MasTec
Network Solutions

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Connecticut Siting Council

September 12, 2017

ORIGINAL

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

EM-SBA-027-170927

RE:	**Notice of Exempt Modification – Repair Steel on Tower**
Property Address:	**46 Meadow Road, Clinton CT 06413**
Applicant:	**MasTec Network Solutions**

Dear Ms. Bachman:

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

SBA currently maintains a wireless telecommunications facility consisting a 165' Self Support Tower. This tower requires routine replacement to ensure its structural safety. MasTec has been contracted to complete this work on behalf of the tower owner and is asking for an exemption of full citing review based on the information below.

The planned modification to the facility fall squarely within those activities explicitly provided for in R.C.S.A 16-50j-72(b) (2)

1. The proposed modification will not result in an increase in the height of the existing tower. Replacing existing steel members with new steel members.

2. The proposed modification will not involve any changes to the ground – mounted equipment and, therefore, will not require an extension of the site boundary.
3. The purpose of the modification will not increase the noise levels at the facility.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard.
5. The purpose of the modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support the proposed modifications. (See Structural Analysis Report included.

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

Sincerely,

Walter N. McCowan

Walter Mccowan
1000 Centre Green Way, Suite 300,
Cary, NC 27513
Office: (919) 674-5823
Mobile: (919) 889-0121
Email: walter.mccowan@mastec.com

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

Post-Mod Structural Analysis Report

Existing 195 ft Sabre Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT01879-S

Customer Site Name: Clinton 4 CT

Carrier Name: AT&T

Carrier Site ID / Name: FA# 10049127 USID# CT2230 / 2230 Clinton-Meadow

Site Location: 46 Meadow Road

Clinton, Connecticut

Middlesex County

Latitude: 41.275205

Longitude: -72.497711

Analysis Result:

Max Structural Usage: 97% [Pass]

Max Foundation Usage: 99% [Pass]

Report Prepared By : Ram Kodali

Introduction

The purpose of this report is to summarize the analysis results on the 195 ft Sabre Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

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

Sources of Information

Tower Drawings	Sabre, Job # 00-10101, dated 11/19/99
Foundation Drawing	Sabre, Dwg # 9014022, dated 11/23/99
Geotechnical Report	JGI, Project # 99500G, dated 12/13/99 Original design soil parameters from Sabre Job # 00-10101, dated 11/23/99
Existing Modification	FDH, Project # 1465YH1400, dated 6/3/14 FDH, Project # 15BZTJ1400, dated 9/24/15
Proposed Modification	TES Job # 32039

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 135 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	D
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

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	194.0	3	AIR 21 B2A B4P - Panel	(3) Sector Frame	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	AIR 21 B4A B2P - Panel			
3	192.5	3	KRY 112 144/1			
4	184.0	1	PD1151	Direct	(1) 7/8"	Town of Clinton
5	182.0	3	APXVTM14-C-120 - Panel	(3) Sector Frame	(4) 1 1/4"	Sprint
6		3	APXVSPP18-C-A20 - Panel			
7		3	TD-RRH8x20-25			
8		3	1900 MHz RRH			
9		3	800 MHz RRH			
10		4	ACU-A20-N			
11		3	ALU 800 MHz Filter			
12	162.0	6	SBNHH-1D65B - Panel	(3) Sector Frame	(10) 1 5/8" (2) 1 5/8" Fiber	Verizon
13		4	LPA-80063-4CF - Panel			
14		2	LPA-80063/6CF - Panel			
15		6	FD9R6004/2C-3L			
16		3	RRH2X60-AWS			
17		3	RRH2X60-PCS			
18		3	RRH2X60-700			
19		2	DB-T1-6Z-8AB-0Z			
-	150.5	6	Powerwave 7770 - Panel	(3) Sector Frame	(12) 1 5/8" (1) 1/2" Fiber & (2) 3/4" DC in (1) 3" Flex Conduit	AT&T
-		3	KMW AMXCD1465 - Panel			
-		3	Andrew SBNHH-1D65A - Panel			
-		6	Powerwave TT19-08BP111-001 - TMA			
-		12	Powerwave 7020			
-		6	Ericsson RRUS 11 - RRU			
-		3	Ericsson RRUS A2 - RRU			
-		1	Raycap DC6-48-60-18-8F			
27	141.5	3	SD312HL	(3) Side Arm	(4) 7/8"	Town of Clinton
28	102.0	1	Radiowave RDH4518A - Dish	Pipe	(2) CAT5e	
29	75.0	1	GPS	Direct	(1) 1/2	Verizon

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
20	150.5	6	Powerwave 7770 - Panel	(3) Sector Frame	(12) 1 5/8" (1) 1/2" Fiber & (2) 3/4" DC in (1) 3" Flex Conduit	AT&T
21		3	Andrew SBNHH-1D65A - Panel			
22		6	Powerwave TT19-08BP111-001 - TMA			
23		12	Powerwave 7020			
24		3	Ericsson RRUS 11 - RRU			
25		3	Ericsson RRUS 32 B2 - RRU			
26		1	Raycap DC6-48-60-18-8F			

There are no proposed coax lines.

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**97.0%**	**82.0%**	**13.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	507.4	447.8	54.7

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

Operational Condition (Rigidity)

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2322 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the design ANSI/TIA/EIA 222-G standards under a basic wind speed of 105 mph no ice and 50 mph with 3/4" radial ice after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 32039

Pre-Mod Installation Determination

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

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

Standard Conditions

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

2. The 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 or/and 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.

Site Name:	Clinton 4 CT			**Code:**	EIA/TIA-222-G	5/5/2017
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	195.00 (ft)	**Base Width:**	23.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	5.00	**Operational WS:**	60.00	Page: 1

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Section Properties

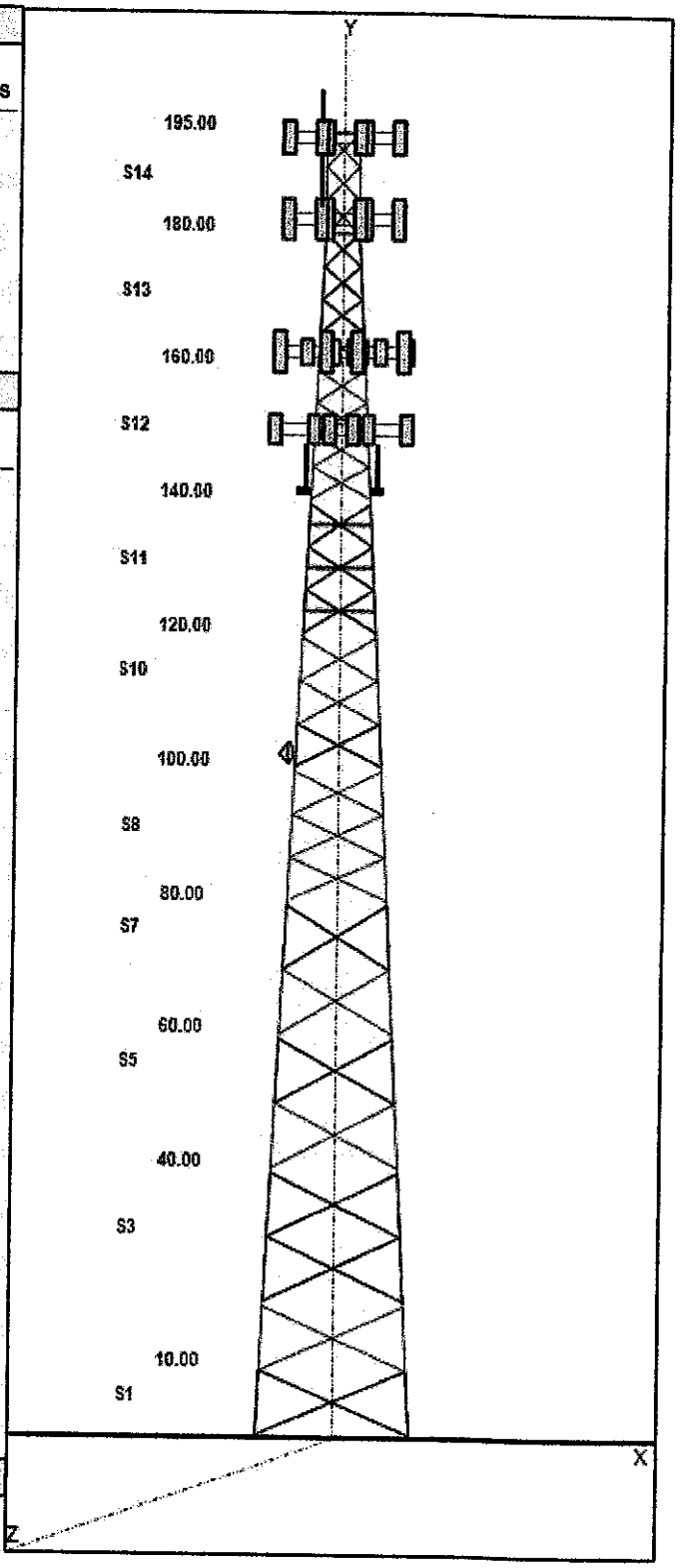
Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	PX 8" DIA PIPE	SAE 4X4X0.375	
3-5	MOD 8"PST+5x5x3/8L	SAE 4X4X0.375	
6-7	MOD 6"PX+L4x4x3/8	SAE 4X4X0.375	
8	MOD 6"PST+4x4x3/8L	SAE 3X3X0.375	
9-10	PX 5" DIA PIPE	SAE 2.5X2.5X0.375	
11	PX 4" DIA PIPE	SAE 2.5X2.5X0.375	
12	PX 3" DIA PIPE	SAE 2.5X2.5X0.375	
13	PST 3" DIA PIPE	SAE 1.75X1.75X0.1875	SAE 1.75X1.75X0.1875
14	PST 2" DIA PIPE	SAE 1.75X1.75X0.1875	SAE 1.75X1.75X0.1875

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
194.00	194.00	3	Sector Frame
194.00	194.00	3	AIR 21 B2A B4P
194.00	194.00	3	AIR 21 B4A B2P
192.50	192.50	3	KRY 112 144/1
184.00	192.60	1	PD1151
182.00	182.00	3	Sector Frame
182.00	182.00	3	APXVTM14-C-120
182.00	182.00	3	APXVSPP18-C-A20
182.00	182.00	3	TD-RRH8x20-25
182.00	182.00	3	1900 MHz RRH
182.00	182.00	3	800 MHz RRH
182.00	182.00	4	ACU-A20-N
182.00	182.00	3	ALU 800 MHz Filter
162.00	162.00	3	Sector Frame
162.00	162.00	6	SBNHH-1D65B
162.00	162.00	4	LPA-80063-4CF
162.00	162.00	2	LPA-80063/6CF
162.00	162.00	6	FD9R6004/2C-3L
162.00	162.00	3	RRH2X60-AWS
162.00	162.00	3	RRH2X60-PCS
162.00	162.00	3	RRH2X60-700
162.00	162.00	2	DB-T1-6Z-8AB-0Z
150.50	150.50	3	Sector Frame
150.50	150.50	6	7770
150.50	150.50	3	SBNHH-1D65A
150.50	150.50	6	TT19-08BP111-001
150.50	150.50	12	7020
150.50	150.50	3	RRUS 11
150.50	150.50	3	RRUS 32 B2
150.50	150.50	1	DC6-48-60-18-8F
141.50	141.50	3	Side Arm
141.50	144.96	3	SD312HL
102.00	102.00	1	Radiowave RDH4518A
102.00	102.00	1	Pipe Mount
75.00	75.00	1	GPS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	195.00	1	Climbing Ladder
0.00	195.00	1	Safety Cable



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0.00	194.00	12	1 5/8" Coax
0.00	194.00	1	1 5/8" Fiber
0.00	194.00	1	W/G Ladder
0.00	184.00	1	7/8" Coax
0.00	182.00	4	1 1/4" Coax
0.00	182.00	1	W/G Ladder
0.00	162.00	10	1 5/8" Coax
0.00	162.00	2	1 5/8" Fiber
0.00	162.00	1	W/G Ladder
0.00	150.50	6	1 5/8" Coax
0.00	150.50	4	1 5/8" Coax
0.00	150.50	2	1 5/8" Coax
0.00	150.50	1	3" Flex Conduit
0.00	150.50	1	W/G Ladder
0.00	141.50	4	7/8" Coax
0.00	102.00	2	CAT5e
0.00	75.00	1	1/2" Coax

Base Reactions

Leg		Overturning	
Max Uplift:	-447.81 (kips	Moment:	9672.64 (ft-kips)
Max Down:	507.40 (kips	Total Down:	65.36 (kips)
Max Shear:	54.65 (kips	Total Shear:	90.89 (kips)

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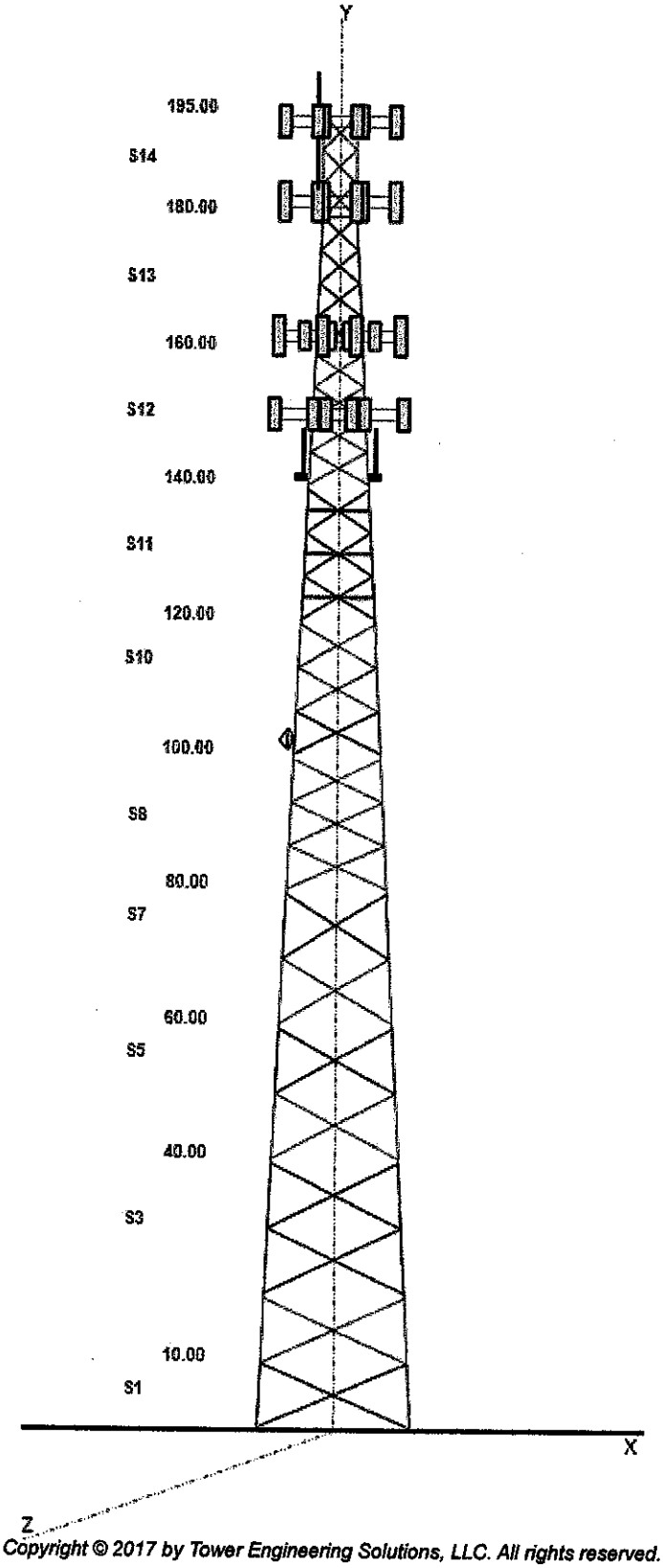
Site Name:	Clinton 4 CT			**Code:**	EIA/TIA-222-G	5/5/2017
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	195.00 (ft)	**Base Width:**	23.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	5.00	**Operational WS:**	60.00	Page: 3



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Type: Self Support
Site Name: Clinton 4 CT
Height: 195.00 (ft)

5/5/2017

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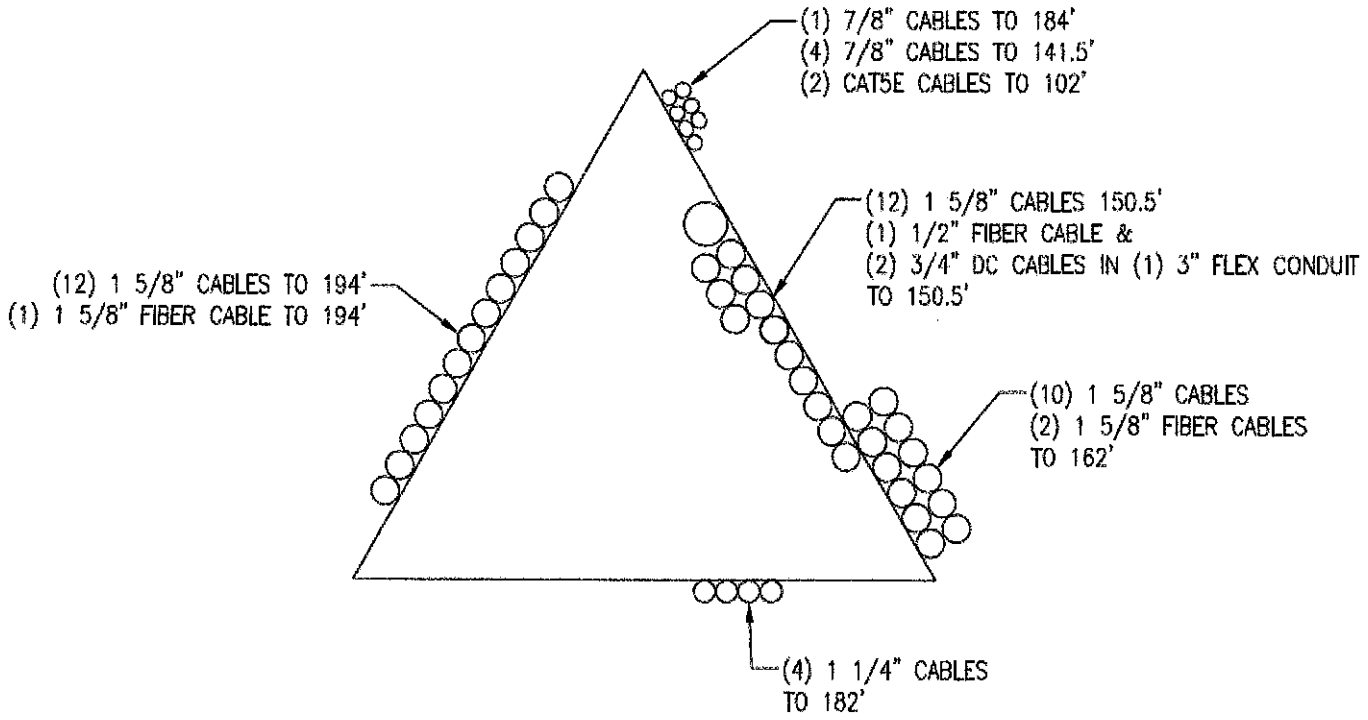

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 5	

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Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
194.00	Sector Frame	3	500.00	17.500	1213.84	31.741	0.000	0.000	0.000	0.75	0.75	0.000
194.00	AIR 21 B2A B4P	3	91.50	6.090	264.95	7.214	56.000	12.100	7.900	1.00	0.86	0.000
194.00	AIR 21 B4A B2P	3	90.40	6.090	263.85	7.214	56.000	12.100	7.900	1.00	0.86	0.000
192.50	KRY 112 144/1	3	11.00	0.410	22.02	0.896	6.900	6.100	2.700	0.80	0.67	0.000
184.00	PD1151	1	20.00	4.820	243.60	11.145	206.400	2.800	2.800	1.00	1.00	8.600
182.00	Sector Frame	3	500.00	17.500	1206.88	31.602	0.000	0.000	0.000	0.75	0.75	0.000
182.00	APXVTM14-C-120	3	56.00	6.340	218.85	7.468	56.300	12.600	6.300	0.80	0.79	0.000
182.00	APXVSPP18-C-A20	3	57.00	8.020	259.69	9.332	72.000	11.800	7.000	0.80	0.83	0.000
182.00	TD-RRH8x20-25	3	70.00	4.050	182.15	4.874	26.100	18.600	6.700	0.80	0.67	0.000
182.00	1900 MHz RRH	3	44.00	3.800	154.54	5.207	23.000	13.000	17.000	0.80	0.67	0.000
182.00	800 MHz RRH	3	53.00	2.490	127.89	3.648	19.700	13.000	10.800	0.80	0.67	0.000
182.00	ACU-A20-N	4	1.00	0.140	5.35	0.441	4.000	2.000	3.500	0.80	0.67	0.000
182.00	ALU 800 MHz Filter	3	8.80	0.780	26.67	1.435	10.000	8.000	3.000	0.80	0.67	0.000
162.00	Sector Frame	3	500.00	17.500	1206.88	31.602	0.000	0.000	0.000	0.75	0.75	0.000
162.00	SBNHH-1D65B	6	40.60	8.080	245.24	9.389	72.000	11.900	7.100	0.80	0.83	0.000
162.00	LPA-80063-4CF	4	20.00	6.150	228.53	7.197	47.400	15.200	13.100	0.80	0.93	0.000
162.00	LPA-80063/6CF	2	27.00	9.600	319.21	10.971	70.900	15.000	13.100	0.80	0.94	0.000
162.00	FD9R6004/2C-3L	6	3.10	0.360	11.23	0.809	5.800	6.500	1.500	0.80	0.67	0.000
162.00	RRH2X60-AWS	3	55.00	3.500	136.02	4.299	37.000	11.000	6.000	0.80	0.67	0.000
162.00	RRH2X60-PCS	3	55.00	2.200	140.85	2.845	22.000	12.000	9.400	0.80	0.67	0.000
162.00	RRH2X60-700	3	55.00	3.500	136.02	4.299	37.000	11.000	6.000	0.80	0.67	0.000
162.00	DB-T1-6Z-8AB-0Z	2	18.90	4.800	164.77	5.685	24.000	24.000	10.000	0.90	0.90	0.000
150.50	Sector Frame	3	450.00	14.000	801.84	21.037	0.000	0.000	0.000	0.75	0.75	0.000
150.50	7770	6	35.00	5.500	170.17	6.565	55.000	11.000	5.000	0.80	0.73	0.000
150.50	SBNHH-1D65A	3	33.50	5.880	191.86	6.960	55.000	11.900	7.100	0.80	0.83	0.000
150.50	TT19-08BP111-001	6	16.00	0.640	36.24	1.233	9.900	6.700	5.400	0.80	0.67	0.000
150.50	7020	12	2.20	0.400	12.43	0.884	4.900	8.300	2.400	0.80	0.67	0.000
150.50	RRUS 11	3	50.70	2.520	139.89	3.171	17.000	17.800	9.200	0.80	0.67	0.000
150.50	RRUS 32 B2	3	77.00	1.650	125.49	2.230	20.900	9.500	3.300	0.80	0.67	0.000
150.50	DC6-48-60-18-8F	1	31.80	0.920	93.62	1.358	24.000	11.000	11.000	1.00	1.00	0.000
141.50	Side Arm	3	120.00	4.500	224.71	9.746	0.000	0.000	0.000	0.75	0.75	0.000
141.50	SD312HL	3	10.30	3.450	108.73	6.263	83.100	3.500	18.900	1.00	1.00	3.462
102.00	Radiowave RDH4518A	1	110.00	8.920	276.38	10.612	0.000	0.000	0.000	1.00	1.00	0.000
102.00	Pipe Mount	1	100.00	2.000	180.71	3.345	0.000	0.000	0.000	1.00	1.00	0.000
75.00	GPS	1	10.00	1.000	37.36	1.664	12.000	9.000	6.000	1.00	1.00	0.000
	Totals:	**116**	**9,706.80**		**27,122.43**						**Number of Appurtenances :**	**35**

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 6	

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Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	195.00	Climbing Ladder	1	1.00	6.90	100.00	2	Individual NR		N	1.00	1.00	
0.00	195.00	Safety Cable	1	0.38	0.27	100.00	2	Individual NR		N	1.00	1.00	
0.00	194.00	1 5/8" Coax	12	1.98	1.04	100.00	1	Individual IR		N	1.00	1.00	
0.00	194.00	1 5/8" Fiber	1	1.63	1.10	100.00	1	Individual NR		N	1.00	1.00	
0.00	194.00	W/G Ladder	1	1.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	184.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	182.00	1 1/4" Coax	4	1.55	0.66	100.00	3	Individual IR		N	1.00	1.00	
0.00	182.00	W/G Ladder	1	1.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	162.00	1 5/8" Coax	10	1.98	1.04	50.00	2	Block		N	0.50	1.00	
0.00	162.00	1 5/8" Fiber	2	1.63	1.10	50.00	2	Block		N	0.50	1.00	
0.00	162.00	W/G Ladder	1	1.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.50	1 5/8" Coax	6	1.98	1.04	50.00	2	Block		N	0.50	1.00	
0.00	150.50	1 5/8" Coax	4	1.98	1.04	100.00	2	Individual IR		N	1.00	1.00	
0.00	150.50	1 5/8" Coax	2	1.98	1.04	100.00	2	Individual IR		N	1.00	1.00	0
0.00	150.50	3" Flex Conduit	1	3.00	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.50	W/G Ladder	1	1.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	141.50	7/8" Coax	4	1.11	0.52	50.00	2	Block		N	0.50	1.00	
0.00	102.00	CAT5e	2	0.19	0.02	50.00	2	Block		N	1.00	1.00	
0.00	75.00	1/2" Coax	1	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind

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

1.2D + 1.6W 105 mph Wind at Normal To Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	1.00	1.00	0.00	21.71	64.15	0.00	4,181.6	0.0	2076.52	1623.55	3,700.06
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	21.15	64.15	0.00	4,119.4	0.0	2014.20	1623.91	3,638.11
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	128.31	0.00	7,857.8	0.0	4716.14	3663.91	8,380.05
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	64.15	0.00	3,833.8	0.0	2415.06	1965.80	4,380.86
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	64.15	0.00	3,773.9	0.0	2424.68	2035.62	4,460.30
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.06	64.15	0.00	3,618.9	0.0	2250.18	2095.62	4,345.80
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	18.57	63.88	0.00	3,559.7	0.0	2227.64	2139.76	4,367.40
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	35.97	127.22	0.00	6,242.5	0.0	4382.41	4399.49	8,781.90
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	8.41	42.36	0.00	1,692.0	0.0	1116.97	1499.78	2,616.76
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	1.00	1.00	0.00	16.19	84.58	0.00	3,317.1	0.0	2163.65	3043.14	5,206.79
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	1.00	1.00	0.00	28.13	126.91	0.00	4,812.4	0.0	3706.98	4792.19	8,499.16
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.41	104.65	0.00	3,824.2	0.0	2932.84	4055.26	6,988.10
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	15.71	62.55	0.00	1,894.7	0.0	2181.16	2386.16	4,567.32
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.08	0.00	988.1	0.0	1433.61	1295.50	2,729.11
														53,716.0	**0.0**			**72,661.72**

Load Case: 1.2D + 1.6W 60° Wind

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

1.2D + 1.6W 105 mph Wind at 60° From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	0.80	1.00	0.00	18.55	64.15	0.00	4,181.6	0.0	1773.83	1623.55	3,397.37
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	18.10	64.15	0.00	4,119.4	0.0	1723.94	1623.91	3,347.85
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	128.31	0.00	7,857.8	0.0	4134.79	3663.91	7,798.70
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	64.15	0.00	3,833.8	0.0	2126.10	1965.80	4,091.90
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	64.15	0.00	3,773.9	0.0	2140.62	2035.62	4,176.24
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	16.62	64.15	0.00	3,618.9	0.0	1962.38	2095.62	4,058.00
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.24	63.88	0.00	3,559.7	0.0	1948.36	2139.76	4,088.12
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	31.59	127.22	0.00	6,242.5	0.0	3848.91	4399.49	8,248.40
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	7.27	42.36	0.00	1,692.0	0.0	965.73	1499.78	2,465.51
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	0.80	1.00	0.00	14.04	84.58	0.00	3,317.1	0.0	1876.31	3043.14	4,919.45
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	0.80	1.00	0.00	24.01	126.91	0.00	4,812.4	0.0	3163.23	4792.19	7,955.41
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.40	104.65	0.00	3,824.2	0.0	2519.72	4055.26	6,574.98
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	13.83	62.55	0.00	1,894.7	0.0	1920.59	2386.16	4,306.74
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.08	0.00	988.1	0.0	1242.98	1295.50	2,538.49
														53,716.0	**0.0**			**67,967.16**

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind

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

1.2D + 1.6W 105 mph Wind at 90° From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	0.85	1.00	0.00	19.34	64.15	0.00	4,181.6	0.0	1849.50	1623.55	3,473.05
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	18.86	64.15	0.00	4,119.4	0.0	1796.50	1623.91	3,420.41
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	128.31	0.00	7,857.8	0.0	4280.13	3663.91	7,944.04
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	64.15	0.00	3,833.8	0.0	2198.34	1965.80	4,164.14
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	64.15	0.00	3,773.9	0.0	2211.64	2035.62	4,247.26
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.23	64.15	0.00	3,618.9	0.0	2034.33	2095.62	4,129.95
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	16.82	63.88	0.00	3,559.7	0.0	2018.18	2139.76	4,157.94
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	32.69	127.22	0.00	6,242.5	0.0	3982.29	4399.49	8,381.78
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	7.56	42.36	0.00	1,692.0	0.0	1003.54	1499.78	2,503.32
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	0.85	1.00	0.00	14.58	84.58	0.00	3,317.1	0.0	1948.14	3043.14	4,991.28
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	0.85	1.00	0.00	25.04	126.91	0.00	4,812.4	0.0	3299.17	4792.19	8,091.35
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.15	104.65	0.00	3,824.2	0.0	2623.00	4055.26	6,678.26
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.30	62.55	0.00	1,894.7	0.0	1985.73	2386.16	4,371.89
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.08	0.00	988.1	0.0	1290.64	1295.50	2,586.14
														53,716.0	**0.0**			**69,140.80**

Load Case: 0.9D + 1.6W Normal Wind

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00

0.9D + 1.6W 105 mph Wind at Normal To Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	1.00	1.00	0.00	21.71	64.15	0.00	3,136.2	0.0	2076.52	1623.55	3,700.06
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	21.15	64.15	0.00	3,089.5	0.0	2014.20	1623.91	3,638.11
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	128.31	0.00	5,893.3	0.0	4716.14	3663.91	8,380.05
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	64.15	0.00	2,875.3	0.0	2415.06	1965.80	4,380.86
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	64.15	0.00	2,830.4	0.0	2424.68	2035.62	4,460.30
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.06	64.15	0.00	2,714.1	0.0	2250.18	2095.62	4,345.80
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	18.57	63.88	0.00	2,669.8	0.0	2227.64	2139.76	4,367.40
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	35.97	127.22	0.00	4,681.9	0.0	4382.41	4399.49	8,781.90
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	8.41	42.36	0.00	1,269.0	0.0	1116.97	1499.78	2,616.76
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	1.00	1.00	0.00	16.19	84.58	0.00	2,487.8	0.0	2163.65	3043.14	5,206.79
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	1.00	1.00	0.00	28.13	126.91	0.00	3,609.3	0.0	3706.98	4792.19	8,499.16
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.41	104.65	0.00	2,868.2	0.0	2932.84	4055.26	6,988.10
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	15.71	62.55	0.00	1,421.0	0.0	2181.16	2386.16	4,567.32
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.08	0.00	741.1	0.0	1433.61	1295.50	2,729.11
														40,287.0	**0.0**			**72,661.72**

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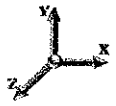
Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	



TES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 60° Wind

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00

0.9D + 1.6W 105 mph Wind at 60° From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	0.80	1.00	0.00	18.55	64.15	0.00	3,136.2	0.0	1773.83	1623.55	3,397.37
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	18.10	64.15	0.00	3,089.5	0.0	1723.94	1623.91	3,347.85
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	128.31	0.00	5,893.3	0.0	4134.79	3663.91	7,798.70
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	64.15	0.00	2,875.3	0.0	2126.10	1965.80	4,091.90
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	64.15	0.00	2,830.4	0.0	2140.62	2035.62	4,176.24
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	16.62	64.15	0.00	2,714.1	0.0	1962.38	2095.62	4,058.00
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.24	63.88	0.00	2,669.8	0.0	1948.36	2139.76	4,088.12
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	31.59	127.22	0.00	4,681.9	0.0	3848.91	4399.49	8,248.40
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	7.27	42.36	0.00	1,269.0	0.0	965.73	1499.78	2,465.51
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	0.80	1.00	0.00	14.04	84.58	0.00	2,487.8	0.0	1876.31	3043.14	4,919.45
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	0.80	1.00	0.00	24.01	126.91	0.00	3,609.3	0.0	3163.23	4792.19	7,955.41
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.40	104.65	0.00	2,868.2	0.0	2519.72	4055.26	6,574.98
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	13.83	62.55	0.00	1,421.0	0.0	1920.59	2386.16	4,306.74
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.08	0.00	741.1	0.0	1242.98	1295.50	2,538.49
														40,287.0	**0.0**			**67,967.16**

Load Case: 0.9D + 1.6W 90° Wind

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00

0.9D + 1.6W 105 mph Wind at 90° From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	24.71	15.825	14.40	0.00	0.13	2.85	0.85	1.00	0.00	19.34	64.15	0.00	3,136.2	0.0	1849.50	1623.55	3,473.05
2	15.0	24.72	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	18.86	64.15	0.00	3,089.5	0.0	1796.50	1623.91	3,420.41
3	30.0	27.88	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	128.31	0.00	5,893.3	0.0	4280.13	3663.91	7,944.04
4	45.0	29.92	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	64.15	0.00	2,875.3	0.0	2198.34	1965.80	4,164.14
5	55.0	30.98	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	64.15	0.00	2,830.4	0.0	2211.64	2035.62	4,247.26
6	65.0	31.90	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.23	64.15	0.00	2,714.1	0.0	2034.33	2095.62	4,129.95
7	75.0	32.70	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	16.82	63.88	0.00	2,669.8	0.0	2018.18	2139.76	4,157.94
8	90.0	33.75	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	32.69	127.22	0.00	4,681.9	0.0	3982.29	4399.49	8,381.78
9	103.3	34.57	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	7.56	42.36	0.00	1,269.0	0.0	1003.54	1499.78	2,503.32
10	113.3	35.13	10.749	12.38	0.00	0.14	2.80	0.85	1.00	0.00	14.58	84.58	0.00	2,487.8	0.0	1948.14	3043.14	4,991.28
11	130.0	35.98	20.633	15.02	0.00	0.17	2.69	0.85	1.00	0.00	25.04	126.91	0.00	3,609.3	0.0	3299.17	4792.19	8,091.35
12	150.0	36.89	15.082	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.15	104.65	0.00	2,868.2	0.0	2623.00	4055.26	6,678.26
13	170.0	37.70	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.30	62.55	0.00	1,421.0	0.0	1985.73	2386.16	4,371.89
14	187.5	38.35	6.701	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.08	0.00	741.1	0.0	1290.64	1295.50	2,586.14
														40,287.0	**0.0**			**69,140.80**

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind

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

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.60	15.825	28.67	14.27	0.19	2.63	1.00	1.00	1.24	32.25	101.09	18.63	7,846.0	3664.4	403.92	501.08	905.00
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	1.00	1.00	1.39	32.43	103.74	20.79	8,202.1	4082.7	400.49	519.84	920.33
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	1.00	1.00	1.49	70.76	217.74	34.67	16,907.	9049.7	940.68	1192.16	2,132.83
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	1.00	1.00	1.55	34.57	110.10	18.05	8,478.3	4644.5	485.23	647.44	1,132.67
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	1.00	1.00	1.58	34.02	110.73	18.42	8,465.9	4692.1	488.69	673.96	1,162.64
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	1.00	1.00	1.61	30.74	111.26	18.73	8,179.3	4560.5	460.69	700.63	1,161.33
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	1.00	1.00	1.63	30.14	111.45	17.64	8,113.1	4553.3	457.28	711.24	1,168.52
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	1.00	1.00	1.66	63.18	223.56	33.17	15,504.	9262.1	942.58	1444.78	2,387.36
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	1.00	1.00	1.68	16.20	73.48	11.21	4,450.1	2758.1	258.91	492.81	751.72
10	113.3	7.97	10.749	35.05	22.67	0.28	2.36	1.00	1.00	1.70	31.50	146.05	22.62	8,788.5	5471.4	503.32	993.65	1,496.97
11	130.0	8.16	20.633	46.96	31.94	0.32	2.25	1.00	1.00	1.72	49.02	219.99	34.41	13,590.	8778.1	765.47	1518.65	2,284.12
12	150.0	8.36	15.082	45.08	33.39	0.35	2.17	1.00	1.00	1.75	42.86	179.04	32.14	10,904.	7080.0	661.39	1304.89	1,966.28
13	170.0	8.55	9.382	43.21	31.52	0.40	2.07	1.00	1.00	1.77	36.86	110.62	24.15	6,656.3	4761.7	553.21	870.12	1,423.34
14	187.5	8.70	6.701	28.97	23.03	0.43	2.00	1.00	1.00	1.78	25.56	57.23	13.98	3,830.0	2841.9	378.36	436.30	814.66
														129,916.2	**76200.3**			**19,707.77**

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind

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

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.60	15.825	28.67	14.27	0.19	2.63	0.80	1.00	1.24	29.08	101.09	18.63	7,846.0	3664.4	364.28	501.08	865.36
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	0.80	1.00	1.39	29.39	103.74	20.79	8,202.1	4082.7	362.86	519.84	882.70
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	0.80	1.00	1.49	65.11	217.74	34.67	16,907.	9049.7	865.66	1192.16	2,057.82
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	0.80	1.00	1.55	31.93	110.10	18.05	8,478.3	4644.5	448.16	647.44	1,095.59
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	0.80	1.00	1.58	31.50	110.73	18.42	8,465.9	4692.1	452.37	673.96	1,126.33
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	0.80	1.00	1.61	28.30	111.26	18.73	8,179.3	4560.5	424.16	700.63	1,124.79
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	0.80	1.00	1.63	27.81	111.45	17.64	8,113.1	4553.3	421.96	711.24	1,133.20
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	0.80	1.00	1.66	58.80	223.56	33.17	15,504.	9262.1	877.25	1444.78	2,322.03
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	0.80	1.00	1.68	15.06	73.48	11.21	4,450.1	2758.1	240.71	492.81	733.52
10	113.3	7.97	10.749	35.05	22.67	0.28	2.36	0.80	1.00	1.70	29.35	146.05	22.62	8,788.5	5471.4	468.97	993.65	1,462.62
11	130.0	8.16	20.633	46.96	31.94	0.32	2.25	0.80	1.00	1.72	44.89	219.99	34.41	13,590.	8778.1	701.03	1518.65	2,219.68
12	150.0	8.36	15.082	45.08	33.39	0.35	2.17	0.80	1.00	1.75	39.84	179.04	32.14	10,904.	7080.0	614.85	1304.89	1,919.73
13	170.0	8.55	9.382	43.21	31.52	0.40	2.07	0.80	1.00	1.77	34.98	110.62	24.15	6,656.3	4761.7	525.05	870.12	1,395.18
14	187.5	8.70	6.701	28.97	23.03	0.43	2.00	0.80	1.00	1.78	24.22	57.23	13.98	3,830.0	2841.9	358.52	436.30	794.82
														129,916.2	**76200.3**			**19,133.36**

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Section Forces

Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

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

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.60	15.825	28.67	14.27	0.19	2.63	0.85	1.00	1.24	29.87	101.09	18.63	7,846.0	3664.4	374.19	501.08	875.27
2	15.0	5.60	15.237	29.92	15.52	0.20	2.59	0.85	1.00	1.39	30.15	103.74	20.79	8,202.1	4082.7	372.27	519.84	892.11
3	30.0	6.32	28.213	73.08	31.90	0.24	2.47	0.85	1.00	1.49	66.52	217.74	34.67	16,907.	9049.7	884.42	1192.16	2,076.57
4	45.0	6.78	13.208	36.50	15.91	0.25	2.43	0.85	1.00	1.55	32.59	110.10	18.05	8,478.3	4644.5	457.42	647.44	1,104.86
5	55.0	7.03	12.642	36.38	15.79	0.26	2.41	0.85	1.00	1.58	32.13	110.73	18.42	8,465.9	4692.1	461.45	673.96	1,135.41
6	65.0	7.23	12.188	31.71	15.57	0.25	2.44	0.85	1.00	1.61	28.91	111.26	18.73	8,179.3	4560.5	433.29	700.63	1,133.92
7	75.0	7.41	11.639	31.49	15.35	0.26	2.41	0.85	1.00	1.63	28.39	111.45	17.64	8,113.1	4553.3	430.79	711.24	1,142.03
8	90.0	7.65	21.896	68.89	36.62	0.30	2.29	0.85	1.00	1.66	59.89	223.56	33.17	15,504.	9262.1	893.58	1444.78	2,338.36
9	103.3	7.84	5.694	17.86	11.66	0.26	2.40	0.85	1.00	1.68	15.35	73.48	11.21	4,450.1	2758.1	245.26	492.81	738.07
10	113.3	7.97	10.749	35.05	22.67	0.28	2.36	0.85	1.00	1.70	29.89	146.05	22.62	8,788.5	5471.4	477.56	993.65	1,471.21
11	130.0	8.16	20.633	46.96	31.94	0.32	2.25	0.85	1.00	1.72	45.92	219.99	34.41	13,590.	8778.1	717.14	1518.65	2,235.79
12	150.0	8.36	15.082	45.08	33.39	0.35	2.17	0.85	1.00	1.75	40.60	179.04	32.14	10,904.	7080.0	626.48	1304.89	1,931.37
13	170.0	8.55	9.382	43.21	31.52	0.40	2.07	0.85	1.00	1.77	35.45	110.62	24.15	6,656.3	4761.7	532.09	870.12	1,402.22
14	187.5	8.70	6.701	28.97	23.03	0.43	2.00	0.85	1.00	1.78	24.55	57.23	13.98	3,830.0	2841.9	363.48	436.30	799.78
														129,916.2	**76200.3**			**19,276.96**

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	8.07	15.825	14.40	0.00	0.13	2.85	1.00	1.00	0.00	23.14	64.15	0.00	3,484.6	0.0	451.66	331.34	783.00
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	1.00	1.00	0.00	22.56	64.15	0.00	3,432.8	0.0	438.59	331.41	770.00
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	1.00	1.00	0.00	45.77	128.31	0.00	6,548.1	0.0	962.48	747.74	1,710.21
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	1.00	1.00	0.00	22.08	64.15	0.00	3,194.8	0.0	492.87	401.18	894.05
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	1.00	1.00	0.00	21.58	64.15	0.00	3,144.9	0.0	494.83	415.43	910.27
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	1.00	1.00	0.00	19.66	64.15	0.00	3,015.7	0.0	473.62	427.68	901.30
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	1.00	1.00	0.00	19.10	63.88	0.00	2,966.4	0.0	467.77	436.69	904.46
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	1.00	1.00	0.00	36.89	127.22	0.00	5,202.1	0.0	917.05	897.86	1,814.91
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	1.00	1.00	0.00	9.16	42.36	0.00	1,410.0	0.0	248.27	306.08	554.35
10	113.3	11.47	10.749	12.38	0.00	0.14	2.80	1.00	1.00	0.00	17.67	84.58	0.00	2,764.3	0.0	481.97	621.05	1,103.02
11	130.0	11.75	20.633	15.02	0.00	0.17	2.69	1.00	1.00	0.00	29.20	126.91	0.00	4,010.3	0.0	785.20	954.30	1,739.50
12	150.0	12.05	15.082	11.69	0.00	0.16	2.73	1.00	1.00	0.00	21.73	104.65	0.00	3,186.8	0.0	607.33	815.25	1,422.58
13	170.0	12.31	9.382	11.69	0.00	0.17	2.71	1.00	1.00	0.00	16.04	62.55	0.00	1,578.9	0.0	454.51	486.97	941.48
14	187.5	12.52	6.701	5.94	0.00	0.16	2.73	1.00	1.00	0.00	10.08	34.08	0.00	823.5	0.0	292.57	264.39	556.96
														44,763.3	**0.0**			**15,006.10**

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

TES Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60° Wind

1.0D + 1.0W 60 mph Wind at 60° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	8.07	15.825	14.40	0.00	0.13	2.85	0.80	1.00	0.00	19.98	64.15	0.00	3,484.6	0.0	389.89	331.34	721.23
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	0.80	1.00	0.00	19.52	64.15	0.00	3,432.8	0.0	379.36	331.41	710.77
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	0.80	1.00	0.00	40.13	128.31	0.00	6,548.1	0.0	843.83	747.74	1,591.57
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	0.80	1.00	0.00	19.44	64.15	0.00	3,194.8	0.0	433.90	401.18	835.08
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	0.80	1.00	0.00	19.05	64.15	0.00	3,144.9	0.0	436.66	415.43	852.29
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	0.80	1.00	0.00	17.22	64.15	0.00	3,015.7	0.0	414.89	427.68	842.57
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	0.80	1.00	0.00	16.78	63.88	0.00	2,966.4	0.0	410.78	436.69	847.46
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	0.80	1.00	0.00	32.51	127.22	0.00	5,202.1	0.0	808.17	897.86	1,706.03
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	0.80	1.00	0.00	8.02	42.36	0.00	1,410.0	0.0	217.41	306.08	523.49
10	113.3	11.47	10.749	12.38	0.00	0.14	2.80	0.80	1.00	0.00	15.52	84.58	0.00	2,764.3	0.0	423.33	621.05	1,044.37
11	130.0	11.75	20.633	15.02	0.00	0.17	2.69	0.80	1.00	0.00	25.07	126.91	0.00	4,010.3	0.0	674.23	954.30	1,628.53
12	150.0	12.05	15.082	11.69	0.00	0.16	2.73	0.80	1.00	0.00	18.71	104.65	0.00	3,186.8	0.0	523.02	815.25	1,338.27
13	170.0	12.31	9.382	11.69	0.00	0.17	2.71	0.80	1.00	0.00	14.16	62.55	0.00	1,578.9	0.0	401.33	486.97	888.30
14	187.5	12.52	6.701	5.94	0.00	0.16	2.73	0.80	1.00	0.00	8.74	34.08	0.00	823.5	0.0	253.67	264.39	518.06
														44,763.3	**0.0**			**14,048.03**

Load Case: 1.0D + 1.0W 90° Wind

1.0D + 1.0W 60 mph Wind at 90° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	8.07	15.825	14.40	0.00	0.13	2.85	0.85	1.00	0.00	20.77	64.15	0.00	3,484.6	0.0	405.33	331.34	736.67
2	15.0	8.07	15.237	14.40	0.00	0.13	2.83	0.85	1.00	0.00	20.28	64.15	0.00	3,432.8	0.0	394.17	331.41	725.58
3	30.0	9.10	28.213	41.18	0.00	0.17	2.72	0.85	1.00	0.00	41.54	128.31	0.00	6,548.1	0.0	873.50	747.74	1,621.23
4	45.0	9.77	13.208	20.59	0.00	0.17	2.69	0.85	1.00	0.00	20.10	64.15	0.00	3,194.8	0.0	448.64	401.18	849.82
5	55.0	10.12	12.642	20.59	0.00	0.18	2.67	0.85	1.00	0.00	19.69	64.15	0.00	3,144.9	0.0	451.35	415.43	866.79
6	65.0	10.41	12.188	16.14	0.00	0.16	2.72	0.85	1.00	0.00	17.83	64.15	0.00	3,015.7	0.0	429.57	427.68	857.25
7	75.0	10.68	11.639	16.14	0.00	0.17	2.70	0.85	1.00	0.00	17.36	63.88	0.00	2,966.4	0.0	425.03	436.69	861.71
8	90.0	11.02	21.896	32.28	0.00	0.18	2.65	0.85	1.00	0.00	33.60	127.22	0.00	5,202.1	0.0	835.39	897.86	1,733.25
9	103.3	11.29	5.694	6.19	0.00	0.14	2.82	0.85	1.00	0.00	8.31	42.36	0.00	1,410.0	0.0	225.12	306.08	531.20
10	113.3	11.47	10.749	12.38	0.00	0.14	2.80	0.85	1.00	0.00	16.06	84.58	0.00	2,764.3	0.0	437.99	621.05	1,059.03
11	130.0	11.75	20.633	15.02	0.00	0.17	2.69	0.85	1.00	0.00	26.10	126.91	0.00	4,010.3	0.0	701.97	954.30	1,656.28
12	150.0	12.05	15.082	11.69	0.00	0.16	2.73	0.85	1.00	0.00	19.47	104.65	0.00	3,186.8	0.0	544.10	815.25	1,359.35
13	170.0	12.31	9.382	11.69	0.00	0.17	2.71	0.85	1.00	0.00	14.63	62.55	0.00	1,578.9	0.0	414.63	486.97	901.60
14	187.5	12.52	6.701	5.94	0.00	0.16	2.73	0.85	1.00	0.00	9.07	34.08	0.00	823.5	0.0	263.40	264.39	527.78
														44,763.3	**0.0**			**14,287.55**

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Force/Stress Compression Summary

Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	10	PX - 8" DIA PIPE	-495.14	1.2D + 1.6W Normal Wind	9.64	100	100	100	40.20	50.00	510.21	97.0	Member X
2	20	PX - 8" DIA PIPE	-470.57	1.2D + 1.6W Normal Wind	9.64	100	100	100	40.20	50.00	510.21	92.0	Member X
3	40	MOD - 8"PST+5x5x3/8L	-442.63	1.2D + 1.6W Normal Wind	9.62	100	100	100	43.01	50.00	472.01	93.0	Member X
4	50	MOD - 8"PST+5x5x3/8L	-388.10	1.2D + 1.6W Normal Wind	9.64	100	100	100	43.13	50.00	471.68	82.0	Member X
5	60	MOD - 8"PST+5x5x3/8L	-360.13	1.2D + 1.6W Normal Wind	9.64	100	100	100	43.13	50.00	471.68	76.0	Member X
6	70	MOD - 6"PX+L4x4x3/8	-332.81	1.2D + 1.6W Normal Wind	9.64	100	100	100	56.38	50.00	401.71	82.0	Member X
7	80	MOD - 6"PX+L4x4x3/8	-304.74	1.2D + 1.6W Normal Wind	9.64	100	100	100	56.38	50.00	401.71	75.0	Member X
8	100	MOD - 6"PST+4x4x3/8L	-281.18	1.2D + 1.6W Normal Wind	6.43	100	100	100	37.83	50.00	342.05	82.0	Member X
9	106.6	PX - 5" DIA PIPE	-225.21	1.2D + 1.6W Normal Wind	6.31	100	100	100	41.12	50.00	242.97	92.0	Member X
10	120	PX - 5" DIA PIPE	-207.55	1.2D + 1.6W Normal Wind	6.49	100	100	100	42.31	50.00	241.21	86.0	Member X
11	140	PX - 4" DIA PIPE	-178.03	1.2D + 1.6W Normal Wind	0.38	50	50	50	1.52	50.00	198.42	89.0	Member X
12	160	PX - 3" DIA PIPE	-110.14	1.2D + 1.6W Normal Wind	4.82	100	100	100	50.74	50.00	112.58	97.0	Member X
13	180	PST - 3" DIA PIPE	-52.89	1.2D + 1.6W Normal Wind	4.91	100	100	100	50.84	50.00	83.07	63.0	Member X
14	195	PST - 2" DIA PIPE	-15.44	1.2D + 1.6W Normal Wind	5.00	100	100	100	76.24	50.00	31.48	49.0	Member X

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	10										0.00	0	0				
2	20										0.00	0	0				
3	40										0.00	0	0				
4	50										0.00	0	0				
5	60										0.00	0	0				
6	70										0.00	0	0				
7	80										0.00	0	0				
8	100										0.00	0	0				
9	106.										0.00	0	0				
10	120										0.00	0	0				
11	140										0.00	0	0				
12	160										0.00	0	0				
13	180	SAE - 1.75X1.75X0.187!	-0.63	1.2D + 1.6W 60° Wind	5.00	100	100	100	174.93	36.00	4.58	1	1	15.19	9.79	13	Member Z
14	195	SAE - 1.75X1.75X0.187!	-0.55	1.2D + 1.6W 60° Wind	5.00	100	100	100	174.93	36.00	4.58	1	1	15.19	9.79	12	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	10	SAE - 4X4X0.375	-16.2	1.2D + 1.6W 90° Wind	24.46	48	48	48	178.77	36.00	20.22	1	1	21.86	20.2	80	Member Z
2	20	SAE - 4X4X0.375	-17.7	1.2D + 1.6W 90° Wind	23.57	48	48	48	172.32	36.00	21.76	1	1	21.86	21.5	82	Bolt Bear
3	40	SAE - 4X4X0.375	-16.6	1.2D + 1.6W 90° Wind	21.75	48	48	48	159.02	36.00	25.55	1	1	21.86	21.5	77	Bolt Bear
4	50	SAE - 4X4X0.375	-15.5	1.2D + 1.6W 90° Wind	20.84	48	48	48	152.33	36.00	27.85	1	1	21.86	21.5	71	Bolt Bear
5	60	SAE - 4X4X0.375	-15.6	1.2D + 1.6W 90° Wind	19.99	48	48	48	146.12	36.00	30.26	1	1	21.86	21.5	72	Bolt Bear
6	70	SAE - 4X4X0.375	-14.0	1.2D + 1.6W 90° Wind	19.09	48	48	48	139.53	36.00	33.19	1	1	21.86	21.5	65	Bolt Bear
7	80	SAE - 4X4X0.375	-14.5	1.2D + 1.6W 90° Wind	18.26	48	48	48	133.50	36.00	36.26	1	1	21.86	21.5	67	Bolt Bear
8	100	SAE - 3X3X0.375	-12.3	1.2D + 1.6W 90° Wind	15.99	48	48	48	156.87	36.00	19.37	1	1	21.86	21.5	63	Member Z
9	106.	SAE - 2.5X2.5X0.375	-11.0	1.2D + 1.6W 90° Wind	14.13	48	48	48	167.11	36.00	14.00	1	1	15.19	19.5	78	Member Z
10	120	SAE - 2.5X2.5X0.375	-11.7	1.2D + 1.6W 90° Wind	13.08	48	48	48	154.70	36.00	16.33	1	1	15.19	19.5	77	Bolt Shear
11	140	SAE - 2.5X2.5X0.375	-10.8	1.2D + 1.6W 90° Wind	11.35	49	49	49	137.02	36.00	20.82	1	1	15.19	19.5	71	Bolt Shear
12	160	SAE - 2.5X2.5X0.375	-8.38	1.2D + 1.6W 90° Wind	9.96	49	49	49	120.29	36.00	26.17	1	1	15.19	19.5	55	Bolt Shear
13	180	SAE - 1.75X1.75X0.187	4.37	1.2D + 1.6W 90° Wind	8.32	49	49	49	142.62	36.00	6.89	1	1	15.19	9.79	63	Member Z

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

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DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Shear Num Holes	Cap (kips)	Bear Cap (kips)	Use %	Controls
14	195	SAE - 1.75X1.75X0.187\3.05		1.2D + 1.6W Normal Wind	7.07	50	50	50	123.69	36.00	8.98	1	1	15.19	9.79	34	Member Z

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Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Site Name:	Clinton 4 CT	**Exposure:**	D		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
2	20	PX - 8" DIA PIPE	415.85	0.9D + 1.6W 60° Wind	50	574.20	72.00	Member
3	40	MOD - 8"PST+5x5x3/8L	406.72	0.9D + 1.6W 60° Wind	50	540.39	75.00	Member
4	60	MOD - 8"PST+5x5x3/8L	358.55	0.9D + 1.6W 60° Wind	50	540.39	66.00	Member
7	80	MOD - 6"PX+L4x4x3/8	269.48	1.2D + 1.6W 60° Wind	50	508.83	53.00	Member
8	100	MOD - 6"PST+4x4x3/8L	259.00	1.2D + 1.6W 60° Wind	50	379.79	68.00	Member
9	120.67	PX - 5" DIA PIPE	200.35	1.2D + 1.6W 60° Wind	50	274.05	73.00	Member
12	160	PX - 3" DIA PIPE	104.19	0.9D + 1.6W 60° Wind	50	135.90	76.00	Member
13	180	PST - 3" DIA PIPE	50.21	1.2D + 1.6W 60° Wind	50	100.35	50.00	Member
14	195	PST - 2" DIA PIPE	12.29	1.2D + 1.6W 60° Wind	50	46.15	25.00	Member

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
2	20	-			36	0.00	0	0					
3	40	-			36	0.00	0	0					
4	60	-			36	0.00	0	0					
7	80	-			36	0.00	0	0					
8	100	-			36	0.00	0	0					
9	120.67				36	0.00	0	0					
12	160	-			36	0.00	0	0					
13	180	SAE - 1.75X1.75X0.1875	0.54	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	7	Blck Shear
14	195	SAE - 1.75X1.75X0.1875	0.55	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	7	Blck Shear

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
2	20	SAE - 4X4X0.375	17.34	1.2D + 1.6W 90° Wind	36	62.60	1	1	21.86	21.53	24.93	80	Bolt Bear
3	40	SAE - 4X4X0.375	16.21	1.2D + 1.6W 90° Wind	36	62.60	1	1	21.86	21.53	24.93	75	Bolt Bear
4	60	SAE - 4X4X0.375	15.24	1.2D + 1.6W 90° Wind	36	62.60	1	1	21.86	21.53	24.93	70	Bolt Bear
7	80	SAE - 4X4X0.375	13.97	1.2D + 1.6W 90° Wind	36	62.60	1	1	21.86	21.53	24.93	64	Bolt Bear
8	100	SAE - 3X3X0.375	12.19	1.2D + 1.6W 90° Wind	36	58.13	1	1	21.86	21.53	20.85	58	Blck Shear
9	120.67	SAE - 2.5X2.5X0.375	10.80	1.2D + 1.6W 90° Wind	36	47.27	1	1	15.19	19.56	19.07	71	Bolt Shear
12	160	SAE - 2.5X2.5X0.375	8.47	1.2D + 1.6W 90° Wind	36	47.27	1	1	15.19	19.56	19.07	55	Bolt Shear
13	180	SAE - 1.75X1.75X0.1875	4.45	1.2D + 1.6W 90° Wind	36	15.64	1	1	15.19	9.79	7.50	59	Blck Shear
14	195	SAE - 1.75X1.75X0.1875	2.65	1.2D + 1.6W 60° Wind	36	15.64	1	1	15.19	9.79	7.50	36	Blck Shear

Structure:	CT01979 S SBA	**Code:**	EIA/TIA 222 G
Height:	195.00 (ft)	**Crest Height:**	0.00
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil
Gh:	0.85	**Topography:**	1

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DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls

Support Reaction Summary

Structure: CT01979-S SBA | **Code:** EIA/TIA 222-G | 5/5/2017

Height: 195.00 (ft) | **Crest Height:** 0.00

Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	507.40	-54.65	
1.2D + 1.6W 60° Wind	1	-5.78	254.36	-26.64	
	1a	-25.85	253.92	8.50	
1.2D + 1.6W 90° Wind	1a	-41.24	426.50	20.13	
	1b	-39.28	-385.04	-18.90	
0.9D + 1.6W 60° Wind	1b	-19.36	-226.16	-18.29	
0.9D + 1.6W 90° Wind	1	-5.79	240.02	-20.29	
1.2D + 1.0Di + 1.0Wi Normal Wind	1a	-6.85	16.43	-0.88	
	1b	-5.91	-9.22	-5.19	
1.2D + 1.0Di + 1.0Wi 60° Wind	1b	-12.38	-69.30	-7.17	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-1.77	32.20	0.91	
1.0D + 1.0W Normal Wind	1	0.00	115.63	-11.99	
1.0D + 1.0W 60° Wind	1a	-6.03	64.69	2.15	
	1b	-7.91	-75.10	-4.59	
1.0D + 1.0W 90° Wind	1b	-7.16	-63.49	-3.86	

Leg			Overturning		
Max Uplift:	-447.81	(kips)	Moment:	9672.64	(ft-kips)
Max Shear:	54.65	(kips)	Total Shear:	90.89	(kips)

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Load Combination	Elevation			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	100.38	0.1062	-0.0027	0.1310
	[illegible]	[illegible]	[illegible]	[illegible]
	150.00	0.2506	0.0108	0.2242
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	185.00	0.4035	0.0097	0.2401
	[illegible]	[illegible]	[illegible]	[illegible]
	195.00	0.4525	0.0101	0.2823
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	140.38	0.2178	-0.0132	0.2379
	150.00	0.2527	0.0101	0.2238
	160.38	0.2947	0.0111	0.2955
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	195.00	0.4558	0.0076	0.2833
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	140.38	0.2250	0.0038	0.2623
	[illegible]	[illegible]	[illegible]	[illegible]
	160.38	0.3039	-0.0070	0.3088
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	190.00	0.4445	-0.0073	0.2945
	[illegible]	[illegible]	[illegible]	[illegible]
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	79.63	0.0871	-0.0042	0.1341
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	0.0141	[illegible]
	160.38	0.3784	0.0172	0.3865
	180.00	0.4904	0.0209	0.3578
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	180.00	0.4830	-0.0125	0.3654
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	100.38	0.1381	0.0038	0.1823
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	180.00	0.4920	-0.0095	0.3520
	185.00	0.5234	0.0014	0.5747
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	185.00	2.0284	0.4181	1.2288
	[illegible]	[illegible]	[illegible]	[illegible]

Analysis Summary

Structure:	CT01879-S-SBA	**Code:**	EIA/TIA-222-G	5/5/2017	
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	Site Class:	D - Stiff Soil		
Gh:	0.85	**Topography:**	1	**Struct Class:**	II

Page: 18

TES
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Leg			Overturning		
Max Uplift:	-447.81	(kips)	Moment:	6072.04	(ft-kips)
Max Down:	[illegible]	(kips)	Total Down:	[illegible]	(kips)
Max Shear:	54.65	(kips)	Total Shear:	90.89	(kips)

Bolt Size (in.):	1.50	Number Bolts:	8
Yield Strength (Ksi):	105.00	Tensile Strength (Ksi):	125.00
Detail Type:	C		

Max Usages

Max Horiz: 13.0% (1.2D + 1.6W 60° Wind - Sect 13)

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	100.38	0.5298	0.0203	0.6573
	140.38	1.0817	0.0779	1.2251
	150.00	1.2547	0.1053	1.1253
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	185.00	2.0242	0.4173	1.2252
	190.00	2.1480	0.4362	1.3233
	195.00	2.2718	0.4295	1.4223
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	140.38	1.0003	0.0636	1.1980
	150.00	1.2654	0.0644	1.1253
	160.38	1.4768	0.0752	1.4901
	[illegible]	[illegible]	[illegible]	[illegible]
	185.00	2.0400	0.0295	0.7369
	190.00	[illegible]	[illegible]	[illegible]
	195.00	2.2887	0.0754	1.4279
	[illegible]	[illegible]	[illegible]	[illegible]
	140.38	1.1239	0.0241	1.3333
	150.00	1.3039	0.0235	1.1705
	160.38	1.5212	-0.0243	1.5681
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	190.00	2.2295	-0.0326	1.4805
	195.00	2.3576	-0.0323	1.5662

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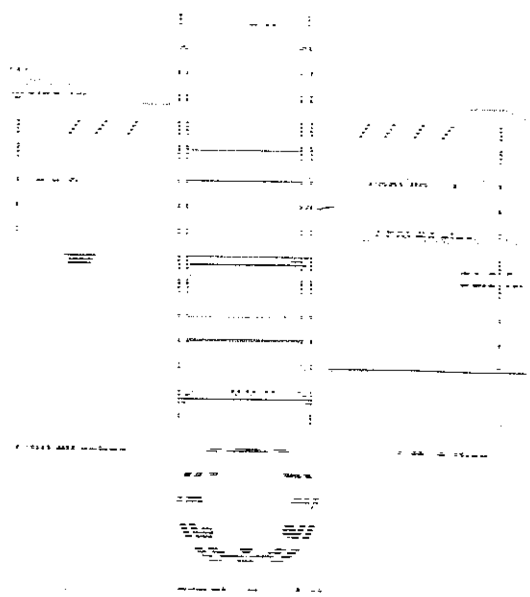
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
150.00	[illegible]	0.0645	1.1278
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
150.00	1.3063	0.0235	1.1732
160.38	1.5242	-0.0245	1.5719
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
195.00	[illegible]	[illegible]	[illegible]

Customer Name: [illegible] EIA/TIA Standard: [illegible]

Foundation Info Obtained from: [illegible]

Axial Load (Kips): [illegible] Shear Force (Kips): [illegible]



Concrete Strength (psi): 3000 Steel Elastic Modulus: 29000 ksi

Concrete Cover (in.): [illegible] Concrete Unit Weight: [illegible] pcf

Ratio of Uplift/Axial Skin Friction: 1.0 Pullout failure Angle: 32 (°)

Depth of Layers (ft)		γ	ϕ	Cohesion				Ultimate Uplift	Ultimate Axial	Kc	Kt		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Total Dry Concrete Volume (cu. ft.): [illegible] Total Dry Concrete Weight: [illegible] Kips

MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 195' SABRE SELF SUPPORTING TOWER

PROPOSED CARRIER: AT&T

SITE: CT01879-S-SBA / CLINTON 4 CT

COORDINATES (LATITUDE: 41.275205°, LONGITUDE: -72.497711°)

CONSTRUCTION CLASS

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

COMPLETE FABRICATION DRAWINGS FOR ALL MATERIALS REQUIRED FOR THIS PROJECT ARE AVAILABLE FROM TOWER ENGINEERING SOLUTIONS (TES). PLEASE CONTACT TES FOR MORE INFORMATION.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	1
BOM	BILL OF MATERIALS	1
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	1
A-2	DIAGONAL REPLACEMENT DETAILS	1
A-3	L 5" X 5" X 3/8" ANGLE LEG REINFORCEMENT	1
A-3A	DIAGONAL REPLACEMENT DETAILS	0
A-4	L 4" X 4" X 3/8" ANGLE LEG REINFORCEMENT	1
A-4A	L 4" X 4" X 3/8" ANGLE LEG REINFORCEMENT	1
A-4B	DIAGONAL REPLACEMENT DETAILS	0
A-5	DIAGONAL REPLACEMENT DETAILS	0
A-6	MID-BAY HORIZONTAL ASSEMBLY- 3 BAYS (4.50" O.D PIPE LEG)	0
A-7	DIAGONAL REPLACEMENT DETAILS	0
A-8	FLANGE REINFORCEMENT ASSEMBLY	1

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. **31606**, DATED **03/15/17**.

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CUSTOMER SITE NO:
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CUSTOMER SITE NAME:
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46 MEADOW ROAD
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STATE OF CONNECTICUT
HAMMING YOU
28931
LICENSED
PROFESSIONAL ENGINEER
7/10/17

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:
TITLE SHEET

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SHEET NUMBER: T-1

REV #: 1

BILL OF MATERIALS

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PIECE WEIGHT	WEIGHT (lb)	NOTES
			MATERIAL & HARDWARE					
33	35	---	SPACER/SHIM FOR 3/4" DIA BOLT (3/8" THICK)	---	A-2, A-3A, A-4B	---	---	GALVANIZED
33	35	---	BOLT 3/4" X 2 1/2" A325	---	A-2, A-3A	---	---	(1) HHN & LKW-EA GALVANIZED
132	139	---	BOLT 3/4" X 2" A325 △1	---	A-2, A-3A	---	---	(1) HHN & LKW-EA GALVANIZED
12	12	D-1	L 4" X 4" X 3/8" X 26'-0" A36	---	A-2, F-2	258.3	3100	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
6	6	AL-1	L 5" X 5" X 3/8" X 20'-0" A529-50	---	A-3, F-1	269.6	1618	GALVANIZED
36	36	D-2	L 4" X 4" X 3/8" X 23'-6" A36	---	A-3A, F-2	233.5	8406	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
6	6	AL-2	L 4" X 4" X 3/8" X 20'-0" A529-50	---	A-4, A-4A, F-1	198.7	1192	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
18	18	D-3	L 3" X 3" X 3/8" X 17'-0" A36	---	A-4B, F-2	124.1	2234	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
21	23	---	SPACER/SHIM FOR 5/8" DIA BOLT (3/8" THICK)	---	A-5, A-7	---	---	GALVANIZED
75	79	---	BOLT 5/8" X 2" A325	---	A-5, A-7	---	---	(1) HHN & LKW-EA GALVANIZED
84	89	---	BOLT 5/8" X 1 3/4" A325	---	A-5, A-6, A-7	---	---	(1) HHN & LKW-EA GALVANIZED
18	18	D-4	L 2 1/2" X 2 1/2" X 3/8" X 15'-0" A36	---	A-5, F-2	89.8	1616	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
9	10	---	BOLT 5/8" X 2 1/4" A325 W/HHN & LW	---	A-6	---	---	(1) HHN & LKW-EA GALVANIZED
18	19	MS02-625-4625-700	RU-BOLT 5/8" X 4 5/8" I.W. X 7" I.L. A36 OR EQUIV	---	A-6, RBC-1	1.6	30	(2) HHN & LKW-EA GALVANIZED
9	9	MH-18-300CP1	PL 3/8" X 3" X 2'-0 1/4" A36	---	A-6,MH-CP	7.88	71	GALVANIZED
18	18	MH-15E	L 2 1/2" X 2 1/2" X 1/4" X 7'-6" A36	---	A-6, MH-1	31.38	565	GALVANIZED
9	9	HBR425-450W	PL 1/2" X 4 3/4" X 7" A36 WELDMENT BRACKET	---	A-6, BR-1	9.96	90	GALVANIZED
24	24	D-5	L 2 1/2" X 2 1/2" X 3/8" X 11'-6" A36	---	A-7, F-2	68.8	1651	GALVANIZED
24	24	FP-1	PL 1/2" X 1'-0 1/2" X 4'-6" A572-50 △1	---	A-8, F-2	73.9	1774	GALVANIZED
4	4	---	LANCO /HENRY 287 WHITE ACRYLIC ELASTOMERIC COATING AND SEALER (OR EQUIV) (GALLONS) △1	---	A-1	---	---	PROVIDED BY CONTRACTOR
			TOTAL WEIGHT (lb) =				**22,346**	

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

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

PAGE 1 OF 1

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CUSTOMER SITE NAME:
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DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
△0	FIRST ISSUE	CHLE	05/12/17
△1	REVISED	CHLE	07/10/17
△			
△			
△			

SHEET TITLE:
BILL OF MATERIALS

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SHEET NUMBER: BOM
REV #: 1

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSE A10.48, AND 2016 CONNECTICUT STATE BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER TIA-1019-A, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

FABRICATION

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

WELDING

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

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

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

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2012 SECTION 1705 - TABLE 1705.2.2 FOR STEEL CONSTRUCTION AND TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

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

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

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

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

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

[d] BEVELED WASHER NOT USED.

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

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

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

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

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

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CUSTOMER SITE NO: CT01879-S-SBA

CUSTOMER SITE NAME: CLINTON 4 CT

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17

SHEET TITLE: GENERAL NOTES

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SHEET NUMBER: GN-1 | REV #: 0

NOTES:

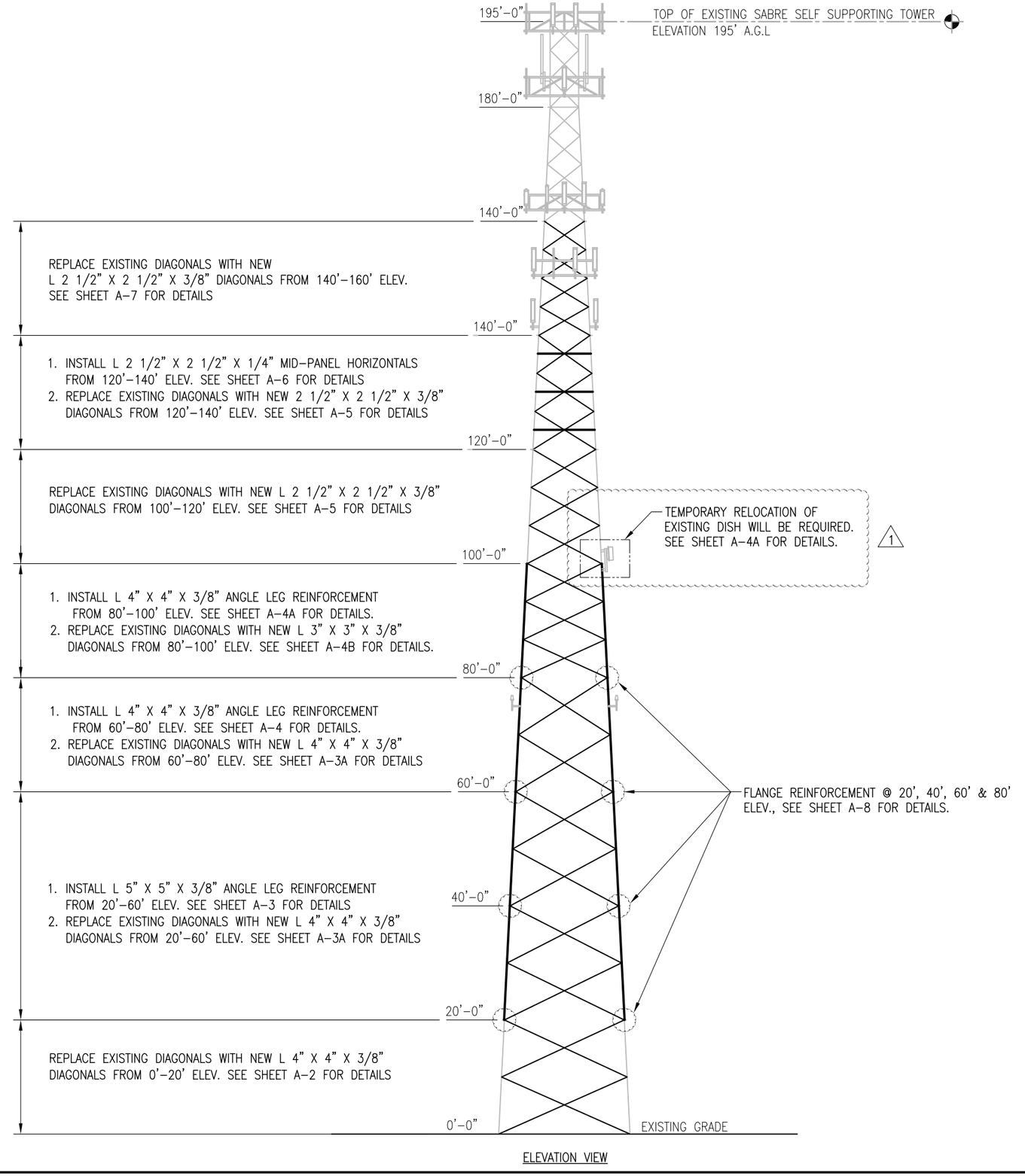
1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. TEMPORARILY RELOCATE EXISTING EQUIPMENT AROUND FOUNDATION MAY BE REQUIRED DURING THE CONSTRUCTION
3. TEMPORARY BRACING SHALL BE PROVIDED WHILE REPLACING MEMBERS. ONLY ONE MEMBER CAN BE REMOVED AT A TIME.
4. SEE SHEET GN-1 FOR HOT WORK PLAN NOTES.

DISH PHOTO @ ±102' ELEV.

TOWER BASE/FOUNDATION PHOTO

SELF-SUPPORT FOUNDATION COATING NOTES:

FOR CONCRETE FOUNDATIONS GC TO APPLY PROTECTIVE SEALANT (LANCO/HENRY 287 WHITE ACRYLIC ELASTOMERIC COATING AND SEALER OR EQUIV). FOLLOW ALL COATING MANUFACTURER RECOMMENDATIONS PRIOR TO AND DURING THE APPLICATION OF THE COATING.



ELEVATION VIEW

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CUSTOMER SITE NO:
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CLINTON 4 CT

46 MEADOW ROAD
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DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:

TOWER PROFILE

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SHEET NUMBER: A-1

REV #: 1

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NOTES:

1. SEE SHEET A–1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS,
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5. TEMPORARY BRACING SHALL BE PROVIDED WHILE REPLACING MEMBERS. ONLY ONE MEMBER CAN BE REMOVED AT A TIME..

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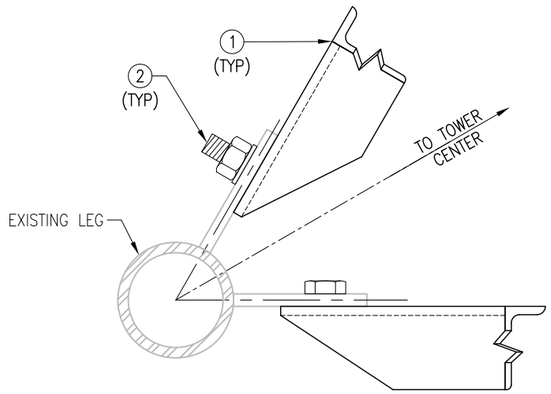
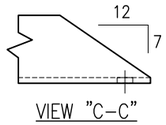
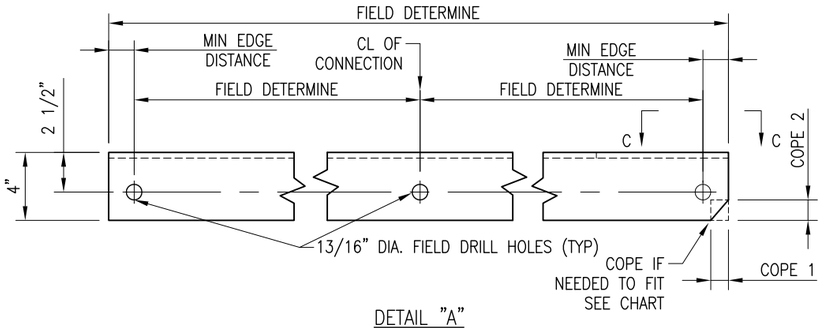


SECTION "A–A"

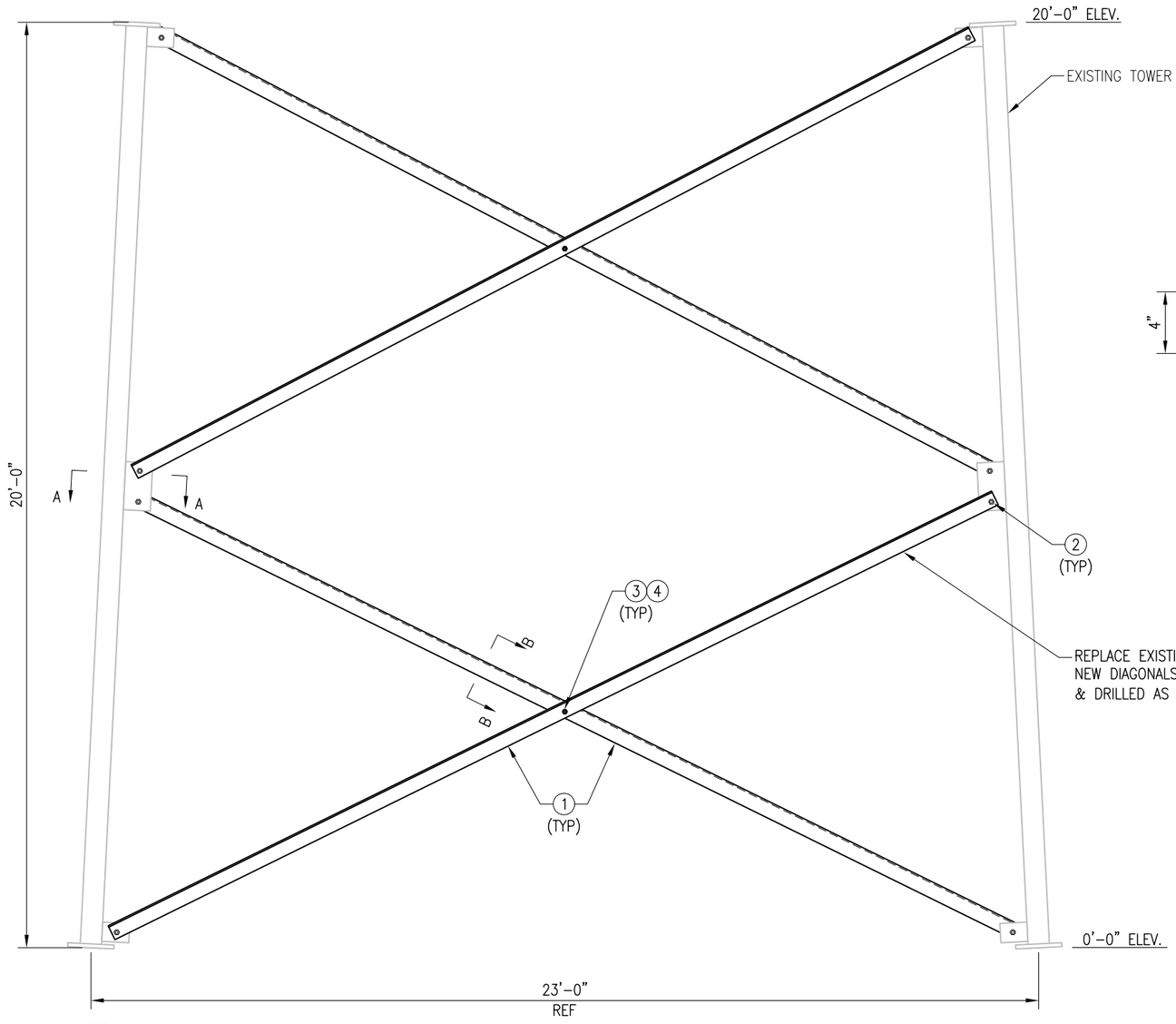


VIEW "C–C"



DETAIL "A"

BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	1 1/4"
5/8"	1 1/8"	13/16"	1 3/16"
3/4"	1 3/8"	1"	1 1/8"
7/8"	1 1/2"	1 1/16"	1 1/16"
1"	1 3/4"	1 1/4"	1"



NOTE:
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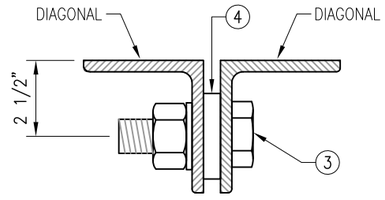
ELEVATION VIEW



SECTION "B–B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
4	6	---	SPACER/SHIM FOR 3/4" DIA BOLT (3/8" THICK)
3	6	---	BOLT 3/4" X 2 1/2" A325
2	24	---	BOLT 3/4" X 2" A325
1	12	D–1	L 4" X 4" X 3/8" X 26'–0" A36

1

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SBA

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

TES JOB NO:
32039

CUSTOMER SITE NO:
CT01879–S–SBA
CUSTOMER SITE NAME:
CLINTON 4 CT
46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:
DIAGONAL REPLACEMENT DETAILS

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SHEET NUMBER: A–2
REV #: 1

NOTES:

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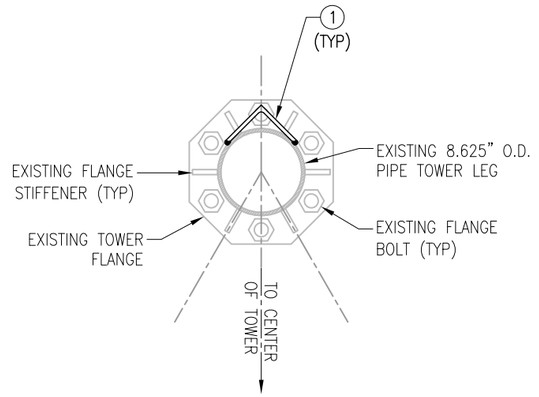
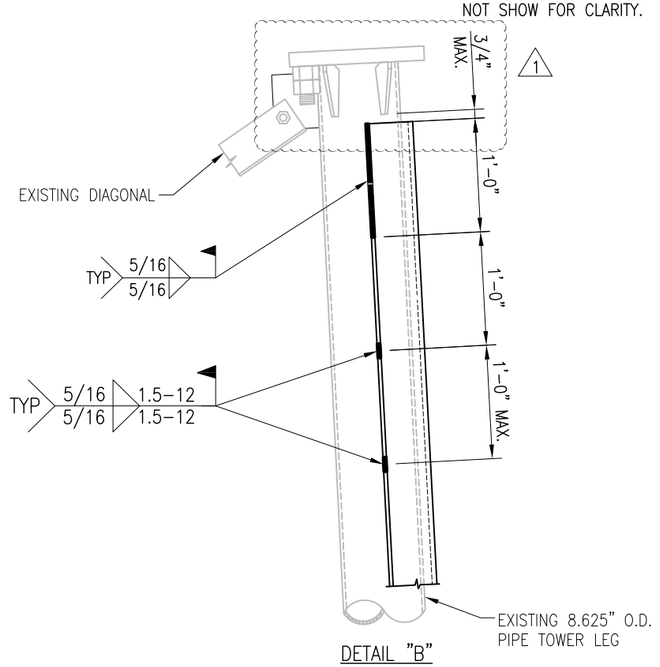
5. SEE SHEET GN-1 FOR "FIELD HOT WORK PLAN NOTES".

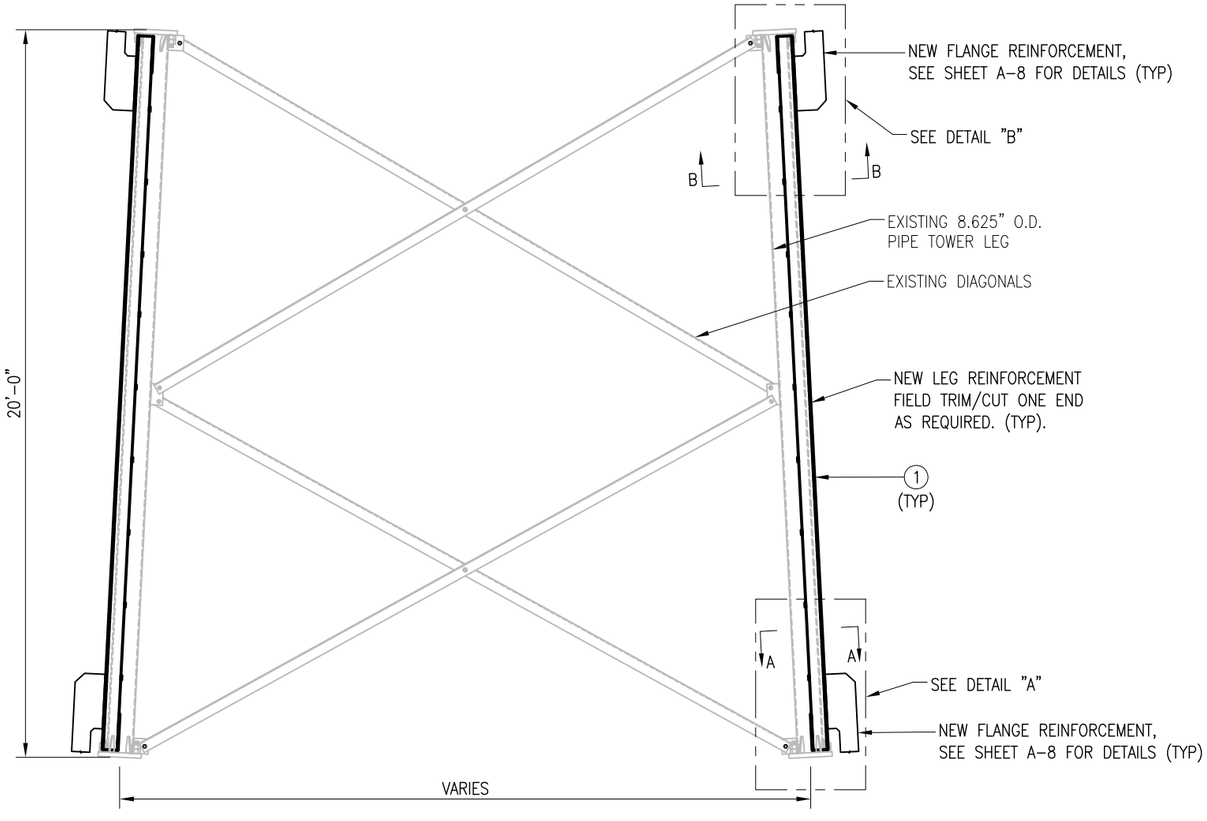


SECTION "A-A"
SECTION "B-B"

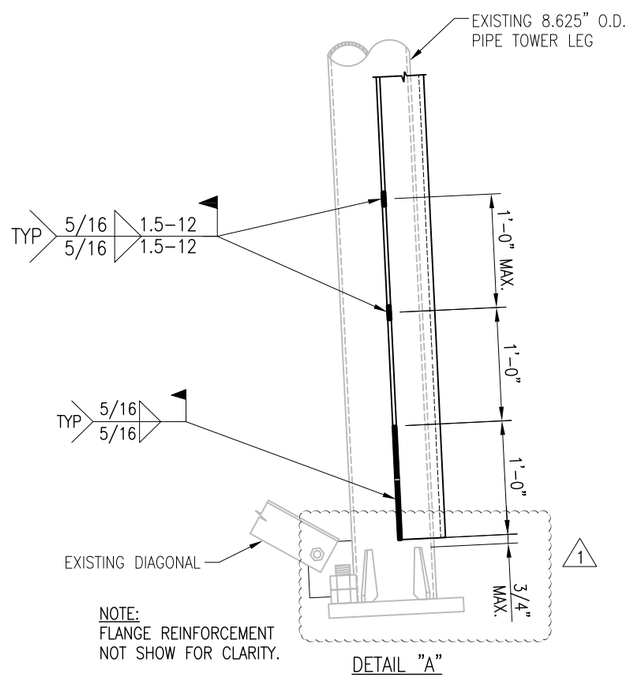
NOTE:
FLANGE REINFORCEMENT NOT SHOW FOR CLARITY.



DETAIL "B"



ELEVATION VIEW



NOTE:
FLANGE REINFORCEMENT NOT SHOW FOR CLARITY.

DETAIL "A"

NOTE:
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ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	AL-1	L 5" X 5" X 3/8" X 20'-0" A529-50

Tower Engineering Solutions
8445 FREEPORT PARKWAY, SUITE 375
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(800)-487-SITE

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879-S-SBA

CUSTOMER SITE NAME: CLINTON 4 CT

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DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:
L 5" X 5" X 3/8" ANGLE LEG REINFORCEMENT

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SHEET NUMBER: A-3

REV #: 1

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NOTES:

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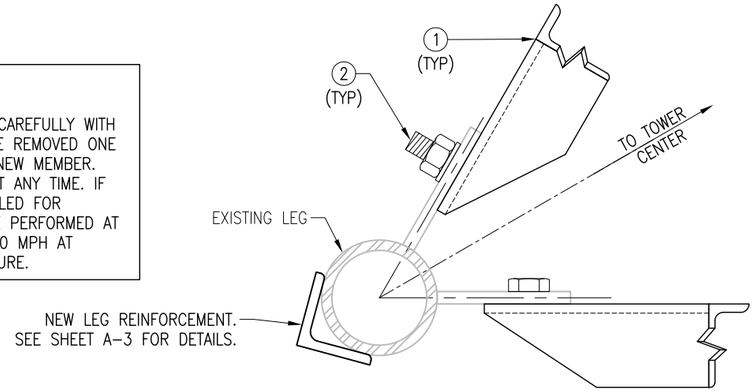
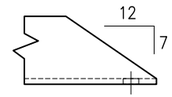
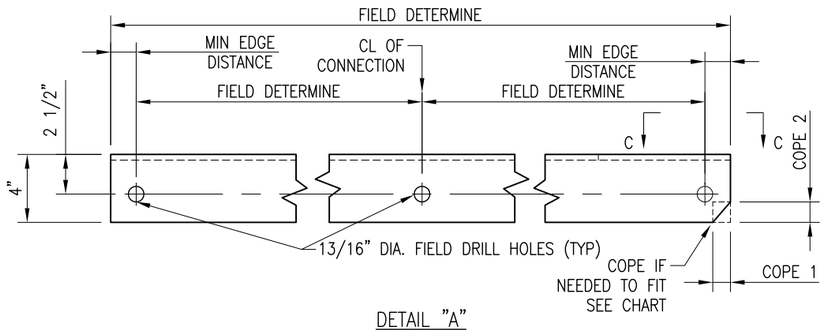


SECTION "A–A"



VIEW "C–C"



DETAIL "A"

BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	1 1/4"
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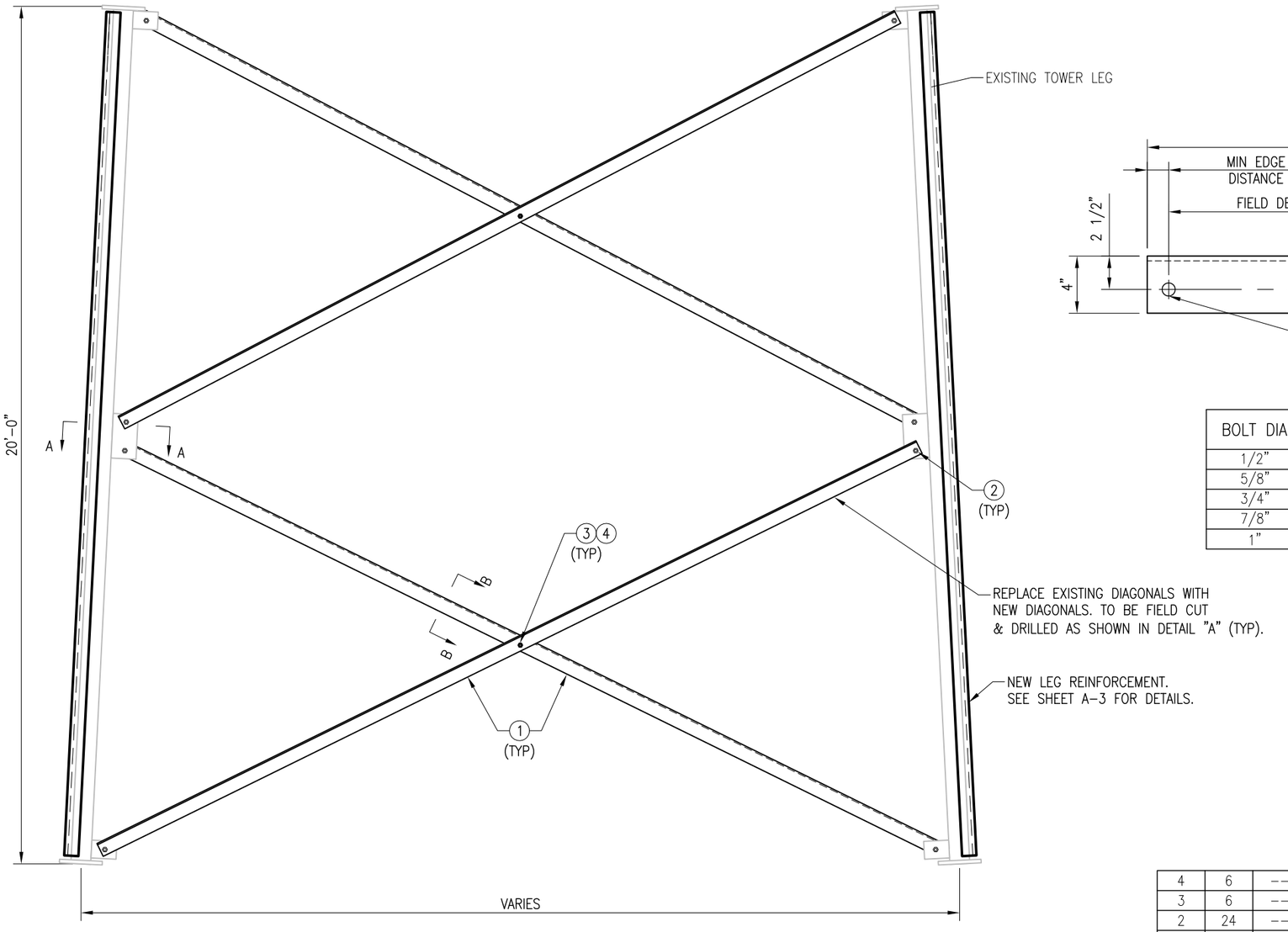

NOTE:
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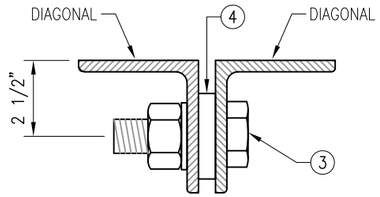
ELEVATION VIEW



SECTION "B–B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
4	6	---	SPACER/SHIM FOR 3/4" DIA BOLT (3/8" THICK)
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(800)–487–SITE

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879–S–SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17

SHEET TITLE:

DIAGONAL REPLACEMENT DETAILS

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SHEET NUMBER: A–3A

REV #: 0

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NOTES:

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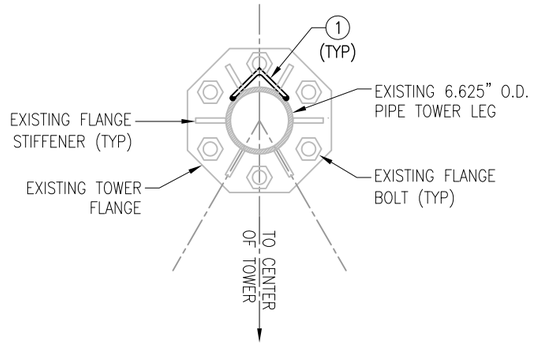
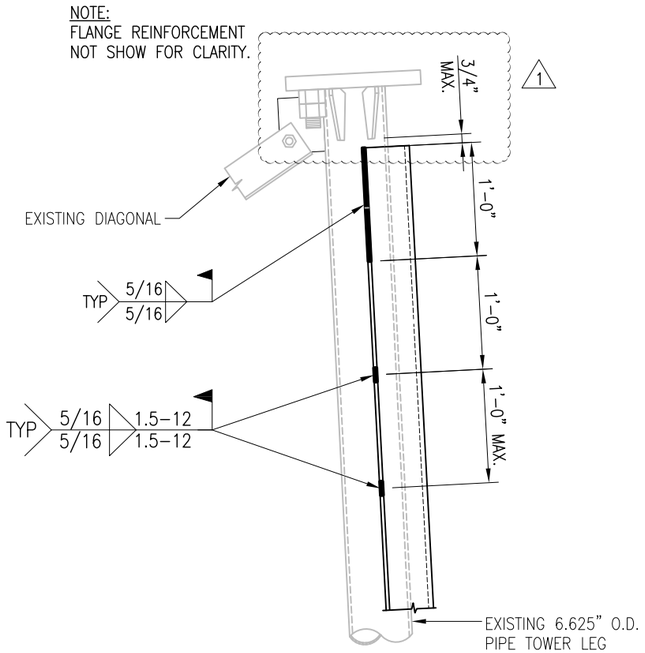
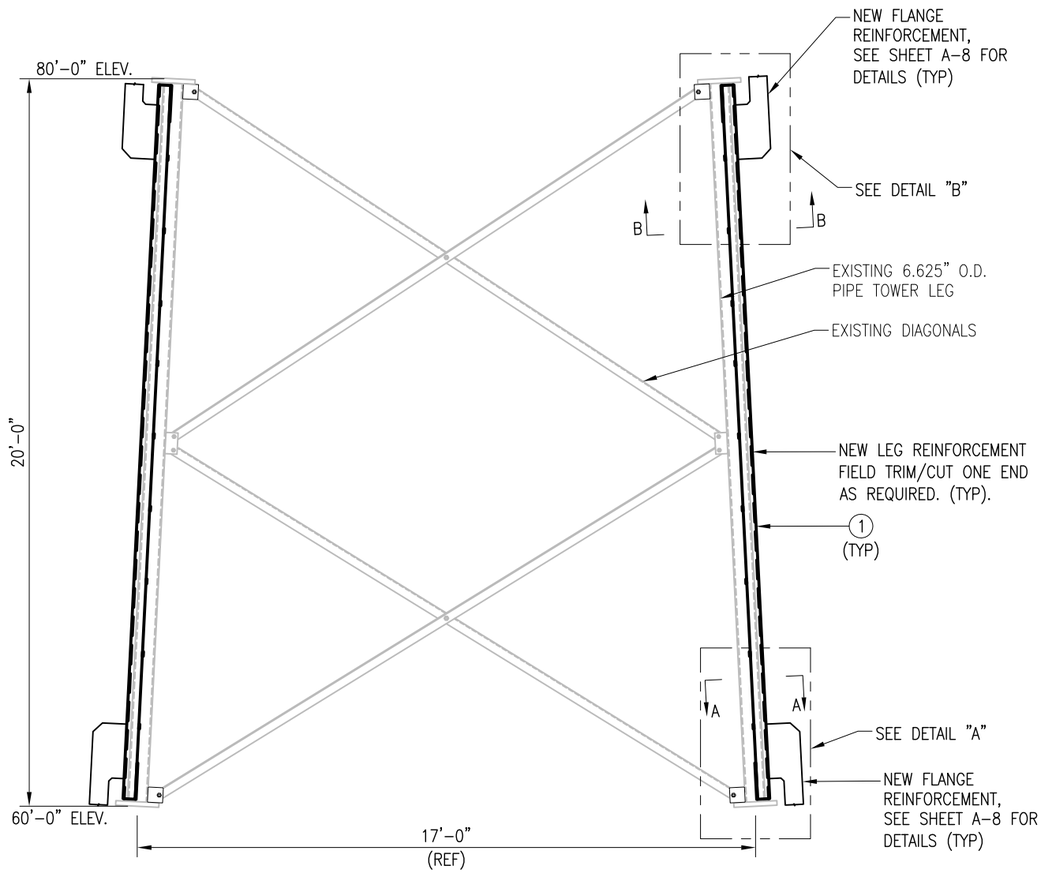


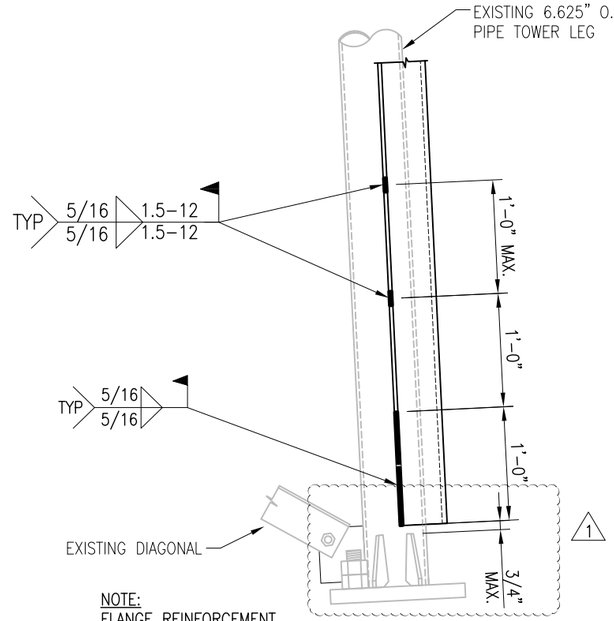
SECTION "A-A"
SECTION "B-B"



DETAIL "B"



ELEVATION VIEW



DETAIL "A"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	AL-2	L 4" X 4" X 3/8" X 20'-0" A529-50

TES
Tower Engineering Solutions
8445 FREEPORT PARKWAY, SUITE 375
IRVING, TX 75063
PH: (972) 483-0607

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

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879-S-SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:

L 4" X 4" X 3/8" ANGLE LEG REINFORCEMENT

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SHEET NUMBER: A-4 | REV #: 1

NOTES:

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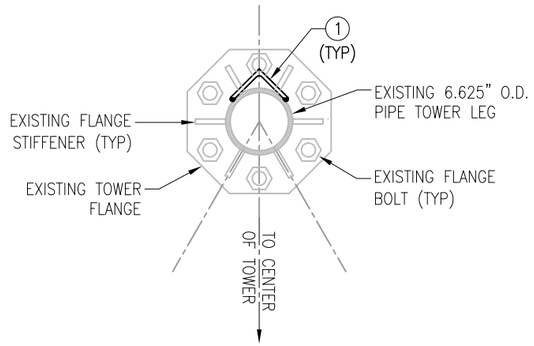
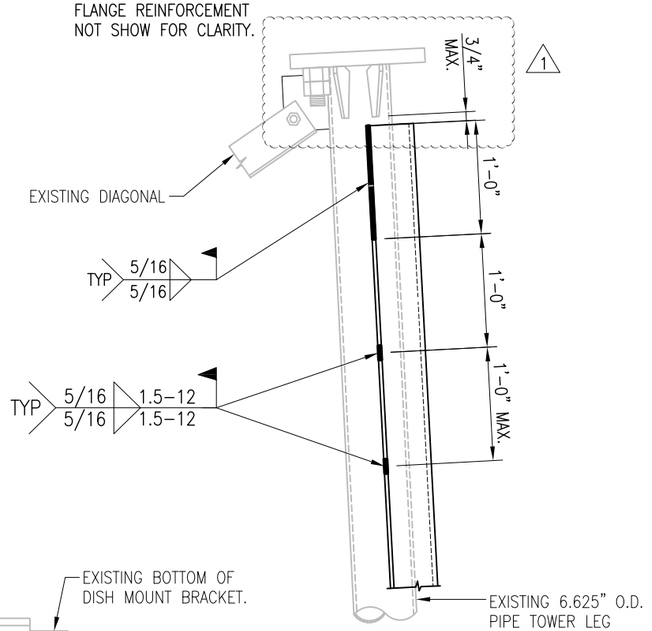
5. SEE SHEET GN-1 FOR "FIELD HOT WORK PLAN NOTES".

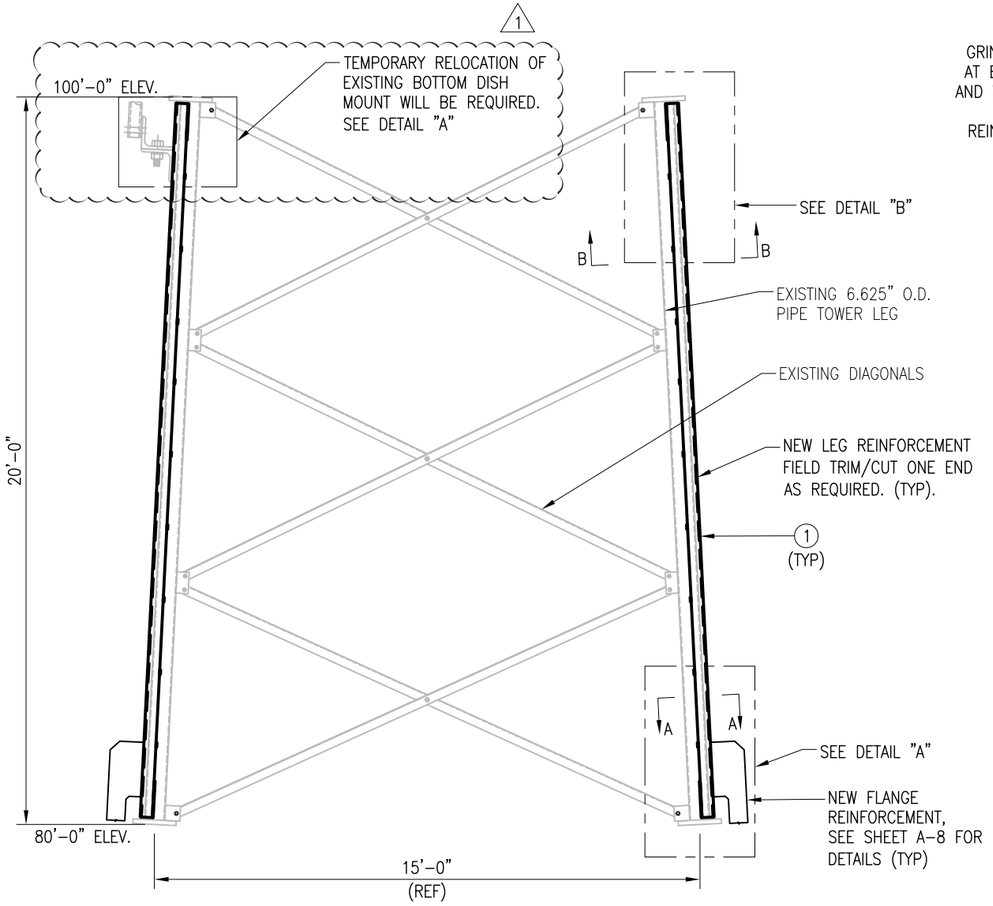


SECTION "A-A"
SECTION "B-B"

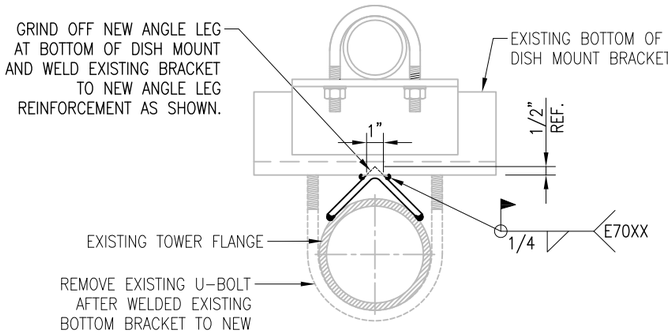
NOTE:
FLANGE REINFORCEMENT
NOT SHOW FOR CLARITY.



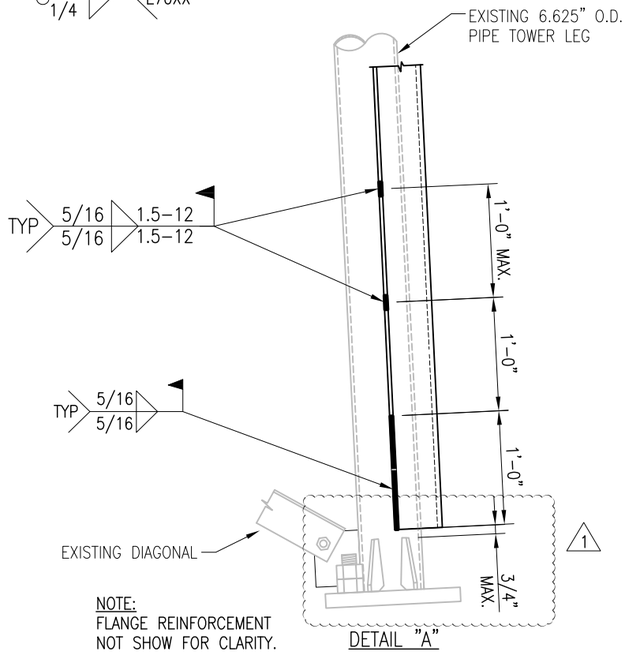
DETAIL "B"



ELEVATION VIEW



DETAIL "A"



NOTE:
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DETAIL "A"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	AL-2	L 4" X 4" X 3/8" X 20'-0" A529-50

Tower Engineering Solutions
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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879-S-SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/10/17

SHEET TITLE:

L 4" X 4" X 3/8" ANGLE LEG REINFORCEMENT

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SHEET NUMBER: A-4A

REV #: 1

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NOTES:

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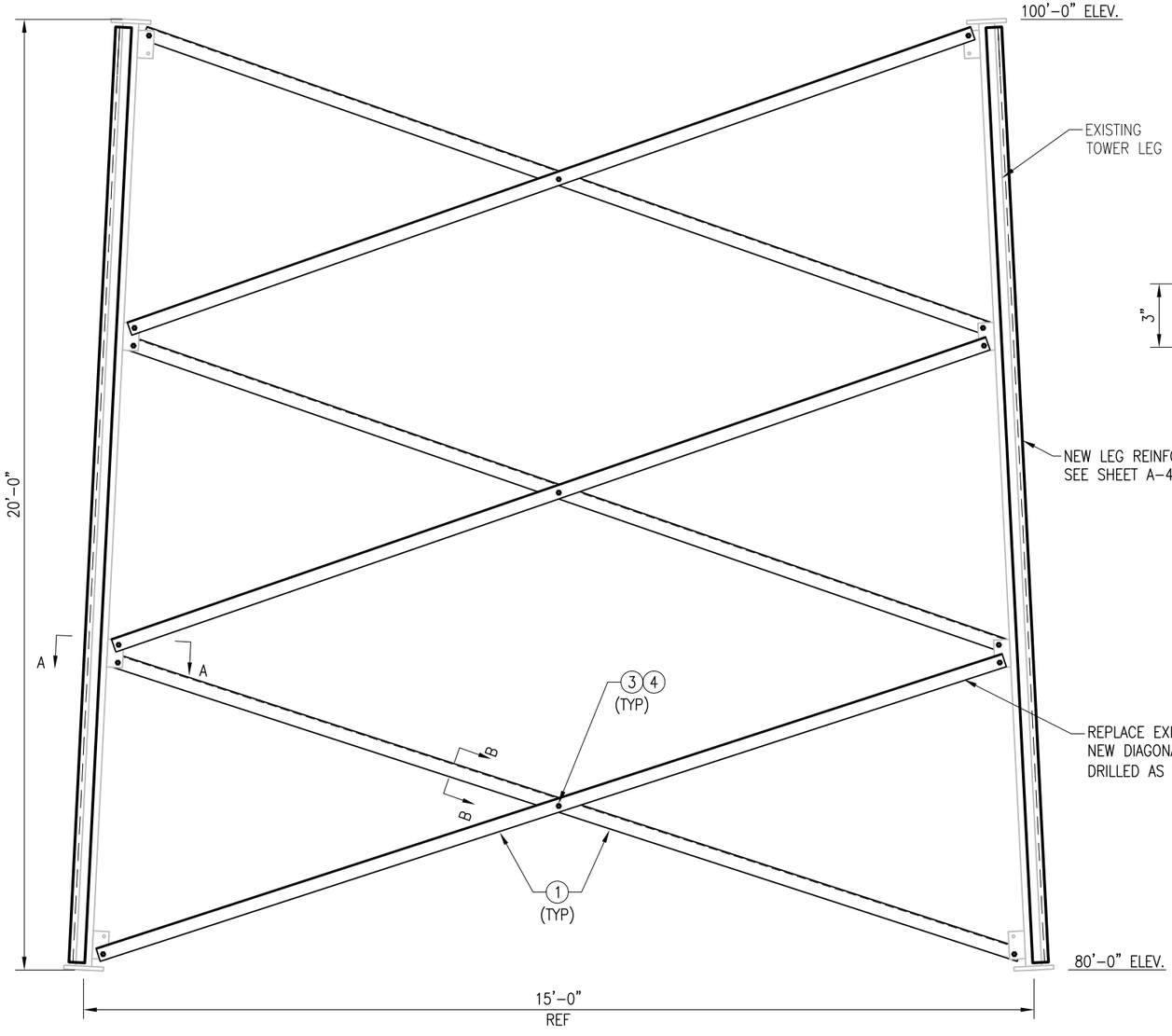

NOTE:
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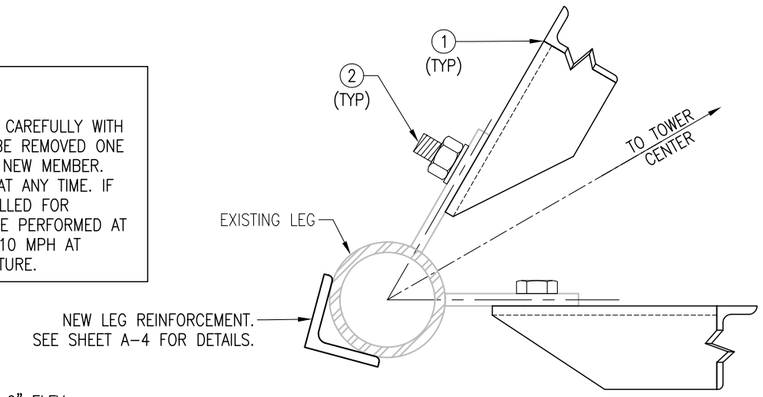
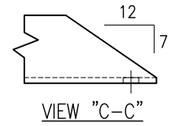
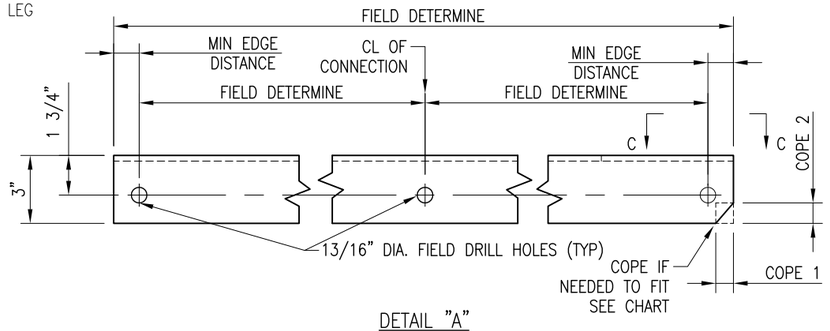
ELEVATION VIEW



SECTION "A–A"

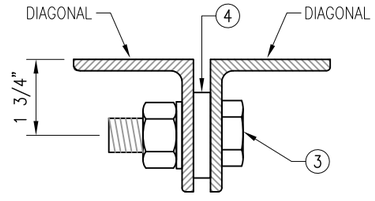


VIEW "C–C"



DETAIL "A"

BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	1"
5/8"	1 1/8"	13/16"	15/16"
3/4"	1 3/8"	1"	7/8"
7/8"	1 1/2"	1 1/16"	13/16"
1"	1 3/4"	1 1/4"	3/4"



SECTION "B–B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
4	9	---	SPACER/SHIM FOR 3/4" DIA BOLT (3/8" THICK)
3	9	---	BOLT 3/4" X 2 1/2" A325
2	36	---	BOLT 3/4" X 2" A325
1	18	D–3	L 3" X 3" X 3/8" X 17'–0" A36

TES
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BOCA RATON, FL 33487
(800)–487–SITE

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879–S–SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1			

SHEET TITLE:

DIAGONAL REPLACEMENT DETAILS

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SHEET NUMBER: A–4B

REV #: 0

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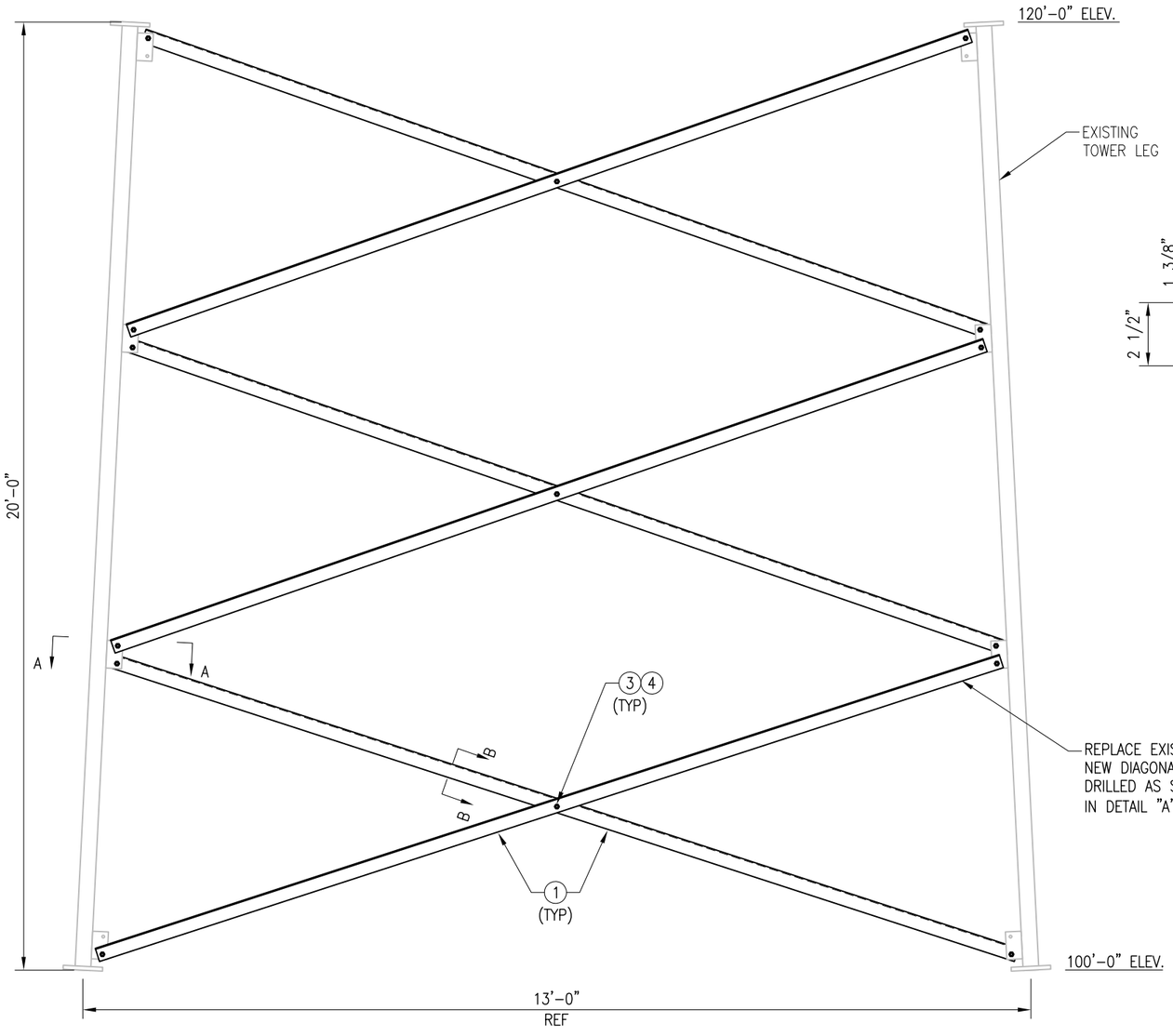
NOTES:

1. SEE SHEET A–1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS,
4. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
5. TEMPORARY BRACING SHALL BE PROVIDED WHILE REPLACING MEMBERS. ONLY ONE MEMBER CAN BE REMOVED AT A TIME..

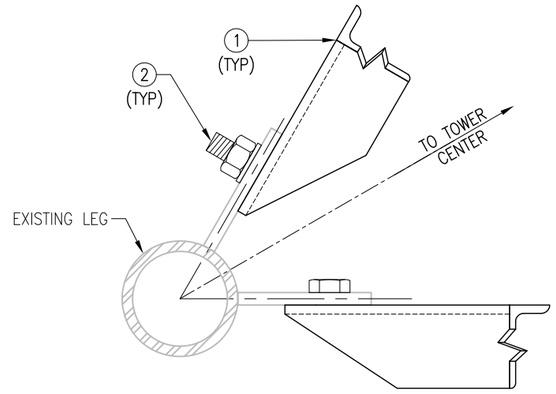
SAFETY NOTES:

REMOVAL OF EXISTING DIAGONALS MUST BE DONE CAREFULLY WITH SAFETY IN MIND. DIAGONAL MEMBERS CAN ONLY BE REMOVED ONE AT A TIME AND IMMEDIATELY REPLACED WITH THE NEW MEMBER. NO MORE THEN ONE MEMBER SHOULD REMOVED AT ANY TIME. IF REQUIRED TEMPORARY BRACING SHOULD BE INSTALLED FOR SAFETY.REPLACEMENT OF THE DIAGONALS SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE.

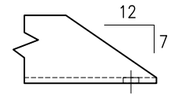


ELEVATION VIEW

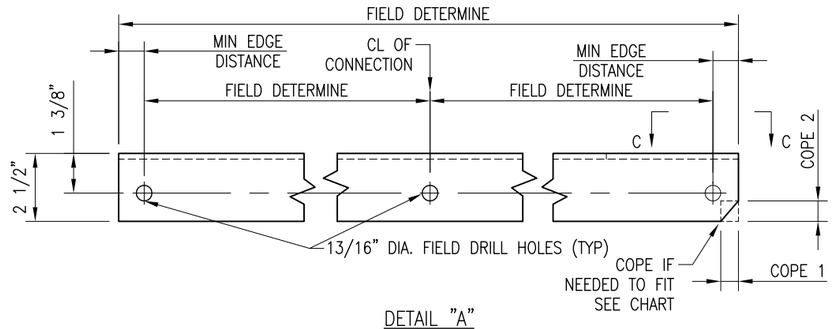
NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.



SECTION "A–A"

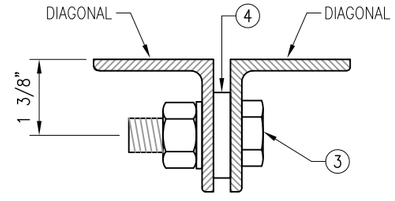


VIEW "C–C"



DETAIL "A"

BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	7/8"
5/8"	1 1/8"	13/16"	13/16"
3/4"	1 3/8"	1"	3/4"
7/8"	1 1/2"	1 1/16"	11/16"
1"	1 3/4"	1 1/4"	5/8"



SECTION "B–B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
4	9	---	SPACER/SHIM FOR 5/8" DIA BOLT (3/8" THICK)
3	9	---	BOLT 5/8" X 2" A325
2	36	---	BOLT 5/8" X 1 3/4" A325
1	18	D–4	L 2 1/2" X 2 1/2" X 3/8" X 15'–0" A36

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TES JOB NO: 32039

CUSTOMER SITE NO: CT01879–S–SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17

SHEET TITLE:

DIAGONAL REPLACEMENT DETAILS

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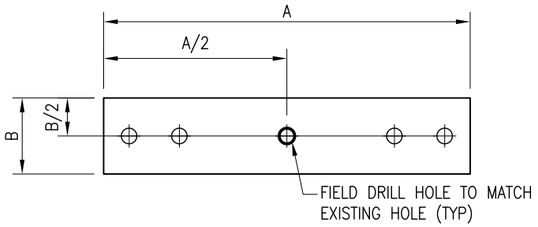
SHEET NUMBER: A–5

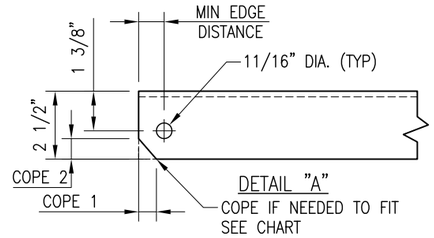
REV #: 0

NOTES:

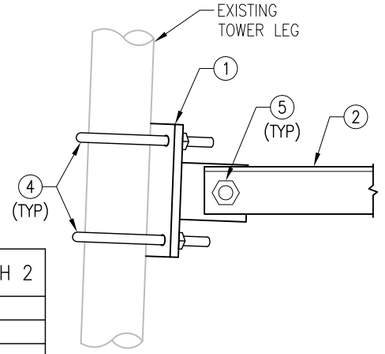
1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
3. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS,
4. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
5. TEMPORARY BRACING SHALL BE PROVIDED WHILE REPLACING MEMBERS. ONLY ONE MEMBER CAN BE REMOVED AT A TIME..



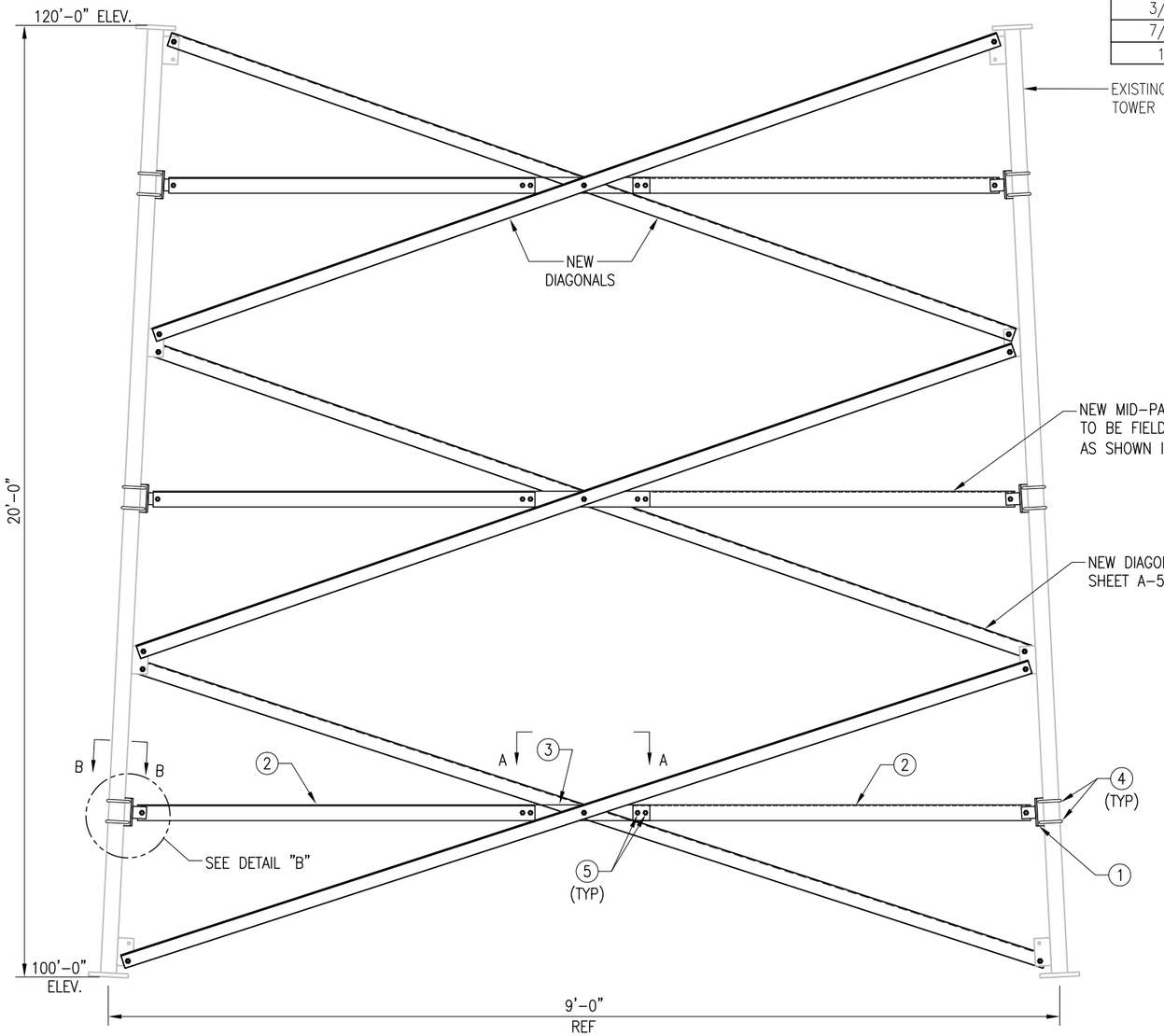
CONNECTION PLATE DETAIL



BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	7/8"
5/8"	1 1/8"	13/16"	13/16"
3/4"	1 3/8"	1"	3/4"
7/8"	1 1/2"	1 1/16"	11/16"
1"	1 3/4"	1 1/4"	5/8"

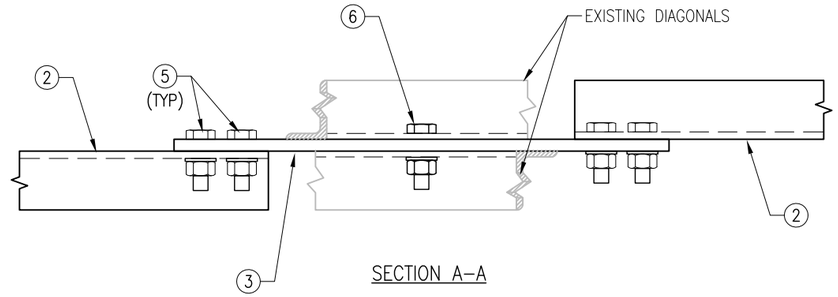


DETAIL "B"

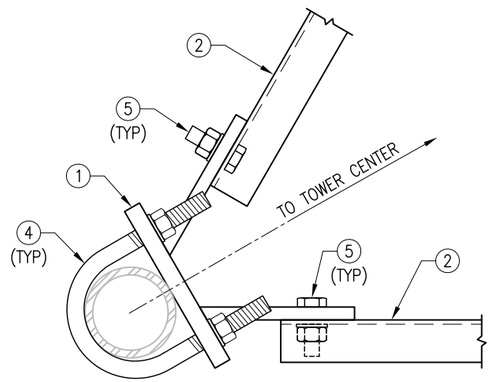


ELEVATION VIEW

NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.



SECTION A-A



SECTION "B-B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
6	9	---	BOLT 5/8" X 2 1/4" A325 W/HHN & LW
5	54	---	BOLT 5/8" X 2" A325 W/HHN & LW
4	18	MS02-625-4625-700	RU-BOLT 5/8" X 4 5/8" I.W. X 7" I.L. A36 OR EQUIV
3	9	MH-18-300CP1	PL 3/8" X 3" X 2'-0 1/4" A36
2	18	MH-15E	L 2 1/2" X 2 1/2" X 1/4" X 7'-6" A36
1	9	HBR425-450W	PL 1/2" X 4 3/4" X 7" A36 WELDMENT BRACKET

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(800)-487-SITE

TES JOB NO:
32039

CUSTOMER SITE NO:
CT01879-S-SBA
CUSTOMER SITE NAME:
CLINTON 4 CT
46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17

SHEET TITLE:
MID-BAY HORIZONTAL ASSEMBLY- 3 BAYS (4.50" O.D PIPE LEG)

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SHEET NUMBER: A-6
REV #: 0

NOTES:

1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATIONS.
2. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
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4. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
5. TEMPORARY BRACING SHALL BE PROVIDED WHILE REPLACING MEMBERS. ONLY ONE MEMBER CAN BE REMOVED AT A TIME..

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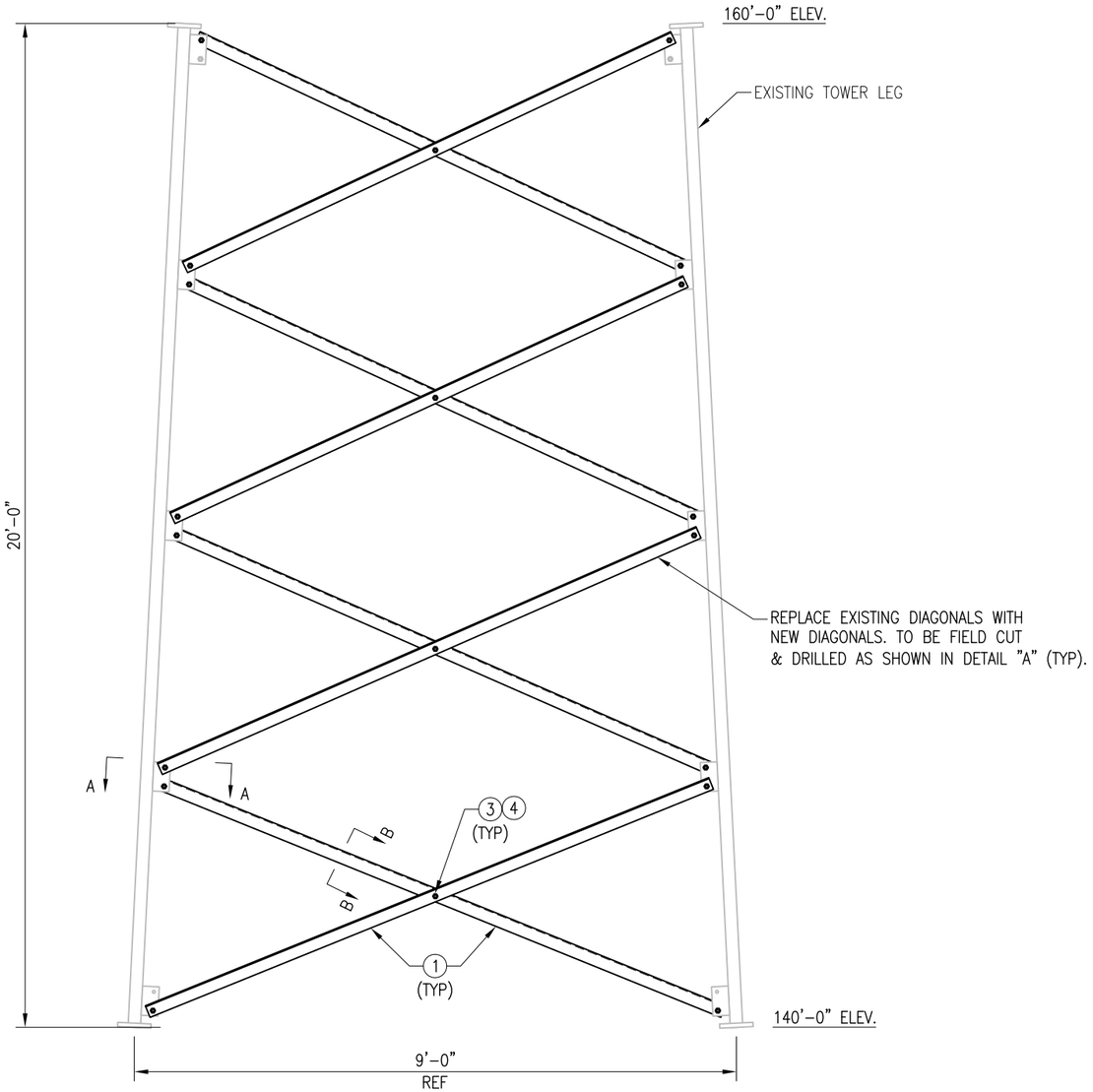
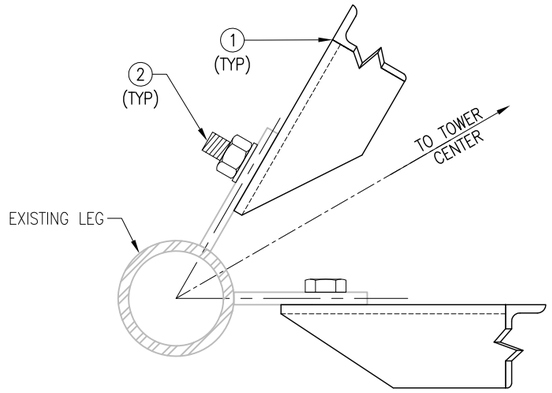
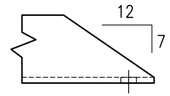


ELEVATION VIEW

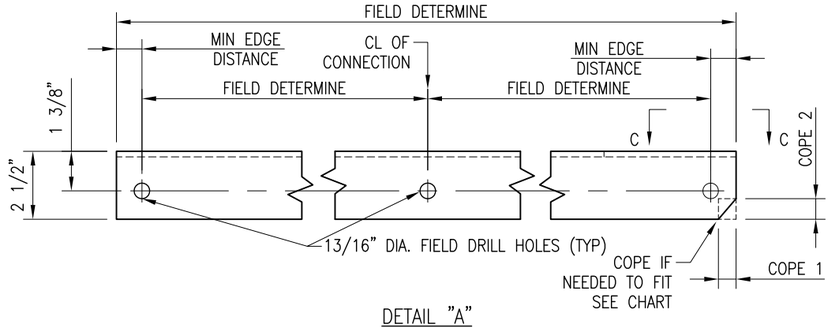
NOTE:
TOWER SHOWN IS ONLY REPRESENTATIVE.



SECTION "A-A"

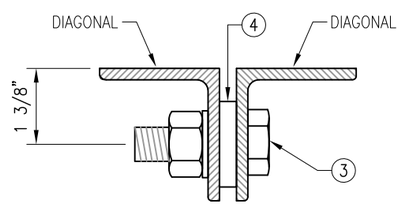


VIEW "C-C"



DETAIL "A"

BOLT DIA	MIN EDGE DISTANCE	COPE LENGTH 1	COPE LENGTH 2
1/2"	7/8"	5/8"	7/8"
5/8"	1 1/8"	13/16"	13/16"
3/4"	1 3/8"	1"	3/4"
7/8"	1 1/2"	1 1/16"	11/16"
1"	1 3/4"	1 1/4"	5/8"



SECTION "B-B"

ITEM NO.	QTY.	PART NO.	DESCRIPTION
4	12	---	SPACER/SHIM FOR 5/8" DIA BOLT (3/8" THICK)
3	12	---	BOLT 5/8" X 2" A325
2	48	---	BOLT 5/8" X 1 3/4" A325
1	24	D-5	L 2 1/2" X 2 1/2" X 3/8" X 11'-6" A36

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(800)-487-SITE

TES JOB NO: 32039

CUSTOMER SITE NO: CT01879-S-SBA

CUSTOMER SITE NAME: CLINTON 4 CT

46 MEADOW ROAD
CLINTON, CT 06413

DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17

SHEET TITLE:

DIAGONAL REPLACEMENT DETAILS

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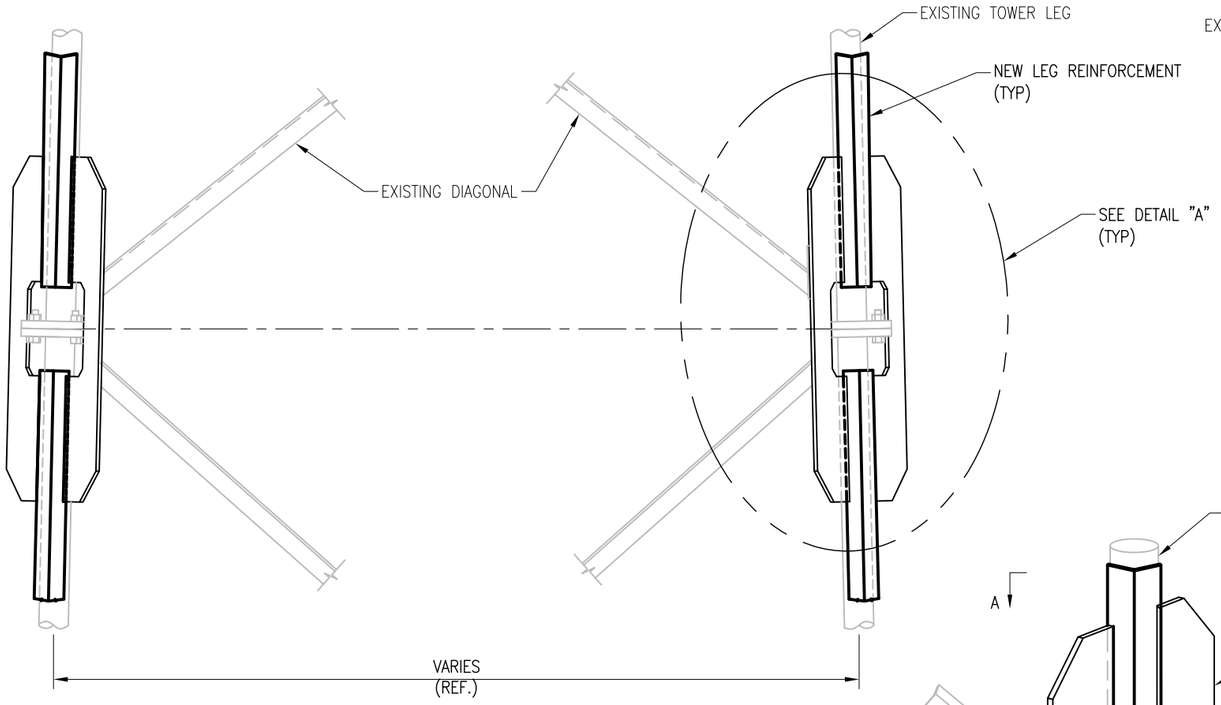
SHEET NUMBER: A-7

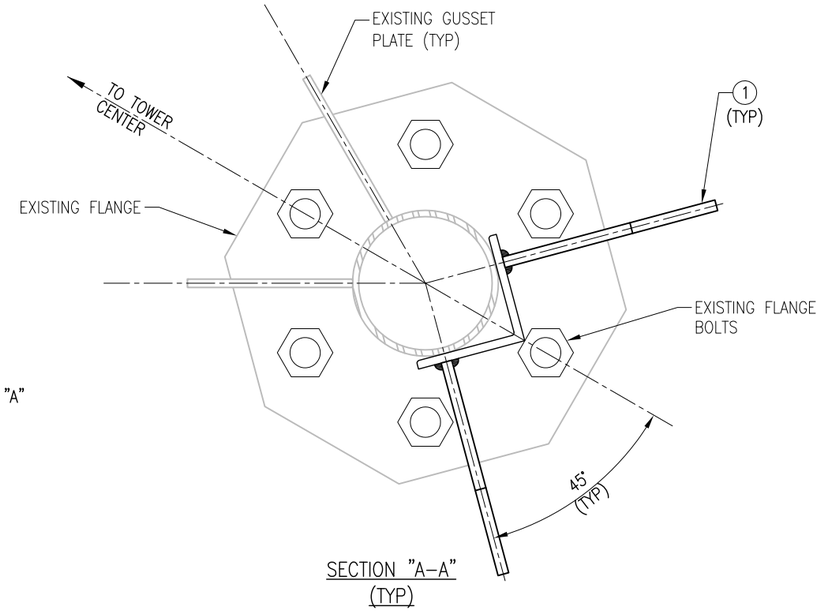
REV #: 0

INSTALLATION NOTES:

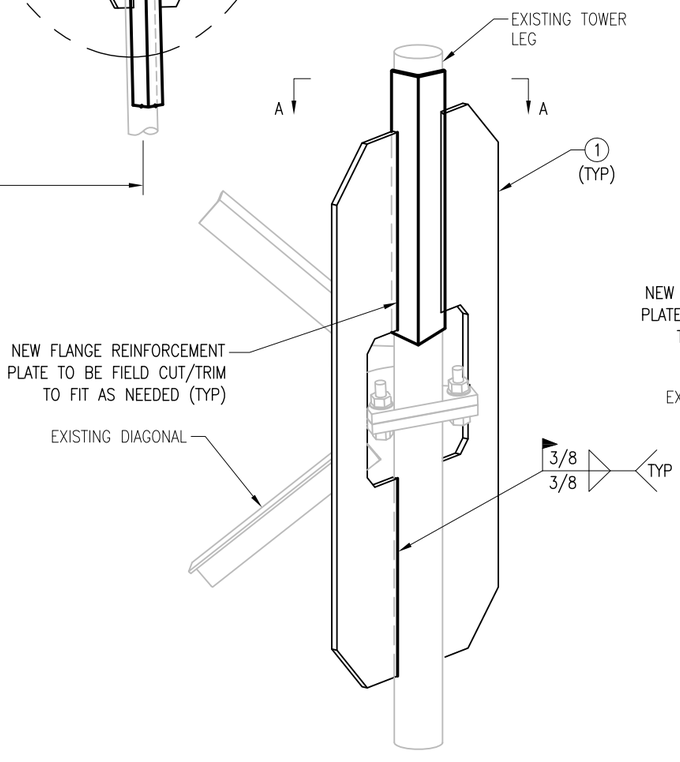
1. SEE SHEET A-1 FOR LOCATION OF REQUIRED SECTION MODIFICATION.
2. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND PER MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT, WELDED AND EXPOSED AREAS.
3. WELD TYPE: E70XX



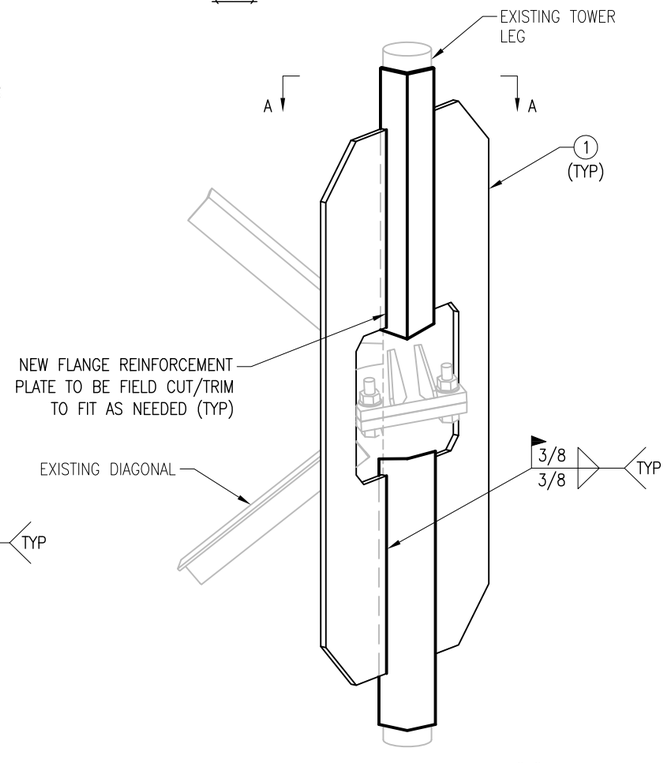
ELEVATION VIEW
(@ 20', 40', 60' AND 80' ELEV.)



SECTION "A-A"
(TYP)



DETAIL "A"
(@ 20'-0" ELEV.)



DETAIL "A"
(@ 40', 60, & 80' ELEV.)

1

ITEM NO.	QTY.	PART NO.	DESCRIPTION (PER ELEVATION ABOVE)
1	6	FP-1	PL 1/2" X 1'-0 1/2" X 4'-6" A572-50

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CUSTOMER SITE NAME:
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DRAWN BY: CHLE | CHECKED BY: RAM/SR

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	05/12/17
1	REVISED	CHLE	07/07/17

SHEET TITLE:
FLANGE REINFORCEMENT ASSEMBLY

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SHEET NUMBER: A-8
REV #: 1

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