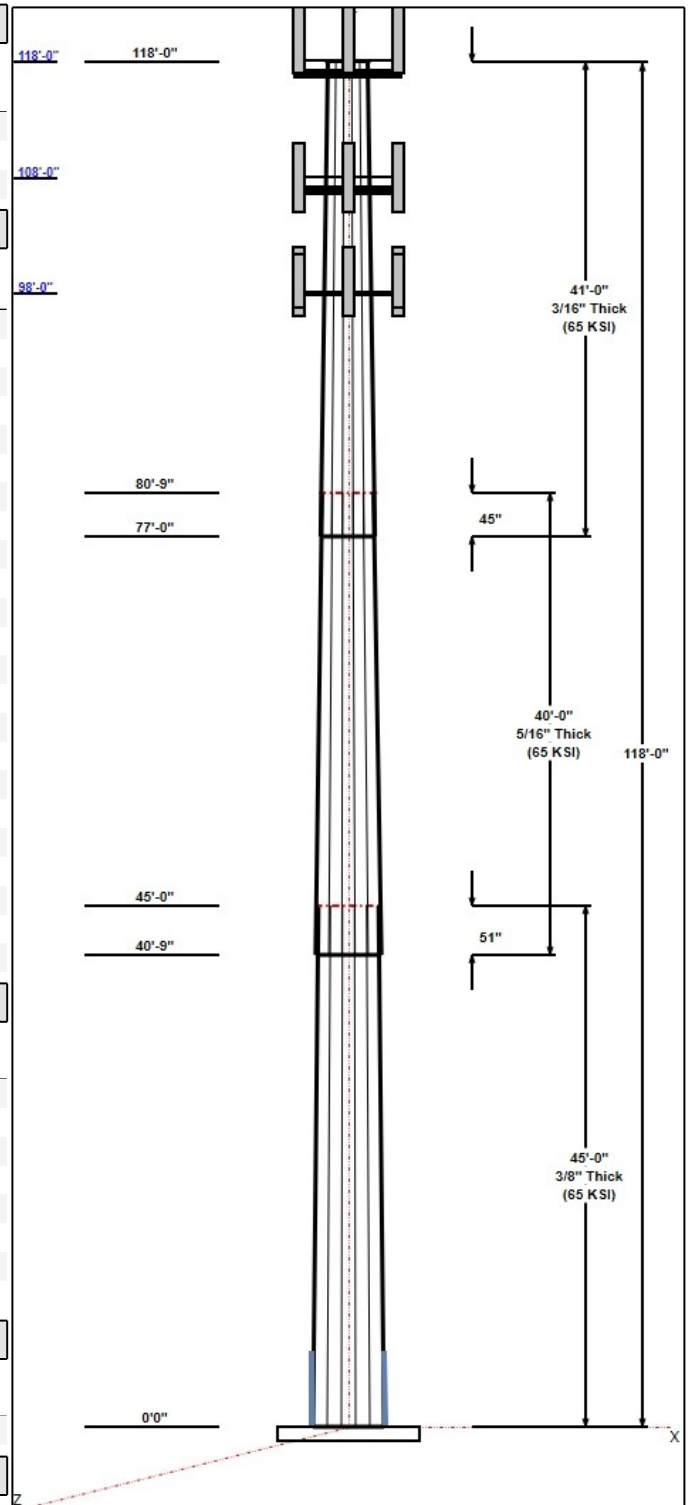
### Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

### Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	46.0	50.0	Clipped

### Reactions





## Structure: CT46133-A-SBA

**Type:** Tapered  
**Site Name:** Shelton-north  
**Height:** 118.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 12 Sided  
**Taper:** 0.16500

1/26/2017

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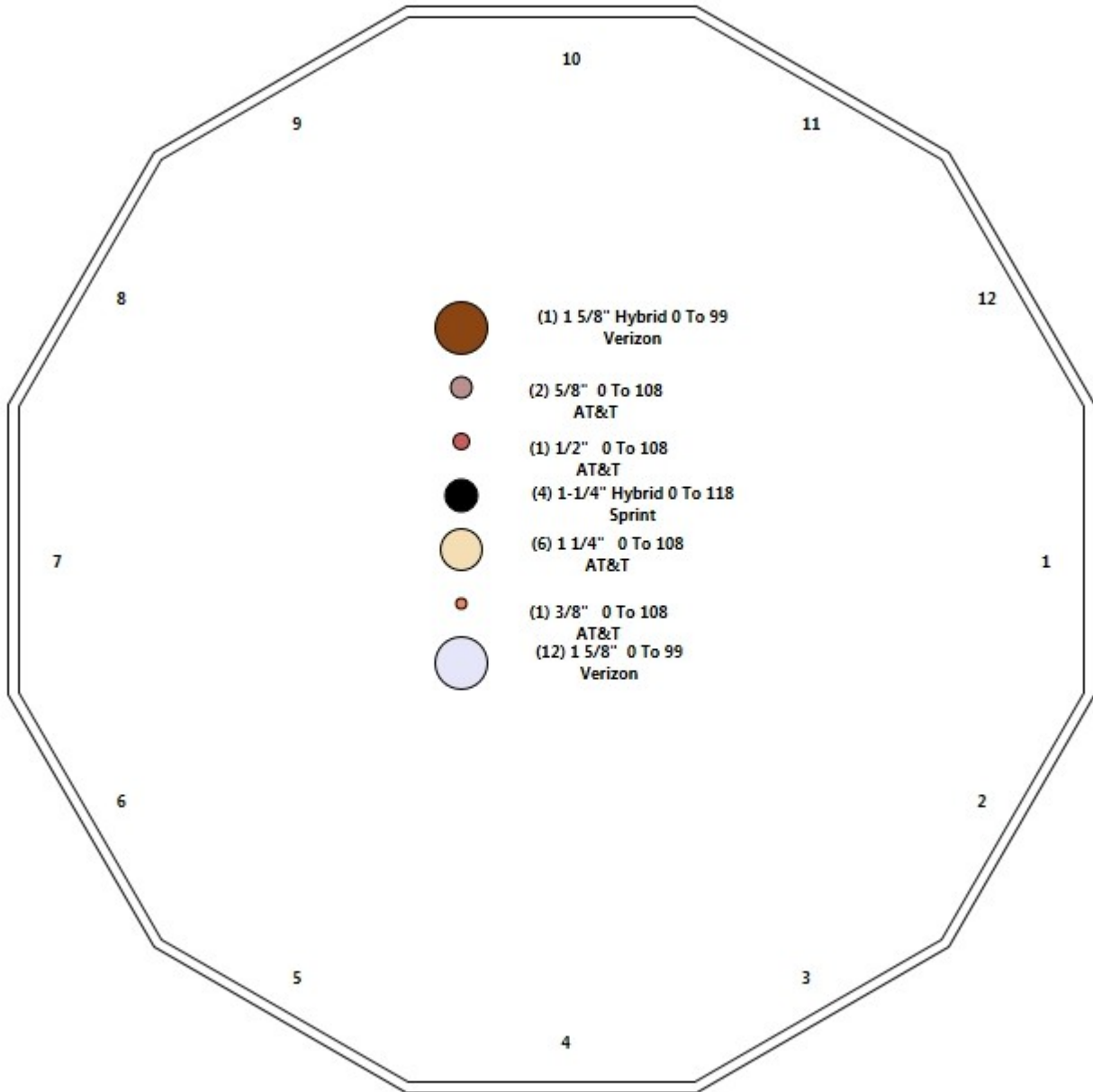
Load Case	Moment	Shear	Axial
1.2D + 1.6W 97 mph Wind	2482.4	28.2	28.2
0.9D + 1.6W 97 mph Wind	2456.8	28.2	21.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	607.3	6.5	44.7
1.2D + 1.0E	180.0	1.7	28.2
0.9D + 1.0E	177.9	1.7	21.2
1.0D + 1.0W 60 mph Wind	590.7	6.7	23.5

# Structure: CT46133-A-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** Shelton-north  
**Height:** 118.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	12	45.000	0.3750	65		0.00	6,727
2	12	40.000	0.3125	65	Slip	51.00	4,213
3	12	41.000	0.1875	65	Slip	45.00	2,122
<b>Total Shaft Weight:</b>							<b>13,062</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	40.47	0.00	48.41	9934.45	26.77	107.92	33.05	45.00	39.45	5374.28	21.47	88.12	0.165000
2	34.37	40.75	34.27	5074.32	27.33	109.99	27.77	80.75	27.63	2659.10	21.67	88.87	0.165000
3	28.77	77.00	17.25	1798.52	38.96	153.41	22.00	118.00	13.17	799.76	29.30	117.3	0.165000

### Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors		Termination Connectors			
							Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty	
0.00	6.50	4	PLT 6"x1.5"(1.25" Hole)	50	65	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	11	11

## Load Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	118.00	APXVC-120	3	57.00	8.02	0.83	225.75	10.748	0.85	0.00	2.00
2	118.00	800 MHz RRH	3	53.00	2.49	0.50	125.21	3.607	0.50	0.00	2.00
3	118.00	TD-RRH8x20-25	3	70.00	4.05	0.67	167.23	4.848	0.67	0.00	2.00
4	118.00	ACU-A20-N	4	1.00	0.14	0.50	5.19	0.430	0.50	0.00	2.00
5	118.00	APXVSP18-C-A20	3	57.00	8.02	0.83	225.75	10.748	0.85	0.00	2.00
6	118.00	RRU	3	70.00	0.00	0.67	167.23	0.000	0.67	0.00	2.00
7	118.00	Platform w/ Hand Rails	1	2000.00	40.00	1.00	4044.60	60.446	1.00	0.00	0.00
8	118.00	ALU - External Notch Filters	3	8.80	0.78	0.50	26.02	1.411	0.50	0.00	2.00
9	108.00	800-10121	3	44.10	5.15	0.82	155.25	7.189	0.84	0.00	0.00
10	108.00	LGP21401	6	19.00	1.26	0.50	43.07	2.061	0.50	0.00	0.00
11	108.00	DC6-48-60-18-8F	1	31.80	1.47	1.00	91.63	2.147	1.00	0.00	0.00
12	108.00	HPA-65R-BUU-H6	3	51.00	9.66	0.83	286.34	10.985	0.85	0.00	0.00
13	108.00	860 10025	6	1.20	0.18	0.50	7.00	0.547	0.50	0.00	0.00
14	108.00	RRUS-32 B2	3	60.00	2.74	0.67	144.50	3.443	0.67	0.00	0.00
15	108.00	RRUS-11	3	51.00	2.52	0.67	120.94	3.133	0.67	0.00	0.00
16	108.00	Platform + HR & V-Brace	1	2246.00	51.70	1.00	5280.46	88.720	1.00	0.00	0.00
17	98.00	DB-T1-6Z-8AB-0Z	1	18.90	4.80	1.00	134.93	8.653	1.00	0.00	3.00
18	98.00	LNx-6514DS-VTM	3	33.10	8.09	0.83	200.53	10.769	0.85	0.00	1.00
19	98.00	BXA-171063-12BF	3	15.00	4.74	0.88	105.98	6.991	0.90	0.00	1.00
20	98.00	Low Profile Platform	1	1500.00	22.00	1.00	2754.36	38.926	1.00	0.00	0.00
21	98.00	SBNHH-1D65A	6	33.50	5.88	0.83	178.99	6.911	0.85	0.00	1.00
22	98.00	RRH2X60-700	3	60.00	3.50	0.67	143.65	4.256	0.67	0.00	3.00
23	98.00	RRH2X60-AWS	3	60.00	3.50	0.67	143.65	4.256	0.67	0.00	3.00
<b>Totals:</b>			<b>69</b>	<b>8,192.90</b>			<b>20,415.24</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	118.00	(4) 1-1/4" Hybrid	0.00	Inside
0.00	108.00	(6) 1 1/4" Coax	0.00	Inside
0.00	108.00	(1) 1/2" RET	0.00	Inside
0.00	108.00	(1) 3/8" Fiber	0.00	Inside
0.00	108.00	(2) 5/8" DC	0.00	Inside
0.00	99.00	(12) 1 5/8" Coax	0.00	Inside
0.00	99.00	(1) 1 5/8" Hybrid	0.00	Inside
0.00	9.25	(1) 1.5" Reinforcing Plate	0.00	Inside



## Shaft Section Properties

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in <sup>2</sup> )	Ixp (in <sup>4</sup> )	Iyp (in <sup>4</sup> )	Weight (lb)
0.00	RB1	0.3750	40.470	48.415	9934.4	26.77	107.92	65	76	0.0	36.00	11922.1	4046.0	
5.00		0.3750	39.645	47.419	9333.7	26.18	105.72	65	76	815.2	36.00	11459.2	3891.7	612.5
6.50	RT1	0.3750	39.398	47.120	9158.4	26.01	105.06	65	76	241.3	36.00	11322.1	3846.0	183.8
10.00		0.3750	38.820	46.422	8757.8	25.59	103.52	65	77	557.0				
15.00		0.3750	37.995	45.426	8206.0	25.01	101.32	65	77	781.3				
20.00		0.3750	37.170	44.430	7677.8	24.42	99.12	65	78	764.4				
25.00		0.3750	36.345	43.434	7172.9	23.83	96.92	65	79	747.5				
30.00		0.3750	35.520	42.438	6690.6	23.24	94.72	65	79	730.5				
35.00		0.3750	34.695	41.441	6230.4	22.65	92.52	65	80	713.6				
40.00		0.3750	33.870	40.445	5791.8	22.06	90.32	65	81	696.6				
40.75	Bot - Section 2	0.3750	33.746	40.296	5727.8	21.97	89.99	65	81	103.0				
45.00	Top - Section 1	0.3125	33.670	33.566	4767.3	26.73	107.74	65	76	1067.2				
50.00		0.3125	32.845	32.736	4422.3	26.02	105.10	65	76	564.0				
55.00		0.3125	32.020	31.906	4094.3	25.31	102.46	65	77	549.9				
60.00		0.3125	31.195	31.076	3782.9	24.60	99.82	65	78	535.8				
65.00		0.3125	30.370	30.245	3487.8	23.90	97.18	65	79	521.7				
70.00		0.3125	29.545	29.415	3208.4	23.19	94.54	65	79	507.5				
75.00		0.3125	28.720	28.585	2944.4	22.48	91.90	65	80	493.4				
77.00	Bot - Section 3	0.3125	28.390	28.253	2842.9	22.20	90.85	65	81	193.4				
80.00		0.3125	27.895	27.755	2695.2	21.77	89.26	65	81	460.5				
80.75	Top - Section 2	0.1875	28.146	16.880	1684.2	38.08	150.11	65	63	113.8				
85.00		0.1875	27.445	16.457	1560.6	37.08	146.37	65	64	241.1				
90.00		0.1875	26.620	15.959	1423.2	35.90	141.97	65	66	275.8				
95.00		0.1875	25.795	15.461	1294.0	34.72	137.57	65	67	267.3				
98.00		0.1875	25.300	15.162	1220.4	34.01	134.93	65	68	156.3				
100.00		0.1875	24.970	14.962	1172.9	33.54	133.17	65	68	102.5				
105.00		0.1875	24.145	14.464	1059.7	32.36	128.77	65	69	250.3				
108.00		0.1875	23.650	14.165	995.3	31.65	126.13	65	70	146.1				
110.00		0.1875	23.320	13.966	953.9	31.18	124.37	65	71	95.7				
115.00		0.1875	22.495	13.468	855.5	30.00	119.97	65	72	233.4				
118.00		0.1875	22.000	13.169	799.8	29.30	117.33	65	73	136.0				
<b>Total Weight</b>										<b>13062.1</b>				
											<b>796.3</b>			

## Wind Loading - Shaft

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	19.450	21.40	312.24	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	305.88	1.000	0.000	5.00	17.279	17.28	591.5	0.0	978.3
6.50	RT1	1.00	0.85	19.450	21.40	303.97	1.000	0.000	1.50	5.114	5.11	175.1	0.0	289.5
10.00		1.00	0.85	19.450	21.40	299.51	1.000	0.000	3.50	11.809	11.81	404.3	0.0	668.4
15.00		1.00	0.85	19.450	21.40	293.15	1.000	0.000	5.00	16.568	16.57	567.2	0.0	937.6
20.00		1.00	0.90	20.638	22.70	295.40	1.000	0.000	5.00	16.212	16.21	588.8	0.0	917.3
25.00		1.00	0.95	21.630	23.79	295.71	1.000	0.000	5.00	15.856	15.86	603.6	0.0	896.9
30.00		1.00	0.98	22.477	24.72	294.60	1.000	0.000	5.00	15.500	15.50	613.2	0.0	876.6
35.00		1.00	1.01	23.218	25.54	292.46	1.000	0.000	5.00	15.144	15.14	618.8	0.0	856.3
40.00		1.00	1.04	23.880	26.27	289.55	1.000	0.000	5.00	14.788	14.79	621.5	0.0	835.9
40.75	Bot - Section 2	1.00	1.05	23.974	26.37	289.06	1.000	0.000	0.75	2.188	2.19	92.3	0.0	123.6
45.00	Top - Section 1	1.00	1.07	24.479	26.93	286.02	1.000	0.000	4.25	12.474	12.47	537.4	0.0	1280.6
50.00		1.00	1.09	25.029	27.53	287.46	1.000	0.000	5.00	14.346	14.35	631.9	0.0	676.8
55.00		1.00	1.12	25.536	28.09	283.07	1.000	0.000	5.00	13.990	13.99	628.8	0.0	659.9
60.00		1.00	1.14	26.008	28.61	278.31	1.000	0.000	5.00	13.634	13.63	624.1	0.0	642.9
65.00		1.00	1.16	26.450	29.09	273.24	1.000	0.000	5.00	13.278	13.28	618.1	0.0	626.0
70.00		1.00	1.17	26.866	29.55	267.90	1.000	0.000	5.00	12.923	12.92	611.0	0.0	609.0
75.00		1.00	1.19	27.259	29.98	262.32	1.000	0.000	5.00	12.567	12.57	602.9	0.0	592.1
77.00	Bot - Section 3	1.00	1.20	27.410	30.15	260.03	1.000	0.000	2.00	4.927	4.93	237.7	0.0	232.1
80.00		1.00	1.21	27.632	30.39	256.52	1.000	0.000	3.00	7.381	7.38	358.9	0.0	552.6
80.75	Top - Section 2	1.00	1.21	27.686	30.45	255.63	1.000	0.000	0.75	1.825	1.83	88.9	0.0	136.6
85.00		1.00	1.22	27.987	30.79	254.00	1.000	0.000	4.25	10.192	10.19	502.0	0.0	289.3
90.00		1.00	1.24	28.325	31.16	247.85	1.000	0.000	5.00	11.661	11.66	581.3	0.0	330.9
95.00		1.00	1.25	28.650	31.51	241.54	1.000	0.000	5.00	11.305	11.31	570.0	0.0	320.7
98.00	Appurtenance(s)	1.00	1.26	28.838	31.72	237.68	1.000	0.000	3.00	6.612	6.61	335.6	0.0	187.6
100.00		1.00	1.27	28.961	31.86	235.08	1.000	0.000	2.00	4.337	4.34	221.1	0.0	123.0
105.00		1.00	1.28	29.260	32.19	228.48	1.000	0.000	5.00	10.593	10.59	545.5	0.0	300.4
108.00	Appurtenance(s)	1.00	1.29	29.434	32.38	224.46	1.000	0.000	3.00	6.185	6.19	320.4	0.0	175.4
110.00		1.00	1.29	29.548	32.50	221.76	1.000	0.000	2.00	4.052	4.05	210.7	0.0	114.9
115.00		1.00	1.30	29.826	32.81	214.92	1.000	0.000	5.00	9.881	9.88	518.7	0.0	280.1
118.00	Appurtenance(s)	1.00	1.31	29.988	32.99	210.76	1.000	0.000	3.00	5.758	5.76	303.9	0.0	163.2
<b>Totals:</b>								<b>118.00</b>				<b>13,925.5</b>		<b>15,674.5</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	118.00	ACU-A20-N	4	30.094	33.103	0.50	1.00	0.28	4.80	0.000	2.000	14.83	0.00	29.66	
2	118.00	APXVC-120	3	30.094	33.103	0.83	1.00	19.97	205.20	0.000	2.000	1057.71	0.00	2115.42	
3	118.00	800 MHz RRH	3	30.094	33.103	0.50	1.00	3.74	190.80	0.000	2.000	197.83	0.00	395.65	
4	118.00	TD-RRH8x20-25	3	30.094	33.103	0.67	1.00	8.14	252.00	0.000	2.000	431.16	0.00	862.33	
5	118.00	ALU - External Notch	3	30.094	33.103	0.50	1.00	1.17	31.68	0.000	2.000	61.97	0.00	123.94	
6	118.00	APXVSP18-C-A20	3	30.094	33.103	0.83	1.00	19.97	205.20	0.000	2.000	1057.71	0.00	2115.42	
7	118.00	RRU	3	30.094	33.103	0.67	1.00	0.00	252.00	0.000	2.000	0.00	0.00	0.00	
8	118.00	Platform w/ Hand Rails	1	29.988	32.986	1.00	1.00	40.00	2400.00	0.000	0.000	2111.13	0.00	0.00	
9	108.00	Platform + HR & V-Brace	1	29.434	32.377	1.00	1.00	51.70	2695.20	0.000	0.000	2678.24	0.00	0.00	
10	108.00	RRUS-11	3	29.434	32.377	0.54	0.80	4.05	183.60	0.000	0.000	209.92	0.00	0.00	
11	108.00	RRUS-32 B2	3	29.434	32.377	0.54	0.80	4.41	216.00	0.000	0.000	228.24	0.00	0.00	
12	108.00	860 10025	6	29.434	32.377	0.40	0.80	0.43	8.64	0.000	0.000	22.38	0.00	0.00	
13	108.00	DC6-48-60-18-8F	1	29.434	32.377	0.80	0.80	1.18	38.16	0.000	0.000	60.92	0.00	0.00	
14	108.00	LGP21401	6	29.434	32.377	0.40	0.80	3.02	136.80	0.000	0.000	156.65	0.00	0.00	
15	108.00	800-10121	3	29.434	32.377	0.66	0.80	10.14	158.76	0.000	0.000	525.04	0.00	0.00	
16	108.00	HPA-65R-BUU-H6	3	29.434	32.377	0.66	0.80	19.24	183.60	0.000	0.000	996.84	0.00	0.00	
17	98.00	BXA-171063-12BF	3	28.900	31.790	0.70	0.80	10.01	54.00	0.000	1.000	509.19	0.00	509.19	
18	98.00	DB-T1-6Z-8AB-OZ	1	29.021	31.924	0.80	0.80	3.84	22.68	0.000	3.000	196.14	0.00	588.42	
19	98.00	LNx-6514DS-VTM	3	28.900	31.790	0.66	0.80	16.12	119.16	0.000	1.000	819.67	0.00	819.67	
20	98.00	RRH2X60-700	3	29.021	31.924	0.54	0.80	5.63	216.00	0.000	3.000	287.47	0.00	862.40	
21	98.00	Low Profile Platform	1	28.838	31.722	1.00	1.00	22.00	1800.00	0.000	0.000	1116.60	0.00	0.00	
22	98.00	SBNHH-1D65A	6	28.900	31.790	0.66	0.80	23.43	241.20	0.000	1.000	1191.52	0.00	1191.52	
23	98.00	RRH2X60-AWS	3	29.021	31.924	0.54	0.80	5.63	216.00	0.000	3.000	287.47	0.00	862.40	
<b>Totals:</b>								<b>9,831.48</b>							<b>14,218.62</b>

## Total Applied Force Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		591.52	1109.67	0.00	0.00
6.50		175.08	328.94	0.00	0.00
10.00		404.26	760.40	0.00	0.00
15.00		567.15	1069.00	0.00	0.00
20.00		588.85	1048.66	0.00	0.00
25.00		603.62	1028.32	0.00	0.00
30.00		613.16	1007.98	0.00	0.00
35.00		618.84	987.64	0.00	0.00
40.00		621.53	967.30	0.00	0.00
40.75		92.30	143.34	0.00	0.00
45.00		537.43	1392.25	0.00	0.00
50.00		631.95	808.21	0.00	0.00
55.00		628.76	791.26	0.00	0.00
60.00		624.10	774.31	0.00	0.00
65.00		618.14	757.36	0.00	0.00
70.00		611.03	740.41	0.00	0.00
75.00		602.90	723.46	0.00	0.00
77.00		237.69	284.64	0.00	0.00
80.00		358.95	631.40	0.00	0.00
80.75		88.94	156.32	0.00	0.00
85.00		502.00	400.94	0.00	0.00
90.00		581.33	462.28	0.00	0.00
95.00		570.04	452.11	0.00	0.00
98.00	(20) attachments	4743.65	2935.43	0.00	4833.59
100.00		221.06	159.26	0.00	0.00
105.00		545.52	350.29	0.00	0.00
108.00	(26) attachments	5198.64	3826.06	0.00	0.00
110.00		210.73	124.03	0.00	0.00
115.00		518.71	302.96	0.00	0.00
118.00	(23) attachments	5236.24	3718.57	0.00	5642.42
	<b>Totals:</b>	<b>28,144.11</b>	<b>28,242.79</b>	<b>0.00</b>	<b>10,476.01</b>



## Calculated Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



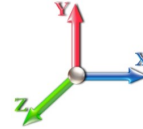
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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Iterations** 23

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.18	-28.21	0.00	-2482.4	0.00	2482.44	3290.40	1645.20	5438.37	2685.80	0.00	0.000	0.000	0.662
5.00	-27.00	-27.69	0.00	-2341.4	0.00	2341.41	3250.13	1625.07	5260.26	2597.84	0.13	-0.245	0.000	0.641
6.50	-26.61	-27.57	0.00	-2299.8	0.00	2299.88	3237.83	1618.92	5207.01	2571.54	0.22	-0.320	0.000	0.635
6.50	-26.61	-27.57	0.00	-2299.8	0.00	2299.88	3237.83	1618.92	5207.01	2571.54	0.22	-0.320	0.000	0.635
10.00	-25.73	-27.28	0.00	-2203.4	0.00	2203.40	3208.72	1604.36	5083.09	2510.35	0.52	-0.493	0.000	0.886
15.00	-24.50	-26.84	0.00	-2067.0	0.00	2067.02	3166.15	1583.07	4906.98	2423.37	1.22	-0.840	0.000	0.861
20.00	-23.31	-26.38	0.00	-1932.8	0.00	1932.80	3122.42	1561.21	4732.05	2336.98	2.29	-1.186	0.000	0.835
25.00	-22.14	-25.88	0.00	-1800.9	0.00	1800.91	3077.54	1538.77	4558.41	2251.23	3.71	-1.532	0.000	0.807
30.00	-20.99	-25.37	0.00	-1671.4	0.00	1671.49	3031.51	1515.76	4386.18	2166.17	5.50	-1.876	0.000	0.779
35.00	-19.88	-24.83	0.00	-1544.6	0.00	1544.65	2984.33	1492.17	4215.48	2081.87	7.65	-2.218	0.000	0.749
40.00	-18.86	-24.24	0.00	-1420.4	0.00	1420.49	2936.00	1468.00	4046.44	1998.38	10.16	-2.557	0.000	0.718
40.75	-18.65	-24.19	0.00	-1402.3	0.00	1402.31	2928.65	1464.32	4021.23	1985.93	10.56	-2.609	0.000	0.713
45.00	-17.16	-23.68	0.00	-1299.5	0.00	1299.50	2282.79	1141.40	3138.94	1550.20	13.01	-2.894	0.000	0.846
50.00	-16.25	-23.10	0.00	-1181.0	0.00	1181.09	2249.07	1124.53	3015.37	1489.18	16.22	-3.222	0.000	0.801
55.00	-15.35	-22.53	0.00	-1065.5	0.00	1065.57	2214.18	1107.09	2892.60	1428.55	19.79	-3.584	0.000	0.753
60.00	-14.49	-21.94	0.00	-952.94	0.00	952.94	2178.15	1089.08	2770.77	1368.38	23.73	-3.934	0.000	0.703
65.00	-13.66	-21.35	0.00	-843.24	0.00	843.24	2140.97	1070.48	2649.98	1308.73	28.03	-4.272	0.000	0.651
70.00	-12.85	-20.75	0.00	-736.50	0.00	736.50	2102.63	1051.31	2530.36	1249.65	32.67	-4.594	0.000	0.596
75.00	-12.11	-20.14	0.00	-632.74	0.00	632.74	2063.13	1031.57	2412.02	1191.21	37.64	-4.898	0.000	0.537
77.00	-11.80	-19.90	0.00	-592.47	0.00	592.47	2047.01	1023.51	2365.08	1168.02	39.72	-5.016	0.000	0.513
80.00	-11.16	-19.51	0.00	-532.76	0.00	532.76	2022.49	1011.24	2295.09	1133.46	42.92	-5.185	0.000	0.476
80.75	-10.97	-19.43	0.00	-518.13	0.00	518.13	959.89	479.95	1109.20	547.79	43.74	-5.227	0.000	0.959
85.00	-10.52	-18.95	0.00	-435.54	0.00	435.54	952.00	476.00	1072.31	529.57	48.48	-5.443	0.000	0.835
90.00	-10.02	-18.38	0.00	-340.79	0.00	340.79	941.66	470.83	1028.33	507.86	54.37	-5.797	0.000	0.683
95.00	-9.56	-17.81	0.00	-248.88	0.00	248.88	930.16	465.08	983.85	485.89	60.60	-6.092	0.000	0.524
98.00	-7.12	-12.79	0.00	-190.63	0.00	190.63	922.71	461.35	956.96	472.61	64.47	-6.238	0.000	0.412
100.00	-6.96	-12.57	0.00	-165.06	0.00	165.06	917.51	458.75	938.97	463.72	67.10	-6.321	0.000	0.364
105.00	-6.65	-12.00	0.00	-102.23	0.00	102.23	903.70	451.85	893.83	441.43	73.80	-6.483	0.000	0.240
108.00	-3.44	-6.40	0.00	-66.24	0.00	66.24	894.87	447.43	866.66	428.01	77.89	-6.551	0.000	0.159
110.00	-3.33	-6.18	0.00	-53.44	0.00	53.44	888.75	444.37	848.53	419.06	80.63	-6.586	0.000	0.131
115.00	-3.09	-5.63	0.00	-22.54	0.00	22.54	872.64	436.32	803.20	396.67	87.55	-6.642	0.000	0.061
118.00	0.00	-5.24	0.00	-5.64	0.00	5.64	862.42	431.21	776.03	383.25	91.72	-6.656	0.000	0.015

## Wind Loading - Shaft

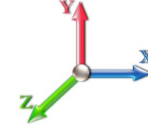
<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	19.450	21.40	312.24	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	305.88	1.000	0.000	5.00	17.279	17.28	591.5	0.0	733.7
6.50	RT1	1.00	0.85	19.450	21.40	303.97	1.000	0.000	1.50	5.114	5.11	175.1	0.0	217.1
10.00		1.00	0.85	19.450	21.40	299.51	1.000	0.000	3.50	11.809	11.81	404.3	0.0	501.3
15.00		1.00	0.85	19.450	21.40	293.15	1.000	0.000	5.00	16.568	16.57	567.2	0.0	703.2
20.00		1.00	0.90	20.638	22.70	295.40	1.000	0.000	5.00	16.212	16.21	588.8	0.0	688.0
25.00		1.00	0.95	21.630	23.79	295.71	1.000	0.000	5.00	15.856	15.86	603.6	0.0	672.7
30.00		1.00	0.98	22.477	24.72	294.60	1.000	0.000	5.00	15.500	15.50	613.2	0.0	657.5
35.00		1.00	1.01	23.218	25.54	292.46	1.000	0.000	5.00	15.144	15.14	618.8	0.0	642.2
40.00		1.00	1.04	23.880	26.27	289.55	1.000	0.000	5.00	14.788	14.79	621.5	0.0	626.9
40.75	Bot - Section 2	1.00	1.05	23.974	26.37	289.06	1.000	0.000	0.75	2.188	2.19	92.3	0.0	92.7
45.00	Top - Section 1	1.00	1.07	24.479	26.93	286.02	1.000	0.000	4.25	12.474	12.47	537.4	0.0	960.4
50.00		1.00	1.09	25.029	27.53	287.46	1.000	0.000	5.00	14.346	14.35	631.9	0.0	507.6
55.00		1.00	1.12	25.536	28.09	283.07	1.000	0.000	5.00	13.990	13.99	628.8	0.0	494.9
60.00		1.00	1.14	26.008	28.61	278.31	1.000	0.000	5.00	13.634	13.63	624.1	0.0	482.2
65.00		1.00	1.16	26.450	29.09	273.24	1.000	0.000	5.00	13.278	13.28	618.1	0.0	469.5
70.00		1.00	1.17	26.866	29.55	267.90	1.000	0.000	5.00	12.923	12.92	611.0	0.0	456.8
75.00		1.00	1.19	27.259	29.98	262.32	1.000	0.000	5.00	12.567	12.57	602.9	0.0	444.1
77.00	Bot - Section 3	1.00	1.20	27.410	30.15	260.03	1.000	0.000	2.00	4.927	4.93	237.7	0.0	174.1
80.00		1.00	1.21	27.632	30.39	256.52	1.000	0.000	3.00	7.381	7.38	358.9	0.0	414.4
80.75	Top - Section 2	1.00	1.21	27.686	30.45	255.63	1.000	0.000	0.75	1.825	1.83	88.9	0.0	102.5
85.00		1.00	1.22	27.987	30.79	254.00	1.000	0.000	4.25	10.192	10.19	502.0	0.0	216.9
90.00		1.00	1.24	28.325	31.16	247.85	1.000	0.000	5.00	11.661	11.66	581.3	0.0	248.2
95.00		1.00	1.25	28.650	31.51	241.54	1.000	0.000	5.00	11.305	11.31	570.0	0.0	240.6
98.00	Appurtenance(s)	1.00	1.26	28.838	31.72	237.68	1.000	0.000	3.00	6.612	6.61	335.6	0.0	140.7
100.00		1.00	1.27	28.961	31.86	235.08	1.000	0.000	2.00	4.337	4.34	221.1	0.0	92.3
105.00		1.00	1.28	29.260	32.19	228.48	1.000	0.000	5.00	10.593	10.59	545.5	0.0	225.3
108.00	Appurtenance(s)	1.00	1.29	29.434	32.38	224.46	1.000	0.000	3.00	6.185	6.19	320.4	0.0	131.5
110.00		1.00	1.29	29.548	32.50	221.76	1.000	0.000	2.00	4.052	4.05	210.7	0.0	86.2
115.00		1.00	1.30	29.826	32.81	214.92	1.000	0.000	5.00	9.881	9.88	518.7	0.0	210.0
118.00	Appurtenance(s)	1.00	1.31	29.988	32.99	210.76	1.000	0.000	3.00	5.758	5.76	303.9	0.0	122.4
<b>Totals:</b>								<b>118.00</b>				<b>13,925.5</b>		<b>11,755.8</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	118.00	ACU-A20-N	4	30.094	33.103	0.50	1.00	0.28	3.60	0.000	2.000	14.83	0.00	29.66	
2	118.00	APXVC-120	3	30.094	33.103	0.83	1.00	19.97	153.90	0.000	2.000	1057.71	0.00	2115.42	
3	118.00	800 MHz RRH	3	30.094	33.103	0.50	1.00	3.74	143.10	0.000	2.000	197.83	0.00	395.65	
4	118.00	TD-RRH8x20-25	3	30.094	33.103	0.67	1.00	8.14	189.00	0.000	2.000	431.16	0.00	862.33	
5	118.00	ALU - External Notch	3	30.094	33.103	0.50	1.00	1.17	23.76	0.000	2.000	61.97	0.00	123.94	
6	118.00	APXVSP18-C-A20	3	30.094	33.103	0.83	1.00	19.97	153.90	0.000	2.000	1057.71	0.00	2115.42	
7	118.00	RRU	3	30.094	33.103	0.67	1.00	0.00	189.00	0.000	2.000	0.00	0.00	0.00	
8	118.00	Platform w/ Hand Rails	1	29.988	32.986	1.00	1.00	40.00	1800.00	0.000	0.000	2111.13	0.00	0.00	
9	108.00	Platform + HR & V-Brace	1	29.434	32.377	1.00	1.00	51.70	2021.40	0.000	0.000	2678.24	0.00	0.00	
10	108.00	RRUS-11	3	29.434	32.377	0.54	0.80	4.05	137.70	0.000	0.000	209.92	0.00	0.00	
11	108.00	RRUS-32 B2	3	29.434	32.377	0.54	0.80	4.41	162.00	0.000	0.000	228.24	0.00	0.00	
12	108.00	860 10025	6	29.434	32.377	0.40	0.80	0.43	6.48	0.000	0.000	22.38	0.00	0.00	
13	108.00	DC6-48-60-18-8F	1	29.434	32.377	0.80	0.80	1.18	28.62	0.000	0.000	60.92	0.00	0.00	
14	108.00	LGP21401	6	29.434	32.377	0.40	0.80	3.02	102.60	0.000	0.000	156.65	0.00	0.00	
15	108.00	800-10121	3	29.434	32.377	0.66	0.80	10.14	119.07	0.000	0.000	525.04	0.00	0.00	
16	108.00	HPA-65R-BUU-H6	3	29.434	32.377	0.66	0.80	19.24	137.70	0.000	0.000	996.84	0.00	0.00	
17	98.00	BXA-171063-12BF	3	28.900	31.790	0.70	0.80	10.01	40.50	0.000	1.000	509.19	0.00	509.19	
18	98.00	DB-T1-6Z-8AB-OZ	1	29.021	31.924	0.80	0.80	3.84	17.01	0.000	3.000	196.14	0.00	588.42	
19	98.00	LNx-6514DS-VTM	3	28.900	31.790	0.66	0.80	16.12	89.37	0.000	1.000	819.67	0.00	819.67	
20	98.00	RRH2X60-700	3	29.021	31.924	0.54	0.80	5.63	162.00	0.000	3.000	287.47	0.00	862.40	
21	98.00	Low Profile Platform	1	28.838	31.722	1.00	1.00	22.00	1350.00	0.000	0.000	1116.60	0.00	0.00	
22	98.00	SBNHH-1D65A	6	28.900	31.790	0.66	0.80	23.43	180.90	0.000	1.000	1191.52	0.00	1191.52	
23	98.00	RRH2X60-AWS	3	29.021	31.924	0.54	0.80	5.63	162.00	0.000	3.000	287.47	0.00	862.40	
<b>Totals:</b>									<b>7,373.61</b>						<b>14,218.62</b>

## Total Applied Force Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

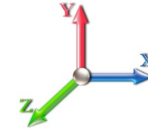


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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		591.52	832.26	0.00	0.00
6.50		175.08	246.70	0.00	0.00
10.00		404.26	570.30	0.00	0.00
15.00		567.15	801.75	0.00	0.00
20.00		588.85	786.49	0.00	0.00
25.00		603.62	771.24	0.00	0.00
30.00		613.16	755.98	0.00	0.00
35.00		618.84	740.73	0.00	0.00
40.00		621.53	725.48	0.00	0.00
40.75		92.30	107.51	0.00	0.00
45.00		537.43	1044.19	0.00	0.00
50.00		631.95	606.16	0.00	0.00
55.00		628.76	593.44	0.00	0.00
60.00		624.10	580.73	0.00	0.00
65.00		618.14	568.02	0.00	0.00
70.00		611.03	555.31	0.00	0.00
75.00		602.90	542.60	0.00	0.00
77.00		237.69	213.48	0.00	0.00
80.00		358.95	473.55	0.00	0.00
80.75		88.94	117.24	0.00	0.00
85.00		502.00	300.70	0.00	0.00
90.00		581.33	346.71	0.00	0.00
95.00		570.04	339.08	0.00	0.00
98.00	(20) attachments	4743.65	2201.57	0.00	4833.59
100.00		221.06	119.45	0.00	0.00
105.00		545.52	262.72	0.00	0.00
108.00	(26) attachments	5198.64	2869.54	0.00	0.00
110.00		210.73	93.02	0.00	0.00
115.00		518.71	227.22	0.00	0.00
118.00	(23) attachments	5236.24	2788.93	0.00	5642.42
<b>Totals:</b>		<b>28,144.11</b>	<b>21,182.10</b>	<b>0.00</b>	<b>10,476.01</b>

## Calculated Forces

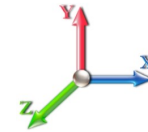
<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-21.12	-28.19	0.00	-2456.8	0.00	2456.80	3290.40	1645.20	5438.37	2685.80	0.00	0.000	0.000	0.654
5.00	-20.21	-27.65	0.00	-2315.8	0.00	2315.86	3250.13	1625.07	5260.26	2597.84	0.13	-0.243	0.000	0.633
6.50	-19.91	-27.52	0.00	-2274.3	0.00	2274.38	3237.83	1618.92	5207.01	2571.54	0.22	-0.317	0.000	0.627
6.50	-19.91	-27.52	0.00	-2274.3	0.00	2274.38	3237.83	1618.92	5207.01	2571.54	0.22	-0.317	0.000	0.627
10.00	-19.22	-27.20	0.00	-2178.0	0.00	2178.07	3208.72	1604.36	5083.09	2510.35	0.51	-0.487	0.000	0.874
15.00	-18.26	-26.73	0.00	-2042.0	0.00	2042.08	3166.15	1583.07	4906.98	2423.37	1.21	-0.830	0.000	0.849
20.00	-17.33	-26.23	0.00	-1908.4	0.00	1908.43	3122.42	1561.21	4732.05	2336.98	2.26	-1.172	0.000	0.822
25.00	-16.42	-25.71	0.00	-1777.2	0.00	1777.28	3077.54	1538.77	4558.41	2251.23	3.67	-1.514	0.000	0.795
30.00	-15.54	-25.17	0.00	-1648.7	0.00	1648.74	3031.51	1515.76	4386.18	2166.17	5.44	-1.854	0.000	0.767
35.00	-14.67	-24.61	0.00	-1522.9	0.00	1522.91	2984.33	1492.17	4215.48	2081.87	7.56	-2.191	0.000	0.737
40.00	-13.90	-24.00	0.00	-1399.8	0.00	1399.88	2936.00	1468.00	4046.44	1998.38	10.04	-2.524	0.000	0.706
40.75	-13.72	-23.95	0.00	-1381.8	0.00	1381.88	2928.65	1464.32	4021.23	1985.93	10.44	-2.576	0.000	0.701
45.00	-12.58	-23.43	0.00	-1280.1	0.00	1280.11	2282.79	1141.40	3138.94	1550.20	12.86	-2.857	0.000	0.832
50.00	-11.87	-22.83	0.00	-1162.9	0.00	1162.98	2249.07	1124.53	3015.37	1489.18	16.02	-3.180	0.000	0.787
55.00	-11.18	-22.24	0.00	-1048.8	0.00	1048.81	2214.18	1107.09	2892.60	1428.55	19.54	-3.536	0.000	0.740
60.00	-10.52	-21.64	0.00	-937.61	0.00	937.61	2178.15	1089.08	2770.77	1368.38	23.43	-3.881	0.000	0.690
65.00	-9.87	-21.04	0.00	-829.40	0.00	829.40	2140.97	1070.48	2649.98	1308.73	27.67	-4.213	0.000	0.639
70.00	-9.26	-20.44	0.00	-724.19	0.00	724.19	2102.63	1051.31	2530.36	1249.65	32.25	-4.530	0.000	0.584
75.00	-8.69	-19.83	0.00	-621.99	0.00	621.99	2063.13	1031.57	2412.02	1191.21	37.15	-4.828	0.000	0.527
77.00	-8.45	-19.59	0.00	-582.33	0.00	582.33	2047.01	1023.51	2365.08	1168.02	39.20	-4.945	0.000	0.503
80.00	-7.98	-19.21	0.00	-523.56	0.00	523.56	2022.49	1011.24	2295.09	1133.46	42.35	-5.111	0.000	0.466
80.75	-7.83	-19.13	0.00	-509.15	0.00	509.15	959.89	479.95	1109.20	547.79	43.16	-5.152	0.000	0.939
85.00	-7.48	-18.64	0.00	-427.86	0.00	427.86	952.00	476.00	1072.31	529.57	47.84	-5.365	0.000	0.817
90.00	-7.09	-18.06	0.00	-334.68	0.00	334.68	941.66	470.83	1028.33	507.86	53.64	-5.712	0.000	0.668
95.00	-6.75	-17.49	0.00	-244.36	0.00	244.36	930.16	465.08	983.85	485.89	59.78	-6.002	0.000	0.512
98.00	-5.04	-12.55	0.00	-187.07	0.00	187.07	922.71	461.35	956.96	472.61	63.59	-6.145	0.000	0.402
100.00	-4.92	-12.33	0.00	-161.97	0.00	161.97	917.51	458.75	938.97	463.72	66.18	-6.227	0.000	0.355
105.00	-4.69	-11.76	0.00	-100.35	0.00	100.35	903.70	451.85	893.83	441.43	72.78	-6.386	0.000	0.233
108.00	-2.42	-6.28	0.00	-65.06	0.00	65.06	894.87	447.43	866.66	428.01	76.81	-6.452	0.000	0.155
110.00	-2.34	-6.06	0.00	-52.50	0.00	52.50	888.75	444.37	848.53	419.06	79.51	-6.486	0.000	0.128
115.00	-2.17	-5.52	0.00	-22.20	0.00	22.20	872.64	436.32	803.20	396.67	86.32	-6.542	0.000	0.059
118.00	0.00	-5.24	0.00	-5.64	0.00	5.64	862.42	431.21	776.03	383.25	90.43	-6.556	0.000	0.015

## Wind Loading - Shaft

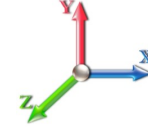
<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	18.314	21.98	124.9	328.8	1307.1
6.50	RT1	1.00	0.85	5.168	5.68	0.00	1.200	1.275	1.50	5.433	6.52	37.1	100.7	390.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	3.50	12.586	15.10	85.9	242.2	910.7
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	17.723	21.27	120.9	353.4	1291.1
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	17.401	20.88	125.9	356.5	1273.8
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	17.072	20.49	129.5	357.0	1254.0
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	16.738	20.09	131.9	355.9	1232.5
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	16.402	19.68	133.6	353.6	1209.8
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	16.063	19.28	134.5	350.4	1186.3
40.75	Bot - Section 2	1.00	1.05	6.370	7.01	0.00	1.200	1.532	0.75	2.379	2.85	20.0	52.5	176.1
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	4.25	13.570	16.28	116.5	299.8	1580.4
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	15.649	18.78	137.4	348.2	1025.0
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	15.306	18.37	137.1	343.2	1003.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	14.961	17.95	136.5	337.9	980.8
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	14.616	17.54	135.6	332.1	958.1
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	14.270	17.12	134.5	326.1	935.1
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	13.924	16.71	133.1	319.7	911.8
77.00	Bot - Section 3	1.00	1.20	7.283	8.01	0.00	1.200	1.633	2.00	5.471	6.57	52.6	126.9	358.9
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	3.00	8.200	9.84	79.5	190.3	742.9
80.75	Top - Section 2	1.00	1.21	7.356	8.09	0.00	1.200	1.640	0.75	2.030	2.44	19.7	47.4	184.0
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	4.25	11.359	13.63	111.5	263.8	553.1
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	13.043	15.65	129.6	303.4	634.3
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	12.694	15.23	127.6	296.2	616.9
98.00	Appurtenance(s)	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	7.448	8.94	75.3	175.1	362.6
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	2.00	4.896	5.87	49.7	115.5	238.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	11.997	14.40	123.1	281.3	581.7
108.00	Appurtenance(s)	1.00	1.29	7.821	8.60	0.00	1.200	1.689	3.00	7.030	8.44	72.6	166.1	341.4
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	2.00	4.616	5.54	47.8	109.5	224.3
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	11.298	13.56	118.2	265.9	545.9
118.00	Appurtenance(s)	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	6.610	7.93	69.5	156.7	319.8
<b>Totals:</b>								<b>118.00</b>			<b>3,051.6</b>	<b>23,330.5</b>		



## Discrete Appurtenance Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	118.00	ACU-A20-N	4	7.996	8.796	0.50	1.00	0.86	16.38	0.000	2.000	7.56	0.00	15.12	
2	118.00	APXVC-120	3	7.996	8.796	0.85	1.00	27.41	562.96	0.000	2.000	241.05	0.00	482.11	
3	118.00	800 MHz RRH	3	7.996	8.796	0.50	1.00	5.41	344.12	0.000	2.000	47.58	0.00	95.17	
4	118.00	TD-RRH8x20-25	3	7.996	8.796	0.67	1.00	9.74	477.68	0.000	2.000	85.70	0.00	171.41	
5	118.00	ALU - External Notch	3	7.996	8.796	0.50	1.00	2.12	68.35	0.000	2.000	18.62	0.00	37.25	
6	118.00	APXVSP18-C-A20	3	7.996	8.796	0.85	1.00	27.41	562.96	0.000	2.000	241.05	0.00	482.11	
7	118.00	RRU	3	7.996	8.796	0.67	1.00	0.00	468.68	0.000	2.000	0.00	0.00	0.00	
8	118.00	Platform w/ Hand Rails	1	7.968	8.765	1.00	1.00	60.45	3844.60	0.000	0.000	529.79	0.00	0.00	
9	108.00	Platform + HR & V-Brace	1	7.821	8.603	1.00	1.00	88.72	4725.66	0.000	0.000	763.23	0.00	0.00	
10	108.00	RRUS-11	3	7.821	8.603	0.54	0.80	5.04	345.41	0.000	0.000	43.34	0.00	0.00	
11	108.00	RRUS-32 B2	3	7.821	8.603	0.54	0.80	5.54	469.51	0.000	0.000	47.63	0.00	0.00	
12	108.00	860 10025	6	7.821	8.603	0.40	0.80	1.31	33.86	0.000	0.000	11.29	0.00	0.00	
13	108.00	DC6-48-60-18-8F	1	7.821	8.603	0.80	0.80	1.72	80.29	0.000	0.000	14.78	0.00	0.00	
14	108.00	LGP21401	6	7.821	8.603	0.40	0.80	4.95	238.59	0.000	0.000	42.55	0.00	0.00	
15	108.00	800-10121	3	7.821	8.603	0.67	0.80	14.49	393.51	0.000	0.000	124.67	0.00	0.00	
16	108.00	HPA-65R-BUU-H6	3	7.821	8.603	0.68	0.80	22.41	717.42	0.000	0.000	192.78	0.00	0.00	
17	98.00	BXA-171063-12BF	3	7.679	8.447	0.72	0.80	15.10	245.33	0.000	1.000	127.56	0.00	127.56	
18	98.00	DB-T1-6Z-8AB-0Z	1	7.711	8.482	0.80	0.80	6.92	111.61	0.000	3.000	58.72	0.00	176.16	
19	98.00	LNx-6514DS-VTM	3	7.679	8.447	0.68	0.80	21.97	471.45	0.000	1.000	185.56	0.00	185.56	
20	98.00	RRH2X60-700	3	7.711	8.482	0.54	0.80	6.84	406.95	0.000	3.000	58.05	0.00	174.16	
21	98.00	Low Profile Platform	1	7.662	8.429	1.00	1.00	38.93	2754.36	0.000	0.000	328.09	0.00	0.00	
22	98.00	SBNHH-1D65A	6	7.679	8.447	0.68	0.80	28.20	902.37	0.000	1.000	238.15	0.00	238.15	
23	98.00	RRH2X60-AWS	3	7.711	8.482	0.54	0.80	6.84	406.95	0.000	3.000	58.05	0.00	174.16	
<b>Totals:</b>									<b>18,649.02</b>						<b>3,465.82</b>

## Total Applied Force Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		124.94	1438.51	0.00	0.00
6.50		37.06	429.67	0.00	0.00
10.00		85.86	1002.64	0.00	0.00
15.00		120.90	1422.44	0.00	0.00
20.00		125.95	1405.15	0.00	0.00
25.00		129.51	1385.35	0.00	0.00
30.00		131.95	1363.88	0.00	0.00
35.00		133.56	1341.22	0.00	0.00
40.00		134.53	1317.66	0.00	0.00
40.75		20.00	195.81	0.00	0.00
45.00		116.51	1692.03	0.00	0.00
50.00		137.37	1156.42	0.00	0.00
55.00		137.08	1134.51	0.00	0.00
60.00		136.47	1112.18	0.00	0.00
65.00		135.59	1089.49	0.00	0.00
70.00		134.46	1066.48	0.00	0.00
75.00		133.12	1043.20	0.00	0.00
77.00		52.60	411.49	0.00	0.00
80.00		79.47	821.68	0.00	0.00
80.75		19.71	203.74	0.00	0.00
85.00		111.50	664.73	0.00	0.00
90.00		129.57	765.64	0.00	0.00
95.00		127.56	748.29	0.00	0.00
98.00	(20) attachments	1129.52	5740.49	0.00	1075.75
100.00		49.73	274.79	0.00	0.00
105.00		123.11	631.62	0.00	0.00
108.00	(26) attachments	1312.84	7375.60	0.00	0.00
110.00		47.84	233.50	0.00	0.00
115.00		118.18	568.84	0.00	0.00
118.00	(23) attachments	1240.89	6679.32	0.00	1283.16
<b>Totals:</b>		<b>6,517.38</b>	<b>44,716.40</b>	<b>0.00</b>	<b>2,358.91</b>

## Calculated Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 19
	<b>Struct Class:</b> II	

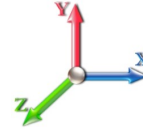


**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 22

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



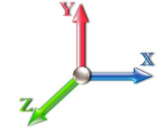
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-44.71	-6.54	0.00	-607.26	0.00	607.26	3290.40	1645.20	5438.37	2685.80	0.00	0.000	0.000	0.168
5.00	-43.27	-6.44	0.00	-574.56	0.00	574.56	3250.13	1625.07	5260.26	2597.84	0.03	-0.060	0.000	0.164
6.50	-42.84	-6.43	0.00	-564.89	0.00	564.89	3237.83	1618.92	5207.01	2571.54	0.05	-0.079	0.000	0.162
6.50	-42.84	-6.43	0.00	-564.89	0.00	564.89	3237.83	1618.92	5207.01	2571.54	0.05	-0.079	0.000	0.162
10.00	-41.83	-6.39	0.00	-542.39	0.00	542.39	3208.72	1604.36	5083.09	2510.35	0.13	-0.121	0.000	0.229
15.00	-40.40	-6.32	0.00	-510.44	0.00	510.44	3166.15	1583.07	4906.98	2423.37	0.30	-0.206	0.000	0.223
20.00	-38.98	-6.25	0.00	-478.82	0.00	478.82	3122.42	1561.21	4732.05	2336.98	0.56	-0.292	0.000	0.217
25.00	-37.59	-6.17	0.00	-447.57	0.00	447.57	3077.54	1538.77	4558.41	2251.23	0.91	-0.378	0.000	0.211
30.00	-36.22	-6.08	0.00	-416.72	0.00	416.72	3031.51	1515.76	4386.18	2166.17	1.36	-0.464	0.000	0.204
35.00	-34.87	-5.99	0.00	-386.31	0.00	386.31	2984.33	1492.17	4215.48	2081.87	1.89	-0.549	0.000	0.197
40.00	-33.55	-5.87	0.00	-356.37	0.00	356.37	2936.00	1468.00	4046.44	1998.38	2.51	-0.634	0.000	0.190
40.75	-33.35	-5.87	0.00	-351.97	0.00	351.97	2928.65	1464.32	4021.23	1985.93	2.61	-0.647	0.000	0.189
45.00	-31.65	-5.78	0.00	-327.02	0.00	327.02	2282.79	1141.40	3138.94	1550.20	3.22	-0.719	0.000	0.225
50.00	-30.48	-5.67	0.00	-298.14	0.00	298.14	2249.07	1124.53	3015.37	1489.18	4.01	-0.801	0.000	0.214
55.00	-29.34	-5.56	0.00	-269.78	0.00	269.78	2214.18	1107.09	2892.60	1428.55	4.90	-0.893	0.000	0.202
60.00	-28.23	-5.45	0.00	-241.97	0.00	241.97	2178.15	1089.08	2770.77	1368.38	5.88	-0.982	0.000	0.190
65.00	-27.13	-5.34	0.00	-214.71	0.00	214.71	2140.97	1070.48	2649.98	1308.73	6.96	-1.067	0.000	0.177
70.00	-26.06	-5.22	0.00	-188.03	0.00	188.03	2102.63	1051.31	2530.36	1249.65	8.12	-1.150	0.000	0.163
75.00	-25.02	-5.09	0.00	-161.94	0.00	161.94	2063.13	1031.57	2412.02	1191.21	9.37	-1.227	0.000	0.148
77.00	-24.60	-5.04	0.00	-151.77	0.00	151.77	2047.01	1023.51	2365.08	1168.02	9.89	-1.257	0.000	0.142
80.00	-23.78	-4.95	0.00	-136.65	0.00	136.65	2022.49	1011.24	2295.09	1133.46	10.69	-1.301	0.000	0.132
80.75	-23.57	-4.94	0.00	-132.94	0.00	132.94	959.89	479.95	1109.20	547.79	10.90	-1.311	0.000	0.267
85.00	-22.91	-4.85	0.00	-111.93	0.00	111.93	952.00	476.00	1072.31	529.57	12.09	-1.367	0.000	0.236
90.00	-22.14	-4.73	0.00	-87.70	0.00	87.70	941.66	470.83	1028.33	507.86	13.57	-1.458	0.000	0.196
95.00	-21.39	-4.60	0.00	-64.05	0.00	64.05	930.16	465.08	983.85	485.89	15.14	-1.534	0.000	0.155
98.00	-15.68	-3.33	0.00	-49.16	0.00	49.16	922.71	461.35	956.96	472.61	16.12	-1.572	0.000	0.121
100.00	-15.40	-3.28	0.00	-42.51	0.00	42.51	917.51	458.75	938.97	463.72	16.78	-1.593	0.000	0.109
105.00	-14.77	-3.14	0.00	-26.12	0.00	26.12	903.70	451.85	893.83	441.43	18.47	-1.635	0.000	0.076
108.00	-7.44	-1.62	0.00	-16.68	0.00	16.68	894.87	447.43	866.66	428.01	19.51	-1.652	0.000	0.047
110.00	-7.21	-1.57	0.00	-13.44	0.00	13.44	888.75	444.37	848.53	419.06	20.20	-1.660	0.000	0.040
115.00	-6.64	-1.44	0.00	-5.59	0.00	5.59	872.64	436.32	803.20	396.67	21.95	-1.675	0.000	0.022
118.00	0.00	-1.24	0.00	-1.28	0.00	1.28	862.42	431.21	776.03	383.25	23.00	-1.678	0.000	0.003

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case: 1.2D + 1.0E</b>						<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.21	<b>Ss</b> 0.20
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b>	0.04	<b>Seismic Importance Factor</b> 1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
5.00		815.25	0.00	0.04	0.02	19.27	
6.50	RT1	241.27	0.01	0.05	0.03	6.55	
10.00		557.03	0.01	0.06	0.03	18.08	
15.00		781.35	0.03	0.07	0.04	28.23	
20.00		764.40	0.05	0.07	0.04	28.97	
25.00		747.45	0.08	0.07	0.04	29.26	
30.00		730.50	0.12	0.07	0.03	29.48	
35.00		713.55	0.17	0.07	0.03	29.46	
40.00		696.60	0.22	0.06	0.02	28.70	
40.75	Bot - Section 2	103.03	0.23	0.06	0.02	4.23	
45.00	Top - Section 1	1067.1	0.27	0.05	0.01	41.35	
50.00		564.03	0.34	0.04	0.01	18.18	
55.00		549.90	0.41	0.01	0.01	11.11	
60.00		535.78	0.49	-0.01	0.01	1.56	
65.00		521.65	0.57	-0.04	0.01	-8.47	
70.00		507.53	0.67	-0.08	0.02	-16.24	
75.00		493.40	0.76	-0.10	0.04	-19.87	
77.00	Bot - Section 3	193.41	0.80	-0.11	0.06	-7.94	
80.00		460.48	0.87	-0.12	0.08	-18.18	
80.75	Top - Section 2	113.85	0.89	-0.12	0.08	-4.39	
85.00		241.06	0.98	-0.11	0.12	-7.09	
90.00		275.76	1.10	-0.07	0.19	-2.83	
95.00		267.28	1.23	0.03	0.27	4.78	
98.00	Appurtenance(s)	2380.5	1.30	0.13	0.34	93.08	
100.00		102.51	1.36	0.21	0.39	5.64	
105.00		250.33	1.50	0.49	0.54	25.39	
108.00	Appurtenance(s)	3163.4	1.58	0.73	0.65	423.15	
110.00		95.73	1.64	0.92	0.73	15.05	
115.00		233.38	1.80	1.52	0.97	51.99	
118.00	Appurtenance(s)	3087.3	1.89	1.98	1.14	823.89	
<b>Totals:</b>		<b>21,255.0</b>				<b>1,652.4</b>	<b>Total Wind: 28,144.1</b>

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E							<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.21		<b>Ss</b> 0.20
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10		<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b>	0.04	<b>Seismic Importance Factor</b>	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.24	-1.74	0.00	-179.97	0.00	179.97	3290.40	1645.20	5438.37	2685.80	0.00	0.00	0.00	0.053
5.00	-27.13	-1.73	0.00	-171.26	0.00	171.26	3250.13	1625.07	5260.26	2597.84	0.01	-0.02	0.051	
6.50	-26.80	-1.73	0.00	-168.67	0.00	168.67	3237.83	1618.92	5207.01	2571.54	0.02	-0.02	0.051	
6.50	-26.80	-1.73	0.00	-168.67	0.00	168.67	3237.83	1618.92	5207.01	2571.54	0.02	-0.02	0.051	
10.00	-26.04	-1.72	0.00	-162.63	0.00	162.63	3208.72	1604.36	5083.09	2510.35	0.04	-0.04	0.073	
15.00	-24.97	-1.70	0.00	-154.06	0.00	154.06	3166.15	1583.07	4906.98	2423.37	0.09	-0.06	0.071	
20.00	-23.92	-1.68	0.00	-145.57	0.00	145.57	3122.42	1561.21	4732.05	2336.98	0.17	-0.09	0.070	
25.00	-22.89	-1.66	0.00	-137.18	0.00	137.18	3077.54	1538.77	4558.41	2251.23	0.27	-0.11	0.068	
30.00	-21.89	-1.64	0.00	-128.89	0.00	128.89	3031.51	1515.76	4386.18	2166.17	0.41	-0.14	0.067	
35.00	-20.90	-1.61	0.00	-120.71	0.00	120.71	2984.33	1492.17	4215.48	2081.87	0.57	-0.17	0.065	
40.00	-19.93	-1.59	0.00	-112.65	0.00	112.65	2936.00	1468.00	4046.44	1998.38	0.76	-0.19	0.063	
40.75	-19.79	-1.59	0.00	-111.46	0.00	111.46	2928.65	1464.32	4021.23	1985.93	0.79	-0.20	0.063	
45.00	-18.39	-1.55	0.00	-104.71	0.00	104.71	2282.79	1141.40	3138.94	1550.20	0.97	-0.22	0.076	
50.00	-17.58	-1.54	0.00	-96.97	0.00	96.97	2249.07	1124.53	3015.37	1489.18	1.22	-0.25	0.073	
55.00	-16.79	-1.53	0.00	-89.29	0.00	89.29	2214.18	1107.09	2892.60	1428.55	1.49	-0.28	0.070	
60.00	-16.02	-1.53	0.00	-81.64	0.00	81.64	2178.15	1089.08	2770.77	1368.38	1.80	-0.31	0.067	
65.00	-15.26	-1.54	0.00	-73.98	0.00	73.98	2140.97	1070.48	2649.98	1308.73	2.14	-0.34	0.064	
70.00	-14.52	-1.54	0.00	-66.30	0.00	66.30	2102.63	1051.31	2530.36	1249.65	2.50	-0.36	0.060	
75.00	-13.79	-1.54	0.00	-58.61	0.00	58.61	2063.13	1031.57	2412.02	1191.21	2.90	-0.39	0.056	
77.00	-13.51	-1.54	0.00	-55.53	0.00	55.53	2047.01	1023.51	2365.08	1168.02	3.07	-0.40	0.054	
80.00	-12.88	-1.54	0.00	-50.91	0.00	50.91	2022.49	1011.24	2295.09	1133.46	3.33	-0.42	0.051	
80.75	-12.72	-1.54	0.00	-49.76	0.00	49.76	959.89	479.95	1109.20	547.79	3.39	-0.42	0.104	
85.00	-12.32	-1.54	0.00	-43.21	0.00	43.21	952.00	476.00	1072.31	529.57	3.78	-0.44	0.095	
90.00	-11.86	-1.55	0.00	-35.50	0.00	35.50	941.66	470.83	1028.33	507.86	4.27	-0.48	0.083	
95.00	-11.40	-1.54	0.00	-27.78	0.00	27.78	930.16	465.08	983.85	485.89	4.79	-0.51	0.069	
98.00	-8.47	-1.42	0.00	-23.15	0.00	23.15	922.71	461.35	956.96	472.61	5.11	-0.53	0.058	
100.00	-8.31	-1.42	0.00	-20.30	0.00	20.30	917.51	458.75	938.97	463.72	5.34	-0.54	0.053	
105.00	-7.96	-1.39	0.00	-13.21	0.00	13.21	903.70	451.85	893.83	441.43	5.91	-0.56	0.039	
108.00	-4.14	-0.93	0.00	-9.03	0.00	9.03	894.87	447.43	866.66	428.01	6.27	-0.57	0.026	
110.00	-4.01	-0.92	0.00	-7.17	0.00	7.17	888.75	444.37	848.53	419.06	6.51	-0.57	0.022	
115.00	-3.71	-0.86	0.00	-2.58	0.00	2.58	872.64	436.32	803.20	396.67	7.11	-0.58	0.011	
118.00	0.00	-0.82	0.00	0.00	0.00	0.00	862.42	431.21	776.03	383.25	7.48	-0.58	0.000	

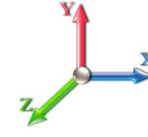
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.21	<b>Ss</b> 0.20
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b> 0.04
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
5.00		815.25	0.00	0.04	0.02	19.27	
6.50	RT1	241.27	0.01	0.05	0.03	6.55	
10.00		557.03	0.01	0.06	0.03	18.08	
15.00		781.35	0.03	0.07	0.04	28.23	
20.00		764.40	0.05	0.07	0.04	28.97	
25.00		747.45	0.08	0.07	0.04	29.26	
30.00		730.50	0.12	0.07	0.03	29.48	
35.00		713.55	0.17	0.07	0.03	29.46	
40.00		696.60	0.22	0.06	0.02	28.70	
40.75	Bot - Section 2	103.03	0.23	0.06	0.02	4.23	
45.00	Top - Section 1	1067.1	0.27	0.05	0.01	41.35	
50.00		564.03	0.34	0.04	0.01	18.18	
55.00		549.90	0.41	0.01	0.01	11.11	
60.00		535.78	0.49	-0.01	0.01	1.56	
65.00		521.65	0.57	-0.04	0.01	-8.47	
70.00		507.53	0.67	-0.08	0.02	-16.24	
75.00		493.40	0.76	-0.10	0.04	-19.87	
77.00	Bot - Section 3	193.41	0.80	-0.11	0.06	-7.94	
80.00		460.48	0.87	-0.12	0.08	-18.18	
80.75	Top - Section 2	113.85	0.89	-0.12	0.08	-4.39	
85.00		241.06	0.98	-0.11	0.12	-7.09	
90.00		275.76	1.10	-0.07	0.19	-2.83	
95.00		267.28	1.23	0.03	0.27	4.78	
98.00	Appurtenance(s)	2380.5	1.30	0.13	0.34	93.08	
100.00		102.51	1.36	0.21	0.39	5.64	
105.00		250.33	1.50	0.49	0.54	25.39	
108.00	Appurtenance(s)	3163.4	1.58	0.73	0.65	423.15	
110.00		95.73	1.64	0.92	0.73	15.05	
115.00		233.38	1.80	1.52	0.97	51.99	
118.00	Appurtenance(s)	3087.3	1.89	1.98	1.14	823.89	
	<b>Totals:</b>	<b>21,255.0</b>				<b>1,652.4</b>	<b>Total Wind: 28,144.1</b>

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required



## Calculated Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E							<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.21	<b>Ss</b>	0.20
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10	<b>S1</b>	0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b>	0.04	<b>Seismic Importance Factor</b>	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-21.18	-1.74	0.00	-177.92	0.00	177.92	3290.40	1645.20	5438.37	2685.80	0.00	0.00	0.00	0.051
5.00	-20.35	-1.72	0.00	-169.22	0.00	169.22	3250.13	1625.07	5260.26	2597.84	0.01	-0.02	0.050	
6.50	-20.10	-1.72	0.00	-166.63	0.00	166.63	3237.83	1618.92	5207.01	2571.54	0.02	-0.02	0.049	
6.50	-20.10	-1.72	0.00	-166.63	0.00	166.63	3237.83	1618.92	5207.01	2571.54	0.02	-0.02	0.049	
10.00	-19.53	-1.71	0.00	-160.60	0.00	160.60	3208.72	1604.36	5083.09	2510.35	0.04	-0.04	0.070	
15.00	-18.73	-1.69	0.00	-152.06	0.00	152.06	3166.15	1583.07	4906.98	2423.37	0.09	-0.06	0.069	
20.00	-17.94	-1.67	0.00	-143.61	0.00	143.61	3122.42	1561.21	4732.05	2336.98	0.17	-0.09	0.067	
25.00	-17.17	-1.64	0.00	-135.27	0.00	135.27	3077.54	1538.77	4558.41	2251.23	0.27	-0.11	0.066	
30.00	-16.41	-1.62	0.00	-127.05	0.00	127.05	3031.51	1515.76	4386.18	2166.17	0.40	-0.14	0.064	
35.00	-15.67	-1.60	0.00	-118.95	0.00	118.95	2984.33	1492.17	4215.48	2081.87	0.56	-0.16	0.062	
40.00	-14.95	-1.57	0.00	-110.97	0.00	110.97	2936.00	1468.00	4046.44	1998.38	0.75	-0.19	0.061	
40.75	-14.84	-1.57	0.00	-109.79	0.00	109.79	2928.65	1464.32	4021.23	1985.93	0.78	-0.19	0.060	
45.00	-13.79	-1.53	0.00	-103.13	0.00	103.13	2282.79	1141.40	3138.94	1550.20	0.96	-0.22	0.073	
50.00	-13.19	-1.51	0.00	-95.48	0.00	95.48	2249.07	1124.53	3015.37	1489.18	1.20	-0.24	0.070	
55.00	-12.59	-1.51	0.00	-87.91	0.00	87.91	2214.18	1107.09	2892.60	1428.55	1.47	-0.27	0.067	
60.00	-12.01	-1.51	0.00	-80.37	0.00	80.37	2178.15	1089.08	2770.77	1368.38	1.78	-0.30	0.064	
65.00	-11.44	-1.51	0.00	-72.82	0.00	72.82	2140.97	1070.48	2649.98	1308.73	2.11	-0.33	0.061	
70.00	-10.89	-1.51	0.00	-65.27	0.00	65.27	2102.63	1051.31	2530.36	1249.65	2.47	-0.36	0.057	
75.00	-10.34	-1.51	0.00	-57.70	0.00	57.70	2063.13	1031.57	2412.02	1191.21	2.86	-0.39	0.053	
77.00	-10.13	-1.51	0.00	-54.67	0.00	54.67	2047.01	1023.51	2365.08	1168.02	3.03	-0.40	0.052	
80.00	-9.66	-1.51	0.00	-50.13	0.00	50.13	2022.49	1011.24	2295.09	1133.46	3.28	-0.41	0.049	
80.75	-9.54	-1.51	0.00	-48.99	0.00	48.99	959.89	479.95	1109.20	547.79	3.35	-0.42	0.099	
85.00	-9.24	-1.52	0.00	-42.56	0.00	42.56	952.00	476.00	1072.31	529.57	3.73	-0.44	0.090	
90.00	-8.89	-1.52	0.00	-34.98	0.00	34.98	941.66	470.83	1028.33	507.86	4.21	-0.47	0.078	
95.00	-8.55	-1.51	0.00	-27.38	0.00	27.38	930.16	465.08	983.85	485.89	4.72	-0.50	0.066	
98.00	-6.35	-1.40	0.00	-22.84	0.00	22.84	922.71	461.35	956.96	472.61	5.04	-0.52	0.055	
100.00	-6.23	-1.40	0.00	-20.03	0.00	20.03	917.51	458.75	938.97	463.72	5.26	-0.53	0.050	
105.00	-5.97	-1.37	0.00	-13.04	0.00	13.04	903.70	451.85	893.83	441.43	5.83	-0.55	0.036	
108.00	-3.10	-0.92	0.00	-8.93	0.00	8.93	894.87	447.43	866.66	428.01	6.18	-0.56	0.024	
110.00	-3.01	-0.91	0.00	-7.08	0.00	7.08	888.75	444.37	848.53	419.06	6.41	-0.56	0.020	
115.00	-2.78	-0.85	0.00	-2.56	0.00	2.56	872.64	436.32	803.20	396.67	7.01	-0.57	0.010	
118.00	0.00	-0.82	0.00	0.00	0.00	0.00	862.42	431.21	776.03	383.25	7.37	-0.57	0.000	

## Wind Loading - Shaft

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

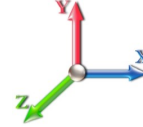


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 22

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	7.442	8.19	193.14	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	189.20	1.000	0.000	5.00	17.279	17.28	141.5	0.0	815.2
6.50	RT1	1.00	0.85	7.442	8.19	188.02	1.000	0.000	1.50	5.114	5.11	41.9	0.0	241.3
10.00		1.00	0.85	7.442	8.19	185.26	1.000	0.000	3.50	11.809	11.81	96.7	0.0	557.0
15.00		1.00	0.85	7.442	8.19	181.33	1.000	0.000	5.00	16.568	16.57	135.6	0.0	781.3
20.00		1.00	0.90	7.896	8.69	182.72	1.000	0.000	5.00	16.212	16.21	140.8	0.0	764.4
25.00		1.00	0.95	8.276	9.10	182.91	1.000	0.000	5.00	15.856	15.86	144.3	0.0	747.5
30.00		1.00	0.98	8.600	9.46	182.23	1.000	0.000	5.00	15.500	15.50	146.6	0.0	730.5
35.00		1.00	1.01	8.883	9.77	180.91	1.000	0.000	5.00	15.144	15.14	148.0	0.0	713.6
40.00		1.00	1.04	9.137	10.05	179.10	1.000	0.000	5.00	14.788	14.79	148.6	0.0	696.6
40.75	Bot - Section 2	1.00	1.05	9.173	10.09	178.80	1.000	0.000	0.75	2.188	2.19	22.1	0.0	103.0
45.00	Top - Section 1	1.00	1.07	9.366	10.30	176.92	1.000	0.000	4.25	12.474	12.47	128.5	0.0	1067.2
50.00		1.00	1.09	9.576	10.53	177.81	1.000	0.000	5.00	14.346	14.35	151.1	0.0	564.0
55.00		1.00	1.12	9.770	10.75	175.09	1.000	0.000	5.00	13.990	13.99	150.4	0.0	549.9
60.00		1.00	1.14	9.951	10.95	172.15	1.000	0.000	5.00	13.634	13.63	149.2	0.0	535.8
65.00		1.00	1.16	10.120	11.13	169.02	1.000	0.000	5.00	13.278	13.28	147.8	0.0	521.7
70.00		1.00	1.17	10.279	11.31	165.71	1.000	0.000	5.00	12.923	12.92	146.1	0.0	507.5
75.00		1.00	1.19	10.430	11.47	162.26	1.000	0.000	5.00	12.567	12.57	144.2	0.0	493.4
77.00	Bot - Section 3	1.00	1.20	10.488	11.54	160.84	1.000	0.000	2.00	4.927	4.93	56.8	0.0	193.4
80.00		1.00	1.21	10.572	11.63	158.67	1.000	0.000	3.00	7.381	7.38	85.8	0.0	460.5
80.75	Top - Section 2	1.00	1.21	10.593	11.65	158.12	1.000	0.000	0.75	1.825	1.83	21.3	0.0	113.8
85.00		1.00	1.22	10.708	11.78	157.11	1.000	0.000	4.25	10.192	10.19	120.0	0.0	241.1
90.00		1.00	1.24	10.838	11.92	153.31	1.000	0.000	5.00	11.661	11.66	139.0	0.0	275.8
95.00		1.00	1.25	10.962	12.06	149.41	1.000	0.000	5.00	11.305	11.31	136.3	0.0	267.3
98.00	Appurtenance(s)	1.00	1.26	11.034	12.14	147.02	1.000	0.000	3.00	6.612	6.61	80.3	0.0	156.3
100.00		1.00	1.27	11.081	12.19	145.41	1.000	0.000	2.00	4.337	4.34	52.9	0.0	102.5
105.00		1.00	1.28	11.195	12.31	141.33	1.000	0.000	5.00	10.593	10.59	130.5	0.0	250.3
108.00	Appurtenance(s)	1.00	1.29	11.262	12.39	138.84	1.000	0.000	3.00	6.185	6.19	76.6	0.0	146.1
110.00		1.00	1.29	11.305	12.44	137.17	1.000	0.000	2.00	4.052	4.05	50.4	0.0	95.7
115.00		1.00	1.30	11.412	12.55	132.94	1.000	0.000	5.00	9.881	9.88	124.0	0.0	233.4
118.00	Appurtenance(s)	1.00	1.31	11.474	12.62	130.37	1.000	0.000	3.00	5.758	5.76	72.7	0.0	136.0
<b>Totals:</b>								<b>118.00</b>			<b>3,330.0</b>	<b>13,062.1</b>		

## Discrete Appurtenance Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	118.00	ACU-A20-N	4	11.514	12.666	0.50	1.00	0.28	4.00	0.000	2.000	3.55	0.00	7.09
2	118.00	APXVC-120	3	11.514	12.666	0.83	1.00	19.97	171.00	0.000	2.000	252.93	0.00	505.87
3	118.00	800 MHz RRH	3	11.514	12.666	0.50	1.00	3.74	159.00	0.000	2.000	47.31	0.00	94.61
4	118.00	TD-RRH8x20-25	3	11.514	12.666	0.67	1.00	8.14	210.00	0.000	2.000	103.11	0.00	206.21
5	118.00	ALU - External Notch	3	11.514	12.666	0.50	1.00	1.17	26.40	0.000	2.000	14.82	0.00	29.64
6	118.00	APXVSP18-C-A20	3	11.514	12.666	0.83	1.00	19.97	171.00	0.000	2.000	252.93	0.00	505.87
7	118.00	RRU	3	11.514	12.666	0.67	1.00	0.00	210.00	0.000	2.000	0.00	0.00	0.00
8	118.00	Platform w/ Hand Rails	1	11.474	12.621	1.00	1.00	40.00	2000.00	0.000	0.000	504.84	0.00	0.00
9	108.00	Platform + HR & V-Brace	1	11.262	12.388	1.00	1.00	51.70	2246.00	0.000	0.000	640.46	0.00	0.00
10	108.00	RRUS-11	3	11.262	12.388	0.54	0.80	4.05	153.00	0.000	0.000	50.20	0.00	0.00
11	108.00	RRUS-32 B2	3	11.262	12.388	0.54	0.80	4.41	180.00	0.000	0.000	54.58	0.00	0.00
12	108.00	860 10025	6	11.262	12.388	0.40	0.80	0.43	7.20	0.000	0.000	5.35	0.00	0.00
13	108.00	DC6-48-60-18-8F	1	11.262	12.388	0.80	0.80	1.18	31.80	0.000	0.000	14.57	0.00	0.00
14	108.00	LGP21401	6	11.262	12.388	0.40	0.80	3.02	114.00	0.000	0.000	37.46	0.00	0.00
15	108.00	800-10121	3	11.262	12.388	0.66	0.80	10.14	132.30	0.000	0.000	125.55	0.00	0.00
16	108.00	HPA-65R-BUU-H6	3	11.262	12.388	0.66	0.80	19.24	153.00	0.000	0.000	238.38	0.00	0.00
17	98.00	BXA-171063-12BF	3	11.057	12.163	0.70	0.80	10.01	45.00	0.000	1.000	121.76	0.00	121.76
18	98.00	DB-T1-6Z-8AB-0Z	1	11.104	12.214	0.80	0.80	3.84	18.90	0.000	3.000	46.90	0.00	140.71
19	98.00	LNx-6514DS-VTM	3	11.057	12.163	0.66	0.80	16.12	99.30	0.000	1.000	196.01	0.00	196.01
20	98.00	RRH2X60-700	3	11.104	12.214	0.54	0.80	5.63	180.00	0.000	3.000	68.74	0.00	206.23
21	98.00	Low Profile Platform	1	11.034	12.137	1.00	1.00	22.00	1500.00	0.000	0.000	267.02	0.00	0.00
22	98.00	SBNHH-1D65A	6	11.057	12.163	0.66	0.80	23.43	201.00	0.000	1.000	284.93	0.00	284.93
23	98.00	RRH2X60-AWS	3	11.104	12.214	0.54	0.80	5.63	180.00	0.000	3.000	68.74	0.00	206.23
<b>Totals:</b>									<b>8,192.90</b>			<b>3,400.14</b>		

## Total Applied Force Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

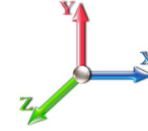


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



**Iterations** 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		141.45	924.73	0.00	0.00
6.50		41.87	274.11	0.00	0.00
10.00		96.67	633.67	0.00	0.00
15.00		135.62	890.83	0.00	0.00
20.00		140.81	873.88	0.00	0.00
25.00		144.35	856.93	0.00	0.00
30.00		146.63	839.98	0.00	0.00
35.00		147.99	823.03	0.00	0.00
40.00		148.63	806.08	0.00	0.00
40.75		22.07	119.45	0.00	0.00
45.00		128.52	1160.21	0.00	0.00
50.00		151.12	673.51	0.00	0.00
55.00		150.36	659.38	0.00	0.00
60.00		149.24	645.26	0.00	0.00
65.00		147.82	631.13	0.00	0.00
70.00		146.12	617.01	0.00	0.00
75.00		144.17	602.88	0.00	0.00
77.00		56.84	237.20	0.00	0.00
80.00		85.84	526.17	0.00	0.00
80.75		21.27	130.27	0.00	0.00
85.00		120.04	334.11	0.00	0.00
90.00		139.01	385.24	0.00	0.00
95.00		136.31	376.76	0.00	0.00
98.00	(20) attachments	1134.36	2446.19	0.00	1155.87
100.00		52.86	132.72	0.00	0.00
105.00		130.45	291.91	0.00	0.00
108.00	(26) attachments	1243.17	3188.38	0.00	0.00
110.00		50.39	103.36	0.00	0.00
115.00		124.04	252.46	0.00	0.00
118.00	(23) attachments	1252.16	3098.81	0.00	1349.29
<b>Totals:</b>		<b>6,730.18</b>	<b>23,535.66</b>	<b>0.00</b>	<b>2,505.16</b>

## Calculated Forces

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	<b>1/26/2017</b>
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



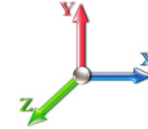
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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 22

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.53	-6.74	0.00	-590.68	0.00	590.68	3290.40	1645.20	5438.37	2685.80	0.00	0.000	0.000	0.160
5.00	-22.60	-6.62	0.00	-556.97	0.00	556.97	3250.13	1625.07	5260.26	2597.84	0.03	-0.058	0.000	0.155
6.50	-22.33	-6.58	0.00	-547.05	0.00	547.05	3237.83	1618.92	5207.01	2571.54	0.05	-0.076	0.000	0.154
6.50	-22.33	-6.58	0.00	-547.05	0.00	547.05	3237.83	1618.92	5207.01	2571.54	0.05	-0.076	0.000	0.154
10.00	-21.69	-6.51	0.00	-524.01	0.00	524.01	3208.72	1604.36	5083.09	2510.35	0.12	-0.117	0.000	0.216
15.00	-20.79	-6.40	0.00	-491.46	0.00	491.46	3166.15	1583.07	4906.98	2423.37	0.29	-0.200	0.000	0.209
20.00	-19.90	-6.29	0.00	-459.45	0.00	459.45	3122.42	1561.21	4732.05	2336.98	0.54	-0.282	0.000	0.203
25.00	-19.04	-6.16	0.00	-428.02	0.00	428.02	3077.54	1538.77	4558.41	2251.23	0.88	-0.364	0.000	0.196
30.00	-18.19	-6.04	0.00	-397.20	0.00	397.20	3031.51	1515.76	4386.18	2166.17	1.31	-0.446	0.000	0.189
35.00	-17.36	-5.91	0.00	-367.01	0.00	367.01	2984.33	1492.17	4215.48	2081.87	1.82	-0.527	0.000	0.182
40.00	-16.55	-5.76	0.00	-337.47	0.00	337.47	2936.00	1468.00	4046.44	1998.38	2.42	-0.608	0.000	0.175
40.75	-16.43	-5.75	0.00	-333.15	0.00	333.15	2928.65	1464.32	4021.23	1985.93	2.51	-0.620	0.000	0.173
45.00	-15.26	-5.63	0.00	-308.71	0.00	308.71	2282.79	1141.40	3138.94	1550.20	3.09	-0.688	0.000	0.206
50.00	-14.58	-5.49	0.00	-280.56	0.00	280.56	2249.07	1124.53	3015.37	1489.18	3.86	-0.766	0.000	0.195
55.00	-13.92	-5.35	0.00	-253.10	0.00	253.10	2214.18	1107.09	2892.60	1428.55	4.71	-0.852	0.000	0.183
60.00	-13.27	-5.21	0.00	-226.35	0.00	226.35	2178.15	1089.08	2770.77	1368.38	5.64	-0.935	0.000	0.172
65.00	-12.63	-5.07	0.00	-200.29	0.00	200.29	2140.97	1070.48	2649.98	1308.73	6.67	-1.015	0.000	0.159
70.00	-12.01	-4.93	0.00	-174.94	0.00	174.94	2102.63	1051.31	2530.36	1249.65	7.77	-1.092	0.000	0.146
75.00	-11.41	-4.78	0.00	-150.30	0.00	150.30	2063.13	1031.57	2412.02	1191.21	8.95	-1.164	0.000	0.132
77.00	-11.17	-4.73	0.00	-140.73	0.00	140.73	2047.01	1023.51	2365.08	1168.02	9.45	-1.192	0.000	0.126
80.00	-10.64	-4.63	0.00	-126.55	0.00	126.55	2022.49	1011.24	2295.09	1133.46	10.21	-1.232	0.000	0.117
80.75	-10.51	-4.62	0.00	-123.08	0.00	123.08	959.89	479.95	1109.20	547.79	10.40	-1.242	0.000	0.236
85.00	-10.17	-4.50	0.00	-103.46	0.00	103.46	952.00	476.00	1072.31	529.57	11.53	-1.293	0.000	0.206
90.00	-9.79	-4.37	0.00	-80.95	0.00	80.95	941.66	470.83	1028.33	507.86	12.93	-1.378	0.000	0.170
95.00	-9.41	-4.23	0.00	-59.12	0.00	59.12	930.16	465.08	983.85	485.89	14.42	-1.448	0.000	0.132
98.00	-6.99	-3.04	0.00	-45.27	0.00	45.27	922.71	461.35	956.96	472.61	15.34	-1.482	0.000	0.103
100.00	-6.86	-2.98	0.00	-39.20	0.00	39.20	917.51	458.75	938.97	463.72	15.96	-1.502	0.000	0.092
105.00	-6.57	-2.85	0.00	-24.28	0.00	24.28	903.70	451.85	893.83	441.43	17.56	-1.541	0.000	0.062
108.00	-3.41	-1.52	0.00	-15.74	0.00	15.74	894.87	447.43	866.66	428.01	18.53	-1.557	0.000	0.041
110.00	-3.31	-1.47	0.00	-12.70	0.00	12.70	888.75	444.37	848.53	419.06	19.19	-1.565	0.000	0.034
115.00	-3.06	-1.34	0.00	-5.36	0.00	5.36	872.64	436.32	803.20	396.67	20.83	-1.578	0.000	0.017
118.00	0.00	-1.25	0.00	-1.35	0.00	1.35	862.42	431.21	776.03	383.25	21.83	-1.582	0.000	0.004

## Final Analysis Summary

<b>Structure:</b> CT46133-A-SBA	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	28.2	0.00	28.18	0.00	0.00	2482.44
0.9D + 1.6W 97 mph Wind	28.2	0.00	21.12	0.00	0.00	2456.80
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.5	0.00	44.71	0.00	0.00	607.26
1.2D + 1.0E	1.7	0.00	28.24	0.00	0.00	179.97
0.9D + 1.0E	1.7	0.00	21.18	0.00	0.00	177.92
1.0D + 1.0W 60 mph Wind	6.7	0.00	23.53	0.00	0.00	590.68

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-10.97	-19.43	0.00	-518.13	0.00	-518.13	959.89	479.95	1109.20	547.79	80.75	0.959
0.9D + 1.6W 97 mph Wind	-7.83	-19.13	0.00	-509.15	0.00	-509.15	959.89	479.95	1109.20	547.79	80.75	0.939
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-23.57	-4.94	0.00	-132.94	0.00	-132.94	959.89	479.95	1109.20	547.79	80.75	0.267
1.2D + 1.0E	-12.72	-1.54	0.00	-49.76	0.00	-49.76	959.89	479.95	1109.20	547.79	80.75	0.104
0.9D + 1.0E	-9.54	-1.51	0.00	-48.99	0.00	-48.99	959.89	479.95	1109.20	547.79	80.75	0.099
1.0D + 1.0W 60 mph Wind	-10.51	-4.62	0.00	-123.08	0.00	-123.08	959.89	479.95	1109.20	547.79	80.75	0.236

### Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	6.5	(4) PLT-6"x1.5"(1.25" Hole)	290.0	5.22	37.1	300.3	37.1	9	11	290.3	37.1	8	11	300.31	392.4	347.34	0.865



## Base Plate Summary

<b>Structure:</b> CT46133-A-SB	<b>Code:</b> EIA/TIA-222-G	1/26/2017
<b>Site Name:</b> Shelton-north	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 50.00	<b>Bolt Circle:</b> 48.15
<b>Moment (kip-ft):</b> 1810.00	<b>Width (in):</b> 46.00	<b>Number Bolts:</b> 12.00
<b>Axial (kip):</b> 18.50	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 20.00	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.25
Analysis	<b>Clip Length (in):</b> 6.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 2482.44	<b>Effective Len (in):</b> 11.03	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 44.71	<b>Moment (kip-in):</b> 806.21	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 28.21	<b>Allow Stress (ksi):</b> 67.50	<b>Cluster Dist (in):</b> 5.00
	<b>Applied Stress (ksi):</b> 0.00	<b>Start Angle (deg):</b> 45.00
<b>Moment Design %:</b> 137.15	<b>Stress Ratio:</b> 0.62	<b>Compression</b>
		<b>Force (kip):</b> 209.95
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.83
		<b>Tension</b>
		<b>Force (kip):</b> 202.50
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.80



# Monopole Mat Foundation Design

Date

1/26/2017

<b>Customer Name:</b>	AT&T	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	118
<b>Site Number:</b>	CT46133-A-SBA	<b>Engineer Name:</b>	J. Tibbetts
<b>Engr. Number:</b>	29927	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

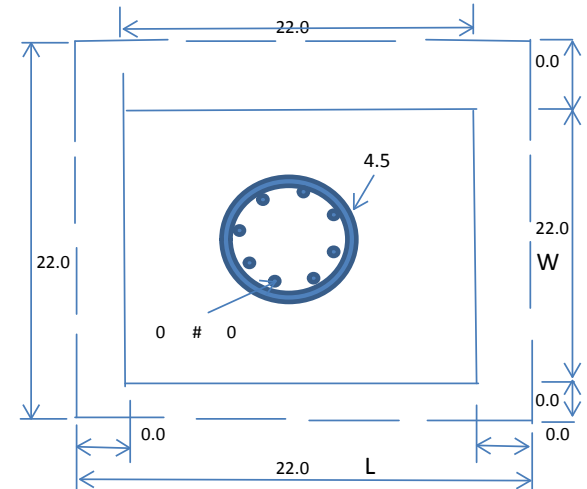
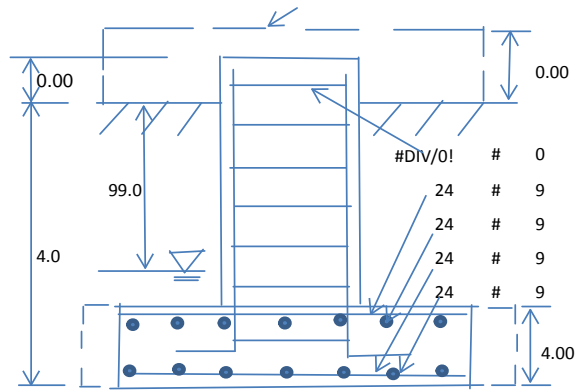
**Base Reactions (Factored):**

Axial Load (Kips):	28.2	Shear Force (Kips):	28.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2482.4

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	4.5	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	0.00	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	22	Width of Pad (ft.):	22
Final Length of pad (ft)	22.0	Final width of pad (ft):	22.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)		Tie steel yield (ksi):		
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
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):	24	Qty. of Rebar in Pad (W):	24	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	24	Qty. of Rebar in Pad (W):	24	

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	70.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:		Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		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:	0.75
Total Dry Soil Volume (cu. Ft.):	0.47	Total Dry Soil Weight (Kips):	0.06
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.06	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1936.10	Total Dry Concrete Weight (Kips):	290.41
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	290.41	Total Vertical Load on Base (Kips):	318.65

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	2922	<	Allowable Factored Soil Bearing (psf):	9000	0.32	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3185.7	>	Design Factored Momont (kips-ft):	2595	0.81	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.23					OK!

Load/  
Capacity  
Ratio

**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

Load/  
Capacity  
Ratio

(1).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	963.8	>	One-Way Factored Shear (L-D. Kips):	166.4	0.17	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	963.8	>	One-Way Factored Shear (W-D., Kips)	166.4	0.17	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	1165.4	>	One-Way Factored Shear (C-C, Kips):	171.1	0.15	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0020	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0020		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	4683.7	>	Moment at Bottom ( L-Direct. K-Ft):	419.5	0.09	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	4683.7	>	Moment at Bottom ( W-Direct. K-Ft):	419.5	0.09	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	6596.1	>	Moment at Bottom ( C-C Dir. K-Ft):	593.2	0.09	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0020	OK!	Upper Steel Reinf. Ratio (W-Direct. ):	0.0020		
Upper Steel Pad Moment Capacity (L-Direction, Kips-ft):	4683.7	>	Moment at the top (L-Dir Kips-Ft):	163.8	0.03	OK!
Upper Steel Pad Moment Capacity (W-Direction, Kips-ft):	4683.7	>	Moment at the top (W-Dir Kips-Ft):	163.8	0.03	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	6596.1	>	Moment at the top (C-C Direc. K-Ft):	383.4	0.06	OK!



# Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5441

Shelton North Central  
165 Birdseye Road  
Shelton, CT 6484

**February 6, 2017**

**Centerline Communications Project Number: 950006-029**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>8.67 %</b>



February 6, 2017

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

### Emissions Analysis for Site: **CT5441 – Shelton North Central**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **165 Birdseye Road, Shelton, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.





## CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **165 Birdseye Road, Shelton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
GSM	850 MHz	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60

*Table 1: Channel Data Table*



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	108
A	2	CCI HPA-65R-BUU-H6	108
B	1	Kathrein 800-10121	108
B	2	CCI HPA-65R-BUU-H6	108
C	1	Kathrein 800-10121	108
C	2	CCI HPA-65R-BUU-H6	108

*Table 2: Antenna Data*

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



## RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector A Composite MPE%							<b>4.21</b>
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna B2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector B Composite MPE%							<b>4.21</b>
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	6	180	3,309.26	1.59
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	2.63
Sector C Composite MPE%							<b>4.21</b>

*Table 3: AT&T Emissions Levels*



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

<b>Site Composite MPE%</b>	
<b>Carrier</b>	<b>MPE%</b>
AT&T – Max Sector Value	<b>4.21 %</b>
Sprint	0.05 %
Nextel	0.43 %
Verizon Wireless	3.98 %
<b>Site Total MPE %:</b>	<b>8.67 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	4.21 %
AT&T Sector B Total:	4.21 %
AT&T Sector C Total:	4.21 %
<b>Site Total:</b>	<b>8.67 %</b>

*Table 5: Site MPE Summary*



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	418.91	108	2.90	850 MHz	567	0.51%
AT&T 1900 MHz (PCS) UMTS	2	816.81	108	5.64	1900 MHz (PCS)	1000	0.56%
AT&T 850 MHz GSM	2	418.91	108	2.90	850 MHz	567	0.51%
AT&T 700 MHz LTE	2	940.05	108	6.50	700 MHz	467	1.39%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	108	12.38	1900 MHz (PCS)	1000	1.24%
						Total:	4.21%

*Table 6: AT&T Maximum Sector MPE Power Values*



## Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.21 %
Sector B:	4.21 %
Sector C:	4.21 %
AT&T Maximum Total (per sector):	4.21 %
Site Total:	8.67 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **8.67 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan  
RF Engineering Director  
**Centerline Communications, LLC**  
95 Ryan Drive, Suite 1  
Raynham, MA 02767



**PROJECT TEAM**

**SITE ACQUISITION & ZONING:**

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE 125  
WESTBOROUGH, MA 01581

**ENGINEERING:**

TRYLON TSF  
1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 75038  
PHONE: 1-855-669-5421

**RF ENGINEER:**

AT&T MOBILITY - NEW ENGLAND  
550 COCHITUATE ROAD  
SUITE 550 13 & 14  
FRAMINGHAM, MA 01701  
CAMERON SYME  
508-596-7146  
cs6970@att.com

**CONSTRUCTION MANAGEMENT:**

EMPIRE TELECOM  
16 ESQUIRE ROAD  
BILLERICA, MA 01821  
GRZEGORZ "GREG" DORMAN  
484-683-1750  
gdorman@empiretelecomm.com

**TOWER OWNER:**

SBA PROPERTIES, LLC  
8051 CONGRESS AVENUE  
BOCA RATON, FL 33487

SBA SITE ID: CT46133-A  
SBA SITE NAME: SHELTON-NORTH

SBA REGIONAL SITE MANAGER: STEPHEN ROTH  
860-539-4920  
sroth@sbsite.com

**GENERAL NOTES**

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

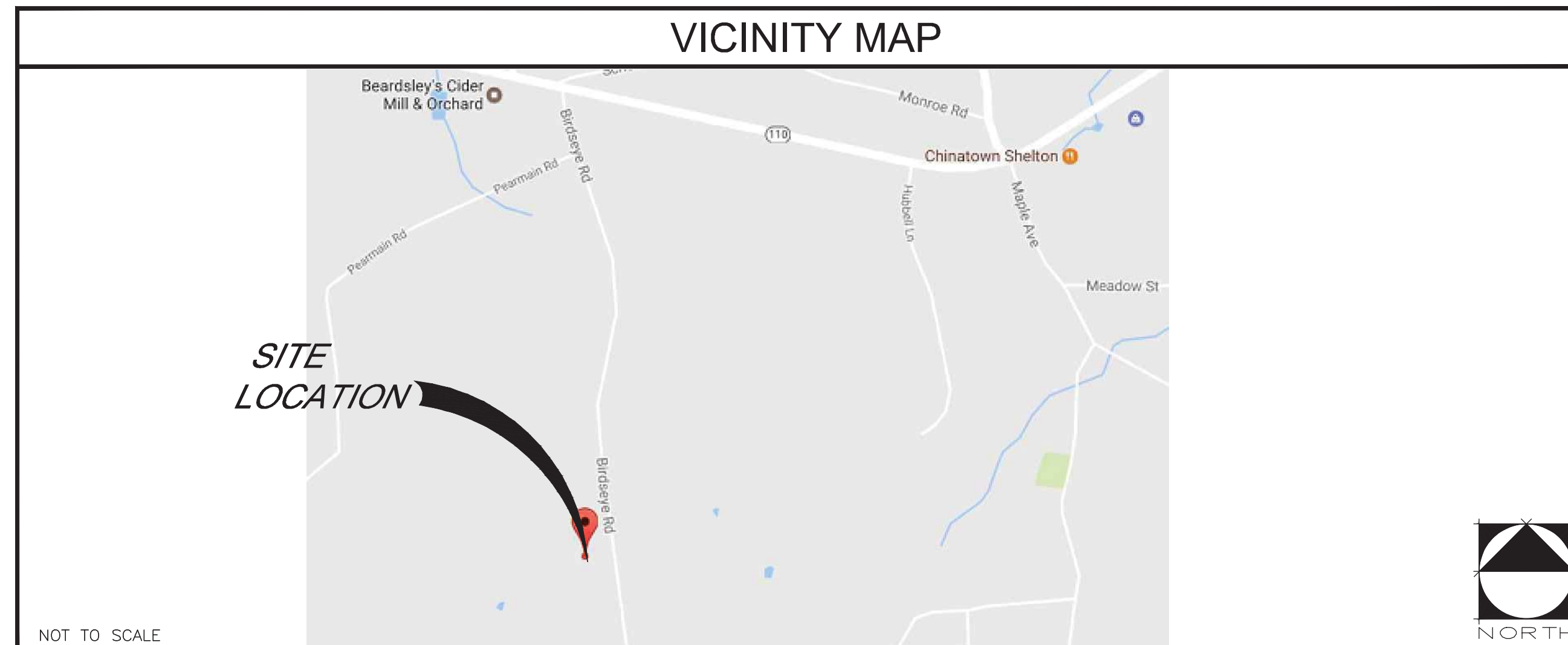
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

**SITE INFORMATION**

LATITUDE: 41° 19' 32.85084" N  
LONGITUDE: 73° 08' 55.31604" W  
LAT./LONG. TYPE: NAD 83  
GROUND ELEVATION: N/A  
APN/UPC: N/A  
AREA OF CONSTRUCTION: EXISTING  
ZONING/JURISDICTION: UNKNOWN  
CURRENT ZONING: UNKNOWN  
EXISTING USE: TELECOMMUNICATIONS FACILITY  
COUNTY: FAIRFIELD  
HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.



**LTE MULTI CARRIER RRU ADD  
CT5441  
SHELTON NORTH CENTRAL  
165 BIRDSEYE ROAD, SHELTON, CT 06484  
FA CODE: 10092045.**



**DRIVING DIRECTIONS**

SHELTON NORTH CENTRAL 5441\_GSMI-95 NORTH (NEW ENGLAND THRUWAY). GET OFF EXIT 27A (RT-8 NORTH). FOLLOW TO EXIT 14; GO LEFT OFF THE EXIT AND THEN LEFT ONTO ROUTE 110. FOLLOW ABOUT 5 MILES DOWN AND TURN LEFT ONTO BIRDSEYE ROAD. SITE IS ABOUT 1 MILE ON RIGHT.

**CODE COMPLIANCE**

2012 INTERNATIONAL BUILDING CODE WITH CONNECTICUT STATE AMENDMENTS  
2014 NATIONAL ELECTRICAL CODE WITH CONNECTICUT STATE AMENDMENTS

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

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



CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

**APPROVALS**

AT&T (RF): \_\_\_\_\_ DATE: \_\_\_\_\_

AT&T (C) **REVIEWED** By Steven Phinney at 8:16 pm, Jan 26, 2017 DATE: \_\_\_\_\_

AT&T (OPS): \_\_\_\_\_ DATE: \_\_\_\_\_

TOWER OWNER: \_\_\_\_\_ DATE: \_\_\_\_\_

**JURISDICTIONAL APPROVAL**

BASED ON INFORMATION PROVIDED BY AT&T REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).

**PROJECT DESCRIPTION**

THIS PROJECT WILL BE COMPRISED OF:  
CHANGES ON THE EXISTING MONOPOLE TOWER:

- REMOVE (3) EXISTING P65-16-XLH-RR, (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW HPA-65R-BUU-H6, (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW RRUS-32 B2, (1) PER SECTOR FOR (3) SECTORS.
- REUSE (3) EXISTING RRUS11.
- REUSE (1) EXISTING FIBER TRUNK.
- REUSE (2) EXISTING DC TRUNK.
- REUSE (1) EXISTING DC/FIBER SQUID.
- REUSE (6) EXISTING 1-1/4" COAX CABLES.
- INSTALL MOUNT REINFORCING @ 108.0'

**Michael Plahovinsak** Digitally signed by Michael Plahovinsak  
Date: 2017.01.20 20:42:59 -05'00'

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GROUNDING & GENERAL NOTES
A-1	SITE PLAN
A-2	EQUIPMENT LAYOUT
A-3	ANTENNA LAYOUTS & TOWER ELEVATION
A-4	DETAILS
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS
S-1	MOUNT REINFORCING @ 108.0'



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701



16 ESQUIRE ROAD  
BILLERICA, MA 01821



SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

**PLANS PREPARED BY:**



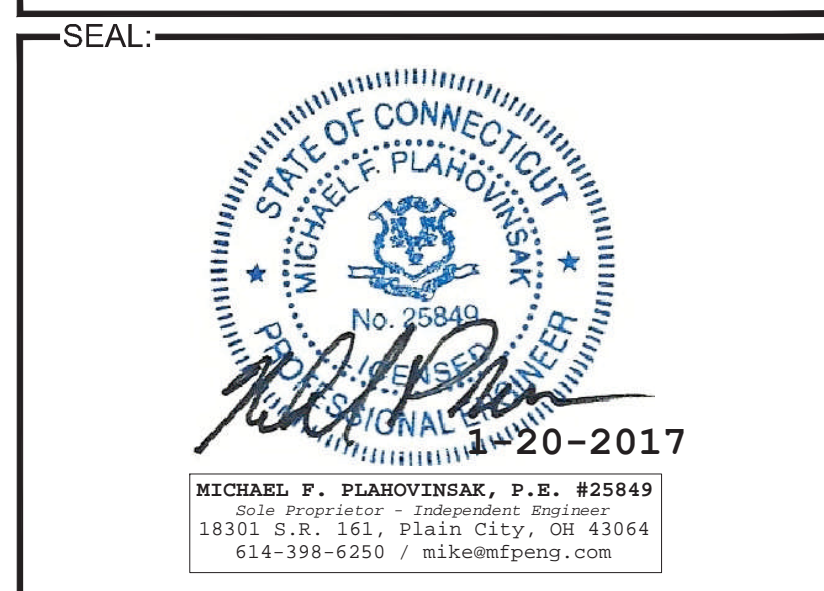
1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

**SITE INFORMATION:**

**CT5441  
SHELTON NORTH CENTRAL  
FA CODE: 10092045**

165 BIRDSEYE ROAD  
SHELTON, CT 06484



**SHEET TITLE:**  
  
**TITLE SHEET**

**SHEET NUMBER:**  
  
**T-1**



**GENERAL NOTES:**

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - EMPIRE TELECOM  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY  
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
- 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.
- SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCR1 'AP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
- ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- 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). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
- CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
- 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.
- 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- 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 DANGEROUS EXPOSURE LEVELS.
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
- FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

**GROUNDING NOTES:**

- THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- 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.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
- 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.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- METAL CONDUIT AND TRAY SHALL BE GROUNDING 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.
- 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.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
- ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.



NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE



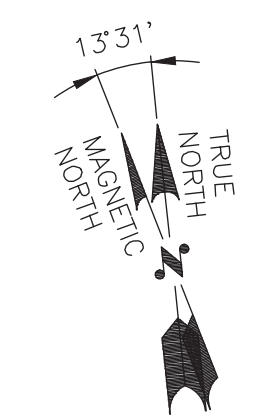
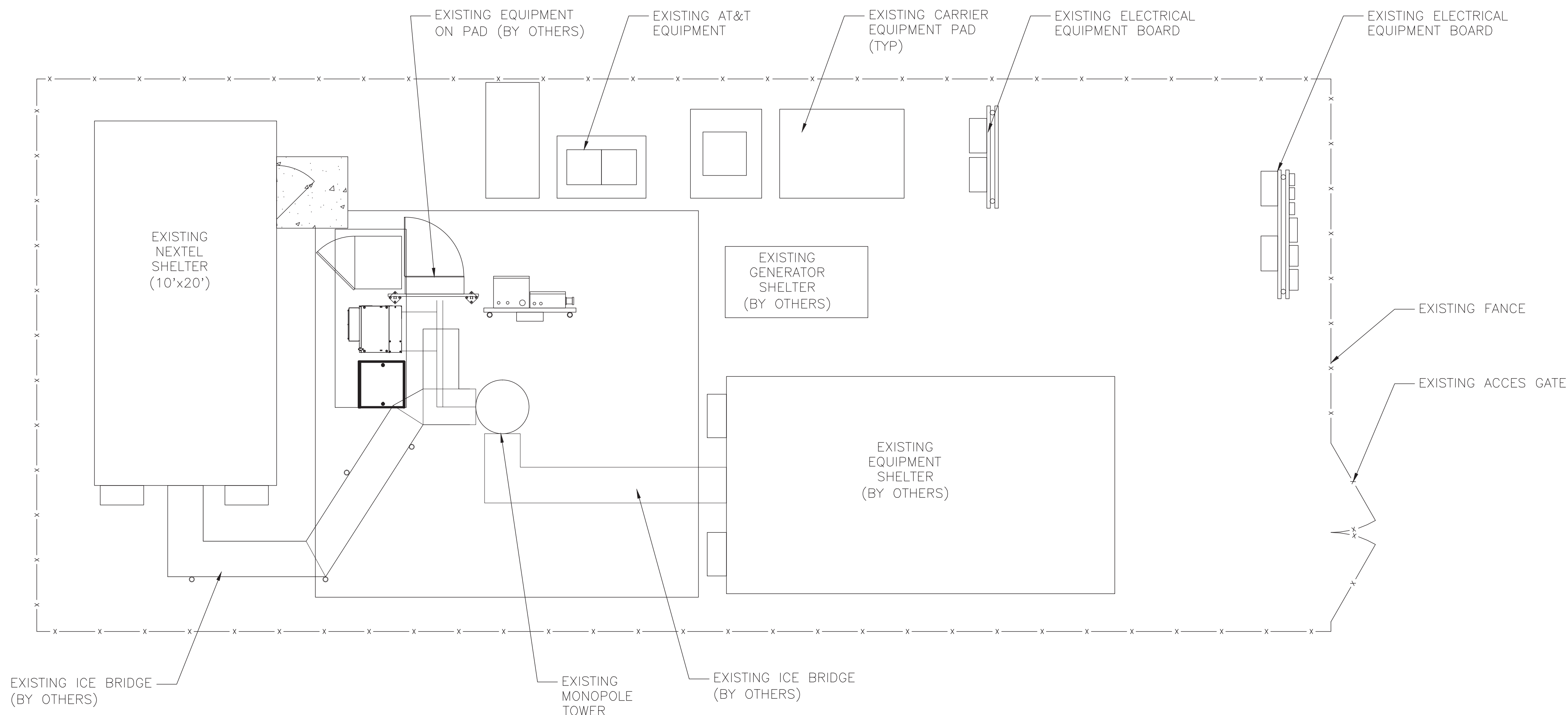
SHEET TITLE:

**GENERAL NOTES & GROUNDING NOTES**

SHEET NUMBER:

**GN-1**





SITE PLAN

22"x34" SCALE: 3/16" = 1'-0"  
 11"x17" SCALE: 3/32" = 1'-0"

1

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

16 ESQUIRE ROAD  
BILLERICA, MA 01821

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:

1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:

CT5441  
 SHELTON NORTH CENTRAL  
 FA CODE: 10092045

165 BIRDSEYE ROAD  
 SHELTON, CT 06484

SEAL:

MICHAEL F. PLABOVINSAK, P.E. #25849  
 State Registered - Independent Engineer  
 18301 S.R. 161, Plain City, OH 43064  
 614-398-6250 / mike@mpeng.com

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

A-1



PLANS PREPARED BY:

NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:

**CT5441**  
**SHELTON NORTH CENTRAL**  
**FA CODE: 10092045**

165 BIRDSEYE ROAD  
 SHELTON, CT 06484

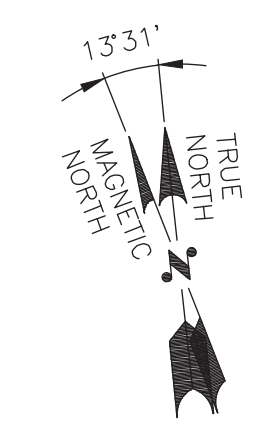
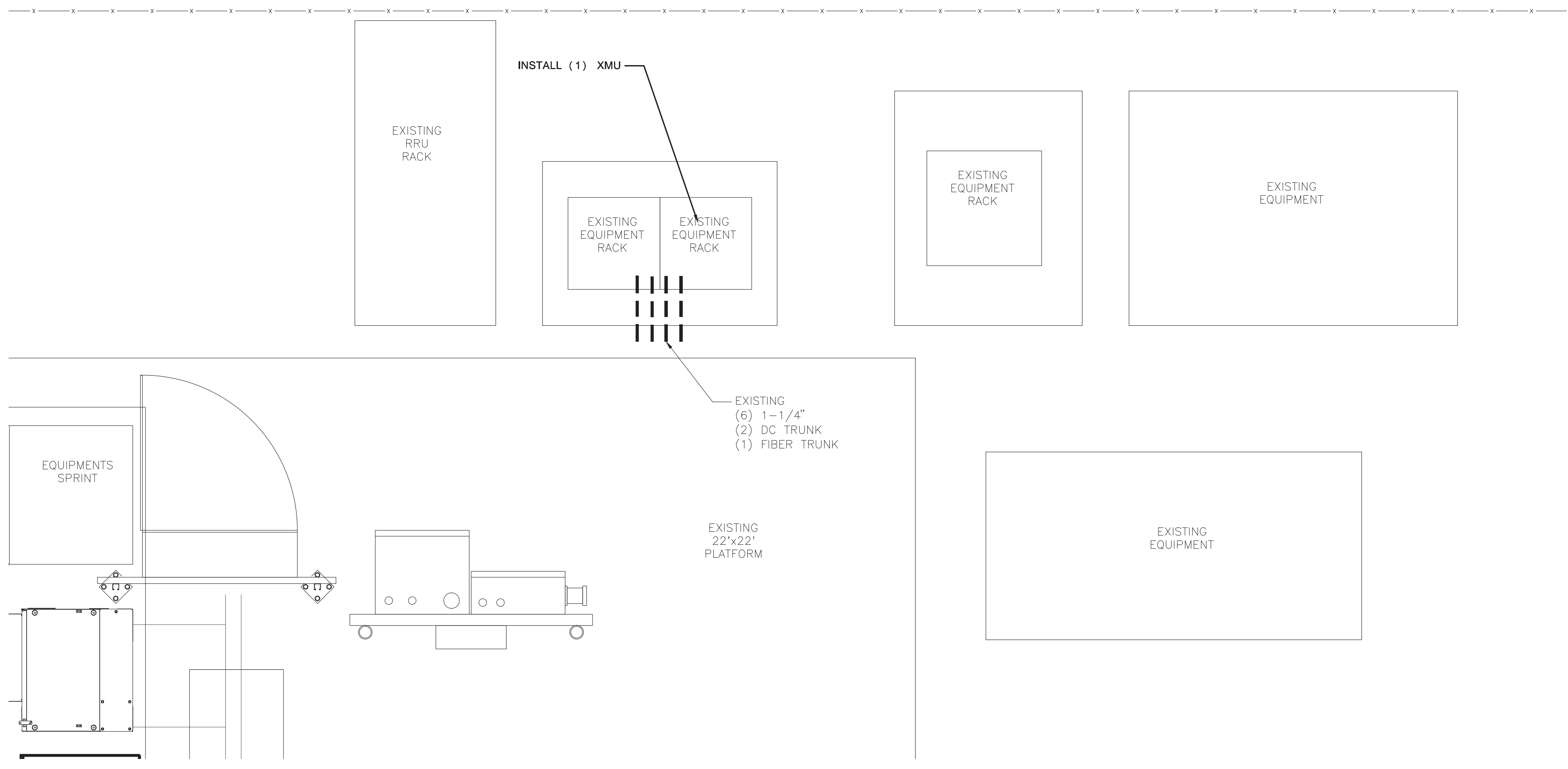


SHEET TITLE:

**EQUIPMENT LAYOUTS**

SHEET NUMBER:

**A-2**

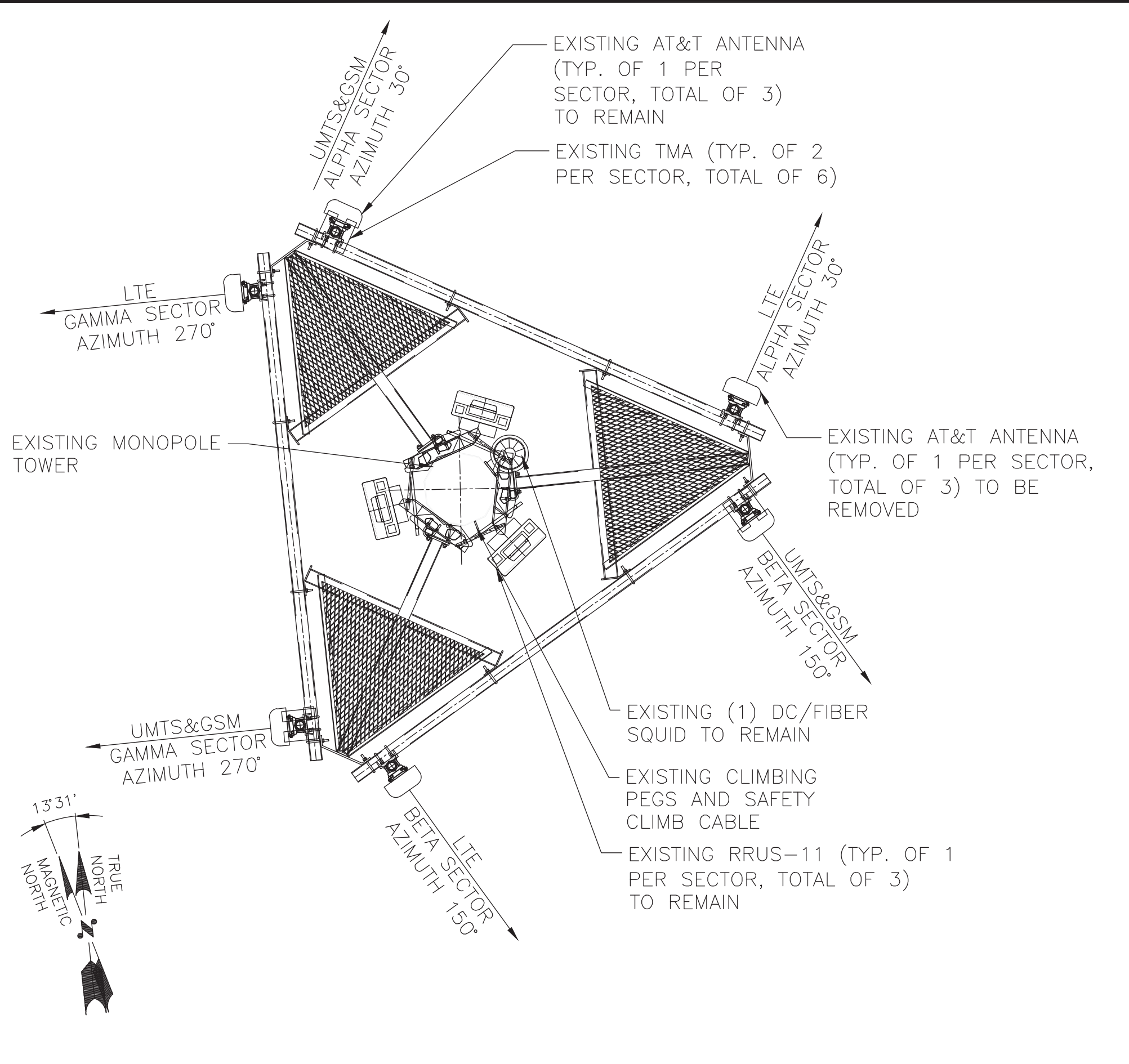


ENLARGED PARTIAL SITE PLAN

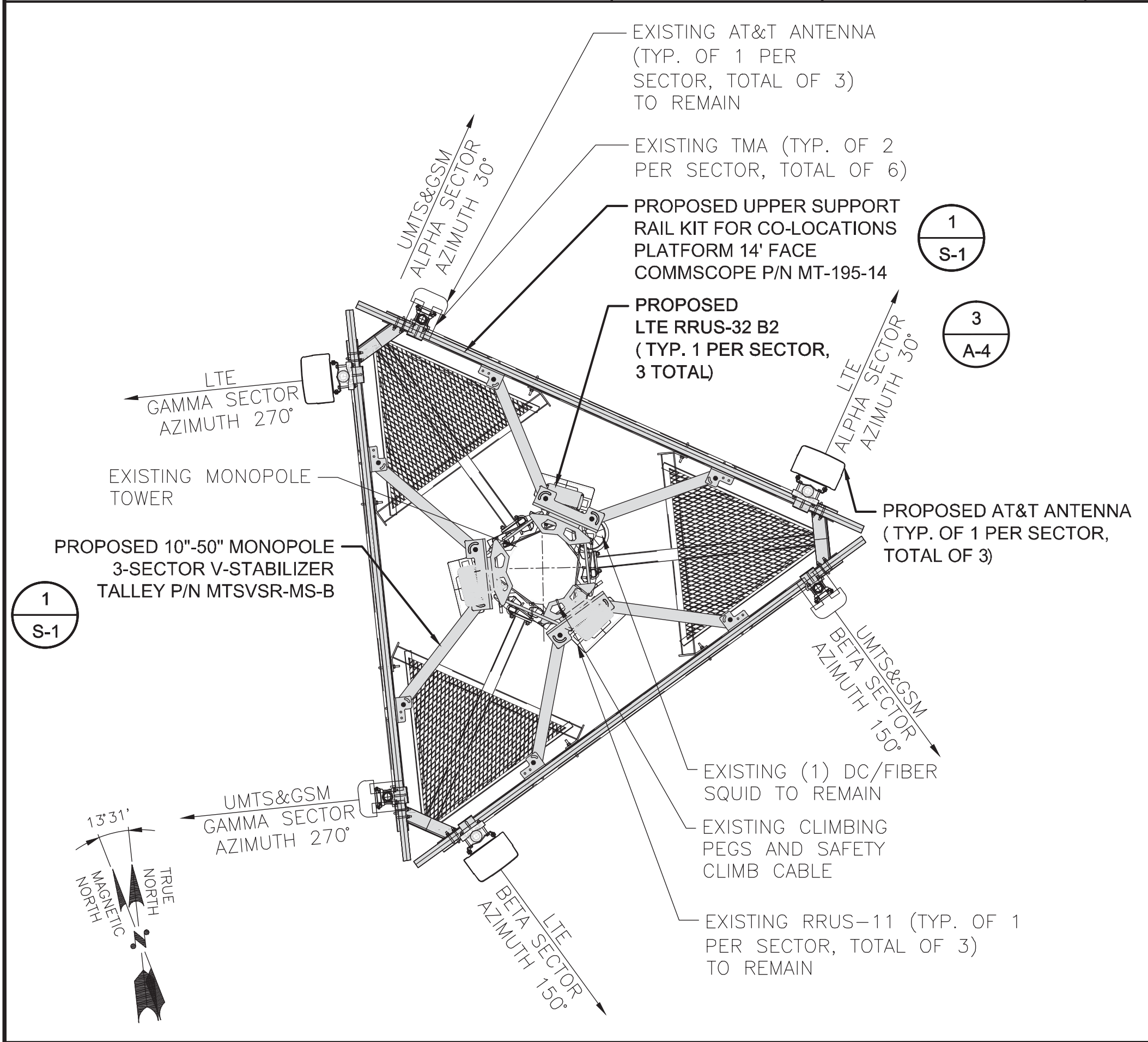
22"x34" SCALE: 3/4" = 1'-0"  
 11"x17" SCALE: 3/8" = 1'-0"

1



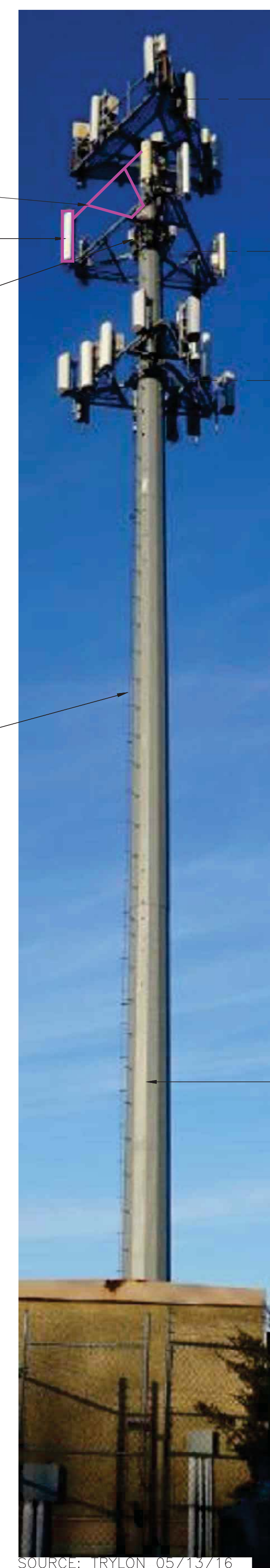


**EXISTING ANTENNA LAYOUT** 22"x34" SCALE: 3/8" = 1'-0" 11"x17" SCALE: 3/16" = 1'-0" 1



**PROPOSED ANTENNA LAYOUT** 22"x34" SCALE: 3/8" = 1'-0" 11"x17" SCALE: 3/16" = 1'-0" 2

- 1 S-1 PROPOSED REINFORCING
- 2 A-3 PROPOSED ANTENNA LAYOUT
- 3 A-4 MOUNT DETAIL



- EXISTING SPRINT ANTENNAS ± 115.0° AGL
- EXISTING AT&T UMTS & GSM ANTENNAS RAD CENTER ± 108.0' AGL TO REMAIN
- EXISTING AT&T LTE ANTENNAS RAD CENTER ± 108.0' AGL TO BE REMOVE
- EXISTING VERIZON ANTENNAS ± 87.0° AGL
- EXISTING MONOPOLE TOWER
- EXISTING SAFETY CLIMB AND CLIMBING PEGS

**SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):** GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

**NOTE:** CARRIER POSITIONS AND RAD. ELEVATIONS PROVIDED BY SBA. TRYLON HAS NOT INDEPENDENTLY FIELD VERIFIED.

**EXISTING ELEVATION** N.T.S. 3

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

16 ESQUIRE ROAD  
BILLERICA, MA 01821

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:

1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:

CT5441  
SHELTON NORTH CENTRAL  
FA CODE: 10092045

165 BIRDSEYE ROAD  
SHELTON, CT 06484

SEAL:

MICHAEL F. PIAROVINSAK, P.E. #25849  
Soil Preparation - Independent Registration  
18303 S.R. 163, Plain City, OH 43064  
614-398-6250 / mike@mpeng.com

SHEET TITLE:

**ANTENNA LAYOUTS,  
TOWER ELEVATION &  
MOUNTING DETAILS**

SHEET NUMBER:

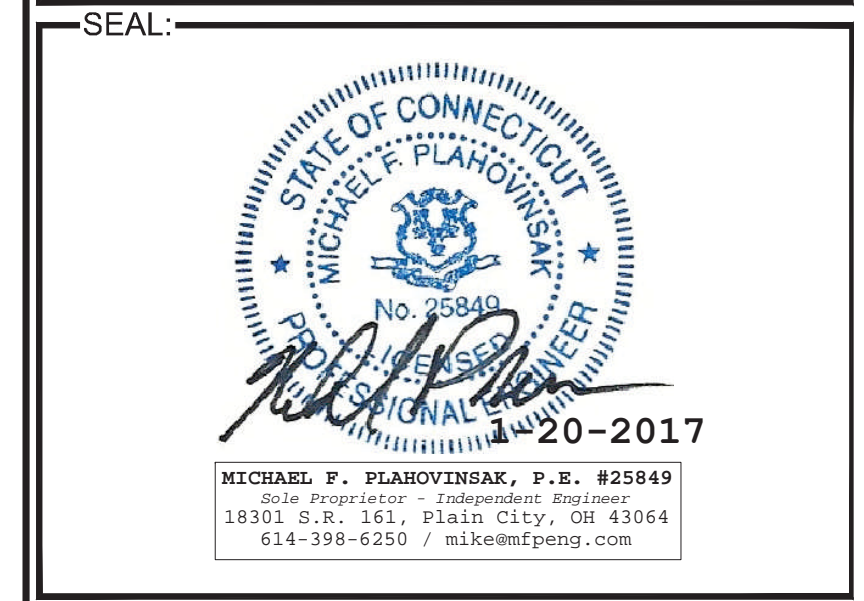
**A-3**





NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:  
**CT5441**  
**SHELTON NORTH CENTRAL**  
FA CODE: 10092045  
165 BIRDSEYE ROAD  
SHELTON, CT 06484

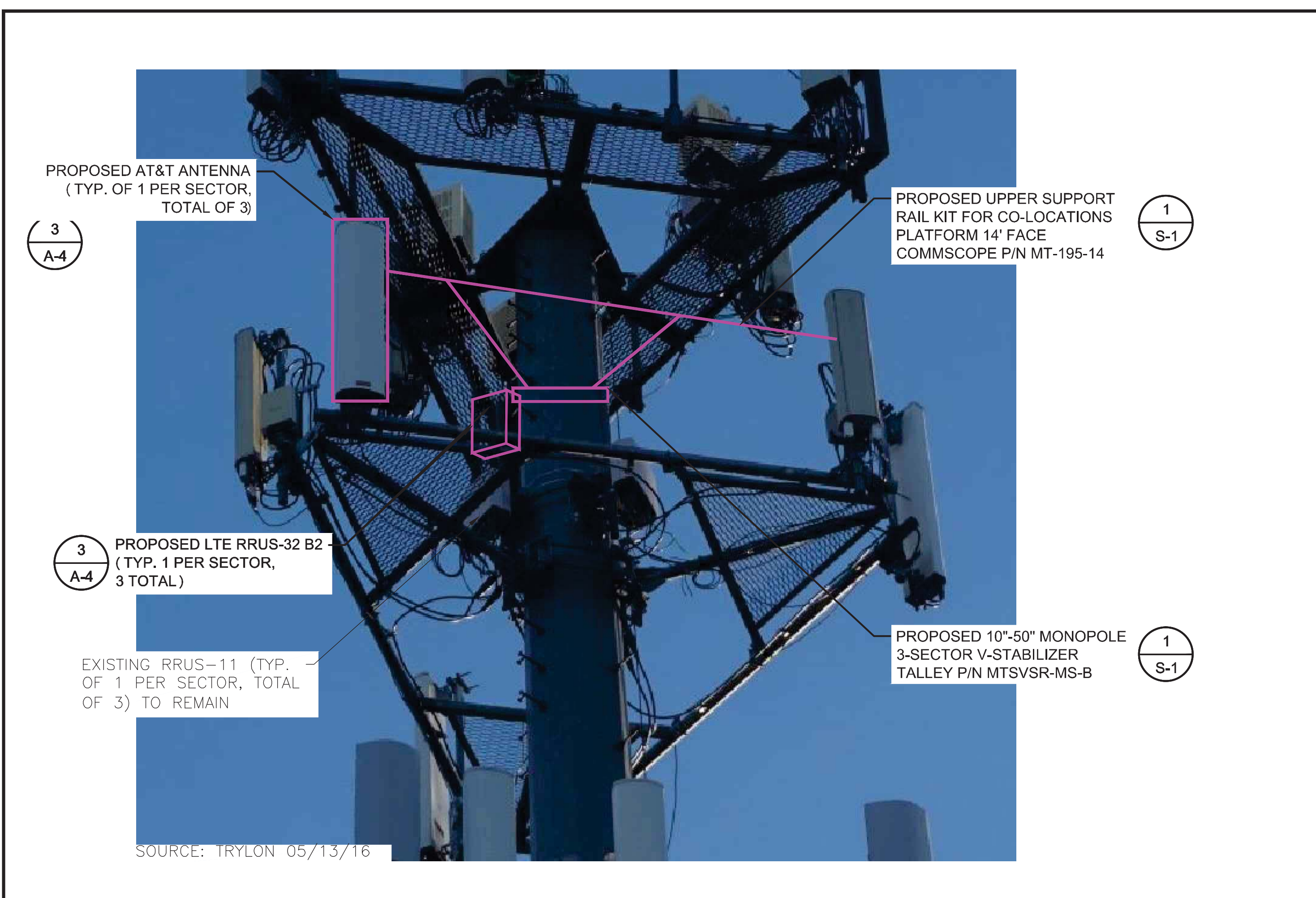
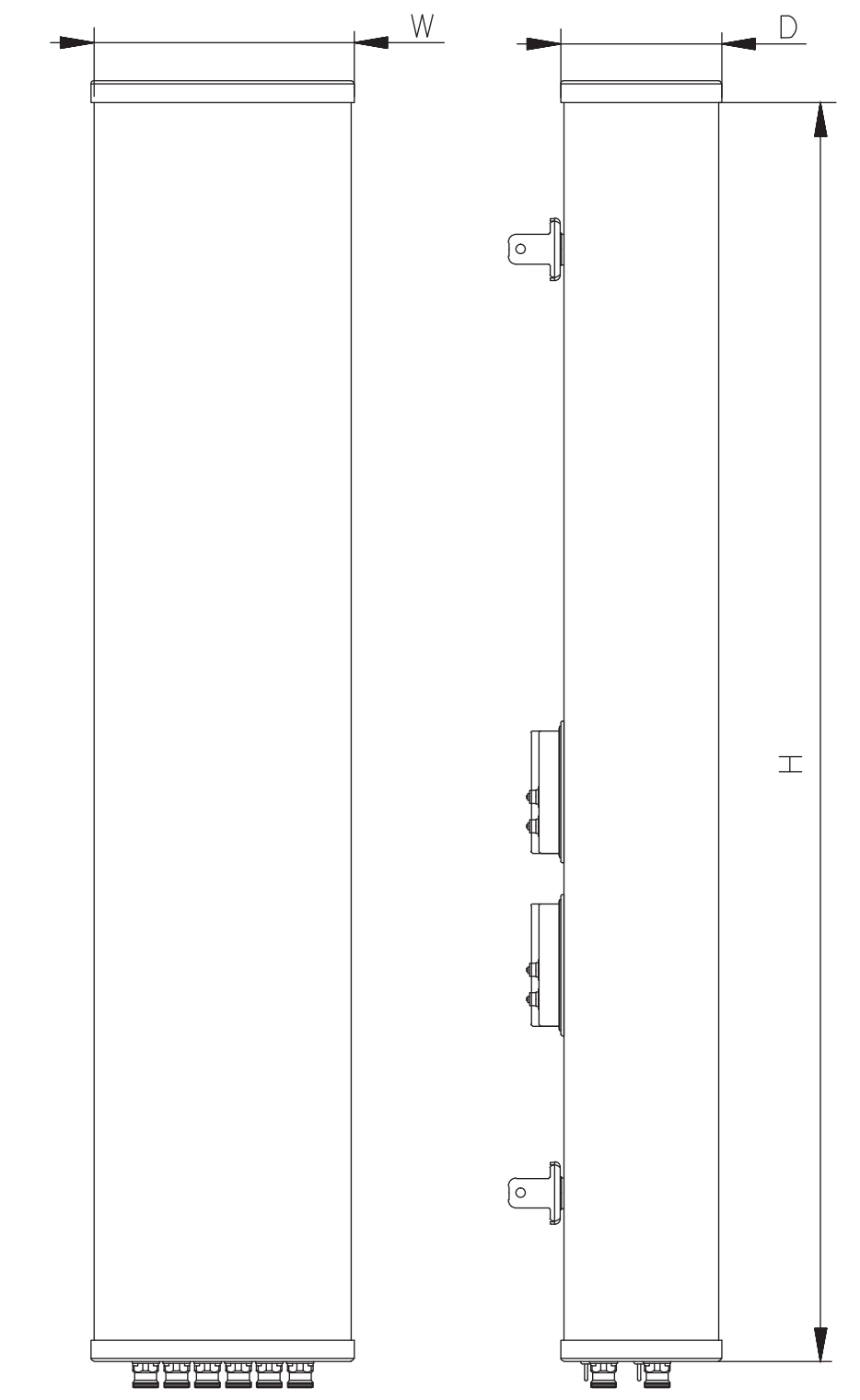


SHEET TITLE:  
**DETAILS**

SHEET NUMBER:  
**A-4**

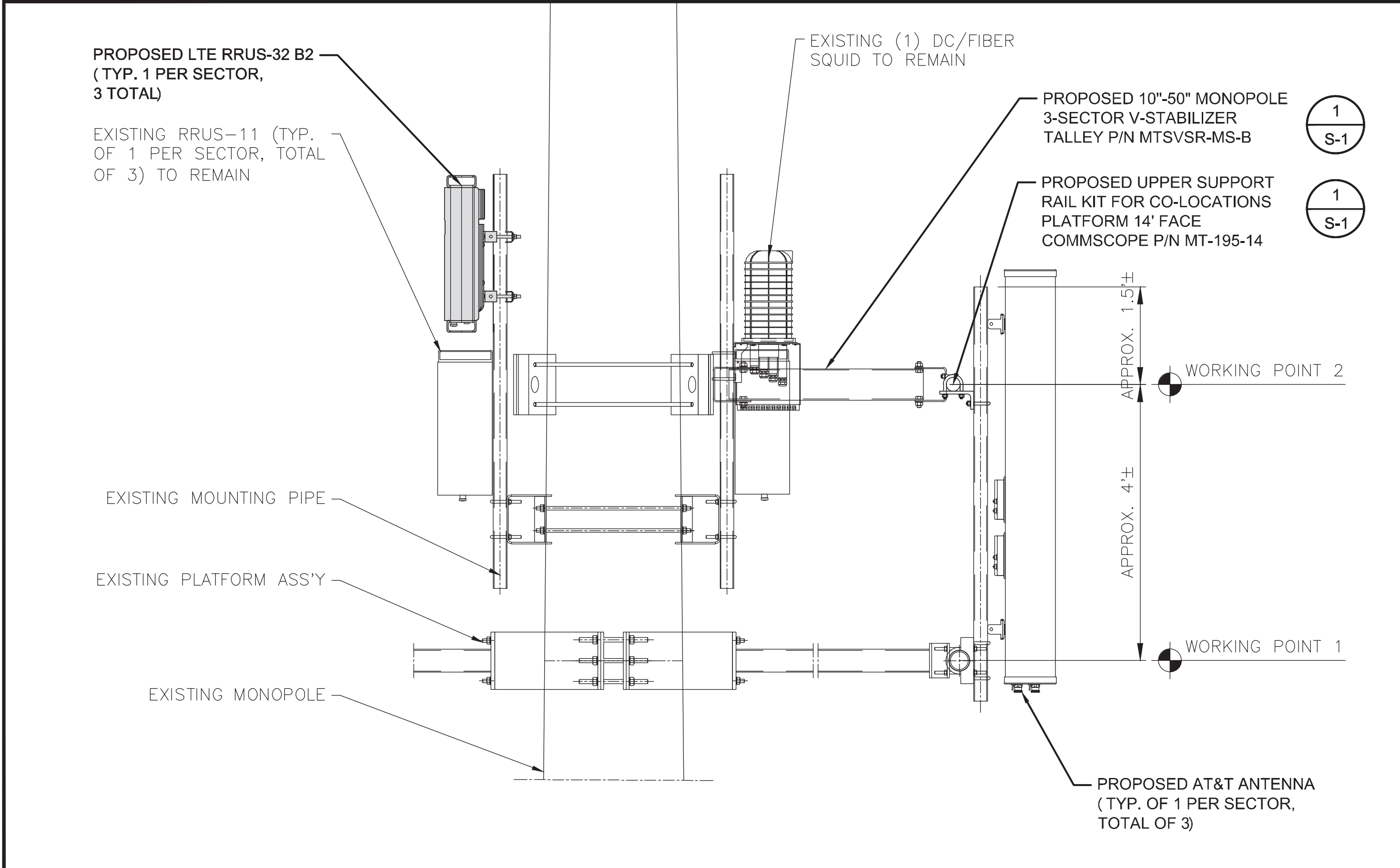
L1900 ANTENNA DIMENSIONS

MODEL	HPA-65R-BUU-H6
MANUF.	CCI
WIDTH	14.8"
DEPTH	9.0"
HEIGHT	72.0"
WEIGHT	50.7 LBS

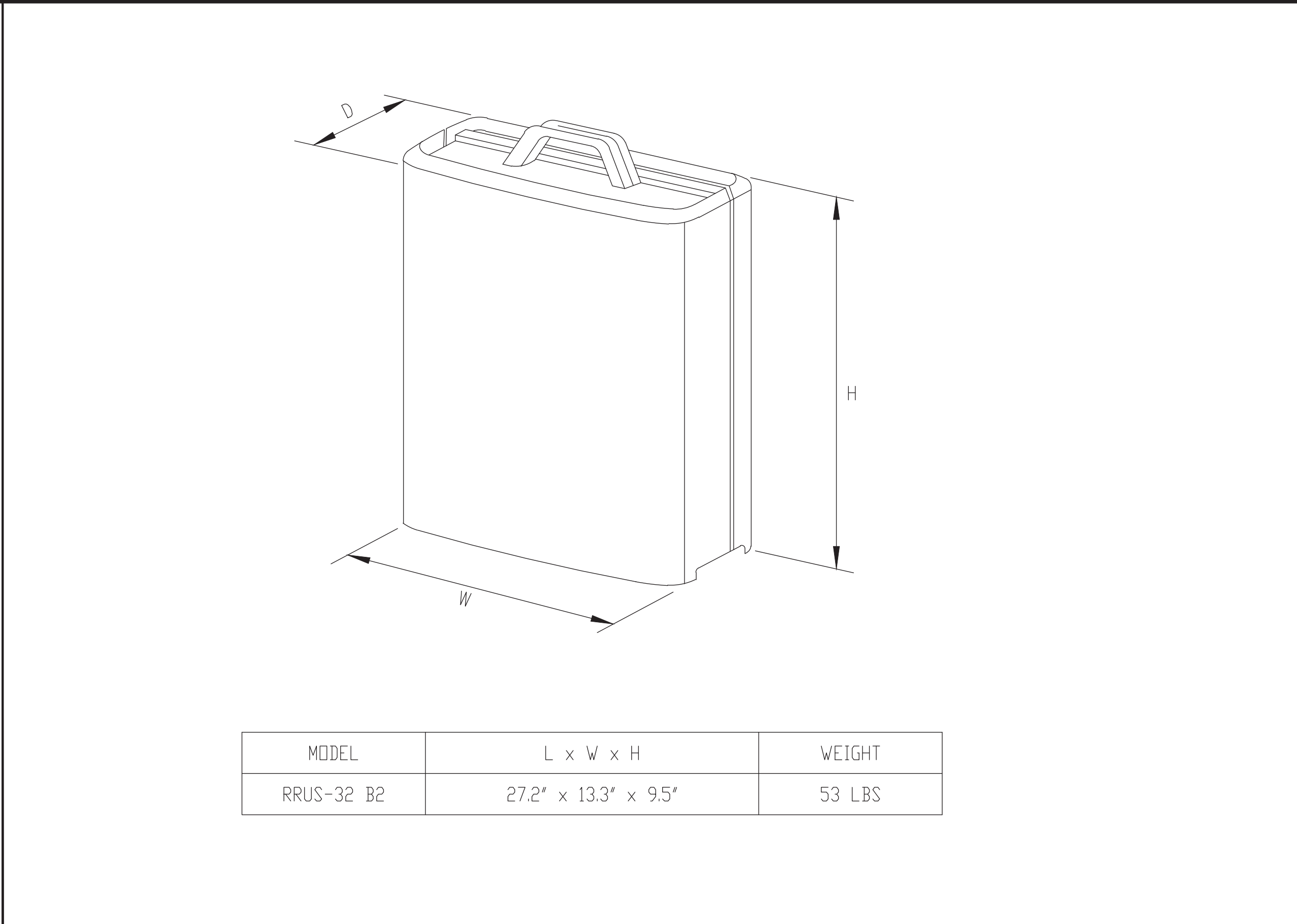


**EQUIPMENT MOUNTING DETAILS** N.T.S 1

**ANTENNA DETAILS** N.T.S 2



**MOUNTING DETAIL** 22"x34" SCALE: 3/4" = 1'-0" 11"x17" SCALE: 3/8" = 1'-0" N.T.S 3



**RRUS DETAILS** N.T.S 4





550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701



16 ESQUIRE ROAD  
BILLERICA, MA 01821



SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:



1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:

CT5441  
SHELTON NORTH CENTRAL  
FA CODE: 10092045

165 BIRDSEYE ROAD  
SHELTON, CT 06484

SEAL:

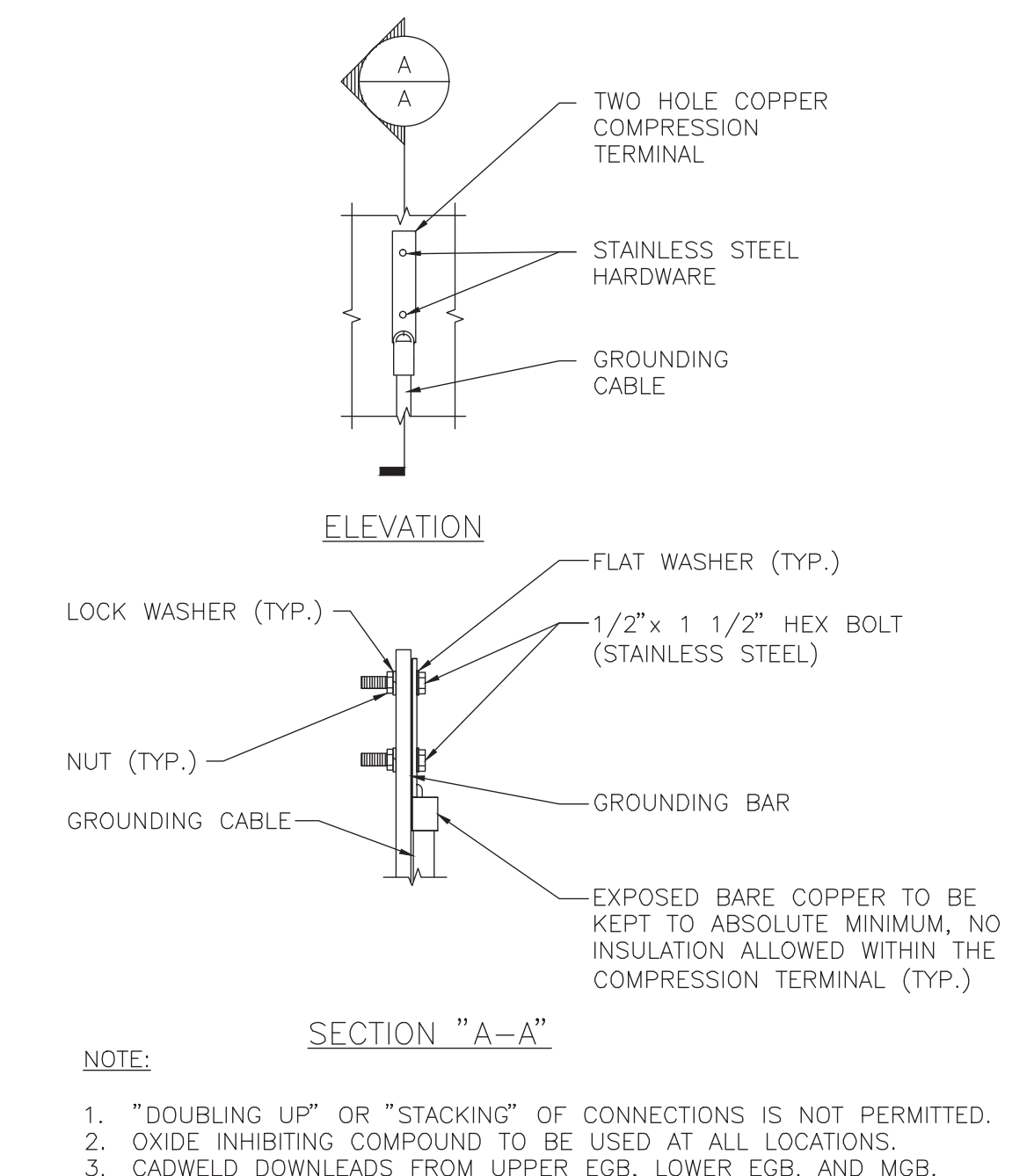
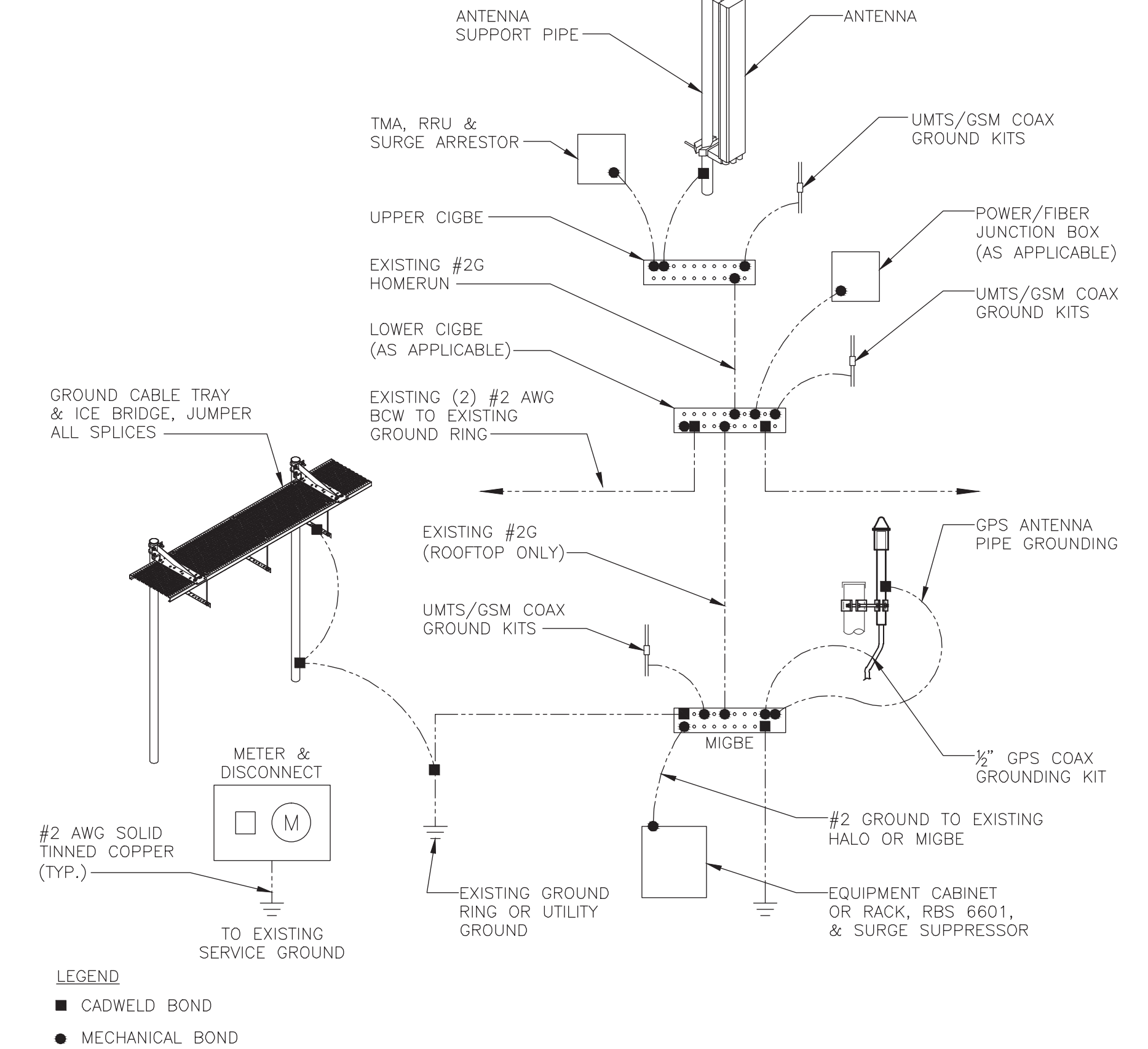
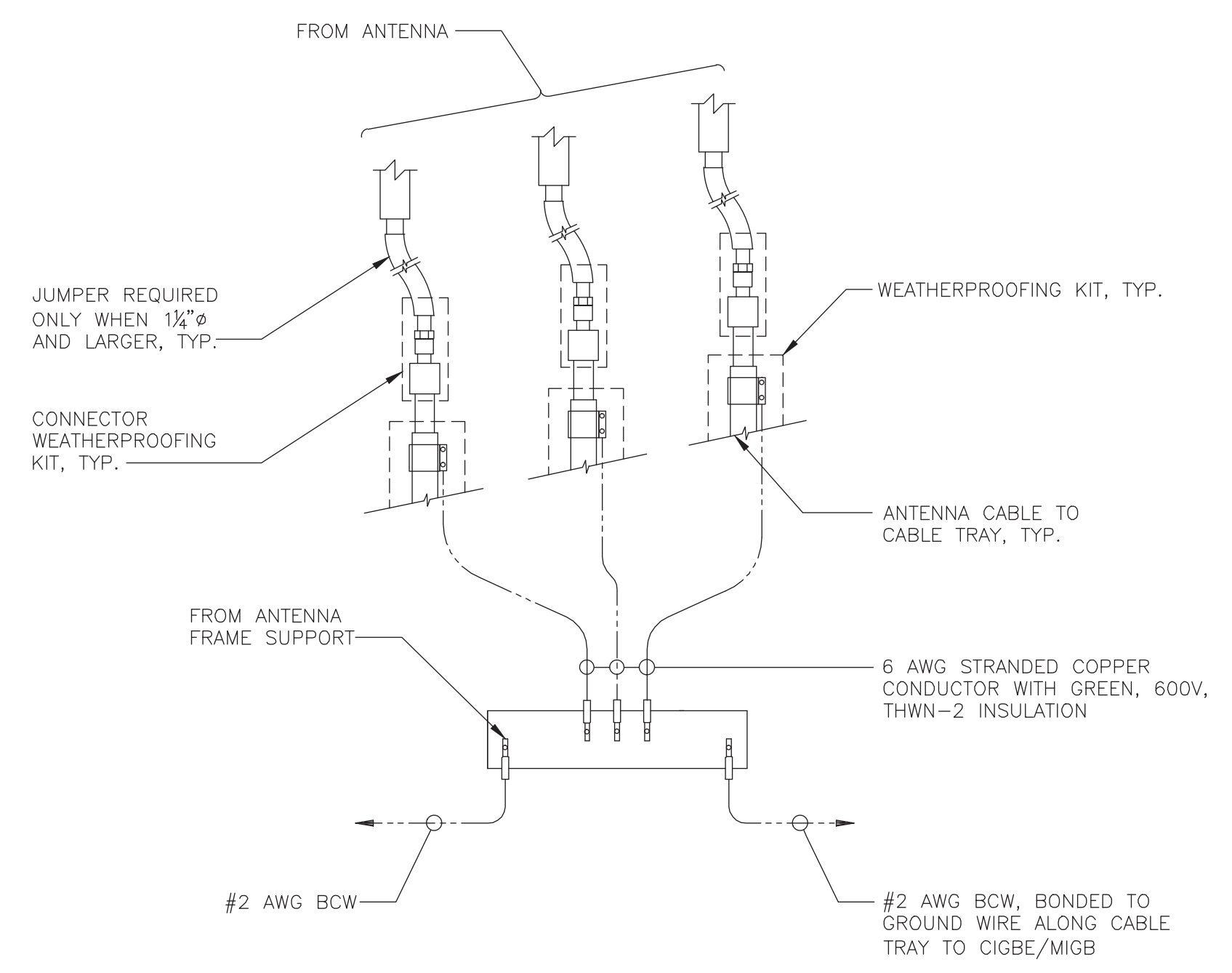


SHEET TITLE:

GROUNDING, ONE-LINE  
DIAGRAM & DETAILS

SHEET NUMBER:

G-1



GROUND WIRE TO GROUND BAR CONNECTION DETAILS

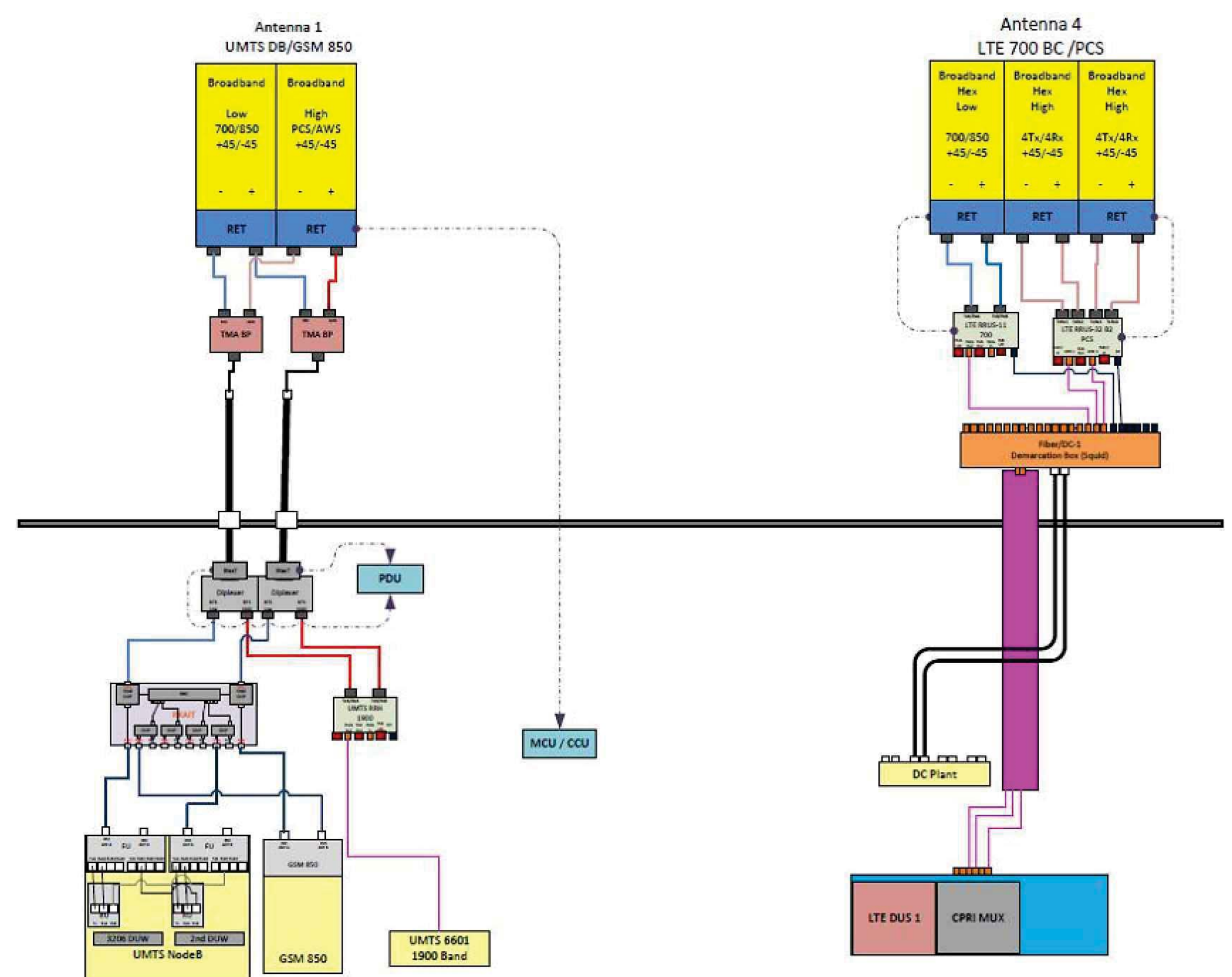
N.T.S 1

GROUND RISER DIAGRAM

N.T.S 2

TYPICAL GROUND BAR CONNECTION DETAILS

N.T.S 3

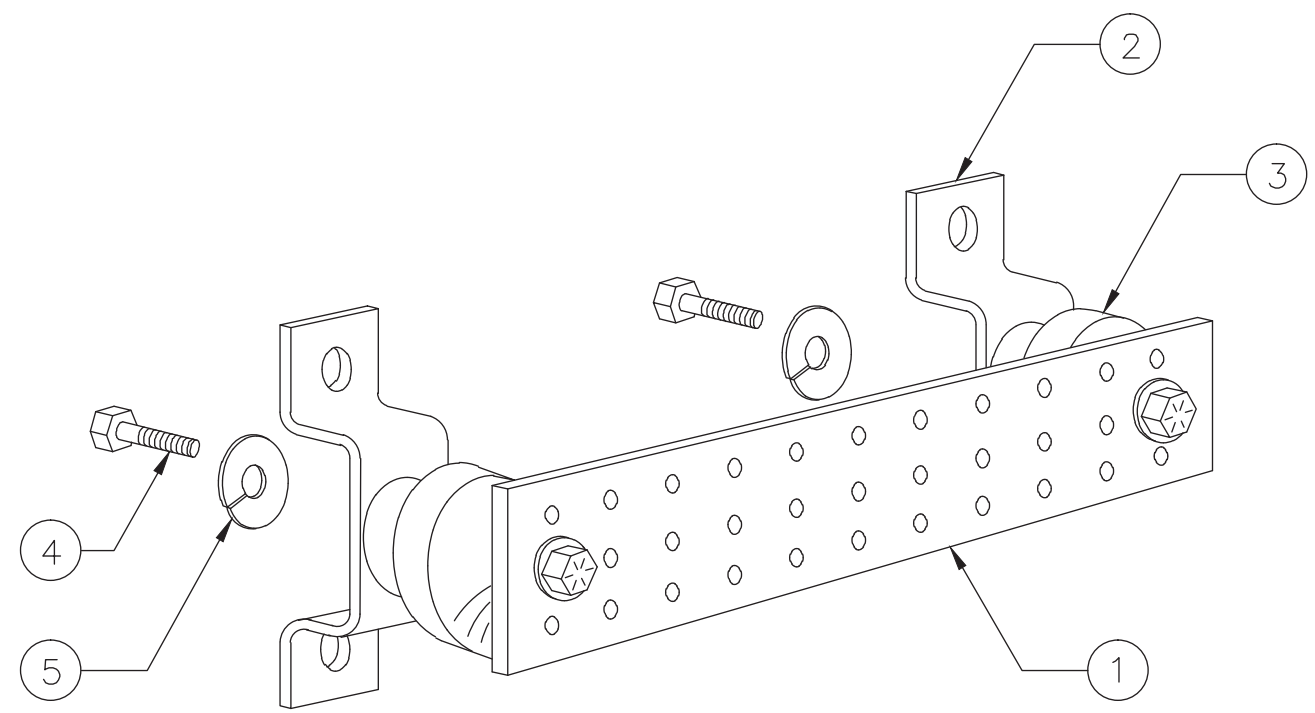


RUN WIRING DIAGRAM

N.T.S 4

GROUND BAR DETAILS

N.T.S 5



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20'x 4'x 1/4')
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	3/8"-11x1" HHCS.
5	4	3/8" LOCK WASHER

- NOTES:
- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION
- SECTION "P" - SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
  - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
  - TELCO GROUND BAR
  - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
  - +24V POWER SUPPLY RETURN BAR (#2)
  - 48V POWER SUPPLY 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)

RUN WIRING DIAGRAM

N.T.S 4

GROUND BAR DETAILS

N.T.S 5





NO.	DATE	DESCRIPTION	BY
A	01/19/17	FOR REVIEW	SE

SITE INFORMATION:

**CT5441**  
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**FA CODE: 10092045**

165 BIRDSEYE ROAD  
SHELTON, CT 06484

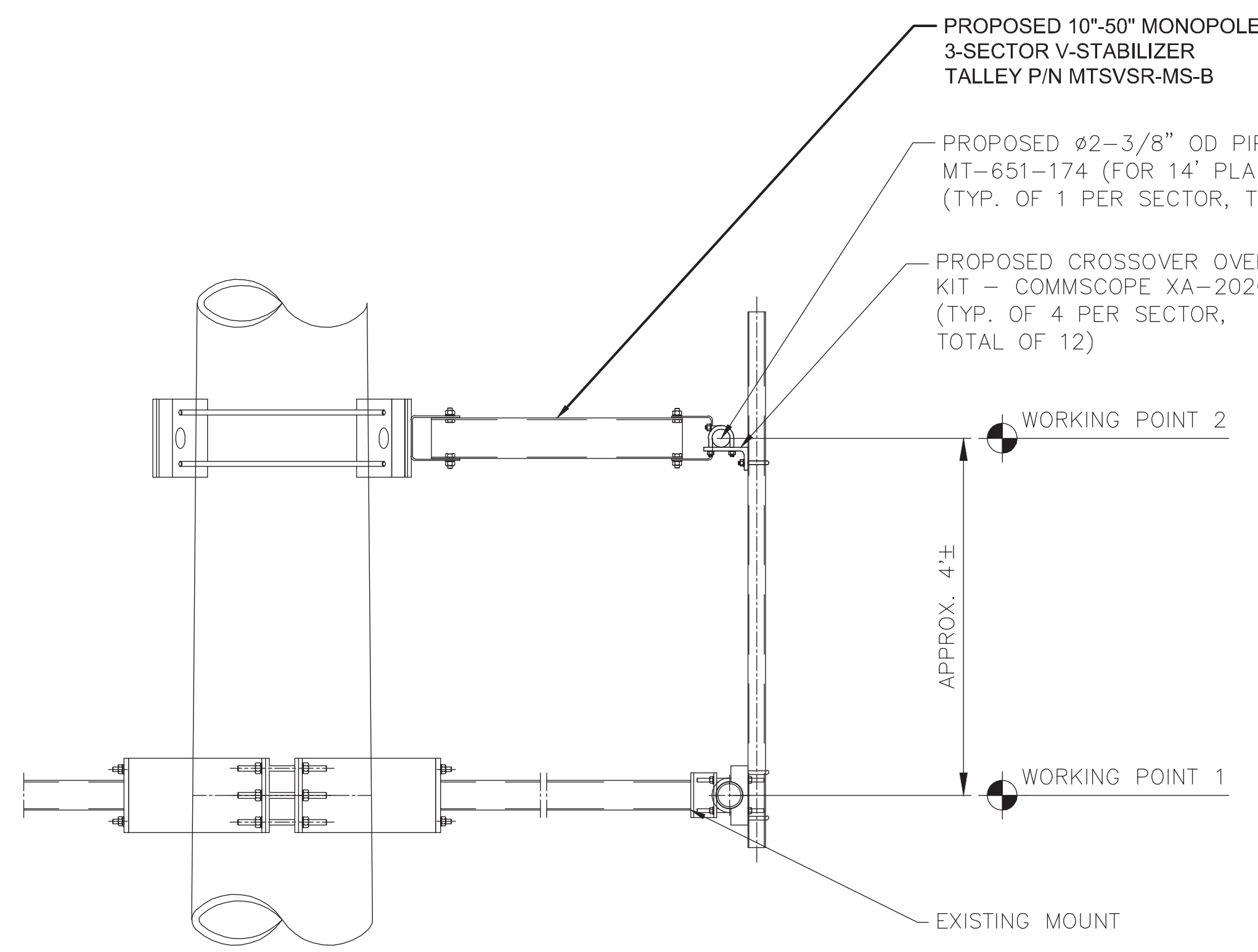


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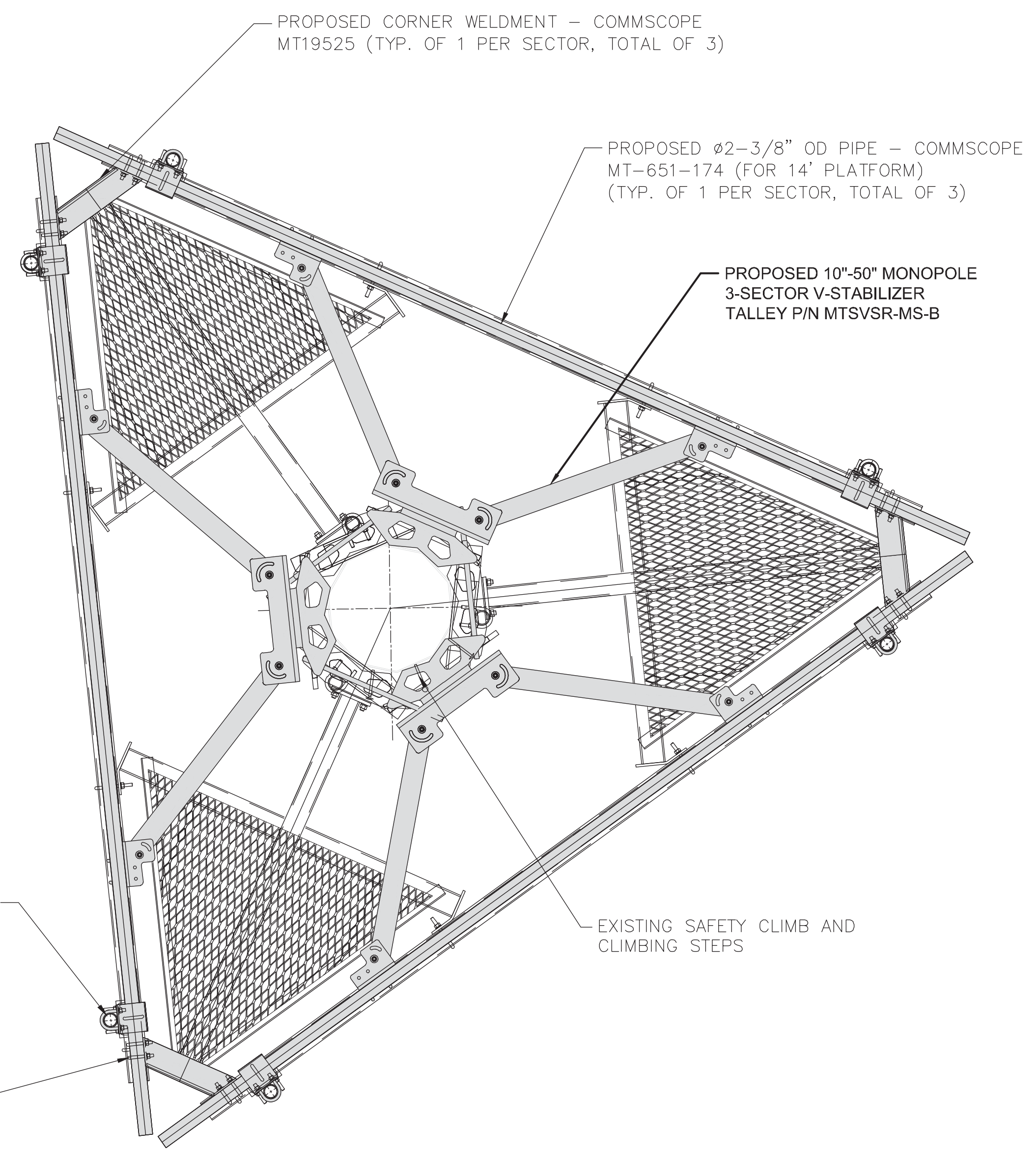
MOUNT REINFORCING  
@ 108.0'

SHEET NUMBER:

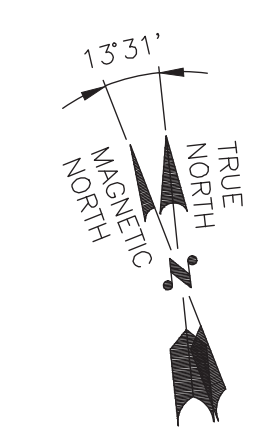
**S-1**



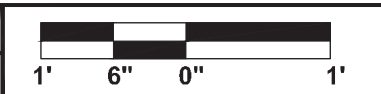
ELEVATION VIEW



PLAN VIEW



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



N.T.S 1