



Filed by:

G. Scott Shepherd - SBA Communications  
134 Flanders Rd., Suite 125, Westborough, MA 01581  
508.251.0720 x 3807 – Gshepherd@SBASite.com

August 26, 2020

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

**Notice of Exempt Modification**

207 Garden Circle, Waterbury, CT  
N 41.5697222  
W -73.017499

**T-Mobile#: CT11392B\_Anchor**

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) 600/700/1900/2100 MHz antennas at the 182-foot level of the existing 280-foot Stainless Guyed Tower located at 207 Garden Circle, Waterbury, CT. The tower is owned SBA Towers V, LLC. The property is owned by SBA Properties Inc. T-Mobile intends to install three (3) 2500 MHz antennas for a total of twelve. The new antennas would be installed at the 182-foot level of the tower.

**Please note:** Per the Connecticut Siting Council Website: CSC COVID 19 Guidelines.  
*In order to prevent the spread of Coronavirus and protect the health and safety of our members and staff, as of March 18, 2020, the Connecticut Siting Council shall convert to full remote operations until March 30, 2020. Please be advised that during this time period, all hard copy filing requirements will be waived in lieu of an electronic filing. Please also be advised that the March 26, 2020 regular meeting shall be held via teleconference. The Council's website is not equipped with an on-line filing fee receipt service. Therefore, filing fees and/or direct cost charges associated with matters received electronically during the above-mentioned time period will be directly invoiced at a later date.*

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- N/A

Install New:

- (3) Ericsson AIR64449 B41 – antennas

- (3) Ericsson Radio 4415 B25 RRU
- (3) 1-5/8" fiber
- (3) Sector Frame with modifications:
- (3) PST2375-10 – (frame mods)
- (3) MS-STZ-2PST – (frame mods)
- (3) MS-STZ-287P- (frame mods)

Existing Equipment to Remain:

- (3) T-frames
- (3) Ericsson KRD9011461-B66A-B2 – antenna
- (3) RFS APXVAARR24\_43-U-NA20 – antenna
- (3) Ericsson AIR32 46 B66 - antenna
- (3) Ericsson KRY 112 144/1 – TMAs
- (3) Ericsson Radio 4449 B71+B12 – RRU
- (2) 1-5/8" fiber

Entitlements:

- (3) Ericsson KRY 112 489/2 TMA
- (18) 1 5/8" coax

GROUND

Install New:

- Equipment inside existing 6102 cabinet
- (1) Emerson Nextend 2416 cabinet
- (1) Ericsson B160 battery cabinet
- (1) Ericsson 6160 equipment cabinet

This facility was approved by the City of Waterbury, CT at a meeting of the Zoning Board of Appeals held March 18, 1985. The Board voted unanimously to grant the petition of EMAC Communications, Inc, requesting special exception under Section 5.13-12 of the Waterbury Ordinance to construct a radio communications tower and facility. EMAC Communications merged with and into SBA Properties, Inc. December 21, 2001. There were no post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the City of Waterbury's Mayor, The Honorable Neil M. O'Leary City Planner, Robert Nerney, as well as the City Clerk, Antoinette Spinelli. (Separate notice is not being sent to tower owner, as it belongs to SBA.)



The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

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

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

Sincerely,

G. Scott Shepherd  
Site Development Specialist II  
SBA COMMUNICATIONS CORPORATION  
134 Flanders Rd., Suite 125  
Westborough, MA 01581

508.251.0720 x3807 + T  
508.366.2610 + F  
508.868.6000 + C  
GShepherd@@sbsite.com

#### Attachments

- cc: The Honorable Neil M. O'Leary / Office of the Mayor / with attachments  
*City Hall Building, 235 Grand St., Waterbury, CT 06702*  
Antoinette Spinelli, Town Clerk / with attachments  
*City Hall Building, 235 Grand St., Waterbury, CT 06702*  
Robert Nerney, City Planner / with attachments  
185 South Main St., 5<sup>th</sup> Fl. Waterbury, CT 06706

**EXHIBIT LIST**

Exhibit 1	Check Copy	To Be Invoiced by CSC per Covid guidelines
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	The City of Waterbury 3/20/1985
Exhibit 6	Construction Drawings	Chappell Engineering Associates 8/24/20
Exhibit 7	Modification Drawings	TES 7/29/20
Exhibit 8	Structural Analysis	TES 7/31/20
Exhibit 9	Mount Analysis	TES 7/27/20
Exhibit 10	EME Report	EBI Consulting 8/18/20



## EXHIBIT 1

Normally, Exhibit 1 would contain a copy of the check for the filing fee.

# EXHIBIT 2

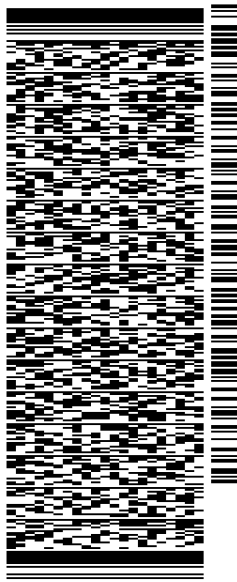
ORIGIN ID:BFBA (508) 614-0389  
 RICK WOODS  
 SBA COMMUNICATIONS CORPORATION  
 134 FLANDERS RD  
 SUITE 125  
 WESTBOROUGH, MA 01581  
 UNITED STATES US

SHIP DATE: 25AUG20  
 ACTWGT: 1.00 LB  
 CAD: 105843304/NET4280

BILL SENDER

TO **MELANIE A. BACHMAN EXEC. DIR**  
**CONNECTICUT SITING COUNCIL**  
**TEN FRANKLIN SQUARE**

**NEW BRITAIN CT 06051**  
 (508) 251-0720 X 302 REF: 105692009-6089  
 INV. DEPT:  
 PO:



TRK# 7713 5236 3228  
 0201  
 WED - 26 AUG 10:30A  
 PRIORITY OVERNIGHT

**EBBDLA**  
 CT-US BDL  
 06051

56B.I2/7709/B766

**After printing this label:**

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:BFBA (508) 614-0389  
RICK WOODS  
SBA COMMUNICATIONS CORPORATION  
134 FLANDERS RD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

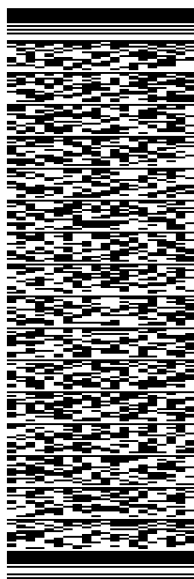
SHIP DATE: 25AUG20  
ACTWGT: 1.00 LB  
CAD: 105843304/NET4280

BILL SENDER

TO THE HONORABLE NEIL M. O'LEARY  
CITY HALL BUILDING  
235 GRAND ST

WATERBURY CT 06702

(508) 251-0720 X 3807 REF: 105692009-6089  
INV. PO. DEPT.

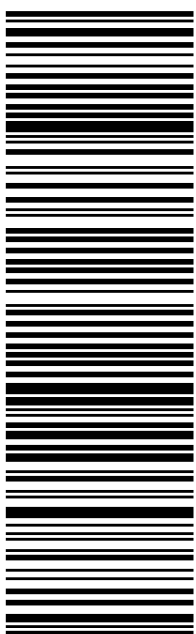


TRK# 7713 5240 8834  
0201

WED - 26 AUG 10:30A  
PRIORITY OVERNIGHT

EB BNHA

06702  
BDL  
CT-US



56B.I2/7709/B766

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RICK WOODS  
SBA COMMUNICATIONS CORPORATION  
134 FLANDERS RD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

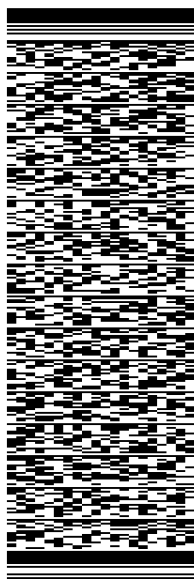
SHIP DATE: 25AUG20  
ACTWGT: 1.00 LB  
CAD: 105843304/NET4280

BILL SENDER

TO ANTOINETTE SPINELLI, TOWN CLERK  
CITY HALL BUILDING  
235 GRAND ST

WATERBURY CT 06702

(508) 251-0720 X3807 REF: 1056920096089  
INV/ PO: DEPT:

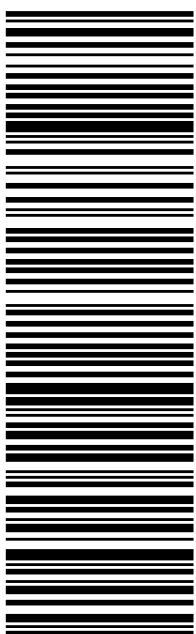


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0201

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PRIORITY OVERNIGHT

EB BNHA

06702  
CT:US BDL



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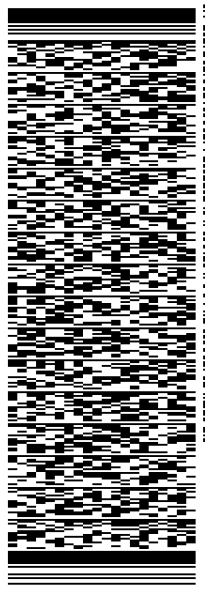
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 SBA COMMUNICATIONS CORPORATION  
 134 FLANDERS RD  
 SUITE 125  
 WESTBOROUGH, MA 01581  
 UNITED STATES US

SHIP DATE: 25AUG20  
 ACTWGT: 1.00 LB  
 CAD: 105843304/NET4280

TO **ROBERT NERNEY, CITY PLANNER**

**185 SOUTH MAIN ST  
 5TH FLOOR  
 WATERBURY CT 06706**

(508) 251-0720 X 3807 REF: 1056920096089  
 INV/ DEPT:



TRK# 0201 **7713 5247 2041**

WED - 26 AUG 10:30A  
 PRIORITY OVERNIGHT

**EB BNHA**

06706  
 CT-US BDL

56B.I2/7709/B766

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# EXHIBIT 3

The Assessor's office is responsible for the maintenance of records on the ownership of properties.

Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.



Information on the Property Records for the Municipality of Waterbury was last updated on

### Parcel Information

Location:	207 GARDEN CIR	Property Use:	Residential	Primary Use:	Residential
Unique ID:	018408050050	Map Block Lot:	0184-0805-0050	Acres:	0.92
490 Acres:	0.00	Zone:	RL	Volume / Page:	4307/ 9
Developers Map / Lot:		Census:			

### Value Information

	Appraised Value	Assessed Value
Land	194,391	136,070
Buildings	0	0
Detached Outbuildings	0	0
Total	194,391	136,070

### Owner's Information

Owner's Data
SBA PROPERTIES INC 8051 CONGRESS AVE ATTN: CT.4877 BOCA RATON FL 33487-1307



### Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
SBA PROPERTIES INC	4307	9	01/28/2002	Other	No	\$0
EMAC COMUNICATIONS INC			06/04/1985		No	\$22,500

### Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2018.1575	Electrical	06/12/2018		Open Permit	INSTALL AND WIRE GENERATOR
2013.2794	Electrical	09/19/2016		Closed	ADD 3 ANTENNAS TO EXISTING CELL SITE
2016.2793	Electrical	09/19/2016		Closed	MODIFICATION TO EXISTING CELL SITE ADD CABINET WITH 100A BREAKER
2015.3458	Comm Renovations	11/17/2015		Closed	REPLACE 3 EXISTING ANTENNAS WITH 3 NEW ANTENNAS
2015.3459	Comm Renovations	11/17/2015		Closed	UPGRADE & REPLACEMENT OF EQUIPMENT IN EXISTING SHELTER. SEE SUBMITTED PLAN

Information Published With Permission From The Assessor

# EXHIBIT 4

FARMDALE DR

d100

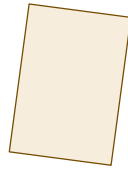
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d100

d100

**492**  
0.92 Ac  
#

d200



**50**  
0.92 Ac  
#207

d400

d400

**51**  
0.69 Ac  
#

d300

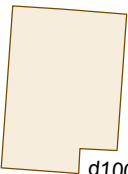
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d100

**49**  
0.46 Ac  
#



**491**  
0.46 Ac  
#97



**805**

d100

d100

GARDEN CIR

d100

**5**  
0.23 Ac  
#178

100

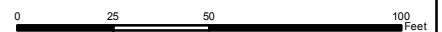
100

d100

GARDEN HILL CIR

d25

d50



City of Waterbury  
Public Works Department

MBL: 0184-0805-0050  
ADDRESS: 207 GARDEN CIR

This map is for informational purposes only and has not been prepared for, or suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to verify the usability of the information. The City of Waterbury makes no warranties, express or implied, as to the use of the information obtained herein.



# EXHIBIT 5

25176

VOL 1757 PAGE 173



OFFICE OF THE CITY CLERK  
**THE CITY OF WATERBURY**  
CONNECTICUT

March 20, 1985

TO WHOM IT MAY CONCERN:

THIS IS TO CERTIFY THAT at a meeting of the Zoning Board of Appeals held Monday, March 18, 1985, the Board voted unanimously to grant the petition of EMAC Communications, Inc., requesting a special exception under Section 5.13-12 of the Waterbury Ordinance to construct a radio communication tower and facility on the premises at Garden Circle, Garden Hill Circle and Farmdale Drive, an R.L. zone.

ATTEST:

*Ralph T. Phelan*  
Ralph T. Phelan  
Assistant City Clerk

RTP/cc

NOTE: Please have this recorded in the Town Clerk's Office as soon as possible.

RECEIVED FOR RECORD  
TOWN CLERK'S OFFICE

1985 MAR 22 P 3 22

*Lillian K. Hurlburt*  
TOWN CLERK  
WATERBURY, CT.

679374

CONNECTICUT  
GRID NORTH



N/T  
DANIEL M. MORAN  
(VOL. 3067, PG. 142)

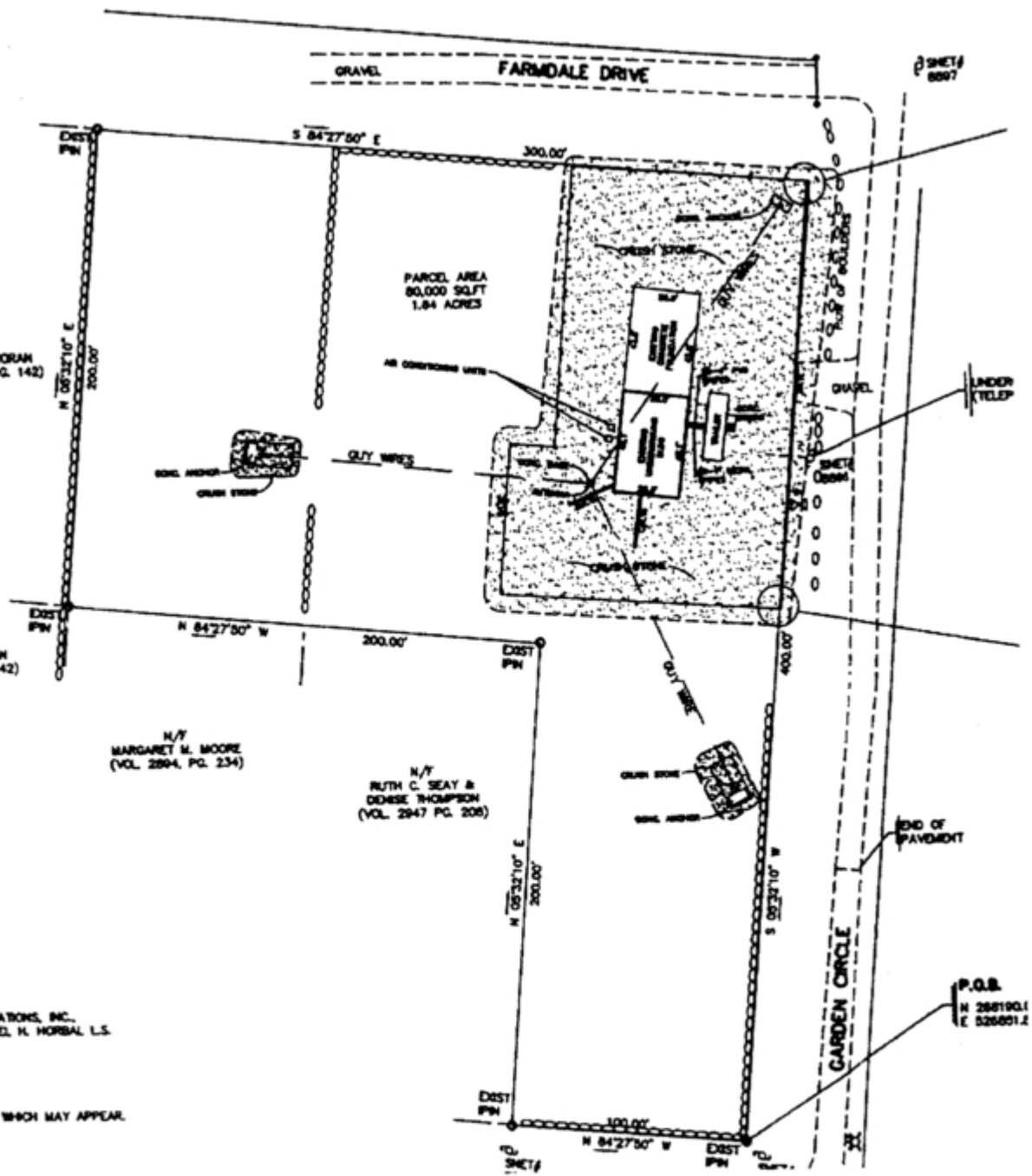
N/T  
DANIEL M. MORAN  
(VOL. 3067, PG. 142)

N/T  
MARGARET M. MOORE  
(VOL. 2894, PG. 234)

N/T  
RUTH C. SEAY &  
DENISE THOMPSON  
(VOL. 2947 PG. 208)

AC COMMUNICATIONS, INC.  
BY MICHAEL H. MORAL L.S.

AS OF RECORD WHICH MAY APPEAR.



Hope this helps.

Thanks,

**Darcy Nelson**  
Regional Site Manager - NE

570.362.8355 + C  
561.322.2851 + F



Department of Public Works  
**The City of Waterbury**

November 29, 2012

**STREET NUMBERING**

In compliance with the provisions of the ordinance quoted hereon, you are hereby ordered to place in a conspicuous place on your building or door the number designated below. The numbers must be plain and not less than 2½ inches in height.

Your New Number is 207

Extract from City Ordinance concerning Buildings:

**AN ORDINANCE CONCERNING THE NUMBERING OF BUILDINGS:**

1. Numbers of regular series shall be affixed to, or inscribed on all buildings or parts of buildings erected or fronting on any street, alley or public court in the City of Waterbury.
2. Such numbers shall be of a color, different from and in distinct contrast to their background; shall be of such size and material and in such location as to be at all times by daylight plainly legible from the middle of the street; and shall in no case be less than two and one half inches in height.
3. The Bureau of Engineering shall arrange the series and designate the number of numbers to be affixed to such buildings, or parts of buildings, and shall keep a record thereof.
4. In case the numbered building is so situated that the number upon it is not plainly visible from the middle of the street in daylight, an additional number or numbers shall be placed at the street entrance, upon a fence, or post, or adjacent building, in such a way as to be plainly visible from the middle of the street.
5. The Police Department shall cause this ordinance to be enforced and any owner or occupant of any building, who shall neglect or refuse for sixty (60) days after the passage of this ordinance, or after the numbers have been designated by the Bureau of Engineering, to affix to the same the number designated by the Bureau of Engineering, or who shall affix to the same, or retain thereon more than five (5) days any number contrary to the said designation and the direction of the Police Department, shall forfeit not less than one (1) no more than twenty (20) dollars for every such offense, and a like fine for every day thereafter until the directions of said Police Department are complied with.

**SAVE THIS NOTICE**

Until you attach the numbers to building in accordance with the regulations above  
OWNER'S NAME : SBA Properties Inc  
OWNER'S ADDRESS: 5900 Broken Sound Pkwy Nw  
Boca Raton, Fl 33487  
Assessor's: #0184-0805-0050 HOUSE #207 Garden Cir.  
Per Owners request  
Numbering Map 12-21-42



[Property Search](#)    
 [Residential Sales](#)    
 [Commercial Sales](#)    
 [Vacant Land Sales](#)

**City of Waterbury**

**Last Updated: 11/27/2012**



**Summary**

*207 GARDEN CIR.*

Address <i>X</i> GARDEN HILL CIR <i>X</i>	Map/Block/Lot 0184-0805-0050
Primary Use Residential	Acres 0.92
Unique ID 018408050050	Zone RL
Volume 4307	Page 9

**Ownership Information**

<p><b>Current Owner</b> SBA PROPERTIES INC                  % SBA NETWORK SERVICES                  5900 BROKEN SOUND PKWY NW                  BOCA RATON FL 33487</p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="text-align: center;">Appraised Value</th> <th style="text-align: center;">70% Assessment</th> </tr> </thead> <tbody> <tr> <td><b>Land</b></td> <td style="text-align: center;">251838</td> <td style="text-align: center;">176290</td> </tr> <tr> <td><b>Buildings</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td><b>Outbuildings</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td><b>Total</b></td> <td style="text-align: center;"><b>251838</b></td> <td style="text-align: center;"><b>176290</b></td> </tr> </tbody> </table>		Appraised Value	70% Assessment	<b>Land</b>	251838	176290	<b>Buildings</b>	0	0	<b>Outbuildings</b>	0	0	<b>Total</b>	<b>251838</b>	<b>176290</b>
	Appraised Value	70% Assessment														
<b>Land</b>	251838	176290														
<b>Buildings</b>	0	0														
<b>Outbuildings</b>	0	0														
<b>Total</b>	<b>251838</b>	<b>176290</b>														

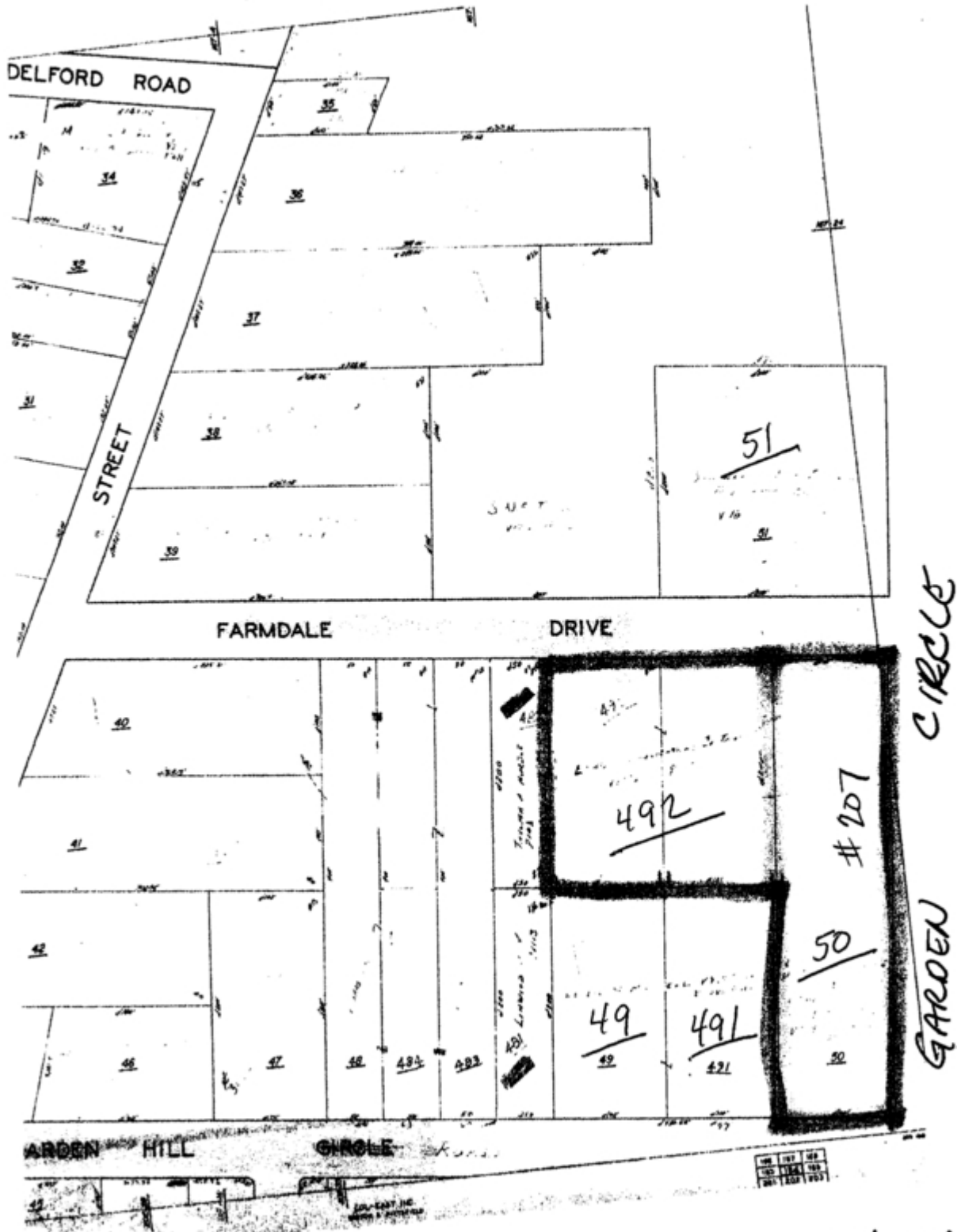
**Sales History**

Previous Owner EMAC COMMUNICATIONS INC	Sale Date 1/28/2002
Sale Price 0	Deed Type
Volume/Page 4307 / 9	Valid Sale No
Previous Owner <i>V.1131 Pg 40</i>	Sale Date 6/4/1985
Sale Price 22500	Deed Type
Volume/Page /	Valid Sale No

Disclaimer: This information is provided for your use. No claim that the file is complete or that the file is 100% accurate is made. It is a copy of the Property Record File of the town and as such is a constant work in progress. You may also view and copy data in the Town Hall.

Please feel free to [contact](#) us for further information.  
 Click [here](#) to go back.





12-21-10      ASSES. MAP # 184-805-50

FARMDALE

DRIVE

492  
ASSES. LOT #

ASSES. LOT #  
50

# 207 GARDEN CIR.  
PER OWNERS REQUEST  
NOV. 27, 2012 S.R.

400'

100'

N 758200

768000

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HSE ADDRESS  
178

HSE ADDRESS  
166

Garden hill Ci

HOUSE NUMBERS

Date Recieved NOV. 27, 2012

Date Numbered NOV. 29, 2012

Numbers Given 207

Side of street WEST

Number of Buildings N/A Doors N/A

Remarks CELL TOWER

Kind of Buildings, Etc;  
ASSES. MAP# 184-805-50

12-21-42

PER OWNERS REQUEST

By SR

LOCATION OF BUILDING TO BE NUMBERED

GARDEN CIR. AVE

Located ST

ASSES. MAP# 184-805-50

Request by SBA PROPERTIES INC

5900 BROKEN SOUND PKWY NW  
BOCA RATON, FL 33487

# EXHIBIT 6



# WATERBURY/HILL STREET

207 GARDEN CIRCLE  
WATERBURY, CT 06704  
NEW HAVEN COUNTY

## SITE NO.: CT11392B

SITE TYPE: SELF-SUPPORT TOWER

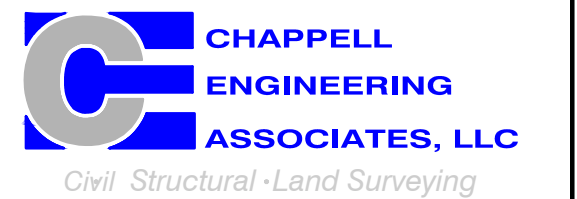
RF DESIGN GUIDELINE: 67D5A992M HYBRID

### T-MOBILE NORTHEAST LLC

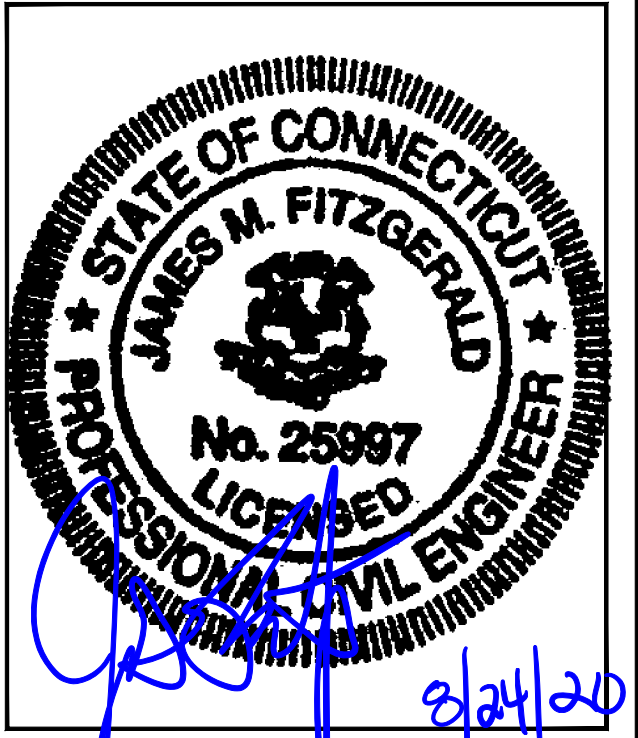
15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
(508) 286-2700



SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE 125  
WESTBOROUGH, MA 01581  
(508) 251-0720



R.K. EXECUTIVE CENTRE  
201 BOSTON POST ROAD WEST, SUITE 101  
MARLBOROUGH, MA 01752  
(508) 481-7400  
www.chappellengineering.com



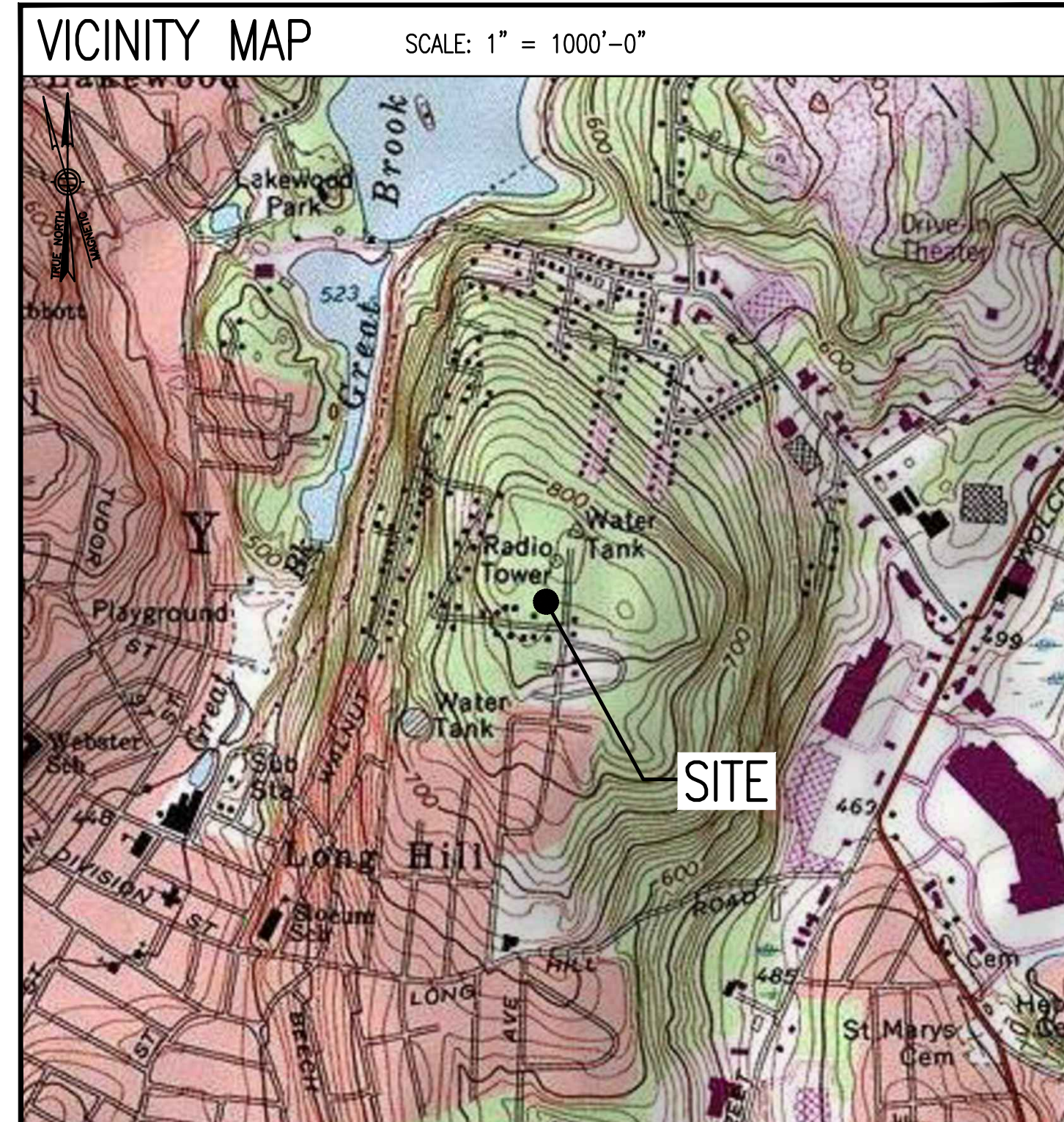
APPROVALS			
PROJECT MANAGER:	DATE:	ZONING/SITE ACQ.:	DATE:
CONSTRUCTION:	DATE:	OPERATIONS:	DATE:
RF ENGINEERING:	DATE:	TOWER OWNER:	DATE:

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS BY CERTIFIED CLIMBER
SECTOR B:	ACCESS BY CERTIFIED CLIMBER
SECTOR C:	ACCESS BY CERTIFIED CLIMBER
SECTOR D:	ACCESS BY CERTIFIED CLIMBER
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

SITE NOTES	
1.	THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE. <ul style="list-style-type: none"> <li>• ADA COMPLIANCE NOT REQUIRED.</li> <li>• POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.</li> <li>• NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.</li> </ul>
2.	CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3.	NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES. <ul style="list-style-type: none"> <li>• BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE</li> <li>• ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE</li> <li>• STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.</li> </ul>

GENERAL NOTES	
1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK, THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.	11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.	12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
3. THE CONTRACTOR OR BIDDER BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.	13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.	14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.	15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS, THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.	16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.	17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.	
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.	
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.	

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811



**DO NOT SCALE DRAWINGS**

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SHEET INDEX		
SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	TOWER ELEVATION & ANTENNA PLANS	1
A-3	EQUIPMENT DETAILS	1
E-1	ELECTRIC & GROUNDING DETAILS	1

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

PROJECT SUMMARY	
SITE NUMBER:	CT11392B
SBA SITE NUMBER:	CT04877-A
SBA SITE NAME:	WATERBURY/HILL STREET
SITE ADDRESS:	207 GARDEN CIRCLE WATERBURY, CT 06704
PROPERTY OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
TOWER OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW HAVEN COUNTY
ZONING DISTRICT:	RL (RESIDENTIAL)
STRUCTURE TYPE:	SELF-SUPPORT TOWER
STRUCTURE HEIGHT:	280.0'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SROth@sbsite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.5697°    N41°34'11.00" LONGITUDE W.73.0175°    W73°01'03.00"

CHECKED BY: CMC

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	08/20/20	ISSUED FOR CONSTRUCTION	CMC
0	08/10/20	ISSUED FOR REVIEW	CAW

SITE NUMBER:  
**CT11392B**

SITE ADDRESS:  
207 GARDEN CIRCLE  
WATERBURY, CT 06704

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



**GENERAL NOTES:**

- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR – T-MOBILE  
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER – T-MOBILE  
OEM – ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, STATE AND FEDERAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
- SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER, T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR AND/OR LANDLORD PRIOR TO CONSTRUCTION.
- THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AND RETURN DISTURBED AREAS TO ORIGINAL CONDITIONS.
- THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS AND POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.
- CONSTRUCTION SHALL COMPLY WITH ALL T-MOBILE STANDARDS AND SPECIFICATIONS.
- SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITES ARE IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- IF THE EXISTING CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

**SITE WORK GENERAL NOTES:**

- THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
- SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T-MOBILE SPECIFICATION FOR SITE SIGNAGE.

**CONCRETE AND REINFORCING STEEL NOTES:**

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (400PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNDO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
CONCRETE CAST AGAINST EARTH.....3 IN.  
CONCRETE EXPOSED TO EARTH OR WEATHER:  
#6 AND LARGER .....2 IN.  
#5 AND SMALLER & WWF .....1½ IN.  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:  
SLAB AND WALL .....¾ IN.  
BEAMS AND COLUMNS .....½ IN.
- A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.
- CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;  
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.  
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.  
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

**STRUCTURAL STEEL NOTES:**

- ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND T-MOBILE SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
- ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.
- BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (¾") AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ¾" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

**SOIL COMPACTION NOTES FOR SLAB ON GRADE:**

- EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
- COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
- AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
- COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #1 SIEVE.
- AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). AND SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

**COMPACTION EQUIPMENT:**

- HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

**CONSTRUCTION NOTES:**

- FIELD VERIFICATION:  
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T-MOBILE ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.
- COORDINATION OF WORK:  
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.
- CABLE LADDER RACK:  
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY AND/OR ICE BRIDGE, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

**ELECTRICAL INSTALLATION NOTES:**

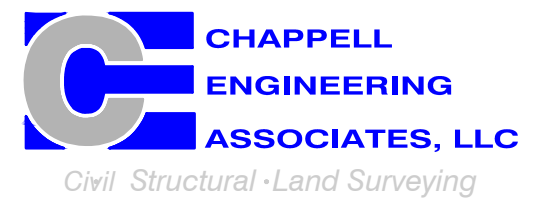
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA, AND MATCH INSTALLATION REQUIREMENTS.
- POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY HARGER (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.
- NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND, DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.
- CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

**T-MOBILE  
NORTHEAST LLC**

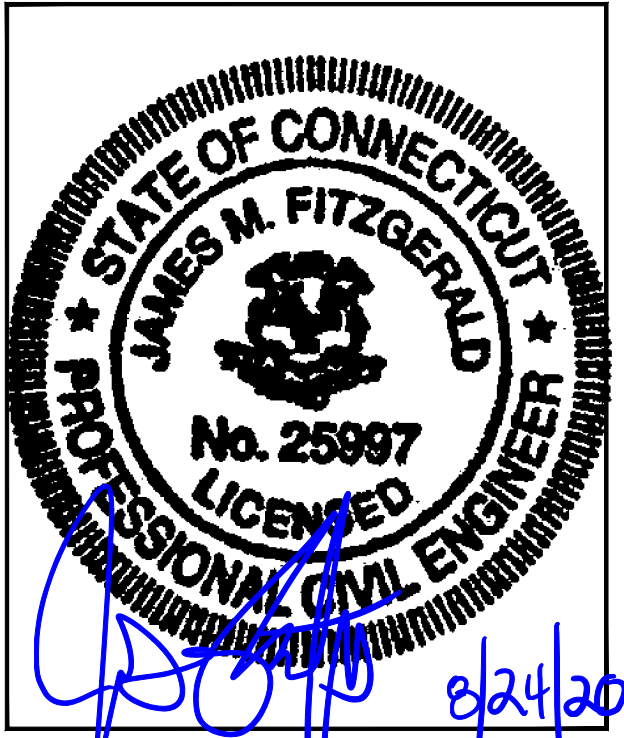
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SITE NUMBER:  
**CT11392B**  
  
SITE ADDRESS:  
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WATERBURY, CT 06704

SHEET TITLE  
  
**GENERAL NOTES**

SHEET NUMBER  
  
**GN-1**



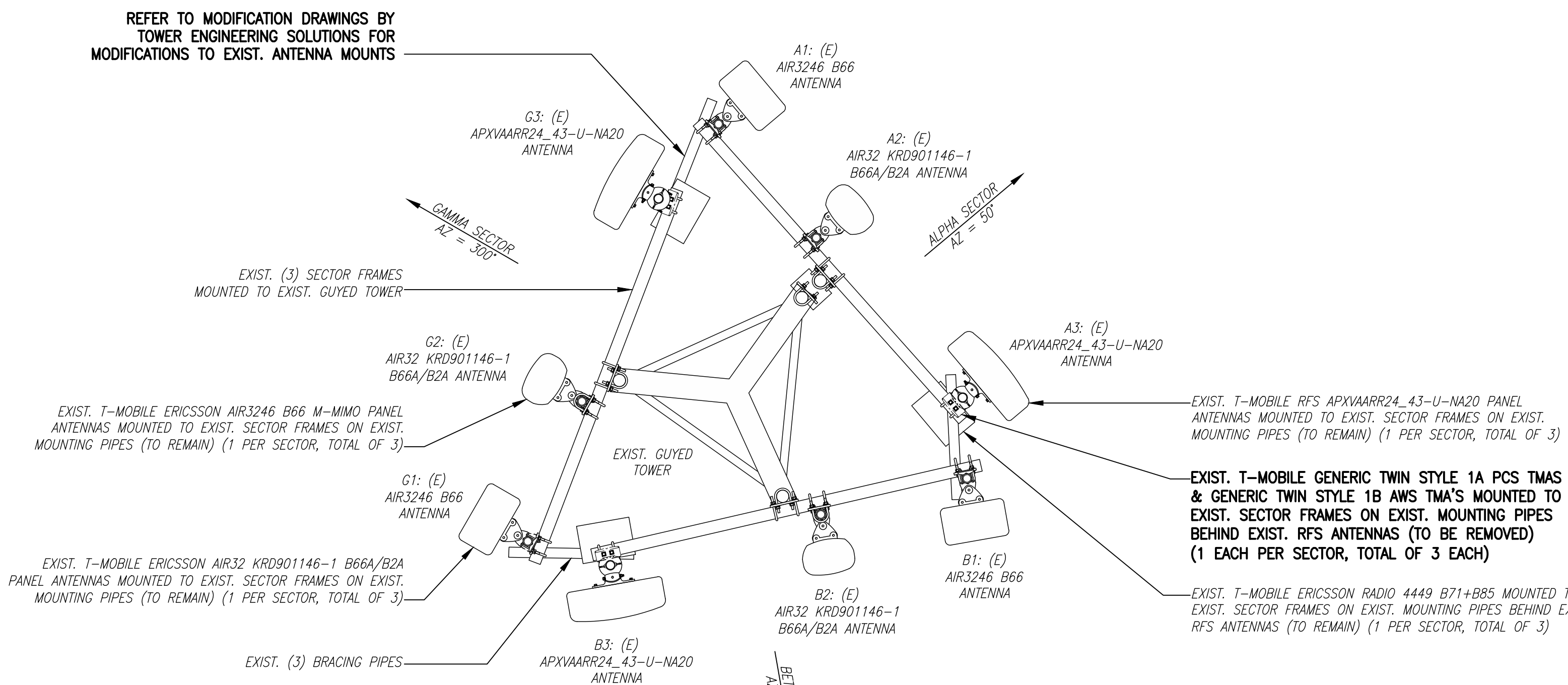
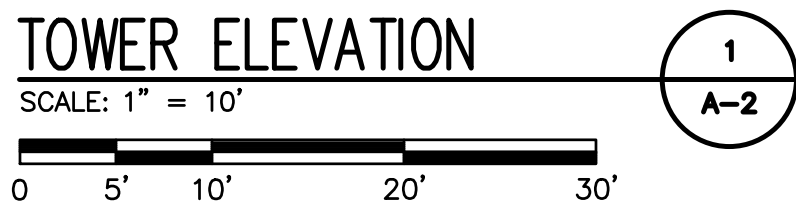
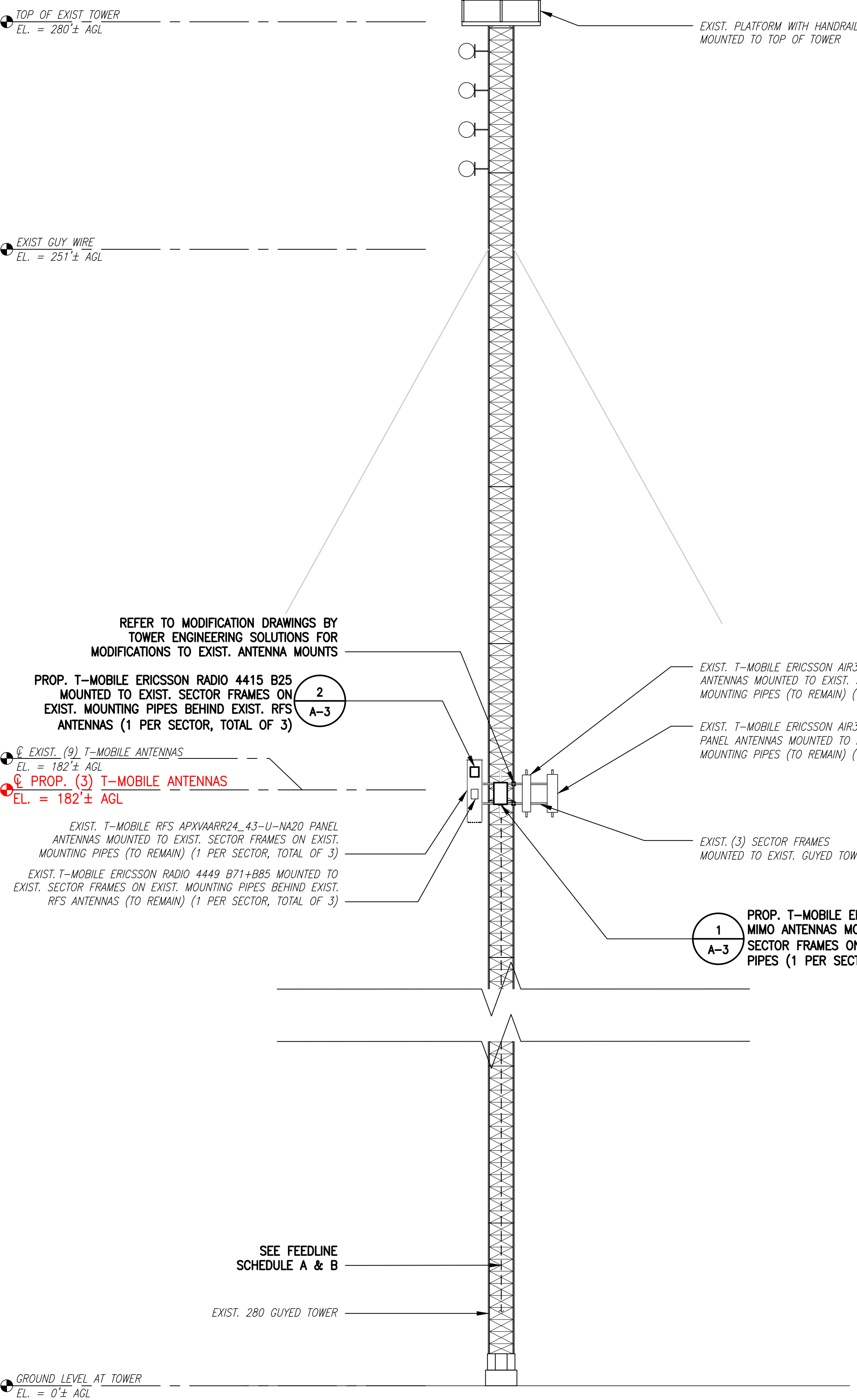




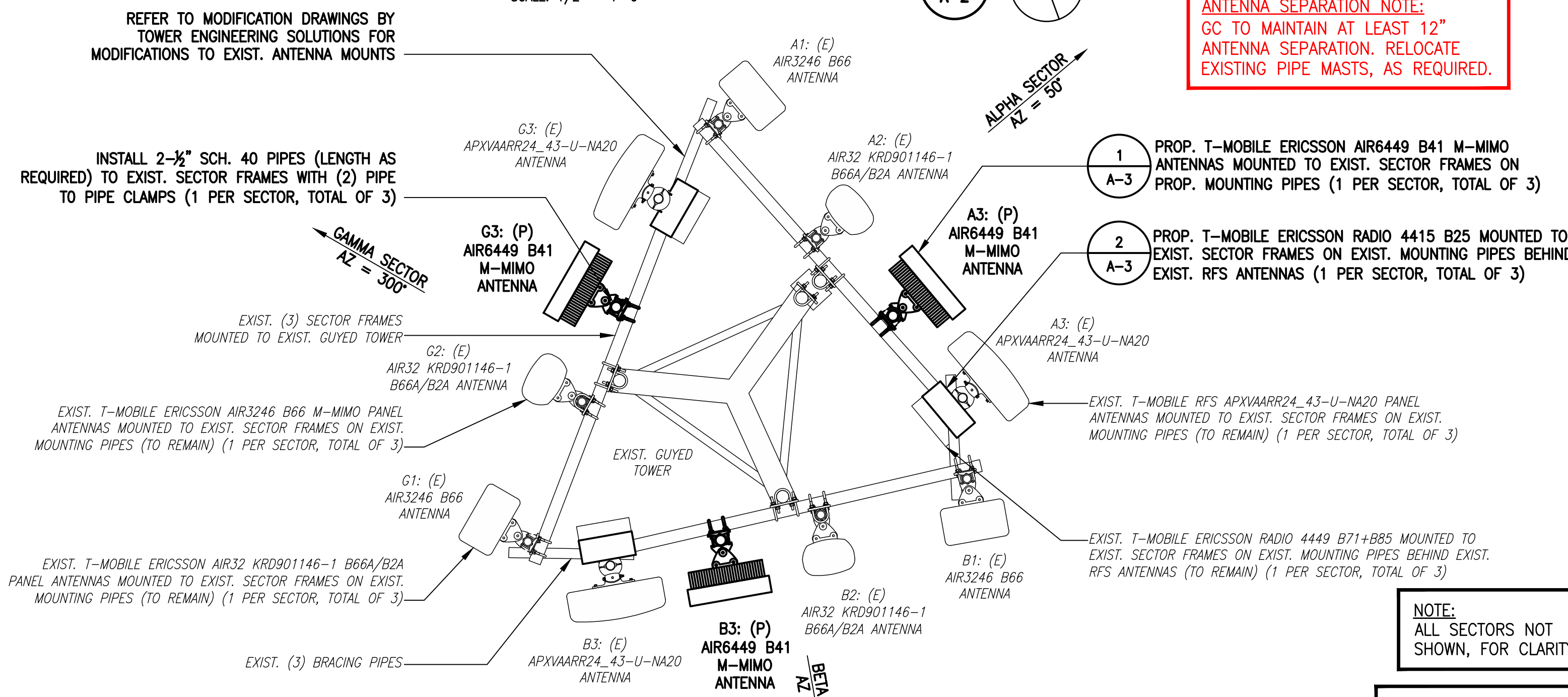
**SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):**  
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

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

**RAD CENTER NOTE:**  
 T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.



**EXIST. ANTENNA PLAN**  
 SCALE: 1/2" = 1'-0"



**PROP. ANTENNA PLAN**  
 SCALE: 1/2" = 1'-0"

**MOUNT MODIFICATION NOTE:**  
 FOR MORE DETAILS, REFER TO MOUNT MODIFICATION DRAWINGS BY TOWER ENGINEERING SOLUTIONS, DATED 07/29/20.

**NOTE:**  
 ALL SECTORS NOT SHOWN, FOR CLARITY.

**NOTE:**  
 VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

**ANTENNA STATUS LEGEND:**

- EMPTY - EMPTY PIPE
- (E) - EXISTING
- (P) - INSTALL
- (F) - FUTURE

**T-MOBILE NORTHEAST LLC**

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 WATERBURY, CT 06704

SHEET TITLE

**TOWER ELEVATION & ANTENNA PLANS**

SHEET NUMBER

**A-2**



**FINAL ANTENNA CONFIGURATION**

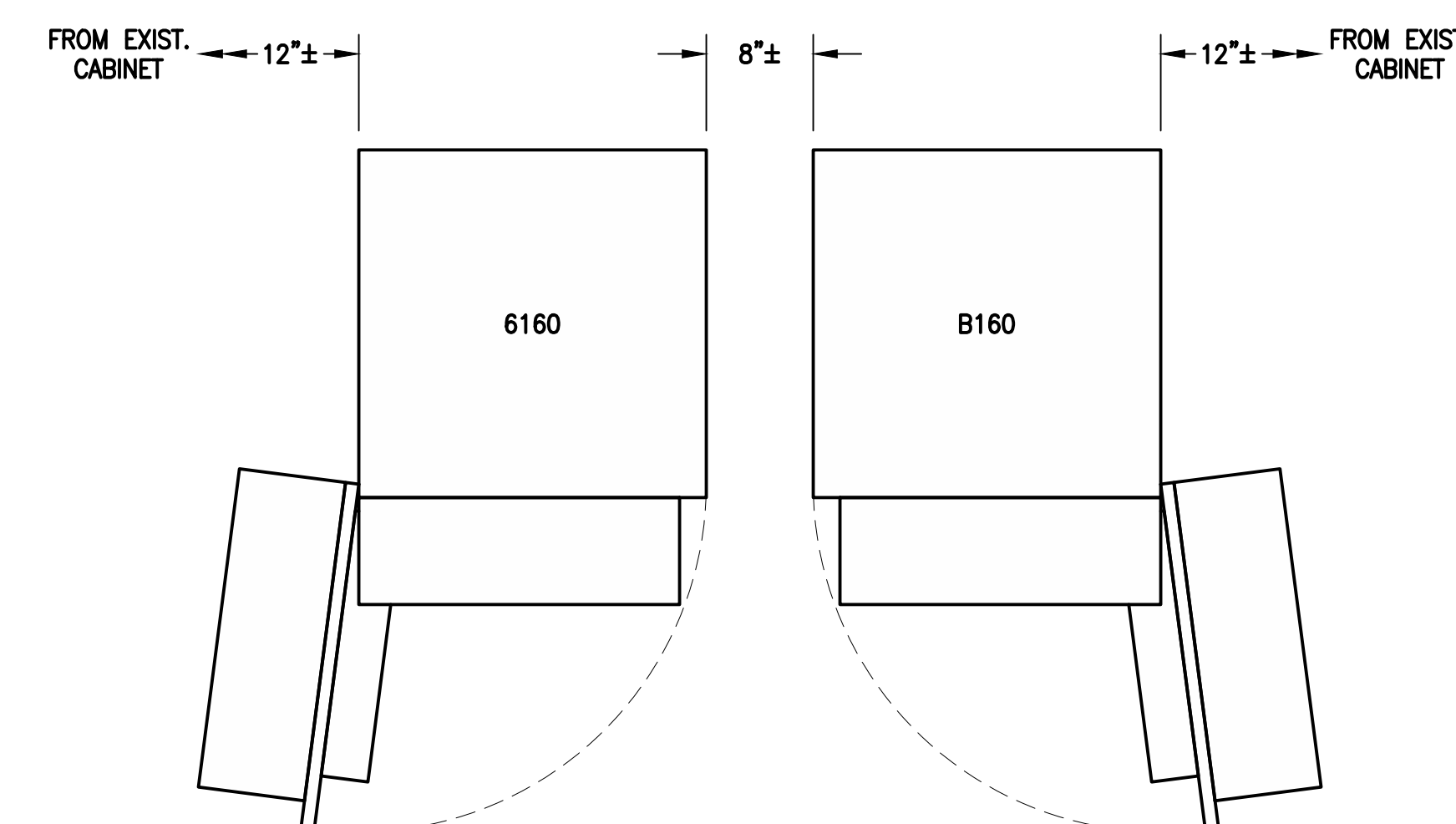
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	ERICSSON AIR32 KRD901146-1 B66A/B2A	182'± AGL	50°	2'	8'	U2100	-	(2) 1-3/8" HCS FIBER CABLES (3) 1-5/8" HCS FIBER CABLES
	ERICSSON M-MIMO AIR3246 B66	182'± AGL	50°	2'	8'	L2100	-	
	ERICSSON M-MIMO AIR6449 B41	182'± AGL	50°	2'	0'	L2500/N2500	-	
	RFS APXVAARR24_43-U-NA20	182'± AGL	50°	2'	8'	L700/L600/N600 L1900/U1900	RADIO 4449 B71+B85 RADIO 4415 B25	
BETA	ERICSSON AIR32 KRD901146-1 B66A/B2A	182'± AGL	170°	2'	8'	U2100	-	
	ERICSSON M-MIMO AIR3246 B66	182'± AGL	170°	2'	8'	L2100	-	
	ERICSSON M-MIMO AIR6449 B41	182'± AGL	170°	2'	0'	L2500/N2500	-	
	RFS APXVAARR24_43-U-NA20	182'± AGL	170°	2'	8'	L700/L600/N600 L1900/U1900	RADIO 4449 B71+B85 RADIO 4415 B25	
GAMMA	ERICSSON AIR32 KRD901146-1 B66A/B2A	182'± AGL	300°	2'	8'	U2100	-	
	ERICSSON M-MIMO AIR3246 B66	182'± AGL	300°	2'	8'	L2100	-	
	ERICSSON M-MIMO AIR6449 B41	182'± AGL	300°	2'	0'	L2500/N2500	-	
	RFS APXVAARR24_43-U-NA20	182'± AGL	300°	2'	8'	L700/L600/N600 L1900/U1900	RADIO 4449 B71+B85 RADIO 4415 B25	

CABLE NOTE: EXISTING (18) 1-5/8" COAX CABLES TO BE REMOVED. SEE FEEDLINE SCHEDULE A & B ON SHEET A-1.

NOTE: RFDS VERSION 4 - 05/17/20



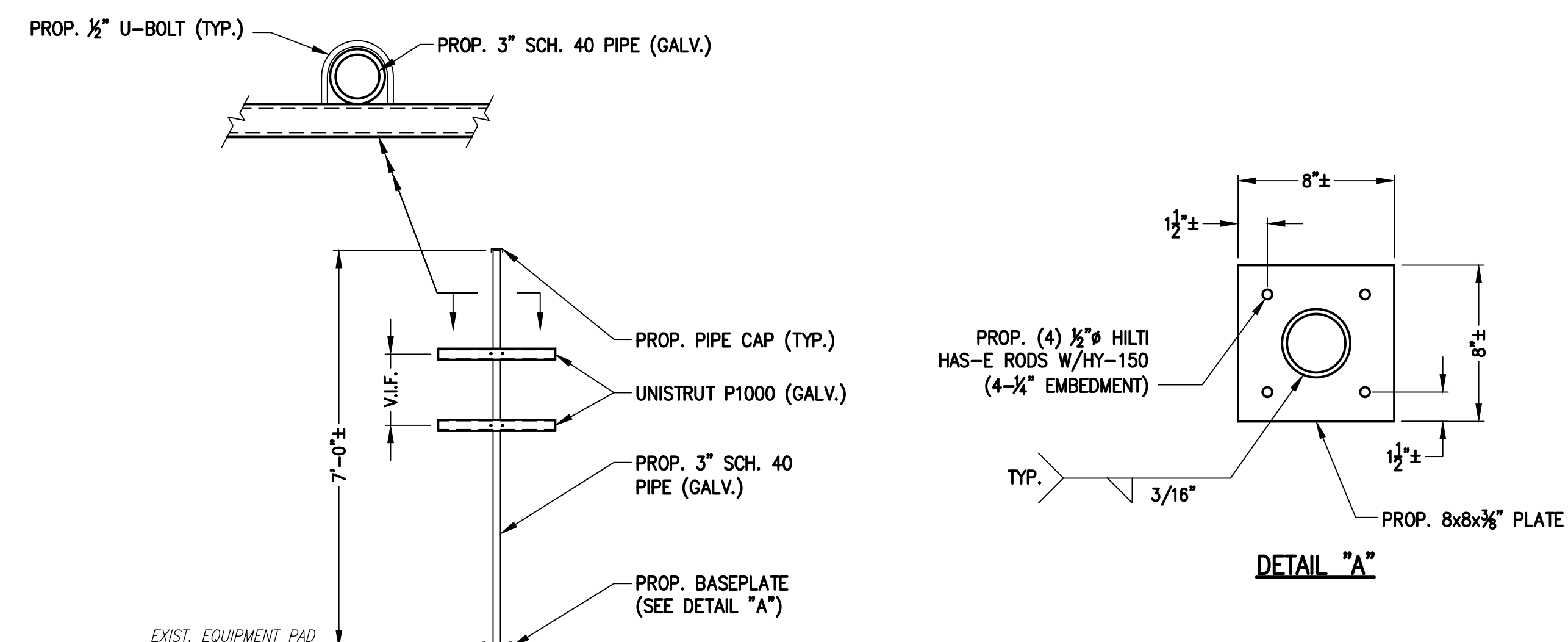
EMERSON NETXTEND COMPACT 2416 AAV CABINET  
DIMENSIONS: 24.0"H x 25.25"W x 25.24"D  
TOTAL OF 1



ERICSSON 6160 SITE SUPPORT CABINET  
DIMENSIONS: 63.25"H x 26.0"W x 34.0"D  
TOTAL OF 1

ERICSSON B160 BATTERY CABINET  
DIMENSIONS: 63.25"H x 26.0"W x 34.0"D  
TOTAL OF 1

EQUIPMENT DETAIL 3  
SCALE: N.T.S.



ERICSSON M-MIMO AIR6449 B41 PANEL ANTENNA  
DIMENSIONS: 33.1"H x 20.5"W x 8.3"D  
WEIGHT: 103.0 LBS  
1 PER SECTOR, TOTAL OF 3

ANTENNA DETAIL 1  
SCALE: N.T.S.



ERICSSON RRUS 4415 B25  
DIMENSIONS: 16.5"H x 13.4"W x 5.9"D  
WEIGHT: 46 LBS  
1 PER SECTOR, TOTAL OF 3

RRUS DETAIL 2  
SCALE: N.T.S.

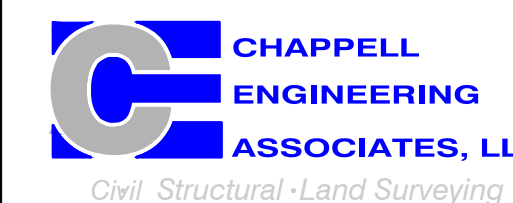
H-FRAME DETAIL 4  
SCALE: N.T.S.

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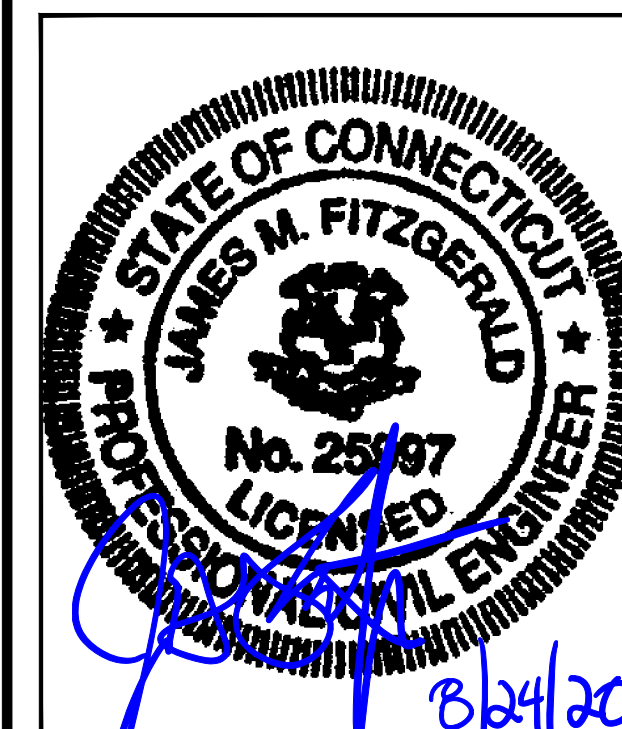
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SHEET TITLE  
**EQUIPMENT DETAILS**

SHEET NUMBER

**A-3**

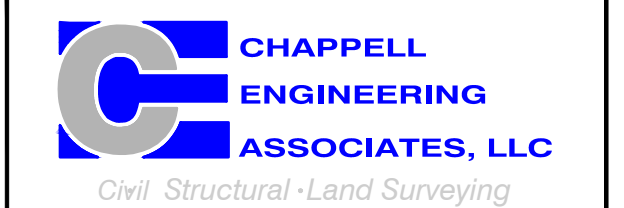


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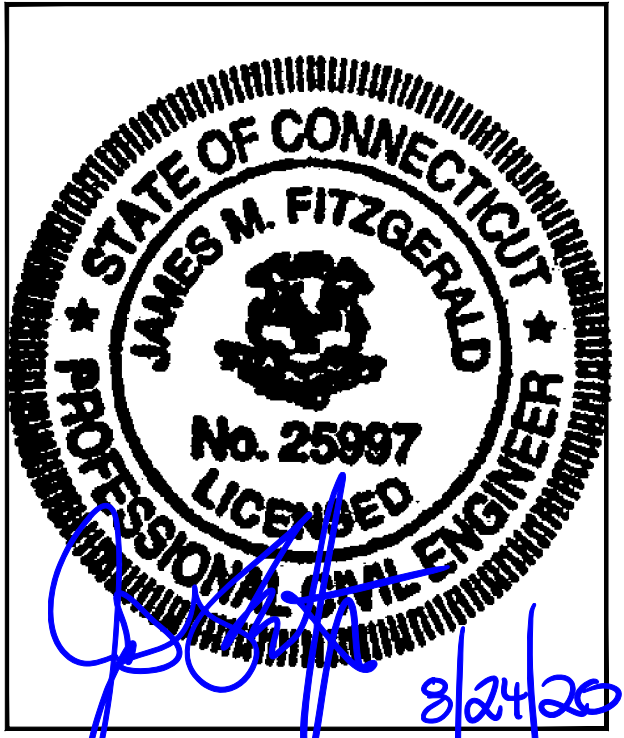
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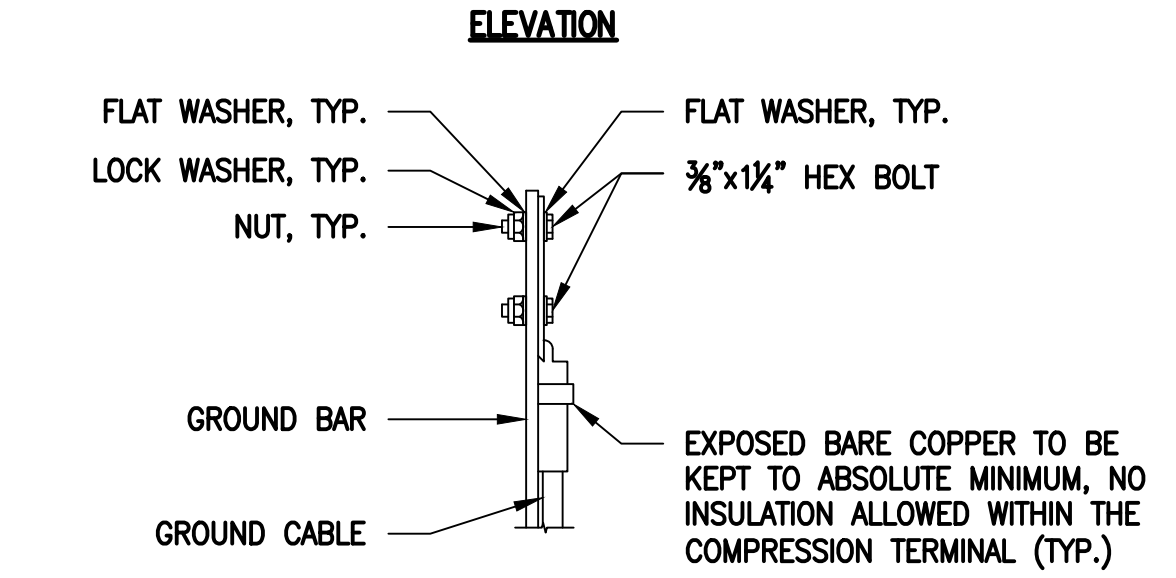
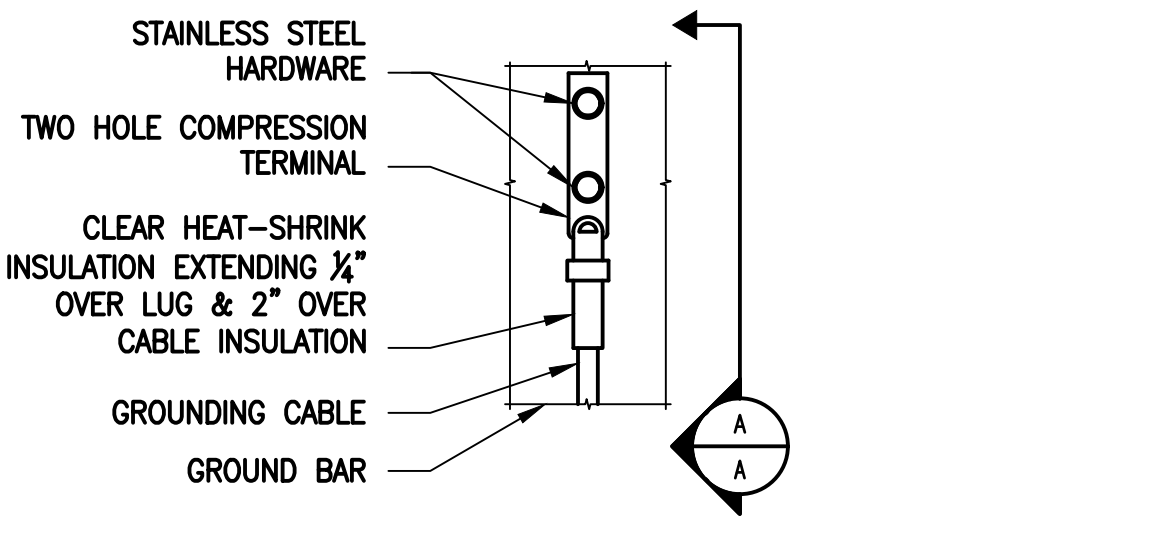
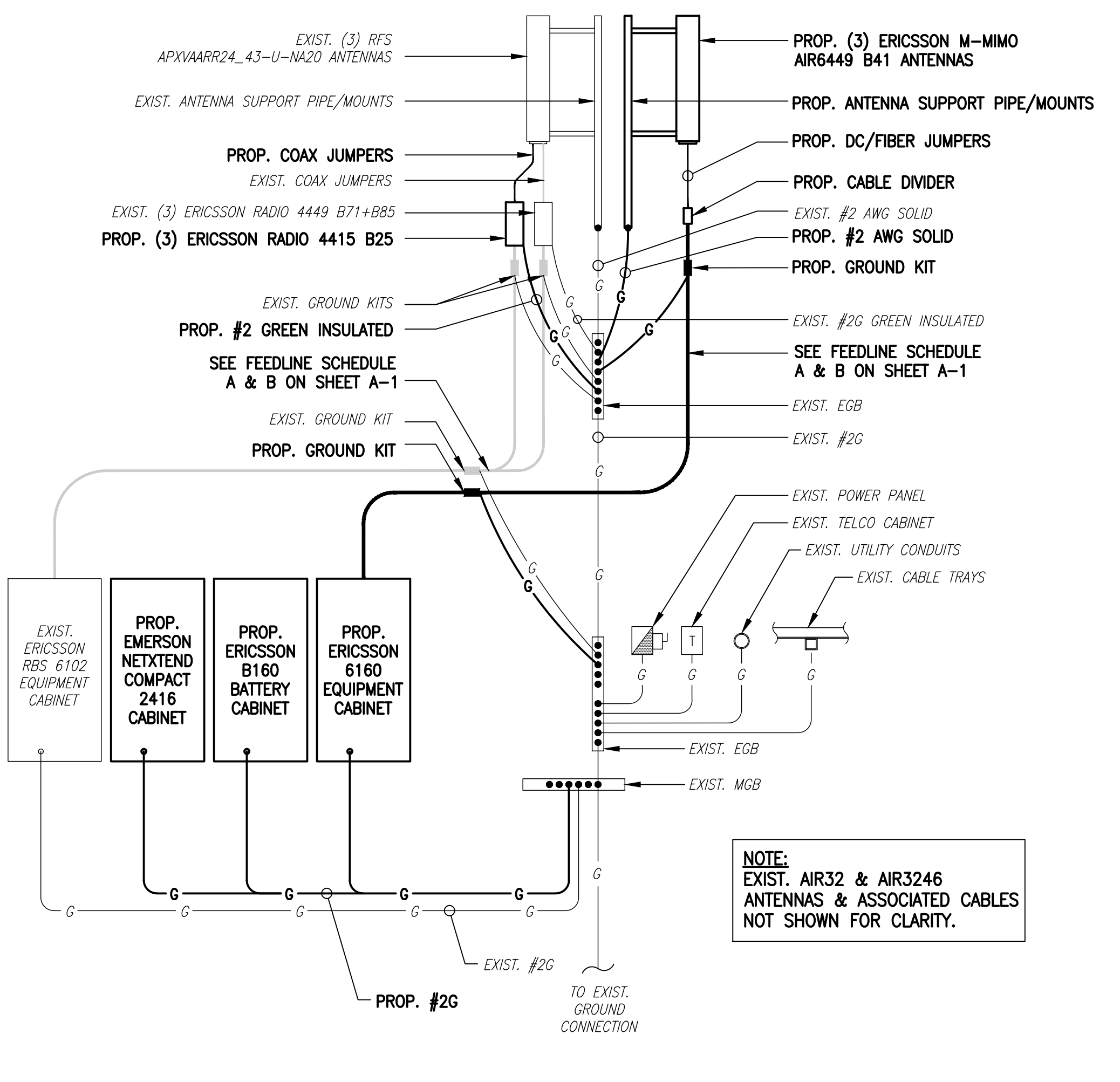
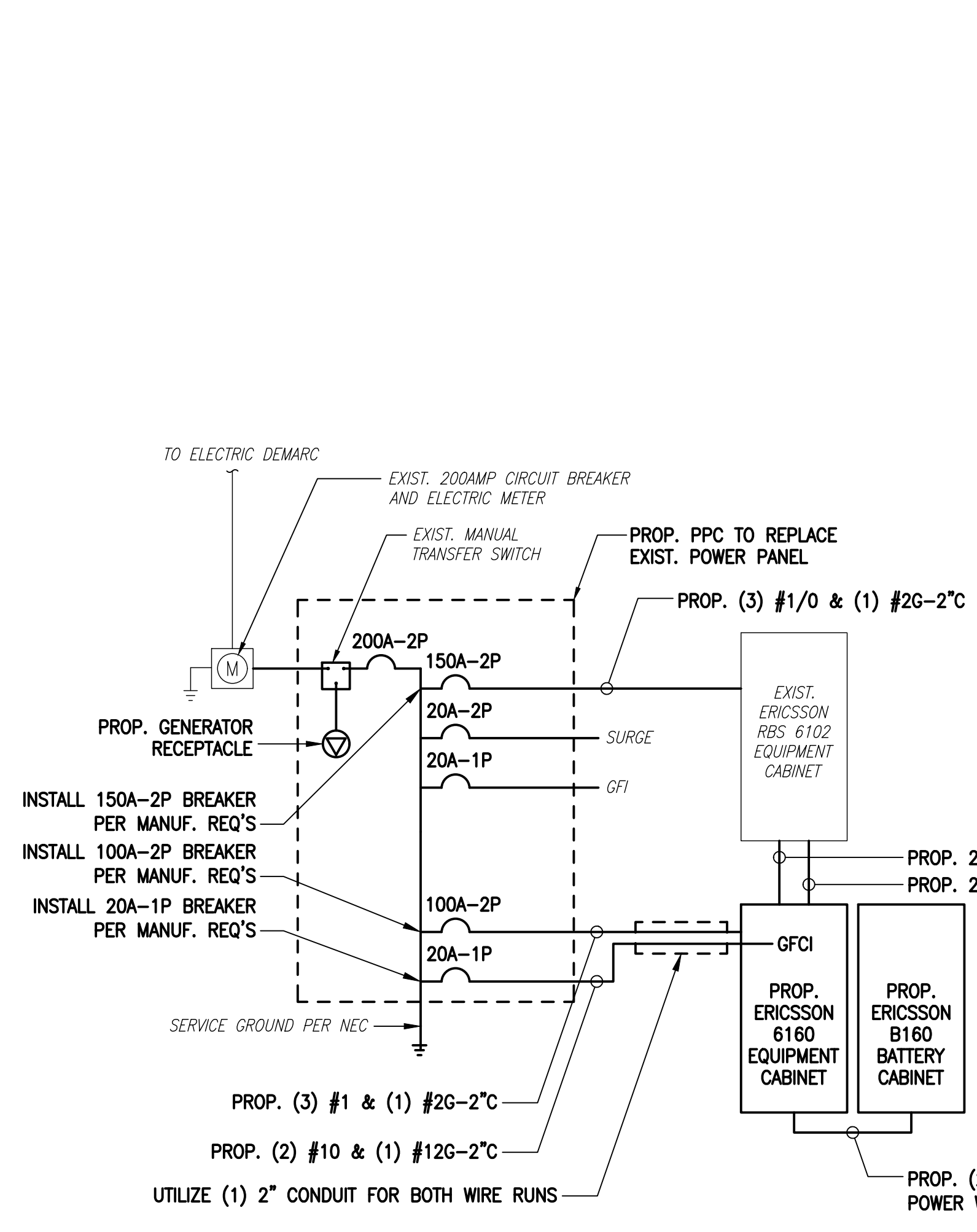
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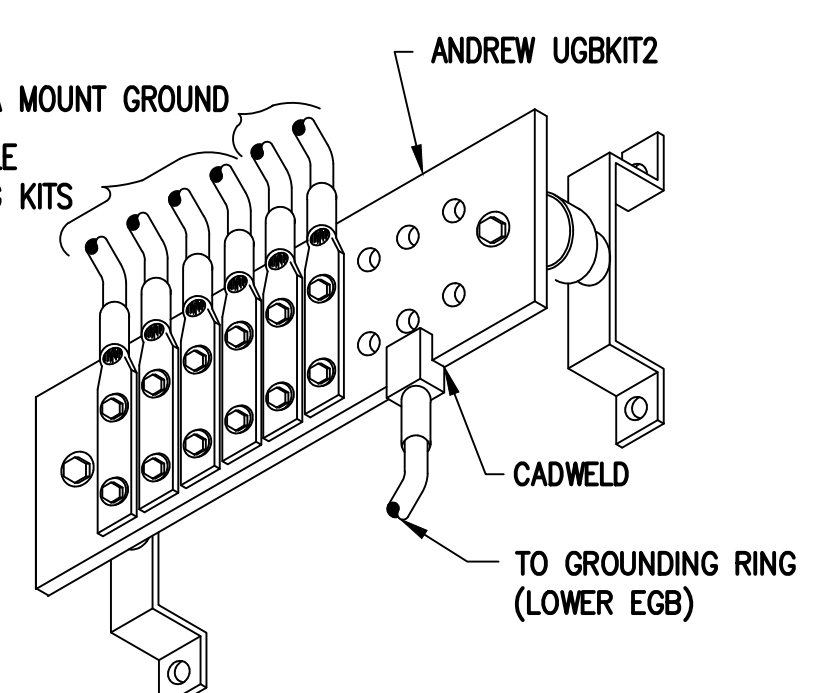
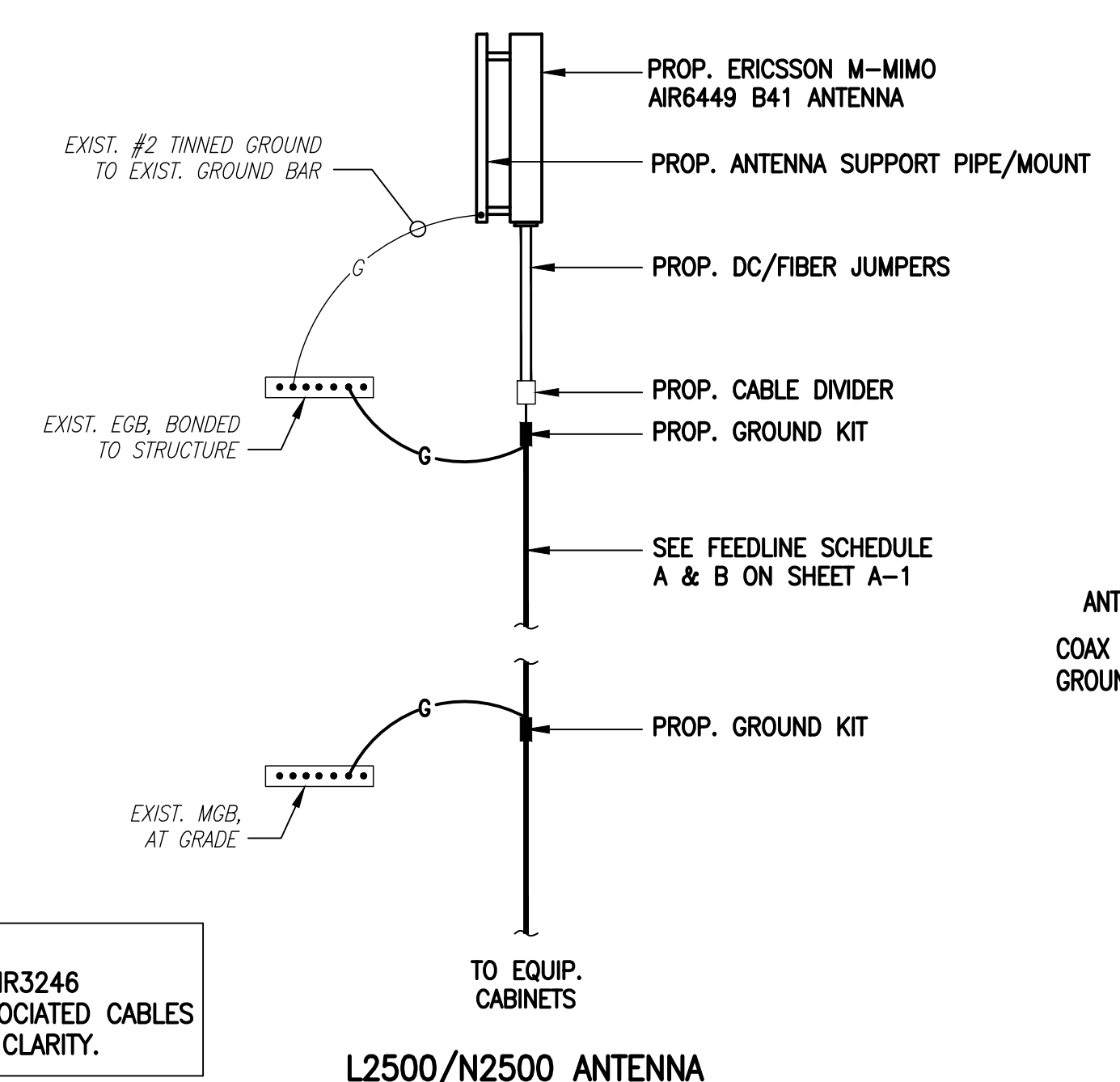
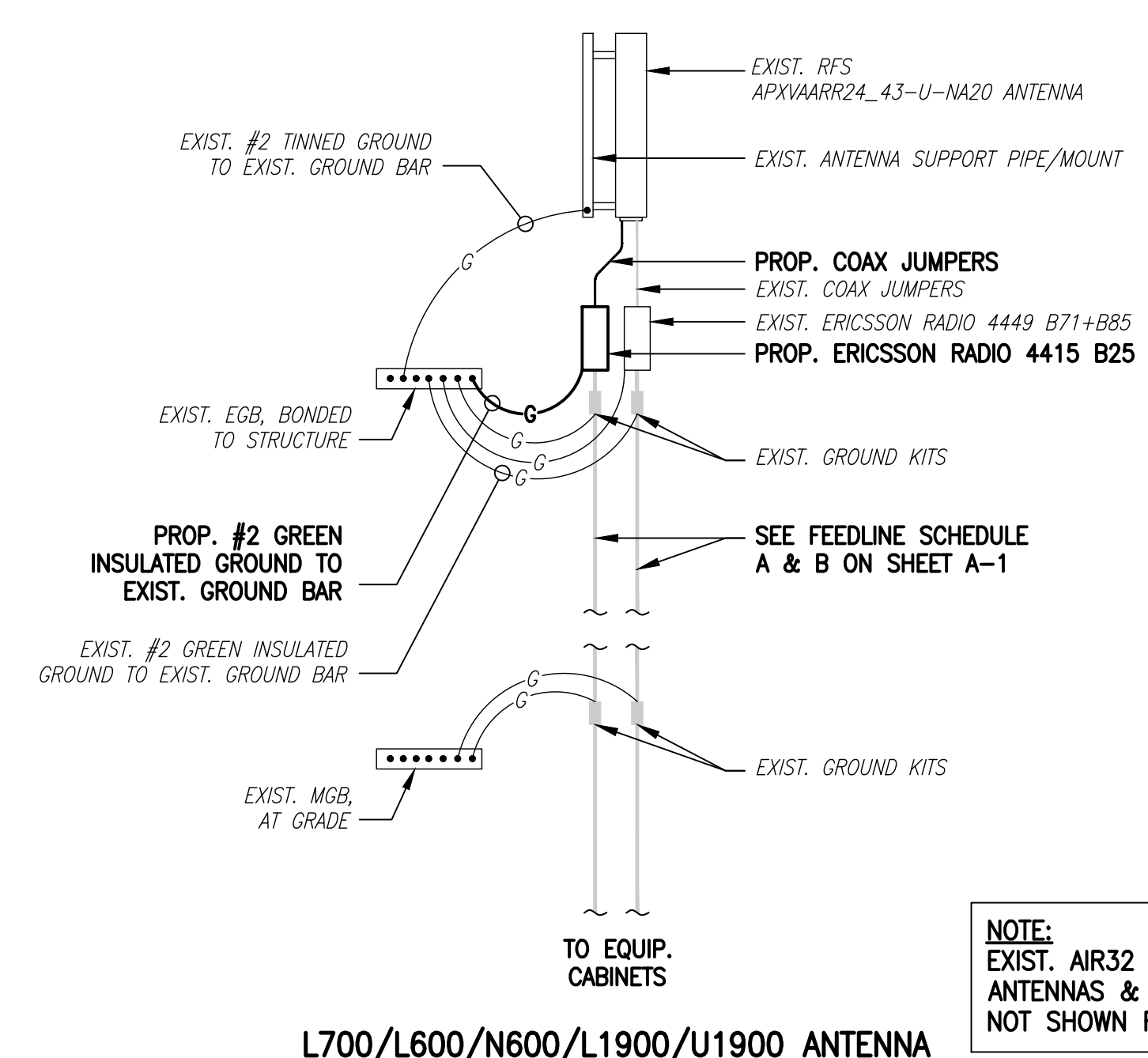
SHEET TITLE  
**ELECTRIC & GROUNDING  
DETAILS**

SHEET NUMBER  
**E-1**



- NOTES:**
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
  - CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

**TYPICAL GROUND BAR CONNECTIONS DETAIL**  
SCALE: NOT TO SCALE



## ELECTRICAL AND GROUNDING NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THHN, OR THININSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH FULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH FULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXIST. TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

# EXHIBIT 7



# MODIFICATION AND DESIGN DRAWINGS FOR EXISTING ANTENNA MOUNTS EXISTING GUYED TOWER

PROPOSED CARRIER: T-MOBILE

TOWER OWNER: SBA / TOWER OWNER SITE #: CT04877-A  
CARRIER SITE #/NAME: CT11392B / WATERBURY HILL ST.

COORDINATES (LATITUDE: 41.569722°, LONGITUDE: -73.017499°)

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

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0
D-2	STANDARD DETAILS	0
MS-STZ-2PST	METROSITE STABILIZER KIT	
MS-STZ-2875P	METROSITE STABILIZER ADAPTER KIT	

**NOTE:**

- THE MODIFICATION DRAWINGS ARE BASED ON THE TES PROJECT NO. 94975, DATED 07/13/2020.

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(800)-487-SITE

TES JOB NO:  
**95637**

CUSTOMER SITE NO:  
**CT04877-A-SBA**  
CUSTOMER SITE NAME:  
**WATERBURY 2, CT**  
207 GARDEN CIRCLE  
WATERBURY, CT 06704



DRAWN BY: **MG**      CHECKED BY: **MK/BT**

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1	FIRST ISSUE	MG	07/29/20

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**TITLE SHEET**

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SHEET NUMBER: **T-1**      REV #: **0**

**BILL OF MATERIALS**

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	SHEET LIST	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES	
<b>MATERIAL &amp; HARDWARE</b>								
3	3	MS-STZ-2PST	METROSITE STABILIZER KIT	A-1, MS-STZ-2PST	79.3	237.9	Galvanized	
3	3	MS-STZ-2875P	METROSITE STABILIZER ADAPTER KIT	A-1, MS-STZ-2875P	4.3	12.9	Galvanized	
<b>FOLLOWING ITEMS ARE "CUSTOM" PARTS</b>								
3	3	PST2375-10	2" PST (2.375" O.D. X 0.154" THK) X 10'-0" A53 GR-B 35KSI	A-1	37.68	113.0	GALVANIZED	
6	6	PL2875-2375	PL 3/8" X 7 1/8" X 10" A36	D-1	7.70	46.2	GALVANIZED	
36	38	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	D-1	1.37	52.1	(2) HHN & LKW-EA GALVANIZED	
12	13	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	D-1	1.17	15.2	(2) HHN & LKW-EA GALVANIZED	
6	6	PL2875-2875	PL 3/8" X 7 1/8" X 10" A36	D-1	7.70	46.2	GALVANIZED	
<p align="center"><b>ALL METROSITE PARTS ARE AVAILABLE FROM METROSITE, LLC.</b></p> <p align="center"><b>180 IND PARK BLVD COMMERCE, GA 30529</b></p> <p align="center"><b>OFFICE: (706) 335-7045</b></p> <p align="center"><b>FAX: (706) 335-7056</b></p>								
<p align="center"><b>NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.</b></p>								
					<b>TOTAL WEIGHT (LBS) =</b>	<b>523.5</b>		



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**95637**

CUSTOMER SITE NO:  
**CT04877-A-SBA**  
 CUSTOMER SITE NAME:  
**WATERBURY 2, CT**  
 207 GARDEN CIRCLE  
 WATERBURY, CT 06704

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**BILL OF MATERIALS**

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**GENERAL NOTES**

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.
7. IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES (WITH SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
8. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-[TESORDERS@TESTOWER.US](mailto:TESORDERS@TESTOWER.US)

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

**VERIFICATION AND INSPECTION**

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

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING<sup>a,b</sup>

BOLT LENGTH <sup>f</sup>	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 <sup>d</sup>	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS <sup>d</sup>
NOT MORE THAN 4d <sub>b</sub>	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN 4d <sub>b</sub> BUT NOT MORE THAN 8d <sub>b</sub>	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN 8d <sub>b</sub> BUT NOT MORE THAN 12d <sub>b</sub>	2/3 TURN	5/6 TURN	1 TURN

<sup>a</sup> 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.

<sup>b</sup> APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

<sup>c</sup> WHEN THE BOLT LENGTH EXCEEDS 12d<sub>b</sub>, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

<sup>d</sup> 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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**SCOPE OF WORK**

- 1 A. RELOCATE EXISTING ANTENNA MOUNT PIPE (PINK COLOR) 1'-0" AWAY FROM THE CENTER TO ACCOMMODATE THE INSTALLATION OF NEW MODIFICATION AS SHOWN. (1) PER SECTOR. EXISTING ANTENNA RAD CENTER TO BE MAINTAINED.

**NOTE:**  
CONTRACTOR TO COORDINATE WITH CARRIER PRIOR TO RELOCATING OF EXISTING ANTENNA MOUNT PIPES TO DETERMINE IF EXISTING ANTENNAS NEEDS TO BE TURNED DOWN.

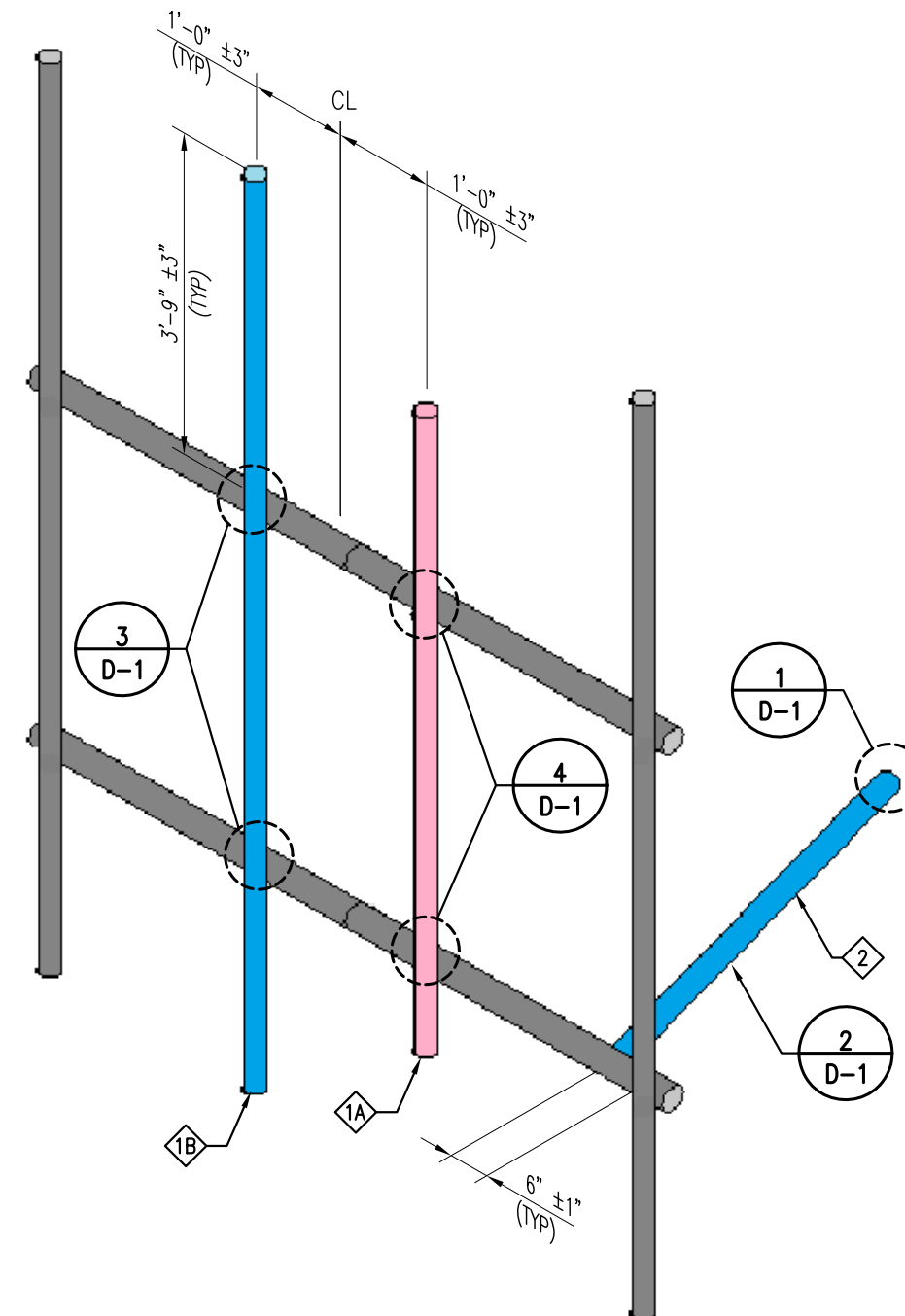
- B. INSTALL NEW 2" PST ANTENNA MOUNT PIPE (10'-0" LONG). (1) PER SECTOR.

- 2 INSTALL NEW STABILIZER KIT AND STABILIZER ADAPTER KIT. SEE SHEETS MS-STZ-2PST, MS-STZ-2875P AND D-1 FOR DETAILS.
- 3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.



PHOTO 1

EXISTING ANTENNA MOUNT  
@ 182' ELEV



ISOMETRIC VIEW  
EXISTING ANTENNA MOUNT @ 182' ELEV.  
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)

**CONTRACTOR NOTE:**

- 1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THERE IS NO INTERFERENCES WITH (SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
- 2. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESORDERS@TESTOWER.US

**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. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS.
- 3. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
- 4. MEMBERS IN BLUE COLOR ARE NEW REINFORCEMENTS.

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	3	PST2375-10	2" PST (2.375" O.D. X 0.154" THK) X 10'-0" A53 GR-B 35K5
2	3	MS-STZ-2PST	METROSITE STABILIZER KIT
3	3	MS-STZ-2875P	METROSITE STABILIZER ADAPTER KIT



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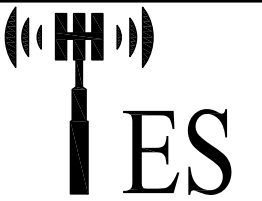
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ANTENNA MOUNT  
MODIFICATION DETAILS

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A-1 | 0



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SHEET TITLE:

ANTENNA MOUNT  
 PHOTOS

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SHEET NUMBER: REV #:

A-2 0



PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

RELOCATE EXISTING ANTENNA MOUNT PIPE 1'-0" AWAY FROM THE CENTER TO ACCOMMODATE THE INSTALLATION OF NEW MODIFICATION. (1) PER SECTOR. EXISTING ANTENNA RAD CENTER TO BE MAINTAINED.

**NOTE:**  
 EXISTING RRUS/EQUIPMENT MAY BE RELOCATED ALONG THE MEMBER TO ACCOMMODATE THE INSTALLATION OF NEW MOUNT MODIFICATION





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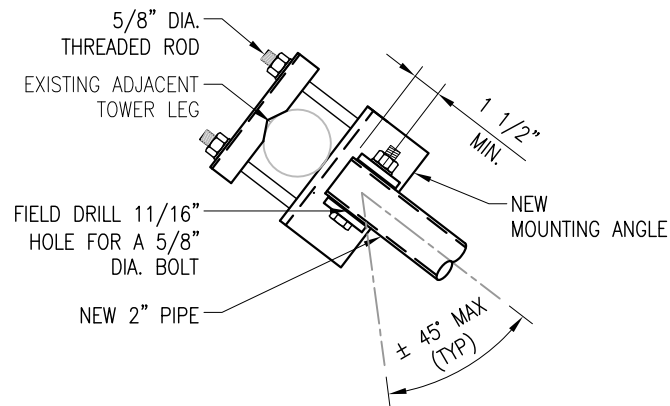
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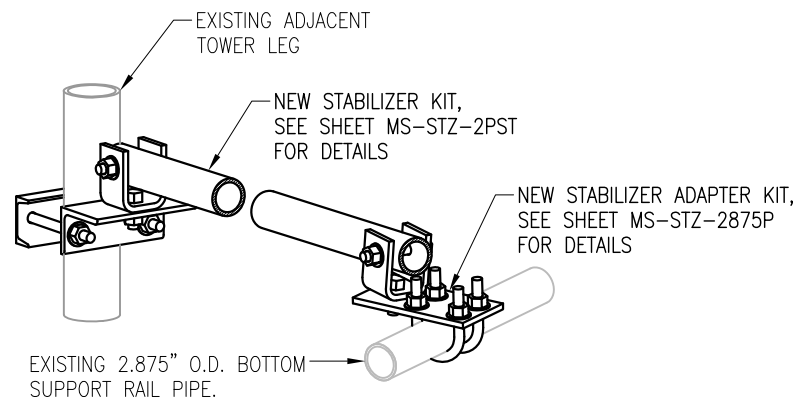
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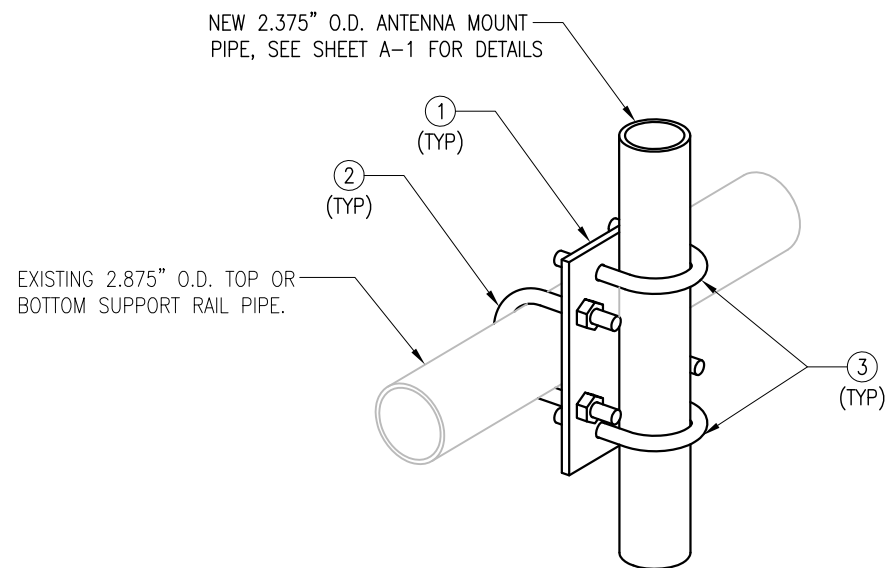
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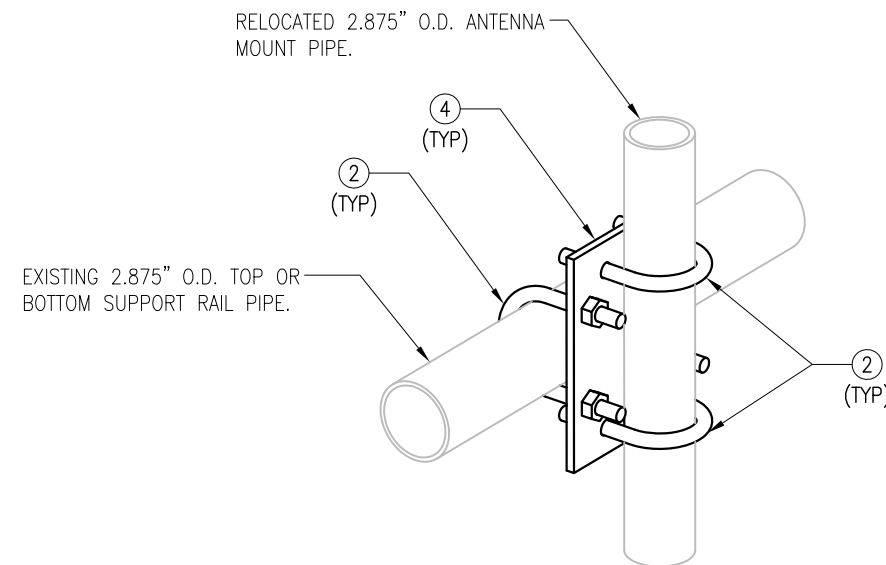
1  
D-1 DETAIL



2  
D-1 STABILIZER DETAIL



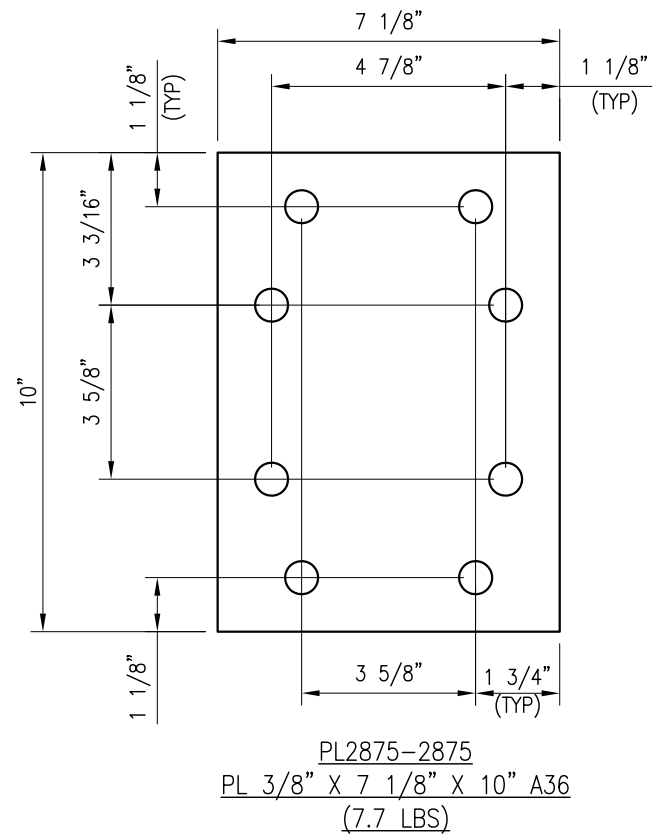
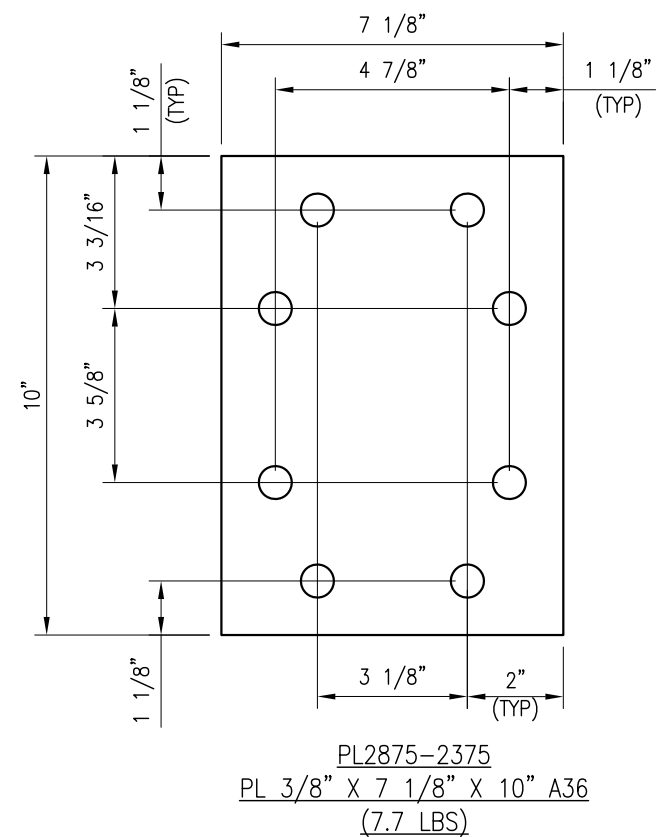
3  
D-1 DETAIL



4  
D-1 DETAIL

- NOTES:
- HOT-DIPPED GALVANIZED PER ASTM A123.
  - ALL HOLES ARE 11/16" DIA. U.N.O

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	6	PL2875-2375	PL 3/8" X 7 1/8" X 10" A36
2	36	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)
3	12	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)
4	6	PL2875-2875	PL 3/8" X 7 1/8" X 10" A36



- NOTES:  
 1. HOT-DIPPED GALVANIZED PER ASTM A123.  
 2. ALL HOLES ARE 11/16" DIA. U.N.O



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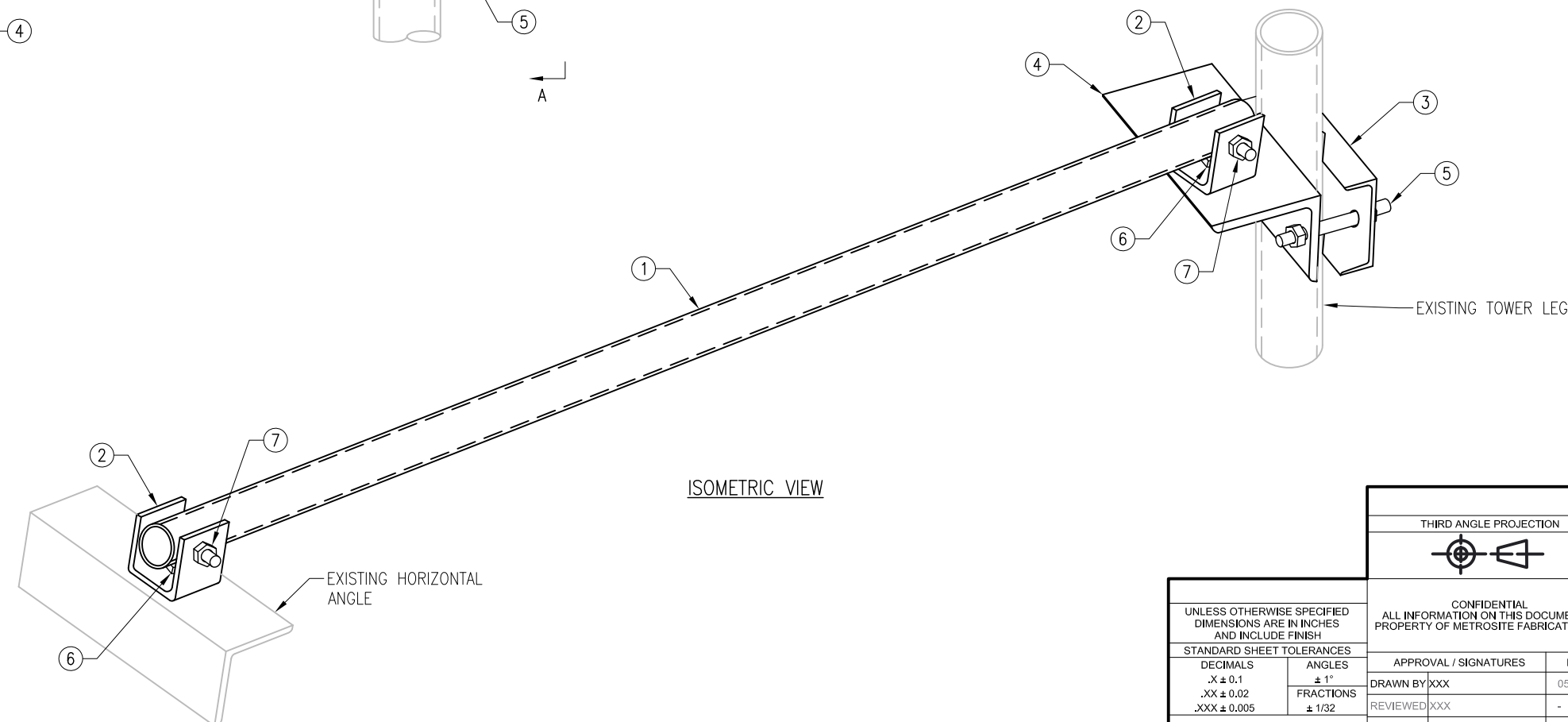
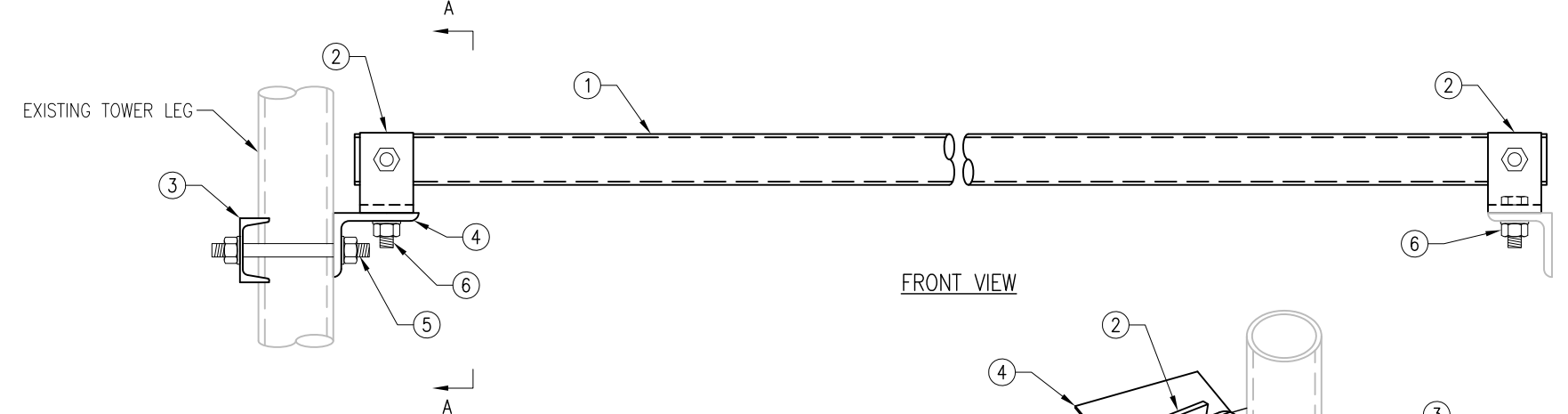
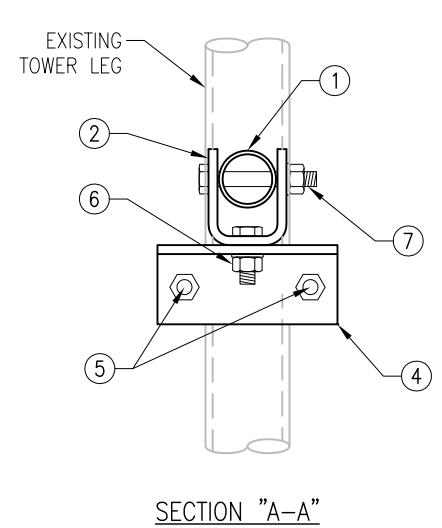
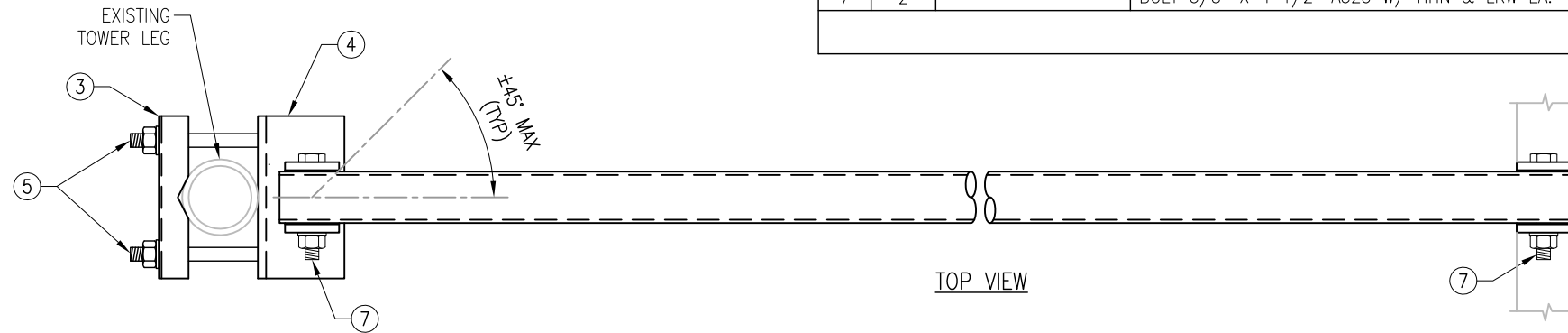
THE FOLLOWING DRAWINGS ARE INCLUDED FOR REFERENCE ONLY  
PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS

**NOTES:**

- 1) FITS 1 1/4" DIA. TO 4 1/2" DIA. LEG.
- 2) FIELD ASSEMBLY ALL PARTS.
- 3) THREADED ROD MAY BE CUT TO LENGTH AS REQUIRED.

MS-STZ-2PST

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	1	PP2375-15	2" PST PIPE (2.375" O.D. X 0.154" THICKNESS) X 15'-0"	A53 GR. B OR A500 GR. B/C	STZ-1	56.8
2	2	UP-2375P	PL 3/8" X 2 1/2" X 9 3/4" BENT PLATE	A36	STZ-1	19.0
3	1	C-3750	C3X6 X 0'-7 1/2"	A36	STZ-1	1.2
4	1	AL-4375	L 4" X 3" X 3/8" X 7 1/2"	A36	STZ-1	2.3
5	2	---	THREADED ROD 5/8" X 8" W/ (2) HHN & LKW EA.	A36	--	--
6	2	---	BOLT 5/8" X 2" A325 W/ HHN & LKW EA.	---	---	---
7	2	---	BOLT 5/8" X 4 1/2" A325 W/ HHN & LKW EA.	---	---	---
GALVANIZED WT						79.3



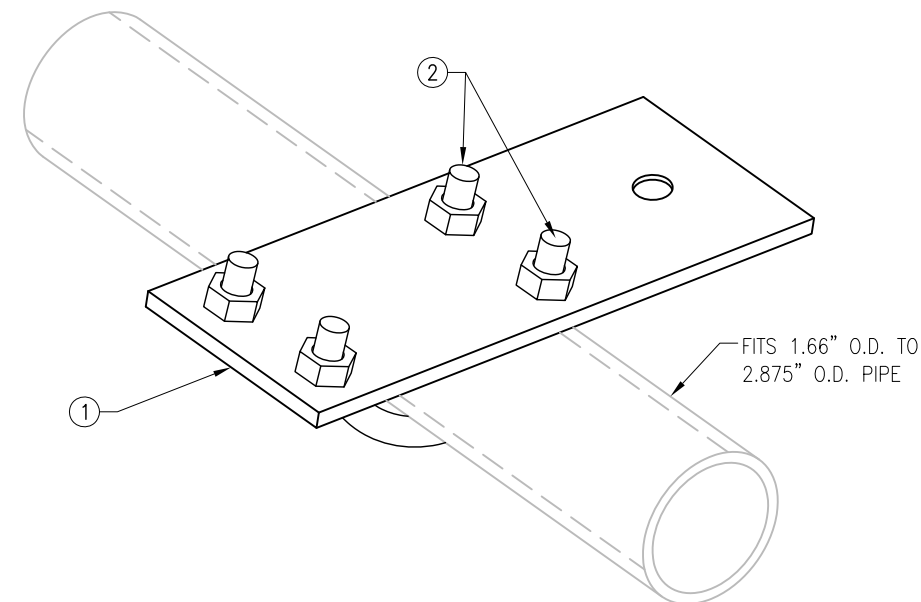
THIRD ANGLE PROJECTION			METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529	
			TITLE <b>MS-STZ-2PST STABILIZER KIT</b>	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		SIZE/DWG NO <b>B MS-STZ-2PST</b>
STANDARD SHEET TOLERANCES DECIMALS .X ± 0.1 .XX ± 0.02 .XXX ± 0.005		APPROVAL / SIGNATURES DRAWN BY: XXX REVIEWED: XXX APPROVED: XXX		DATE 05/12/17 - -
ANGLES ± 1° FRACTIONS ± 1/32		SHEET 1 OF 1		REV <b>1</b>



MS-STZ-2875P

NOTES:

- 1) FIELD ASSEMBLY ALL PARTS.
- 2) FITS 1.66" O.D. TO 2.875" O.D. HORIZONTAL PIPE.

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	1	PL375-4259	PL 3/8" X 4 1/4" X 9" 1	A36	BK-2	4.3
2	2	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	---	RBC-1	--
GALVANIZED WT						4.3



<p>THIRD ANGLE PROJECTION</p> 			<p>METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529</p>									
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH</p>			<p>CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC</p>									
<p>STANDARD SHEET TOLERANCES</p> <table border="1"> <tr> <th>DECIMALS</th> <th>ANGLES</th> </tr> <tr> <td>.X ± 0.1</td> <td>± 1°</td> </tr> <tr> <td>.XX ± 0.02</td> <td>FRACTIONS</td> </tr> <tr> <td>.XXX ± 0.005</td> <td>± 1/32</td> </tr> </table>		DECIMALS	ANGLES	.X ± 0.1	± 1°	.XX ± 0.02	FRACTIONS	.XXX ± 0.005	± 1/32	<p>APPROVAL / SIGNATURES</p> <p>DRAWN BY: XXX</p> <p>REVIEWED: XXX</p> <p>APPROVED: XXX</p>	<p>DATE</p> <p>05/12/17</p> <p>-</p> <p>-</p>	<p>TITLE</p> <p><b>MS-STZ-2875P</b> <b>STABILIZER ADAPTER KIT</b></p>
DECIMALS	ANGLES											
.X ± 0.1	± 1°											
.XX ± 0.02	FRACTIONS											
.XXX ± 0.005	± 1/32											
<p>SIZE DWG NO</p> <p><b>B MS-STZ-2875P</b></p>		<p>SCALE</p> <p>-</p>	<p>REV</p> <p>1</p>	<p>SHEET 1 OF 1</p>								

# EXHIBIT 8



**Tower Engineering Solutions**

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

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## Structural Analysis Report

Existing 280 ft Stainless Guyed Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT04877-A

Customer Site Name: Waterbury 2, CT

Carrier Name: T-Mobile (App#: 134567, V1)

Carrier Site ID / Name: CT11392B / Waterbury Hill St.

Site Location: 207 Garden Circle

Waterbury, Connecticut

New Haven County

Latitude: 41.569722

Longitude: -73.017499

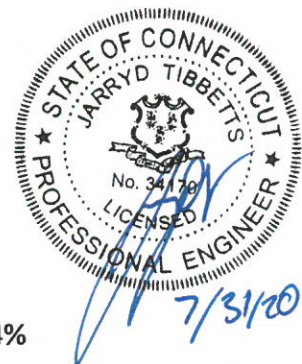
### Analysis Result:

Max Structural Usage: 75.4% [Pass]

Max Foundation Usage: 31.0% [Pass]

Additional Usage Caused by Mount Modification: +1.4%

Report Prepared By : Dipika Dhungana



## Introduction

The purpose of this report is to summarize the analysis results on the 280 ft Stainless Guyed Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Stainless, Inc., Report #3329 dated May 2, 1987
<b>Foundation Drawing</b>	Stainless, Inc., Report #3329 dated March 16, 1987
<b>Geotechnical Report</b>	FDH Engineering, Inc., Project #12-09101EG1 dated October 23, 2012
<b>Modification Drawings</b>	Paul J. Ford and Co., Job # A00-T155 dated July 20, 2001 FDH Engineering, Project #11-02333E S1 dated March 30, 2011 FDH Engineering, Project #12-09101E S3 dated March 21, 2013

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. 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.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed Vult = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed Vasd = 97.0 mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_S = 0.189$ , $S_1 = 0.067$

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



## Existing Antennas, Mounts and Transmission Lines

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

Items	Antenna Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	285.0		-	(1) Empty 1.5' Standoff	-	-
2	284.0		-	(1) Empty 3.6' Pipe Mount	-	-
3	283.0		-	(1) Empty 5' Pipe Mount	-	-
4	280.0	-	-	8' Platform w/ Handrail	-	-
5	268.5	1	Dielectric DCRT4	Leg Mount	(1) 7/8"	Full Power Radio
6	257.0	2	Celwave TDE6082A	(1) 4.7' Standoff	(2) 7/8"	Campion Ambulance Service
-	182.0	3	Ericsson KRD9011461-B66A-B2A (Octa) - Panel	(3) T-Frames	(12) 1 5/8" (2) 1 5/8" Hybrid	T-Mobile
-		3	RFS APXVAARR24_43-U-NA20 (Octa) - Panel			
-		3	Ericsson AIR 3246 B66 (Octa) - Panel			
-		3	Ericsson KRY 112 144/2 - TMA			
-		3	Ericsson KRY 112 489/2 - TMA			
-		3	Ericsson Radio 4449 B71 + B12			
15	150	1	dbSpectra DS2C00-F-36-D	(1)Commscope DB5004 @129.5'	(2) 7/8"	Connecticut Light & Power
16	132.0	1	Telewave ANT150F2 Omni	(1)SitePro USF-4U@143' (1) Commscope DB5004 @119.5'	(1) 7/8"	
17	122.0	1	Telewave ANT150F2		(1) 7/8"	
18	98.0	1	RFS SP4-107BC1C1R	Leg mount	(1) EW65	
19	97.5	1	Decibel DB586		(1) 7/8"	
20	96.0	1	RFS PAL8-65-A	Leg Mount	(1) EW65	
21	95.0	1	Bird 422 series	(1) Commscope DB5004@95'	(1) 1/2"	
22	92.5	1	Decibel DB586	(1) Commscope DB5004	(1) 7/8"	

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
7	182.0	3	Ericsson AIR 32 KRD901146-1 B66A B2A (Octa)	(3) Sector Frame w/ modifications {(3) PST2375-10 (3)MS-STZ-2PST (3)MS-STZ-2875P}	(9) 1 5/8" (5) 1 5/8" Hybrid	T-Mobile
8		3	RFS APXVAARR24_43-U-NA20 (Octa)			
9		3	Ericsson AIR3246 B66 (Octa)			
10		3	Ericsson AIR6449 B41			
11		3	Ericsson KRY 112 144/2			
12		3	Ericsson KRY 112 489/2			
13		3	Ericsson Radio 4449 B71 + B85			
14		3	Ericsson Radio 4415 B25			

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

## **Analysis Results**

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

Tower Component	Legs	Diagonals	Horizontals	Guy Wires
Max. Usage:	<b>68.8%</b>	<b>75.4%</b>	<b>59.4%</b>	<b>60.6%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

Reactions (kips)	Base Reactions		Inner Anchors	
	Axial	Shear	Uplift	Shear
Analysis Reactions	187.1	2.6	51.2	43.6

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

## **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.0691 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

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

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

## Structure: CT04877-A-SBA

**Site Name:** Waterbury 2, CT

**Code:** EIA/TIA-222-G

7/31/2020

**Type:** Guyed

**Base Shape:** Triangle

**Basic WS:** 97.00

**Height:** 280.00 (ft)

**Base Width:** 0.00

**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

**Top Width:** 4.00

**Operational WS:** 60.00

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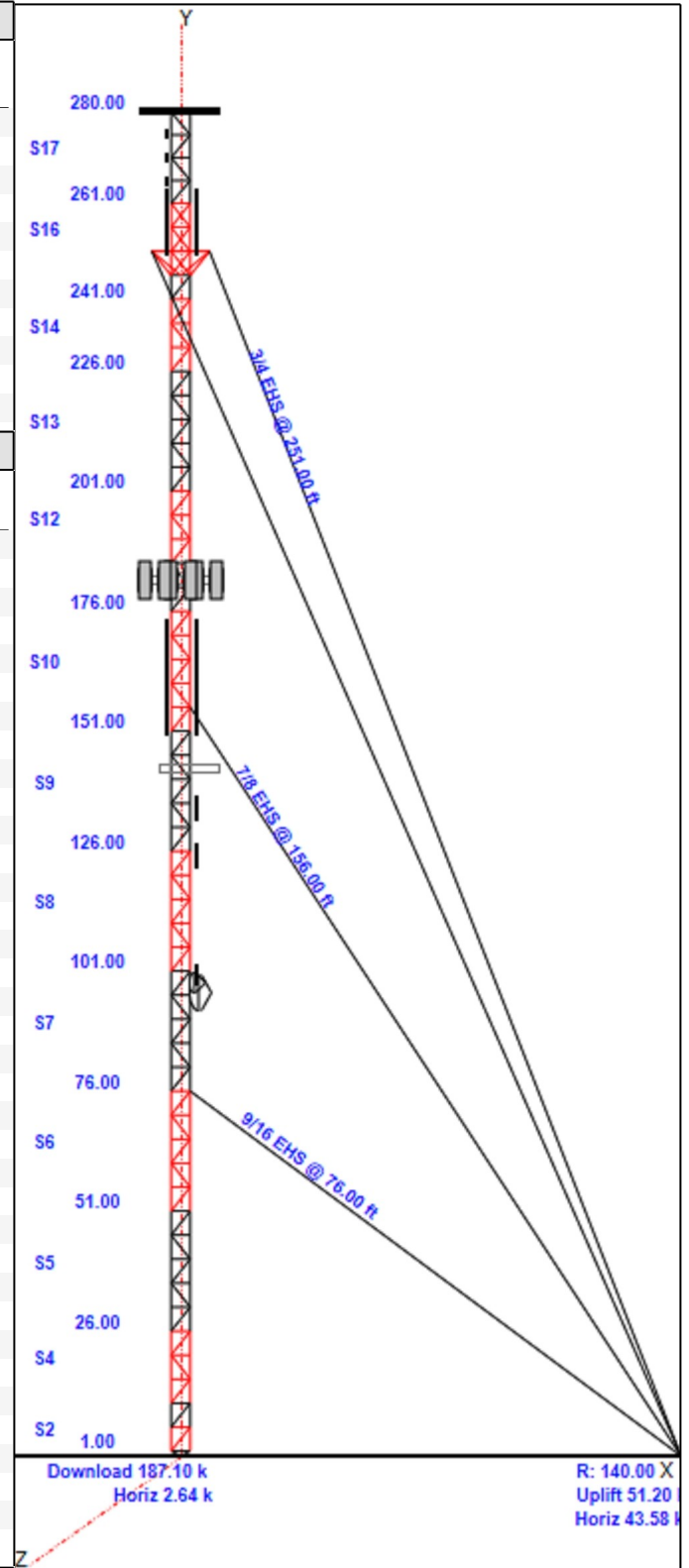
### Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	WBM W18 x 46		WBM W18 x 46
2	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
3	SOL 2 1/2" SOLID	SAE 2X2X0.375	PSP ROHN 1 1/2X11GA
4-5	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
6-7	SOL 2 1/2" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA
8	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
9-10	SOL 2 1/2" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA
11	SOL 2 1/4" SOLID	SAE 2.5X2.5X0.1875	PSP ROHN 1 1/2X11GA
12-13	SOL 2 1/4" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
14	SOL 2 1/4" SOLID	SAE 2.5X2.5X0.1875	PSP ROHN 1 1/2X11GA
15-17	SOL 2 1/4" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
280.00	280.00	1	Beacon
280.00	280.00	1	Lightning Rod
280.00	280.00	1	Platform w/ Hand Rails (flat)
280.00	284.00	1	3.6'x2.4" Pipe Mount
280.00	285.00	1	1.5' Standoff
280.00	283.00	1	5'x2.4" Pipe Mount
275.00	275.00	1	DCRT-4
270.00	270.00	1	DCRT-4
265.00	265.00	1	DCRT-4
260.00	260.00	1	DCRT-4
250.00	253.00	1	4.7' Standoff
250.00	257.00	2	Celwave TDE6082A
182.00	182.00	3	AIR6449 B41
182.00	182.00	3	RRUS 4415 B25
182.00	182.00	1	(3) Stabilizer Kit (12' FW)
182.00	182.00	3	Light Sector Frame-Flat
182.00	182.00	3	KRD 9011461-B66A-B2A (Octa)
182.00	182.00	3	APXVAARR24_43-U-NA20 (Octa)
182.00	182.00	3	AIR 3246 B66 (Octa)
182.00	182.00	3	KRY 112 144/2
182.00	182.00	3	KRY 112 489/2
182.00	182.00	3	Radio 4449 B71 + B12
150.00	162.15	1	DS2C00-F-36-D
143.00	143.00	1	USF-4U
132.00	134.50	1	ANT150F2
129.50	129.50	1	DB5004 Side Arm
125.00	126.00	1	2' Standoff (Commscope S-200)
122.00	124.50	1	ANT150F2
119.50	119.50	1	DB5004 Side Arm
98.00	98.00	1	SP4-107BC1C1R w/ Radome
97.50	100.00	1	DB586-Y
96.00	96.00	1	PAL8-65A w/ Radome
95.00	95.00	1	DB5004 Side Arm
95.00	95.00	1	Bird 422 Series
92.50	95.00	1	DB586-Y
90.00	90.00	1	4' Pipe Mount

### Linear Appurtenances



**Structure: CT04877-A-SBA**

<b>Site Name:</b> Waterbury 2, CT	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Type:</b> Guyed	<b>Base Shape:</b> Triangle	<b>Basic WS:</b> 97.00
<b>Height:</b> 280.00 (ft)	<b>Base Width:</b> 0.00	<b>Basic Ice WS:</b> 50.00
<b>Base Elev:</b> 0.00 (ft)	<b>Top Width:</b> 4.00	<b>Operational WS:</b> 60.00



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Elev From (ft)	Elev To (ft)	Qty	Description
0.00	280.00	1	Climbing Ladder
0.00	280.00	1	Safety Cable
0.00	280.00	1	W/G Ladder
0.00	280.00	1	W/G Ladder
0.00	268.50	1	7/8" Coax
0.00	250.00	2	7/8" Coax
0.00	182.00	9	1 5/8" Coax
0.00	182.00	5	1 5/8" Hybrid
0.00	140.30	2	7/8" Coax
0.00	125.00	1	7/8" Coax
0.00	101.60	1	7/8" Coax
0.00	101.00	1	W/G Ladder
0.00	98.00	1	EW65
0.00	97.50	1	7/8" Coax
0.00	96.00	1	EW65
0.00	95.00	1	1/2" Coax
0.00	92.50	1	7/8" Coax

**Max Guy Wire**

60.61% @ 76 ft - 9/16 EHS

**Structure: CT04877-A-SBA**

**Site Name:** Waterbury 2, CT

**Code:** EIA/TIA-222-G

7/31/2020

**Type:** Guyed

**Base Shape:** Triangle

**Basic WS:** 97.00

**Height:** 280.00 (ft)

**Base Width:** 0.00

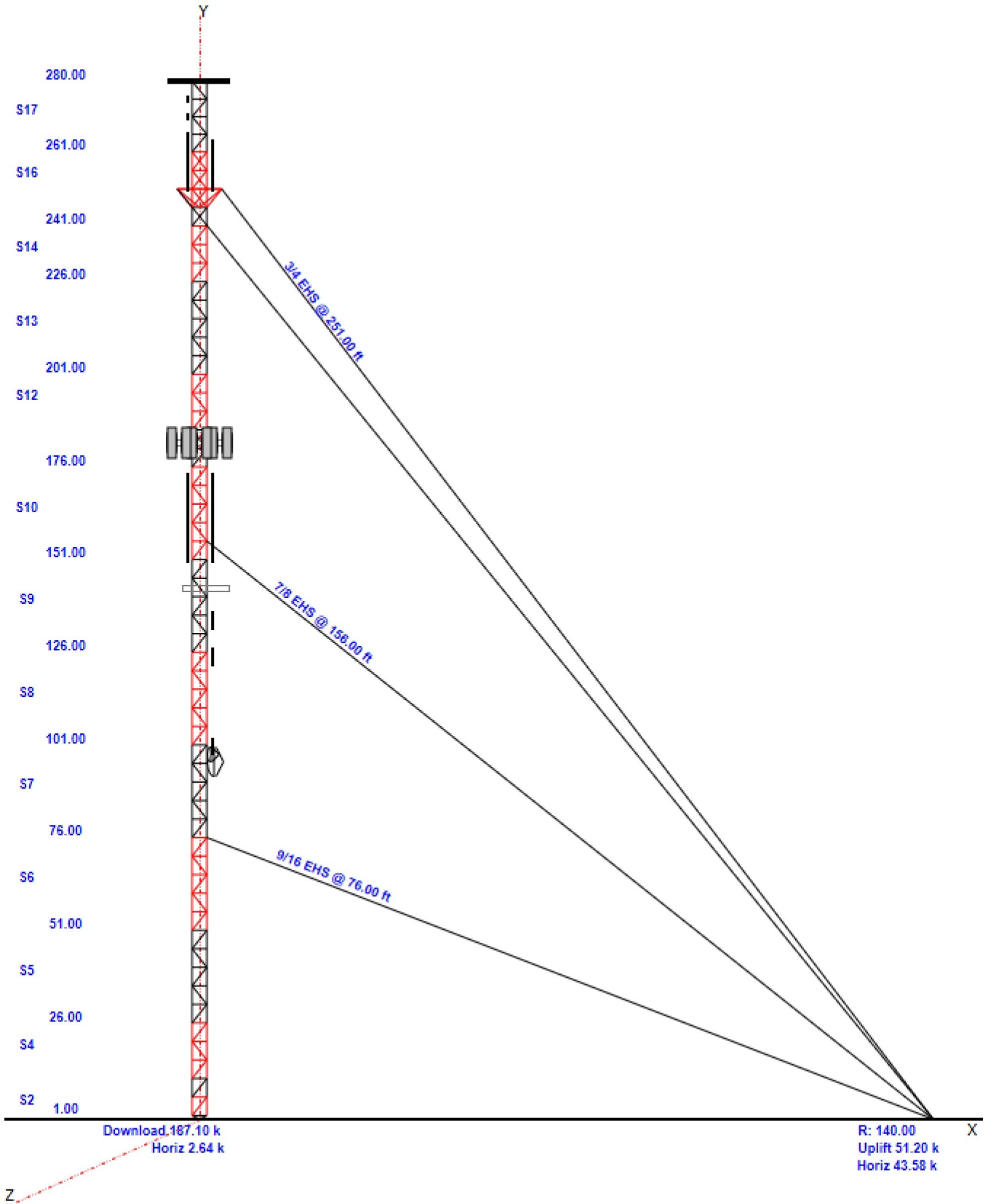
**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

**Top Width:** 4.00

**Operational WS:** 60.00

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# Anchor Drops with Guy Radius - Structure: CT04877-A-SBA

**Site Name:** Waterbury 2, CT

**Code:** EIA/TIA-222-G

7/31/2020

**Type:** Guyed

**Base Shape:** Triangle

**Basic WS:** 97.00

**Height:** 280.00 (ft)

**Base Width:** 0.00

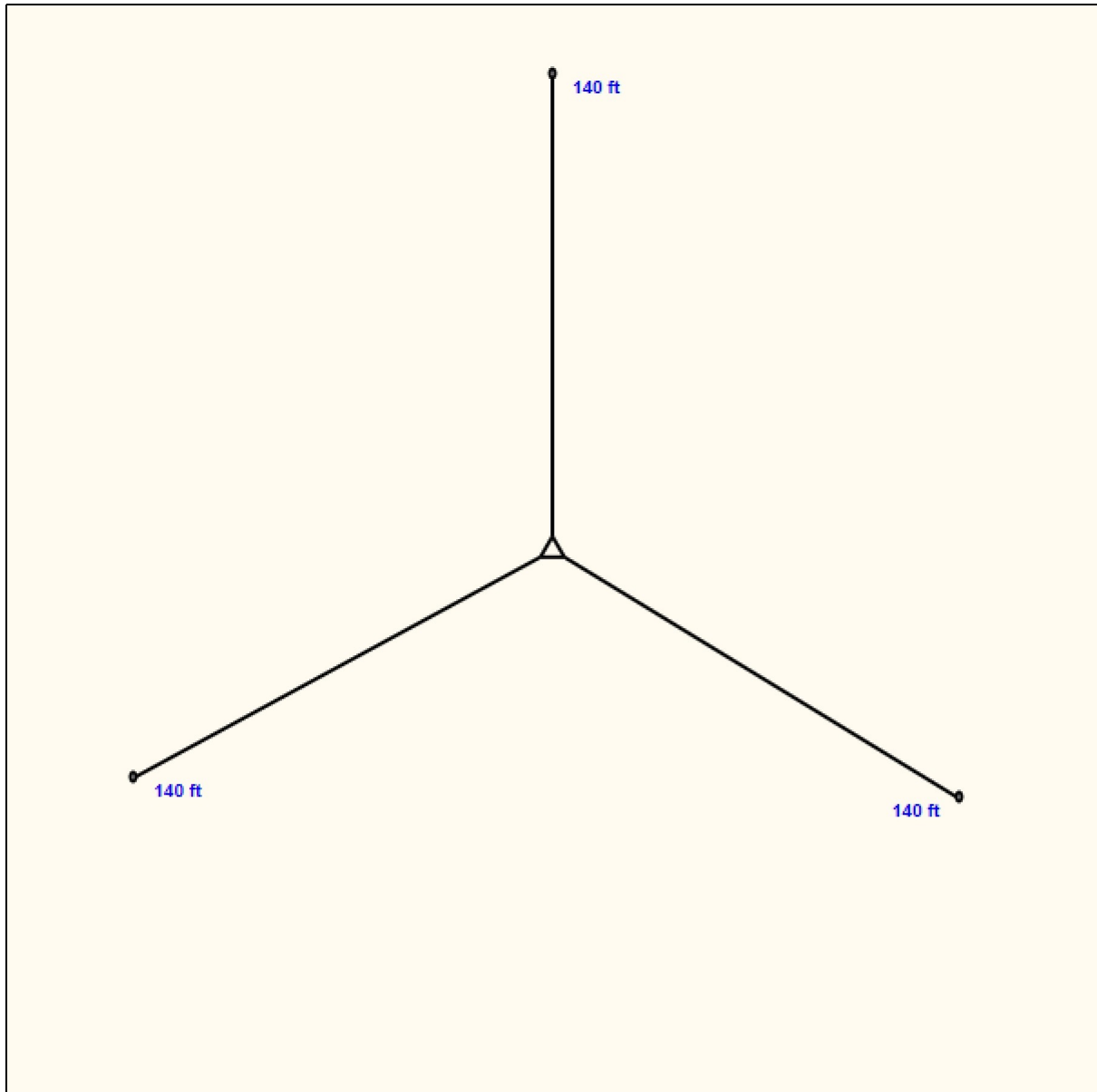
**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

**Top Width:** 4.00

**Operational WS:** 60.00

Page: 4





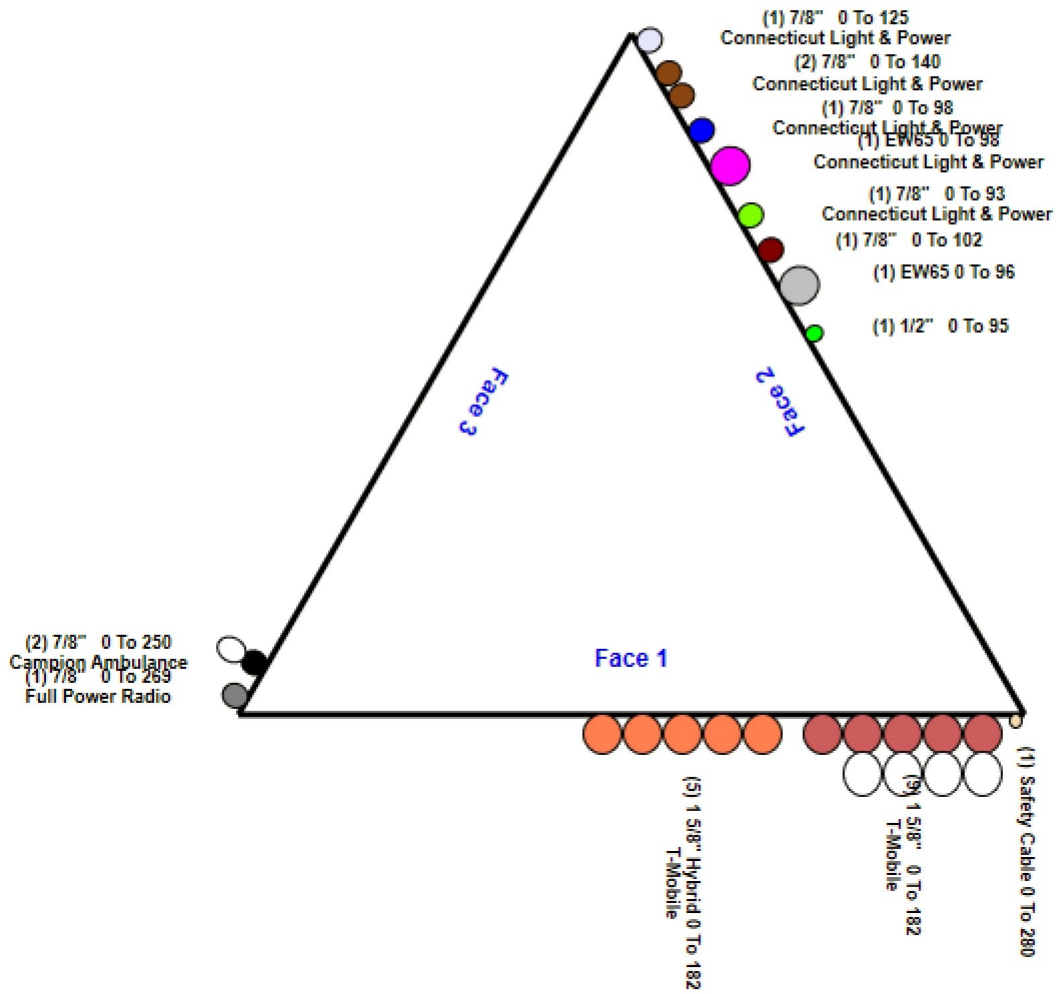
# Structure: CT04877-A-SBA - Coax Line Placement

Type: Guyed  
Site Name: Waterbury 2, CT  
Height: 280.00 (ft)

7/31/2020



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## Loading Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice		Ice		Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
			Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)						
280.00	Beacon	1	36.00	2.720	177.28	3.727	28.000	17.500	17.500	1.00	1.00	0.000
280.00	Lightning Rod	1	5.00	0.500	27.21	2.351	72.000	1.000	1.000	1.00	1.00	0.000
280.00	Platform w/ Hand Rails (flat)	1	1210.0	34.800	2553.98	54.127	0.000	0.000	0.000	1.00	1.00	0.000
280.00	3.6'x2.4" Pipe Mount	1	60.00	0.650	104.43	1.131	43.200	2.400	2.400	1.00	1.00	4.000
280.00	1.5' Standoff	1	60.00	2.960	104.43	5.152	18.000	2.400	2.400	1.00	1.00	5.000
280.00	5'x2.4" Pipe Mount	1	60.00	1.210	104.43	2.106	43.200	2.400	2.400	1.00	1.00	3.000
275.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
270.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
265.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
260.00	DCRT-4	1	44.00	4.100	336.50	8.314	27.500	27.500	13.300	1.00	1.00	0.000
250.00	4.7' Standoff	1	70.00	2.970	121.50	5.155	48.000	2.400	2.400	1.00	1.00	3.000
250.00	Celwave TDE6082A	2	40.00	4.200	151.59	9.471	168.000	3.000	3.000	1.00	1.00	7.000
182.00	AIR6449 B41	3	103.00	5.650	242.72	6.619	33.100	20.500	8.300	0.80	0.71	0.000
182.00	RRUS 4415 B25	3	46.00	1.640	87.88	2.165	15.000	13.200	5.400	0.80	0.67	0.000
182.00	(3) Stabilizer Kit (12' FW)	1	180.00	6.100	410.47	12.609	0.000	0.000	0.000	1.00	1.00	0.000
182.00	Light Sector Frame-Flat	3	500.00	17.500	1211.32	31.691	0.000	0.000	0.000	0.75	0.75	0.000
182.00	KRD 9011461-B66A-B2A (Octa)	3	132.20	6.510	319.56	7.654	56.600	12.900	8.700	0.80	0.87	0.000
182.00	APXVAARR24_43-U-NA20 (Octa)	3	128.00	20.240	554.89	22.177	95.900	24.000	7.800	0.80	0.70	0.000
182.00	AIR 3246 B66 (Octa)	3	180.00	7.940	385.37	9.143	58.100	15.700	9.400	0.80	0.83	0.000
182.00	KRY 112 144/2	3	11.00	0.410	21.99	0.894	6.900	6.100	2.700	0.80	0.50	0.000
182.00	KRY 112 489/2	3	11.30	0.690	29.02	1.319	10.500	6.800	3.500	0.80	0.50	0.000
182.00	Radio 4449 B71 + B12	3	70.00	1.650	139.88	2.199	15.000	13.200	9.300	0.80	0.67	0.000
150.00	DS2C00-F-36-D	1	71.00	7.290	252.29	15.822	291.600	3.000	0.000	1.00	1.00	12.15
143.00	USF-4U	1	80.00	2.500	157.56	5.616	0.000	0.000	0.000	1.00	1.00	0.000
132.00	ANT150F2	1	12.00	1.290	47.61	2.340	60.000	2.800	2.800	1.00	1.00	2.500
129.50	DB5004 Side Arm	1	60.00	1.320	101.55	2.234	48.000	3.000	3.000	1.00	1.00	0.000
125.00	2' Standoff (Commscope S-200)	1	110.00	2.960	184.68	4.970	18.000	2.400	2.400	1.00	1.00	1.000
122.00	ANT150F2	1	12.00	1.290	46.91	2.319	60.000	2.800	2.800	1.00	1.00	2.500
119.50	DB5004 Side Arm	1	60.00	1.320	100.73	2.216	48.000	3.000	3.000	1.00	1.00	0.000
98.00	SP4-107BC1C1R w/ Radome	1	83.00	11.630	407.83	13.186	49.700	49.700	9.800	1.00	1.00	0.000
97.50	DB586-Y	1	8.30	1.010	13.80	1.679	59.000	0.000	1.500	1.00	1.00	2.500
96.00	PAL8-65A w/ Radome	1	380.00	43.390	1569.25	46.407	96.000	96.000	0.000	1.00	1.00	0.000
95.00	DB5004 Side Arm	1	60.00	1.320	99.73	2.194	48.000	3.000	3.000	1.00	1.00	0.000
95.00	Bird 422 Series	1	50.00	3.450	125.92	6.093	18.000	6.000	6.000	1.00	1.00	0.000
92.50	DB586-Y	1	8.30	1.010	13.80	1.679	59.000	0.000	1.500	1.00	1.00	2.500
90.00	4' Pipe Mount	1	60.00	1.320	99.73	2.194	48.000	3.000	3.000	1.00	1.00	0.000
<b>Totals:</b>		<b>55</b>	<b>6,536.10</b>		<b>17,457.95</b>						<b>Number of Appurtenances :</b>	<b>36</b>

## Loading Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



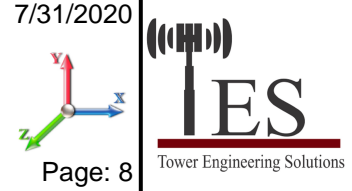
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### Linear Appurtenances Properties

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	280.00	Climbing Ladder	1	3.00	6.90	100.00	1	Individual NR		N	1.00	1.00	
0.00	280.00	Safety Cable	1	0.38	0.27	100.00	1	Individual NR		N	1.00	1.00	
0.00	280.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	280.00	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	268.50	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	250.00	7/8" Coax	2	1.11	0.52	50.00	3	Block		N	1.00	1.00	
0.00	182.00	1 5/8" Coax	9	1.98	1.04	50.00	1	Block		N	0.50	1.00	
0.00	182.00	1 5/8" Hybrid	5	2.00	1.10	100.00	1	Individual NR		N	1.00	1.00	
0.00	140.30	7/8" Coax	2	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	125.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	101.60	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	101.00	W/G Ladder	1	3.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	98.00	EW65	1	2.00	0.50	100.00	2	Individual NR		N	1.00	1.00	
0.00	97.50	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	96.00	EW65	1	2.00	0.50	100.00	2	Individual NR		N	1.00	1.00	
0.00	95.00	1/2" Coax	1	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	
0.00	92.50	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



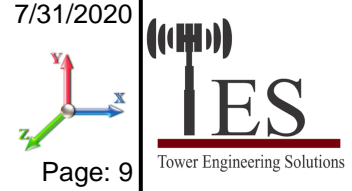
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<b>Load Case:</b> 1.2D + 1.6W Normal Wind	1.2D + 1.6W 97 mph Wind at Normal To Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Linear Area (sqft)	Linear Area (sqft)						
1	0.5	14.33	12.800	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.82	0.00	1,134.2	0.0	523.92	0.00	102.33	
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.09	0.00	642.2	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.09	0.00	709.7	0.0	131.68	314.15	445.83
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	57.26	0.00	1,926.5	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	95.43	0.00	3,210.9	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	95.43	0.00	3,614.1	0.0	839.46	1947.65	2,787.11
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	92.66	0.00	3,555.9	0.0	897.62	2088.45	2,986.08
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	72.52	0.00	2,949.1	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.26	0.00	3,278.8	0.0	1020.16	1752.41	2,772.57
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	65.61	0.00	3,305.7	0.0	1099.90	1777.18	2,877.09
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	18.95	0.00	1,035.4	0.0	463.63	537.20	1,000.84
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	11.99	0.00	1,302.7	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	19.99	0.00	2,171.1	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	11.99	0.00	1,392.6	0.0	748.20	395.67	1,143.87
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.00	0.00	505.9	0.0	231.10	133.48	364.58
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	10.98	0.00	1,841.5	0.0	948.17	372.20	1,320.37
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	12.37	0.00	1,905.6	0.0	916.07	436.85	1,352.93
													<b>34,482.0</b>	<b>0.0</b>			<b>25,926.85</b>	

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.2D + 1.6W 60° Wind	1.2D + 1.6W 97 mph Wind at 60° From Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.82	0.00	1,134.2	0.0	419.13	0.00	419.13
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.09	0.00	642.2	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.09	0.00	709.7	0.0	120.83	314.15	434.97
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	57.26	0.00	1,926.5	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	95.43	0.00	3,210.9	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	95.43	0.00	3,614.1	0.0	763.65	1947.65	2,711.29
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	92.66	0.00	3,555.9	0.0	823.62	2088.45	2,912.08
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	72.52	0.00	2,949.1	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.26	0.00	3,278.8	0.0	936.06	1752.41	2,688.47
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	65.61	0.00	3,305.7	0.0	1000.57	1777.18	2,777.75
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	18.95	0.00	1,035.4	0.0	418.34	537.20	955.54
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	11.99	0.00	1,302.7	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	19.99	0.00	2,171.1	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	11.99	0.00	1,392.6	0.0	675.07	395.67	1,070.74
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.00	0.00	505.9	0.0	211.04	133.48	344.52
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	10.98	0.00	1,841.5	0.0	833.99	372.20	1,206.19
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	12.37	0.00	1,905.6	0.0	836.19	436.85	1,273.04
<b>34,482.0</b>														<b>0.0</b>	<b>25,567.01</b>			

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II
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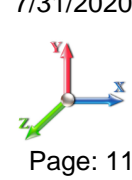


<b>Load Case:</b> 1.2D + 1.6W 90° Wind	1.2D + 1.6W 97 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Linear Area (sqft)	Linear Area (sqft)						
1	0.5	14.33	12.800	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.82	0.00	1,134.2	0.0	445.33	0.00	445.33	
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.09	0.00	642.2	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.09	0.00	709.7	0.0	123.54	314.15	437.68
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	57.26	0.00	1,926.5	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	95.43	0.00	3,210.9	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	95.43	0.00	3,614.1	0.0	782.60	1947.65	2,730.25
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	92.66	0.00	3,555.9	0.0	842.12	2088.45	2,930.58
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	72.52	0.00	2,949.1	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.26	0.00	3,278.8	0.0	957.08	1752.41	2,709.50
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	65.61	0.00	3,305.7	0.0	1025.40	1777.18	2,802.59
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	18.95	0.00	1,035.4	0.0	429.66	537.20	966.87
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	11.99	0.00	1,302.7	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	19.99	0.00	2,171.1	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	11.99	0.00	1,392.6	0.0	693.35	395.67	1,089.03
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.00	0.00	505.9	0.0	216.06	133.48	349.54
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	10.98	0.00	1,841.5	0.0	862.54	372.20	1,234.74
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	12.37	0.00	1,905.6	0.0	856.16	436.85	1,293.01
													<b>34,482.0</b>	<b>0.0</b>			<b>25,762.37</b>	

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	<b>7/31/2020</b>
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.6W Normal Wind	0.9D + 1.6W 97 mph Wind at Normal To Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.82	0.00	850.6	0.0	523.92	0.00	523.92
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.09	0.00	481.6	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.09	0.00	532.3	0.0	131.68	314.15	445.83
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	57.26	0.00	1,444.9	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	95.43	0.00	2,408.2	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	95.43	0.00	2,710.6	0.0	839.46	1947.65	2,787.11
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	92.66	0.00	2,666.9	0.0	897.62	2088.45	2,986.08
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	72.52	0.00	2,211.8	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.26	0.00	2,459.1	0.0	1020.16	1752.41	2,772.57
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	65.61	0.00	2,479.3	0.0	1099.90	1777.18	2,877.09
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	18.95	0.00	776.5	0.0	463.63	537.20	1,000.84
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	11.99	0.00	977.0	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	19.99	0.00	1,628.4	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	11.99	0.00	1,044.4	0.0	748.20	395.67	1,143.87
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.00	0.00	379.4	0.0	231.10	133.48	364.58
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	10.98	0.00	1,381.1	0.0	948.17	372.20	1,320.37
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	12.37	0.00	1,429.2	0.0	916.07	436.85	1,352.93
														<b>25,861.5</b>	<b>0.0</b>			<b>26,348.44</b>

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.6W 60° Wind	0.9D + 1.6W 97 mph Wind at 60° From Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Linear Area (sqft)	Linear Area (sqft)						
1	0.5	14.33	12.800	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.82	0.00	850.6	0.0	419.13	0.00	419.13	
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.09	0.00	481.6	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.09	0.00	532.3	0.0	120.83	314.15	434.97
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	57.26	0.00	1,444.9	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	95.43	0.00	2,408.2	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	95.43	0.00	2,710.6	0.0	763.65	1947.65	2,711.29
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	92.66	0.00	2,666.9	0.0	823.62	2088.45	2,912.08
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	72.52	0.00	2,211.8	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.26	0.00	2,459.1	0.0	936.06	1752.41	2,688.47
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	65.61	0.00	2,479.3	0.0	1000.57	1777.18	2,777.75
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	18.95	0.00	776.5	0.0	418.34	537.20	955.54
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	11.99	0.00	977.0	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	19.99	0.00	1,628.4	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	11.99	0.00	1,044.4	0.0	675.07	395.67	1,070.74
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.00	0.00	379.4	0.0	211.04	133.48	344.52
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	10.98	0.00	1,381.1	0.0	833.99	372.20	1,206.19
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	12.37	0.00	1,429.2	0.0	836.19	436.85	1,273.04
													<b>25,861.5</b>	<b>0.0</b>			<b>25,567.01</b>	



## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II
		Page: 13

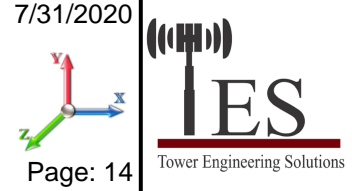


<b>Load Case:</b> 0.9D + 1.6W 90° Wind	0.9D + 1.6W 97 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Linear Area (sqft)	Linear Area (sqft)						
1	0.5	14.33	12.800	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.82	0.00	850.6	0.0	445.33	0.00	445.33	
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.09	0.00	481.6	0.0	102.86	314.15	417.01
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.09	0.00	532.3	0.0	123.54	314.15	437.68
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	57.26	0.00	1,444.9	0.0	308.29	942.44	1,250.73
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	95.43	0.00	2,408.2	0.0	552.24	1688.19	2,240.43
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	95.43	0.00	2,710.6	0.0	782.60	1947.65	2,730.25
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	92.66	0.00	2,666.9	0.0	842.12	2088.45	2,930.58
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	72.52	0.00	2,211.8	0.0	752.11	1742.93	2,495.04
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.26	0.00	2,459.1	0.0	957.08	1752.41	2,709.50
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	65.61	0.00	2,479.3	0.0	1025.40	1777.18	2,802.59
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	18.95	0.00	776.5	0.0	429.66	537.20	966.87
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	11.99	0.00	977.0	0.0	498.23	374.99	873.22
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	19.99	0.00	1,628.4	0.0	854.04	642.80	1,496.84
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	11.99	0.00	1,044.4	0.0	693.35	395.67	1,089.03
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.00	0.00	379.4	0.0	216.06	133.48	349.54
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	10.98	0.00	1,381.1	0.0	862.54	372.20	1,234.74
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	12.37	0.00	1,429.2	0.0	856.16	436.85	1,293.01
													<b>25,861.5</b>	<b>0.0</b>			<b>25,762.37</b>	

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II
		Page: 14

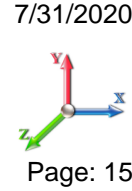


<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi Normal Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 1.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	1.00	1.00	0.99	14.29	4.64	2.80	1,872.0	737.8	97.10	0.00	97.10
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	1.00	1.00	1.20	4.56	24.08	16.98	1,357.9	715.7	32.53	116.17	148.70
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	1.00	1.00	1.31	5.40	24.54	18.55	1,538.3	828.6	37.45	118.65	156.10
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	1.00	1.00	1.42	15.31	74.95	60.17	4,645.4	2718.9	105.73	370.58	476.31
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	1.00	1.00	1.52	26.91	127.16	107.9	8,248.8	5037.9	196.75	682.33	879.09
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	1.00	1.00	1.60	31.15	128.79	113.4	9,616.8	6002.7	256.68	788.53	1,045.21
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	1.00	1.00	1.66	31.49	127.15	110.0	9,631.0	6075.0	283.80	844.92	1,128.73
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	1.00	1.00	1.70	29.23	100.80	77.68	7,665.4	4716.4	284.40	688.91	973.31
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	1.00	1.00	1.73	32.51	97.12	65.96	8,426.3	5147.5	329.89	656.75	986.64
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	1.00	1.00	1.76	33.29	94.95	58.68	8,473.1	5167.3	352.33	648.57	1,000.90
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	1.00	1.00	1.78	13.55	29.62	17.78	2,685.2	1649.8	146.98	208.28	355.26
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	1.00	1.00	1.79	17.81	25.42	13.43	3,093.6	1790.9	200.80	193.53	394.34
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	1.00	1.00	1.81	29.93	42.59	22.60	5,200.5	3029.4	346.25	332.63	678.88
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	1.00	1.00	1.82	20.71	25.68	13.68	3,366.0	1973.4	240.27	197.14	437.41
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	1.00	1.00	1.83	6.62	8.58	4.58	1,245.2	739.3	78.43	67.94	146.38
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	1.00	1.00	1.84	29.12	21.40	13.79	4,757.7	2916.2	317.95	140.98	458.93
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	1.00	1.00	1.85	25.87	24.10	14.04	4,524.5	2618.9	313.28	205.65	518.93
														<b>86,347.7</b>	<b>51865.8</b>			<b>9,882.20</b>

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II

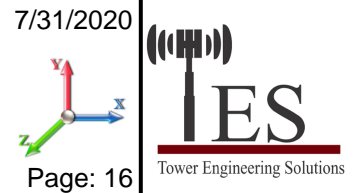


<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi 60° Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 1.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	0.80	1.00	0.99	11.73	4.64	2.80	1,872.0	737.8	79.70	0.00	79.70
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	0.80	1.00	1.20	4.56	24.08	16.98	1,357.9	715.7	32.53	116.17	148.70
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	0.80	1.00	1.31	5.20	24.54	18.55	1,538.3	828.6	36.02	118.65	154.67
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	0.80	1.00	1.42	15.31	74.95	60.17	4,645.4	2718.9	105.73	370.58	476.31
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	0.80	1.00	1.52	26.91	127.16	107.9	8,248.8	5037.9	196.75	682.33	879.09
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	0.80	1.00	1.60	29.98	128.79	113.4	9,616.8	6002.7	247.07	788.53	1,035.60
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	0.80	1.00	1.66	30.46	127.15	110.0	9,631.0	6075.0	274.50	844.92	1,119.42
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	0.80	1.00	1.70	29.23	100.80	77.68	7,665.4	4716.4	284.40	688.91	973.31
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	0.80	1.00	1.73	31.48	97.12	65.96	8,426.3	5147.5	319.41	656.75	976.17
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	0.80	1.00	1.76	32.12	94.95	58.68	8,473.1	5167.3	339.99	648.57	988.56
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	0.80	1.00	1.78	13.03	29.62	17.78	2,685.2	1649.8	141.36	208.28	349.64
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	0.80	1.00	1.79	17.81	25.42	13.43	3,093.6	1790.9	200.80	193.53	394.34
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	0.80	1.00	1.81	29.93	42.59	22.60	5,200.5	3029.4	346.25	332.63	678.88
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	0.80	1.00	1.82	19.93	25.68	13.68	3,366.0	1973.4	231.26	197.14	428.39
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	0.80	1.00	1.83	6.41	8.58	4.58	1,245.2	739.3	75.98	67.94	143.92
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	0.80	1.00	1.84	27.87	21.40	13.79	4,757.7	2916.2	304.37	140.98	445.35
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	0.80	1.00	1.85	25.06	24.10	14.04	4,524.5	2618.9	303.55	205.65	509.21
														<b>86,347.7</b>	<b>51865.8</b>			<b>9,781.26</b>

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II

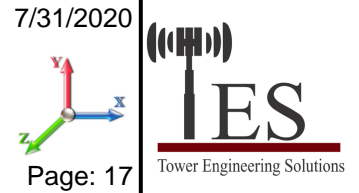


<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi 90° Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 1.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	0.85	1.00	0.99	12.37	4.64	2.80	1,872.0	737.8	84.05	0.00	84.05
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	0.85	1.00	1.20	4.56	24.08	16.98	1,357.9	715.7	32.53	116.17	148.70
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	0.85	1.00	1.31	5.25	24.54	18.55	1,538.3	828.6	36.37	118.65	155.03
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	0.85	1.00	1.42	15.31	74.95	60.17	4,645.4	2718.9	105.73	370.58	476.31
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	0.85	1.00	1.52	26.91	127.16	107.9	8,248.8	5037.9	196.75	682.33	879.09
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	0.85	1.00	1.60	30.27	128.79	113.4	9,616.8	6002.7	249.47	788.53	1,038.00
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	0.85	1.00	1.66	30.72	127.15	110.0	9,631.0	6075.0	276.83	844.92	1,121.75
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	0.85	1.00	1.70	29.23	100.80	77.68	7,665.4	4716.4	284.40	688.91	973.31
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	0.85	1.00	1.73	31.74	97.12	65.96	8,426.3	5147.5	322.03	656.75	978.79
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	0.85	1.00	1.76	32.41	94.95	58.68	8,473.1	5167.3	343.07	648.57	991.64
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	0.85	1.00	1.78	13.16	29.62	17.78	2,685.2	1649.8	142.77	208.28	351.05
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	0.85	1.00	1.79	17.81	25.42	13.43	3,093.6	1790.9	200.80	193.53	394.34
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	0.85	1.00	1.81	29.93	42.59	22.60	5,200.5	3029.4	346.25	332.63	678.88
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	0.85	1.00	1.82	20.13	25.68	13.68	3,366.0	1973.4	233.51	197.14	430.65
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	0.85	1.00	1.83	6.46	8.58	4.58	1,245.2	739.3	76.59	67.94	144.54
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	0.85	1.00	1.84	28.18	21.40	13.79	4,757.7	2916.2	307.77	140.98	448.75
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	0.85	1.00	1.85	25.26	24.10	14.04	4,524.5	2618.9	305.99	205.65	511.64
														<b>86,347.7</b>	<b>51865.8</b>			<b>9,806.50</b>

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II

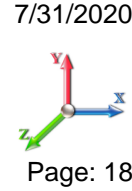


<b>Load Case:</b> 1.0D + 1.0W Normal Wind	1.0D + 1.0W 60 mph Wind at Normal To Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.00	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind 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		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	0.5	5.48	12.800	0.00	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.82	0.00	945.2	0.0	125.29	0.00	125.29
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.09	0.00	535.2	0.0	24.60	75.12	99.72
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.09	0.00	591.4	0.0	31.49	75.12	106.61
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	57.26	0.00	1,605.5	0.0	73.72	225.37	299.09
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	95.43	0.00	2,675.8	0.0	132.06	403.70	535.76
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	95.43	0.00	3,011.8	0.0	200.74	465.75	666.49
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	92.66	0.00	2,963.3	0.0	214.65	499.42	714.07
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	72.52	0.00	2,457.5	0.0	179.85	416.79	596.65
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.26	0.00	2,732.3	0.0	243.95	419.06	663.01
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	65.61	0.00	2,754.8	0.0	263.02	424.98	688.01
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	18.95	0.00	862.8	0.0	110.87	128.46	239.33
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	11.99	0.00	1,085.6	0.0	119.14	89.67	208.81
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	19.99	0.00	1,809.3	0.0	204.23	153.71	357.94
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	11.99	0.00	1,160.5	0.0	178.92	94.62	273.54
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.00	0.00	421.6	0.0	55.26	31.92	87.18
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	10.98	0.00	1,534.6	0.0	226.74	89.01	315.74
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	12.37	0.00	1,588.0	0.0	219.06	104.47	323.53
														<b>28,735.0</b>	<b>0.0</b>			<b>6,300.77</b>

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



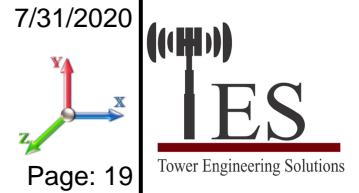
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<b>Load Case:</b> 1.0D + 1.0W 60° Wind	1.0D + 1.0W 60 mph Wind at 60° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.00	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Area (sqft)	Linear Area (sqft)						
1	0.5	5.48	12.800	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.82	0.00	945.2	0.0	100.23	0.00	100.23	
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.09	0.00	535.2	0.0	24.60	75.12	99.72
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.09	0.00	591.4	0.0	28.89	75.12	104.02
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	57.26	0.00	1,605.5	0.0	73.72	225.37	299.09
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	95.43	0.00	2,675.8	0.0	132.06	403.70	535.76
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	95.43	0.00	3,011.8	0.0	182.61	465.75	648.36
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	92.66	0.00	2,963.3	0.0	196.96	499.42	696.37
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	72.52	0.00	2,457.5	0.0	179.85	416.79	596.65
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.26	0.00	2,732.3	0.0	223.84	419.06	642.90
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	65.61	0.00	2,754.8	0.0	239.27	424.98	664.25
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	18.95	0.00	862.8	0.0	100.04	128.46	228.50
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	11.99	0.00	1,085.6	0.0	119.14	89.67	208.81
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	19.99	0.00	1,809.3	0.0	204.23	153.71	357.94
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	11.99	0.00	1,160.5	0.0	161.43	94.62	256.05
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.00	0.00	421.6	0.0	50.47	31.92	82.39
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	10.98	0.00	1,534.6	0.0	199.43	89.01	288.44
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	12.37	0.00	1,588.0	0.0	199.96	104.47	304.43
													<b>28,735.0</b>	<b>0.0</b>			<b>6,113.91</b>	

## Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.0D + 1.0W 90° Wind	1.0D + 1.0W 60 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.00	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

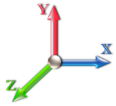
Sect Seq	Wind Height (ft)	Total Flat Area (psf) (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
											Linear Area (sqft)	Linear Area (sqft)						
1	0.5	5.48	12.800	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.82	0.00	945.2	0.0	106.49	0.00	106.49	
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.09	0.00	535.2	0.0	24.60	75.12	99.72
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.09	0.00	591.4	0.0	29.54	75.12	104.66
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	57.26	0.00	1,605.5	0.0	73.72	225.37	299.09
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	95.43	0.00	2,675.8	0.0	132.06	403.70	535.76
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	95.43	0.00	3,011.8	0.0	187.15	465.75	652.89
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	92.66	0.00	2,963.3	0.0	201.38	499.42	700.80
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	72.52	0.00	2,457.5	0.0	179.85	416.79	596.65
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.26	0.00	2,732.3	0.0	228.87	419.06	647.93
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	65.61	0.00	2,754.8	0.0	245.21	424.98	670.19
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	18.95	0.00	862.8	0.0	102.75	128.46	231.21
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	11.99	0.00	1,085.6	0.0	119.14	89.67	208.81
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	19.99	0.00	1,809.3	0.0	204.23	153.71	357.94
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	11.99	0.00	1,160.5	0.0	165.80	94.62	260.42
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.00	0.00	421.6	0.0	51.67	31.92	83.59
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	10.98	0.00	1,534.6	0.0	206.26	89.01	295.27
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	12.37	0.00	1,588.0	0.0	204.74	104.47	309.20
													<b>28,735.0</b>	<b>0.0</b>			<b>6,160.63</b>	

## Force/Stress Compression Summary

**Structure:** CT04877-A-SBA  
**Site Name:** Waterbury 2, CT  
**Height:** 280.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

7/31/2020  
  
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### LEG MEMBERS

Sect	Top Elev	Member	Force		Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls	
			(kips)	Load Case		X	Y	Z					
1	1	WBM - W18 x 46	-145.24	1.2D + 1.0Di + 1.0Wi 60° Wind	2.52	100	100	100	23.41	50.00	583.64	24.9	Member Y
2	6	SOL - 2 1/2" SOLID	-63.29	1.2D + 1.0Di + 1.0Wi 90° Wind	5.00	100	100	100	96.00	36.00	97.90	64.6	Member X
3	11	SOL - 2 1/2" SOLID	-64.85	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	66.2	Member X
4	26	SOL - 2 1/2" SOLID	-67.09	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	68.5	Member X
5	51	SOL - 2 1/2" SOLID	-67.38	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	68.8	Member X
6	76	SOL - 2 1/2" SOLID	-64.26	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	65.6	Member X
7	101	SOL - 2 1/2" SOLID	-54.24	1.2D + 1.0Di + 1.0Wi 90° Wind	5.00	100	100	100	96.00	36.00	97.90	55.4	Member X
8	126	SOL - 2 1/2" SOLID	-53.86	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	55.0	Member X
9	151	SOL - 2 1/2" SOLID	-48.51	1.2D + 1.0Di + 1.0Wi Normal	5.00	100	100	100	96.00	36.00	97.90	49.5	Member X
10	176	SOL - 2 1/2" SOLID	-50.08	1.2D + 1.6W Normal Wind	5.00	100	100	100	96.00	36.00	97.90	51.1	Member X
11	186	SOL - 2 1/4" SOLID	-32.76	1.2D + 1.0Di + 1.0Wi Normal	5.00	100	100	100	106.67	36.00	70.77	46.3	Member X
12	201	SOL - 2 1/4" SOLID	-33.48	1.2D + 1.6W 90° Wind	5.00	100	100	100	106.67	36.00	70.77	47.3	Member X
13	226	SOL - 2 1/4" SOLID	-33.17	1.2D + 1.6W 60° Wind	5.00	100	100	100	106.67	36.00	70.77	46.9	Member X
14	241	SOL - 2 1/4" SOLID	-27.24	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	106.67	36.00	70.77	38.5	Member X
15	246	SOL - 2 1/4" SOLID	-22.81	1.2D + 1.0Di + 1.0Wi 90° Wind	5.00	100	100	100	106.67	36.00	70.77	32.2	Member X
16	261	SOL - 2 1/4" SOLID	-26.93	1.2D + 1.6W Normal Wind	5.00	100	100	100	106.67	36.00	70.77	38.1	Member X
17	280	SOL - 2 1/4" SOLID	-13.83	1.2D + 1.6W Normal Wind	4.75	100	100	100	101.33	36.00	75.03	18.4	Member X

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force		Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Bear		Use %	Controls
			(kips)	Load Case		X	Y	Z					Cap (kips)	Cap (kips)		
1	1								0.00	0	0					
2	6	PSP - ROHN 1 1/2X11G	-2.01	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	20	Member X
3	11	PSP - ROHN 1 1/2X11G	-1.80	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	18	Member X
4	26	PSP - ROHN 1 1/2X11G	-0.82	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	8	Member X
5	51	PSP - ROHN 1 1/2X11G	-0.69	1.2D + 1.6W 60° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	7	Member X
6	76	PSP - ROHN 1 1/2X11G	-0.15	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	1	Member X
7	101	PSP - ROHN 1 1/2X11G	-0.18	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	2	Member X
8	126	PSP - ROHN 1 1/2X11G	-0.60	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	6	Member X
9	151	PSP - ROHN 1 1/2X11G	-2.11	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	21	Member X
10	176	PSP - ROHN 1 1/2X11G	-3.35	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	33	Member X
11	186	PSP - ROHN 1 1/2X11G	-1.61	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	16	Member X
12	201	PSP - ROHN 1 1/2X11G	-0.09	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	1	Member X
13	226	PSP - ROHN 1 1/2X11G	-0.35	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	3	Member X
14	241	PSP - ROHN 1 1/2X11G	-1.03	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	10	Member X
15	246	PSP - ROHN 1 1/2X11G	-2.67	0.9D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	26	Member X
16	261	PSP - ROHN 1 1/2X11G	-3.13	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	31	Member X
17	280	PSP - ROHN 1 1/2X11G	-0.82	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43	8	Member X

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force		Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Bear		Use %	Controls	
			(kips)	Load Case		X	Y	Z					Cap (kips)	Cap (kips)			
1	1				0.00					0.00	0	0					
2	6	PSP - ROHN 1 1/2X11G3.22		1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43	68	Member X	
3	11	SAE - 2X2X0.375	-2.78	1.2D + 1.6W Normal Wind	6.40	100	100	100	197.53	36.00	7.87	1	1	12.43	22.1	35	Member X
4	26	PSP - ROHN 1 1/2X11G2.52		1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43	53	Member X	
5	51	PSP - ROHN 1 1/2X11G1.22		1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43	26	Member X	
6	76	DAE - 2X2X0.1875	-4.06	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	20	Member Y
7	101	DAE - 2X2X0.1875	-4.99	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	25	Member Y



## Force/Stress Compression Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### DIAGONAL MEMBERS

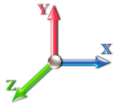
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Bear		Use %	Controls	
						X	Y	Z					Cap (kips)	Cap (kips)			
8	126	PSP - ROHN 1 1/2X11G3.34		1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43	70	Member X	
9	151	DAE - 2X2X0.1875	-6.67	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	33	Member Y
10	176	DAE - 2X2X0.1875	-8.04	1.2D + 1.6W 60° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	40	Member Y
11	186	SAE - 2.5X2.5X0.1875	-6.37	1.2D + 1.6W 60° Wind	6.40	100	100	100	155.23	36.00	8.46	1	1	12.43	9.79	75	Member Z
12	201	PSP - ROHN 1 1/2X11G2.08		1.2D + 1.6W 60° Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		44	Member X
13	226	PSP - ROHN 1 1/2X11G2.79		1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		59	Member X
14	241	SAE - 2.5X2.5X0.1875	-3.78	1.2D + 1.6W Normal Wind	6.40	100	100	100	155.23	36.00	8.46	1	1	12.43	9.79	45	Member Z
15	246	DAE - 2X2X0.1875	-4.16	1.2D + 1.6W Normal Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	20	Member Y
16	261	DAE - 2X2X0.1875	-3.88	1.2D + 1.6W 60° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	19	Member Y
17	280	DAE - 2X2X0.1875	-3.35	1.2D + 1.6W 60° Wind	6.21	100	100	50	121.49	36.00	21.30	2	1	24.86	50.2	16	Member Y

## Force/Stress Tension Summary

**Structure:** CT04877-A-SBA  
**Site Name:** Waterbury 2, CT  
**Height:** 280.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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### LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	1				0	0.00		
2	6				0	0.00		
3	11				0	0.00		
4	26				0	0.00		
5	51				0	0.00		
6	76				0	0.00		
7	101				0	0.00		
8	126				0	0.00		
9	151				0	0.00		
10	176	SOL - 2 1/2" SOLID	11.77	0.9D + 1.6W 60° Wind	36	159.04	7.4	Member
11	186				0	0.00		
12	201				0	0.00		
13	226				0	0.00		
14	241				0	0.00		
15	246				0	0.00		
16	261	SOL - 2 1/4" SOLID	21.10	0.9D + 1.6W 60° Wind	36	128.83	16.4	Member
17	280	SOL - 2 1/4" SOLID	11.31	0.9D + 1.6W 60° Wind	36	128.83	8.8	Member

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	1	WBM - W18 x 46	75.82	1.2D + 1.0Di + 1.0Wi 60° Wind	36	437.40	0	0				17.3	Member
2	6	PSP - ROHN 1 1/2X11GA	1.88	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			15.2	Bolt Shear
3	11	PSP - ROHN 1 1/2X11GA	1.59	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			12.8	Bolt Shear
4	26	PSP - ROHN 1 1/2X11GA	0.84	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			6.8	Bolt Shear
5	51	PSP - ROHN 1 1/2X11GA	0.91	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			7.3	Bolt Shear
6	76	PSP - ROHN 1 1/2X11GA	0.37	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			3.0	Bolt Shear
7	101	PSP - ROHN 1 1/2X11GA	2.17	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			17.4	Bolt Shear
8	126	PSP - ROHN 1 1/2X11GA	2.36	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			18.9	Bolt Shear
9	151	PSP - ROHN 1 1/2X11GA	4.34	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			34.9	Bolt Shear
10	176	PSP - ROHN 1 1/2X11GA	4.21	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			33.9	Bolt Shear
11	186	PSP - ROHN 1 1/2X11GA	1.66	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			13.4	Bolt Shear
12	201	PSP - ROHN 1 1/2X11GA	0.89	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			7.2	Bolt Shear
13	226	PSP - ROHN 1 1/2X11GA	1.80	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			14.5	Bolt Shear
14	241	PSP - ROHN 1 1/2X11GA	2.43	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			19.5	Bolt Shear
15	246	PSP - ROHN 1 1/2X11GA			36	0.00	0	0					
16	261	PSP - ROHN 1 1/2X11GA	7.39	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			59.4	Bolt Shear
17	280	PSP - ROHN 1 1/2X11GA	0.69	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			5.6	Bolt Shear

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	1	-	0.00		50	0.00	0	0					
2	6	PSP - ROHN 1 1/2X11GA	3.34	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			26.9	Bolt Shear
3	11	SAE - 2X2X0.375	3.28	1.2D + 1.6W 90° Wind	36	44.06	1	1	12.43	22.19	15.75	26.4	Bolt Shear
4	26	PSP - ROHN 1 1/2X11GA	2.43	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			19.5	Bolt Shear
5	51	PSP - ROHN 1 1/2X11GA	1.03	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			8.3	Bolt Shear
6	76	DAE - 2X2X0.1875	3.36	1.2D + 1.6W 60° Wind	36	46.33	2	1	24.86	50.24	27.14	13.5	Bolt Shear
7	101	DAE - 2X2X0.1875	5.26	1.2D + 1.6W 90° Wind	36	46.33	2	1	24.86	50.24	27.14	21.2	Bolt Shear
8	126	PSP - ROHN 1 1/2X11GA	2.56	1.2D + 1.6W Normal Wind	36	16.85	1	1	12.43			20.6	Bolt Shear

## Force/Stress Tension Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



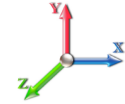
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### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
						Cap (kips)							
9	151	DAE - 2X2X0.1875	5.66	1.2D + 1.6W Normal W	36	46.33	2	1	24.86	50.24	27.14	22.8	Bolt Shear
10	176	DAE - 2X2X0.1875	8.19	1.2D + 1.6W 60° Wind	36	46.33	2	1	24.86	50.24	27.14	32.9	Bolt Shear
11	186	SAE - 2.5X2.5X0.1875	5.06	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	9.79	9.53	53.0	Blck Shear
12	201	PSP - ROHN 1 1/2X11GA	1.62	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			13.0	Bolt Shear
13	226	PSP - ROHN 1 1/2X11GA	2.40	1.2D + 1.6W Normal W	36	16.85	1	1	12.43			19.3	Bolt Shear
14	241	SAE - 2.5X2.5X0.1875	3.35	1.2D + 1.6W Normal W	36	29.22	1	1	12.43	9.79	9.53	35.1	Blck Shear
15	246	DAE - 2X2X0.1875	1.82	0.9D + 1.6W Normal W	36	46.33	2	1	24.86	50.24	27.14	7.3	Bolt Shear
16	261	DAE - 2X2X0.1875	4.04	0.9D + 1.6W 90° Wind	36	46.33	2	1	24.86	50.24	27.14	16.3	Bolt Shear
17	280	DAE - 2X2X0.1875	3.02	1.2D + 1.6W Normal W	36	46.33	2	1	24.86	50.24	27.14	12.1	Bolt Shear

## Seismic Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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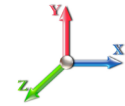
**Load Case: 1.2D + 1.0E**

<b>Dead Load Factor</b>	1.20	<b>Sds</b> 0.201	<b>Ss</b> 0.1890	<b>Fa</b> 1.6000	<b>Ke</b> 1.0000
<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.107	<b>S1</b> 0.0670	<b>Fv</b> 2.4000	<b>Kg</b> 0.0064
<b>Seismic Importance Factor</b>	1.00	<b>SA</b> 0.000	<b>R</b> 2.5000	<b>Vs</b> 3.1956	<b>f1</b> 2.2399

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	0.50	945.17	0.00	0.00	0.00	0.31
2	3.50	535.15	0.00	0.00	0.00	1.22
3	8.50	591.43	0.00	0.00	0.00	3.28
4	18.50	1605.4	0.00	0.00	0.00	19.37
5	38.50	2675.7	0.00	0.00	0.00	67.17
6	63.50	3011.7	0.00	0.00	0.00	124.70
7	88.50	3612.8	0.00	0.00	0.00	208.47
8	113.50	2639.5	0.00	0.00	0.00	195.34
9	138.50	2955.3	0.00	0.00	0.00	266.88
10	163.50	2754.7	0.00	0.00	0.00	293.67
11	181.00	4587.3	0.00	0.00	0.00	541.37
12	193.50	1085.5	0.00	0.00	0.00	136.96
13	213.50	1809.2	0.00	0.00	0.00	251.86
14	233.50	1160.4	0.00	0.00	0.00	176.68
15	243.50	421.60	0.00	0.00	0.00	66.93
16	253.50	1728.5	0.00	0.00	0.00	285.71
17	270.50	3151.0	0.00	0.00	0.00	555.74

## Seismic Section Forces

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.0E

<b>Dead Load Factor</b>	0.90	<b>Sds</b>	0.201	<b>Ss</b>	0.1890	<b>Fa</b>	1.6000	<b>Ke</b>	1.0000
<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.107	<b>S1</b>	0.0670	<b>Fv</b>	2.4000	<b>Kg</b>	0.0064
<b>Seismic Importance Factor</b>	1.00	<b>SA</b>	0.000	<b>R</b>	2.5000	<b>Vs</b>	3.1956	<b>f1</b>	2.2399

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	0.50	945.17	0.00	0.00	0.00	0.31
2	3.50	535.15	0.00	0.00	0.00	1.22
3	8.50	591.43	0.00	0.00	0.00	3.28
4	18.50	1605.4	0.00	0.00	0.00	19.37
5	38.50	2675.7	0.00	0.00	0.00	67.17
6	63.50	3011.7	0.00	0.00	0.00	124.70
7	88.50	3612.8	0.00	0.00	0.00	208.47
8	113.50	2639.5	0.00	0.00	0.00	195.34
9	138.50	2955.3	0.00	0.00	0.00	266.88
10	163.50	2754.7	0.00	0.00	0.00	293.67
11	181.00	4587.3	0.00	0.00	0.00	541.37
12	193.50	1085.5	0.00	0.00	0.00	136.96
13	213.50	1809.2	0.00	0.00	0.00	251.86
14	233.50	1160.4	0.00	0.00	0.00	176.68
15	243.50	421.60	0.00	0.00	0.00	66.93
16	253.50	1728.5	0.00	0.00	0.00	285.71
17	270.50	3151.0	0.00	0.00	0.00	555.74

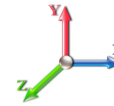
## Support Forces Summary

**Structure:** CT04877-A-SBA  
**Site Name:** Waterbury 2, CT  
**Height:** 280.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

7/31/2020



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.01	137.65	-2.20	
	A1	0.00	-3.86	1.72	
	A1b	31.67	-44.15	-19.66	
	A1a	-31.68	-44.17	-19.64	
1.2D + 1.6W 60° Wind	1	-2.24	119.38	-1.31	
	A1	-0.97	-11.62	7.89	
	A1b	6.34	-11.66	-4.79	
	A1a	-37.21	-50.93	-21.47	
1.2D + 1.6W 90° Wind	1	-2.53	130.49	-0.05	
	A1	-1.29	-28.41	23.17	
	A1b	2.35	-5.56	-1.92	
	A1a	-38.07	-51.20	-21.20	
0.9D + 1.6W Normal Wind	1	0.01	127.11	-2.60	
	A1	0.00	-3.89	1.74	
	A1b	31.63	-44.12	-19.63	
	A1a	-31.64	-44.14	-19.61	
0.9D + 1.6W 60° Wind	1	-2.28	109.09	-1.33	
	A1	-0.97	-11.71	7.95	
	A1b	6.40	-11.75	-4.82	
	A1a	-37.23	-50.98	-21.48	
0.9D + 1.6W 90° Wind	1	-2.60	120.00	-0.04	
	A1	-1.28	-28.41	23.14	
	A1b	2.37	-5.61	-1.94	
	A1a	-38.02	-51.18	-21.18	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.02	186.25	-1.01	
	A1	0.00	-12.06	10.85	
	A1b	21.29	-27.88	-13.30	
	A1a	-21.31	-27.91	-13.31	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.76	187.10	-0.46	
	A1	-0.86	-17.72	15.55	
	A1b	13.02	-17.74	-8.50	
	A1a	-25.84	-33.50	-14.92	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.92	186.74	0.02	
	A1	-1.04	-22.80	20.31	
	A1b	10.26	-13.74	-6.43	
	A1a	-24.99	-31.93	-13.90	
1.2D + 1.0E	1	0.00	100.02	0.02	
	A1	0.00	-15.36	13.15	
	A1b	14.16	-19.67	-8.18	
	A1a	-14.16	-19.67	-8.18	
0.9D + 1.0E	1	0.00	90.14	0.02	
	A1	0.00	-15.57	13.31	
	A1b	14.29	-19.89	-8.26	
	A1a	-14.29	-19.89	-8.26	

1.0D + 1.0W Normal Wind	1	0.01	84.66	-0.72
	A1	0.00	-9.06	6.96
	A1b	13.21	-18.62	-7.91
	A1a	-13.22	-18.64	-7.91
-----				
1.0D + 1.0W 60° Wind	1	-0.58	84.89	-0.34
	A1	-0.23	-12.41	9.82
	A1b	8.38	-12.41	-5.11
	A1a	-15.72	-21.80	-9.07
-----				
1.0D + 1.0W 90° Wind	1	-0.68	84.77	0.00
	A1	-0.28	-15.49	12.58
	A1b	6.66	-10.04	-3.98
	A1a	-15.15	-20.94	-8.60
-----				

Max Reactions (kips)	Base	Anchor 1
Vertical	187.10	51.20
Horizontal	2.64	43.58

## Cable Forces Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	<b>7/31/2020</b>
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Load Case	Elevation (ft)	Cable	Node 1	Node 2	Allow Tension (kips)	Applied Tension (kips)	Use %
1.2D + 1.6W Normal	76.00	9/16 EHS	A1	17	21.00	0.16	1
			A1b	17a	21.00	10.84	52
			A1a	17b	21.00	10.82	52
	156.00	7/8 EHS	A1	33	47.82	0.53	1
			A1b	33a	47.82	22.63	47
			A1a	33b	47.82	22.63	47
	251.00	3/4 EHS	A1	T3	34.98	2.21	6
			A1a	T3b	34.98	13.43	38
			A1b	T3a	34.98	12.58	36
			A1b	T3	34.98	13.79	39
			A1a	T3a	34.98	12.98	37
			A1	T3b	34.98	2.24	6
1.2D + 1.6W 60° Wind	76.00	9/16 EHS	A1	17	21.00	1.45	7
			A1b	17a	21.00	1.43	7
			A1a	17b	21.00	12.18	58
	156.00	7/8 EHS	A1	33	47.82	3.73	8
			A1b	33a	47.82	3.70	8
			A1a	33b	47.82	25.74	54
	251.00	3/4 EHS	A1	T3	34.98	5.13	15
			A1a	T3b	34.98	15.31	44
			A1b	T3a	34.98	4.86	14
			A1b	T3	34.98	5.25	15
			A1a	T3a	34.98	15.60	45
			A1	T3b	34.98	4.90	14
1.2D + 1.6W 90° Wind	76.00	9/16 EHS	A1	17	21.00	6.48	31
			A1b	17a	21.00	0.35	2
			A1a	17b	21.00	12.73	61
	156.00	7/8 EHS	A1	33	47.82	13.66	29
			A1b	33a	47.82	1.21	3
			A1a	33b	47.82	26.50	55
	251.00	3/4 EHS	A1	T3	34.98	9.50	27
			A1a	T3b	34.98	14.81	42
			A1b	T3a	34.98	2.80	8
			A1b	T3	34.98	2.93	8
			A1a	T3a	34.98	15.43	44
			A1	T3b	34.98	8.69	25
0.9D + 1.6W Normal	76.00	9/16 EHS	A1	17	21.00	0.16	1
			A1b	17a	21.00	10.79	51
			A1a	17b	21.00	10.78	51
	156.00	7/8 EHS	A1	33	47.82	0.54	1
			A1b	33a	47.82	22.60	47
			A1a	33b	47.82	22.59	47
	251.00	3/4 EHS	A1	T3	34.98	2.22	6
			A1a	T3b	34.98	13.44	38
			A1b	T3a	34.98	12.59	36
			A1b	T3	34.98	13.80	39
			A1a	T3a	34.98	12.98	37
			A1	T3b	34.98	2.26	6
0.9D + 1.6W 60° Wind	76.00	9/16 EHS	A1	17	21.00	1.46	7
			A1b	17a	21.00	1.43	7
			A1a	17b	21.00	12.16	58
	156.00	7/8 EHS	A1	33	47.82	3.76	8
			A1b	33a	47.82	3.73	8



0.9D + 1.6W 60° Wind	156.00	7/8 EHS	A1a	33b	47.82	25.75	54	
	251.00	3/4 EHS	A1	T3	34.98	5.16	15	
			A1a	T3b	34.98	15.34	44	
	0.9D + 1.6W 90° Wind	76.00	9/16 EHS	A1b	T3a	34.98	4.89	14
				A1b	T3	34.98	5.28	15
				A1a	T3a	34.98	15.62	45
156.00		7/8 EHS	A1	T3b	34.98	4.93	14	
			A1	17	21.00	6.45	31	
			A1b	17a	21.00	0.36	2	
1.2D + 1.0Di + 1.0Wi	251.00	3/4 EHS	A1a	17b	21.00	12.68	60	
			A1a	33a	47.82	1.22	3	
			A1a	33b	47.82	26.46	55	
	1.2D + 1.0Di + 1.0Wi	76.00	9/16 EHS	A1	T3	34.98	9.52	27
				A1a	T3b	34.98	14.83	42
				A1b	T3a	34.98	2.82	8
1.2D + 1.0Di + 1.0Wi		156.00	7/8 EHS	A1b	T3	34.98	2.95	8
				A1a	T3a	34.98	15.44	44
				A1	T3b	34.98	8.71	25
	1.2D + 1.0Di + 1.0Wi	251.00	3/4 EHS	A1	17	21.00	3.69	18
				A1b	17a	21.00	7.73	37
				A1a	17b	21.00	7.72	37
1.2D + 1.0Di + 1.0Wi		76.00	9/16 EHS	A1	33	47.82	6.05	13
				A1b	33a	47.82	13.64	29
				A1a	33b	47.82	13.69	29
	1.2D + 1.0Di + 1.0Wi	156.00	7/8 EHS	A1	T3	34.98	5.68	16
				A1a	T3b	34.98	10.92	31
				A1b	T3a	34.98	10.48	30
1.2D + 1.0Di + 1.0Wi		251.00	3/4 EHS	A1b	T3	34.98	11.01	31
				A1a	T3a	34.98	10.57	30
				A1	T3b	34.98	5.79	17
	1.2D + 1.0Di + 1.0Wi	76.00	9/16 EHS	A1	17	21.00	4.85	23
				A1b	17a	21.00	4.83	23
				A1a	17b	21.00	8.76	42
1.2D + 1.0Di + 1.0Wi		156.00	7/8 EHS	A1	33	47.82	8.36	17
				A1b	33a	47.82	8.28	17
				A1a	33b	47.82	16.39	34
	1.2D + 1.0Di + 1.0Wi	251.00	3/4 EHS	A1	T3	34.98	7.94	23
				A1a	T3b	34.98	12.53	36
				A1b	T3a	34.98	7.57	22
1.2D + 1.0Di + 1.0Wi		76.00	9/16 EHS	A1b	T3	34.98	8.03	23
				A1a	T3a	34.98	12.62	36
				A1	T3b	34.98	7.56	22
	1.2D + 1.0Di + 1.0Wi	156.00	7/8 EHS	A1	17	21.00	6.30	30
				A1b	17a	21.00	3.94	19
				A1a	17b	21.00	8.54	41
1.2D + 1.0Di + 1.0Wi		251.00	3/4 EHS	A1	33	47.82	10.98	23
				A1b	33a	47.82	6.54	14
				A1a	33b	47.82	15.68	33
	1.2D + 1.0E	76.00	9/16 EHS	A1	T3	34.98	9.51	27
				A1a	T3b	34.98	11.90	34
				A1b	T3a	34.98	6.31	18
1.2D + 1.0E		156.00	7/8 EHS	A1b	T3	34.98	6.56	19
				A1a	T3a	34.98	12.16	35
				A1	T3b	34.98	8.99	26
	1.2D + 1.0E	251.00	3/4 EHS	A1	17	21.00	4.31	21
				A1b	17a	21.00	4.84	23
				A1a	17b	21.00	4.84	23
1.2D + 1.0E		76.00	9/16 EHS	A1	33	47.82	7.51	16
				A1b	33a	47.82	9.58	20
				A1a	33b	47.82	9.58	20
	1.2D + 1.0E	156.00	7/8 EHS	A1	T3	34.98	4.86	14
				A1a	T3b	34.98	6.31	18
				A1b	T3a	34.98	6.27	18
1.2D + 1.0E		251.00	3/4 EHS	A1b	T3	34.98	6.33	18
				A1a	T3a	34.98	6.29	18
				A1	T3b	34.98	4.88	14

0.9D + 1.0E	76.00	9/16 EHS	A1	17	21.00	4.33	21
			A1b	17a	21.00	4.86	23
			A1a	17b	21.00	4.86	23
	156.00	7/8 EHS	A1	33	47.82	7.61	16
			A1b	33a	47.82	9.67	20
			A1a	33b	47.82	9.67	20
	251.00	3/4 EHS	A1	T3	34.98	4.93	14
			A1a	T3b	34.98	6.38	18
			A1b	T3a	34.98	6.34	18
			A1b	T3	34.98	6.40	18
			A1a	T3a	34.98	6.37	18
			A1	T3b	34.98	4.95	14
1.0D + 1.0W Normal	76.00	9/16 EHS	A1	17	21.00	1.66	8
			A1b	17a	21.00	4.28	20
			A1a	17b	21.00	4.27	20
	156.00	7/8 EHS	A1	33	47.82	3.81	8
			A1b	33a	47.82	8.93	19
			A1a	33b	47.82	8.96	19
	251.00	3/4 EHS	A1	T3	34.98	3.48	10
			A1a	T3b	34.98	6.21	18
			A1b	T3a	34.98	6.03	17
			A1b	T3	34.98	6.30	18
			A1a	T3a	34.98	6.11	17
			A1	T3b	34.98	3.58	10
1.0D + 1.0W 60° Wind	76.00	9/16 EHS	A1	17	21.00	2.51	12
			A1b	17a	21.00	2.51	12
			A1a	17b	21.00	5.09	24
	156.00	7/8 EHS	A1	33	47.82	5.53	12
			A1b	33a	47.82	5.50	12
			A1a	33b	47.82	10.66	22
	251.00	3/4 EHS	A1	T3	34.98	4.57	13
			A1a	T3b	34.98	7.00	20
			A1b	T3a	34.98	4.39	13
			A1b	T3	34.98	4.64	13
			A1a	T3a	34.98	7.07	20
			A1	T3b	34.98	4.42	13
1.0D + 1.0W 90° Wind	76.00	9/16 EHS	A1	17	21.00	3.39	16
			A1b	17a	21.00	1.88	9
			A1a	17b	21.00	4.88	23
	156.00	7/8 EHS	A1	33	47.82	7.22	15
			A1b	33a	47.82	4.26	9
			A1a	33b	47.82	10.21	21
	251.00	3/4 EHS	A1	T3	34.98	5.43	16
			A1a	T3b	34.98	6.73	19
			A1b	T3a	34.98	3.78	11
			A1b	T3	34.98	3.91	11
			A1a	T3a	34.98	6.85	20
			A1	T3b	34.98	5.21	15

## Analysis Summary

<b>Structure:</b> CT04877-A-SBA	<b>Code:</b> EIA/TIA-222-G	7/31/2020
<b>Site Name:</b> Waterbury 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 280.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Page:</b> 31
	<b>Struct Class:</b> II	



### Max Reactions

Base:	187.10 (Vertical)	2.64 (Horizontal)
Anchor 1:	51.20 (Vertical)	43.58 (Horizontal)

### Max Usages

Max Leg: 68.8% (1.2D + 1.0Di + 1.0Wi 60° Wind - Sect 5)  
 Max Diag: 75.4% (1.2D + 1.6W 60° Wind - Sect 11)  
 Max Horiz: 59.4% (1.2D + 1.6W 60° Wind - Sect 16)  
 Max Cable: 60.6% (1.2D + 1.6W 90° Wind) - Elev: 76 ft

### Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	91.00	0.0130	0.2273	0.0197
	96.00	0.0224	0.2170	0.0214
	121.00	0.0295	0.1662	0.0215
	126.00	0.0253	0.1562	0.0549
	131.00	0.0319	0.1461	0.0228
	141.00	0.0321	0.1260	0.0233
	151.00	0.0453	0.1066	0.0537
	181.00	0.0606	0.0744	0.0433
	251.00	0.0806	-0.0086	0.0183
	261.00	0.0825	-0.0083	0.0231
	265.75	0.0844	-0.0083	0.0233
	270.50	0.0864	-0.0083	0.0240
275.25	0.0883	-0.0084	0.0239	
280.00	0.0920	-0.0087	0.0245	
0.9D + 1.6W 97 mph Wind at 60° From Face	91.00	0.4474	-0.2635	0.2166
	96.00	0.4635	-0.6085	0.2073
	121.00	0.5232	-0.5614	0.1345
	126.00	0.5323	-0.3168	0.1212
	131.00	0.5420	-0.5427	0.1171
	141.00	0.5570	-0.4028	0.0830
	151.00	0.5729	-0.5055	0.1319
	181.00	0.6754	-0.4145	0.2311
	251.00	0.7894	-0.1020	0.1082
	261.00	0.8026	-0.0956	0.1313
	265.75	0.8144	-0.0947	0.1487
	270.50	0.8267	-0.0938	0.1486
275.25	0.8394	-0.0929	0.1643	
280.00	0.8577	-0.0965	0.1401	

0.9D + 1.6W 97 mph Wind at 90° From Face	91.00	0.6178	0.3002	0.2959
	96.00	0.6424	0.4046	0.2901
	121.00	0.7375	0.2041	0.1865
	126.00	0.7510	0.1640	0.1565
	131.00	0.7642	0.1242	0.1605
	141.00	0.7872	0.0445	0.1202
	151.00	0.8091	-0.0773	0.0577
	181.00	0.9169	-0.0555	0.2303
	251.00	1.0071	0.0366	0.0686
	261.00	1.0212	0.0370	0.0966
	265.75	1.0301	0.0371	0.1231
	270.50	1.0395	0.0373	0.1144
	275.25	1.0490	0.0374	0.1446
	280.00	1.0587	0.0375	0.0455
-----				
0.9D + 1.6W 97 mph Wind at Normal To Face	91.00	0.7378	-0.2598	0.3520
	96.00	0.7641	-0.6104	0.3173
	121.00	0.8704	-0.5767	0.1966
	126.00	0.8869	-0.3277	0.2194
	131.00	0.9044	-0.5635	0.1757
	141.00	0.9316	-0.4193	0.1605
	151.00	0.9566	-0.5372	0.2789
	181.00	1.0802	-0.4531	0.2634
	251.00	1.1924	-0.1653	0.1918
	261.00	1.2069	-0.1634	0.1416
	265.75	1.2185	-0.1634	0.1419
	270.50	1.2308	-0.1633	0.1578
	275.25	1.2435	-0.1633	0.1336
	280.00	1.2622	-0.1649	0.2420
-----				
1.0D + 1.0W 60 mph Wind at 60° From Face	91.00	0.0869	0.0701	0.0434
	96.00	0.0888	0.0912	0.0465
	121.00	0.1004	-0.0391	0.0281
	126.00	0.1020	0.0120	0.0405
	131.00	0.1043	-0.0470	0.0221
	141.00	0.1057	-0.0264	0.0076
	151.00	0.1071	-0.0621	0.0461
	181.00	0.1244	-0.0560	0.0398
	251.00	0.1270	-0.0249	0.0276
	261.00	0.1264	-0.0239	0.0118
	265.75	0.1275	-0.0239	0.0149
	270.50	0.1288	-0.0238	0.0154
	275.25	0.1300	-0.0238	0.0182
	280.00	0.1328	-0.0246	0.0226
-----				
1.0D + 1.0W 60 mph Wind at 90° From Face	91.00	0.0848	0.2074	0.0416
	96.00	0.0960	0.2258	0.0467
	121.00	0.1064	0.1460	0.0250
	126.00	0.1002	0.1303	0.0378
	131.00	0.1051	0.1146	0.0193
	141.00	0.1029	0.0834	0.0049
	151.00	0.1080	0.0523	0.0485
	181.00	0.1192	0.0275	0.0352
	251.00	0.1145	0.0017	0.0422
	261.00	0.1139	0.0015	0.0115
	265.75	0.1143	0.0015	0.0113
	270.50	0.1150	0.0015	0.0109
	275.25	0.1155	0.0015	0.0151
	280.00	0.1162	0.0015	0.0180

1.0D + 1.0W 60 mph Wind at Normal To Face	91.00	0.0916	0.0459	0.0427
	96.00	0.0932	0.0674	0.0365
	121.00	0.1027	-0.0592	0.0178
	126.00	0.1044	-0.0095	0.0383
	131.00	0.1065	-0.0672	0.0134
	141.00	0.1068	-0.0469	0.0042
	151.00	0.1067	-0.0839	0.0498
	181.00	0.1193	-0.0691	0.0312
	251.00	0.1040	-0.0377	0.0136
	261.00	0.1016	-0.0361	0.0020
	265.75	0.1015	-0.0357	0.0013
	270.50	0.1016	-0.0354	0.0035
	275.25	0.1018	-0.0351	0.0028
	280.00	0.1034	-0.0355	0.0245
-----				
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	91.00	0.1711	0.2938	0.0756
	96.00	0.1933	0.2976	0.0851
	121.00	0.2114	0.1869	0.0458
	126.00	0.1993	0.1648	0.0827
	131.00	0.2090	0.1427	0.0374
	141.00	0.2059	0.0985	0.0121
	151.00	0.2146	0.0542	0.0884
	181.00	0.2358	0.0190	0.0644
	251.00	0.2438	-0.0372	0.0574
	261.00	0.2407	-0.0355	0.0184
	265.75	0.2411	-0.0355	0.0138
	270.50	0.2419	-0.0355	0.0177
	275.25	0.2427	-0.0355	0.0155
	280.00	0.2458	-0.0371	0.0378
-----				
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	91.00	0.1905	0.4669	0.0745
	96.00	0.2214	0.4686	0.0858
	121.00	0.2357	0.3469	0.0353
	126.00	0.2143	0.3227	0.0781
	131.00	0.2295	0.2984	0.0256
	141.00	0.2143	0.2498	0.0248
	151.00	0.2265	0.2012	0.1200
	181.00	0.2259	0.1503	0.0573
	251.00	0.1786	0.0450	0.1469
	261.00	0.1744	0.0453	0.1047
	265.75	0.1736	0.0454	0.0949
	270.50	0.1735	0.0456	0.0981
	275.25	0.1737	0.0457	0.0941
	280.00	0.1744	0.0458	0.1160
-----				
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	91.00	0.2114	0.2540	0.0728
	96.00	0.2213	0.2582	0.0609
	121.00	0.2328	0.1494	0.0270
	126.00	0.2280	0.1277	0.0594
	131.00	0.2302	0.1060	0.0360
	141.00	0.2240	0.0627	0.0323
	151.00	0.2209	0.0193	0.0681
	181.00	0.2042	-0.0190	0.0544
	251.00	0.0664	-0.0659	0.1241
	261.00	0.0413	-0.0645	0.1189
	265.75	0.0314	-0.0646	0.1201
	270.50	0.0217	-0.0646	0.1143
	275.25	0.0124	-0.0646	0.1215
	280.00	0.0053	-0.0660	0.0934

1.2D + 1.0E - Normal To Face	91.00	0.0127	0.2423	0.0199
	96.00	0.0228	0.2312	0.0219
	121.00	0.0297	0.1759	0.0219
	126.00	0.0250	0.1649	0.0579
	131.00	0.0320	0.1540	0.0233
	141.00	0.0320	0.1321	0.0235
	151.00	0.0457	0.1109	0.0563
	181.00	0.0608	0.0770	0.0438
	251.00	0.0809	-0.0090	0.0183
	261.00	0.0829	-0.0088	0.0231
	265.75	0.0848	-0.0088	0.0234
	270.50	0.0867	-0.0088	0.0242
	275.25	0.0887	-0.0088	0.0240
	280.00	0.0924	-0.0091	0.0248
-----				
1.2D + 1.6W 97 mph Wind at 60° From Face	91.00	0.4490	-0.2484	0.2178
	96.00	0.4651	-0.5942	0.2093
	121.00	0.5253	-0.5516	0.1361
	126.00	0.5346	-0.3078	0.1246
	131.00	0.5444	-0.5347	0.1185
	141.00	0.5596	-0.3967	0.0838
	151.00	0.5756	-0.5014	0.1346
	181.00	0.6788	-0.4118	0.2323
	251.00	0.7936	-0.1031	0.1089
	261.00	0.8068	-0.0966	0.1319
	265.75	0.8187	-0.0957	0.1495
	270.50	0.8311	-0.0948	0.1495
	275.25	0.8438	-0.0939	0.1649
	280.00	0.8623	-0.0974	0.1414
-----				
1.2D + 1.6W 97 mph Wind at 90° From Face	91.00	0.6236	0.3159	0.2989
	96.00	0.6484	0.4194	0.2940
	121.00	0.7453	0.2143	0.1894
	126.00	0.7583	0.1733	0.1594
	131.00	0.7717	0.1325	0.1630
	141.00	0.7950	0.0510	0.1218
	151.00	0.8171	-0.0728	0.0619
	181.00	0.9258	-0.0528	0.2320
	251.00	1.0169	0.0361	0.0680
	261.00	1.0310	0.0364	0.0970
	265.75	1.0400	0.0366	0.1238
	270.50	1.0494	0.0367	0.1151
	275.25	1.0590	0.0368	0.1451
	280.00	1.0687	0.0369	0.0459
-----				
1.2D + 1.6W 97 mph Wind at Normal To Face	91.00	0.7439	-0.2451	0.3550
	96.00	0.7702	-0.5966	0.3200
	121.00	0.8777	-0.5676	0.1987
	126.00	0.8944	-0.3194	0.2243
	131.00	0.9123	-0.5562	0.1777
	141.00	0.9398	-0.4137	0.1623
	151.00	0.9650	-0.5335	0.2830
	181.00	1.0898	-0.4512	0.2656
	251.00	1.2040	-0.1665	0.1935
	261.00	1.2188	-0.1646	0.1435
	265.75	1.2306	-0.1645	0.1438
	270.50	1.2431	-0.1645	0.1597
	275.25	1.2559	-0.1645	0.1355
	280.00	1.2748	-0.1661	0.2443



Tower Engineering Solutions

# Guyed Tower Base Design

Date

7/30/2020

<b>Customer Name:</b>	SBA Communications Corp	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	280
<b>Site Nmber:</b>	CT04877-A-SBA	<b>Engineer Name:</b>	J. Chen
<b>Engr. Number:</b>	94976	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Guyed Tower

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

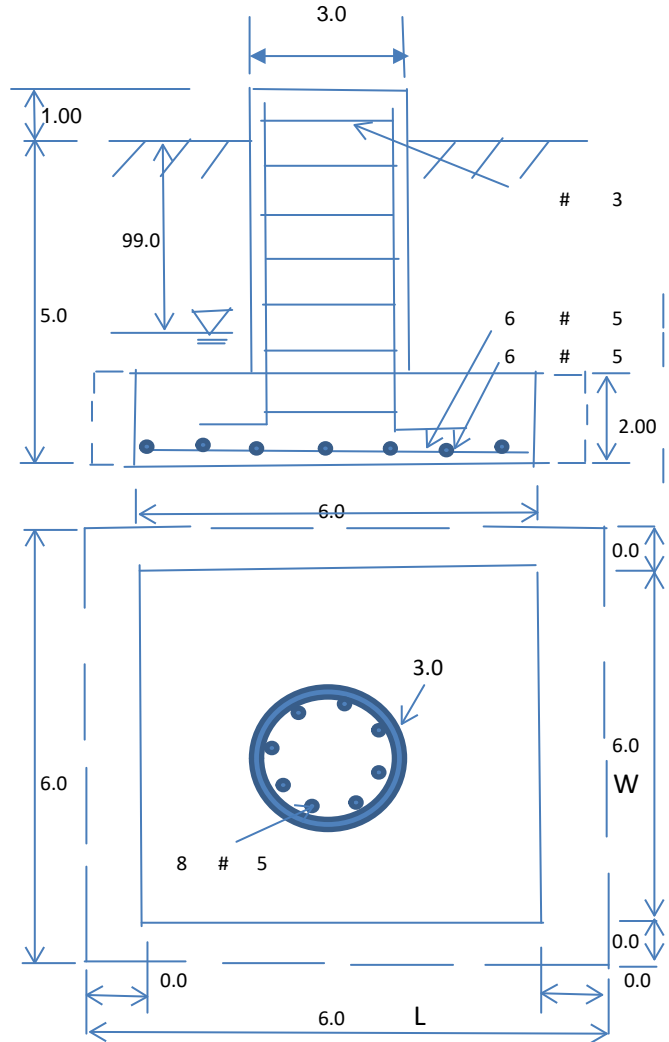
Axial Load (Kips):	187.1	Shear Force (Kips):	2.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	3.0	Depth of Base BG (ft.):	5.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	6	Width of Pad (ft.):	6
Final Length of pad (ft)	6.0	Final width of pad (ft):	6.0

**Material Properties and Reabr Info:**

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	5	Tie / Stirrup Size #:	3	
Qty. of Vertical Rebars:	8	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	5	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	6	Qty. of Rebar in Pad (W):	6	



**Soil Design Parameters:**

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	62.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	30
					Angle from Bottm of Pad:	25

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.6
Total Dry Soil Volume (cu. Ft.):	86.79	Total Dry Soil Weight (Kips):	10.85
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	10.85	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	100.27	Total Dry Concrete Weight (Kips):	15.04
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	15.04	Total Vertical Load on Base (Kips):	212.99

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	5555.8	<	Allowable Factored Soil Bearing (psf):	18000	0.31	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	648.0	>	Design Factored Axial Load (Kips):	191	0.30	OK!

Load/  
Capacity  
Ratio

**Check the capacities of Reinforcing Concrete:**

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

Load/  
Capacity  
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	0.31	Tie / Stirrup Area (sq. in./each):	0.11		
Calculated Moment Capacity (Mn,Kips-Ft):	163.2	> Design Factored Moment (Mu, Kips-Ft)	10.6	0.06	OK!
Calculated Shear Capacity (Kips):	128.2	> Design Factored Shear (Kips):	2.6	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	133.9	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	1795.2	> Design Factored Axial Load (Pu Kips):	187.1	0.10	OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.17	OK!			
Pier Reinforcement Ratio:	0.002				

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Dir. Kips);	141.3	> One-Way Factored Shear (L-Dir Kips):	0.0	0.00	OK!
One-Way Design Shear Capacity (W-Dir. Kips):	141.3	> One-Way Factored Shear (W-Dir Kips)	0.0	0.00	OK!
Two-Way Design Shear Capacity (Kips):	699.0	> Two-Way Factored Shear (Kips):	95.4	0.14	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0012	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0012		OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	171.2	> Moment at Bottom ( L-Direct. K-Ft):	35.7	0.21	OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	171.2	> Moment at Bottom ( W-Dir. Kips-Ft):	35.7	0.21	OK!



# EXHIBIT 9



**Tower Engineering Solutions**

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

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## **Post-Mod Antenna Mount Analysis Report**

**Existing 280-Ft Guyed Tower**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT04877-A-SBA / Waterbury 2, CT**

**Customer Site Name: Waterbury 2, CT**

**Carrier Name: T-Mobile (App#: 134567-1)**

**Carrier Site ID / Name: CT11392B / Waterbury Hill St.**

**Site Location: 207 Garden Circle**

**Waterbury, Connecticut**

**New Haven County**

**Latitude: 41.569722**

**Longitude: -73.017499**

**Exp.01/31/2021**



**Analysis Result:**

**Max Structural Usage: 60.6% [Pass]**

**07/27/2020**

**Report Prepared By : Mohammad Khanfar**

## **Introduction**

The purpose of this report is to summarize the analysis results on the (3) T-frames at 182.00' elevation including the proposed modifications to support the proposed antenna configuration. 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**

Mount Drawings	Mount mapping Info. from SGS Towers, dated 07/07/2020
Antenna Loading	SBA Application #: 134567, v1, dated 06/29/2020
Existing Modification	N/A
Proposed Modification	TES Project No. 95637

## **Analysis Criteria**

Basic Wind Speed Used in the Analysis:  $V_{ULT} = 125$  mph (3-Sec. Gust) / Equivalent to  
 $V_{ASD} = 97$  mph (3-Sec. Gust)

Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 0.75" radial ice concurrent

Operational Wind Speed: 60 mph +0" Radial ice

Standard/Codes: ANSI/TIA/EIA 222-G

Exposure Category: B

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

## **Mount Information**

(3) T-frames at 182.00' elevation

## **Final Antenna Configuration**

- 3 Ericsson AIR 32 KRD901146-1\_B66A\_B2A (Octa)
- 3 RFS APXVAARR24\_43-U-NA20 (Octa)
- 3 Ericsson AIR3246 B66 (Octa)
- 3 Ericsson AIR6449 B41
- 3 Ericsson KRY 112 144/2
- 3 Ericsson KRY 112 489/2
- 3 Ericsson Radio 4449 B71 + B85
- 3 Ericsson Radio 4415 B25

## **Analysis Results**

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration after the proposed modification is successfully completed. The maximum structural usage is 60.6%, which occurs in the mount pipe. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

## **Attachments**

1. Mount Photos Before Modification
2. Antenna Placement Diagram
3. Mount Mapping Information
4. Analysis Calculations

## Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.
2. The analysis is based on the presumption that the antenna mount 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. The mount analysis is not a condition assessment of the mount.
4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.
6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.
7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.
8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.
9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.



Structure: CT04877-A-SBA - Waterbury 2, CT

Sector: **A**

7/27/2020

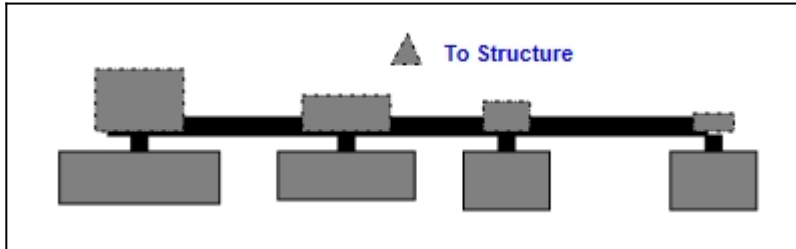


Structure Type: Guyed

Page: 1

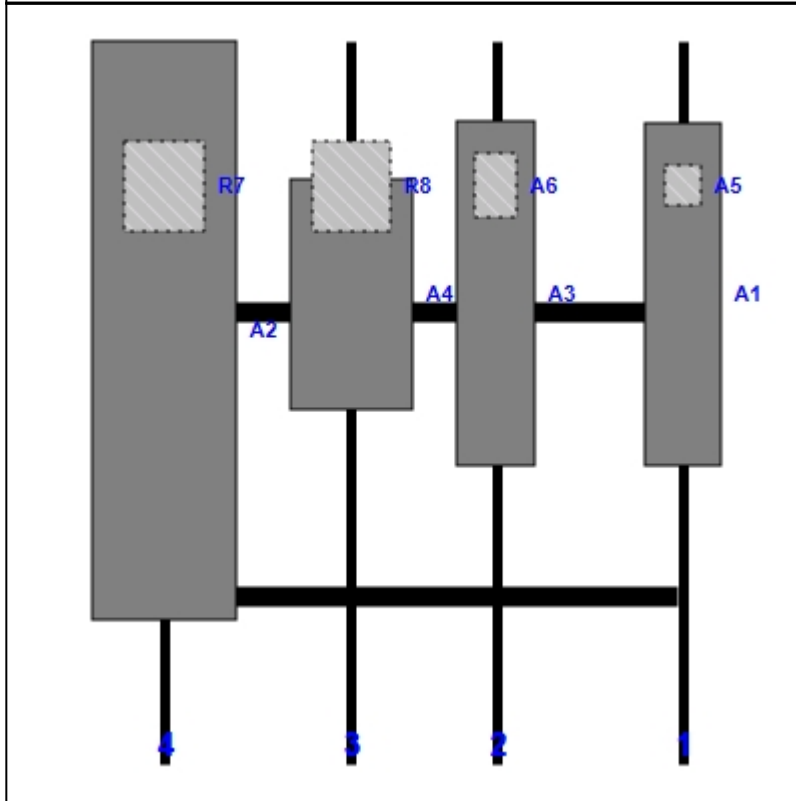
Mount Elev: 182.00

Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR 32 KRD901146-1_B66A_B2A (Octa)	56.60	12.90	91.00	1	a	Front	42.00		Retained	
A5	KRY 112 144/2	6.90	6.10	91.00	1	a	Behind	24.00		Retained	
A3	AIR3246 B66 (Octa)	57.00	12.90	60.00	2	a	Front	42.00		Retained	
A6	KRY 112 489/2	10.50	7.00	60.00	2	a	Behind	24.00		Retained	
A4	AIR6449 B41	38.30	20.50	36.00	3	a	Front	42.00		Added	
R8	Radio 4415 B25	15.00	13.20	36.00	3	a	Behind	24.00		Added	
A2	APXVAARR24_43-U-NA20 (Octa)	95.90	24.00	5.00	4	a	Front	48.00		Retained	
R7	Radio 4449 B71 + B85	15.00	13.20	5.00	4	a	Behind	24.00		Retained	

Structure: CT04877-A-SBA - Waterbury 2, CT

Sector: B

7/27/2020

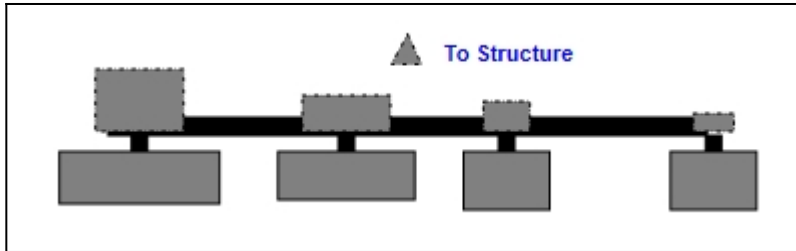
Structure Type: Guyed



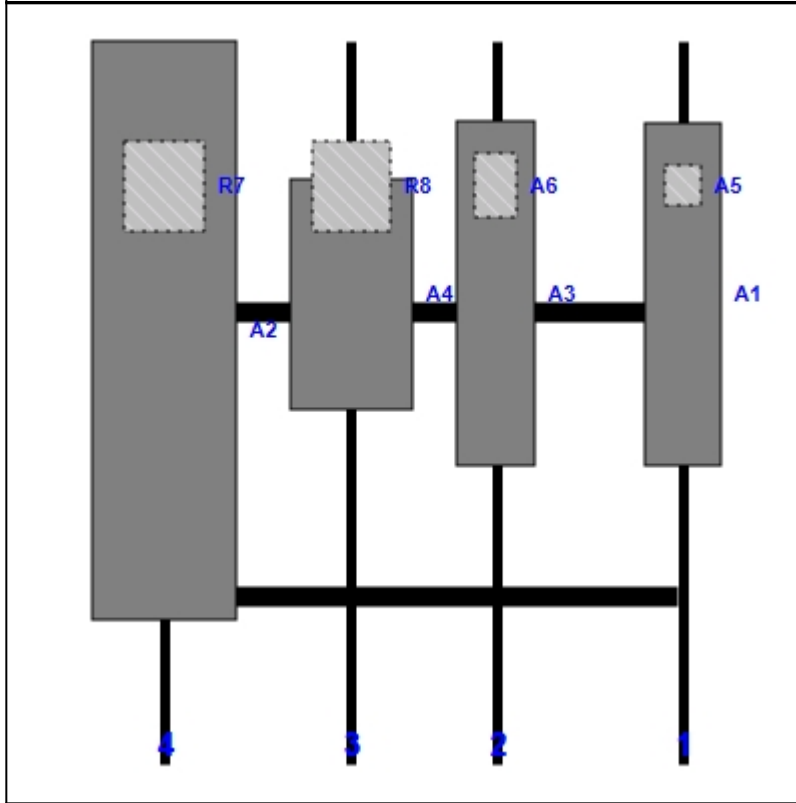
Mount Elev: 182.00

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Plan View



Front View  
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR 32 KRD901146-1_B66A_B2A (Octa)	56.60	12.90	91.00	1	a	Front	42.00		Retained	
A5	KRY 112 144/2	6.90	6.10	91.00	1	a	Behind	24.00		Retained	
A3	AIR3246 B66 (Octa)	57.00	12.90	60.00	2	a	Front	42.00		Retained	
A6	KRY 112 489/2	10.50	7.00	60.00	2	a	Behind	24.00		Retained	
A4	AIR6449 B41	38.30	20.50	36.00	3	a	Front	42.00		Added	
R8	Radio 4415 B25	15.00	13.20	36.00	3	a	Behind	24.00		Added	
A2	APXVAARR24_43-U-NA20 (Octa)	95.90	24.00	5.00	4	a	Front	48.00		Retained	
R7	Radio 4449 B71 + B85	15.00	13.20	5.00	4	a	Behind	24.00		Retained	



**Structure: CT04877-A-SBA - Waterbury 2, CT**

**Sector: C**

7/27/2020

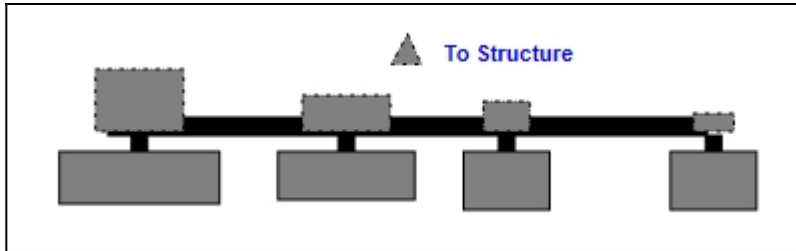
**Structure Type: Guyed**



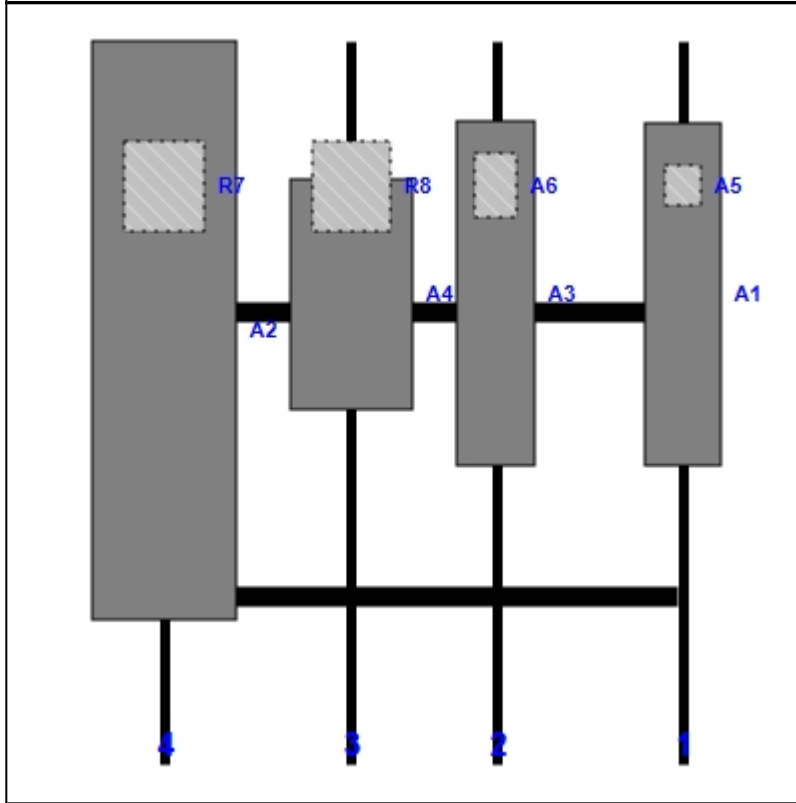
**Mount Elev: 182.00**

Page: 3

**Plan View**



**Front View**  
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR 32 KRD901146-1_B66A_B2A (Octa)	56.60	12.90	91.00	1	a	Front	42.00		Retained	
A5	KRY 112 144/2	6.90	6.10	91.00	1	a	Behind	24.00		Retained	
A3	AIR3246 B66 (Octa)	57.00	12.90	60.00	2	a	Front	42.00		Retained	
A6	KRY 112 489/2	10.50	7.00	60.00	2	a	Behind	24.00		Retained	
A4	AIR6449 B41	38.30	20.50	36.00	3	a	Front	42.00		Added	
R8	Radio 4415 B25	15.00	13.20	36.00	3	a	Behind	24.00		Added	
A2	APXVAARR24_43-U-NA20 (Octa)	95.90	24.00	5.00	4	a	Front	48.00		Retained	
R7	Radio 4449 B71 + B85	15.00	13.20	5.00	4	a	Behind	24.00		Retained	

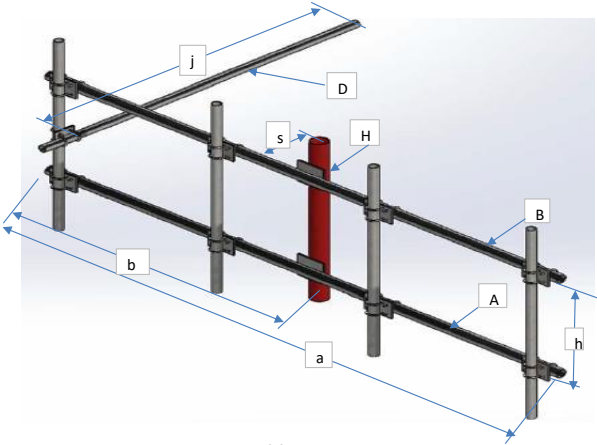


## Antenna Mount Type "MT-B" Mapping Form (PATENT PENDING)

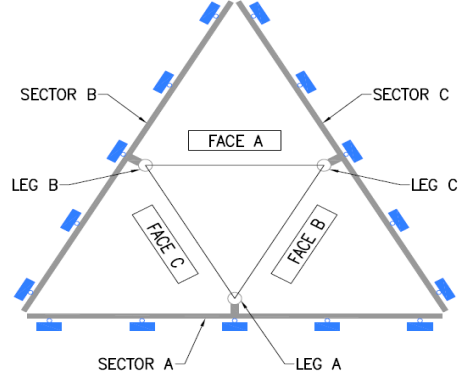
FCC #  
Unknown

Tower Owner:	SBA	Mapping Date:	7/7/20
Site Name:	Waterbury 2, CT	Structure Type:	3-Sided Guyed Tower
Site Number or ID:	CT04877-A	Structure Height (Ft.):	277
Mapping Contractor:	SGS Towers	Mount Height (Ft.):	186

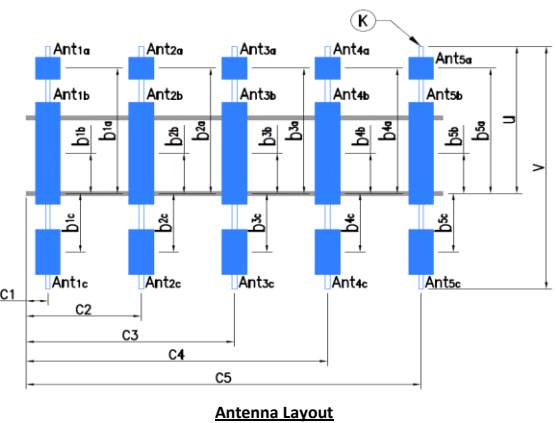
This antenna mapping form is the property of TES and under **PATENT PENDING**. The formation contained herein is considered confidential in nature and is to be used only for the specific customer it was intended for. Reproduction, transmission, publication, modification or disclosure by any method is prohibited except by express written permission of TES. All means and methods are the responsibility of the contractor and the work shall be compliant with ANSI/ASSE A 10.48, OSHA, FCC, FAA and other safety requirements that may apply. TES is not warranting the usability of the safety climb as it must be assessed prior to each use in compliance with OSHA requirements.



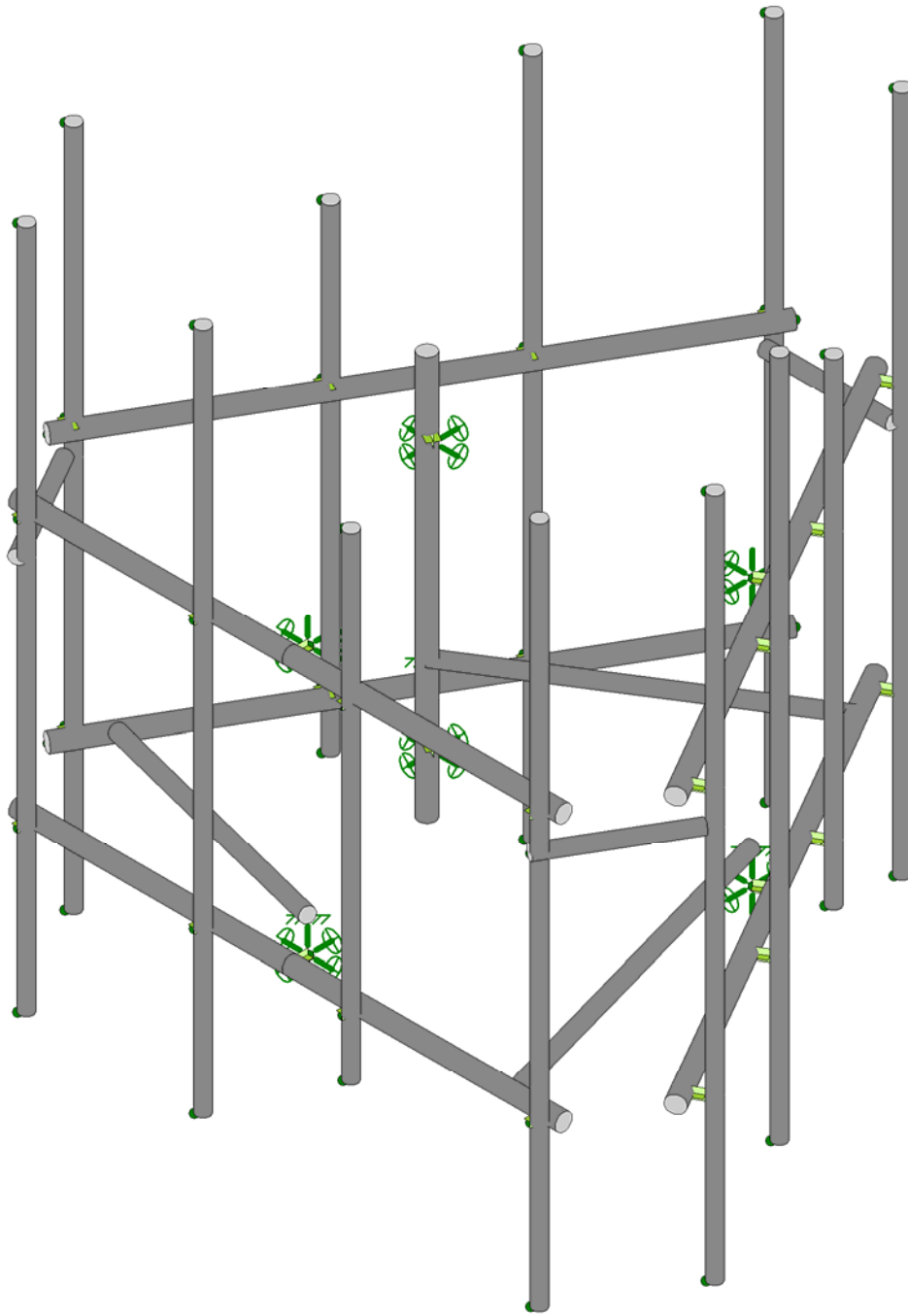
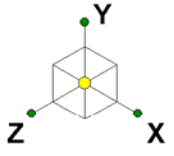
Geometries (Unit: inches)										
a	96	e		j	29.5	o		s	3.5	
b	48	f		k		p		t		
c		g		m		q		u*	92	
d		h	46	n		r		v*	120	
Members (Unit: inches) * - See Ant. Layout for "u", "v" and member "K" (pipe)										
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T	
A	2.875 OD x 0.203 Pipe	2.875	2.469	0.203	F					
B	2.875 OD x 0.203 Pipe	2.875	2.469	0.203	G					
C					H	2.875 OD x 0.203 Pipe	2.875	2.469	0.203	
D	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	J					
E					K (pipe)*	2.875 OD x 0.203 Pipe	2.875	2.469	0.203	
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)										
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)										
Please enter the information below if members can't be found from the drop down lists										
"H" is the tower leg for Sector A & C, "H" for B sector is listed above, with 3.5" standoff from tower leg, 72.5" Long										
K-pipe for Ant4 is same size with "v": 72", "u": 62.5. K-Pipe for Ant3 is same size with "v": 66", "u": 22"										
Ant2b mounted horizontally directly to member A; Ant2c not mounted (no Kpipe at Ant2)										
Tower Face Width at the mount (ft.):				4'		Tower Leg Size at the mount (in.):				2.25



Ants. Items	Enter antenna model. If not labeled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.					Mounting Locations (Unit: inches)			Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances "b <sub>1a</sub> , b <sub>2a</sub> , b <sub>3a</sub> , b <sub>1b</sub> ..." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C <sub>1</sub> , C <sub>2</sub> , C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> " (in.)	
<b>Sector A</b>									
Ant <sub>1a</sub>	Radio 4449	13.2	9.4	18	(18) 1 5/8"	63	-3	5	
Ant <sub>1b</sub>	APXVAARR24_43	24	8.7	95.9	(2) 1 1/2"	32	7	5	
Ant <sub>1c</sub>					(1) 1 3/8"	Trunk			
Ant <sub>2a</sub>	DTMA1900	6.3	4	11		0	0	41	
Ant <sub>2b</sub>									
Ant <sub>2c</sub>	Commscope ATSBT-T	3.7	2.5	2		0	0	32	
Ant <sub>3a</sub>									
Ant <sub>3b</sub>	AIR 32 B2A B66AA	12.87	8.66	59.25		35	5.5	55	
Ant <sub>3c</sub>	Double TMA 17/21	6	2.5	7		14	3	55	
Ant <sub>4a</sub>									
Ant <sub>4b</sub>	Air 3246	15.7	9.4	58.1		44	9	91	
Ant <sub>4c</sub>									
Ant <sub>5a</sub>									
Ant <sub>5b</sub>									
Ant <sub>5c</sub>									
Are Ant same as sector A?		Yes		Antennas on Sector B are the same as Sector A					



Azimuth (Degree) of Each Sector and Climbing Information			
Sector A:	60	↗	Deg
Sector B:	180		Deg
Sector C:	310		Deg
Climbing	0		Deg Inside A-C Face
Climbing Facility	Corrosion Type:	Good condition	
	Access:	Climbing path was unobstructed.	
	Condition:	N/A	



Tower Engineering Solutio...

TES Project No. 94975

CT04877-A-SBA\_MT\_LO\_Loads Only\_G

SK - 4

July 27, 2020 at 1:36 PM

CT04877-A-SBA\_94975\_G\_RISA\_L...







Company : Tower Engineering Solutions, LLC  
 Designer :  
 Job Number : TES Project No. 94975  
 Model Name : CT04877-A-SBA\_MT\_LO\_Loads Only\_G

July 27, 2020  
 1:42 PM  
 Checked By: \_\_\_\_\_

### Basic Load Cases

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Antenna D	None				36		
2	Antenna Di	None				36		
3	Antenna W Front	None				36		
4	Antenna Wi Front	None				36		
5	Antenna W Side	None				36		
6	Antenna Wi Side	None				36		
7	Service Lm1	None				1		
8	Service Lm2	None				1		
9	Structure D	None	-1					
10	Structure Di	None					31	
11	Structure W Front	None					31	
12	Structure Wi Front	None					31	
13	Structure W Side	None					31	
14	Structure Wi Side	None					31	

### Load Combinations

Description	So...P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	1.2D+1.6W (Front)	Yes	Y	1	1.2	9	1.2	3	1.6	11	1.6				
2	1.2D+1.6W (Back)	Yes	Y	1	1.2	9	1.2	3	-1.6	11	-1.6				
3	1.2D+1.6W (Left)	Yes	Y	1	1.2	9	1.2	5	1.6	13	1.6				
4	1.2D+1.6W (Right)	Yes	Y	1	1.2	9	1.2	5	-1.6	13	-1.6				
5	1.2D+1.0Di+1.0Wi ...	Yes	Y	1	1.2	9	1.2	2	1	10	1	4	1	12	1
6	1.2D+1.0Di+1.0Wi ...	Yes	Y	1	1.2	9	1.2	2	1	10	1	4	-1	12	-1
7	1.2D+1.0Di+1.0Wi ...	Yes	Y	1	1.2	9	1.2	2	1	10	1	6	1	14	1
8	1.2D+1.0Di+1.0Wi ...	Yes	Y	1	1.2	9	1.2	2	1	10	1	6	-1	14	-1
9	1.2D+1.5L1+.16W ...	Yes	Y	1	1.2	9	1.2	7	1.5	3	.16	11	.16		
10	1.2D+1.5L2+.16W ...	Yes	Y	1	1.2	9	1.2	8	1.5	3	.16	11	.16		
11	1.4D	Yes	Y	1	1.4	9	1.4								

### Joint Coordinates and Temperatures

Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N5	2.38157	3.916667	-1.375	0
2	N6	2.38157	0	-1.375	0
3	N9	4.598076	3.916667	1.964102	0
4	N10	4.598076	0	1.964102	0
5	N13	3.181409	3.916667	-0.489638	0
6	N14	3.181409	0	-0.489638	0
7	N15	2.098076	3.916667	-2.366025	0
8	N16	2.098076	0	-2.366025	0
9	N19	0.598076	3.916667	-4.964102	0
10	N20	0.598076	0	-4.964102	0
11	NP1	4.689583	7.666666	1.622596	0
12	NP2	4.689583	-2.333333	1.622596	0
13	NP3	3.397916	7.666666	-0.614637	0
14	NP4	3.397916	-2.333333	-0.614637	0
15	NP5	2.314582	6.166666	-2.491026	0
16	NP6	2.314582	-0.833333	-2.491026	0
17	NP7	0.939582	7.666666	-4.872596	0
18	NP8	0.939582	-2.333333	-4.872596	0
19	N29	4.473076	3.916667	1.747595	0



**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
20	N30	0.723076	3.916667	-4.747595	0	
21	N31	4.473076	0	1.747595	0	
22	N32	0.723076	0	-4.747595	0	
23	N29B	3.397916	3.916667	-0.614638	0	
24	N30B	3.397916	0	-0.614638	0	
25	N31A	2.314583	3.916667	-2.491025	0	
26	N32A	2.314583	0	-2.491025	0	
27	N33	4.689582	3.916667	1.622595	0	
28	N34	0.939582	3.916667	-4.872595	0	
29	N35	4.689582	0	1.622595	0	
30	N36	0.939582	0	-4.872595	0	
31	N39	2.598076	3.916667	-1.5	0	
32	N40	2.598076	0	-1.5	0	
33	N33A	-2.38157	3.916667	-1.375	0	
34	N34A	-2.38157	0	-1.375	0	
35	N35A	-0.598076	3.916667	-4.964102	0	
36	N36A	-0.598076	0	-4.964102	0	
37	N37	-2.014743	3.916667	-2.510362	0	
38	N38	-2.014743	0	-2.510362	0	
39	N39A	-3.098076	3.916667	-0.633975	0	
40	N40A	-3.098076	0	-0.633975	0	
41	N41	-4.598076	3.916667	1.964102	0	
42	N42	-4.598076	0	1.964102	0	
43	N43	-0.939582	7.666666	-4.872596	0	
44	N44	-0.939582	-2.333333	-4.872596	0	
45	N45	-2.231249	7.666666	-2.635363	0	
46	N46	-2.231249	-2.333333	-2.635363	0	
47	N47	-3.314583	6.166666	-0.758974	0	
48	N48	-3.314583	-0.833333	-0.758974	0	
49	N49	-4.689583	7.666666	1.622596	0	
50	N50	-4.689583	-2.333333	1.622596	0	
51	N51	-0.723076	3.916667	-4.747595	0	
52	N52	-4.473076	3.916667	1.747595	0	
53	N53	-0.723076	0	-4.747595	0	
54	N54	-4.473076	0	1.747595	0	
55	N55	-2.23125	3.916667	-2.635362	0	
56	N56	-2.23125	0	-2.635362	0	
57	N57	-3.314583	3.916667	-0.758975	0	
58	N58	-3.314583	0	-0.758975	0	
59	N59	-0.939583	3.916667	-4.872595	0	
60	N60	-4.689583	3.916667	1.622595	0	
61	N61	-0.939583	0	-4.872595	0	
62	N62	-4.689583	0	1.622595	0	
63	N63	-2.598076	3.916667	-1.5	0	
64	N64	-2.598076	0	-1.5	0	
65	N65	0	3.916667	2.75	0	
66	N66	0	0	2.75	0	
67	N67	-4	3.916667	3	0	
68	N68	-4	0	3	0	
69	N69	-1.166666	3.916667	3.	0	
70	N70	-1.166666	0	3.	0	
71	N71	1.	3.916667	3.	0	
72	N72	1.	0	3.	0	
73	N73	4	3.916667	3	0	
74	N74	4	0	3	0	
75	N75	-3.75	7.666666	3.25	0	
76	N76	-3.75	-2.333333	3.25	0	



**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
77	N77	-1.166666	7.666666	3.25	0	
78	N78	-1.166666	-2.333333	3.25	0	
79	N79	1.	6.166666	3.25	0	
80	N80	1.	-0.833333	3.25	0	
81	N81	3.75	7.666666	3.25	0	
82	N82	3.75	-2.333333	3.25	0	
83	N83	-3.75	3.916667	3.	0	
84	N84	3.75	3.916667	3.	0	
85	N85	-3.75	0	3.	0	
86	N86	3.75	0	3.	0	
87	N87	-1.166666	3.916667	3.25	0	
88	N88	-1.166666	0	3.25	0	
89	N89	1.	3.916667	3.25	0	
90	N90	1.	0	3.25	0	
91	N91	-3.75	3.916667	3.25	0	
92	N92	3.75	3.916667	3.25	0	
93	N93	-3.75	0	3.25	0	
94	N94	3.75	0	3.25	0	
95	N95	0	3.916667	3.	0	
96	N96	0	0	3.	0	
97	N103	-4.689583	3.416667	1.622595	0	
98	N104	-3.75	3.416667	3.25	0	
99	N105	3.75	3.416667	3.25	0	
100	N106	4.689582	3.416667	1.622595	0	
101	N107	0.939582	3.416667	-4.872595	0	
102	N108	-0.939583	3.416667	-4.872595	0	
103	N109	-2.38157	4.416667	-1.375	0	
104	N110	-2.38157	-1.5	-1.375	0	
105	N111	-2.38157	3.416667	-1.375	0	
106	N112	-2.38157	-.5	-1.375	0	
107	N113	-2.165064	3.416667	-1.25	0	
108	N114	-2.165064	-.5	-1.25	0	
109	N109A	0	.5	2.75	0	
110	N110A	2.38157	.5	-1.375	0	
111	N111A	-2.38157	.5	-1.375	0	
112	N112A	3.25	0	3.	0	
113	N114A	0.973076	0	-4.314583	0	
114	N116	-4.223076	0	1.314583	0	

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	xxxxx	HSS16x0.438	Beam	None	A572 Gr.50	Typical	19.9	606	606	1210

**Cold Formed Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CF	4CU5.25X03...	Beam	CU	A570 Gr.33	Typical	4.854	13.238	12.817	.228

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	AL1A	AACS14X13.9	Beam	AA Channel	3003-H14	Typical	11.8	44.7	401	1.19





**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A570 Gr.33	29500	11346	.3	.65	.49	33	52
2	A607 C1 Gr.55	29500	11346	.3	.65	.49	55	70

**Aluminum Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (...)	Density[...	Table B.4	kt	Ftu[ksi]	Fty[ksi]	Fcy[ksi]	Fsu[ksi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	.173	Table B...	1	19	16	13	12	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	24	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	13	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	19	141
5	5052-H34	10200	3787.5	.33	1.3	.173	Table B...	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	15	141

**Member Advanced Data**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M6						Yes			None
2	M7						Yes			None
3	MP4C						Yes	-z		None
4	MP3C						Yes	-z		None
5	MP2C						Yes	-z		None
6	MP1C						Yes	-z		None
7	M12						Yes			None
8	M13						Yes			None
9	M14						Yes			None
10	M15						Yes			None
11	M16						Yes			None
12	M17						Yes			None
13	M18						Yes			None
14	M19						Yes			None
15	M19A						Yes			None
16	M20						Yes			None
17	M27						Yes			None
18	M28						Yes			None
19	M19B						Yes			None
20	M20A						Yes			None
21	MP4B						Yes	-z		None
22	MP3B						Yes	-z		None
23	MP2B						Yes	-z		None
24	MP1B						Yes	-z		None
25	M25						Yes			None
26	M26						Yes			None
27	M27A						Yes			None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
28	M28A						Yes			None
29	M29						Yes			None
30	M30						Yes			None
31	M31						Yes			None
32	M32						Yes			None
33	M33						Yes			None
34	M34						Yes			None
35	M35						Yes			None
36	M36						Yes			None
37	M37						Yes			None
38	M38						Yes			None
39	MP4A						Yes	-z		None
40	MP3A						Yes	-z		None
41	MP2A						Yes	-z		None
42	MP1A						Yes	-z		None
43	M43						Yes			None
44	M44						Yes			None
45	M45						Yes			None
46	M46						Yes			None
47	M47						Yes			None
48	M48						Yes			None
49	M49						Yes			None
50	M50						Yes			None
51	M51						Yes			None
52	M52						Yes			None
53	M53						Yes			None
54	M54						Yes			None
55	M58	OOOOXO	OOOOXO				Yes			None
56	M59	OOOOXO	OOOOXO				Yes			None
57	M60	OOOOXO	OOOOXO				Yes			None
58	M61						Yes			None
59	M62						Yes			None
60	M63						Yes			None
61	M61A	BenPIN	BenPIN				Yes			None
62	M62A	BenPIN	BenPIN				Yes			None
63	M63A	BenPIN	BenPIN				Yes			None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
1	M6	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
2	M7	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
3	MP4C	PIPE 2.0	10			Lbyy			1	1		Lateral
4	MP3C	PIPE 2.0	10			Lbyy			1	1		Lateral
5	MP2C	PIPE 2.0	7			Lbyy			1	1		Lateral
6	MP1C	PIPE 2.0	10			Lbyy			1	1		Lateral
7	M27	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
8	M28	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
9	M19B	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
10	M20A	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
11	MP4B	PIPE 2.0	10			Lbyy			1	1		Lateral
12	MP3B	PIPE 2.0	10			Lbyy			1	1		Lateral
13	MP2B	PIPE 2.0	7			Lbyy			1	1		Lateral
14	MP1B	PIPE 2.0	10			Lbyy			1	1		Lateral
15	M35	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
16	M36	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity



**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
17	M37	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
18	M38	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
19	MP4A	PIPE 2.0	10			Lbyy			1	1		Lateral
20	MP3A	PIPE 2.0	10			Lbyy			1	1		Lateral
21	MP2A	PIPE 2.0	7			Lbyy			1	1		Lateral
22	MP1A	PIPE 2.0	10			Lbyy			1	1		Lateral
23	M53	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
24	M54	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
25	M58	PIPE 2.0	1.879			Lbyy						Lateral
26	M59	PIPE 2.0	1.879			Lbyy						Lateral
27	M60	PIPE 2.0	1.879			Lbyy						Lateral
28	M61	PIPE 2.5	5.917			Lbyy						Lateral
29	M61A	PIPE 2.0	4.488			Lbyy						Lateral
30	M62A	PIPE 2.0	4.488			Lbyy						Lateral
31	M63A	PIPE 2.0	4.488			Lbyy						Lateral

**Cold Formed Steel Design Parameters**

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torque...	Kyy	Kzz	Cm-...Cm-...	Cb	R	a[ft]	y sw...z sw...
No Data to Print ...														

**Aluminum Design Parameters**

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
No Data to Print ...											

**Joint Loads and Enforced Displacements**

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
No Data to Print ...			

**Member Point Loads (BLC 1 : Antenna D)**

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-66.1	2
2	MP1A	Y	-66.1	5
3	MP1B	Y	-66.1	2
4	MP1B	Y	-66.1	5
5	MP1C	Y	-66.1	2
6	MP1C	Y	-66.1	5
7	MP4A	Y	-64	1
8	MP4A	Y	-64	7
9	MP4B	Y	-64	1
10	MP4B	Y	-64	7
11	MP4C	Y	-64	1
12	MP4C	Y	-64	7
13	MP2A	Y	-66.1	2
14	MP2A	Y	-66.1	5
15	MP2B	Y	-66.1	2
16	MP2B	Y	-66.1	5
17	MP2C	Y	-66.1	2
18	MP2C	Y	-66.1	5
19	MP3A	Y	-66.6	2
20	MP3A	Y	-66.6	5
21	MP3B	Y	-66.6	2



**Member Point Loads (BLC 1 : Antenna D) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
22	MP3B	Y	-66.6	5
23	MP3C	Y	-66.6	2
24	MP3C	Y	-66.6	5
25	MP1A	Y	-11	2
26	MP1B	Y	-11	2
27	MP1C	Y	-11	2
28	MP2A	Y	-15.4	2
29	MP2B	Y	-15.4	2
30	MP2C	Y	-15.4	2
31	MP4A	Y	-70	2
32	MP4B	Y	-70	2
33	MP4C	Y	-70	2
34	MP3A	Y	-46	2
35	MP3B	Y	-46	2
36	MP3C	Y	-46	2

**Member Point Loads (BLC 2 : Antenna Di)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	Y	-93.743	2
2	MP1A	Y	-93.743	5
3	MP1B	Y	-93.743	2
4	MP1B	Y	-93.743	5
5	MP1C	Y	-93.743	2
6	MP1C	Y	-93.743	5
7	MP4A	Y	-213.576	1
8	MP4A	Y	-213.576	7
9	MP4B	Y	-213.576	1
10	MP4B	Y	-213.576	7
11	MP4C	Y	-213.576	1
12	MP4C	Y	-213.576	7
13	MP2A	Y	-94.324	2
14	MP2A	Y	-94.324	5
15	MP2B	Y	-94.324	2
16	MP2B	Y	-94.324	5
17	MP2C	Y	-94.324	2
18	MP2C	Y	-94.324	5
19	MP3A	Y	-83.958	2
20	MP3A	Y	-83.958	5
21	MP3B	Y	-83.958	2
22	MP3B	Y	-83.958	5
23	MP3C	Y	-83.958	2
24	MP3C	Y	-83.958	5
25	MP1A	Y	-16.805	2
26	MP1B	Y	-16.805	2
27	MP1C	Y	-16.805	2
28	MP2A	Y	-28.047	2
29	MP2B	Y	-28.047	2
30	MP2C	Y	-28.047	2
31	MP4A	Y	-69.929	2
32	MP4B	Y	-69.929	2
33	MP4C	Y	-69.929	2
34	MP3A	Y	-55.645	2
35	MP3B	Y	-55.645	2
36	MP3C	Y	-55.645	2



**Member Point Loads (BLC 3 : Antenna W Front)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%]
1	MP1A	Z	-66.426	2
2	MP1A	Z	-66.426	5
3	MP1B	Z	-52.668	2
4	MP1B	Z	-52.668	5
5	MP1C	Z	-52.668	2
6	MP1C	Z	-52.668	5
7	MP4A	Z	-206.522	1
8	MP4A	Z	-206.522	7
9	MP4B	Z	-114.301	1
10	MP4B	Z	-114.301	7
11	MP4C	Z	-114.301	1
12	MP4C	Z	-114.301	7
13	MP2A	Z	-66.426	2
14	MP2A	Z	-66.426	5
15	MP2B	Z	-52.977	2
16	MP2B	Z	-52.977	5
17	MP2C	Z	-52.977	2
18	MP2C	Z	-52.977	5
19	MP3A	Z	-66.63	2
20	MP3A	Z	-66.63	5
21	MP3B	Z	-36.08	2
22	MP3B	Z	-36.08	5
23	MP3C	Z	-36.08	2
24	MP3C	Z	-36.08	5
25	MP1A	Z	-8.367	2
26	MP1B	Z	-4.473	2
27	MP1C	Z	-4.473	2
28	MP2A	Z	-14.489	2
29	MP2B	Z	-9.649	2
30	MP2C	Z	-9.649	2
31	MP4A	Z	-33.672	2
32	MP4B	Z	-26.211	2
33	MP4C	Z	-26.211	2
34	MP3A	Z	-33.468	2
35	MP3B	Z	-18.804	2
36	MP3C	Z	-18.804	2

**Member Point Loads (BLC 4 : Antenna Wi Front)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%]
1	MP1A	Z	-20.754	2
2	MP1A	Z	-20.754	5
3	MP1B	Z	-16.883	2
4	MP1B	Z	-16.883	5
5	MP1C	Z	-16.883	2
6	MP1C	Z	-16.883	5
7	MP4A	Z	-60.129	1
8	MP4A	Z	-60.129	7
9	MP4B	Z	-34.96	1
10	MP4B	Z	-34.96	7
11	MP4C	Z	-34.96	1
12	MP4C	Z	-34.96	7
13	MP2A	Z	-20.912	2
14	MP2A	Z	-20.912	5
15	MP2B	Z	-17.015	2
16	MP2B	Z	-17.015	5
17	MP2C	Z	-17.015	2



**Member Point Loads (BLC 4 : Antenna Wi Front) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
18	MP2C	Z	-17.015	5
19	MP3A	Z	-20.663	2
20	MP3A	Z	-20.663	5
21	MP3B	Z	-11.881	2
22	MP3B	Z	-11.881	5
23	MP3C	Z	-11.881	2
24	MP3C	Z	-11.881	5
25	MP1A	Z	-3.455	2
26	MP1B	Z	-2.421	2
27	MP1C	Z	-2.421	2
28	MP2A	Z	-5.296	2
29	MP2B	Z	-4.231	2
30	MP2C	Z	-4.231	2
31	MP4A	Z	-11.926	2
32	MP4B	Z	-9.669	2
33	MP4C	Z	-9.669	2
34	MP3A	Z	-11.926	2
35	MP3B	Z	-7.412	2
36	MP3C	Z	-7.412	2

**Member Point Loads (BLC 5 : Antenna W Side)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	X	48.083	2
2	MP1A	X	48.083	5
3	MP1B	X	61.84	2
4	MP1B	X	61.84	5
5	MP1C	X	61.84	2
6	MP1C	X	61.84	5
7	MP4A	X	83.56	1
8	MP4A	X	83.56	7
9	MP4B	X	175.782	1
10	MP4B	X	175.782	7
11	MP4C	X	175.782	1
12	MP4C	X	175.782	7
13	MP2A	X	48.494	2
14	MP2A	X	48.494	5
15	MP2B	X	61.943	2
16	MP2B	X	61.943	5
17	MP2C	X	61.943	2
18	MP2C	X	61.943	5
19	MP3A	X	25.897	2
20	MP3A	X	25.897	5
21	MP3B	X	56.447	2
22	MP3B	X	56.447	5
23	MP3C	X	56.447	2
24	MP3C	X	56.447	5
25	MP1A	X	3.175	2
26	MP1B	X	7.069	2
27	MP1C	X	7.069	2
28	MP2A	X	8.035	2
29	MP2B	X	12.876	2
30	MP2C	X	12.876	2
31	MP4A	X	23.724	2
32	MP4B	X	31.185	2
33	MP4C	X	31.185	2
34	MP3A	X	13.917	2



**Member Point Loads (BLC 5 : Antenna W Side) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
35	MP3B	X	28.58	2
36	MP3C	X	28.58	2

**Member Point Loads (BLC 6 : Antenna Wi Side)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	X	15.593	2
2	MP1A	X	15.593	5
3	MP1B	X	19.464	2
4	MP1B	X	19.464	5
5	MP1C	X	19.464	2
6	MP1C	X	19.464	5
7	MP4A	X	26.57	1
8	MP4A	X	26.57	7
9	MP4B	X	51.74	1
10	MP4B	X	51.74	7
11	MP4C	X	51.74	1
12	MP4C	X	51.74	7
13	MP2A	X	15.716	2
14	MP2A	X	15.716	5
15	MP2B	X	19.613	2
16	MP2B	X	19.613	5
17	MP2C	X	19.613	2
18	MP2C	X	19.613	5
19	MP3A	X	8.953	2
20	MP3A	X	8.953	5
21	MP3B	X	17.736	2
22	MP3B	X	17.736	5
23	MP3C	X	17.736	2
24	MP3C	X	17.736	5
25	MP1A	X	2.076	2
26	MP1B	X	3.11	2
27	MP1C	X	3.11	2
28	MP2A	X	3.876	2
29	MP2B	X	4.941	2
30	MP2C	X	4.941	2
31	MP4A	X	8.916	2
32	MP4B	X	11.173	2
33	MP4C	X	11.173	2
34	MP3A	X	5.907	2
35	MP3B	X	10.421	2
36	MP3C	X	10.421	2

**Member Point Loads (BLC 7 : Service Lm1)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	M38	Y	-500	%4

**Member Point Loads (BLC 8 : Service Lm2)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	M38	Y	-500	%100

**Member Area Loads**

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						



### Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N5	Reaction	Reaction	Reaction	Reaction		Reaction
2	N6	Reaction	Reaction	Reaction	Reaction		Reaction
3	N33A						
4	N34A						
5	N65	Reaction	Reaction	Reaction	Reaction		Reaction
6	N66	Reaction	Reaction	Reaction	Reaction		Reaction
7	N109						
8	N110						
9	N111						
10	N112						
11	N113	Reaction	Reaction	Reaction	Reaction		Reaction
12	N114	Reaction	Reaction	Reaction	Reaction		Reaction
13	N109A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
14	N110A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	N111A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

### Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	N5	max	1340.968	4	1426.506	5	854.599	1	.385	3	0	1	.579	7
2		min	-1408.49	3	437.783	2	-876.855	2	-.308	4	0	1	-.203	4
3	N6	max	389.77	4	1404.892	7	327.008	1	.088	1	0	1	.54	7
4		min	-295.885	3	283.01	4	-320.742	2	-.032	2	0	1	-.132	4
5	N65	max	803.096	4	1412.099	7	1219.366	1	.343	1	0	1	.109	2
6		min	-769.465	3	526.115	4	-1308.28	2	-.746	2	0	1	-.519	9
7	N66	max	366.138	4	1454.18	6	472.726	1	.072	1	0	1	.294	1
8		min	-397.682	3	140.606	1	-346.659	2	-.541	6	0	1	-.608	9
9	N113	max	1095.417	4	1328.084	7	1097.049	1	.733	1	0	1	.459	3
10		min	-1039.607	3	279.812	4	-1046.175	2	-.443	2	0	1	-.88	4
11	N114	max	231.712	2	844.059	8	100.344	4	.223	4	0	1	-.015	1
12		min	-602.427	1	26.046	3	-461.038	7	-.158	3	0	1	-.12	7
13	N109A	max	417.385	1	59.113	1	158.355	1	-.004	1	0	1	-.001	1
14		min	-408.471	2	-39.292	2	-155.315	2	-.063	6	-.007	6	-.021	6
15	N110A	max	43.16	3	45.458	4	303.335	3	.013	7	0	4	.065	7
16		min	-45.35	4	-25.603	3	-314.543	4	0	4	-.007	7	.004	4
17	N111A	max	1017.91	4	875.452	8	719.439	1	.137	4	.535	3	.106	4
18		min	-742.365	3	63.543	3	-509.427	2	-.1	3	-.566	4	-.117	3
19	Totals:	max	4541.816	4	8446.432	6	4583.907	1						
20		min	-4541.816	3	3301.13	1	-4583.908	2						

### Envelope Member Section Forces

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...]	LC	y-y Mome...	LC	z-z Mom...	LC	
1	M6	1	max	0	1	.001	3	.002	1	0	1	0	1	0	1
2			min	0	1	0	5	-.003	4	0	1	0	1	0	1
3		2	max	316.812	4	55.938	2	307.116	3	.33	3	.135	3	.184	2
4			min	-484.626	3	-458.816	5	-292.44	4	-.3	4	-.159	4	-.308	1
5		3	max	320.877	4	49.364	2	314.157	3	.33	3	.446	3	.267	7
6			min	-488.691	3	-475.508	5	-299.481	4	-.3	4	-.455	4	-.037	4
7		4	max	414.379	4	-212.051	3	614.336	3	.344	3	.784	3	.381	7
8			min	-728.191	3	-737.433	8	-583.327	4	-.293	4	-.808	4	-.019	4
9		5	max	418.444	4	-218.626	3	621.377	3	.344	3	1.402	3	1.091	7
10			min	-732.256	3	-754.125	8	-590.368	4	-.293	4	-1.395	4	.332	4
11	M7	1	max	0	1	.001	3	.002	2	0	1	0	1	0	1
12			min	0	1	0	5	-.003	4	0	1	0	1	0	1





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
13		2	max	264.604	5	-22.898	4	109.074	3	.025	8	.126	3	-.039	4
14			min	-35.601	2	-418.579	7	-138.341	4	-.003	1	-.115	4	-.154	7
15		3	max	266.115	5	-29.472	4	116.114	3	.025	8	.238	3	.273	7
16			min	-39.666	2	-435.271	7	-145.381	4	-.003	1	-.257	4	-.013	4
17		4	max	488.218	5	-117.301	4	94.74	3	.088	4	.374	3	.374	7
18			min	-11.644	2	-764.39	7	-137.652	4	-.052	3	-.392	4	-.024	4
19		5	max	489.729	5	-123.875	4	101.78	3	.088	4	.472	3	1.147	7
20			min	-15.709	2	-781.082	7	-144.693	4	-.052	3	-.533	4	.096	4
21	MP4C	1	max	0	1	1.213	4	.694	1	0	7	0	1	0	1
22			min	0	1	-1.361	7	-.977	6	0	4	0	1	0	1
23		2	max	477.294	6	351.746	4	244.899	1	0	7	.321	1	.474	3
24			min	171.212	3	-351.889	3	-245.036	2	0	4	-.322	2	-.474	4
25		3	max	141.719	3	241.545	3	202.753	6	.031	4	.06	1	.269	3
26			min	-81.309	4	-133.969	4	-29.478	1	-.033	3	-.139	2	-.184	4
27		4	max	368.025	7	175.113	8	205.594	5	.031	4	.369	7	-.014	4
28			min	5.904	4	-59.093	3	-43.603	2	-.033	3	.043	4	-.273	7
29		5	max	0	7	.032	8	.044	7	0	1	0	1	0	4
30			min	0	1	.003	4	-.002	4	0	8	0	1	0	3
31	MP3C	1	max	0	1	.252	4	.103	1	0	7	0	1	0	1
32			min	0	1	-.425	7	-.426	6	0	4	0	1	0	1
33		2	max	307.713	7	155.681	4	107.304	1	0	7	.068	1	.093	3
34			min	145.532	1	-155.77	3	-107.417	2	0	4	-.069	2	-.093	4
35		3	max	239.496	1	138.658	7	175.158	6	.01	2	-.006	3	.1	7
36			min	-82.001	2	-52.883	4	38.978	1	-.014	1	-.127	8	-.029	4
37		4	max	299.558	5	124.2	7	176.988	5	.01	2	.313	7	-.002	4
38			min	-42.681	2	-.83	4	40.588	2	-.014	1	.076	4	-.221	7
39		5	max	0	1	.024	8	.036	7	0	2	0	1	0	4
40			min	0	1	.002	2	0	4	0	8	0	1	0	3
41	MP2C	1	max	0	1	.131	8	.23	7	0	3	0	1	0	1
42			min	0	1	-.018	3	-.002	4	0	8	0	1	0	1
43		2	max	23.092	6	13.621	4	13.627	1	0	3	.012	1	.012	3
44			min	7.289	3	-13.588	3	-13.557	2	0	8	-.012	2	-.012	4
45		3	max	71.14	2	-10.96	3	.346	4	.104	3	.1	7	.008	4
46			min	-85.23	1	-64.352	8	-143.597	7	-.104	4	.002	4	-.049	7
47		4	max	184.183	6	76.627	4	.346	4	.104	3	.002	4	.065	8
48			min	1.378	1	-123.64	3	-143.597	7	-.104	4	-.151	7	.014	3
49		5	max	0	1	0	3	0	4	0	8	0	1	0	3
50			min	0	1	-.006	8	-.01	7	0	3	0	1	0	4
51	MP1C	1	max	0	1	.31	8	.367	5	0	3	0	1	0	1
52			min	0	1	-.21	3	-.095	2	0	8	0	1	0	1
53		2	max	236.058	5	129.895	4	111.002	1	0	3	.07	1	.08	3
54			min	102.932	3	-129.851	3	-110.908	2	0	8	-.07	2	-.08	4
55		3	max	155.654	3	48.755	4	51.768	2	.136	3	.142	8	.18	4
56			min	-100.788	4	-107.633	3	-209.494	5	-.139	4	.012	3	-.231	3
57		4	max	314.253	7	159.846	4	-45.722	2	.136	3	-.066	2	.291	3
58			min	-16.859	4	-218.724	3	-185.802	5	-.139	4	-.334	5	-.195	4
59		5	max	0	7	.014	3	.007	4	0	8	0	7	0	3
60			min	0	2	-.024	8	-.042	7	0	3	0	2	0	8
61	M12	1	max	283.608	4	442.753	5	310.917	4	.571	5	.093	3	.33	3
62			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.059	4	-.3	4
63		2	max	283.608	4	442.753	5	310.917	4	.571	5	.063	3	.323	3
64			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.039	4	-.31	4
65		3	max	283.608	4	442.753	5	310.917	4	.571	5	.033	3	.316	3
66			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.02	4	-.319	4
67		4	max	283.608	4	442.753	5	310.917	4	.571	5	.01	6	.309	3
68			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.005	1	-.328	4
69		5	max	283.608	4	442.753	5	310.917	4	.571	5	.019	4	.303	3



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...]	LC	y-y Mome...	LC	z-z Mom...	LC
70		min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.028	3	-.338	4
71	M13	max	130.596	4	401.016	7	263.118	5	.464	7	.02	2	.025	8
72		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.06	5	-.003	1
73		max	130.596	4	401.016	7	263.118	5	.464	7	.022	4	.011	4
74		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.045	3	-.018	3
75		max	130.596	4	401.016	7	263.118	5	.464	7	.031	4	.01	4
76		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.043	3	-.033	7
77		max	130.596	4	401.016	7	263.118	5	.464	7	.041	4	.009	4
78		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.042	3	-.059	7
79		max	130.596	4	401.016	7	263.118	5	.464	7	.05	4	.008	4
80		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.041	3	-.084	7
81	M14	max	277.852	4	308.101	6	88.432	4	.421	5	.059	6	.025	7
82		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.011	1	.008	4
83		max	277.852	4	308.101	6	88.432	4	.421	5	.043	6	.012	1
84		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.006	1	-.006	2
85		max	277.852	4	308.101	6	88.432	4	.421	5	.028	8	.014	1
86		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.001	1	-.024	2
87		max	277.852	4	308.101	6	88.432	4	.421	5	.021	4	.016	1
88		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.016	3	-.043	6
89		max	277.852	4	308.101	6	88.432	4	.421	5	.026	4	.018	1
90		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.031	3	-.062	6
91	M15	max	28.596	3	332.55	5	220.6	5	.394	7	.005	2	.076	4
92		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.057	5	-.049	3
93		max	28.596	3	332.55	5	220.6	5	.394	7	.007	2	.071	4
94		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.043	5	-.06	3
95		max	28.596	3	332.55	5	220.6	5	.394	7	.009	2	.065	4
96		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.03	5	-.071	3
97		max	28.596	3	332.55	5	220.6	5	.394	7	.011	2	.06	4
98		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.016	1	-.082	3
99		max	28.596	3	332.55	5	220.6	5	.394	7	.013	2	.055	4
100		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.009	1	-.093	3
101	M16	max	158.617	4	315.31	5	208.456	1	-.006	4	.099	4	.035	5
102		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.123	3	.011	2
103		max	158.617	4	315.31	5	208.456	1	-.006	4	.105	4	.016	7
104		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.122	3	.004	1
105		max	158.617	4	315.31	5	208.456	1	-.006	4	.111	4	.005	2
106		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.12	3	-.009	1
107		max	158.617	4	315.31	5	208.456	1	-.006	4	.116	4	.003	2
108		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.119	3	-.024	5
109		max	158.617	4	315.31	5	208.456	1	-.006	4	.122	4	0	2
110		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.117	3	-.044	5
111	M17	max	311.007	4	324.813	7	299.723	1	.017	4	.081	4	.175	3
112		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.112	3	-.171	4
113		max	311.007	4	324.813	7	299.723	1	.017	4	.099	4	.16	3
114		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.119	3	-.171	4
115		max	311.007	4	324.813	7	299.723	1	.017	4	.116	4	.146	3
116		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.126	3	-.171	4
117		max	311.007	4	324.813	7	299.723	1	.017	4	.133	4	.131	3
118		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.133	3	-.171	4
119		max	311.007	4	324.813	7	299.723	1	.017	4	.15	4	.117	3
120		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.141	3	-.171	4
121	M18	max	77.898	4	207.278	6	45.349	4	.011	4	.13	3	.022	3
122		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.106	4	-.009	4
123		max	77.898	4	207.278	6	45.349	4	.011	4	.12	3	.018	3
124		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.104	4	-.015	4
125		max	77.898	4	207.278	6	45.349	4	.011	4	.11	3	.014	3
126		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.101	4	-.022	4



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
127	4	max	77.898	4	207.278	6	45.349	4	.011	4	.1	3	.009	3	
128		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.098	4	-.029	8	
129	5	max	77.898	4	207.278	6	45.349	4	.011	4	.09	3	.005	3	
130		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.095	4	-.041	8	
131	M19	1	max	194.64	4	347.211	7	22.23	4	-.005	4	.154	3	.245	3
132		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.127	4	-.236	4	
133	2	max	194.64	4	347.211	7	22.23	4	-.005	4	.144	3	.23	3	
134		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.126	4	-.236	4	
135	3	max	194.64	4	347.211	7	22.23	4	-.005	4	.133	3	.214	3	
136		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.124	4	-.235	4	
137	4	max	194.64	4	347.211	7	22.23	4	-.005	4	.123	3	.198	3	
138		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.123	4	-.235	4	
139	5	max	194.64	4	347.211	7	22.23	4	-.005	4	.112	3	.183	3	
140		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.122	4	-.234	4	
141	M19A	1	max	1087.386	4	1426.506	5	799.164	4	.058	1	0	3	.686	3
142		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	0	4	-.33	4	
143	2	max	1087.386	4	1426.506	5	799.164	4	.058	1	.05	4	.647	3	
144		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.053	3	-.36	4	
145	3	max	1087.386	4	1426.506	5	799.164	4	.058	1	.1	4	.609	3	
146		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.105	3	-.39	4	
147	4	max	1087.386	4	1426.506	5	799.164	4	.058	1	.15	4	.57	3	
148		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.158	3	-.42	4	
149	5	max	1087.386	4	1426.506	5	799.164	4	.058	1	.2	4	.532	3	
150		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.21	3	-.45	4	
151	M20	1	max	249.911	2	1404.892	7	355.29	4	.124	4	0	4	.47	7
152		min	-172.538	1	283.01	4	-305.511	3	-.266	7	0	3	-.081	4	
153	2	max	249.911	2	1404.892	7	355.29	4	.124	4	.022	4	.382	7	
154		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.019	3	-.098	4	
155	3	max	249.911	2	1404.892	7	355.29	4	.124	4	.044	4	.314	3	
156		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.038	3	-.116	4	
157	4	max	249.911	2	1404.892	7	355.29	4	.124	4	.067	4	.266	3	
158		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.057	3	-.134	4	
159	5	max	249.911	2	1404.892	7	355.29	4	.124	4	.089	4	.218	3	
160		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.076	3	-.152	4	
161	M27	1	max	260.742	2	689.224	7	496.863	4	.158	4	1.191	3	.913	7
162		min	-524.403	1	127.529	4	-517.464	3	-.188	3	-1.195	4	.167	4	
163	2	max	256.677	2	672.533	7	489.822	4	.171	4	.8	3	.566	7	
164		min	-520.339	1	120.954	4	-510.424	3	-.188	3	-.801	4	.048	4	
165	3	max	156.508	2	357.754	7	323.335	4	.171	4	.463	3	.209	5	
166		min	-307.764	1	13.919	4	-334.422	3	-.175	3	-.474	4	0	2	
167	4	max	152.443	2	341.062	7	316.294	4	.171	4	.132	3	.021	4	
168		min	-303.699	1	7.345	4	-327.381	3	-.175	3	-.154	4	-.15	6	
169	5	max	0	1	0	3	0	2	0	1	0	1	0	1	
170		min	0	1	0	1	-.004	4	0	1	0	1	0	1	
171	M28	1	max	411.479	7	625.055	7	155.796	2	.239	4	.396	3	.883	5
172		min	-131.007	4	159.12	4	-121.237	1	-.271	3	-.444	4	.221	4	
173	2	max	409.968	7	608.363	7	153.45	2	.239	4	.336	3	.594	7	
174		min	-126.942	4	152.545	4	-118.89	1	-.271	3	-.347	4	.065	4	
175	3	max	240.003	7	403.687	7	111.01	2	.231	4	.219	3	.182	7	
176		min	-77.499	4	40.094	4	-87.191	1	-.248	3	-.229	4	.01	4	
177	4	max	238.493	7	386.996	7	108.663	2	.231	4	.24	3	-.026	4	
178		min	-73.434	4	33.52	4	-84.844	1	-.248	3	-.223	4	-.217	5	
179	5	max	0	1	0	3	0	2	0	1	0	1	0	1	
180		min	0	1	0	1	0	4	0	1	0	1	0	1	
181	M19B	1	max	0	1	.001	1	.003	3	0	1	0	1	0	1
182		min	0	1	0	8	0	1	0	1	0	1	0	1	
183	2	max	224.295	2	93.384	3	255.242	1	.331	4	.083	4	.175	3	



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
184		min	-379.809	1	-478.628	8	-234.942	2	-.311	3	-.107	3	-.31	4
185	3	max	228.36	2	86.81	3	257.589	1	.331	4	.33	1	.257	5
186		min	-383.874	1	-495.319	8	-237.289	2	-.311	3	-.332	2	-.035	2
187	4	max	316.996	2	-39.073	1	521.905	4	.275	4	.572	1	.345	5
188		min	-612.701	1	-679.877	6	-479.129	3	-.274	3	-.585	2	-.028	2
189	5	max	321.061	2	-45.647	1	528.946	4	.275	4	1.039	4	.967	6
190		min	-616.766	1	-696.569	6	-486.169	3	-.274	3	-1.018	3	.279	1
191	M20A	1	max	0	1	0	1	.003	3	0	1	0	1	1
192		min	0	1	0	8	0	2	0	1	0	1	0	1
193	2	max	241.749	8	-77.17	2	139.955	4	.026	2	.158	4	-.024	3
194		min	-52.931	3	-400.656	5	-168.583	3	-.018	1	-.145	3	-.184	8
195	3	max	243.26	8	-83.744	2	146.996	4	.026	2	.302	4	.229	5
196		min	-56.996	3	-417.348	5	-175.623	3	-.018	1	-.317	3	.025	2
197	4	max	460.493	8	-4.793	3	122.334	4	.1	2	.514	4	.29	5
198		min	-48.645	3	-893.305	8	-176.761	3	-.07	1	-.526	3	-.009	2
199	5	max	462.003	8	-11.367	3	129.375	4	.1	2	.64	4	1.162	5
200		min	-52.71	3	-909.997	8	-183.801	3	-.07	1	-.707	3	.167	2
201	MP4B	1	max	0	1	1.31	4	1.238	5	0	3	0	1	1
202		min	0	1	-1.34	3	-.683	2	0	4	0	1	0	1
203	2	max	477.294	6	351.844	4	245.074	1	0	3	.322	1	.474	3
204		min	171.212	1	-351.874	3	-244.888	2	0	4	-.321	2	-.474	4
205	3	max	84.223	1	155.431	3	36.043	2	.024	3	.171	5	-.197	3
206		min	-27.093	2	-105.833	4	-230.108	5	-.027	4	-.053	2	-.177	4
207	4	max	350.284	5	194.804	4	21.099	1	.024	3	-.078	2	-.026	3
208		min	60.119	2	-145.206	3	-225.714	6	-.027	4	-.377	5	-.162	8
209	5	max	0	5	.018	5	-.003	2	0	2	0	1	0	4
210		min	0	2	-.003	2	-.045	5	0	5	0	1	0	3
211	MP3B	1	max	0	1	.314	4	.511	5	0	3	0	1	1
212		min	0	1	-.346	3	-.108	2	0	4	0	1	0	1
213	2	max	307.713	5	155.744	4	107.444	1	0	3	.069	1	.093	3
214		min	145.532	1	-155.776	3	-107.31	2	0	4	-.068	2	-.093	4
215	3	max	416.845	4	86.526	7	-7.725	3	.033	3	.149	8	.076	2
216		min	-183.652	3	-34.768	4	-202.093	8	-.038	4	-.013	3	-.048	1
217	4	max	456.164	4	83.227	6	-7.725	3	.033	3	-.032	3	.01	1
218		min	-144.333	3	-23.407	1	-202.093	8	-.038	4	-.356	8	-.151	6
219	5	max	0	1	.016	5	-.002	3	0	2	0	1	0	4
220		min	0	1	-.001	2	-.039	8	0	5	0	1	0	3
221	MP2B	1	max	0	1	.199	8	.015	1	0	2	0	1	1
222		min	0	1	-.033	2	-.196	6	0	8	0	1	0	1
223	2	max	23.092	5	13.653	4	13.586	1	0	2	.012	1	.012	3
224		min	7.289	3	-13.595	3	-13.641	2	0	8	-.012	2	-.012	4
225	3	max	221.675	4	33.823	3	115.667	5	.14	1	.013	2	0	3
226		min	-170.393	3	-115.677	8	23.512	2	-.137	2	-.083	5	-.079	8
227	4	max	308.284	4	.901	4	164.383	1	.14	1	.129	5	.114	8
228		min	-83.784	3	-106.228	7	-74.822	2	-.137	2	.021	2	-.024	3
229	5	max	0	1	.002	2	.01	6	0	5	0	1	0	1
230		min	0	1	-.008	5	0	1	0	2	0	8	0	1
231	MP1B	1	max	0	1	.33	8	.144	1	0	3	0	1	1
232		min	0	1	-.189	3	-.403	6	0	8	0	1	0	1
233	2	max	236.058	8	129.902	4	110.957	1	0	3	.07	1	.08	3
234		min	102.932	9	-129.83	3	-111.043	2	0	8	-.071	2	-.08	4
235	3	max	153.032	9	99.619	1	186.301	5	.161	1	.144	2	.159	1
236		min	-84.74	2	-193.499	2	-25.672	2	-.161	2	-.239	1	-.225	2
237	4	max	294.004	5	99.619	1	249.626	1	.161	1	.36	1	.269	6
238		min	-.811	2	-193.499	2	-123.162	2	-.161	2	-.14	2	-.09	1
239	5	max	0	8	.02	2	.039	6	0	5	0	8	0	6
240		min	0	2	-.04	5	-.01	1	0	2	0	2	0	1



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
241	M25	1	max	232.372	2	462.449	8	219.881	2	.605	8	.117	1	.331	4
242			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.079	2	-.311	3
243		2	max	232.372	2	462.449	8	219.881	2	.605	8	.094	1	.308	4
244			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.066	2	-.305	3
245		3	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.284	4
246			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.057	3	-.298	3
247		4	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.261	4
248			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.067	3	-.292	3
249		5	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.238	4
250			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.076	3	-.286	3
251	M26	1	max	161.813	3	383.291	5	240.252	8	.476	5	.02	3	.026	2
252			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.063	8	-.018	1
253		2	max	161.813	3	383.291	5	240.252	8	.476	5	.017	3	.022	2
254			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.048	8	-.03	1
255		3	max	161.813	3	383.291	5	240.252	8	.476	5	.014	3	.017	2
256			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.033	8	-.041	1
257		4	max	161.813	3	383.291	5	240.252	8	.476	5	.013	2	.013	2
258			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.021	1	-.062	5
259		5	max	161.813	3	383.291	5	240.252	8	.476	5	.025	2	.008	2
260			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.023	1	-.085	5
261	M27A	1	max	269.249	3	390.035	3	84.633	2	.444	6	.063	8	.061	2
262			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.023	3	-.081	1
263		2	max	269.249	3	390.035	3	84.633	2	.444	6	.06	4	.051	2
264			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.033	3	-.081	1
265		3	max	269.249	3	390.035	3	84.633	2	.444	6	.062	4	.04	2
266			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.044	3	-.082	1
267		4	max	269.249	3	390.035	3	84.633	2	.444	6	.063	4	.029	2
268			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.054	3	-.082	1
269		5	max	269.249	3	390.035	3	84.633	2	.444	6	.065	4	.018	2
270			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.064	3	-.089	7
271	M28A	1	max	45.111	1	470.952	8	215.743	8	.451	8	.031	3	.074	2
272			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.067	4	-.052	1
273		2	max	45.111	1	470.952	8	215.743	8	.451	8	.032	3	.069	2
274			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.059	4	-.067	1
275		3	max	45.111	1	470.952	8	215.743	8	.451	8	.033	3	.064	2
276			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.051	4	-.083	1
277		4	max	45.111	1	470.952	8	215.743	8	.451	8	.033	3	.059	2
278			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.043	4	-.099	1
279		5	max	45.111	1	470.952	8	215.743	8	.451	8	.034	3	.053	2
280			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.035	4	-.115	1
281	M29	1	max	180.733	3	282.647	3	172.619	8	.027	2	.105	2	.106	3
282			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.129	1	-.121	4
283		2	max	180.733	3	282.647	3	172.619	8	.027	2	.113	2	.089	3
284			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.13	1	-.115	4
285		3	max	180.733	3	282.647	3	172.619	8	.027	2	.121	2	.071	3
286			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.13	1	-.108	4
287		4	max	180.733	3	282.647	3	172.619	8	.027	2	.129	2	.053	3
288			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.131	1	-.101	4
289		5	max	180.733	3	282.647	3	172.619	8	.027	2	.138	2	.036	3
290			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.132	1	-.094	4
291	M30	1	max	255.536	3	333.437	5	403.832	2	.045	2	.08	2	.166	1
292			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.114	1	-.169	2
293		2	max	255.536	3	333.437	5	403.832	2	.045	2	.105	2	.151	1
294			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.128	1	-.169	2
295		3	max	255.536	3	333.437	5	403.832	2	.045	2	.13	2	.136	1
296			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.142	1	-.168	2
297		4	max	255.536	3	333.437	5	403.832	2	.045	2	.155	2	.121	1





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
298		min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.157	1	-.168	2
299	5	max	255.536	3	333.437	5	403.832	2	.045	2	.181	2	.105	1
300		min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.171	1	-.167	2
301	M31	1	max	55.779	3	315.547	4	74.967	2	.045	2	.18	.023	1
302		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.156	2	-.016	2
303	2	max	55.779	3	315.547	4	74.967	2	.045	2	.168	1	.01	1
304		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.152	2	-.018	6
305	3	max	55.779	3	315.547	4	74.967	2	.045	2	.156	1	-.003	1
306		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.147	2	-.034	6
307	4	max	55.779	3	315.547	4	74.967	2	.045	2	.144	1	0	3
308		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.142	2	-.052	8
309	5	max	55.779	3	315.547	4	74.967	2	.045	2	.132	1	.005	3
310		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.138	2	-.072	8
311	M32	1	max	239.162	2	326.949	5	27.052	2	-.024	2	.217	.327	1
312		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.187	2	-.32	2
313	2	max	239.162	2	326.949	5	27.052	2	-.024	2	.206	1	.313	1
314		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.186	2	-.321	2
315	3	max	239.162	2	326.949	5	27.052	2	-.024	2	.194	1	.299	1
316		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.184	2	-.321	2
317	4	max	239.162	2	326.949	5	27.052	2	-.024	2	.183	1	.286	1
318		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.182	2	-.322	2
319	5	max	239.162	2	326.949	5	27.052	2	-.024	2	.171	1	.272	1
320		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.181	2	-.322	2
321	M33	1	max	951.726	3	1287.11	7	873.88	2	.131	1	.045	.327	8
322		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.054	2	-.092	3
323	2	max	951.726	3	1287.11	7	873.88	2	.131	1	.002	9	.297	4
324		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.048	5	-.136	3
325	3	max	951.726	3	1287.11	7	873.88	2	.131	1	.056	2	.281	4
326		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.065	1	-.18	3
327	4	max	951.726	3	1287.11	7	873.88	2	.131	1	.11	2	.264	4
328		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.12	1	-.224	3
329	5	max	951.726	3	1287.11	7	873.88	2	.131	1	.165	2	.248	4
330		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.175	1	-.267	3
331	M34	1	max	260.832	3	1638.061	8	528.006	2	.148	9	.515	.506	5
332		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.519	4	-.15	2
333	2	max	260.832	3	1638.061	8	528.006	2	.148	9	.503	3	.445	1
334		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.506	4	-.17	2
335	3	max	260.832	3	1638.061	8	528.006	2	.148	9	.491	3	.39	1
336		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.493	4	-.189	2
337	4	max	260.832	3	1638.061	8	528.006	2	.148	9	.48	3	.336	1
338		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.48	4	-.208	2
339	5	max	260.832	3	1638.061	8	528.006	2	.148	9	.468	3	.281	1
340		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.468	4	-.227	2
341	M35	1	max	263.934	1	628.14	7	464.423	3	.158	2	1.103	.897	7
342		min	-550.437	2	73.869	4	-496.72	4	-.14	1	-1.098	3	.263	2
343	2	max	259.869	1	611.448	7	457.383	3	.169	2	.662	4	.598	5
344		min	-546.372	2	67.295	4	-489.68	4	-.166	1	-.668	3	.078	2
345	3	max	240.338	1	366.434	5	269.741	3	.169	2	.38	4	.236	8
346		min	-410.077	2	4.568	2	-278.078	4	-.166	1	-.395	3	-.007	3
347	4	max	236.273	1	349.743	5	262.701	3	.169	2	.106	4	.041	2
348		min	-406.012	2	-2.007	2	-271.038	4	-.166	1	-.129	3	-.139	1
349	5	max	0	1	0	5	.002	3	0	1	0	1	0	1
350		min	0	1	0	4	-.004	2	0	1	0	1	0	1
351	M36	1	max	491.1	1	729.346	8	171.797	1	.327	2	.172	1.021	8
352		min	-216.252	2	21.021	3	-119.376	2	-.351	1	-.239	3	.047	3
353	2	max	487.035	1	712.654	8	174.144	1	.327	2	.148	4	.568	8
354		min	-212.188	2	87.17	2	-168.74	2	-.351	1	-.165	3	.136	3



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
355	3	max	291.242	1	381.711	8	199.838	1	.312	2	.119	4	.18	5	
356		min	-133.157	2	80.595	2	-171.087	2	-.328	1	-.131	3	.036	2	
357	4	max	287.177	1	365.019	8	202.185	1	.312	2	.277	1	-.033	3	
358		min	-129.093	2	74.021	2	-173.433	2	-.328	1	-.259	2	-.195	8	
359	5	max	0	1	0	1	0	3	0	1	0	1	0	1	
360		min	0	1	0	4	0	2	0	1	0	1	0	1	
361	M37	1	max	0	1	0	1	0	0	1	0	1	0	1	
362		min	0	1	0	1	0	1	0	1	0	1	0	1	
363	2	max	157.105	1	14.295	4	308.56	2	.459	2	.108	2	.162	4	
364		min	-319.482	2	-456.946	7	-284.831	1	-.425	1	-.147	1	-.291	3	
365	3	max	157.105	1	7.72	4	317.947	2	.459	2	.421	2	.255	6	
366		min	-319.482	2	-473.638	7	-294.219	1	-.425	1	-.436	1	.009	3	
367	4	max	212.966	3	-167.574	2	702.304	2	.45	2	.741	2	.354	6	
368		min	-541.12	8	-752.26	5	-653.475	1	-.374	1	-.784	1	.017	1	
369	5	max	212.966	3	-174.148	2	711.692	2	.45	2	1.448	2	1.069	5	
370		min	-541.12	8	-768.952	5	-662.862	1	-.374	1	-1.442	1	.374	2	
371	M38	1	max	0	1	0	1	0	0	1	0	1	0	1	
372		min	0	1	0	1	0	1	0	1	0	1	0	1	
373	2	max	253.794	7	-42.834	1	151.053	2	.042	5	.181	2	-.022	1	
374		min	-14.932	4	-424.124	6	-193.887	1	-.102	9	-.159	1	-.169	6	
375	3	max	253.794	7	-49.408	1	160.44	2	.042	5	.337	2	.286	9	
376		min	-14.932	4	-440.815	6	-203.274	1	-.102	9	-.357	1	.024	1	
377	4	max	474.343	7	69.583	1	139.952	2	.104	3	.562	2	.353	9	
378		min	10.314	4	-812.755	6	-206.401	1	-.04	4	-.575	1	.024	1	
379	5	max	474.343	7	63.009	1	149.34	2	.104	3	.707	2	1.171	6	
380		min	10.314	4	-829.447	6	-215.789	1	-.04	4	-.786	1	-.043	1	
381	MP4A	1	max	0	1	1.085	8	1.545	1	0	3	0	1	0	1
382		min	0	1	-.459	3	-1.615	2	0	8	0	1	0	1	
383	2	max	477.294	6	191.686	4	405.243	1	0	3	.551	1	.245	3	
384		min	171.212	2	-191.5	3	-405.313	2	0	8	-.551	2	-.245	4	
385	3	max	129.573	2	-4.71	3	228.309	2	.03	1	.262	1	.011	3	
386		min	-473.12	9	-245.855	8	-185.001	1	-.029	2	-.304	2	-.163	8	
387	4	max	373.512	6	-4.462	4	164.821	1	.03	1	.096	6	.444	6	
388		min	-385.908	9	-245.804	7	-121.513	2	-.029	2	-.037	9	.045	1	
389	5	max	0	6	0	1	.016	5	0	6	0	1	0	1	
390		min	0	1	-.052	6	-.006	9	0	1	0	1	0	2	
391	MP3A	1	max	0	1	.488	8	.342	1	0	3	0	1	0	1
392		min	0	1	-.045	3	-.372	2	0	8	0	1	0	1	
393	2	max	307.713	8	83.271	4	179.886	1	0	3	.105	1	.056	3	
394		min	145.532	2	-83.133	3	-179.915	2	0	8	-.105	2	-.057	4	
395	3	max	330.808	2	-26.366	1	107.344	2	.023	4	.059	1	-.029	4	
396		min	-175.29	1	-212.985	6	-83.6	1	-.028	3	-.078	2	-.149	7	
397	4	max	370.127	2	-26.366	1	49.397	2	.023	4	.071	2	.386	6	
398		min	-135.971	1	-212.985	6	-25.654	1	-.028	3	-.03	1	.028	1	
399	5	max	0	1	0	1	.008	7	0	6	0	1	0	1	
400		min	0	1	-.042	6	-.001	4	0	1	0	1	0	2	
401	MP2A	1	max	0	1	-.026	1	.034	1	0	7	0	1	0	1
402		min	0	1	-.256	7	-.054	6	0	1	0	1	0	1	
403	2	max	23.092	6	13.54	4	13.605	1	0	7	.012	1	.012	3	
404		min	7.289	4	-13.622	3	-13.617	2	0	1	-.012	2	-.012	4	
405	3	max	39.936	1	160.19	6	55.721	2	.092	4	.008	4	.113	6	
406		min	-48.303	2	18.692	1	-37.055	1	-.091	3	-.022	3	.013	1	
407	4	max	182.804	5	171.301	8	82.797	1	.092	4	.048	2	-.02	1	
408		min	38.306	2	-34.633	3	-64.131	2	-.091	3	-.029	1	-.167	6	
409	5	max	0	1	.011	7	.003	8	0	4	0	1	0	1	
410		min	0	1	0	4	-.001	3	0	7	0	6	0	2	
411	MP1A	1	max	0	1	.061	4	.224	1	0	7	0	1	0	1



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
412			0	1	-.423	7	-.242	2	0	4	0	1	0	1	
413	2	max	236.058	7	101.46	4	139.28	1	0	7	.085	1	.066	3	
414		min	102.932	3	-101.57	3	-139.297	2	0	4	-.085	2	-.065	4	
415	3	max	119.636	2	222.821	6	147.413	3	.1	4	.154	4	.174	6	
416		min	-62.841	1	10.937	1	-119.142	4	-105	3	-.164	3	0	1	
417	4	max	310.429	6	222.821	6	147.413	3	.1	4	.204	3	-.027	1	
418		min	21.088	1	10.937	1	-119.142	4	-105	3	-.144	4	-.383	6	
419	5	max	0	6	.039	6	.021	8	0	1	0	6	0	3	
420		min	0	1	.003	1	-.015	3	0	6	0	1	0	4	
421	M43	1	max	274.155	1	440.863	7	154.641	1	.578	7	.121	2	.459	2
422		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.065	1	-.425	1	
423	2	max	274.155	1	440.863	7	154.641	1	.578	7	.101	2	.442	2	
424		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.055	1	-.425	1	
425	3	max	274.155	1	440.863	7	154.641	1	.578	7	.081	2	.425	2	
426		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.045	1	-.424	1	
427	4	max	274.155	1	440.863	7	154.641	1	.578	7	.061	2	.409	2	
428		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.036	1	-.424	1	
429	5	max	274.155	1	440.863	7	154.641	1	.578	7	.041	2	.392	2	
430		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.026	1	-.423	1	
431	M44	1	max	184.204	1	406.524	6	253.817	7	.483	6	.016	1	.042	5
432		min	-140.839	2	-375.573	9	-15	4	.052	1	-.094	7	-.102	9	
433	2	max	184.204	1	406.524	6	253.817	7	.483	6	.018	1	.019	5	
434		min	-140.839	2	-375.573	9	-15	4	.052	1	-.078	6	-.078	9	
435	3	max	184.204	1	406.524	6	253.817	7	.483	6	.021	1	.012	1	
436		min	-140.839	2	-375.573	9	-15	4	.052	1	-.064	6	-.055	9	
437	4	max	184.204	1	406.524	6	253.817	7	.483	6	.023	1	.01	1	
438		min	-140.839	2	-375.573	9	-15	4	.052	1	-.049	6	-.045	6	
439	5	max	184.204	1	406.524	6	253.817	7	.483	6	.026	1	.008	1	
440		min	-140.839	2	-375.573	9	-15	4	.052	1	-.041	2	-.071	6	
441	M45	1	max	350.574	1	381.565	1	63.354	3	.439	7	.091	8	.051	1
442		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.01	1	-.025	9	
443	2	max	350.574	1	381.565	1	63.354	3	.439	7	.077	6	.027	1	
444		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.011	1	-.029	9	
445	3	max	350.574	1	381.565	1	63.354	3	.439	7	.063	6	.021	3	
446		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.013	1	-.033	9	
447	4	max	350.574	1	381.565	1	63.354	3	.439	7	.05	6	.018	3	
448		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.015	1	-.037	9	
449	5	max	350.574	1	381.565	1	63.354	3	.439	7	.037	6	.022	2	
450		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.017	1	-.045	5	
451	M46	1	max	32.315	8	380.544	2	220.554	7	.422	6	.014	4	.083	3
452		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.095	7	-.038	4	
453	2	max	32.315	8	380.544	2	220.554	7	.422	6	.016	4	.069	3	
454		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.082	7	-.041	4	
455	3	max	32.315	8	380.544	2	220.554	7	.422	6	.017	4	.055	3	
456		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.068	7	-.043	4	
457	4	max	32.315	8	380.544	2	220.554	7	.422	6	.019	4	.042	3	
458		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.054	7	-.046	4	
459	5	max	32.315	8	380.544	2	220.554	7	.422	6	.02	4	.043	1	
460		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.04	7	-.063	2	
461	M47	1	max	193.697	1	296.794	6	181.315	7	-.036	1	.051	1	.059	8
462		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.092	2	.007	3	
463	2	max	193.697	1	296.794	6	181.315	7	-.036	1	.053	1	.041	8	
464		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.086	2	-.002	3	
465	3	max	193.697	1	296.794	6	181.315	7	-.036	1	.054	1	.026	4	
466		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.08	2	-.011	3	
467	4	max	193.697	1	296.794	6	181.315	7	-.036	1	.063	3	.02	4	
468		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.083	4	-.019	3	





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
469	5	max	193.697	1	296.794	6	181.315	7	-.036	1	.074	3	.014	4	
470		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.086	4	-.028	3	
471	M48	1	max	325.851	1	320.491	8	382.608	3	-.002	3	.059	1	.138	2
472		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.11	2	-.131	1	
473		2	max	325.851	1	320.491	8	382.608	3	-.002	3	.066	1	.127	2
474		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.106	2	-.134	1	
475		3	max	325.851	1	320.491	8	382.608	3	-.002	3	.072	1	.116	2
476		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.102	2	-.138	1	
477		4	max	325.851	1	320.491	8	382.608	3	-.002	3	.079	1	.105	2
478		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.099	2	-.141	1	
479		5	max	325.851	1	320.491	8	382.608	3	-.002	3	.086	1	.094	2
480		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.095	2	-.145	1	
481	M49	1	max	96.333	1	205.899	5	48.2	3	-.023	3	.15	4	.027	2
482		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.108	3	0	1	
483		2	max	96.333	1	205.899	5	48.2	3	-.023	3	.139	4	.024	2
484		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.105	3	-.009	1	
485		3	max	96.333	1	205.899	5	48.2	3	-.023	3	.129	4	.021	2
486		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.102	3	-.018	1	
487		4	max	96.333	1	205.899	5	48.2	3	-.023	3	.118	4	.018	2
488		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.099	3	-.026	1	
489		5	max	96.333	1	205.899	5	48.2	3	-.023	3	.108	4	.016	2
490		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.096	3	-.034	1	
491	M50	1	max	147.251	3	343.42	6	-10.65	1	-.029	1	.146	4	.216	4
492		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.096	3	-.196	3	
493		2	max	147.251	3	343.42	6	-10.65	1	-.029	1	.138	4	.207	4
494		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.098	3	-.202	3	
495		3	max	147.251	3	343.42	6	-10.65	1	-.029	1	.13	4	.197	4
496		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.1	3	-.208	3	
497		4	max	147.251	3	343.42	6	-10.65	1	-.029	1	.122	4	.188	4
498		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.101	3	-.213	3	
499		5	max	147.251	3	343.42	6	-10.65	1	-.029	1	.113	4	.178	4
500		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.103	3	-.219	3	
501	M51	1	max	1219.366	1	1412.099	7	769.966	3	.109	2	0	3	.746	2
502		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	0	4	-.343	1	
503		2	max	1219.366	1	1412.099	7	769.966	3	.109	2	.048	3	.712	2
504		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.05	4	-.377	1	
505		3	max	1219.366	1	1412.099	7	769.966	3	.109	2	.096	3	.678	2
506		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.1	4	-.412	1	
507		4	max	1219.366	1	1412.099	7	769.966	3	.109	2	.144	3	.644	2
508		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.15	4	-.447	1	
509		5	max	1219.366	1	1412.099	7	769.966	3	.109	2	.192	3	.61	2
510		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.201	4	-.482	1	
511	M52	1	max	472.726	1	1454.18	6	397.568	3	.294	1	0	3	.541	6
512		min	-346.659	2	140.606	1	-366.339	4	-.608	9	0	1	-.072	1	
513		2	max	472.726	1	1454.18	6	397.568	3	.294	1	.025	3	.45	6
514		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.023	4	-.081	1	
515		3	max	472.726	1	1454.18	6	397.568	3	.294	1	.05	3	.359	6
516		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.046	4	-.09	1	
517		4	max	472.726	1	1454.18	6	397.568	3	.294	1	.075	3	.28	2
518		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.069	4	-.099	1	
519		5	max	472.726	1	1454.18	6	397.568	3	.294	1	.099	3	.222	2
520		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.092	4	-.107	1	
521	M53	1	max	276.406	4	682.004	6	557.088	1	.108	1	1.377	2	.932	6
522		min	-556.499	3	154.174	1	-594.593	2	-.16	2	-1.379	1	.218	1	
523		2	max	276.406	4	665.312	6	547.701	1	.131	1	.88	2	.571	6
524		min	-556.499	3	147.6	1	-585.206	2	-.16	2	-.878	1	.103	1	
525		3	max	220.362	4	353.456	8	344.161	1	.131	1	.512	2	.211	6



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
526		min	-382.372	3	67.774	3	-363.238	2	-.138	2	-.529	1	.031	1	
527	4	max	220.362	4	336.764	8	334.774	1	.131	1	.153	2	.042	3	
528		min	-382.372	3	61.199	3	-353.851	2	-.138	2	-.19	1	-.152	8	
529	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
530		min	0	1	0	1	0	1	0	1	0	1	0	1	
531	M54	1	max	425.438	8	626.024	6	257.189	1	.185	3	.703	2	.904	6
532		min	-101.165	3	203.621	1	-197.876	2	-.24	4	-.775	1	.251	1	
533	2	max	425.438	8	609.333	6	247.802	1	.187	3	.51	2	.6	6	
534		min	-101.165	3	197.046	1	-188.489	2	-.24	4	-.523	1	.088	1	
535	3	max	248.512	8	403.521	6	195.85	4	.187	3	.312	2	.188	6	
536		min	-52.97	3	56.635	1	-156.084	3	-.217	4	-.324	1	.028	1	
537	4	max	248.512	8	386.829	6	195.85	4	.187	3	.214	2	-.025	1	
538		min	-52.97	3	50.061	1	-156.084	3	-.217	4	-.187	1	-.207	6	
539	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
540		min	0	1	0	1	0	1	0	1	0	1	0	1	
541	M58	1	max	395.095	1	254.93	1	5.465	3	.16	1	0	1	.236	1
542		min	-408.851	2	-213.272	2	-5.465	4	-.164	2	0	1	-.207	2	
543	2	max	393.518	1	252.973	1	2.732	3	.16	1	.002	3	.117	1	
544		min	-407.273	2	-215.229	2	-2.732	4	-.164	2	-.002	4	-.106	2	
545	3	max	391.94	1	251.016	1	0	1	.16	1	.003	3	.018	4	
546		min	-405.696	2	-217.186	2	0	1	-.164	2	-.003	4	-.026	3	
547	4	max	390.363	1	249.06	1	2.732	4	.16	1	.002	3	.098	2	
548		min	-404.118	2	-219.143	2	-2.732	3	-.164	2	-.002	4	-.119	1	
549	5	max	388.785	1	247.103	1	5.465	4	.16	1	0	1	.201	2	
550		min	-402.54	2	-221.099	2	-5.465	3	-.164	2	0	1	-.235	1	
551	M59	1	max	221.925	4	180.72	2	5.465	4	.122	4	0	1	.164	2
552		min	-231.169	3	-126.731	1	-5.465	3	-.128	3	0	1	-.132	1	
553	2	max	220.347	4	178.764	2	2.732	4	.122	4	.002	4	.08	2	
554		min	-229.592	3	-128.688	1	-2.732	3	-.128	3	-.002	3	-.072	1	
555	3	max	218.77	4	176.807	2	0	1	.122	4	.003	4	-.004	2	
556		min	-228.014	3	-130.645	1	0	1	-.128	3	-.003	3	-.029	5	
557	4	max	217.192	4	174.85	2	2.732	3	.122	4	.002	4	.051	1	
558		min	-226.437	3	-132.602	1	-2.732	4	-.128	3	-.002	3	-.087	2	
559	5	max	215.615	4	172.894	2	5.465	3	.122	4	0	1	.113	1	
560		min	-224.859	3	-134.558	1	-5.465	4	-.128	3	0	1	-.168	2	
561	M60	1	max	285.087	3	267.295	3	7.286	2	.128	3	0	1	.2	3
562		min	-298.438	4	-219.708	4	-7.286	1	-.136	4	0	1	-.169	4	
563	2	max	285.087	3	265.338	3	3.643	2	.128	3	.003	2	.075	3	
564		min	-298.438	4	-221.665	4	-3.643	1	-.136	4	-.003	1	-.066	4	
565	3	max	285.087	3	263.382	3	0	1	.128	3	.003	2	.039	4	
566		min	-298.438	4	-223.622	4	0	1	-.136	4	-.003	1	-.049	3	
567	4	max	285.087	3	261.425	3	3.643	1	.128	3	.003	2	.145	4	
568		min	-298.438	4	-225.578	4	-3.643	2	-.136	4	-.003	1	-.172	3	
569	5	max	285.087	3	259.468	3	7.286	1	.128	3	0	1	.251	4	
570		min	-298.438	4	-227.535	4	-7.286	2	-.136	4	0	1	-.295	3	
571	M61	1	max	0	1	.003	8	.002	5	0	1	0	1	0	1
572		min	0	1	-.001	3	0	2	0	1	0	1	0	1	
573	2	max	-6.437	4	45.282	2	67.083	1	.248	1	.076	2	.044	2	
574		min	-16.344	7	-44.037	1	-69.239	2	-.255	2	-.074	1	-.043	1	
575	3	max	8.346	8	45.282	2	80.969	1	.248	1	.036	1	.022	1	
576		min	3.287	3	-44.037	1	-83.124	2	-.255	2	-.037	2	-.023	2	
577	4	max	819.37	8	231.716	2	100.432	4	.105	3	.206	5	.071	2	
578		min	16.322	3	-602.446	1	-461.048	7	-.091	4	-.038	2	-.207	1	
579	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
580		min	0	1	0	1	0	1	0	1	0	1	0	1	
581	M62	1	max	971.711	3	1328.084	7	803.257	2	.4	2	0	1	.895	4
582		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	0	2	-.386	3	



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
583	2	max	971.711	3	1328.084	7	803.257	2	.4	2	.05	2	.877	4
584		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.051	1	-.431	3
585	3	max	971.711	3	1328.084	7	803.257	2	.4	2	.1	2	.86	4
586		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.101	1	-.476	3
587	4	max	971.711	3	1328.084	7	803.257	2	.4	2	.151	2	.842	4
588		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.152	1	-.521	3
589	5	max	971.711	3	1328.084	7	803.257	2	.4	2	.201	2	.825	4
590		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.203	1	-.566	3
591	M63	1	max	667.46	1	844.059	8	418.607	3	.174	3	0	.16	8
592		min	-208.609	2	26.046	3	-362.21	4	-.185	4	0	8	-.014	3
593	2	max	667.46	1	844.059	8	418.607	3	.174	3	.026	3	.107	8
594		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.023	4	-.016	3
595	3	max	667.46	1	844.059	8	418.607	3	.174	3	.052	3	.055	8
596		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.045	4	-.018	3
597	4	max	667.46	1	844.059	8	418.607	3	.174	3	.078	3	.035	2
598		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.068	4	-.038	1
599	5	max	667.46	1	844.059	8	418.607	3	.174	3	.105	3	.024	2
600		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.091	4	-.066	1
601	M61A	1	max	306.881	3	29.605	5	16.747	3	.066	7	0	0	1
602		min	-320.442	4	8.864	2	-16.747	4	.004	4	0	1	0	1
603	2	max	309.054	3	14.802	5	8.374	3	.066	7	.014	3	-.007	2
604		min	-321.573	4	4.432	2	-8.374	4	.004	4	-.014	4	-.025	5
605	3	max	311.226	3	0	1	0	1	.066	7	.019	3	-.01	2
606		min	-322.705	4	0	1	0	1	.004	4	-.019	4	-.033	5
607	4	max	313.398	3	-4.432	2	8.374	4	.066	7	.014	3	-.007	2
608		min	-323.836	4	-14.802	5	-8.374	3	.004	4	-.014	4	-.025	5
609	5	max	315.571	3	-8.864	2	16.747	4	.066	7	0	1	0	1
610		min	-324.967	4	-29.605	5	-16.747	3	.004	4	0	1	0	1
611	M62A	1	max	223.154	4	29.831	8	9.891	1	.062	5	0	0	1
612		min	-233.342	3	8.32	3	-9.891	2	.014	2	0	1	0	1
613	2	max	219.354	4	14.915	8	4.945	1	.062	5	.008	1	-.007	3
614		min	-228.501	3	4.16	3	-4.945	2	.014	2	-.008	2	-.025	8
615	3	max	215.554	4	0	1	0	1	.062	5	.011	1	-.009	3
616		min	-223.66	3	0	1	0	1	.014	2	-.011	2	-.033	8
617	4	max	211.754	4	-4.16	3	4.945	2	.062	5	.008	1	-.007	3
618		min	-218.819	3	-14.915	8	-4.945	1	.014	2	-.008	2	-.025	8
619	5	max	207.954	4	-8.32	3	9.891	2	.062	5	0	1	0	1
620		min	-213.977	3	-29.831	8	-9.891	1	.014	2	0	1	0	1
621	M63A	1	max	438.383	2	29.687	7	15.612	2	.067	6	0	0	1
622		min	-449.95	1	8.667	4	-15.612	1	.004	1	0	1	0	1
623	2	max	436.267	2	14.843	7	7.806	2	.067	6	.013	2	-.007	4
624		min	-446.793	1	4.334	4	-7.806	1	.004	1	-.013	1	-.025	7
625	3	max	434.151	2	0	1	0	1	.067	6	.018	2	-.01	4
626		min	-443.635	1	0	1	0	1	.004	1	-.018	1	-.033	7
627	4	max	432.035	2	-4.334	4	7.806	1	.067	6	.013	2	-.007	4
628		min	-440.478	1	-14.843	7	-7.806	2	.004	1	-.013	1	-.025	7
629	5	max	429.919	2	-8.667	4	15.612	1	.067	6	0	1	0	1
630		min	-437.321	1	-29.687	7	-15.612	2	.004	1	0	1	0	1

**Envelope AISC 14th(360-10): LRFD Steel Code Checks**

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	MP4A	PIPE 2.0	.606	3.75	2	.049	3.75	1	9836.599	32130	1.872	1.872	2...	H1-1b
2	MP4B	PIPE 2.0	.531	3.75	4	.071	3.75	4	9836.599	32130	1.872	1.872	2...	H1-1b
3	MP4C	PIPE 2.0	.509	3.75	3	.051	3.75	3	9836.599	32130	1.872	1.872	2...	H1-1b
4	M37	PIPE 2.5	.420	4	2	.192	2.833	2	28468.406	50715	3.596	3.596	1...	H1-1b



**Envelope AISI 14th(360-10): LRFD Steel Code Checks (Continued)**

Member	Shape	Code C...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
5	M6	PIPE 2.5	.418	4	3	.152	4	3	28468.406	50715	3.596	3.596	1...	H1-1b
6	M53	PIPE 2.5	.407	0	2	.096	0	2	28468.406	50715	3.596	3.596	2...	H1-1b
7	M27	PIPE 2.5	.363	0	3	.102	0	3	28468.406	50715	3.596	3.596	2...	H1-1b
8	M38	PIPE 2.5	.334	4	6	.083	4	7	28468.406	50715	3.596	3.596	2...	H1-1b
9	M20A	PIPE 2.5	.330	4	8	.073	4	8	28468.406	50715	3.596	3.596	2...	H1-1b
10	M35	PIPE 2.5	.327	0	3	.081	1	1	28468.406	50715	3.596	3.596	3...	H1-1b
11	M7	PIPE 2.5	.327	4	7	.069	4	8	28468.406	50715	3.596	3.596	2...	H1-1b
12	M19B	PIPE 2.5	.305	4	3	.140	2.833	4	28468.406	50715	3.596	3.596	2...	H1-1b
13	M36	PIPE 2.5	.290	0	8	.140	0	1	28468.406	50715	3.596	3.596	2...	H1-1b
14	M54	PIPE 2.5	.259	0	6	.097	0	4	28468.406	50715	3.596	3.596	2...	H1-1b
15	M28	PIPE 2.5	.253	0	7	.107	0	3	28468.406	50715	3.596	3.596	2...	H1-1b
16	MP3C	PIPE 2.0	.248	3.75	7	.031	7.604	5	9836.599	32130	1.872	1.872	1...	H1-1b
17	MP3A	PIPE 2.0	.246	3.75	6	.037	3.75	2	9836.599	32130	1.872	1.872	1...	H1-1b
18	MP3B	PIPE 2.0	.239	7.604	8	.040	3.75	4	9836.599	32130	1.872	1.872	1...	H1-1b
19	MP1B	PIPE 2.0	.237	3.75	8	.144	3.75	2	9836.599	32130	1.872	1.872	2...	H1-1b
20	MP1A	PIPE 2.0	.235	7.604	6	.099	3.75	3	9836.599	32130	1.872	1.872	1...	H1-1b
21	M61	PIPE 2.5	.234	.986	4	.189	3.944	4	38082.042	50715	3.596	3.596	3...	H1-1b
22	MP1C	PIPE 2.0	.226	7.604	7	.105	7.604	3	9836.599	32130	1.872	1.872	1...	H1-1b
23	MP2B	PIPE 2.0	.180	6.125	5	.103	6.125	1	17855.087	32130	1.872	1.872	2...	H1-1b
24	MP2A	PIPE 2.0	.172	6.125	8	.071	6.125	4	17855.087	32130	1.872	1.872	2...	H1-1b
25	MP2C	PIPE 2.0	.169	6.125	7	.079	6.125	3	17855.087	32130	1.872	1.872	2...	H1-1b
26	M60	PIPE 2.0	.162	1.879	3	.105	1.879	4	30798.037	32130	1.872	1.872	2...	H1-1b
27	M58	PIPE 2.0	.133	0	1	.122	0	1	30798.037	32130	1.872	1.872	2...	H1-1b
28	M59	PIPE 2.0	.093	1.879	2	.085	0	4	30798.037	32130	1.872	1.872	2...	H1-1b
29	M63A	PIPE 2.0	.020	2.244	6	.043	4.488	6	25235.644	32130	1.872	1.872	1...	H1-1b
30	M61A	PIPE 2.0	.020	2.244	8	.043	4.488	7	25235.644	32130	1.872	1.872	1...	H1-1b
31	M62A	PIPE 2.0	.019	2.244	8	.040	0	5	25235.644	32130	1.872	1.872	1...	H1-1b

**Envelope AISI S100-10: LRFD Cold Formed Steel Code Checks**

Member	Shape	Code ...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...															

**Envelope AA ADM1-10: ASD - Building Aluminum Code Checks**

Member	Shape	Code C...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	Pnc/O...	Pnt/Om...	Mny/O...	Mnz/O...	Vny/O...	Vnz/O...	Cb	Eqn
No Data to Print ...															



**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
20	N30	0.723076	3.916667	-4.747595	0	
21	N31	4.473076	0	1.747595	0	
22	N32	0.723076	0	-4.747595	0	
23	N29B	3.397916	3.916667	-0.614638	0	
24	N30B	3.397916	0	-0.614638	0	
25	N31A	2.314583	3.916667	-2.491025	0	
26	N32A	2.314583	0	-2.491025	0	
27	N33	4.689582	3.916667	1.622595	0	
28	N34	0.939582	3.916667	-4.872595	0	
29	N35	4.689582	0	1.622595	0	
30	N36	0.939582	0	-4.872595	0	
31	N39	2.598076	3.916667	-1.5	0	
32	N40	2.598076	0	-1.5	0	
33	N33A	-2.38157	3.916667	-1.375	0	
34	N34A	-2.38157	0	-1.375	0	
35	N35A	-0.598076	3.916667	-4.964102	0	
36	N36A	-0.598076	0	-4.964102	0	
37	N37	-2.014743	3.916667	-2.510362	0	
38	N38	-2.014743	0	-2.510362	0	
39	N39A	-3.098076	3.916667	-0.633975	0	
40	N40A	-3.098076	0	-0.633975	0	
41	N41	-4.598076	3.916667	1.964102	0	
42	N42	-4.598076	0	1.964102	0	
43	N43	-0.939582	7.666666	-4.872596	0	
44	N44	-0.939582	-2.333333	-4.872596	0	
45	N45	-2.231249	7.666666	-2.635363	0	
46	N46	-2.231249	-2.333333	-2.635363	0	
47	N47	-3.314583	6.166666	-0.758974	0	
48	N48	-3.314583	-0.833333	-0.758974	0	
49	N49	-4.689583	7.666666	1.622596	0	
50	N50	-4.689583	-2.333333	1.622596	0	
51	N51	-0.723076	3.916667	-4.747595	0	
52	N52	-4.473076	3.916667	1.747595	0	
53	N53	-0.723076	0	-4.747595	0	
54	N54	-4.473076	0	1.747595	0	
55	N55	-2.23125	3.916667	-2.635362	0	
56	N56	-2.23125	0	-2.635362	0	
57	N57	-3.314583	3.916667	-0.758975	0	
58	N58	-3.314583	0	-0.758975	0	
59	N59	-0.939583	3.916667	-4.872595	0	
60	N60	-4.689583	3.916667	1.622595	0	
61	N61	-0.939583	0	-4.872595	0	
62	N62	-4.689583	0	1.622595	0	
63	N63	-2.598076	3.916667	-1.5	0	
64	N64	-2.598076	0	-1.5	0	
65	N65	0	3.916667	2.75	0	
66	N66	0	0	2.75	0	
67	N67	-4	3.916667	3	0	
68	N68	-4	0	3	0	
69	N69	-1.166666	3.916667	3.	0	
70	N70	-1.166666	0	3.	0	
71	N71	1.	3.916667	3.	0	
72	N72	1.	0	3.	0	
73	N73	4	3.916667	3	0	
74	N74	4	0	3	0	
75	N75	-3.75	7.666666	3.25	0	
76	N76	-3.75	-2.333333	3.25	0	





**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
77	N77	-1.166666	7.666666	3.25	0	
78	N78	-1.166666	-2.333333	3.25	0	
79	N79	1.	6.166666	3.25	0	
80	N80	1.	-0.833333	3.25	0	
81	N81	3.75	7.666666	3.25	0	
82	N82	3.75	-2.333333	3.25	0	
83	N83	-3.75	3.916667	3.	0	
84	N84	3.75	3.916667	3.	0	
85	N85	-3.75	0	3.	0	
86	N86	3.75	0	3.	0	
87	N87	-1.166666	3.916667	3.25	0	
88	N88	-1.166666	0	3.25	0	
89	N89	1.	3.916667	3.25	0	
90	N90	1.	0	3.25	0	
91	N91	-3.75	3.916667	3.25	0	
92	N92	3.75	3.916667	3.25	0	
93	N93	-3.75	0	3.25	0	
94	N94	3.75	0	3.25	0	
95	N95	0	3.916667	3.	0	
96	N96	0	0	3.	0	
97	N103	-4.689583	3.416667	1.622595	0	
98	N104	-3.75	3.416667	3.25	0	
99	N105	3.75	3.416667	3.25	0	
100	N106	4.689582	3.416667	1.622595	0	
101	N107	0.939582	3.416667	-4.872595	0	
102	N108	-0.939583	3.416667	-4.872595	0	
103	N109	-2.38157	4.416667	-1.375	0	
104	N110	-2.38157	-1.5	-1.375	0	
105	N111	-2.38157	3.416667	-1.375	0	
106	N112	-2.38157	-.5	-1.375	0	
107	N113	-2.165064	3.416667	-1.25	0	
108	N114	-2.165064	-.5	-1.25	0	
109	N109A	0	.5	2.75	0	
110	N110A	2.38157	.5	-1.375	0	
111	N111A	-2.38157	.5	-1.375	0	
112	N112A	3.25	0	3.	0	
113	N114A	0.973076	0	-4.314583	0	
114	N116	-4.223076	0	1.314583	0	

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	xxxxx	HSS16x0.438	Beam	None	A572 Gr.50	Typical	19.9	606	606	1210

**Cold Formed Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	CF	4CU5.25X03...	Beam	CU	A570 Gr.33	Typical	4.854	13.238	12.817	.228

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	AL1A	AACS14X13.9	Beam	AA Channel	3003-H14	Typical	11.8	44.7	401	1.19



**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A570 Gr.33	29500	11346	.3	.65	.49	33	52
2	A607 C1 Gr.55	29500	11346	.3	.65	.49	55	70

**Aluminum Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (...)	Density[...	Table B.4	kt	Ftu[ksi]	Fty[ksi]	Fcy[ksi]	Fsu[ksi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	.173	Table B...	1	19	16	13	12	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	24	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	13	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	19	141
5	5052-H34	10200	3787.5	.33	1.3	.173	Table B...	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	15	141

**Member Advanced Data**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M6						Yes			None
2	M7						Yes			None
3	MP4C						Yes	-z		None
4	MP3C						Yes	-z		None
5	MP2C						Yes	-z		None
6	MP1C						Yes	-z		None
7	M12						Yes			None
8	M13						Yes			None
9	M14						Yes			None
10	M15						Yes			None
11	M16						Yes			None
12	M17						Yes			None
13	M18						Yes			None
14	M19						Yes			None
15	M19A						Yes			None
16	M20						Yes			None
17	M27						Yes			None
18	M28						Yes			None
19	M19B						Yes			None
20	M20A						Yes			None
21	MP4B						Yes	-z		None
22	MP3B						Yes	-z		None
23	MP2B						Yes	-z		None
24	MP1B						Yes	-z		None
25	M25						Yes			None
26	M26						Yes			None
27	M27A						Yes			None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
28	M28A						Yes			None
29	M29						Yes			None
30	M30						Yes			None
31	M31						Yes			None
32	M32						Yes			None
33	M33						Yes			None
34	M34						Yes			None
35	M35						Yes			None
36	M36						Yes			None
37	M37						Yes			None
38	M38						Yes			None
39	MP4A						Yes	-z		None
40	MP3A						Yes	-z		None
41	MP2A						Yes	-z		None
42	MP1A						Yes	-z		None
43	M43						Yes			None
44	M44						Yes			None
45	M45						Yes			None
46	M46						Yes			None
47	M47						Yes			None
48	M48						Yes			None
49	M49						Yes			None
50	M50						Yes			None
51	M51						Yes			None
52	M52						Yes			None
53	M53						Yes			None
54	M54						Yes			None
55	M58	OOOOXO	OOOOXO				Yes			None
56	M59	OOOOXO	OOOOXO				Yes			None
57	M60	OOOOXO	OOOOXO				Yes			None
58	M61						Yes			None
59	M62						Yes			None
60	M63						Yes			None
61	M61A	BenPIN	BenPIN				Yes			None
62	M62A	BenPIN	BenPIN				Yes			None
63	M63A	BenPIN	BenPIN				Yes			None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
1	M6	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
2	M7	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
3	MP4C	PIPE 2.0	10			Lbyy			1	1		Lateral
4	MP3C	PIPE 2.0	10			Lbyy			1	1		Lateral
5	MP2C	PIPE 2.0	7			Lbyy			1	1		Lateral
6	MP1C	PIPE 2.0	10			Lbyy			1	1		Lateral
7	M27	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
8	M28	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
9	M19B	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
10	M20A	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
11	MP4B	PIPE 2.0	10			Lbyy			1	1		Lateral
12	MP3B	PIPE 2.0	10			Lbyy			1	1		Lateral
13	MP2B	PIPE 2.0	7			Lbyy			1	1		Lateral
14	MP1B	PIPE 2.0	10			Lbyy			1	1		Lateral
15	M35	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
16	M36	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity





**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
17	M37	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
18	M38	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
19	MP4A	PIPE 2.0	10			Lbyy			1	1		Lateral
20	MP3A	PIPE 2.0	10			Lbyy			1	1		Lateral
21	MP2A	PIPE 2.0	7			Lbyy			1	1		Lateral
22	MP1A	PIPE 2.0	10			Lbyy			1	1		Lateral
23	M53	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
24	M54	PIPE 2.5	4			Lbyy			2.1	2.1		Gravity
25	M58	PIPE 2.0	1.879			Lbyy						Lateral
26	M59	PIPE 2.0	1.879			Lbyy						Lateral
27	M60	PIPE 2.0	1.879			Lbyy						Lateral
28	M61	PIPE 2.5	5.917			Lbyy						Lateral
29	M61A	PIPE 2.0	4.488			Lbyy						Lateral
30	M62A	PIPE 2.0	4.488			Lbyy						Lateral
31	M63A	PIPE 2.0	4.488			Lbyy						Lateral

**Cold Formed Steel Design Parameters**

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torque...	Kyy	Kzz	Cm-...Cm-...	Cb	R	a[ft]	y sw...z sw...
No Data to Print ...														

**Aluminum Design Parameters**

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
No Data to Print ...											

**Joint Loads and Enforced Displacements**

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
No Data to Print ...			

**Member Point Loads (BLC 1 : Antenna D)**

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-66.1	2
2	MP1A	Y	-66.1	5
3	MP1B	Y	-66.1	2
4	MP1B	Y	-66.1	5
5	MP1C	Y	-66.1	2
6	MP1C	Y	-66.1	5
7	MP4A	Y	-64	1
8	MP4A	Y	-64	7
9	MP4B	Y	-64	1
10	MP4B	Y	-64	7
11	MP4C	Y	-64	1
12	MP4C	Y	-64	7
13	MP2A	Y	-66.1	2
14	MP2A	Y	-66.1	5
15	MP2B	Y	-66.1	2
16	MP2B	Y	-66.1	5
17	MP2C	Y	-66.1	2
18	MP2C	Y	-66.1	5
19	MP3A	Y	-66.6	2
20	MP3A	Y	-66.6	5
21	MP3B	Y	-66.6	2



**Member Point Loads (BLC 1 : Antenna D) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
22	MP3B	Y	-66.6	5
23	MP3C	Y	-66.6	2
24	MP3C	Y	-66.6	5
25	MP1A	Y	-11	2
26	MP1B	Y	-11	2
27	MP1C	Y	-11	2
28	MP2A	Y	-15.4	2
29	MP2B	Y	-15.4	2
30	MP2C	Y	-15.4	2
31	MP4A	Y	-70	2
32	MP4B	Y	-70	2
33	MP4C	Y	-70	2
34	MP3A	Y	-46	2
35	MP3B	Y	-46	2
36	MP3C	Y	-46	2

**Member Point Loads (BLC 2 : Antenna Di)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	Y	-93.743	2
2	MP1A	Y	-93.743	5
3	MP1B	Y	-93.743	2
4	MP1B	Y	-93.743	5
5	MP1C	Y	-93.743	2
6	MP1C	Y	-93.743	5
7	MP4A	Y	-213.576	1
8	MP4A	Y	-213.576	7
9	MP4B	Y	-213.576	1
10	MP4B	Y	-213.576	7
11	MP4C	Y	-213.576	1
12	MP4C	Y	-213.576	7
13	MP2A	Y	-94.324	2
14	MP2A	Y	-94.324	5
15	MP2B	Y	-94.324	2
16	MP2B	Y	-94.324	5
17	MP2C	Y	-94.324	2
18	MP2C	Y	-94.324	5
19	MP3A	Y	-83.958	2
20	MP3A	Y	-83.958	5
21	MP3B	Y	-83.958	2
22	MP3B	Y	-83.958	5
23	MP3C	Y	-83.958	2
24	MP3C	Y	-83.958	5
25	MP1A	Y	-16.805	2
26	MP1B	Y	-16.805	2
27	MP1C	Y	-16.805	2
28	MP2A	Y	-28.047	2
29	MP2B	Y	-28.047	2
30	MP2C	Y	-28.047	2
31	MP4A	Y	-69.929	2
32	MP4B	Y	-69.929	2
33	MP4C	Y	-69.929	2
34	MP3A	Y	-55.645	2
35	MP3B	Y	-55.645	2
36	MP3C	Y	-55.645	2



**Member Point Loads (BLC 3 : Antenna W Front)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%]
1	MP1A	Z	-66.426	2
2	MP1A	Z	-66.426	5
3	MP1B	Z	-52.668	2
4	MP1B	Z	-52.668	5
5	MP1C	Z	-52.668	2
6	MP1C	Z	-52.668	5
7	MP4A	Z	-206.522	1
8	MP4A	Z	-206.522	7
9	MP4B	Z	-114.301	1
10	MP4B	Z	-114.301	7
11	MP4C	Z	-114.301	1
12	MP4C	Z	-114.301	7
13	MP2A	Z	-66.426	2
14	MP2A	Z	-66.426	5
15	MP2B	Z	-52.977	2
16	MP2B	Z	-52.977	5
17	MP2C	Z	-52.977	2
18	MP2C	Z	-52.977	5
19	MP3A	Z	-66.63	2
20	MP3A	Z	-66.63	5
21	MP3B	Z	-36.08	2
22	MP3B	Z	-36.08	5
23	MP3C	Z	-36.08	2
24	MP3C	Z	-36.08	5
25	MP1A	Z	-8.367	2
26	MP1B	Z	-4.473	2
27	MP1C	Z	-4.473	2
28	MP2A	Z	-14.489	2
29	MP2B	Z	-9.649	2
30	MP2C	Z	-9.649	2
31	MP4A	Z	-33.672	2
32	MP4B	Z	-26.211	2
33	MP4C	Z	-26.211	2
34	MP3A	Z	-33.468	2
35	MP3B	Z	-18.804	2
36	MP3C	Z	-18.804	2

**Member Point Loads (BLC 4 : Antenna Wi Front)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%]
1	MP1A	Z	-20.754	2
2	MP1A	Z	-20.754	5
3	MP1B	Z	-16.883	2
4	MP1B	Z	-16.883	5
5	MP1C	Z	-16.883	2
6	MP1C	Z	-16.883	5
7	MP4A	Z	-60.129	1
8	MP4A	Z	-60.129	7
9	MP4B	Z	-34.96	1
10	MP4B	Z	-34.96	7
11	MP4C	Z	-34.96	1
12	MP4C	Z	-34.96	7
13	MP2A	Z	-20.912	2
14	MP2A	Z	-20.912	5
15	MP2B	Z	-17.015	2
16	MP2B	Z	-17.015	5
17	MP2C	Z	-17.015	2



**Member Point Loads (BLC 4 : Antenna Wi Front) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
18	MP2C	Z	-17.015	5
19	MP3A	Z	-20.663	2
20	MP3A	Z	-20.663	5
21	MP3B	Z	-11.881	2
22	MP3B	Z	-11.881	5
23	MP3C	Z	-11.881	2
24	MP3C	Z	-11.881	5
25	MP1A	Z	-3.455	2
26	MP1B	Z	-2.421	2
27	MP1C	Z	-2.421	2
28	MP2A	Z	-5.296	2
29	MP2B	Z	-4.231	2
30	MP2C	Z	-4.231	2
31	MP4A	Z	-11.926	2
32	MP4B	Z	-9.669	2
33	MP4C	Z	-9.669	2
34	MP3A	Z	-11.926	2
35	MP3B	Z	-7.412	2
36	MP3C	Z	-7.412	2

**Member Point Loads (BLC 5 : Antenna W Side)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	X	48.083	2
2	MP1A	X	48.083	5
3	MP1B	X	61.84	2
4	MP1B	X	61.84	5
5	MP1C	X	61.84	2
6	MP1C	X	61.84	5
7	MP4A	X	83.56	1
8	MP4A	X	83.56	7
9	MP4B	X	175.782	1
10	MP4B	X	175.782	7
11	MP4C	X	175.782	1
12	MP4C	X	175.782	7
13	MP2A	X	48.494	2
14	MP2A	X	48.494	5
15	MP2B	X	61.943	2
16	MP2B	X	61.943	5
17	MP2C	X	61.943	2
18	MP2C	X	61.943	5
19	MP3A	X	25.897	2
20	MP3A	X	25.897	5
21	MP3B	X	56.447	2
22	MP3B	X	56.447	5
23	MP3C	X	56.447	2
24	MP3C	X	56.447	5
25	MP1A	X	3.175	2
26	MP1B	X	7.069	2
27	MP1C	X	7.069	2
28	MP2A	X	8.035	2
29	MP2B	X	12.876	2
30	MP2C	X	12.876	2
31	MP4A	X	23.724	2
32	MP4B	X	31.185	2
33	MP4C	X	31.185	2
34	MP3A	X	13.917	2



**Member Point Loads (BLC 5 : Antenna W Side) (Continued)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
35	MP3B	X	28.58	2
36	MP3C	X	28.58	2

**Member Point Loads (BLC 6 : Antenna Wi Side)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	MP1A	X	15.593	2
2	MP1A	X	15.593	5
3	MP1B	X	19.464	2
4	MP1B	X	19.464	5
5	MP1C	X	19.464	2
6	MP1C	X	19.464	5
7	MP4A	X	26.57	1
8	MP4A	X	26.57	7
9	MP4B	X	51.74	1
10	MP4B	X	51.74	7
11	MP4C	X	51.74	1
12	MP4C	X	51.74	7
13	MP2A	X	15.716	2
14	MP2A	X	15.716	5
15	MP2B	X	19.613	2
16	MP2B	X	19.613	5
17	MP2C	X	19.613	2
18	MP2C	X	19.613	5
19	MP3A	X	8.953	2
20	MP3A	X	8.953	5
21	MP3B	X	17.736	2
22	MP3B	X	17.736	5
23	MP3C	X	17.736	2
24	MP3C	X	17.736	5
25	MP1A	X	2.076	2
26	MP1B	X	3.11	2
27	MP1C	X	3.11	2
28	MP2A	X	3.876	2
29	MP2B	X	4.941	2
30	MP2C	X	4.941	2
31	MP4A	X	8.916	2
32	MP4B	X	11.173	2
33	MP4C	X	11.173	2
34	MP3A	X	5.907	2
35	MP3B	X	10.421	2
36	MP3C	X	10.421	2

**Member Point Loads (BLC 7 : Service Lm1)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	M38	Y	-500	%4

**Member Point Loads (BLC 8 : Service Lm2)**

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
1	M38	Y	-500	%100

**Member Area Loads**

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						



### Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N5	Reaction	Reaction	Reaction	Reaction		Reaction
2	N6	Reaction	Reaction	Reaction	Reaction		Reaction
3	N33A						
4	N34A						
5	N65	Reaction	Reaction	Reaction	Reaction		Reaction
6	N66	Reaction	Reaction	Reaction	Reaction		Reaction
7	N109						
8	N110						
9	N111						
10	N112						
11	N113	Reaction	Reaction	Reaction	Reaction		Reaction
12	N114	Reaction	Reaction	Reaction	Reaction		Reaction
13	N109A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
14	N110A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	N111A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

### Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	N5	max	1340.968	4	1426.506	5	854.599	1	.385	3	0	1	.579	7
2		min	-1408.49	3	437.783	2	-876.855	2	-.308	4	0	1	-.203	4
3	N6	max	389.77	4	1404.892	7	327.008	1	.088	1	0	1	.54	7
4		min	-295.885	3	283.01	4	-320.742	2	-.032	2	0	1	-.132	4
5	N65	max	803.096	4	1412.099	7	1219.366	1	.343	1	0	1	.109	2
6		min	-769.465	3	526.115	4	-1308.28	2	-.746	2	0	1	-.519	9
7	N66	max	366.138	4	1454.18	6	472.726	1	.072	1	0	1	.294	1
8		min	-397.682	3	140.606	1	-346.659	2	-.541	6	0	1	-.608	9
9	N113	max	1095.417	4	1328.084	7	1097.049	1	.733	1	0	1	.459	3
10		min	-1039.607	3	279.812	4	-1046.175	2	-.443	2	0	1	-.88	4
11	N114	max	231.712	2	844.059	8	100.344	4	.223	4	0	1	-.015	1
12		min	-602.427	1	26.046	3	-461.038	7	-.158	3	0	1	-.12	7
13	N109A	max	417.385	1	59.113	1	158.355	1	-.004	1	0	1	-.001	1
14		min	-408.471	2	-39.292	2	-155.315	2	-.063	6	-.007	6	-.021	6
15	N110A	max	43.16	3	45.458	4	303.335	3	.013	7	0	4	.065	7
16		min	-45.35	4	-25.603	3	-314.543	4	0	4	-.007	7	.004	4
17	N111A	max	1017.91	4	875.452	8	719.439	1	.137	4	.535	3	.106	4
18		min	-742.365	3	63.543	3	-509.427	2	-.1	3	-.566	4	-.117	3
19	Totals:	max	4541.816	4	8446.432	6	4583.907	1						
20		min	-4541.816	3	3301.13	1	-4583.908	2						

### Envelope Member Section Forces

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...]	LC	y-y Mome...	LC	z-z Mom...	LC	
1	M6	1	max	0	1	.001	3	.002	1	0	1	0	1	0	1
2			min	0	1	0	5	-.003	4	0	1	0	1	0	1
3		2	max	316.812	4	55.938	2	307.116	3	.33	3	.135	3	.184	2
4			min	-484.626	3	-458.816	5	-292.44	4	-.3	4	-.159	4	-.308	1
5		3	max	320.877	4	49.364	2	314.157	3	.33	3	.446	3	.267	7
6			min	-488.691	3	-475.508	5	-299.481	4	-.3	4	-.455	4	-.037	4
7		4	max	414.379	4	-212.051	3	614.336	3	.344	3	.784	3	.381	7
8			min	-728.191	3	-737.433	8	-583.327	4	-.293	4	-.808	4	-.019	4
9		5	max	418.444	4	-218.626	3	621.377	3	.344	3	1.402	3	1.091	7
10			min	-732.256	3	-754.125	8	-590.368	4	-.293	4	-1.395	4	.332	4
11	M7	1	max	0	1	.001	3	.002	2	0	1	0	1	0	1
12			min	0	1	0	5	-.003	4	0	1	0	1	0	1



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
13		2	max	264.604	5	-22.898	4	109.074	3	.025	8	.126	3	-.039	4
14			min	-35.601	2	-418.579	7	-138.341	4	-.003	1	-.115	4	-.154	7
15		3	max	266.115	5	-29.472	4	116.114	3	.025	8	.238	3	.273	7
16			min	-39.666	2	-435.271	7	-145.381	4	-.003	1	-.257	4	-.013	4
17		4	max	488.218	5	-117.301	4	94.74	3	.088	4	.374	3	.374	7
18			min	-11.644	2	-764.39	7	-137.652	4	-.052	3	-.392	4	-.024	4
19		5	max	489.729	5	-123.875	4	101.78	3	.088	4	.472	3	1.147	7
20			min	-15.709	2	-781.082	7	-144.693	4	-.052	3	-.533	4	.096	4
21	MP4C	1	max	0	1	1.213	4	.694	1	0	7	0	1	0	1
22			min	0	1	-1.361	7	-.977	6	0	4	0	1	0	1
23		2	max	477.294	6	351.746	4	244.899	1	0	7	.321	1	.474	3
24			min	171.212	3	-351.889	3	-245.036	2	0	4	-.322	2	-.474	4
25		3	max	141.719	3	241.545	3	202.753	6	.031	4	.06	1	.269	3
26			min	-81.309	4	-133.969	4	-29.478	1	-.033	3	-.139	2	-.184	4
27		4	max	368.025	7	175.113	8	205.594	5	.031	4	.369	7	-.014	4
28			min	5.904	4	-59.093	3	-43.603	2	-.033	3	.043	4	-.273	7
29		5	max	0	7	.032	8	.044	7	0	1	0	1	0	4
30			min	0	1	.003	4	-.002	4	0	8	0	1	0	3
31	MP3C	1	max	0	1	.252	4	.103	1	0	7	0	1	0	1
32			min	0	1	-.425	7	-.426	6	0	4	0	1	0	1
33		2	max	307.713	7	155.681	4	107.304	1	0	7	.068	1	.093	3
34			min	145.532	1	-155.77	3	-107.417	2	0	4	-.069	2	-.093	4
35		3	max	239.496	1	138.658	7	175.158	6	.01	2	-.006	3	.1	7
36			min	-82.001	2	-52.883	4	38.978	1	-.014	1	-.127	8	-.029	4
37		4	max	299.558	5	124.2	7	176.988	5	.01	2	.313	7	-.002	4
38			min	-42.681	2	-.83	4	40.588	2	-.014	1	.076	4	-.221	7
39		5	max	0	1	.024	8	.036	7	0	2	0	1	0	4
40			min	0	1	.002	2	0	4	0	8	0	1	0	3
41	MP2C	1	max	0	1	.131	8	.23	7	0	3	0	1	0	1
42			min	0	1	-.018	3	-.002	4	0	8	0	1	0	1
43		2	max	23.092	6	13.621	4	13.627	1	0	3	.012	1	.012	3
44			min	7.289	3	-13.588	3	-13.557	2	0	8	-.012	2	-.012	4
45		3	max	71.14	2	-10.96	3	.346	4	.104	3	.1	7	.008	4
46			min	-85.23	1	-64.352	8	-143.597	7	-.104	4	.002	4	-.049	7
47		4	max	184.183	6	76.627	4	.346	4	.104	3	.002	4	.065	8
48			min	1.378	1	-123.64	3	-143.597	7	-.104	4	-.151	7	.014	3
49		5	max	0	1	0	3	0	4	0	8	0	1	0	3
50			min	0	1	-.006	8	-.01	7	0	3	0	1	0	4
51	MP1C	1	max	0	1	.31	8	.367	5	0	3	0	1	0	1
52			min	0	1	-.21	3	-.095	2	0	8	0	1	0	1
53		2	max	236.058	5	129.895	4	111.002	1	0	3	.07	1	.08	3
54			min	102.932	3	-129.851	3	-110.908	2	0	8	-.07	2	-.08	4
55		3	max	155.654	3	48.755	4	51.768	2	.136	3	.142	8	.18	4
56			min	-100.788	4	-107.633	3	-209.494	5	-.139	4	.012	3	-.231	3
57		4	max	314.253	7	159.846	4	-45.722	2	.136	3	-.066	2	.291	3
58			min	-16.859	4	-218.724	3	-185.802	5	-.139	4	-.334	5	-.195	4
59		5	max	0	7	.014	3	.007	4	0	8	0	7	0	3
60			min	0	2	-.024	8	-.042	7	0	3	0	2	0	8
61	M12	1	max	283.608	4	442.753	5	310.917	4	.571	5	.093	3	.33	3
62			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.059	4	-.3	4
63		2	max	283.608	4	442.753	5	310.917	4	.571	5	.063	3	.323	3
64			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.039	4	-.31	4
65		3	max	283.608	4	442.753	5	310.917	4	.571	5	.033	3	.316	3
66			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.02	4	-.319	4
67		4	max	283.608	4	442.753	5	310.917	4	.571	5	.01	6	.309	3
68			min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.005	1	-.328	4
69		5	max	283.608	4	442.753	5	310.917	4	.571	5	.019	4	.303	3





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
70		min	-302.837	3	-62.057	2	-482.492	3	-.227	2	-.028	3	-.338	4	
71	M13	1	max	130.596	4	401.016	7	263.118	5	.464	7	.02	2	.025	8
72		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.06	5	-.003	1	
73		2	max	130.596	4	401.016	7	263.118	5	.464	7	.022	4	.011	4
74		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.045	3	-.018	3	
75		3	max	130.596	4	401.016	7	263.118	5	.464	7	.031	4	.01	4
76		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.043	3	-.033	7	
77		4	max	130.596	4	401.016	7	263.118	5	.464	7	.041	4	.009	4
78		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.042	3	-.059	7	
79		5	max	130.596	4	401.016	7	263.118	5	.464	7	.05	4	.008	4
80		min	-101.978	3	16.394	4	-31.789	2	.055	4	-.041	3	-.084	7	
81	M14	1	max	277.852	4	308.101	6	88.432	4	.421	5	.059	6	.025	7
82		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.011	1	.008	4	
83		2	max	277.852	4	308.101	6	88.432	4	.421	5	.043	6	.012	1
84		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.006	1	-.006	2	
85		3	max	277.852	4	308.101	6	88.432	4	.421	5	.028	8	.014	1
86		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.001	1	-.024	2	
87		4	max	277.852	4	308.101	6	88.432	4	.421	5	.021	4	.016	1
88		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.016	3	-.043	6	
89		5	max	277.852	4	308.101	6	88.432	4	.421	5	.026	4	.018	1
90		min	-291.785	3	-32.636	1	-245.573	6	-.023	2	-.031	3	-.062	6	
91	M15	1	max	28.596	3	332.55	5	220.6	5	.394	7	.005	2	.076	4
92		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.057	5	-.049	3	
93		2	max	28.596	3	332.55	5	220.6	5	.394	7	.007	2	.071	4
94		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.043	5	-.06	3	
95		3	max	28.596	3	332.55	5	220.6	5	.394	7	.009	2	.065	4
96		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.03	5	-.071	3	
97		4	max	28.596	3	332.55	5	220.6	5	.394	7	.011	2	.06	4
98		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.016	1	-.082	3	
99		5	max	28.596	3	332.55	5	220.6	5	.394	7	.013	2	.055	4
100		min	-14.659	4	-32.268	2	32.055	2	.058	4	-.009	1	-.093	3	
101	M16	1	max	158.617	4	315.31	5	208.456	1	-.006	4	.099	4	.035	5
102		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.123	3	.011	2	
103		2	max	158.617	4	315.31	5	208.456	1	-.006	4	.105	4	.016	7
104		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.122	3	.004	1	
105		3	max	158.617	4	315.31	5	208.456	1	-.006	4	.111	4	.005	2
106		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.12	3	-.009	1	
107		4	max	158.617	4	315.31	5	208.456	1	-.006	4	.116	4	.003	2
108		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.119	3	-.024	5	
109		5	max	158.617	4	315.31	5	208.456	1	-.006	4	.122	4	0	2
110		min	-169.452	3	41.236	2	-96.135	2	-.334	7	-.117	3	-.044	5	
111	M17	1	max	311.007	4	324.813	7	299.723	1	.017	4	.081	4	.175	3
112		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.112	3	-.171	4	
113		2	max	311.007	4	324.813	7	299.723	1	.017	4	.099	4	.16	3
114		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.119	3	-.171	4	
115		3	max	311.007	4	324.813	7	299.723	1	.017	4	.116	4	.146	3
116		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.126	3	-.171	4	
117		4	max	311.007	4	324.813	7	299.723	1	.017	4	.133	4	.131	3
118		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.133	3	-.171	4	
119		5	max	311.007	4	324.813	7	299.723	1	.017	4	.15	4	.117	3
120		min	-319.605	3	.041	4	-148.248	2	-.401	7	-.141	3	-.171	4	
121	M18	1	max	77.898	4	207.278	6	45.349	4	.011	4	.13	3	.022	3
122		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.106	4	-.009	4	
123		2	max	77.898	4	207.278	6	45.349	4	.011	4	.12	3	.018	3
124		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.104	4	-.015	4	
125		3	max	77.898	4	207.278	6	45.349	4	.011	4	.11	3	.014	3
126		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.101	4	-.022	4	





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
127	4	max	77.898	4	207.278	6	45.349	4	.011	4	.1	3	.009	3	
128		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.098	4	-.029	8	
129	5	max	77.898	4	207.278	6	45.349	4	.011	4	.09	3	.005	3	
130		min	-67.061	3	8.664	1	-168.456	7	-.329	7	-.095	4	-.041	8	
131	M19	1	max	194.64	4	347.211	7	22.23	4	-.005	4	.154	3	.245	3
132		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.127	4	-.236	4	
133	2	max	194.64	4	347.211	7	22.23	4	-.005	4	.144	3	.23	3	
134		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.126	4	-.236	4	
135	3	max	194.64	4	347.211	7	22.23	4	-.005	4	.133	3	.214	3	
136		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.124	4	-.235	4	
137	4	max	194.64	4	347.211	7	22.23	4	-.005	4	.123	3	.198	3	
138		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.123	4	-.235	4	
139	5	max	194.64	4	347.211	7	22.23	4	-.005	4	.112	3	.183	3	
140		min	-176.652	3	-7.208	4	-222.113	7	-.432	7	-.122	4	-.234	4	
141	M19A	1	max	1087.386	4	1426.506	5	799.164	4	.058	1	0	3	.686	3
142		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	0	4	-.33	4	
143	2	max	1087.386	4	1426.506	5	799.164	4	.058	1	.05	4	.647	3	
144		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.053	3	-.36	4	
145	3	max	1087.386	4	1426.506	5	799.164	4	.058	1	.1	4	.609	3	
146		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.105	3	-.39	4	
147	4	max	1087.386	4	1426.506	5	799.164	4	.058	1	.15	4	.57	3	
148		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.158	3	-.42	4	
149	5	max	1087.386	4	1426.506	5	799.164	4	.058	1	.2	4	.532	3	
150		min	-1140.013	3	437.783	2	-841.913	3	-.222	6	-.21	3	-.45	4	
151	M20	1	max	249.911	2	1404.892	7	355.29	4	.124	4	0	4	.47	7
152		min	-172.538	1	283.01	4	-305.511	3	-.266	7	0	3	-.081	4	
153	2	max	249.911	2	1404.892	7	355.29	4	.124	4	.022	4	.382	7	
154		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.019	3	-.098	4	
155	3	max	249.911	2	1404.892	7	355.29	4	.124	4	.044	4	.314	3	
156		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.038	3	-.116	4	
157	4	max	249.911	2	1404.892	7	355.29	4	.124	4	.067	4	.266	3	
158		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.057	3	-.134	4	
159	5	max	249.911	2	1404.892	7	355.29	4	.124	4	.089	4	.218	3	
160		min	-172.538	1	283.01	4	-305.511	3	-.266	7	-.076	3	-.152	4	
161	M27	1	max	260.742	2	689.224	7	496.863	4	.158	4	1.191	3	.913	7
162		min	-524.403	1	127.529	4	-517.464	3	-.188	3	-1.195	4	.167	4	
163	2	max	256.677	2	672.533	7	489.822	4	.171	4	.8	3	.566	7	
164		min	-520.339	1	120.954	4	-510.424	3	-.188	3	-.801	4	.048	4	
165	3	max	156.508	2	357.754	7	323.335	4	.171	4	.463	3	.209	5	
166		min	-307.764	1	13.919	4	-334.422	3	-.175	3	-.474	4	0	2	
167	4	max	152.443	2	341.062	7	316.294	4	.171	4	.132	3	.021	4	
168		min	-303.699	1	7.345	4	-327.381	3	-.175	3	-.154	4	-.15	6	
169	5	max	0	1	0	3	0	2	0	1	0	1	0	1	
170		min	0	1	0	1	-.004	4	0	1	0	1	0	1	
171	M28	1	max	411.479	7	625.055	7	155.796	2	.239	4	.396	3	.883	5
172		min	-131.007	4	159.12	4	-121.237	1	-.271	3	-.444	4	.221	4	
173	2	max	409.968	7	608.363	7	153.45	2	.239	4	.336	3	.594	7	
174		min	-126.942	4	152.545	4	-118.89	1	-.271	3	-.347	4	.065	4	
175	3	max	240.003	7	403.687	7	111.01	2	.231	4	.219	3	.182	7	
176		min	-77.499	4	40.094	4	-87.191	1	-.248	3	-.229	4	.01	4	
177	4	max	238.493	7	386.996	7	108.663	2	.231	4	.24	3	-.026	4	
178		min	-73.434	4	33.52	4	-84.844	1	-.248	3	-.223	4	-.217	5	
179	5	max	0	1	0	3	0	2	0	1	0	1	0	1	
180		min	0	1	0	1	0	4	0	1	0	1	0	1	
181	M19B	1	max	0	1	.001	1	.003	3	0	1	0	1	0	1
182		min	0	1	0	8	0	1	0	1	0	1	0	1	
183	2	max	224.295	2	93.384	3	255.242	1	.331	4	.083	4	.175	3	



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
184		min	-379.809	1	-478.628	8	-234.942	2	-.311	3	-.107	3	-.31	4
185	3	max	228.36	2	86.81	3	257.589	1	.331	4	.33	1	.257	5
186		min	-383.874	1	-495.319	8	-237.289	2	-.311	3	-.332	2	-.035	2
187	4	max	316.996	2	-39.073	1	521.905	4	.275	4	.572	1	.345	5
188		min	-612.701	1	-679.877	6	-479.129	3	-.274	3	-.585	2	-.028	2
189	5	max	321.061	2	-45.647	1	528.946	4	.275	4	1.039	4	.967	6
190		min	-616.766	1	-696.569	6	-486.169	3	-.274	3	-1.018	3	.279	1
191	M20A	1	max	0	1	0	1	.003	3	0	1	0	1	1
192		min	0	1	0	8	0	2	0	1	0	1	0	1
193	2	max	241.749	8	-77.17	2	139.955	4	.026	2	.158	4	-.024	3
194		min	-52.931	3	-400.656	5	-168.583	3	-.018	1	-.145	3	-.184	8
195	3	max	243.26	8	-83.744	2	146.996	4	.026	2	.302	4	.229	5
196		min	-56.996	3	-417.348	5	-175.623	3	-.018	1	-.317	3	.025	2
197	4	max	460.493	8	-4.793	3	122.334	4	.1	2	.514	4	.29	5
198		min	-48.645	3	-893.305	8	-176.761	3	-.07	1	-.526	3	-.009	2
199	5	max	462.003	8	-11.367	3	129.375	4	.1	2	.64	4	1.162	5
200		min	-52.71	3	-909.997	8	-183.801	3	-.07	1	-.707	3	.167	2
201	MP4B	1	max	0	1	1.31	4	1.238	5	0	3	0	1	1
202		min	0	1	-1.34	3	-.683	2	0	4	0	1	0	1
203	2	max	477.294	6	351.844	4	245.074	1	0	3	.322	1	.474	3
204		min	171.212	1	-351.874	3	-244.888	2	0	4	-.321	2	-.474	4
205	3	max	84.223	1	155.431	3	36.043	2	.024	3	.171	5	-.197	3
206		min	-27.093	2	-105.833	4	-230.108	5	-.027	4	-.053	2	-.177	4
207	4	max	350.284	5	194.804	4	21.099	1	.024	3	-.078	2	-.026	3
208		min	60.119	2	-145.206	3	-225.714	6	-.027	4	-.377	5	-.162	8
209	5	max	0	5	.018	5	-.003	2	0	2	0	1	0	4
210		min	0	2	-.003	2	-.045	5	0	5	0	1	0	3
211	MP3B	1	max	0	1	.314	4	.511	5	0	3	0	1	1
212		min	0	1	-.346	3	-.108	2	0	4	0	1	0	1
213	2	max	307.713	5	155.744	4	107.444	1	0	3	.069	1	.093	3
214		min	145.532	1	-155.776	3	-107.31	2	0	4	-.068	2	-.093	4
215	3	max	416.845	4	86.526	7	-7.725	3	.033	3	.149	8	.076	2
216		min	-183.652	3	-34.768	4	-202.093	8	-.038	4	-.013	3	-.048	1
217	4	max	456.164	4	83.227	6	-7.725	3	.033	3	-.032	3	.01	1
218		min	-144.333	3	-23.407	1	-202.093	8	-.038	4	-.356	8	-.151	6
219	5	max	0	1	.016	5	-.002	3	0	2	0	1	0	4
220		min	0	1	-.001	2	-.039	8	0	5	0	1	0	3
221	MP2B	1	max	0	1	.199	8	.015	1	0	2	0	1	1
222		min	0	1	-.033	2	-.196	6	0	8	0	1	0	1
223	2	max	23.092	5	13.653	4	13.586	1	0	2	.012	1	.012	3
224		min	7.289	3	-13.595	3	-13.641	2	0	8	-.012	2	-.012	4
225	3	max	221.675	4	33.823	3	115.667	5	.14	1	.013	2	0	3
226		min	-170.393	3	-115.677	8	23.512	2	-.137	2	-.083	5	-.079	8
227	4	max	308.284	4	.901	4	164.383	1	.14	1	.129	5	.114	8
228		min	-83.784	3	-106.228	7	-74.822	2	-.137	2	.021	2	-.024	3
229	5	max	0	1	.002	2	.01	6	0	5	0	1	0	1
230		min	0	1	-.008	5	0	1	0	2	0	8	0	1
231	MP1B	1	max	0	1	.33	8	.144	1	0	3	0	1	1
232		min	0	1	-.189	3	-.403	6	0	8	0	1	0	1
233	2	max	236.058	8	129.902	4	110.957	1	0	3	.07	1	.08	3
234		min	102.932	9	-129.83	3	-111.043	2	0	8	-.071	2	-.08	4
235	3	max	153.032	9	99.619	1	186.301	5	.161	1	.144	2	.159	1
236		min	-84.74	2	-193.499	2	-25.672	2	-.161	2	-.239	1	-.225	2
237	4	max	294.004	5	99.619	1	249.626	1	.161	1	.36	1	.269	6
238		min	-.811	2	-193.499	2	-123.162	2	-.161	2	-.14	2	-.09	1
239	5	max	0	8	.02	2	.039	6	0	5	0	8	0	6
240		min	0	2	-.04	5	-.01	1	0	2	0	2	0	1



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
241	M25	1	max	232.372	2	462.449	8	219.881	2	.605	8	.117	1	.331	4
242			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.079	2	-.311	3
243		2	max	232.372	2	462.449	8	219.881	2	.605	8	.094	1	.308	4
244			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.066	2	-.305	3
245		3	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.284	4
246			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.057	3	-.298	3
247		4	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.261	4
248			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.067	3	-.292	3
249		5	max	232.372	2	462.449	8	219.881	2	.605	8	.074	4	.238	4
250			min	-253.321	1	-100.837	3	-376.135	1	-.247	3	-.076	3	-.286	3
251	M26	1	max	161.813	3	383.291	5	240.252	8	.476	5	.02	3	.026	2
252			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.063	8	-.018	1
253		2	max	161.813	3	383.291	5	240.252	8	.476	5	.017	3	.022	2
254			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.048	8	-.03	1
255		3	max	161.813	3	383.291	5	240.252	8	.476	5	.014	3	.017	2
256			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.033	8	-.041	1
257		4	max	161.813	3	383.291	5	240.252	8	.476	5	.013	2	.013	2
258			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.021	1	-.062	5
259		5	max	161.813	3	383.291	5	240.252	8	.476	5	.025	2	.008	2
260			min	-131.976	4	70.567	2	-49.748	3	.111	2	-.023	1	-.085	5
261	M27A	1	max	269.249	3	390.035	3	84.633	2	.444	6	.063	8	.061	2
262			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.023	3	-.081	1
263		2	max	269.249	3	390.035	3	84.633	2	.444	6	.06	4	.051	2
264			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.033	3	-.081	1
265		3	max	269.249	3	390.035	3	84.633	2	.444	6	.062	4	.04	2
266			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.044	3	-.082	1
267		4	max	269.249	3	390.035	3	84.633	2	.444	6	.063	4	.029	2
268			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.054	3	-.082	1
269		5	max	269.249	3	390.035	3	84.633	2	.444	6	.065	4	.018	2
270			min	-294.686	4	-210.671	4	-241.423	5	-.012	1	-.064	3	-.089	7
271	M28A	1	max	45.111	1	470.952	8	215.743	8	.451	8	.031	3	.074	2
272			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.067	4	-.052	1
273		2	max	45.111	1	470.952	8	215.743	8	.451	8	.032	3	.069	2
274			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.059	4	-.067	1
275		3	max	45.111	1	470.952	8	215.743	8	.451	8	.033	3	.064	2
276			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.051	4	-.083	1
277		4	max	45.111	1	470.952	8	215.743	8	.451	8	.033	3	.059	2
278			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.043	4	-.099	1
279		5	max	45.111	1	470.952	8	215.743	8	.451	8	.034	3	.053	2
280			min	-19.558	2	-133.921	3	12.435	3	.05	3	-.035	4	-.115	1
281	M29	1	max	180.733	3	282.647	3	172.619	8	.027	2	.105	2	.106	3
282			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.129	1	-.121	4
283		2	max	180.733	3	282.647	3	172.619	8	.027	2	.113	2	.089	3
284			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.13	1	-.115	4
285		3	max	180.733	3	282.647	3	172.619	8	.027	2	.121	2	.071	3
286			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.13	1	-.108	4
287		4	max	180.733	3	282.647	3	172.619	8	.027	2	.129	2	.053	3
288			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.131	1	-.101	4
289		5	max	180.733	3	282.647	3	172.619	8	.027	2	.138	2	.036	3
290			min	-203.875	4	-109.523	4	-48.022	3	-.294	5	-.132	1	-.094	4
291	M30	1	max	255.536	3	333.437	5	403.832	2	.045	2	.08	2	.166	1
292			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.114	1	-.169	2
293		2	max	255.536	3	333.437	5	403.832	2	.045	2	.105	2	.151	1
294			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.128	1	-.169	2
295		3	max	255.536	3	333.437	5	403.832	2	.045	2	.13	2	.136	1
296			min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.142	1	-.168	2
297		4	max	255.536	3	333.437	5	403.832	2	.045	2	.155	2	.121	1



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
298		min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.157	1	-.168	2
299	5	max	255.536	3	333.437	5	403.832	2	.045	2	.181	2	.105	1
300		min	-264.61	4	-8.973	2	-230.263	1	-.393	5	-.171	1	-.167	2
301	M31	1	max	55.779	3	315.547	4	74.967	2	.045	2	.18	.023	1
302		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.156	2	-.016	2
303	2	max	55.779	3	315.547	4	74.967	2	.045	2	.168	1	.01	1
304		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.152	2	-.018	6
305	3	max	55.779	3	315.547	4	74.967	2	.045	2	.156	1	-.003	1
306		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.147	2	-.034	6
307	4	max	55.779	3	315.547	4	74.967	2	.045	2	.144	1	0	3
308		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.142	2	-.052	8
309	5	max	55.779	3	315.547	4	74.967	2	.045	2	.132	1	.005	3
310		min	-32.637	4	-76.526	3	-191.732	1	-.3	5	-.138	2	-.072	8
311	M32	1	max	239.162	2	326.949	5	27.052	2	-.024	2	.217	.327	1
312		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.187	2	-.32	2
313	2	max	239.162	2	326.949	5	27.052	2	-.024	2	.206	1	.313	1
314		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.186	2	-.321	2
315	3	max	239.162	2	326.949	5	27.052	2	-.024	2	.194	1	.299	1
316		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.184	2	-.321	2
317	4	max	239.162	2	326.949	5	27.052	2	-.024	2	.183	1	.286	1
318		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.182	2	-.322	2
319	5	max	239.162	2	326.949	5	27.052	2	-.024	2	.171	1	.272	1
320		min	-219.64	1	8.315	2	-235.933	5	-.392	5	-.181	2	-.322	2
321	M33	1	max	951.726	3	1287.11	7	873.88	2	.131	1	.045	.327	8
322		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.054	2	-.092	3
323	2	max	951.726	3	1287.11	7	873.88	2	.131	1	.002	9	.297	4
324		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.048	5	-.136	3
325	3	max	951.726	3	1287.11	7	873.88	2	.131	1	.056	2	.281	4
326		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.065	1	-.18	3
327	4	max	951.726	3	1287.11	7	873.88	2	.131	1	.11	2	.264	4
328		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.12	1	-.224	3
329	5	max	951.726	3	1287.11	7	873.88	2	.131	1	.165	2	.248	4
330		min	-1025.467	4	262.394	4	-878.122	1	-.167	2	-.175	1	-.267	3
331	M34	1	max	260.832	3	1638.061	8	528.006	2	.148	9	.515	.506	5
332		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.519	4	-.15	2
333	2	max	260.832	3	1638.061	8	528.006	2	.148	9	.503	3	.445	1
334		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.506	4	-.17	2
335	3	max	260.832	3	1638.061	8	528.006	2	.148	9	.491	3	.39	1
336		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.493	4	-.189	2
337	4	max	260.832	3	1638.061	8	528.006	2	.148	9	.48	3	.336	1
338		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.48	4	-.208	2
339	5	max	260.832	3	1638.061	8	528.006	2	.148	9	.468	3	.281	1
340		min	-155.966	4	32.358	3	-511.807	1	-.203	5	-.468	4	-.227	2
341	M35	1	max	263.934	1	628.14	7	464.423	3	.158	2	1.103	.897	7
342		min	-550.437	2	73.869	4	-496.72	4	-.14	1	-1.098	3	.263	2
343	2	max	259.869	1	611.448	7	457.383	3	.169	2	.662	4	.598	5
344		min	-546.372	2	67.295	4	-489.68	4	-.166	1	-.668	3	.078	2
345	3	max	240.338	1	366.434	5	269.741	3	.169	2	.38	4	.236	8
346		min	-410.077	2	4.568	2	-278.078	4	-.166	1	-.395	3	-.007	3
347	4	max	236.273	1	349.743	5	262.701	3	.169	2	.106	4	.041	2
348		min	-406.012	2	-2.007	2	-271.038	4	-.166	1	-.129	3	-.139	1
349	5	max	0	1	0	5	.002	3	0	1	0	1	0	1
350		min	0	1	0	4	-.004	2	0	1	0	1	0	1
351	M36	1	max	491.1	1	729.346	8	171.797	1	.327	2	.172	1.021	8
352		min	-216.252	2	21.021	3	-119.376	2	-.351	1	-.239	3	.047	3
353	2	max	487.035	1	712.654	8	174.144	1	.327	2	.148	4	.568	8
354		min	-212.188	2	87.17	2	-168.74	2	-.351	1	-.165	3	.136	3



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
355	3	max	291.242	1	381.711	8	199.838	1	.312	2	.119	4	.18	5	
356		min	-133.157	2	80.595	2	-171.087	2	-.328	1	-.131	3	.036	2	
357	4	max	287.177	1	365.019	8	202.185	1	.312	2	.277	1	-.033	3	
358		min	-129.093	2	74.021	2	-173.433	2	-.328	1	-.259	2	-.195	8	
359	5	max	0	1	0	1	0	3	0	1	0	1	0	1	
360		min	0	1	0	4	0	2	0	1	0	1	0	1	
361	M37	1	max	0	1	0	1	0	0	1	0	1	0	1	
362		min	0	1	0	1	0	1	0	1	0	1	0	1	
363	2	max	157.105	1	14.295	4	308.56	2	.459	2	.108	2	.162	4	
364		min	-319.482	2	-456.946	7	-284.831	1	-.425	1	-.147	1	-.291	3	
365	3	max	157.105	1	7.72	4	317.947	2	.459	2	.421	2	.255	6	
366		min	-319.482	2	-473.638	7	-294.219	1	-.425	1	-.436	1	.009	3	
367	4	max	212.966	3	-167.574	2	702.304	2	.45	2	.741	2	.354	6	
368		min	-541.12	8	-752.26	5	-653.475	1	-.374	1	-.784	1	.017	1	
369	5	max	212.966	3	-174.148	2	711.692	2	.45	2	1.448	2	1.069	5	
370		min	-541.12	8	-768.952	5	-662.862	1	-.374	1	-1.442	1	.374	2	
371	M38	1	max	0	1	0	1	0	0	1	0	1	0	1	
372		min	0	1	0	1	0	1	0	1	0	1	0	1	
373	2	max	253.794	7	-42.834	1	151.053	2	.042	5	.181	2	-.022	1	
374		min	-14.932	4	-424.124	6	-193.887	1	-.102	9	-.159	1	-.169	6	
375	3	max	253.794	7	-49.408	1	160.44	2	.042	5	.337	2	.286	9	
376		min	-14.932	4	-440.815	6	-203.274	1	-.102	9	-.357	1	.024	1	
377	4	max	474.343	7	69.583	1	139.952	2	.104	3	.562	2	.353	9	
378		min	10.314	4	-812.755	6	-206.401	1	-.04	4	-.575	1	.024	1	
379	5	max	474.343	7	63.009	1	149.34	2	.104	3	.707	2	1.171	6	
380		min	10.314	4	-829.447	6	-215.789	1	-.04	4	-.786	1	-.043	1	
381	MP4A	1	max	0	1	1.085	8	1.545	1	0	3	0	1	0	1
382		min	0	1	-.459	3	-1.615	2	0	8	0	1	0	1	
383	2	max	477.294	6	191.686	4	405.243	1	0	3	.551	1	.245	3	
384		min	171.212	2	-191.5	3	-405.313	2	0	8	-.551	2	-.245	4	
385	3	max	129.573	2	-4.71	3	228.309	2	.03	1	.262	1	.011	3	
386		min	-473.12	9	-245.855	8	-185.001	1	-.029	2	-.304	2	-.163	8	
387	4	max	373.512	6	-4.462	4	164.821	1	.03	1	.096	6	.444	6	
388		min	-385.908	9	-245.804	7	-121.513	2	-.029	2	-.037	9	.045	1	
389	5	max	0	6	0	1	.016	5	0	6	0	1	0	1	
390		min	0	1	-.052	6	-.006	9	0	1	0	1	0	2	
391	MP3A	1	max	0	1	.488	8	.342	1	0	3	0	1	0	1
392		min	0	1	-.045	3	-.372	2	0	8	0	1	0	1	
393	2	max	307.713	8	83.271	4	179.886	1	0	3	.105	1	.056	3	
394		min	145.532	2	-83.133	3	-179.915	2	0	8	-.105	2	-.057	4	
395	3	max	330.808	2	-26.366	1	107.344	2	.023	4	.059	1	-.029	4	
396		min	-175.29	1	-212.985	6	-83.6	1	-.028	3	-.078	2	-.149	7	
397	4	max	370.127	2	-26.366	1	49.397	2	.023	4	.071	2	.386	6	
398		min	-135.971	1	-212.985	6	-25.654	1	-.028	3	-.03	1	.028	1	
399	5	max	0	1	0	1	.008	7	0	6	0	1	0	1	
400		min	0	1	-.042	6	-.001	4	0	1	0	1	0	2	
401	MP2A	1	max	0	1	-.026	1	.034	1	0	7	0	1	0	1
402		min	0	1	-.256	7	-.054	6	0	1	0	1	0	1	
403	2	max	23.092	6	13.54	4	13.605	1	0	7	.012	1	.012	3	
404		min	7.289	4	-13.622	3	-13.617	2	0	1	-.012	2	-.012	4	
405	3	max	39.936	1	160.19	6	55.721	2	.092	4	.008	4	.113	6	
406		min	-48.303	2	18.692	1	-37.055	1	-.091	3	-.022	3	.013	1	
407	4	max	182.804	5	171.301	8	82.797	1	.092	4	.048	2	-.02	1	
408		min	38.306	2	-34.633	3	-64.131	2	-.091	3	-.029	1	-.167	6	
409	5	max	0	1	.011	7	.003	8	0	4	0	1	0	1	
410		min	0	1	0	4	-.001	3	0	7	0	6	0	2	
411	MP1A	1	max	0	1	.061	4	.224	1	0	7	0	1	0	1





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
412			0	1	-.423	7	-.242	2	0	4	0	1	0	1	
413	2	max	236.058	7	101.46	4	139.28	1	0	7	.085	1	.066	3	
414		min	102.932	3	-101.57	3	-139.297	2	0	4	-.085	2	-.065	4	
415	3	max	119.636	2	222.821	6	147.413	3	.1	4	.154	4	.174	6	
416		min	-62.841	1	10.937	1	-119.142	4	-105	3	-.164	3	0	1	
417	4	max	310.429	6	222.821	6	147.413	3	.1	4	.204	3	-.027	1	
418		min	21.088	1	10.937	1	-119.142	4	-105	3	-.144	4	-.383	6	
419	5	max	0	6	.039	6	.021	8	0	1	0	6	0	3	
420		min	0	1	.003	1	-.015	3	0	6	0	1	0	4	
421	M43	1	max	274.155	1	440.863	7	154.641	1	.578	7	.121	2	.459	2
422		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.065	1	-.425	1	
423	2	max	274.155	1	440.863	7	154.641	1	.578	7	.101	2	.442	2	
424		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.055	1	-.425	1	
425	3	max	274.155	1	440.863	7	154.641	1	.578	7	.081	2	.425	2	
426		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.045	1	-.424	1	
427	4	max	274.155	1	440.863	7	154.641	1	.578	7	.061	2	.409	2	
428		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.036	1	-.424	1	
429	5	max	274.155	1	440.863	7	154.641	1	.578	7	.041	2	.392	2	
430		min	-301.788	2	-20.263	4	-322.135	2	-.174	4	-.026	1	-.423	1	
431	M44	1	max	184.204	1	406.524	6	253.817	7	.483	6	.016	1	.042	5
432		min	-140.839	2	-375.573	9	-15	4	.052	1	-.094	7	-.102	9	
433	2	max	184.204	1	406.524	6	253.817	7	.483	6	.018	1	.019	5	
434		min	-140.839	2	-375.573	9	-15	4	.052	1	-.078	6	-.078	9	
435	3	max	184.204	1	406.524	6	253.817	7	.483	6	.021	1	.012	1	
436		min	-140.839	2	-375.573	9	-15	4	.052	1	-.064	6	-.055	9	
437	4	max	184.204	1	406.524	6	253.817	7	.483	6	.023	1	.01	1	
438		min	-140.839	2	-375.573	9	-15	4	.052	1	-.049	6	-.045	6	
439	5	max	184.204	1	406.524	6	253.817	7	.483	6	.026	1	.008	1	
440		min	-140.839	2	-375.573	9	-15	4	.052	1	-.041	2	-.071	6	
441	M45	1	max	350.574	1	381.565	1	63.354	3	.439	7	.091	8	.051	1
442		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.01	1	-.025	9	
443	2	max	350.574	1	381.565	1	63.354	3	.439	7	.077	6	.027	1	
444		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.011	1	-.029	9	
445	3	max	350.574	1	381.565	1	63.354	3	.439	7	.063	6	.021	3	
446		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.013	1	-.033	9	
447	4	max	350.574	1	381.565	1	63.354	3	.439	7	.05	6	.018	3	
448		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.015	1	-.037	9	
449	5	max	350.574	1	381.565	1	63.354	3	.439	7	.037	6	.022	2	
450		min	-374.367	2	-124.727	2	-242.859	8	0	4	-.017	1	-.045	5	
451	M46	1	max	32.315	8	380.544	2	220.554	7	.422	6	.014	4	.083	3
452		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.095	7	-.038	4	
453	2	max	32.315	8	380.544	2	220.554	7	.422	6	.016	4	.069	3	
454		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.082	7	-.041	4	
455	3	max	32.315	8	380.544	2	220.554	7	.422	6	.017	4	.055	3	
456		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.068	7	-.043	4	
457	4	max	32.315	8	380.544	2	220.554	7	.422	6	.019	4	.042	3	
458		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.054	7	-.046	4	
459	5	max	32.315	8	380.544	2	220.554	7	.422	6	.02	4	.043	1	
460		min	-6.256	1	-125.56	1	25.206	4	.032	1	-.04	7	-.063	2	
461	M47	1	max	193.697	1	296.794	6	181.315	7	-.036	1	.051	1	.059	8
462		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.092	2	.007	3	
463	2	max	193.697	1	296.794	6	181.315	7	-.036	1	.053	1	.041	8	
464		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.086	2	-.002	3	
465	3	max	193.697	1	296.794	6	181.315	7	-.036	1	.054	1	.026	4	
466		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.08	2	-.011	3	
467	4	max	193.697	1	296.794	6	181.315	7	-.036	1	.063	3	.02	4	
468		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.083	4	-.019	3	





**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
469	5	max	193.697	1	296.794	6	181.315	7	-.036	1	.074	3	.014	4	
470		min	-212.324	2	72.348	1	-56.035	4	-.313	6	-.086	4	-.028	3	
471	M48	1	max	325.851	1	320.491	8	382.608	3	-.002	3	.059	1	.138	2
472		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.11	2	-.131	1	
473		2	max	325.851	1	320.491	8	382.608	3	-.002	3	.066	1	.127	2
474		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.106	2	-.134	1	
475		3	max	325.851	1	320.491	8	382.608	3	-.002	3	.072	1	.116	2
476		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.102	2	-.138	1	
477		4	max	325.851	1	320.491	8	382.608	3	-.002	3	.079	1	.105	2
478		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.099	2	-.141	1	
479		5	max	325.851	1	320.491	8	382.608	3	-.002	3	.086	1	.094	2
480		min	-344.711	2	54.793	1	-220.044	4	-.4	8	-.095	2	-.145	1	
481	M49	1	max	96.333	1	205.899	5	48.2	3	-.023	3	.15	4	.027	2
482		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.108	3	0	1	
483		2	max	96.333	1	205.899	5	48.2	3	-.023	3	.139	4	.024	2
484		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.105	3	-.009	1	
485		3	max	96.333	1	205.899	5	48.2	3	-.023	3	.129	4	.021	2
486		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.102	3	-.018	1	
487		4	max	96.333	1	205.899	5	48.2	3	-.023	3	.118	4	.018	2
488		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.099	3	-.026	1	
489		5	max	96.333	1	205.899	5	48.2	3	-.023	3	.108	4	.016	2
490		min	-77.705	2	45.529	2	-176.923	8	-.315	8	-.096	3	-.034	1	
491	M50	1	max	147.251	3	343.42	6	-10.65	1	-.029	1	.146	4	.216	4
492		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.096	3	-.196	3	
493		2	max	147.251	3	343.42	6	-10.65	1	-.029	1	.138	4	.207	4
494		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.098	3	-.202	3	
495		3	max	147.251	3	343.42	6	-10.65	1	-.029	1	.13	4	.197	4
496		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.1	3	-.208	3	
497		4	max	147.251	3	343.42	6	-10.65	1	-.029	1	.122	4	.188	4
498		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.101	3	-.213	3	
499		5	max	147.251	3	343.42	6	-10.65	1	-.029	1	.113	4	.178	4
500		min	-118.742	4	31.176	1	-224.794	8	-.42	6	-.103	3	-.219	3	
501	M51	1	max	1219.366	1	1412.099	7	769.966	3	.109	2	0	3	.746	2
502		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	0	4	-.343	1	
503		2	max	1219.366	1	1412.099	7	769.966	3	.109	2	.048	3	.712	2
504		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.05	4	-.377	1	
505		3	max	1219.366	1	1412.099	7	769.966	3	.109	2	.096	3	.678	2
506		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.1	4	-.412	1	
507		4	max	1219.366	1	1412.099	7	769.966	3	.109	2	.144	3	.644	2
508		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.15	4	-.447	1	
509		5	max	1219.366	1	1412.099	7	769.966	3	.109	2	.192	3	.61	2
510		min	-1308.28	2	526.115	4	-802.298	4	-.519	9	-.201	4	-.482	1	
511	M52	1	max	472.726	1	1454.18	6	397.568	3	.294	1	0	3	.541	6
512		min	-346.659	2	140.606	1	-366.339	4	-.608	9	0	1	-.072	1	
513		2	max	472.726	1	1454.18	6	397.568	3	.294	1	.025	3	.45	6
514		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.023	4	-.081	1	
515		3	max	472.726	1	1454.18	6	397.568	3	.294	1	.05	3	.359	6
516		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.046	4	-.09	1	
517		4	max	472.726	1	1454.18	6	397.568	3	.294	1	.075	3	.28	2
518		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.069	4	-.099	1	
519		5	max	472.726	1	1454.18	6	397.568	3	.294	1	.099	3	.222	2
520		min	-346.659	2	140.606	1	-366.339	4	-.608	9	-.092	4	-.107	1	
521	M53	1	max	276.406	4	682.004	6	557.088	1	.108	1	1.377	2	.932	6
522		min	-556.499	3	154.174	1	-594.593	2	-.16	2	-1.379	1	.218	1	
523		2	max	276.406	4	665.312	6	547.701	1	.131	1	.88	2	.571	6
524		min	-556.499	3	147.6	1	-585.206	2	-.16	2	-.878	1	.103	1	
525		3	max	220.362	4	353.456	8	344.161	1	.131	1	.512	2	.211	6



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
526		min	-382.372	3	67.774	3	-363.238	2	-.138	2	-.529	1	.031	1	
527	4	max	220.362	4	336.764	8	334.774	1	.131	1	.153	2	.042	3	
528		min	-382.372	3	61.199	3	-353.851	2	-.138	2	-.19	1	-.152	8	
529	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
530		min	0	1	0	1	0	1	0	1	0	1	0	1	
531	M54	1	max	425.438	8	626.024	6	257.189	1	.185	3	.703	2	.904	6
532		min	-101.165	3	203.621	1	-197.876	2	-.24	4	-.775	1	.251	1	
533	2	max	425.438	8	609.333	6	247.802	1	.187	3	.51	2	.6	6	
534		min	-101.165	3	197.046	1	-188.489	2	-.24	4	-.523	1	.088	1	
535	3	max	248.512	8	403.521	6	195.85	4	.187	3	.312	2	.188	6	
536		min	-52.97	3	56.635	1	-156.084	3	-.217	4	-.324	1	.028	1	
537	4	max	248.512	8	386.829	6	195.85	4	.187	3	.214	2	-.025	1	
538		min	-52.97	3	50.061	1	-156.084	3	-.217	4	-.187	1	-.207	6	
539	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
540		min	0	1	0	1	0	1	0	1	0	1	0	1	
541	M58	1	max	395.095	1	254.93	1	5.465	3	.16	1	0	1	.236	1
542		min	-408.851	2	-213.272	2	-5.465	4	-.164	2	0	1	-.207	2	
543	2	max	393.518	1	252.973	1	2.732	3	.16	1	.002	3	.117	1	
544		min	-407.273	2	-215.229	2	-2.732	4	-.164	2	-.002	4	-.106	2	
545	3	max	391.94	1	251.016	1	0	1	.16	1	.003	3	.018	4	
546		min	-405.696	2	-217.186	2	0	1	-.164	2	-.003	4	-.026	3	
547	4	max	390.363	1	249.06	1	2.732	4	.16	1	.002	3	.098	2	
548		min	-404.118	2	-219.143	2	-2.732	3	-.164	2	-.002	4	-.119	1	
549	5	max	388.785	1	247.103	1	5.465	4	.16	1	0	1	.201	2	
550		min	-402.54	2	-221.099	2	-5.465	3	-.164	2	0	1	-.235	1	
551	M59	1	max	221.925	4	180.72	2	5.465	4	.122	4	0	1	.164	2
552		min	-231.169	3	-126.731	1	-5.465	3	-.128	3	0	1	-.132	1	
553	2	max	220.347	4	178.764	2	2.732	4	.122	4	.002	4	.08	2	
554		min	-229.592	3	-128.688	1	-2.732	3	-.128	3	-.002	3	-.072	1	
555	3	max	218.77	4	176.807	2	0	1	.122	4	.003	4	-.004	2	
556		min	-228.014	3	-130.645	1	0	1	-.128	3	-.003	3	-.029	5	
557	4	max	217.192	4	174.85	2	2.732	3	.122	4	.002	4	.051	1	
558		min	-226.437	3	-132.602	1	-2.732	4	-.128	3	-.002	3	-.087	2	
559	5	max	215.615	4	172.894	2	5.465	3	.122	4	0	1	.113	1	
560		min	-224.859	3	-134.558	1	-5.465	4	-.128	3	0	1	-.168	2	
561	M60	1	max	285.087	3	267.295	3	7.286	2	.128	3	0	1	.2	3
562		min	-298.438	4	-219.708	4	-7.286	1	-.136	4	0	1	-.169	4	
563	2	max	285.087	3	265.338	3	3.643	2	.128	3	.003	2	.075	3	
564		min	-298.438	4	-221.665	4	-3.643	1	-.136	4	-.003	1	-.066	4	
565	3	max	285.087	3	263.382	3	0	1	.128	3	.003	2	.039	4	
566		min	-298.438	4	-223.622	4	0	1	-.136	4	-.003	1	-.049	3	
567	4	max	285.087	3	261.425	3	3.643	1	.128	3	.003	2	.145	4	
568		min	-298.438	4	-225.578	4	-3.643	2	-.136	4	-.003	1	-.172	3	
569	5	max	285.087	3	259.468	3	7.286	1	.128	3	0	1	.251	4	
570		min	-298.438	4	-227.535	4	-7.286	2	-.136	4	0	1	-.295	3	
571	M61	1	max	0	1	.003	8	.002	5	0	1	0	1	0	1
572		min	0	1	-.001	3	0	2	0	1	0	1	0	1	
573	2	max	-6.437	4	45.282	2	67.083	1	.248	1	.076	2	.044	2	
574		min	-16.344	7	-44.037	1	-69.239	2	-.255	2	-.074	1	-.043	1	
575	3	max	8.346	8	45.282	2	80.969	1	.248	1	.036	1	.022	1	
576		min	3.287	3	-44.037	1	-83.124	2	-.255	2	-.037	2	-.023	2	
577	4	max	819.37	8	231.716	2	100.432	4	.105	3	.206	5	.071	2	
578		min	16.322	3	-602.446	1	-461.048	7	-.091	4	-.038	2	-.207	1	
579	5	max	0	1	0	1	0	1	0	1	0	1	0	1	
580		min	0	1	0	1	0	1	0	1	0	1	0	1	
581	M62	1	max	971.711	3	1328.084	7	803.257	2	.4	2	0	1	.895	4
582		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	0	2	-.386	3	



**Envelope Member Section Forces (Continued)**

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
583	2	max	971.711	3	1328.084	7	803.257	2	.4	2	.05	2	.877	4
584		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.051	1	-.431	3
585	3	max	971.711	3	1328.084	7	803.257	2	.4	2	.1	2	.86	4
586		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.101	1	-.476	3
587	4	max	971.711	3	1328.084	7	803.257	2	.4	2	.151	2	.842	4
588		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.152	1	-.521	3
589	5	max	971.711	3	1328.084	7	803.257	2	.4	2	.201	2	.825	4
590		min	-1045.452	4	279.812	4	-810.074	1	-.437	1	-.203	1	-.566	3
591	M63	1	max	667.46	1	844.059	8	418.607	3	.174	3	0	.16	8
592		min	-208.609	2	26.046	3	-362.21	4	-.185	4	0	8	-.014	3
593	2	max	667.46	1	844.059	8	418.607	3	.174	3	.026	3	.107	8
594		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.023	4	-.016	3
595	3	max	667.46	1	844.059	8	418.607	3	.174	3	.052	3	.055	8
596		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.045	4	-.018	3
597	4	max	667.46	1	844.059	8	418.607	3	.174	3	.078	3	.035	2
598		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.068	4	-.038	1
599	5	max	667.46	1	844.059	8	418.607	3	.174	3	.105	3	.024	2
600		min	-208.609	2	26.046	3	-362.21	4	-.185	4	-.091	4	-.066	1
601	M61A	1	max	306.881	3	29.605	5	16.747	3	.066	7	0	0	1
602		min	-320.442	4	8.864	2	-16.747	4	.004	4	0	1	0	1
603	2	max	309.054	3	14.802	5	8.374	3	.066	7	.014	3	-.007	2
604		min	-321.573	4	4.432	2	-8.374	4	.004	4	-.014	4	-.025	5
605	3	max	311.226	3	0	1	0	1	.066	7	.019	3	-.01	2
606		min	-322.705	4	0	1	0	1	.004	4	-.019	4	-.033	5
607	4	max	313.398	3	-4.432	2	8.374	4	.066	7	.014	3	-.007	2
608		min	-323.836	4	-14.802	5	-8.374	3	.004	4	-.014	4	-.025	5
609	5	max	315.571	3	-8.864	2	16.747	4	.066	7	0	1	0	1
610		min	-324.967	4	-29.605	5	-16.747	3	.004	4	0	1	0	1
611	M62A	1	max	223.154	4	29.831	8	9.891	1	.062	5	0	0	1
612		min	-233.342	3	8.32	3	-9.891	2	.014	2	0	1	0	1
613	2	max	219.354	4	14.915	8	4.945	1	.062	5	.008	1	-.007	3
614		min	-228.501	3	4.16	3	-4.945	2	.014	2	-.008	2	-.025	8
615	3	max	215.554	4	0	1	0	1	.062	5	.011	1	-.009	3
616		min	-223.66	3	0	1	0	1	.014	2	-.011	2	-.033	8
617	4	max	211.754	4	-4.16	3	4.945	2	.062	5	.008	1	-.007	3
618		min	-218.819	3	-14.915	8	-4.945	1	.014	2	-.008	2	-.025	8
619	5	max	207.954	4	-8.32	3	9.891	2	.062	5	0	1	0	1
620		min	-213.977	3	-29.831	8	-9.891	1	.014	2	0	1	0	1
621	M63A	1	max	438.383	2	29.687	7	15.612	2	.067	6	0	0	1
622		min	-449.95	1	8.667	4	-15.612	1	.004	1	0	1	0	1
623	2	max	436.267	2	14.843	7	7.806	2	.067	6	.013	2	-.007	4
624		min	-446.793	1	4.334	4	-7.806	1	.004	1	-.013	1	-.025	7
625	3	max	434.151	2	0	1	0	1	.067	6	.018	2	-.01	4
626		min	-443.635	1	0	1	0	1	.004	1	-.018	1	-.033	7
627	4	max	432.035	2	-4.334	4	7.806	1	.067	6	.013	2	-.007	4
628		min	-440.478	1	-14.843	7	-7.806	2	.004	1	-.013	1	-.025	7
629	5	max	429.919	2	-8.667	4	15.612	1	.067	6	0	1	0	1
630		min	-437.321	1	-29.687	7	-15.612	2	.004	1	0	1	0	1

**Envelope AISC 14th(360-10): LRFD Steel Code Checks**

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	MP4A	PIPE 2.0	.606	3.75	2	.049	3.75	1	9836.599	32130	1.872	1.872	2...	H1-1b
2	MP4B	PIPE 2.0	.531	3.75	4	.071	3.75	4	9836.599	32130	1.872	1.872	2...	H1-1b
3	MP4C	PIPE 2.0	.509	3.75	3	.051	3.75	3	9836.599	32130	1.872	1.872	2...	H1-1b
4	M37	PIPE 2.5	.420	4	2	.192	2.833	2	28468.406	50715	3.596	3.596	1...	H1-1b



**Envelope AISI 14th(360-10): LRFD Steel Code Checks (Continued)**

Member	Shape	Code C...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
5	M6	PIPE 2.5	.418	4	3	.152	4	3	28468.406	50715	3.596	3.596	1...	H1-1b
6	M53	PIPE 2.5	.407	0	2	.096	0	2	28468.406	50715	3.596	3.596	2...	H1-1b
7	M27	PIPE 2.5	.363	0	3	.102	0	3	28468.406	50715	3.596	3.596	2...	H1-1b
8	M38	PIPE 2.5	.334	4	6	.083	4	7	28468.406	50715	3.596	3.596	2...	H1-1b
9	M20A	PIPE 2.5	.330	4	8	.073	4	8	28468.406	50715	3.596	3.596	2...	H1-1b
10	M35	PIPE 2.5	.327	0	3	.081	1	1	28468.406	50715	3.596	3.596	3...	H1-1b
11	M7	PIPE 2.5	.327	4	7	.069	4	8	28468.406	50715	3.596	3.596	2...	H1-1b
12	M19B	PIPE 2.5	.305	4	3	.140	2.833	4	28468.406	50715	3.596	3.596	2...	H1-1b
13	M36	PIPE 2.5	.290	0	8	.140	0	1	28468.406	50715	3.596	3.596	2...	H1-1b
14	M54	PIPE 2.5	.259	0	6	.097	0	4	28468.406	50715	3.596	3.596	2...	H1-1b
15	M28	PIPE 2.5	.253	0	7	.107	0	3	28468.406	50715	3.596	3.596	2...	H1-1b
16	MP3C	PIPE 2.0	.248	3.75	7	.031	7.604	5	9836.599	32130	1.872	1.872	1...	H1-1b
17	MP3A	PIPE 2.0	.246	3.75	6	.037	3.75	2	9836.599	32130	1.872	1.872	1...	H1-1b
18	MP3B	PIPE 2.0	.239	7.604	8	.040	3.75	4	9836.599	32130	1.872	1.872	1...	H1-1b
19	MP1B	PIPE 2.0	.237	3.75	8	.144	3.75	2	9836.599	32130	1.872	1.872	2...	H1-1b
20	MP1A	PIPE 2.0	.235	7.604	6	.099	3.75	3	9836.599	32130	1.872	1.872	1...	H1-1b
21	M61	PIPE 2.5	.234	.986	4	.189	3.944	4	38082.042	50715	3.596	3.596	3...	H1-1b
22	MP1C	PIPE 2.0	.226	7.604	7	.105	7.604	3	9836.599	32130	1.872	1.872	1...	H1-1b
23	MP2B	PIPE 2.0	.180	6.125	5	.103	6.125	1	17855.087	32130	1.872	1.872	2...	H1-1b
24	MP2A	PIPE 2.0	.172	6.125	8	.071	6.125	4	17855.087	32130	1.872	1.872	2...	H1-1b
25	MP2C	PIPE 2.0	.169	6.125	7	.079	6.125	3	17855.087	32130	1.872	1.872	2...	H1-1b
26	M60	PIPE 2.0	.162	1.879	3	.105	1.879	4	30798.037	32130	1.872	1.872	2...	H1-1b
27	M58	PIPE 2.0	.133	0	1	.122	0	1	30798.037	32130	1.872	1.872	2...	H1-1b
28	M59	PIPE 2.0	.093	1.879	2	.085	0	4	30798.037	32130	1.872	1.872	2...	H1-1b
29	M63A	PIPE 2.0	.020	2.244	6	.043	4.488	6	25235.644	32130	1.872	1.872	1...	H1-1b
30	M61A	PIPE 2.0	.020	2.244	8	.043	4.488	7	25235.644	32130	1.872	1.872	1...	H1-1b
31	M62A	PIPE 2.0	.019	2.244	8	.040	0	5	25235.644	32130	1.872	1.872	1...	H1-1b

**Envelope AISI S100-10: LRFD Cold Formed Steel Code Checks**

Member	Shape	Code ...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...															

**Envelope AA ADM1-10: ASD - Building Aluminum Code Checks**

Member	Shape	Code C...	Loc[ft]	LC Shear ...	Loc[ft]	Dir	LC	Pnc/O...	Pnt/Om...	Mny/O...	Mnz/O...	Vny/O...	Vnz/O...	Cb	Eqn
No Data to Print ...															

# EXHIBIT 10

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

T-Mobile Existing Facility

Site ID: CT11392B

Waterbury/ Hill St.  
207 Garden Circle  
Waterbury, Connecticut 06704

**August 18, 2020**

**EBI Project Number: 6220004026**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>8.40%</b>



August 18, 2020

T-Mobile

Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11392B - Waterbury/ Hill St.

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **207 Garden Circle in Waterbury, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 207 Garden Circle in Waterbury, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 6) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 8) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 9) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 10) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 13) The antennas used in this modeling are the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector A, the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector B, the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback

from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 14) The antenna mounting height centerline of the proposed antennas is 182 feet above ground level (AGL).
- 15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 16) All calculations were done with respect to uncontrolled / general population threshold limits.

## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	6,153.47	ERP (W):	6,153.47	ERP (W):	6,153.47
Antenna A1 MPE %:	<b>0.67%</b>	Antenna B1 MPE %:	<b>0.67%</b>	Antenna C1 MPE %:	<b>0.67%</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts	Total TX Power (W):	300 Watts
ERP (W):	10,533.98	ERP (W):	10,533.98	ERP (W):	10,533.98
Antenna A2 MPE %:	<b>1.14%</b>	Antenna B2 MPE %:	<b>1.14%</b>	Antenna C2 MPE %:	<b>1.14%</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	<b>2.78%</b>	Antenna B3 MPE %:	<b>2.78%</b>	Antenna C3 MPE %:	<b>2.78%</b>
Antenna #:	4	Antenna #:	4	Antenna #:	4
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts



# EBI Consulting

environmental | engineering | due diligence

ERP (W):	10,670.10	ERP (W):	10,670.10	ERP (W):	10,670.10
Antenna A4 MPE %:	<b>1.77%</b>	Antenna B4 MPE %:	<b>1.77%</b>	Antenna C4 MPE %:	<b>1.77%</b>



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	6.36%
Sky Tel	0.12%
Bell South	0.02%
Arch	0.13%
Mobile Com	0.15%
Fed Ex	0.02%
#7	0.01%
MediaFLO	0.52%
CL&P	1.07%
Site Total MPE % :	8.40%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.36%
T-Mobile Sector B Total:	6.36%
T-Mobile Sector C Total:	6.36%
Site Total MPE % :	8.40%

### T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 2100 MHz LTE	4	1538.37	182.0	6.68	2100 MHz LTE	1000	0.67%
T-Mobile 1900 MHz GSM	4	1028.30	182.0	4.46	1900 MHz GSM	1000	0.45%
T-Mobile 1900 MHz LTE	2	2056.61	182.0	4.46	1900 MHz LTE	1000	0.45%
T-Mobile 2100 MHz UMTS	2	1153.78	182.0	2.50	2100 MHz UMTS	1000	0.25%
T-Mobile 2500 MHz LTE	2	6412.98	182.0	13.92	2500 MHz LTE	1000	1.39%
T-Mobile 2500 MHz NR	2	6412.98	182.0	13.92	2500 MHz NR	1000	1.39%
T-Mobile 600 MHz LTE	2	591.73	182.0	1.28	600 MHz LTE	400	0.32%
T-Mobile 600 MHz NR	1	1577.94	182.0	1.71	600 MHz NR	400	0.43%
T-Mobile 700 MHz LTE	2	648.82	182.0	1.41	700 MHz LTE	467	0.30%
T-Mobile 1900 MHz UMTS	2	1101.85	182.0	2.39	1900 MHz UMTS	1000	0.24%
T-Mobile 1900 MHz LTE	2	2203.69	182.0	4.78	1900 MHz LTE	1000	0.48%
						<b>Total:</b>	<b>6.36%</b>

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

## Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	6.36%
Sector B:	6.36%
Sector C:	6.36%
T-Mobile Maximum MPE % (Sector A):	6.36%
Site Total:	8.40%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **8.40%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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