



Filed by:  
G. Scott Shepherd, Site Development Specialist II - SBA Communications  
134 Flanders Rd., Suite 125, Westborough, MA 01581  
508.251.0720 x 3807 - gshepherd@sbsite.com

February 23, 2021

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

**RE: Notice of Exempt Modification**  
**130 Welles Road, Groton, CT**  
**Latitude: 41.392666**  
**Longitude: -71.969805**  
**T-Mobile Site #: CTNL225A\_L600**

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 108-foot level of the existing 118-foot Monopole Tower at 130 Wells Rd., Groton, CT. The 108-foot tower is owned by SBA 2012 TC Assets, LLC. The property is owned by the City of Groton. T-Mobile now intends to install three (3) new L600/ L700MHz.

The new antennas would be installed at the 108-foot level of the tower and do not support 5G services.

T-Mobile is also proposing tower modifications to the footings of the tower at ground level. As shown on the enclosed Post-Mod Structural drawings in Exhibit 9.

**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) RFS APXVAARR24\_43-U-NA20 L600/L700 MHz antennas
- (3) Ericsson Radio 4449 B71+B12 RRUs
- Low Profile platform: Site Pro PRK-1245L + Site Pro PRK-SFS-L

Existing Equipment to Remain:

- (3) T-Arms
- (10) 1-5/8" coax
- (1) 1-5/8" fiber

Entitlements:

- (2) 1-5/8" coax

## TOWER MODIFICATIONS

Install New:

- (3) Anchor Rod Reinforcements
- (2) LP6X125-BL4.75-20T and (1) LP6X125-BR4.75-20T Flat Bar Reinforcements
- (3) LPX100-G-10TT Flat Bar Reinforcements
- Apply Foundation coating

## GROUND

Install New:

- (1) RBS 6102 mounted to existing concrete pad
- Equipment within existing RBS 6201 equipment cabinet

This facility was approved by the Council under Docket 230 on December 19, 2002. Approval was given for a monopole not to exceed a height of 120 feet above ground level. A D&M plan was to be produced. Upon the establishment of any new State or federal RF standards applicable to the facility, the facility was to be brought into compliance with same. Space was to be permitted to public or private entities for fair consideration or reasons provided precluding same. And any obsolete antennas were to be removed within 60 days. There were no further 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 Groton's Planning & Economic Development, Joseph Summers, and Deputy Mayor, Gweneviere Depot. (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: Gweneviere Depot, Deputy Mayor / with attachments  
*City of Groton, 295 Meridian St., Groton, CT 06340*  
Joseph Summers, Planning & Economic Development / with attachments  
*City of Groton, 295 Meridian St., Groton, CT 06340*

**EXHIBIT LIST**

Exhibit 1	Check Copy	To Be Invoiced at a later date per Covid Guideleines
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	X
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	CSC Docket 230
Exhibit 6	Construction Drawings	Chappell Engineering 2/2/21
Exhibit 7	Modification Drawings	Geo Structural 6/20/19
Exhibit 8	Post-Mod Structural Analysis	TES 11/18/20
Exhibit 9	Structural Mod Design Drawings	TES 11/24/20 (Job # 99403)
Exhibit 10	Post-Mod Mount Analysis	Geo Structural 6/13/19
Exhibit 11__	EME Report	Transcom Engineering 6/11/19

## EXHIBIT 1

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

# EXHIBIT 2

ORIGIN ID: BFEA	(508) 614-0389	SHIP DATE: 23FEB21
RICK WOODS		ACTWGT: 1.00 LB
SBA COMMUNICATIONS CORPORATION		CAD: 105843304/NET14340
134 FLANDERS RD		
SUITE 125		
WESTBOROUGH, MA 01581		BILL SENDER
UNITED STATES US		
<b>TO MELANIE A. BACHMAN EXEC. DIR</b>		
<b>CONNECTICUT SITING COUNCIL</b>		
<b>TEN FRANKLIN SQUARE</b>		
<b>NEW BRITAIN CT 06051</b>		
(508) 251-0720 X 3807	REF: 105692009-6089	
INV#		
PO:	DEPT:	

TRK#	7729 7326 8971	WED - 24 FEB 10:30A
0201		PRIORITY OVERNIGHT
<b>EB BDLA</b>		
		06051
		BDL
		CT:US

	
	J21121011901uv


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56DJ3/CB7A/FE4A

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

SHIP DATE: 23FEB21  
ACTWGT: 1.00 LB  
CAD: 105843304/NET14340

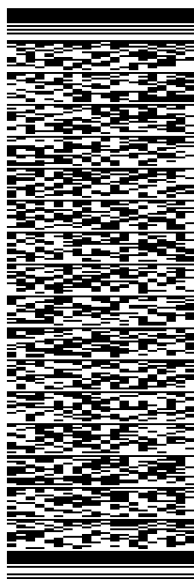
BILL SENDER

TO DEPUTY MAYOR, GWENEVIERE DEPOT  
CITY OF GROTON  
295 MERIDIAN ST.

GROTON CT 06340

(508) 251-0720 X 3807 REF: 1056920096089

INV# PO: DEPT:



J211121011901uv

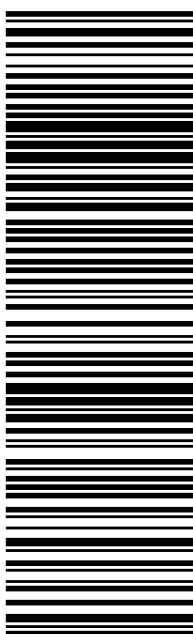
56DJ3/CB7A/FE4A

TRK# 7729 7330 3955  
0201

WED - 24 FEB 10:30A  
PRIORITY OVERNIGHT

EB GONA

06340  
CT-US BDL



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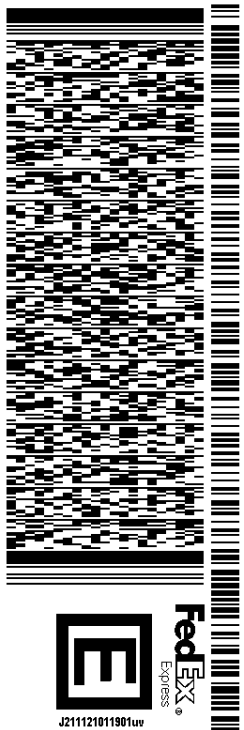


ORIGIN ID:BFBA (508) 614-0389  
RICK WOODS  
SBA COMMUNICATIONS CORPORATION  
134 FLANDERS RD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 23FEB21  
ACTWGT: 1.00 LB  
CAD: 105843304/NET14340  
BILL SENDER

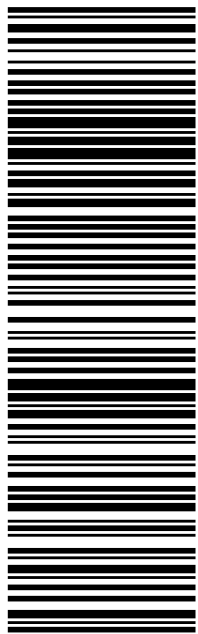
TO  
**JOSEPH SUMMERS**  
**CITY OF GROTON**  
**PLANNING & ECONOMIC DEVELOPMENT**  
**295 MERIDIAN ST.**  
**GROTON CT 06340**  
(508) 251-0720 X.3807 REF: 105692009-6089  
INV# DEPT:  
PO:

56DJ3/CB7A/FE4A



TRK# 7729 7332 5673  
0201  
WED - 24 FEB 10:30A  
PRIORITY OVERNIGHT

**EB GONA**  
06340  
CT:US BDL



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# EXHIBIT 3

# Commercial Property Card

## Card 1 of 1

<b>Account</b> 271014348692 E	<b>Location</b> 130 WELLES RD	<b>Zoning</b> RU-80	<b>Deed Book/Page</b> 137/622	<b>Acres</b> 8.55
<b>District</b> OLD MYSTIC	<b>Use Code</b> MUNICIPALITIES			

### Current Owner

GROTON TOWN OF  
45 FORT HILL RD  
GROTON CT 06340

### Property Picture



### Building Information

<b>Building No:</b>	1
<b>Year Built:</b>	1990
<b>No of Units:</b>	1
<b>Structure Type:</b>	MANUFACTURING
<b>Building Total Area:</b>	3568 sqft.
<b>Grade:</b>	C
<b>Identical Units:</b>	1

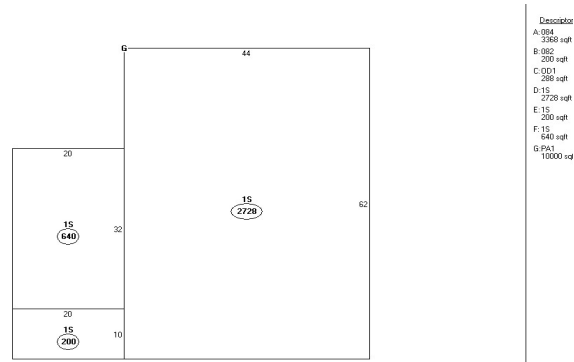
### Valuation

<b>Land:</b>	\$246,300
<b>Building:</b>	\$109,700
<b>Total:</b>	\$356,000
<b>Total Assessed Value:</b>	\$249,200

### Recent Sales

Book/Page	Date	Price
137/622	8/29/1952	\$0

### Building Sketch



### Sketch Legend

---	Main Living Area	1SMA	Masonry	GRHS	Attached Greenhouse
1FR	Frame	OMP	Open Masonry Porch	CAT	Cathedral Ceiling
OFF	Open Frame Porch	EMP	Enclosed Msry Porch	SOP	Screen Open Frame Prch
EFP	Enclosed Frame Porch	MUB	Masonry Utility	SMP	Screen Open Msrny Prch
FUB	Frame Utility Building	MB	Masonry Bay	CPAT	Concrete Patio
FB	Frame Bay	MOH	Masonry Overhang	B	Basement
FG	Frame Garage	.SMA	1/2 Story Masonry		
FOH	Frame Overhang	MP	Masonry Patio		
.SFR	1/2 Story Frame	WD	Wood Deck		
A(U)	Attic (Unfinished)	CPY	Canopy		
A(F)	Attic (Finished)				

### Exterior/Interior Information

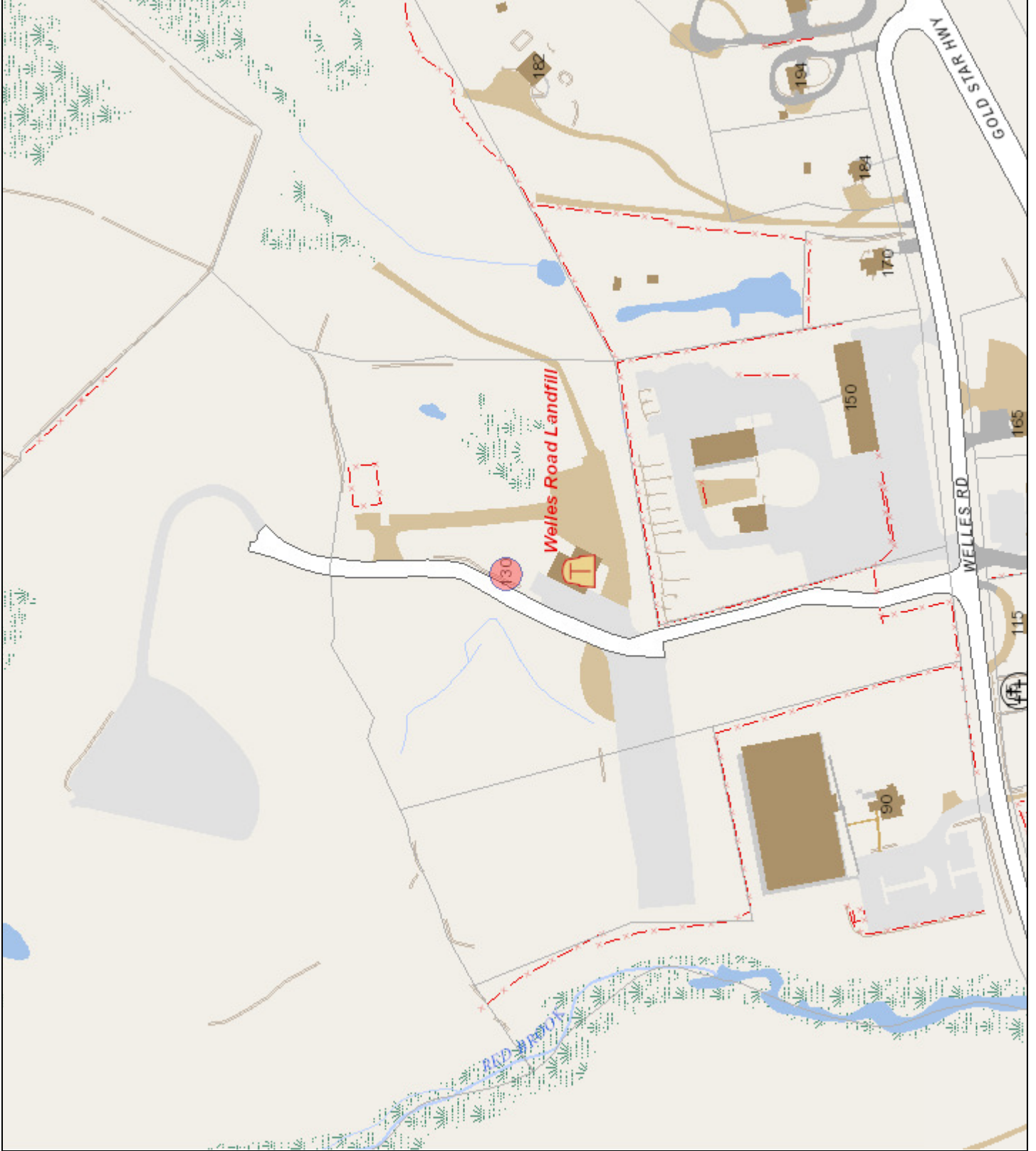
Levels	Use Type	Ext. Walls	Const. Type	Heating	A/C	Condition
01 - 01	MULTI-USE STORAGE	METAL,LIGHT	LIGHT STEEL	NONE	NONE	NORMAL
01 - 01	MULTI-USE OFFICE	METAL,LIGHT	LIGHT STEEL	ELECTRIC	NONE	NORMAL

# EXHIBIT 4

# Town of Groton



## GIS Map



**Disclaimer:**  
The information on this page is for informational purposes only. It is not intended to be used as a legal document. The information on this page is based on the most current data available to the Town of Groton as of February 23, 2021. The information on this page is based on the most current data available to the Town of Groton as of February 23, 2021. The information on this page is based on the most current data available to the Town of Groton as of February 23, 2021. THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY.  
Horizontal Datum: Connecticut State Plane, Connecticut, North American Datum of 1983 (NAD83)  
Vertical Datum: North American Vertical Datum of 1988 (NAVD88)



1 inch = 208 feet  
Date: February 23, 2021

# EXHIBIT 5

<b>DOCKET NO. 230</b> – Sprint Spectrum, L. P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a cellular telecommunications facility at Welles Road, Groton, Connecticut.	} } } }	Connecticut  Siting  Council  December 19, 2002
--	------------------	---

**Decision and Order**

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum L. P. (Sprint) for the construction, maintenance and operation of a wireless telecommunications facility at the proposed site located at the town bulky waste disposal facility on Welles Road in Groton, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level.
2. The site development shall be moved 20 feet to the north to provide a greater buffer to the adjacent wetland areas. The closest wetland area to the edge of the development area shall be a minimum distance of 65 feet.
3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, security fence, access road, utility line, and landscaping; and
  - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
7. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and The Day.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

**Applicant**

Sprint Spectrum, L.P.  
d/b/a Sprint PCS

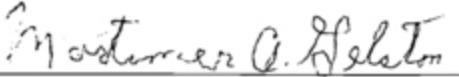

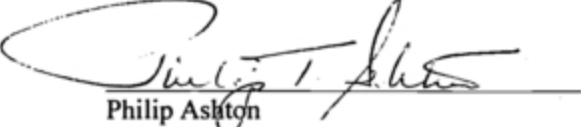
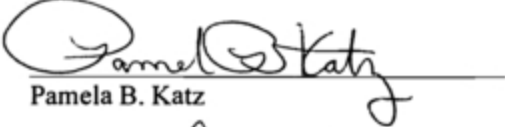
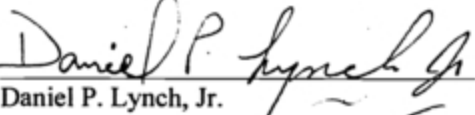
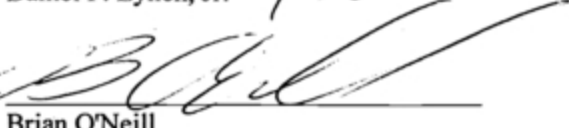
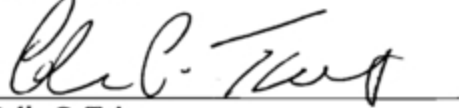

**Its Representative**

Thomas J. Regan, Esquire  
Brown Rudnick Berlack Israels LLP  
CityPlace I, 38<sup>th</sup> Floor  
185 Asylum Street  
Hartford, CT 06103-3402  
(860) 509-6522



**CERTIFICATION**

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 230** – Sprint Spectrum, L. P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a cellular telecommunications facility at Welles Road, Groton, Connecticut, and voted as follows to approve the proposed facility:

<u>Council Members</u>	<u>Vote Cast</u>
 Mortimer A. Gelston, Chairman	Yes
_____ Commissioner Donald W. Downes Designee: Gerald J. Heffernan	Absent
 Commissioner Arthur J. Rocque, Jr. Designee: Brian J. Emerick	Yes
 Philip Ashton	Abstain
 Pamela B. Katz	Abstain
 Daniel P. Lynch, Jr.	Yes
 Brian O'Neill	Yes
 Colin C. Tait	Yes
 Edward S. Wilensky	Yes

Dated at New Britain, Connecticut December 19, 2002.

STATE OF CONNECTICUT )

ss. New Britain, Connecticut :

COUNTY OF HARTFORD )

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

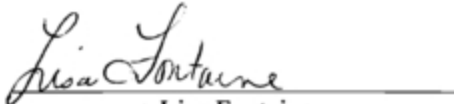
ATTEST:



S. Derek Phelps  
Executive Director  
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 230 has been forwarded by Certified First Class Return Receipt Requested mail on December 23, 2002, to all parties and intervenors of record as listed on the attached service list, dated August 19, 2002.

ATTEST:



Lisa Fontaine  
Administrative Assistant  
Connecticut Siting Council

**LIST OF PARTIES AND INTERVENORS**  
**SERVICE LIST**

<b>Status Granted</b>	<b>Status Holder (name, address &amp; phone number)</b>	<b>Representative (name, address &amp; phone number)</b>
<b>Applicant</b>	Sprint Spectrum L.P. d/b/a Sprint PCS	Thomas J. Regan, Esquire Brown Rudnick Berlack Israels LLP CityPlace I, 38 <sup>th</sup> Floor 185 Asylum Street Hartford, CT 06103-3402 (860)509-6522 (860) 509-6501--fax <a href="mailto:tregan@brbilaw.com">tregan@brbilaw.com</a>

# EXHIBIT 6

**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).**

# TOWERCO GROTON MONOPOLE

132 WELLES ROAD  
 MYSTIC, CT 06355  
 NEW LONDON COUNTY

## SITE NO.: CTNL225A

SITE TYPE: 118'± MONOPOLE

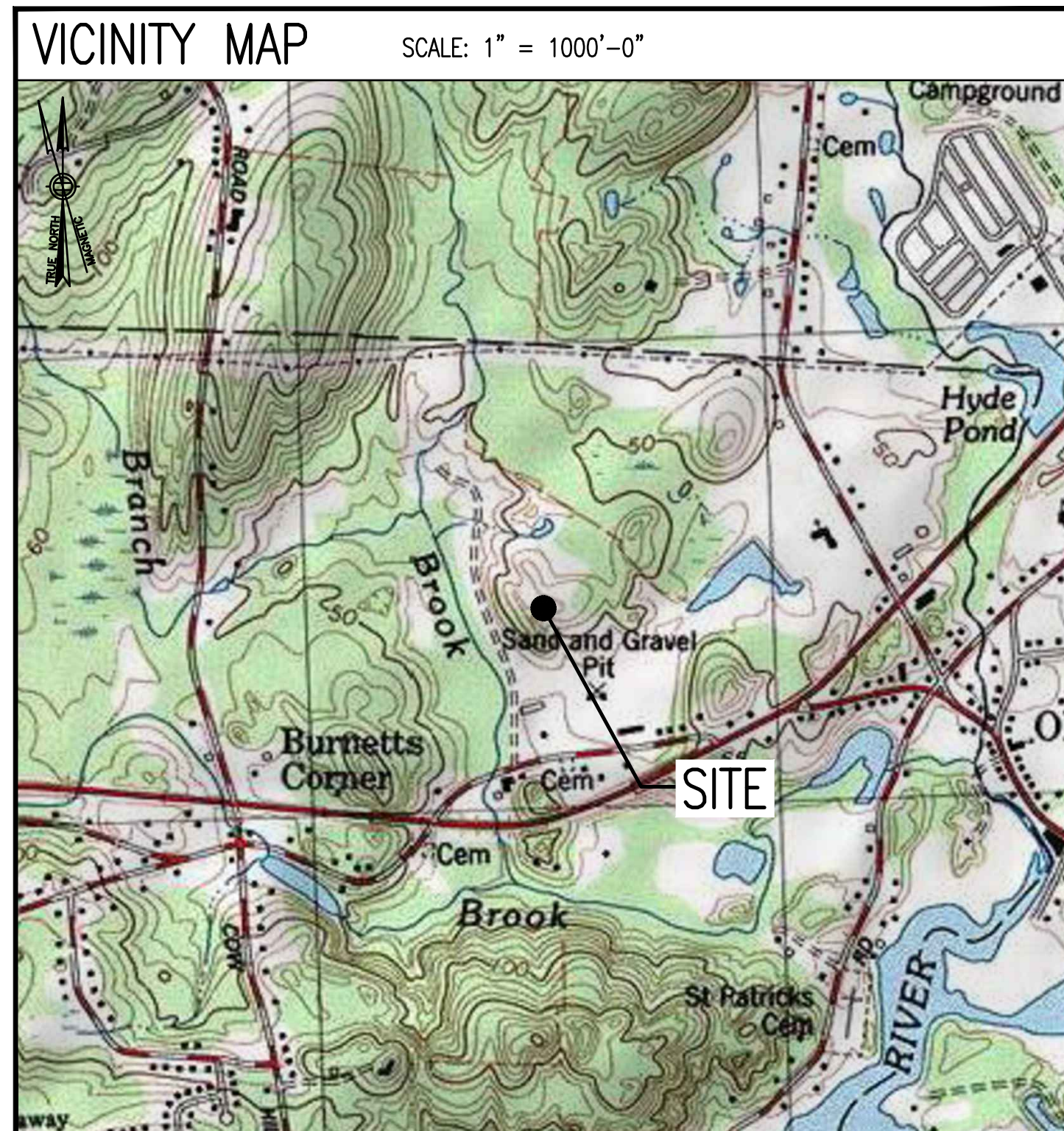
RF DESIGN GUIDELINE: 67D05A

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
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES	
<p>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.</p> <p>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.</p> <p>3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOTENT 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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.</p> <p>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.</p> <p>16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.</p> <p>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.</p>

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 PLAN	1
A-2	TOWER ELEVATIONS & ANTENNA PLAN	1
A-3	SITE 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).

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>

PROJECT SUMMARY	
SITE NUMBER:	CTNL225A
SBA SITE NUMBER:	CT46142-A
SBA SITE NAME:	SOUTH LEDYARD - TOWN DUMP
SITE ADDRESS:	132 WELLES ROAD MYSTIC, CT 06355
PROPERTY OWNER:	TOWN OF GROTON 45 FORT HILL ROAD, GROTON, CT 06340
TOWER OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW LONDON COUNTY
ZONING DISTRICT:	RU-80 - RURAL RESIDENTIAL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	118'
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SROth@sbasite.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.41.3927°    41°23'33.72" LONGITUDE W.71.9698°    71°58'11.28"

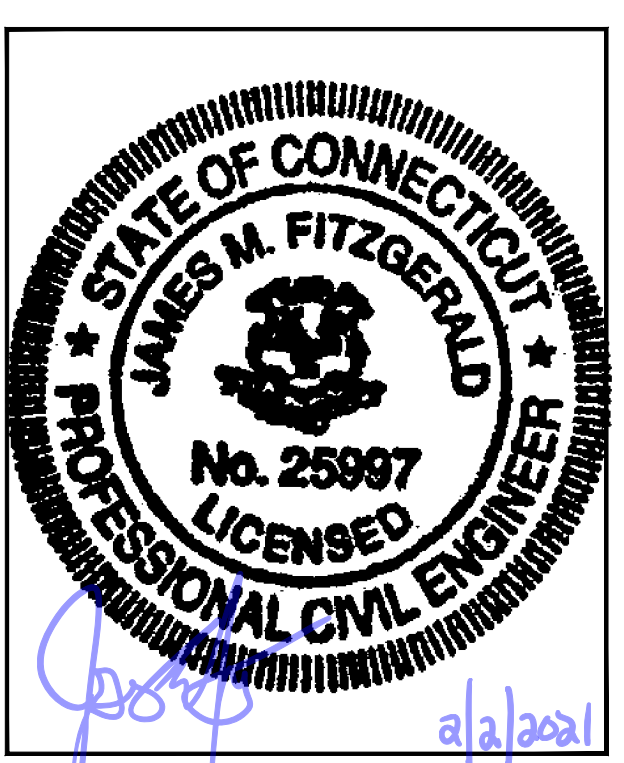
**T-MOBILE NORTHEAST LLC**  
 15 COMMERCE WAY, SUITE B  
 NORTON, MA 02766  
 (508) 286-2700

**SBA**

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

**CHAPPELL ENGINEERING ASSOCIATES, LLC**  
 Civil Structural-Land Surveying

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



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	02/02/21	ISSUED FOR CONSTRUCTION	C/MC
0	06/06/19	ISSUED FOR REVIEW	CAW

SITE NUMBER:  
**CTNL225A**

SITE ADDRESS:  
 132 WELLES ROAD  
 MYSTIC, CT 06355

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 DIPPEL 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:**

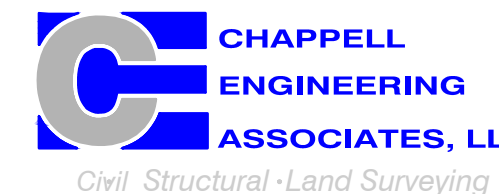
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR 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, ½ 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.

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SITE NUMBER:  
**CTNL225A**

SITE ADDRESS:  
132 WELLES ROAD  
MYSTIC, CT 06355

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

**GN-1**

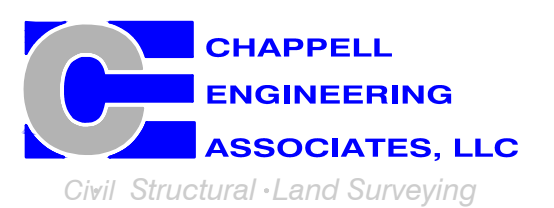
**SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):**  
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR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

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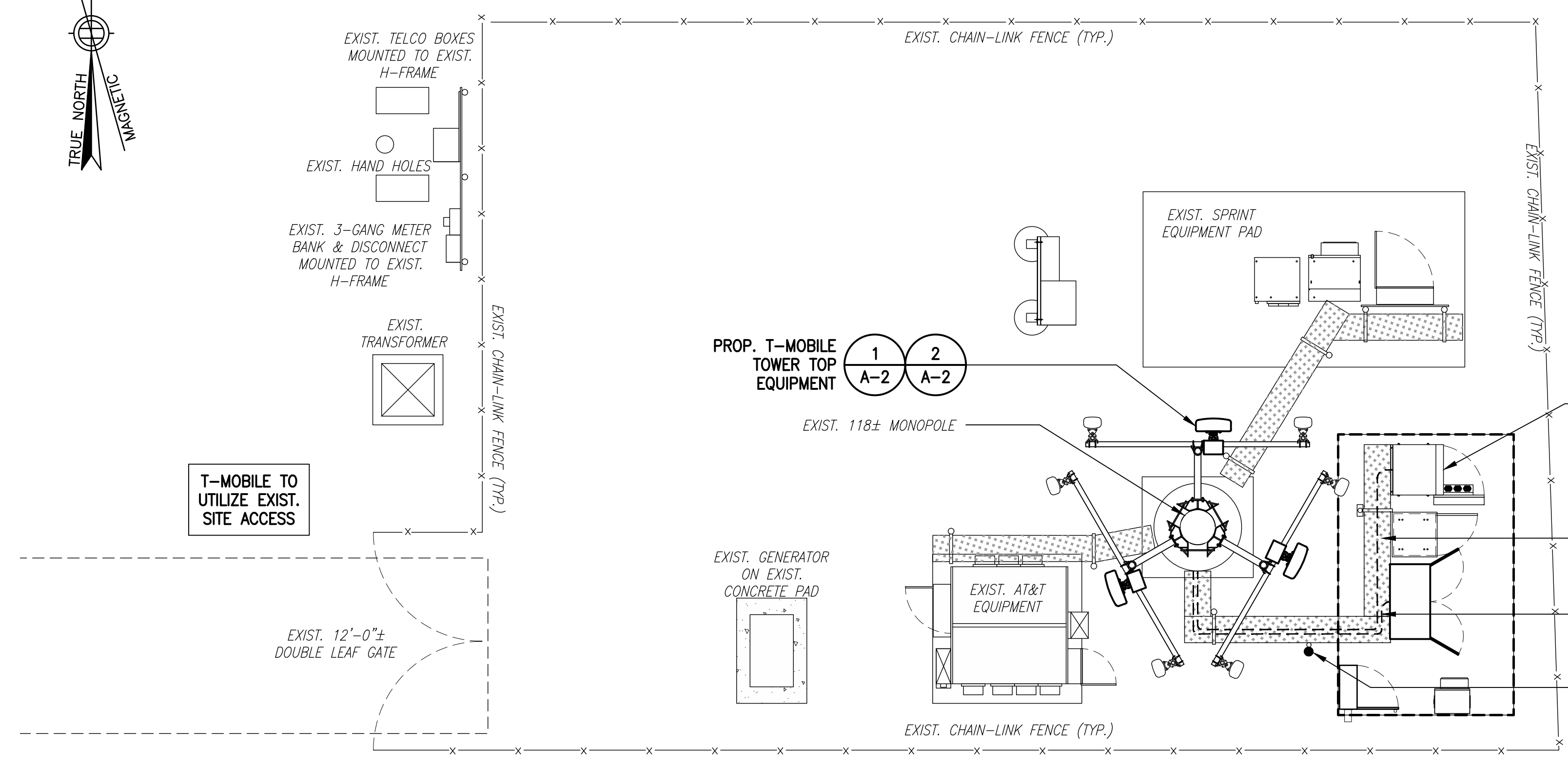
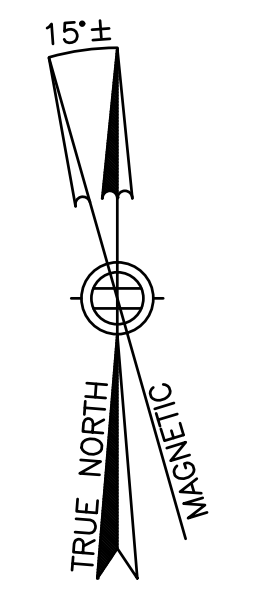
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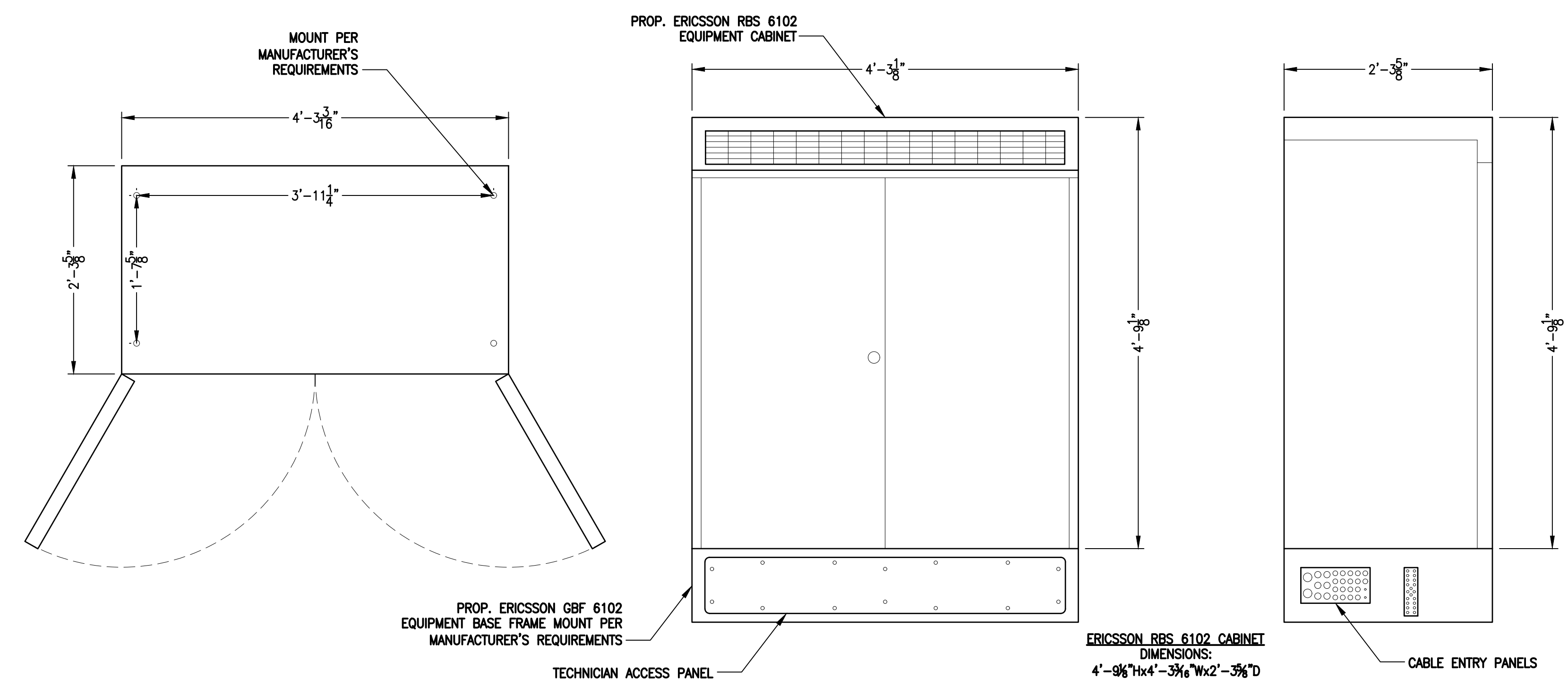
SITE ADDRESS:  
132 WELLES ROAD  
MYSTIC, CT 06355

SHEET TITLE  
**COMPOUND & EQUIPMENT PLAN**

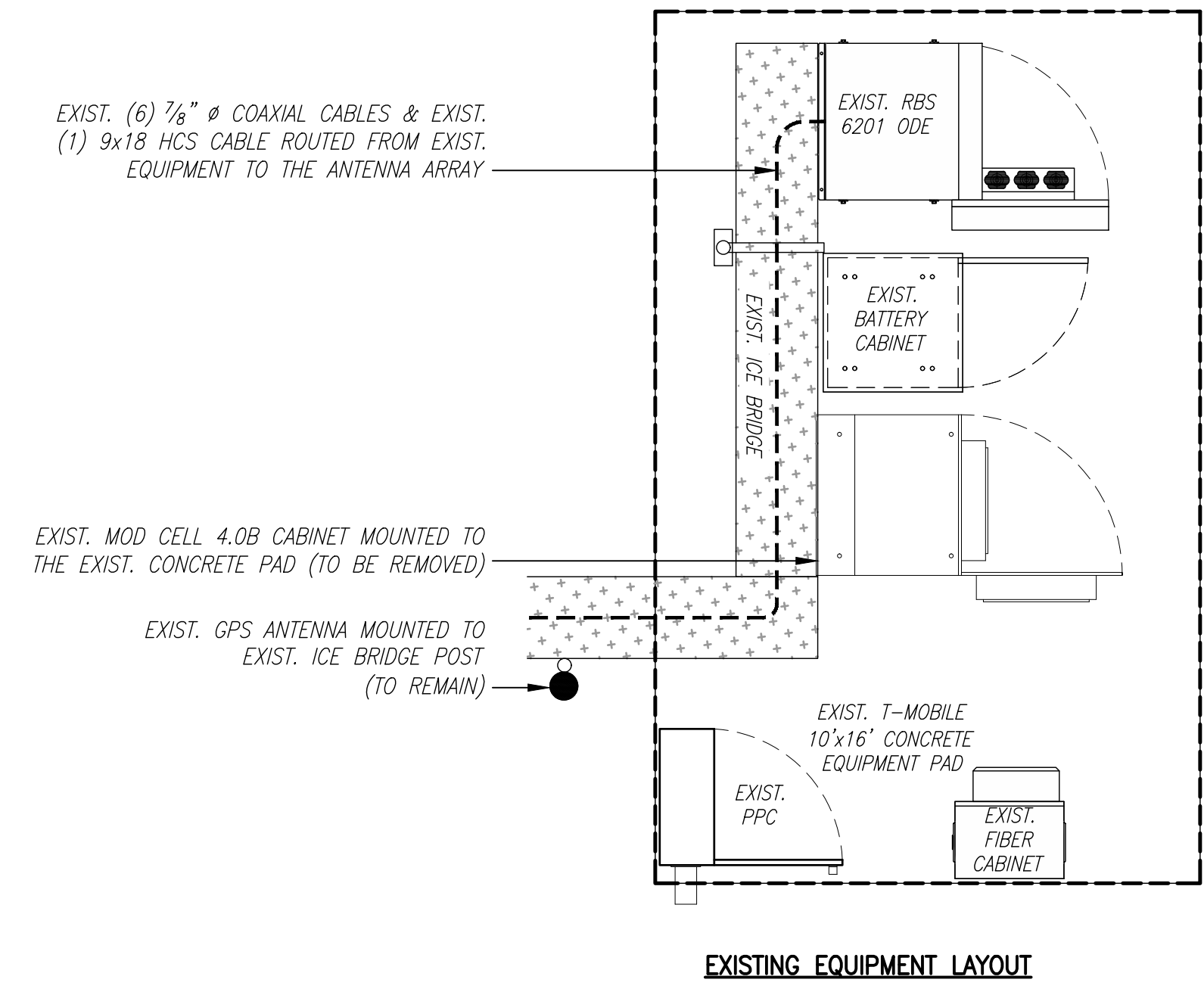
SHEET NUMBER  
**A-1**



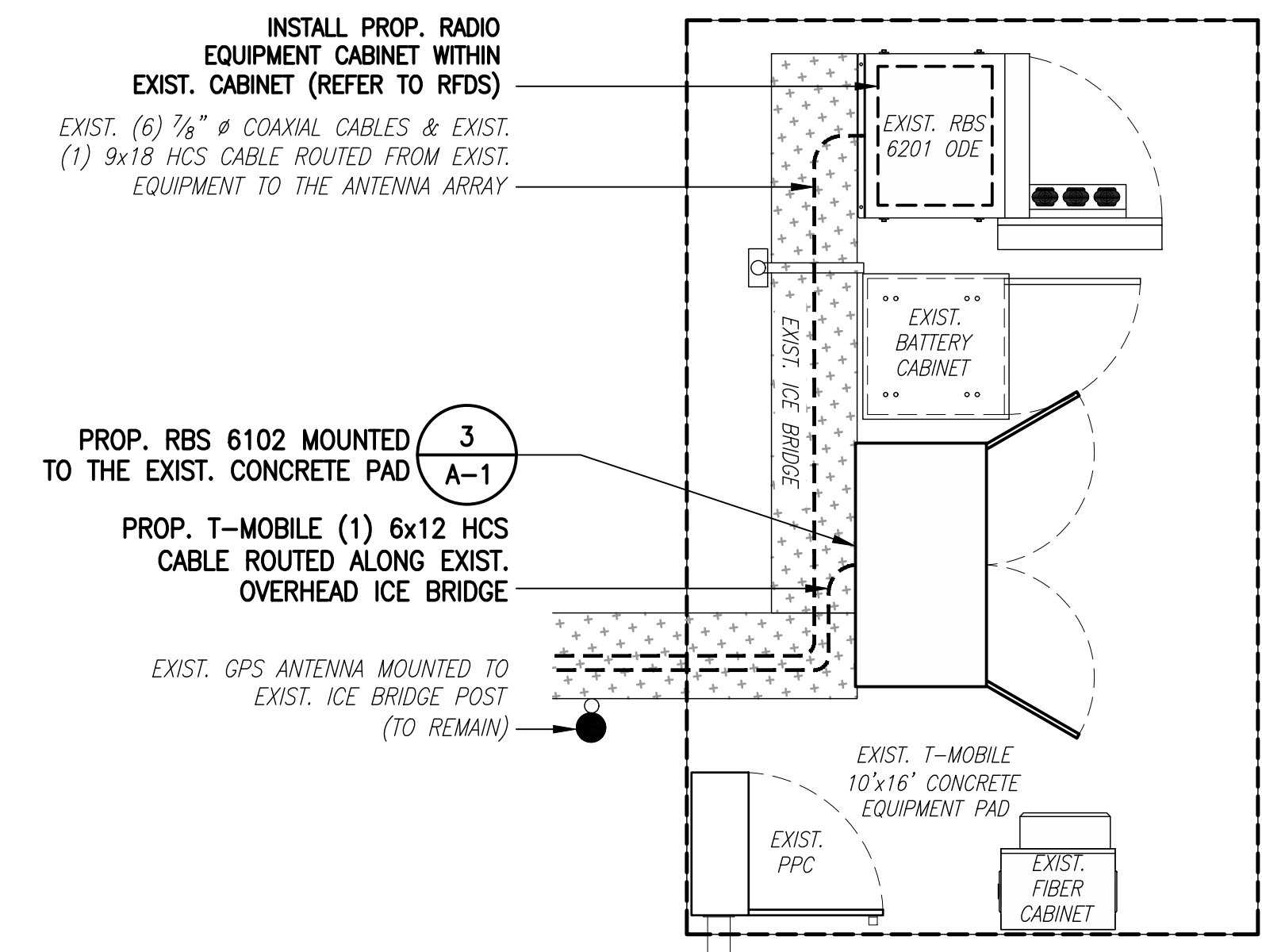
**COMPOUND PLAN**  
 SCALE: 3/16" = 1'-0"  
 0 5'-4" 10'-8" 16'-0"



**RBS6102 DETAILS**  
 SCALE: N.T.S.



**EXISTING EQUIPMENT LAYOUT**



**PROPOSED EQUIPMENT LAYOUT**

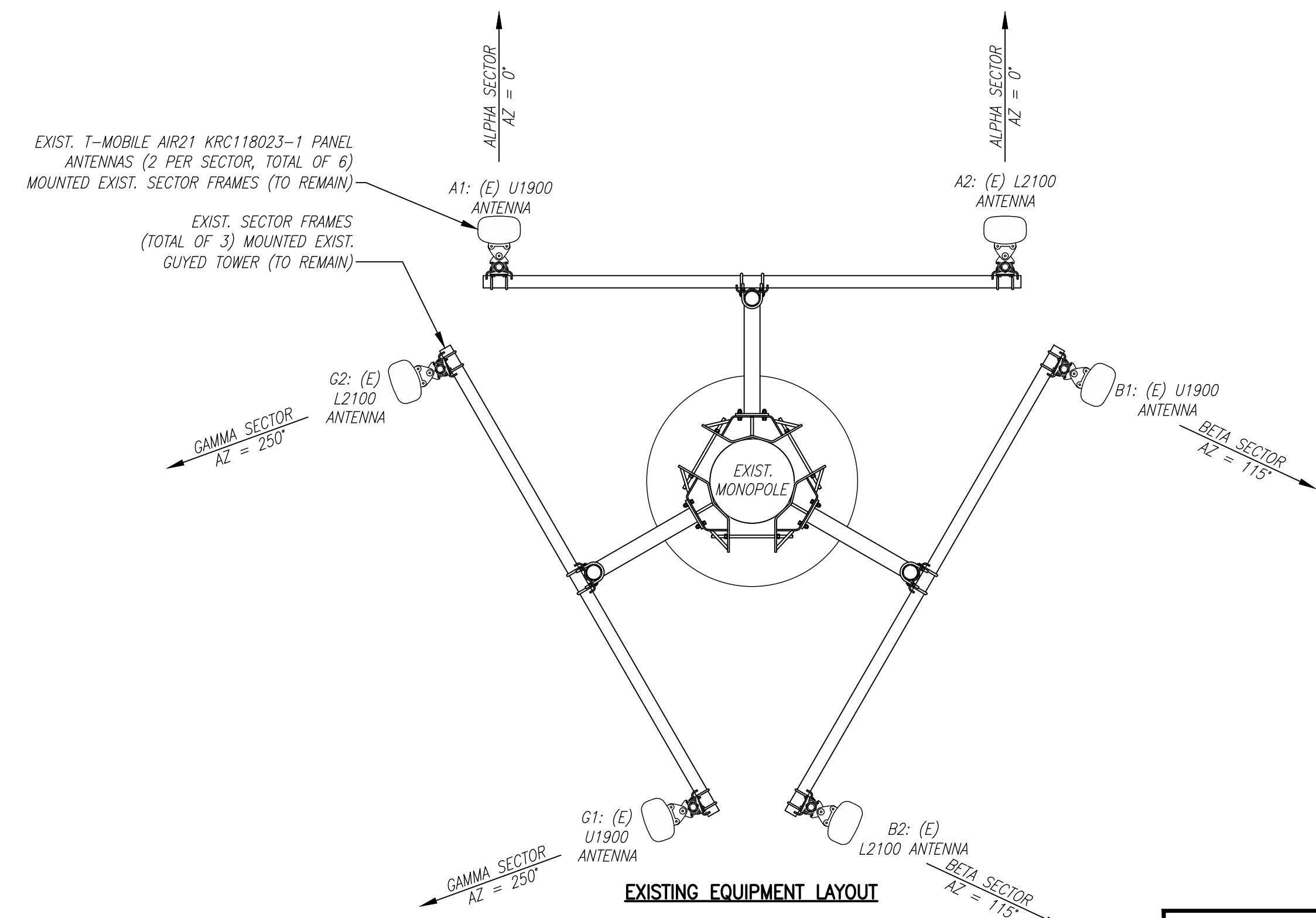
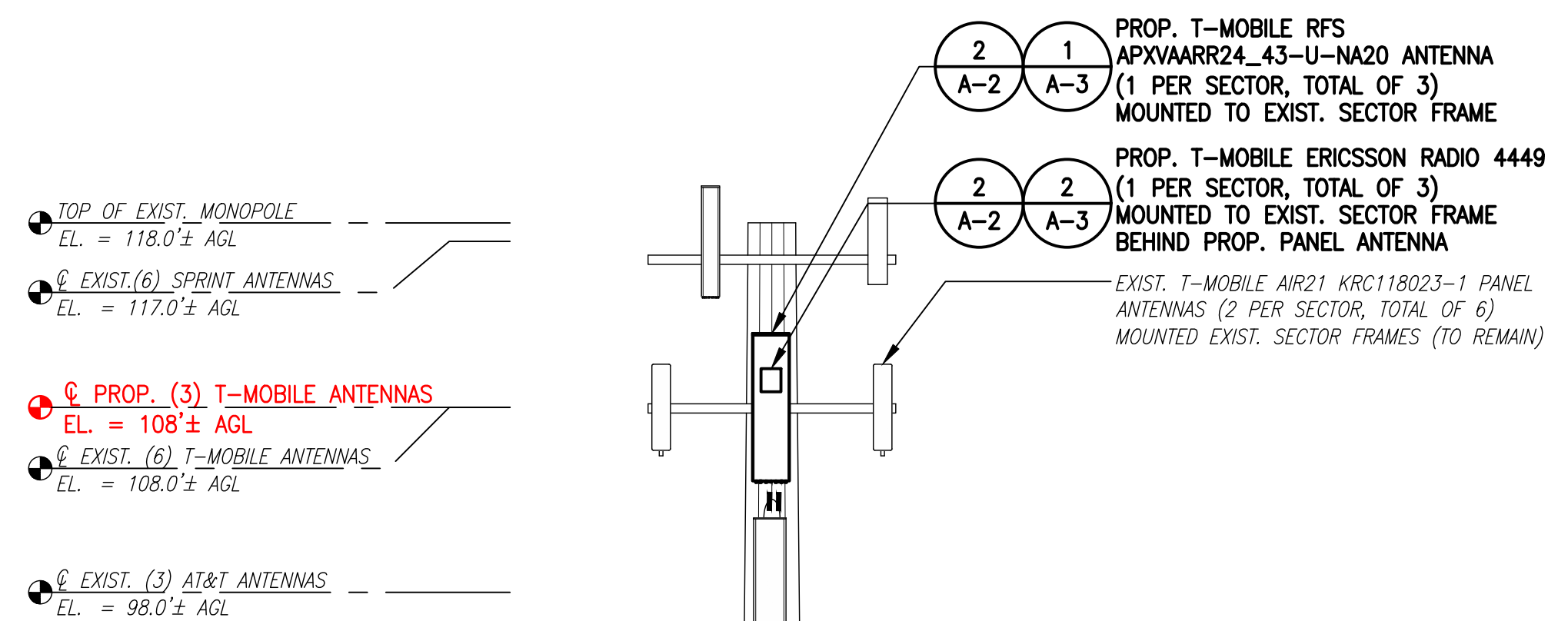
**EQUIPMENT PLAN**  
 SCALE: 3/8" = 1'-0"  
 0 2'-8" 5'-4" 8'-0"

**SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):**  
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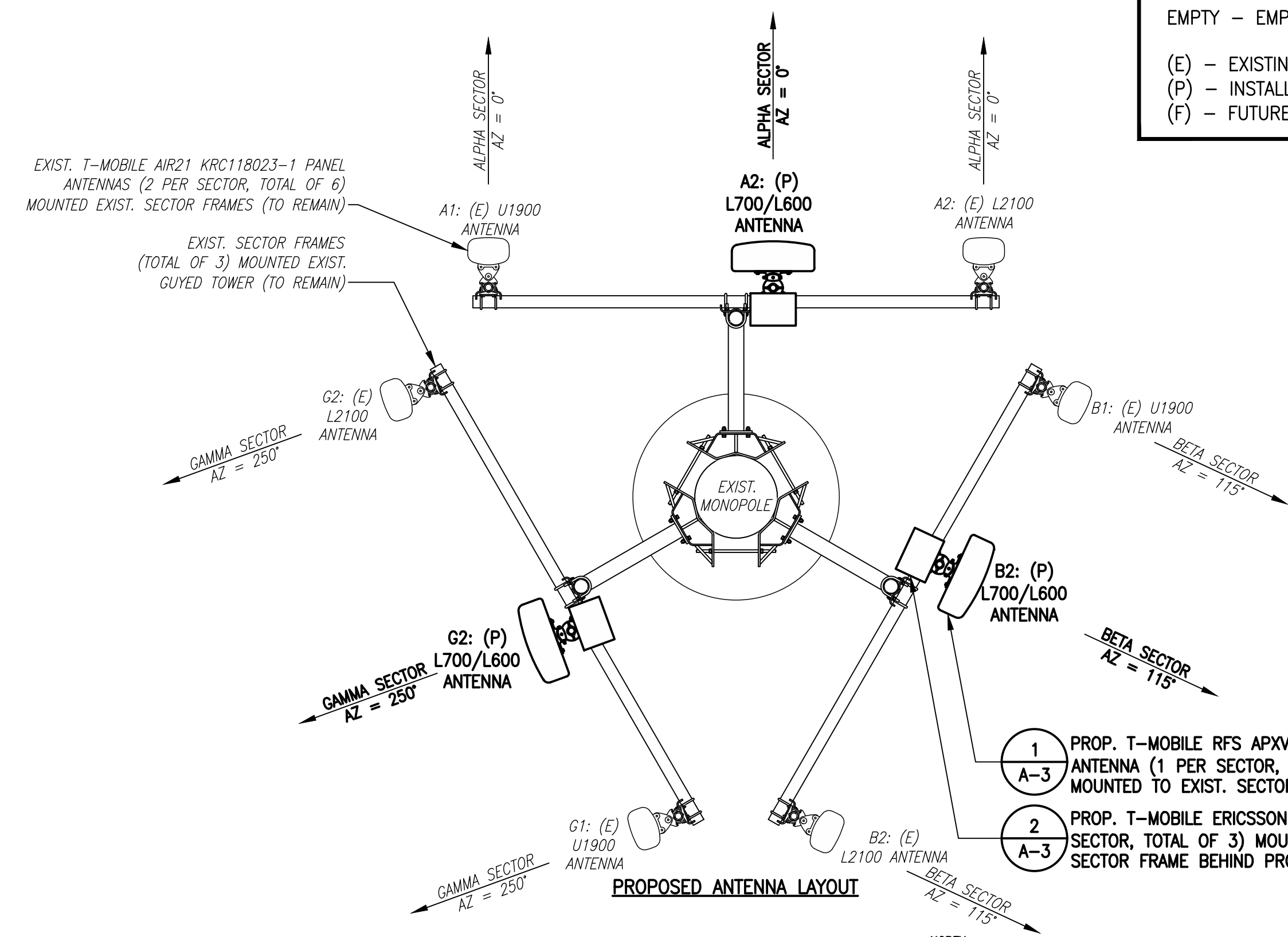
**SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):**  
 GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED RING-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.

GENERAL CONTRACTOR SHALL REFER TO MOUNT STRUCTURAL ANALYSIS AND ANY MOUNT MODIFICATION DESIGN PROVIDED BY SBA.

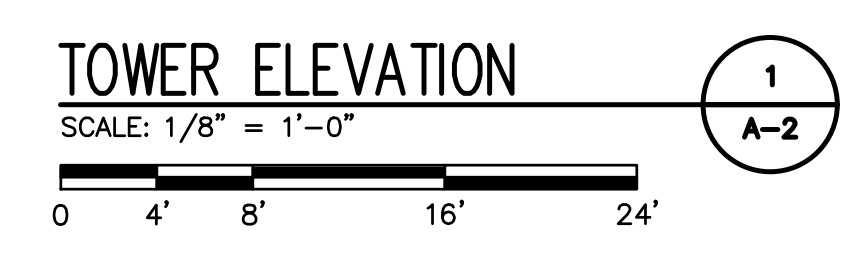
**RAD CENTER NOTE:**  
 T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.



**ANTENNA STATUS LEGEND:**  
 EMPTY - EMPTY PIPE  
 (E) - EXISTING  
 (P) - INSTALL  
 (F) - FUTURE



NOTE: GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.



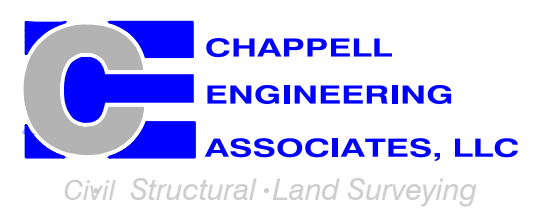
NOTE: VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

**T-MOBILE  
NORTHEAST LLC**

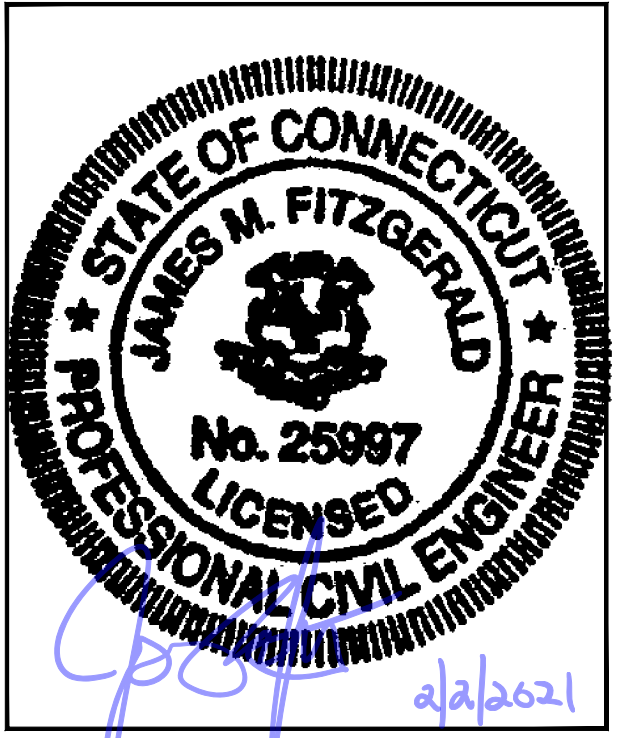
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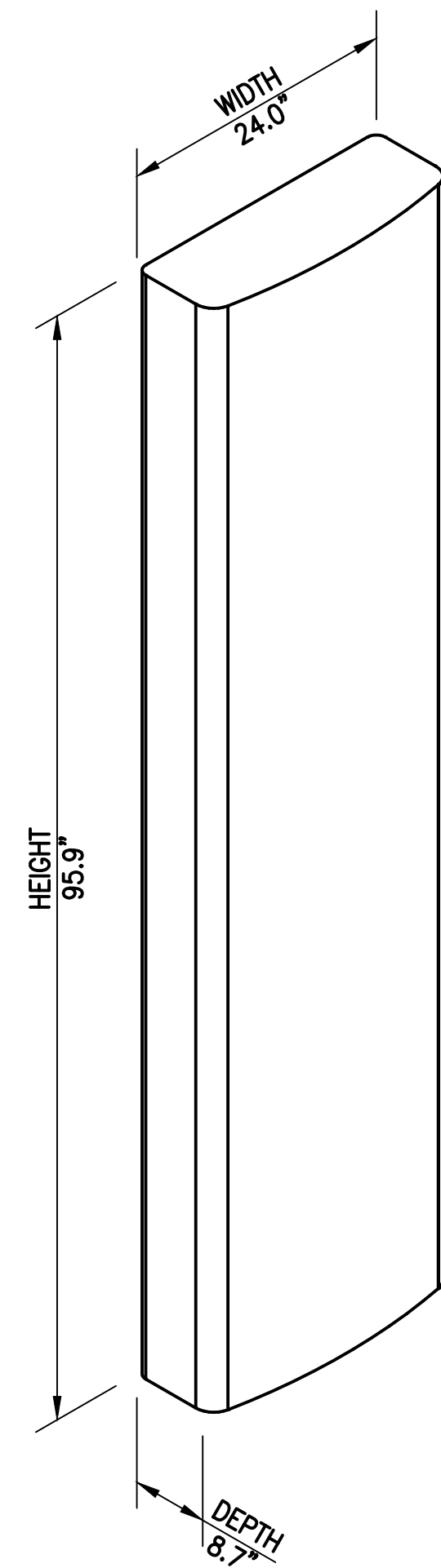
SHEET TITLE  
**TOWER ELEVATIONS &  
 ANTENNA PLAN**

SHEET NUMBER  
**A-2**



FINAL ANTENNA CONFIGURATION								
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	ERICSSON AIR21 KRC118023-1 B2A/B4P	108'± AGL	0°	0°	2°	U1900	-	9x18 HCS CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	108'± AGL	0°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 HCS CABLE (SHARED)
	ERICSSON AIR21 KRC118023-1 B2P/B4A	108'± AGL	0°	0°	2°	L2100	-	9x18 HCS CABLE (SHARED)
BETA	ERICSSON AIR21 KRC118023-1 B2A/B4P	108'± AGL	115°	0°	2°	U1900	-	9x18 HCS CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	108'± AGL	115°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 HCS CABLE (SHARED)
	ERICSSON AIR21 KRC118023-1 B2P/B4A	108'± AGL	115°	0°	2°	L2100	-	9x18 HCS CABLE (SHARED)
GAMMA	ERICSSON AIR21 KRC118023-1 B2A/B4P	108'± AGL	250°	0°	2°	U1900	-	9x18 HCS CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	108'± AGL	250°	0°	2°	L600/L700	RADIO 4449 B71+B12	(1) 6x12 HCS CABLE (SHARED)
	ERICSSON AIR21 KRC118023-1 B2P/B4A	108'± AGL	250°	0°	2°	L2100	-	9x18 HCS CABLE (SHARED)

NOTE: EXIST. (6) 3/8" COAXIAL CABLES TO REMAIN DISCONNECTED.



RFS APXVAARR24\_43-NA20 PANEL ANTENNA  
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D  
WEIGHT: 128.0 LBS  
1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS  
SCALE: N.T.S.

1  
A-3



ERICSSON RADIO 4449 B12+B71  
DIMENSIONS: 14.9"H x 13.2"W x 9.3"D  
WEIGHT: 74.0 LBS  
1 PER SECTOR, TOTAL OF 3

RRU DETAIL  
SCALE: N.T.S.

2  
A-3

T-MOBILE  
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SHEET TITLE

SITE DETAILS

SHEET NUMBER

A-3

T-MOBILE  
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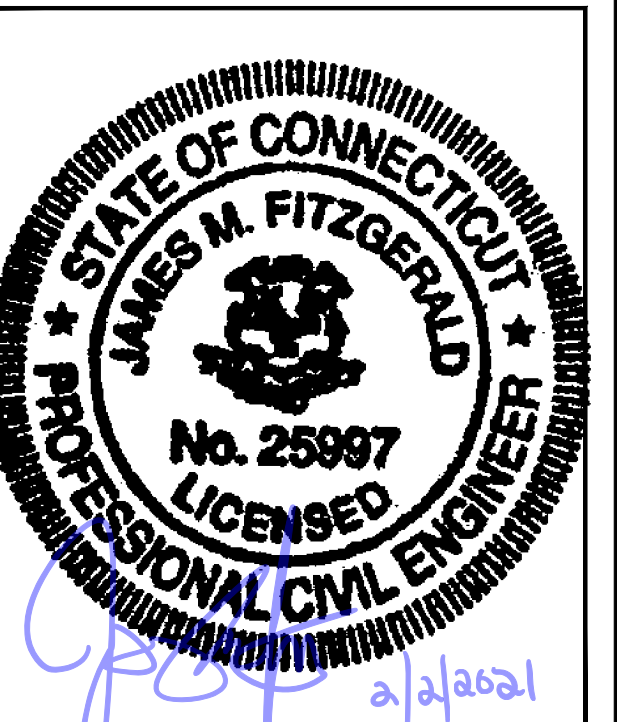
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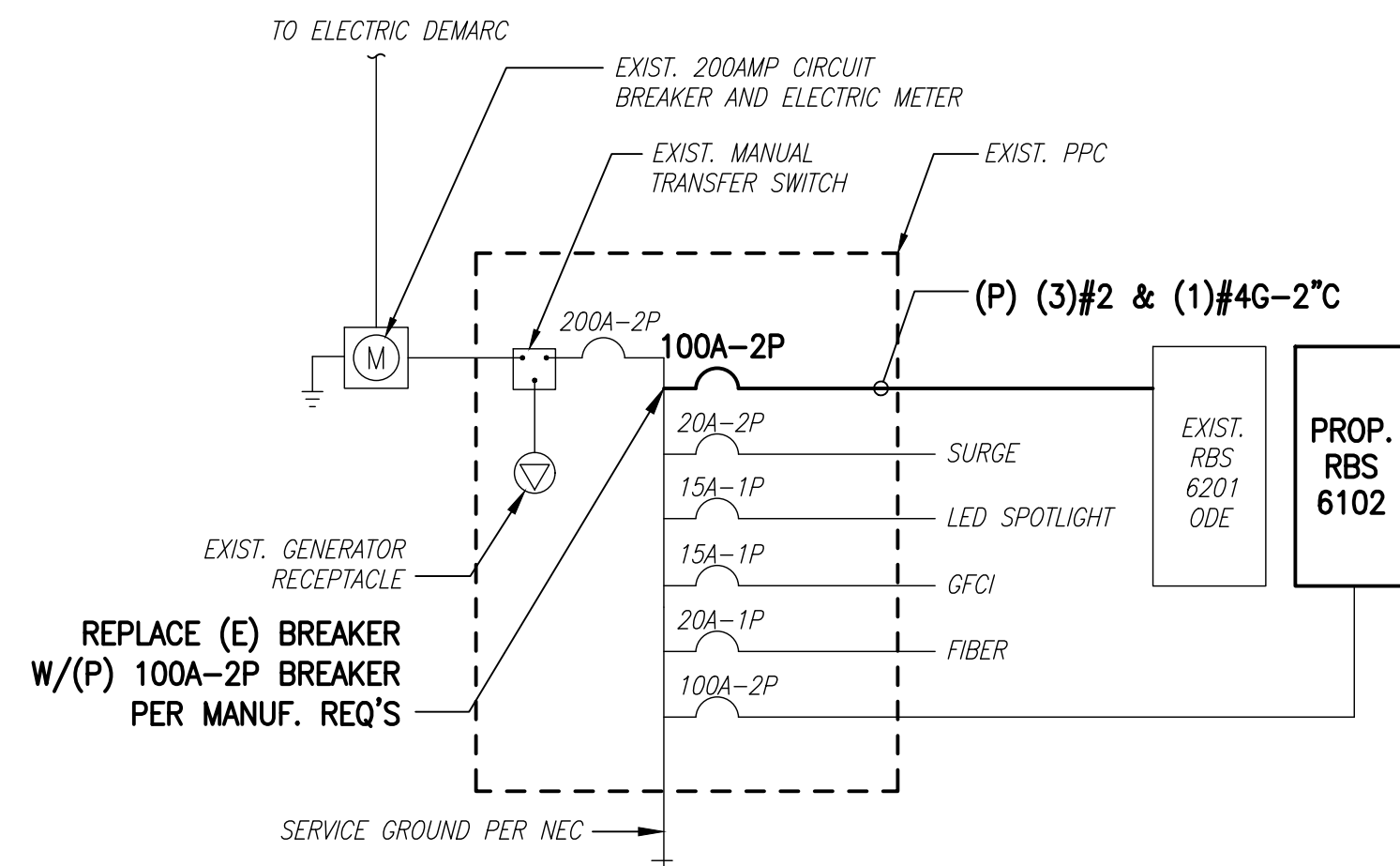
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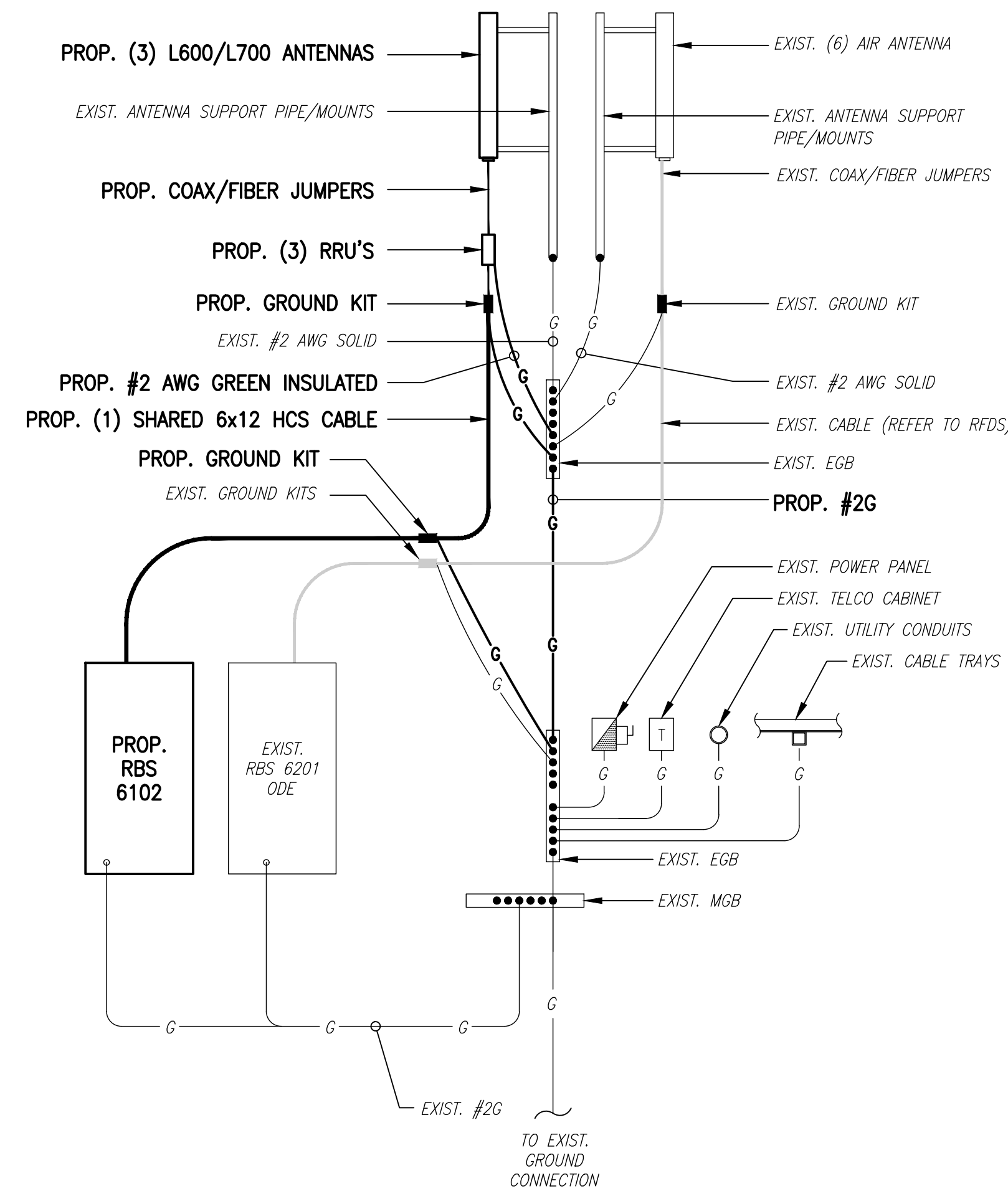
SITE ADDRESS:  
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SHEET TITLE  
**ELECTRIC & GROUNDING  
DETAILS**

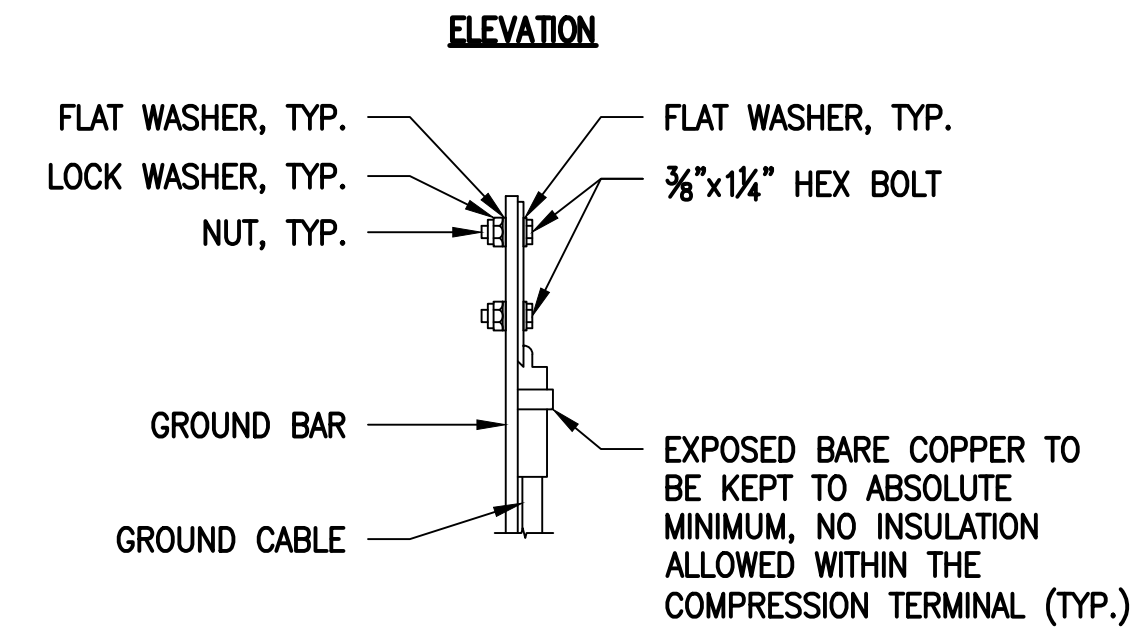
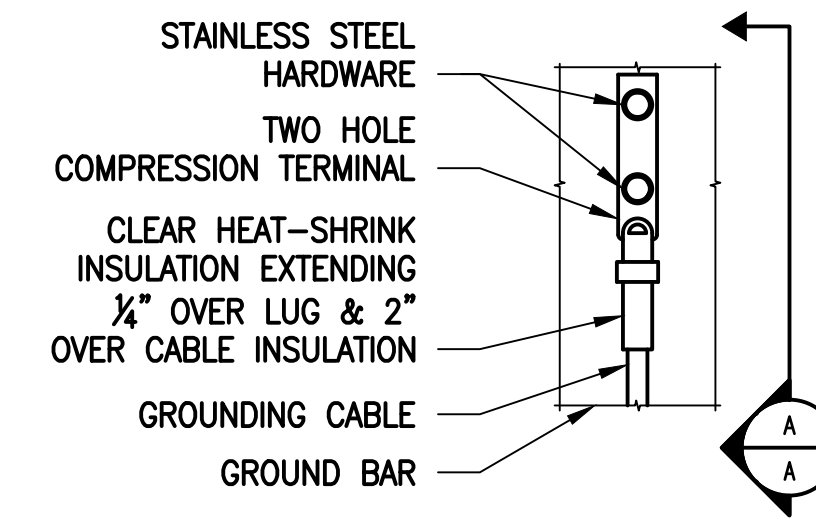
SHEET NUMBER  
**E-1**



**ONE LINE DIAGRAM**  
SCALE: NOT TO SCALE

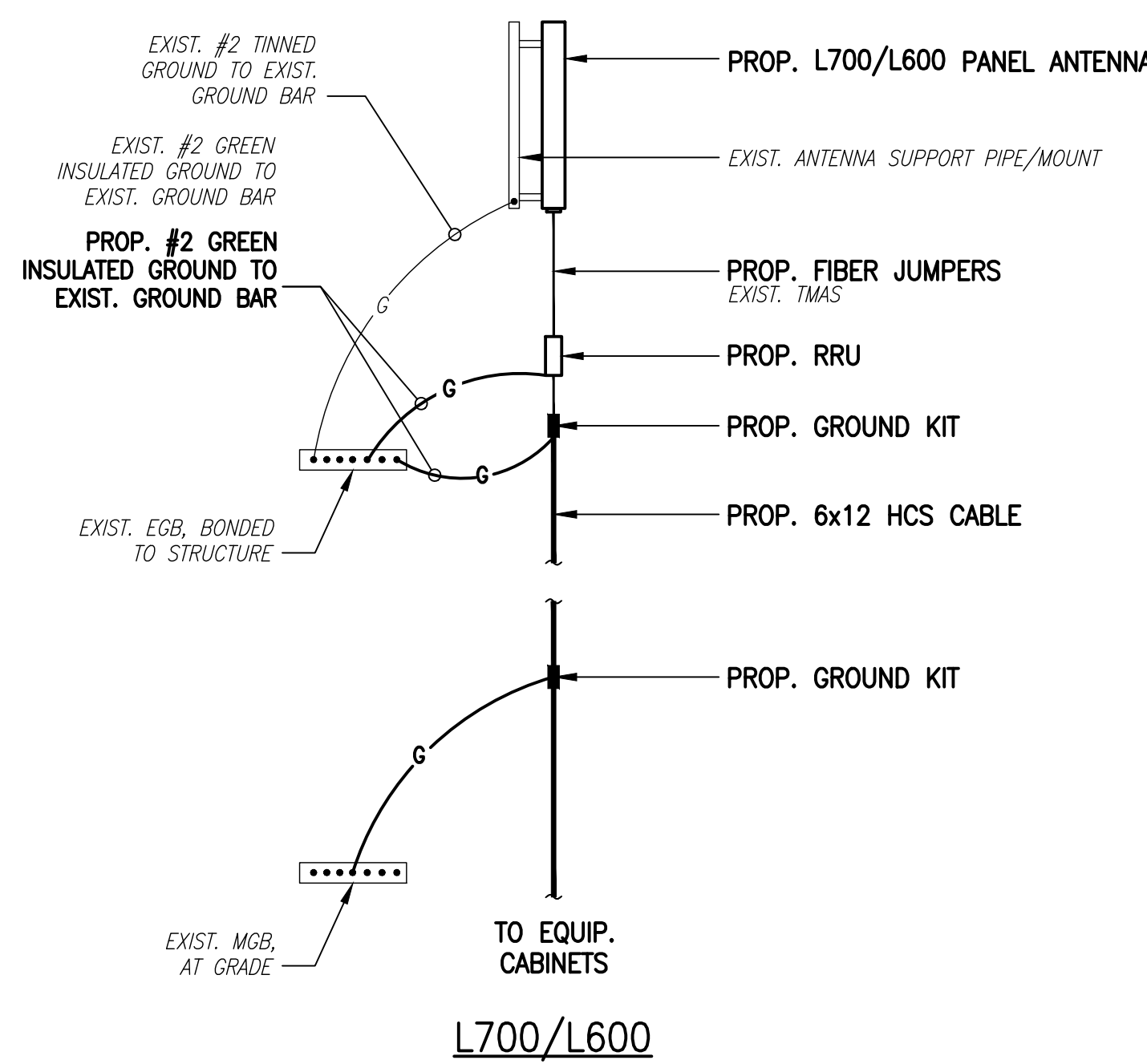


**GROUNDING RISER DIAGRAM**  
SCALE: NOT TO SCALE

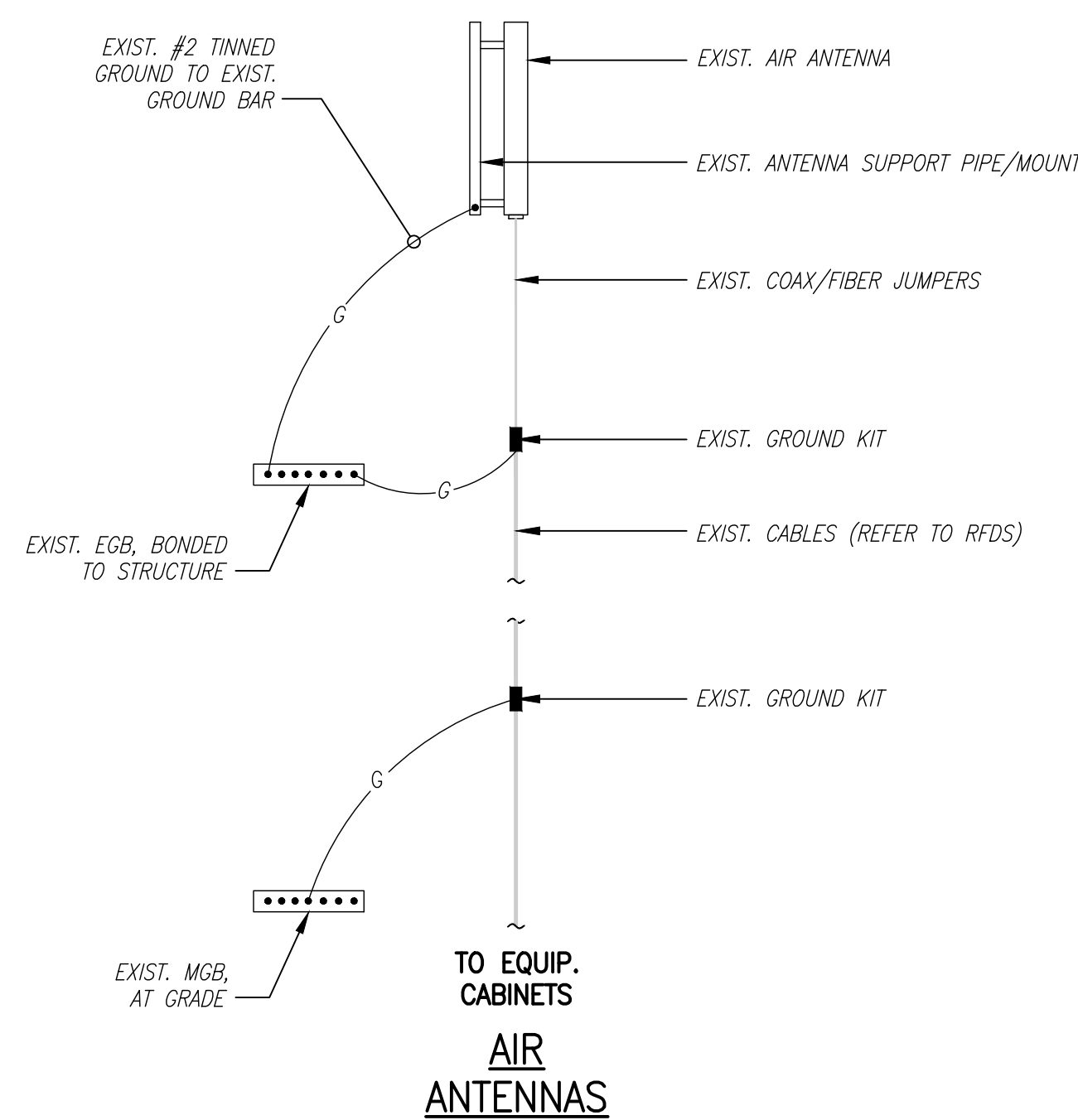


- NOTES:**
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
  - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

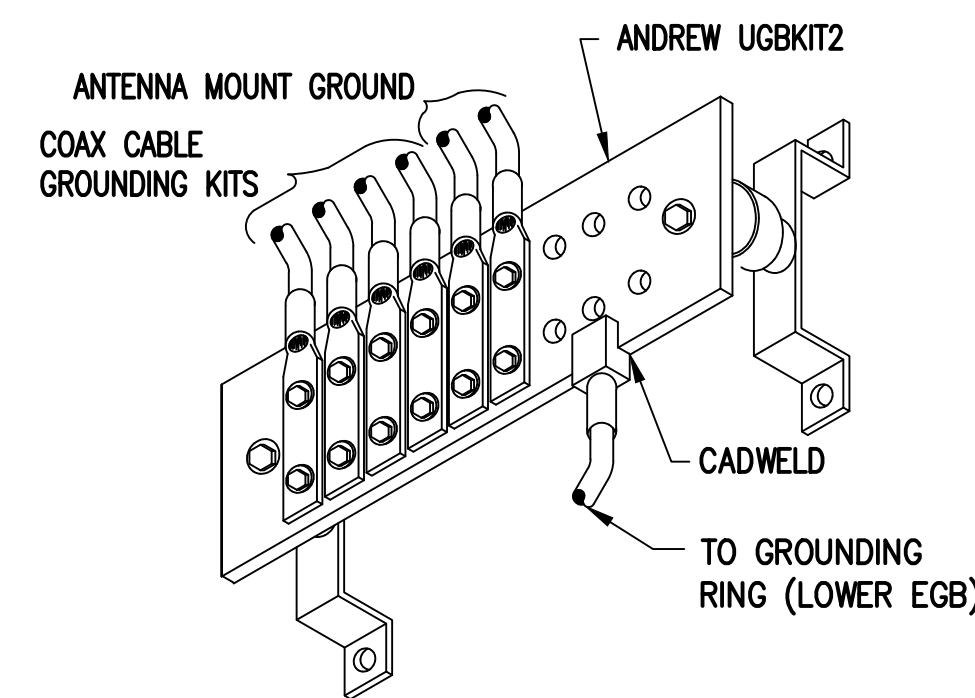
**TYPICAL GROUND BAR CONNECTIONS DETAIL**  
SCALE: NOT TO SCALE



**COAX CABLE CONNECTION AND GROUNDING DETAIL**  
SCALE: NOT TO SCALE



**GROUND BAR (EGB)**  
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, THWN, OR THHN INSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL 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 PULL 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

T-MOBILE: CTNL225A  
SBA: CT46142-A SOUTH LEDYARD-TOWN DUMP

**MOUNT AUGMENTATION @ 108'**

MONOPOLE TOWER

GROTON, CT  
NEW LONDON COUNTY

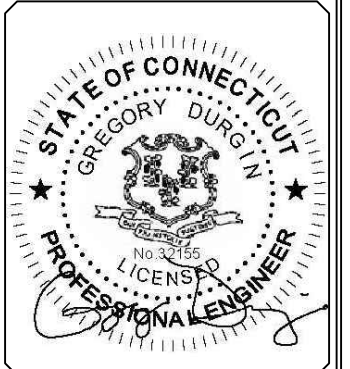



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REVISIONS:			
0	06/20/19	ISSUE FOR CONSTRUCTION	RWR

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SITE INFORMATION:  
**MOUNT AUGMENTATION**  
T-MOBILE: CTNL225A  
SBA: CT46142-A SOUTH LEDYARD-TOWN DUMP  
GROTON, CT  
LATITUDE: 41.392666  
LONGITUDE: -71.969805

SHEET TITLE:  
**TITLE SHEET**

SHEET NUMBER:  
**S-1**

**SITE INFORMATION**

STRUCTURE TYPE: MONOPOLE  
MOUNT TYPE: (3) T-ARMS  
LATITUDE: 41.392666 (NAD 83)  
LONGITUDE: -71.969805 (NAD 83)  
CITY / STATE: GROTON, CT  
COUNTY: NEW LONDON  
  
COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

**DO NOT SCALE DRAWINGS**

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

**CODE COMPLIANCE**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.  
  
BUILDING CODE AND DESIGN STANDARD: 2015 IBC / TIA-222 / 2018 CT BUILDING CODE

**A&E INFORMATION**



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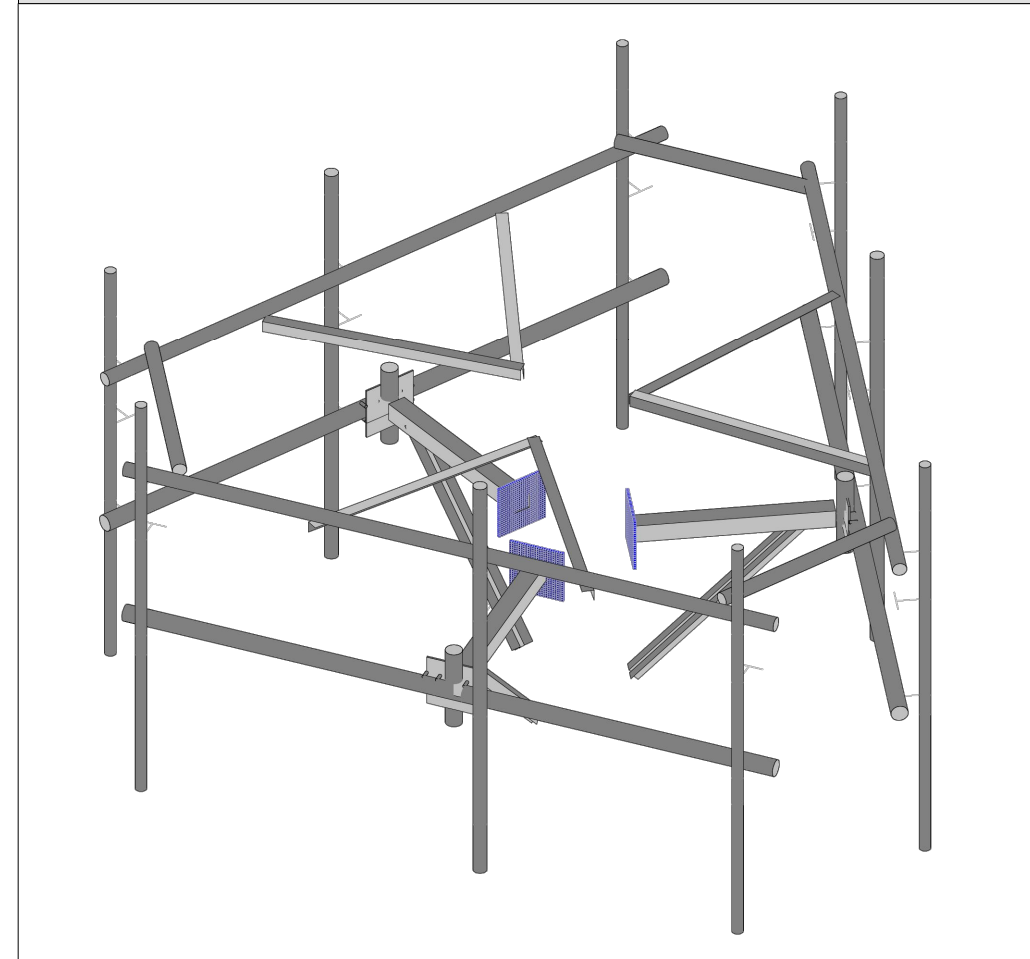
**GENERAL DESIGN NOTES**

- THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
- THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
- ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
- ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
- ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
- UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
- ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

**SHEET INDEX**

SHEET	DESCRIPTION
S-1	TITLE SHEET
S-2	NOTES AND SPECIFICATIONS
S-3	INSPECTION NOTES
S-4	AUGMENTATIONS, SECTIONS & DETAILS

**MOUNT AUGMENTATION CONFIGURATION**



**AUGMENTATION SCOPE**

MODIFY ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

**GENERAL PROJECT NOTES**

1. CONTRACTOR IS RESPONSIBLE FOR ERECTING TEMPORARY BARRICADES AND/OR FENCING TO PROTECT THE SAFETY OF THE PUBLIC DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY BARRIERS AND REPAIR ALL DAMAGE TO PROPERTY ON THE SITE CAUSED BY THIS CONSTRUCTION. THE COST OF REPAIR IS THE CONTRACTOR'S RESPONSIBILITY.
2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE PRIOR TO ORDERING ANY MATERIALS OR CONDUCTING ANY WORK.
4. THESE PLANS DO NOT ADDRESS THE SAFETY AND STABILITY OF THE STRUCTURE DURING ASSEMBLY AND ERECTION, WHICH ARE THE RESPONSIBILITY OF THE ERECTOR, BASED ON THE MEANS AND METHODS CHOSEN BY THE ERECTOR.

**CONTRACTOR NOTES**

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
4. THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
5. IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
6. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

**STRUCTURAL ERECTION AND BRACING REQUIREMENTS**

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

**STRUCTURAL STEEL**

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
  - CHANNELS & ANGLES ..... ASTM A36, (Fy = 36 KSI)
  - PLATES ..... ASTM A36, (Fy = 36 KSI)
  - PIPES ..... ASTM A53 GR.B, (Fy = 35 KSI)
  - HSS ROUND ..... ASTM A500 GR.B, (Fy = 42 KSI)
  - HSS RECTANGULAR ..... ASTM A500 GR.B, (Fy = 46 KSI)
  - W-FLANGE ..... ASTM A992 (Fy = 50 KSI)
  - STRUCTURAL BOLTS ..... ASTM A325
  - U-BOLTS ..... ASTM A307 GR.A
  - NUTS FOR BOLTS ..... ASTM A563 (THREADING TO MATCH BOLT)
  - WASHERS FOR BOLTS ..... ASTM F436
  - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
  - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
  - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
  - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
  - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
5. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
6. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
7. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION. GEOSTRUCTURAL IS ABSOLVED OF ALL LIABILITY ASSOCIATED WITH THE MISINTERPRETATION OF THE CONSTRUCTION DOCUMENTS IF CONTRACTOR CHOOSES NOT TO SUBMIT SHOP DRAWINGS.
8. TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
9. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
10. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN 1/2" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
11. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

**STRUCTURAL BOLTS**

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
3. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1 1/2 TURNS BEYOND SNUG-TIGHT.
5. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.
6. MINIMUM EDGE DISTANCE FOR BOLTS SHALL BE 1 1/2" CENTER TO EDGE UNLESS OTHERWISE NOTED.

**NOMINAL HOLE DIMENSIONS:**

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/8"Ø

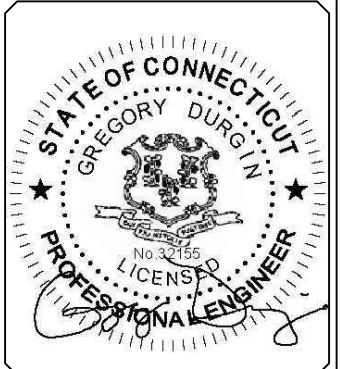


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**MOUNT AUGMENTATION**  
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 SBA: CT46142-A SOUTH LEDYARD-TOWN DUMP  
 GROTON, CT  
 LATITUDE: 41.392666  
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SHEET TITLE:  
**NOTES AND SPECIFICATIONS**

SHEET NUMBER:  
**S-2**

PRE-CONSTRUCTION INSPECTION CHECKLIST	
CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTION CHECKLIST
√	APPROVED SHOP DRAWINGS (LATEST REVISION)
√	FABRICATION INSPECTION
	FABRICATOR'S CERTIFIED WELD INSPECTOR (CWI)
	FABRICATOR'S QUALIFIED PERSONNEL FOR WELDING
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
	FABRICATOR'S NON-DESTRUCTIVE TESTING (NDT) TECHNICIAN
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

CONSTRUCTION INSPECTION CHECKLIST	
CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	FOUNDATION INSPECTIONS
	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTING RESULTS/CERTIFICATES
	ADHESIVE ANCHOR ROD(S) INSTALLATION INSPECTION
	BASE PLATE GROUT INSPECTION
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
	SOIL EXCAVATION — DENSITY TESTING, COMPACTION INSPECTION/VERIFICATION, USE OF SUITABLE FILL
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
	GUY WIRE (RE-)TENSION REPORT AND INSPECTION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)

POST-CONSTRUCTION INSPECTION CHECKLIST	
CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTOR'S ISSUE LIST (INCLUDING CORRECTIVE ACTIONS TAKEN) AND/OR REDLINED RECORD DRAWINGS
	POST-INSTALLED ADHESIVE ANCHOR ROD PULL-OUT TESTING
√	PHOTOGRAPHS OF AUGMENTATIONS (INCLUDE PHOTOS OF BOTH SIDES OF WELDED OR BOLTED CONNECTIONS, OF OVERALL AND DETAIL VIEWS OF INSTALLED AUGMENTATIONS, AND BEFORE/AFTER PHOTOS OF ANY ISSUES IDENTIFIED BY THE INSPECTOR)

GENERAL NOTES
1. THE POST-AUGMENTATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE AUGMENTATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERIFY THAT THE AUGMENTATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACT DOCUMENTS INCLUDE THESE AUGMENTATION DRAWINGS, ANY PROJECT SPECIFICATIONS REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE AUGMENTATION DRAWINGS WITH THE INTENT THAT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.
2. THE POST-AUGMENTATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE AUGMENTATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE AUGMENTATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE AUGMENTATION DESIGN'S EFFECTIVENESS AND INTENT, LIES WITH THE ENGINEER OF RECORD.
3. TO ENSURE THAT THE REQUIREMENTS OF THE POST-AUGMENTATION INSPECTION ARE MET, IT IS ESSENTIAL THAT COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR BEGIN AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATING THESE ISSUES TO EACH OTHER AND TO THE ENGINEER OF RECORD AND STRUCTURE OWNER AND/OR CUSTOMER, AS REQUIRED.

INSPECTION AND REPORT RECOMMENDATIONS
1. THE FOLLOWING ARE PROVIDED IN THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE AUGMENTATION INSPECTION AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USABLE REPORT:
1.1. IT IS RECOMMENDED THAT THE PRIME CONTRACTOR PROVIDE THE AUGMENTATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE AUGMENTATION INSPECTION.
1.2. THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
1.3. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTION IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTION, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

INSPECTION RESCHEDULING AND CANCELLATION
1. IF THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE AUGMENTATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

REMEDICATION OF FAILING INSPECTION
1. IN THE EVENT THAT ANY PORTION OF THE AUGMENTATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE AUGMENTATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:
1.1. REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY THAT IT IS SATISFACTORY.
1.2. OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE AUGMENTATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE. IF THIS ACTION IS NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

AUGMENTATION INSPECTOR'S RESPONSIBILITIES
1. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION.
2. THE AUGMENTATION INSPECTOR SHALL CONTACT THE PRIME CONTRACTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THIS INSPECTION. THE AUGMENTATION INSPECTOR SHALL REVIEW THE REQUIREMENTS OF THE INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME CONTRACTOR TO DEVELOP A SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AND SHALL DISCUSS ANY SITE-SPECIFIC INSPECTION REQUIREMENTS OR OTHER CONCERNS.
3. THE AUGMENTATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL PRIME CONTRACTOR INSPECTION AND TEST REPORTS (INCLUDING THOSE OF ASSIGNED SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHALL CONDUCT THE NECESSARY ON-SITE INSPECTIONS.

PRIME CONTRACTOR'S RESPONSIBILITIES
1. THE PRIME CONTRACTOR SHALL CONTACT THE AUGMENTATION INSPECTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THE AUGMENTATION INSTALLATION OR PROJECT. THE PRIME CONTRACTOR SHALL REVIEW THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST, SHALL WORK WITH THE AUGMENTATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTION AND TESTING REQUIREMENTS WITH THE AUGMENTATION INSPECTOR IN DETAIL TO OBTAIN A FULL UNDERSTANDING OF THE REQUIRED INSPECTIONS AND TESTING.
2. THE PRIME CONTRACTOR SHALL PERFORM AND RECORD THE TESTING AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST.

PHOTOGRAPHY REQUIREMENTS
1. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BETWEEN THE EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PERSONNEL PROVIDE PHOTOGRAPHS WITH THE INSPECTION REPORT TO INCLUDE THE FOLLOWING:
a. GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION
b. AUGMENTATION INSTALLATION PHOTOGRAPHS DURING CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIONS
b.1. RAW MATERIALS
b.2. PHOTOS OF DETAILED WORK REQUIRED ON THE DRAWINGS (CONNECTIONS, WELDMENTS, FIELD-FABRICATED MEMBERS, ETC)
b.3. BOLT INSTALLATION AND TORQUE/PRE-TENSION.
b.4. FINAL INSTALLED CONDITION (AFTER DEFICIENT CONDITIONS, IF ANY, ARE REMEDIATED).
b.5. REPAIR OF SURFACE COATINGS (INCLUDING GALVANIZING AND/OR PAINT COATING)
c. POST-AUGMENTATION PHOTOGRAPHS OF THE SITE & WORK.
d. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE AT CONCLUSION OF THE WORK BY THE PRIME CONTRACTOR, ASSOCIATED SUBCONTRACTORS, AND THE AUGMENTATION INSPECTOR.
e. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONTRACTOR & AUGMENTATION INSPECTOR'S DISCRETION.
NOTE: PHOTOS OF AUGMENTATIONS INSTALLED ON THE STRUCTURE ABOVE AN ELEVATION OF 20 FT SHALL REQUIRE PHOTOS TAKEN FROM THE STRUCTURE AS WELL AS OVERALL PHOTOGRAPHS OF THE AUGMENTATIONS TAKEN FROM THE GROUND.

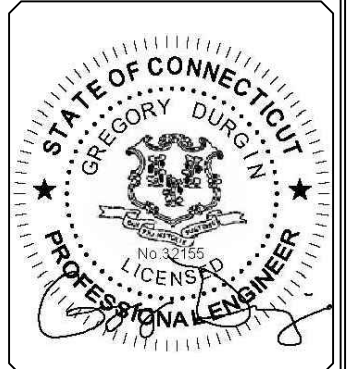
OWNER INSPECTIONS
1. THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED AUGMENTATION INSPECTION REPORTS FOR THE AUGMENTATION INSTALLATION WORK.
2. INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A AUGMENTATION PROJECT IS COMPLETED AND A PASSING AUGMENTATION INSPECTION REPORT IS ISSUED.



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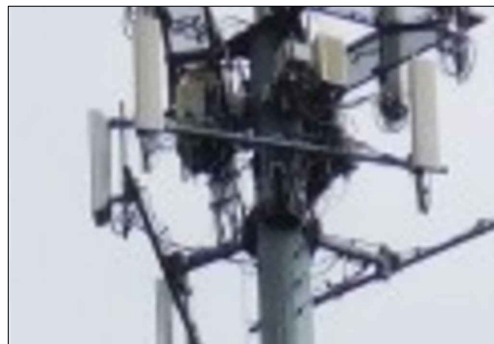
SITE INFORMATION:  
MOUNT AUGMENTATION  
T-MOBILE: CTNL225A  
SBA: CT46142-A SOUTH LEDYARD-TOWN DUMP  
GROTON, CT  
LATITUDE: 41.392666  
LONGITUDE: -71.969805

SHEET TITLE:  
INSPECTION NOTES

SHEET NUMBER:  
S-3

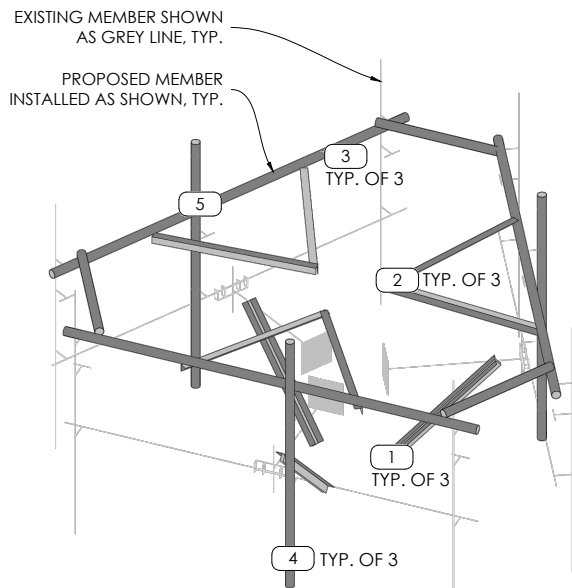
NEW MOUNT AUGMENTATIONS	
1	INSTALL PLATFORM REINFORCEMENT KIT; LOCATED 3.0' BELOW THE EXISTING STANDOFF CENTERLINE AND ATTACHING TO THE EXISTING STANDOFF MEMBER END NEAR THE FACE RAIL. - SITEPRO1 PRK-1245L, (1) TOTAL.
2	INSTALL V-BRACE KIT; LOCATED 3.0' ABOVE THE EXISTING MOUNT FACE RAIL CENTERLINE. - SITEPRO1 PRK-SFS-L, (1) TOTAL. ATTACH RING MOUNT IN KIT TO MONOPOLE SHAFT AND SFS ANGLE GATE CLAMP BRACKETS TO NEW HANDRAIL W/ A HORIZ. SPREAD OF APPROXIMATELY 5.2'.
3	INSTALL HANDRAIL KIT; LOCATED 3.0' ABOVE THE EXISTING MOUNT FACE RAIL CENTERLINE. - PIPE2.5STD x 12.5' (MATCH EXISTING) HORIZONTAL RAIL, VERIFY REQUIRED SIZE IN FIELD. (3) TOTAL. ATTACH PRK-SFS-L KIT ANGLES TO NEW HORIZONTAL RAIL. - PIPE2.5STD x 5' LONG CORNER BRACES, (3) TOTAL. ATTACH TO NEW HORIZONTAL RAIL W/ SITEPRO1 PUCK BRACKETS, (6) TOTAL.
4	INSTALL (3) PIPE2.5STD x 8'-0" MOUNT PIPES AT POSITION 2 MOUNT PIPE LOCATION. ATTACH NEW PIPE2.5STD MOUNT PIPE TO EXISTING RAIL AND TO NEW TOP HANDRAIL PIPE WITH APPROVED CROSS-OVER PLATE.
5	INSTALL NEW APPROVED CROSS-OVER PLATE ASSEMBLIES BETWEEN NEW HANDRAIL AND ALL MOUNT PIPES. - SITEPRO1 SCX x -K (9) TOTAL.

AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.

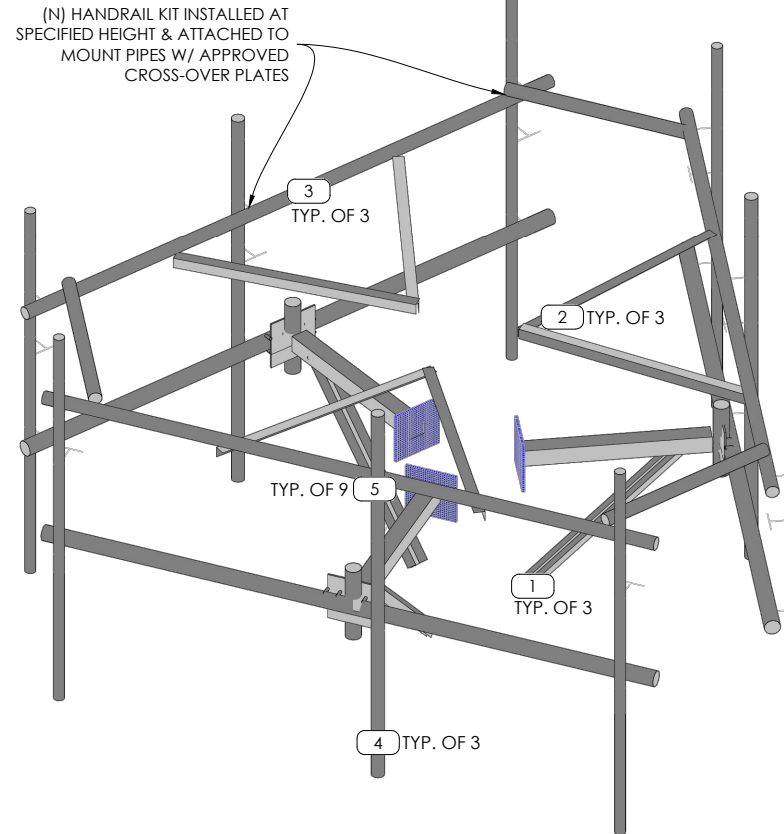


EXISTING MOUNT

### (3) T-ARMS @ 108' AUGMENTATION



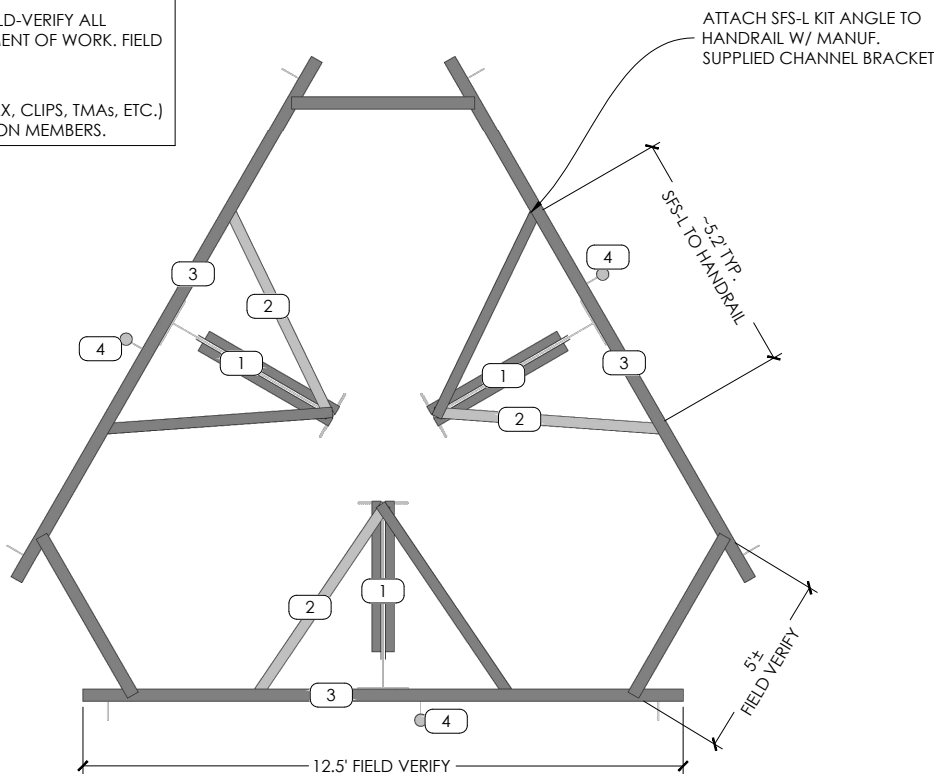
MOUNT AUGMENTATION ISOLATION  
SCALE: N.T.S.



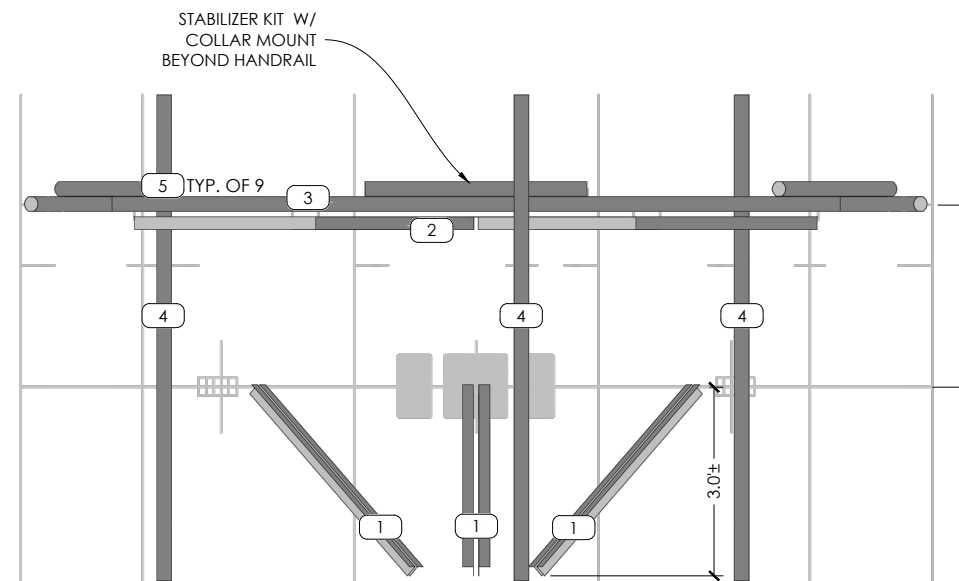
AUGMENTED MOUNT ISOMETRIC  
SCALE: N.T.S.

- #### CONSTRUCTION NOTES
- SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
  - ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
  - CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.

- #### INSTALLATION NOTES
- AUGMENTATION MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
  - CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
  - COORDINATE PLACEMENT OF NEW AUGMENTATION MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
  - REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



AUGMENTED MOUNT PLAN  
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION  
SCALE: N.T.S.

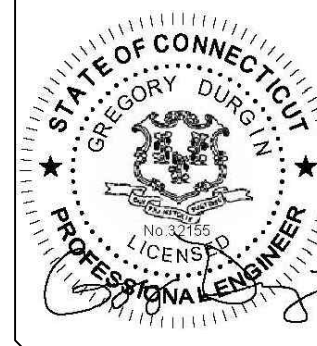


PO BOX 2621, BOISE, ID 83701  
530.539.4787  
CONTACT@GEOSTRUCTURAL.COM  
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REVISIONS:			
0	06/20/19	ISSUE FOR CONSTRUCTION	RWR

CHECKED BY: DWG

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SITE INFORMATION:  
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T-MOBILE: CTNL225A  
SBA: CT46142-A SOUTH LEDYARD-TOWN DUMP  
GROTON, CT  
LATITUDE: 41.392666  
LONGITUDE: -71.969805

SHEET TITLE:  
AUGMENTATIONS  
SECTIONS &  
DETAILS

SHEET NUMBER:  
S-4

# 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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**Post-Mod Structural Analysis Report**

**Existing 118 ft. PennSummit Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT46142-A**

**Customer Site Name: South Ledyard- Town Dump**

**Carrier Name: T-Mobile (App#: 117053 V2)**

**Carrier Site ID / Name: CTNL225A / South Ledyard**

**Site Location: 130 Welles Road**

**Groton, Connecticut**

**New London County**

**Latitude: 41.392666**

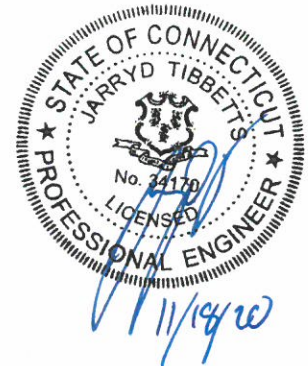
**Longitude: -71.969805**

**Analysis Result:**

**Max Structural Usage: 92.9% [Pass]**

**Max Foundation Usage: 87.0% [Pass]**

**Report Prepared By : Billy Davis**



## Introduction

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

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

## Sources of Information

<b>Tower Drawings</b>	Paul J. Ford and Company, Job #29203-0083 dated April 24, 2003
<b>Foundation Drawing</b>	Paul J. Ford and Company, Job #29203-0083 dated September 12, 2003
<b>Geotechnical Report</b>	Criscuolo Shepard Associates, PC, File #2001.916 dated April 10, 2001
<b>Mount Analysis</b>	GeoStructural, dated June 13, 2019
<b>Existing Modification</b>	N/A
<b>Proposed Modification</b>	TES Job # 99403

## 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 **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 135.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 105.0$ mph (3-Sec. Gust)
<b>Basic 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>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft.
<b>Seismic Parameters:</b>	$SS = 0.161$ , $S1 = 0.028$

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

## Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	117.0	3	RFS APXVSP18-C-A20 - Panel	Low Profile Platform	(4) 1-1/4" Hybrid	Sprint Nextel
2		4	ACU-A20-N – RET			
3		3	56.3"x12.6"x6.3" - Panel			
4	114.0	3	Alcatel Lucent 1900MHz RRH	Collar Mount		
5		3	Alcatel Lucent 800 MHz RRH			
6		3	Alcatel Lucent 800 MHz Filter			
7			26.1"x18.6"x6.7" RRU			
-	108.0	3	Ericsson AIR 21 B4A B2P - Panel	(3) T-Arm	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson AIR 21 B2A B4P - Panel			
12	98.0	3	KMW AM-X-CD-14-65-00T - Panel	(1)4-1/2" Pipe Mount Assembly (Sabre C10899050)	(6) 1 5/8"	AT&T
13		3	CCI DTMAP7819VG12A TMA			

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

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
8	108.0	3	Ericsson Air 21 B4A/B2P - Panel	Low Profile Platform + Sitepro PRK-1245L + Sitepro PRK-SFS-L	(10) 1 5/8" Coax (1) 1 5/8" Fiber	T-Mobile
9		3	Ericsson Air21 B2A/B4P - Panel			
10		3	RFS APXVAARR24_43-U-NA20 - Panel			
11		3	Ericsson Radio 4449 B71+B12			

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:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>92.9%</b>	<b>71.6%</b>	<b>91.7%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2152.8	23.3	42.5

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 TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.4060 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222-G-2 Standard after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 99403

### **Pre-Mod Installation Determination**

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

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

## Standard Conditions

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

## Usage Diagram - Max Ratio 92.87% at 20.0ft

**Structure:** CT46142-A-SBA  
**Site Name:** South Ledyard- Town Dump  
**Height:** 118.00 (ft)  
**Base Elev:** 0.000 (ft)

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

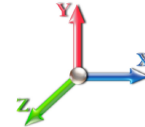
11/18/2020



Page: 1

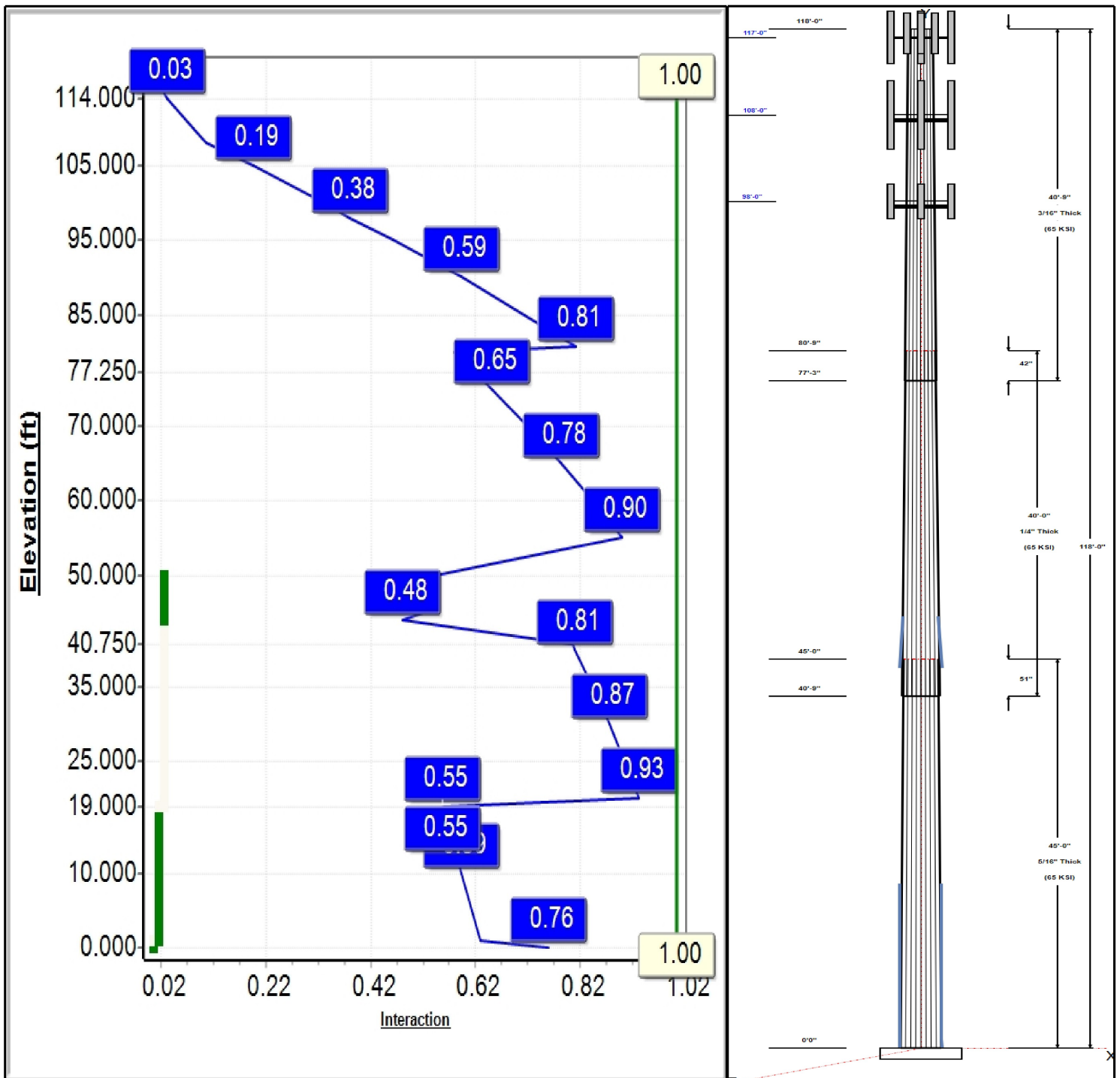
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 105 mph Wind**



**Iterations:** 25

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## Structure: CT46142-A-SBA

**Type:** Tapered

**Base Shape:** 18 Sided

11/18/2020

**Site Name:** South Ledyard- Town Dump

**Taper:** 0.15100

**Height:** 118.00 (ft)

**Base Elev:** 0.00 (ft)

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### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	32.15	38.94	0.313		0.15100	65
2	40.00	27.25	33.29	0.250	Slip	0.15100	65
3	40.75	22.00	28.15	0.188	Slip	0.15100	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
117.50	117.50	3	56.3"x12.6"x6.3" - Panel	Sprint Nextel
117.00	117.00	3	APXVSP18-C-A20	Sprint Nextel
117.00	117.00	4	ACU-A20-N	Sprint Nextel
117.00	117.00	1	Low Profile Platform-flat	Sprint Nextel
114.00	114.00	3	26.1"x18.6"x6.7" RRU	Sprint Nextel
114.00	114.00	1	Flush Mount	Sprint Nextel
114.00	114.00	3	1900MHz RRH	Sprint Nextel
114.00	114.00	3	800 MHz RRH	Sprint Nextel
114.00	114.00	3	800 Filter	Sprint Nextel
108.00	108.00	3	AIR 21 B4A B2P	T-Mobile
108.00	108.00	3	AIR 21 B2A B4P	T-Mobile
108.00	108.00	1	PRK-1245 (kicker kit)	T-Mobile
108.00	108.00	1	(3) PRK-SFS-L (V-Braces)	T-Mobile
108.00	108.00	1	Horizontal Rail	T-Mobile
108.00	108.00	3	Corner Braces	T-Mobile
108.00	108.00	3	RFS	T-Mobile
108.00	108.00	1	Low Profile Platform	T-Mobile
108.00	108.00	3	Ericsson Radio 4449	T-Mobile
98.00	98.00	3	KMW AM-X-CD-14-65-00T	AT&T
98.00	98.00	3	CCI DTMABP7819VG12A	AT&T
98.00	98.00	1	Sabre C10899050	AT&T

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	117.00	Inside	1-1/4" Hybrid	Sprint Nextel
0.00	117.00	Outside	Safety Cable	
0.00	108.00	Inside	1 5/8" Coax	T-Mobile
0.00	108.00	Inside	1 5/8" Fiber	T-Mobile
0.00	98.00	Inside	1 5/8" Coax	AT&T

### Anchor Bolts

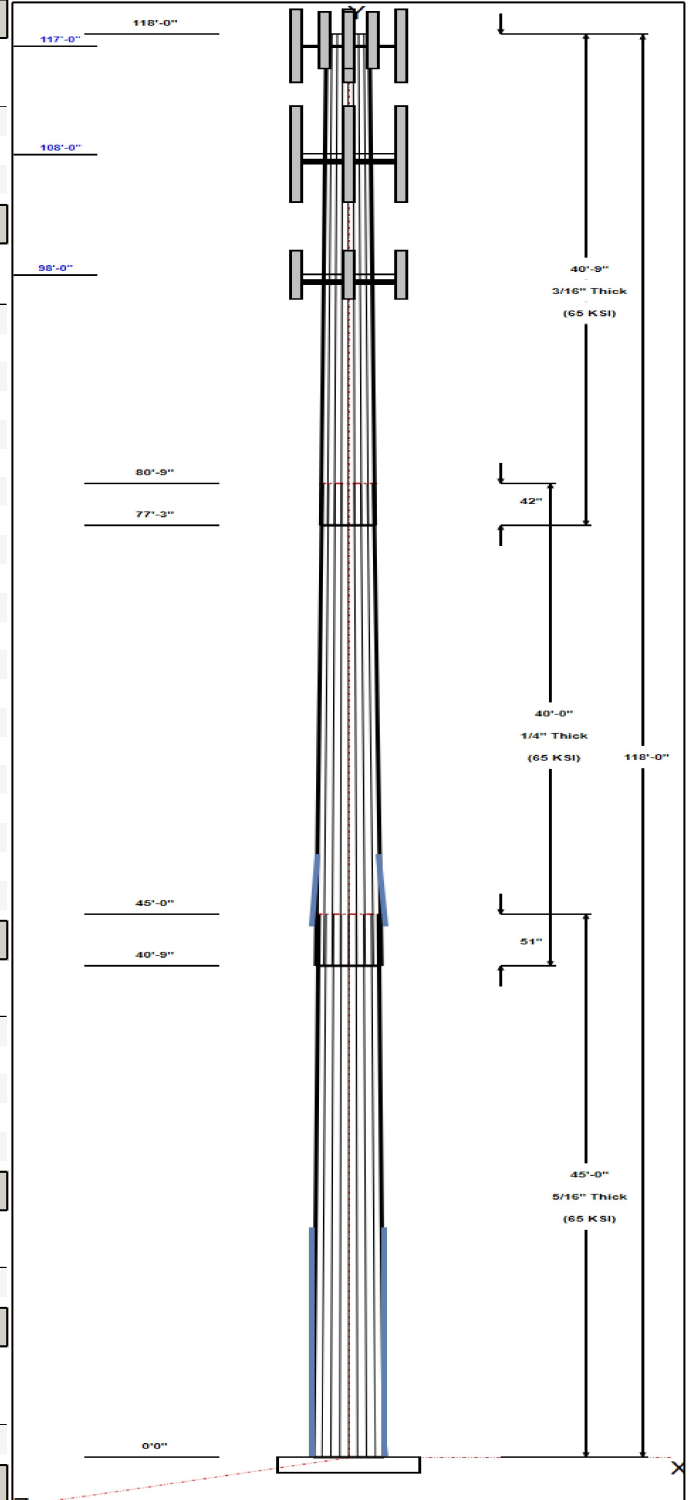
Qty	Specifications	Grade (ksi)	Arrangement
8	2.25" 18J	75.0	Cluster

### Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	44.0	55.0	Clipped

### Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	2152.8	23.3	25.4
0.9D + 1.6W 105 mph Wind	2127.1	23.3	19.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	532.3	5.7	42.5





# Structure: CT46142-A-SBA

**Type:** Tapered      **Base Shape:** 18 Sided      11/18/2020  
**Site Name:** South Ledyard- Town Dump      **Taper:** 0.15100  
**Height:** 118.00 (ft)  
**Base Elev:** 0.00 (ft)



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1.2D + 1.0E	137.1	1.3	25.4
0.9D + 1.0E	135.3	1.3	19.1
1.0D + 1.0W 60 mph Wind	436.7	4.8	21.2

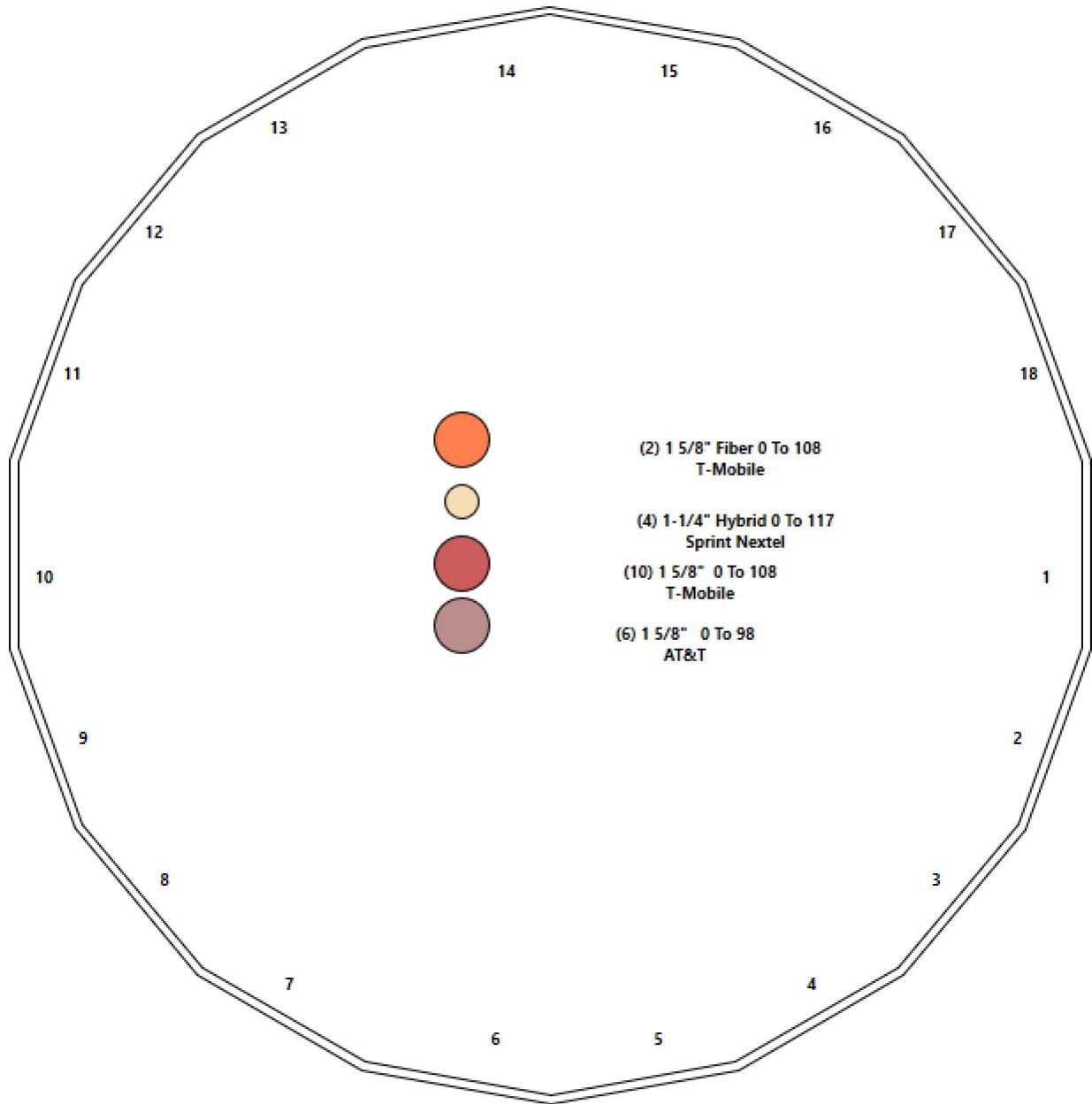
# Structure: CT46142-A-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** South Ledyard- Town Dump  
**Height:** 118.00 (ft)

11/18/2020



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## Shaft Properties

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.3125	65		0.00	5,351
2	18	40.000	0.2500	65	Slip	51.00	3,242
3	18	40.750	0.1875	65	Slip	42.00	2,054
<b>Total Shaft Weight:</b>							<b>10,647</b>

### Bottom

### Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	38.94	0.00	38.32	7224.13	20.56	124.62	32.15	45.00	31.58	4043.24	16.73	102.8	0.151000
2	33.29	40.75	26.22	3615.72	22.07	133.16	27.25	80.75	21.42	1973.17	17.81	109.0	0.151000
3	28.15	77.25	16.64	1644.47	25.06	150.15	22.00	118.00	12.98	780.30	19.28	117.3	0.151000

### Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors			Termination Connectors		
							Description	Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty
0.00	1.00	3	SOL 2 1/4" William R71	128	150	0.00	5/8" Hollo Bolt	12.00	5/8" Hollo Bolt	3.00		
1.00	19.00	3	LNP LP6X125-B-20T	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		13
44.00	50.00	3	LNP LP6X100-G-10TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	11

## Load Summary

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	117.50	56.3"x12.6"x6.3" - Panel	3	56.00	6.34	0.79	211.78	7.425	0.79	0.00	0.00
2	117.00	APXVSP18-C-A20	3	57.00	8.02	0.83	225.61	10.745	0.83	0.00	0.00
3	117.00	ACU-A20-N	4	1.00	0.14	0.67	5.19	0.429	0.67	0.00	0.00
4	117.00	Low Profile Platform-flat	1	1200.00	25.00	1.00	2221.43	45.429	1.00	0.00	0.00
5	114.00	26.1"x18.6"x6.7" RRU	3	63.90	4.05	0.67	157.51	5.585	0.67	0.00	0.00
6	114.00	Flush Mount	1	350.00	5.00	1.00	635.26	8.396	1.00	0.00	0.00
7	114.00	1900MHz RRH	3	60.00	2.77	0.67	141.18	4.004	0.67	0.00	0.00
8	114.00	800 MHz RRH	3	53.00	2.49	0.67	124.96	3.603	0.67	0.00	0.00
9	114.00	800 Filter	3	8.80	0.67	0.67	22.91	1.094	0.67	0.00	0.00
10	108.00	AIR 21 B4A B2P	3	90.40	6.09	0.86	252.81	7.149	0.86	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	90.40	6.09	0.86	252.81	7.149	0.86	0.00	0.00
12	108.00	PRK-1245 (kicker kit)	1	517.00	9.50	1.00	866.25	19.126	1.00	0.00	0.00
13	108.00	(3) PRK-SFS-L (V-Braces)	1	642.00	6.70	1.00	1509.38	13.489	1.00	0.00	0.00
14	108.00	Horizontal Rail	1	261.72	6.75	1.00	562.28	13.134	1.00	0.00	0.00
15	108.00	Corner Braces	3	350.00	5.00	1.00	633.72	8.378	1.00	0.00	0.00
16	108.00	RFS APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	530.76	22.076	0.70	0.00	0.00
17	108.00	Low Profile Platform	1	1200.00	25.00	1.00	2213.29	45.266	1.00	0.00	0.00
18	108.00	Ericsson Radio 4449 B71+B12	3	74.00	1.65	0.67	139.49	2.168	0.67	0.00	0.00
19	98.00	KMW AM-X-CD-14-65-00T	3	36.40	5.00	0.75	161.08	5.931	0.75	0.00	0.00
20	98.00	CCI DTMAPB7819VG12A TMA	3	19.20	1.14	0.67	51.42	1.379	0.67	0.00	0.00
21	98.00	Sabre C10899050	1	648.00	10.00	1.00	1168.21	16.690	1.00	0.00	0.00
<b>Totals:</b>			<b>50</b>	<b>8,084.02</b>			<b>17,914.94</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	117.00	(4) 1-1/4" Hybrid	0.00	Inside
0.00	117.00	(1) Safety Cable	0.38	Outside
0.00	108.00	(10) 1 5/8" Coax	0.00	Inside
0.00	108.00	(2) 1 5/8" Fiber	0.00	Inside
0.00	98.00	(6) 1 5/8" Coax	0.00	Inside

## Shaft Section Properties

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1	0.3125	38.943	38.315	7224.1	20.56	124.62	65	77	0.0	12.24	2600.0	2600.0	
1.00	RT1 RB2	0.3125	38.792	38.165	7139.7	20.48	124.13	65	77	130.1	22.50	4544.7	4544.7	76.6
5.00		0.3125	38.188	37.566	6808.8	20.14	122.20	65	78	515.4	22.50	4409.7	4409.7	306.2
10.00		0.3125	37.433	36.818	6409.7	19.71	119.79	65	78	632.8	22.50	4243.8	4243.8	382.8
15.00		0.3125	36.678	36.069	6026.5	19.28	117.37	65	79	620.0	22.50	4081.1	4081.1	382.8
19.00	RT2	0.3125	36.074	35.470	5731.1	18.94	115.44	65	79	486.9	22.50	3953.3	3953.3	306.2
20.00		0.3125	35.923	35.320	5658.9	18.86	114.95	65	79	120.4				
25.00		0.3125	35.168	34.571	5306.5	18.43	112.54	65	80	594.6				
30.00		0.3125	34.413	33.822	4969.1	18.01	110.12	65	80	581.8				
35.00		0.3125	33.658	33.073	4646.3	17.58	107.71	65	81	569.1				
40.00		0.3125	32.903	32.325	4337.8	17.15	105.29	65	81	556.3				
40.75	Bot - Section 2	0.3125	32.790	32.212	4292.7	17.09	104.93	65	81	82.4				
44.00	RB3	0.3125	32.299	31.725	4101.0	16.81	103.36	65	82	641.3	18.00	2598.1	2598.1	199.1
45.00	Top - Section 1	0.2500	32.648	25.707	3409.1	21.62	130.59	65	76	195.4	18.00	2575.2	2575.2	61.2
50.00	RT3	0.2500	31.893	25.108	3176.3	21.08	127.57	65	77	432.3	18.00	2462.1	2462.1	306.2
55.00		0.2500	31.138	24.509	2954.3	20.55	124.55	65	77	422.1				
60.00		0.2500	30.383	23.910	2742.9	20.02	121.53	65	78	411.9				
65.00		0.2500	29.628	23.311	2541.9	19.49	118.51	65	78	401.7				
70.00		0.2500	28.873	22.712	2350.9	18.95	115.49	65	79	391.5				
75.00		0.2500	28.118	22.112	2169.7	18.42	112.47	65	80	381.3				
77.25	Bot - Section 3	0.2500	27.778	21.843	2091.3	18.18	111.11	65	80	168.3				
80.00		0.2500	27.363	21.513	1998.1	17.89	109.45	65	80	357.4				
80.75	Top - Section 2	0.1875	27.625	16.328	1553.0	24.57	147.33	65	73	96.5				
85.00		0.1875	26.983	15.946	1446.5	23.96	143.91	65	73	233.4				
90.00		0.1875	26.228	15.497	1327.7	23.25	139.88	65	74	267.5				
95.00		0.1875	25.473	15.047	1215.5	22.54	135.86	65	75	259.8				
98.00		0.1875	25.020	14.778	1151.3	22.12	133.44	65	75	152.2				
100.00		0.1875	24.718	14.598	1109.9	21.83	131.83	65	76	100.0				
105.00		0.1875	23.963	14.149	1010.5	21.12	127.80	65	77	244.5				
108.00		0.1875	23.510	13.879	953.8	20.70	125.39	65	77	143.1				
110.00		0.1875	23.208	13.700	917.3	20.41	123.78	65	77	93.8				
114.00		0.1875	22.604	13.340	846.9	19.85	120.55	65	78	184.0				
115.00		0.1875	22.453	13.250	829.9	19.70	119.75	65	78	45.2				
117.00		0.1875	22.151	13.071	796.6	19.42	118.14	65	79	89.6				
117.50		0.1875	22.076	13.026	788.4	19.35	117.74	65	79	22.2				
118.00		0.1875	22.000	12.981	780.3	19.28	117.33	65	79	22.1				
<b>Total Weight</b>										<b>10647.0</b>	<b>2021.2</b>			

## Wind Loading - Shaft

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

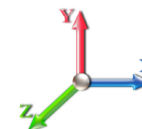


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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	22.791	25.07	319.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	22.791	25.07	317.77	0.650	0.000	1.00	3.289	2.14	85.8	0.0	156.1
5.00		1.00	0.85	22.791	25.07	312.82	0.650	0.000	4.00	13.028	8.47	339.7	0.0	618.5
10.00		1.00	0.85	22.791	25.07	306.63	0.650	0.000	5.00	15.997	10.40	417.1	0.0	759.3
15.00		1.00	0.85	22.791	25.07	300.45	0.650	0.000	5.00	15.678	10.19	408.8	0.0	744.0
19.00	RT2	1.00	0.89	23.922	26.31	302.75	0.650	0.000	4.00	12.312	8.00	337.0	0.0	584.2
20.00		1.00	0.90	24.182	26.60	303.11	0.650	0.000	1.00	3.046	1.98	84.3	0.0	144.5
25.00		1.00	0.95	25.345	27.88	303.80	0.650	0.000	5.00	15.039	9.78	436.1	0.0	713.5
30.00		1.00	0.98	26.337	28.97	303.03	0.650	0.000	5.00	14.720	9.57	443.5	0.0	698.2
35.00		1.00	1.01	27.206	29.93	301.23	0.650	0.000	5.00	14.400	9.36	448.2	0.0	682.9
40.00		1.00	1.04	27.981	30.78	298.64	0.650	0.000	5.00	14.081	9.15	450.7	0.0	667.6
40.75	Bot - Section 2	1.00	1.05	28.091	30.90	298.20	0.650	0.000	0.75	2.085	1.35	67.0	0.0	98.8
44.00	RB3	1.00	1.06	28.548	31.40	296.12	0.650	0.000	3.25	9.088	5.91	296.8	0.0	769.6
45.00	Top - Section 1	1.00	1.07	28.684	31.55	295.43	0.650	0.000	1.00	2.769	1.80	90.9	0.0	234.5
50.00	RT3	1.00	1.09	29.327	32.26	296.36	0.650	0.000	5.00	13.653	8.87	458.1	0.0	518.7
55.00		1.00	1.12	29.922	32.91	292.26	0.650	0.000	5.00	13.334	8.67	456.4	0.0	506.5
60.00		1.00	1.14	30.475	33.52	287.80	0.650	0.000	5.00	13.015	8.46	453.7	0.0	494.3
65.00		1.00	1.16	30.993	34.09	283.02	0.650	0.000	5.00	12.695	8.25	450.1	0.0	482.0
70.00		1.00	1.17	31.480	34.63	277.97	0.650	0.000	5.00	12.376	8.04	445.7	0.0	469.8
75.00		1.00	1.19	31.941	35.13	272.67	0.650	0.000	5.00	12.056	7.84	440.5	0.0	457.6
77.25	Bot - Section 3	1.00	1.20	32.140	35.35	270.22	0.650	0.000	2.25	5.321	3.46	195.6	0.0	201.9
80.00		1.00	1.21	32.377	35.62	267.16	0.650	0.000	2.75	6.503	4.23	240.9	0.0	428.9
80.75	Top - Section 2	1.00	1.21	32.441	35.69	266.32	0.650	0.000	0.75	1.757	1.14	65.2	0.0	115.9
85.00		1.00	1.22	32.793	36.07	265.14	0.650	0.000	4.25	9.819	6.38	368.4	0.0	280.0
90.00		1.00	1.24	33.190	36.51	259.27	0.650	0.000	5.00	11.257	7.32	427.4	0.0	321.0
95.00		1.00	1.25	33.570	36.93	253.25	0.650	0.000	5.00	10.937	7.11	420.0	0.0	311.8
98.00	Appurtenance(s)	1.00	1.26	33.791	37.17	249.56	0.650	0.000	3.00	6.409	4.17	247.8	0.0	182.7
100.00		1.00	1.27	33.935	37.33	247.07	0.650	0.000	2.00	4.209	2.74	163.4	0.0	120.0
105.00		1.00	1.28	34.285	37.71	240.76	0.650	0.000	5.00	10.298	6.69	403.9	0.0	293.5
108.00	Appurtenance(s)	1.00	1.29	34.489	37.94	236.91	0.650	0.000	3.00	6.026	3.92	237.7	0.0	171.7
110.00		1.00	1.29	34.623	38.08	234.32	0.650	0.000	2.00	3.953	2.57	156.6	0.0	112.6
114.00	Appurtenance(s)	1.00	1.30	34.884	38.37	229.08	0.650	0.000	4.00	7.753	5.04	309.4	0.0	220.8
115.00		1.00	1.30	34.948	38.44	227.76	0.650	0.000	1.00	1.906	1.24	76.2	0.0	54.3
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	225.10	0.650	0.000	2.00	3.774	2.45	151.4	0.0	107.5
117.50	Appurtenance(s)	1.00	1.31	35.107	38.62	224.44	0.650	0.000	0.50	0.936	0.61	37.6	0.0	26.6
118.00		1.00	1.31	35.138	38.65	223.77	0.650	0.000	0.50	0.932	0.61	37.5	0.0	26.5
<b>Totals:</b>									<b>118.00</b>			<b>10,149.3</b>		<b>12,776.4</b>

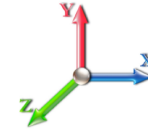
## Discrete Appurtenance Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.2D + 1.6W 105 mph Wind

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



**Iterations** 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor	x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	117.50	56.3"x12.6"x6.3" - Panel	3	35.107	38.617	0.63	0.80	12.02	201.60	0.000	0.000	742.73	0.00	0.00		
2	117.00	Low Profile Platform-flat	1	35.075	38.583	1.00	1.00	25.00	1440.00	0.000	0.000	1543.31	0.00	0.00		
3	117.00	ACU-A20-N	4	35.075	38.583	0.54	0.80	0.30	4.80	0.000	0.000	18.53	0.00	0.00		
4	117.00	APXVSP18-C-A20	3	35.075	38.583	0.66	0.80	15.98	205.20	0.000	0.000	986.23	0.00	0.00		
5	114.00	800 Filter	3	34.884	38.372	0.54	0.80	1.08	31.68	0.000	0.000	66.15	0.00	0.00		
6	114.00	800 MHz RRH	3	34.884	38.372	0.54	0.80	4.00	190.80	0.000	0.000	245.82	0.00	0.00		
7	114.00	1900MHz RRH	3	34.884	38.372	0.54	0.80	4.45	216.00	0.000	0.000	273.47	0.00	0.00		
8	114.00	Flush Mount	1	34.884	38.372	1.00	1.00	5.00	420.00	0.000	0.000	306.98	0.00	0.00		
9	114.00	26.1"x18.6"x6.7" RRU	3	34.884	38.372	0.54	0.80	6.51	230.04	0.000	0.000	399.83	0.00	0.00		
10	108.00	Ericsson Radio 4449	3	34.489	37.938	0.50	0.75	2.49	266.40	0.000	0.000	150.99	0.00	0.00		
11	108.00	Low Profile Platform	1	34.489	37.938	1.00	1.00	25.00	1440.00	0.000	0.000	1517.52	0.00	0.00		
12	108.00	RFS	3	34.489	37.938	0.52	0.75	31.88	460.80	0.000	0.000	1935.02	0.00	0.00		
13	108.00	Corner Braces	3	34.489	37.938	1.00	1.00	15.00	1260.00	0.000	0.000	910.51	0.00	0.00		
14	108.00	Horizontal Rail	1	34.489	37.938	1.00	1.00	6.75	314.06	0.000	0.000	409.73	0.00	0.00		
15	108.00	(3) PRK-SFS-L (V-Braces)	1	34.489	37.938	1.00	1.00	6.70	770.40	0.000	0.000	406.70	0.00	0.00		
16	108.00	PRK-1245 (kicker kit)	1	34.489	37.938	1.00	1.00	9.50	620.40	0.000	0.000	576.66	0.00	0.00		
17	108.00	AIR 21 B2A B4P	3	34.489	37.938	0.65	0.75	11.78	325.44	0.000	0.000	715.31	0.00	0.00		
18	108.00	AIR 21 B4A B2P	3	34.489	37.938	0.65	0.75	11.78	325.44	0.000	0.000	715.31	0.00	0.00		
19	98.00	Sabre C10899050	1	33.791	37.170	1.00	1.00	10.00	777.60	0.000	0.000	594.72	0.00	0.00		
20	98.00	CCI DTMABP7819VG12A	3	33.791	37.170	0.54	0.80	1.83	69.12	0.000	0.000	109.02	0.00	0.00		
21	98.00	KMW AM-X-CD-14-65-00T	3	33.791	37.170	0.60	0.80	9.00	131.04	0.000	0.000	535.25	0.00	0.00		
<b>Totals:</b>									<b>9,700.82</b>							<b>13,159.75</b>

## Total Applied Force Summary

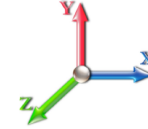
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

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



**Iterations** 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
1.00		85.75	183.66	0.00	0.00
5.00		339.67	728.54	0.00	0.00
10.00		417.10	896.91	0.00	0.00
15.00		408.77	881.62	0.00	0.00
19.00		336.96	694.29	0.00	0.00
20.00		84.27	172.04	0.00	0.00
25.00		436.06	851.04	0.00	0.00
30.00		443.50	835.76	0.00	0.00
35.00		448.18	820.47	0.00	0.00
40.00		450.74	805.18	0.00	0.00
40.75		66.99	119.46	0.00	0.00
44.00		296.80	859.00	0.00	0.00
45.00		90.86	261.97	0.00	0.00
50.00		458.08	656.31	0.00	0.00
55.00		456.43	644.08	0.00	0.00
60.00		453.73	631.85	0.00	0.00
65.00		450.11	619.61	0.00	0.00
70.00		445.69	607.38	0.00	0.00
75.00		440.54	595.15	0.00	0.00
77.25		195.65	263.83	0.00	0.00
80.00		240.87	504.59	0.00	0.00
80.75		65.20	136.49	0.00	0.00
85.00		368.38	396.98	0.00	0.00
90.00		427.41	458.55	0.00	0.00
95.00		420.04	449.38	0.00	0.00
98.00	(7) attachments	1486.73	1242.98	0.00	0.00
100.00		163.39	160.01	0.00	0.00
105.00		403.92	393.59	0.00	0.00
108.00	(19) attachments	7575.48	6014.70	0.00	0.00
110.00		156.58	122.43	0.00	0.00
114.00	(13) attachments	1601.65	1328.97	0.00	0.00
115.00		76.22	59.20	0.00	0.00
117.00	(8) attachments	2699.51	1767.29	0.00	0.00
117.50	(3) attachments	780.30	228.24	0.00	0.00
118.00		37.48	26.55	0.00	0.00
	<b>Totals:</b>	<b>23,309.02</b>	<b>25,418.09</b>	<b>0.00</b>	<b>0.00</b>



## Linear Appurtenance Segment Forces (Factored)

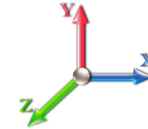
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 105 mph Wind

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



**Iterations** 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
1.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	22.791	0.00	0.33
5.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	22.791	0.00	1.31
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.64
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.64
19.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	23.922	0.00	1.31
20.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	24.182	0.00	0.33
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	25.345	0.00	1.64
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	26.337	0.00	1.64
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.206	0.00	1.64
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.981	0.00	1.64
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	28.091	0.00	0.25
44.00	Safety Cable	Yes	3.25	0.000	0.38	0.10	0.00	0.011	0.000	28.548	0.00	1.06
45.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.012	0.000	28.684	0.00	0.33
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.327	0.00	1.64
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.922	0.00	1.64
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.475	0.00	1.64
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.993	0.00	1.64
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.480	0.00	1.64
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.941	0.00	1.64
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	32.140	0.00	0.74
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	32.377	0.00	0.90
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	32.441	0.00	0.25
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	32.793	0.00	1.39
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.190	0.00	1.64
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.570	0.00	1.64
98.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	33.791	0.00	0.98
100.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.015	0.000	33.935	0.00	0.66
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	34.285	0.00	1.64
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	34.489	0.00	0.98
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	34.623	0.00	0.66
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	34.884	0.00	1.31
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	34.948	0.00	0.33
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	35.075	0.00	0.66
<b>Totals:</b>											<b>0.0</b>	<b>38.3</b>

## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

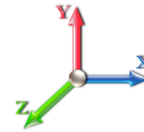


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**Load Case:** 1.2D + 1.6W 105 mph Wind

**Iterations** 25

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



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.40	-23.32	0.00	-2152.8	0.00	2152.80	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.756
1.00	-25.17	-23.30	0.00	-2129.4	0.00	2129.48	2655.70	1327.85	4197.91	2102.08	0.01	-0.062	0.000	0.625
5.00	-24.35	-23.05	0.00	-2036.3	0.00	2036.30	2627.56	1313.78	4087.72	2046.90	0.15	-0.265	0.000	0.610
10.00	-23.36	-22.73	0.00	-1921.0	0.00	1921.04	2591.79	1295.89	3951.04	1978.45	0.56	-0.516	0.000	0.590
15.00	-22.39	-22.40	0.00	-1807.4	0.00	1807.40	2555.34	1277.67	3815.58	1910.62	1.23	-0.765	0.000	0.570
19.00	-21.65	-22.10	0.00	-1717.8	0.00	1717.81	2525.69	1262.85	3708.14	1856.83	1.96	-0.963	0.000	0.553
19.00	-21.65	-22.10	0.00	-1717.8	0.00	1717.81	2525.69	1262.85	3708.14	1856.83	1.96	-0.963	0.000	0.553
20.00	-21.39	-22.10	0.00	-1695.7	0.00	1695.71	2518.21	1259.11	3681.41	1843.44	2.16	-1.013	0.000	0.929
25.00	-20.40	-21.79	0.00	-1585.2	0.00	1585.22	2480.41	1240.21	3548.60	1776.94	3.45	-1.426	0.000	0.901
30.00	-19.42	-21.46	0.00	-1476.2	0.00	1476.27	2441.94	1220.97	3417.21	1711.15	5.16	-1.836	0.000	0.871
35.00	-18.47	-21.12	0.00	-1368.9	0.00	1368.96	2402.79	1201.39	3287.30	1646.09	7.30	-2.243	0.000	0.840
40.00	-17.60	-20.70	0.00	-1263.3	0.00	1263.38	2362.96	1181.48	3158.94	1581.82	9.86	-2.646	0.000	0.806
40.75	-17.43	-20.68	0.00	-1247.8	0.00	1247.85	2356.93	1178.46	3139.82	1572.24	10.28	-2.708	0.000	0.801
44.00	-16.53	-20.39	0.00	-1180.6	0.00	1180.64	2330.61	1165.31	3057.40	1530.97	12.22	-2.970	0.000	0.477
45.00	-16.22	-20.32	0.00	-1160.2	0.00	1160.26	1757.80	878.90	2340.38	1171.93	12.85	-3.019	0.000	0.515
50.00	-15.50	-19.90	0.00	-1058.6	0.00	1058.65	1730.99	865.49	2250.57	1126.96	16.13	-3.258	0.000	0.535
55.00	-14.77	-19.49	0.00	-959.17	0.00	959.17	1703.50	851.75	2161.57	1082.39	19.68	-3.512	0.000	0.895
60.00	-14.02	-19.10	0.00	-861.71	0.00	861.71	1675.34	837.67	2073.46	1038.27	23.59	-3.951	0.000	0.839
65.00	-13.30	-18.71	0.00	-766.19	0.00	766.19	1646.50	823.25	1986.29	994.62	27.95	-4.373	0.000	0.779
70.00	-12.61	-18.30	0.00	-672.65	0.00	672.65	1616.99	808.49	1900.13	951.48	32.75	-4.775	0.000	0.715
75.00	-11.97	-17.87	0.00	-581.15	0.00	581.15	1586.80	793.40	1815.05	908.87	37.95	-5.155	0.000	0.647
77.25	-11.67	-17.68	0.00	-540.95	0.00	540.95	1573.00	786.50	1777.13	889.88	40.41	-5.320	0.000	0.616
80.00	-11.15	-17.42	0.00	-492.32	0.00	492.32	1555.94	777.97	1731.10	866.84	43.53	-5.514	0.000	0.576
80.75	-10.98	-17.37	0.00	-479.26	0.00	479.26	1065.47	532.73	1202.43	602.11	44.40	-5.565	0.000	0.807
85.00	-10.52	-17.03	0.00	-405.42	0.00	405.42	1050.73	525.37	1157.88	579.80	49.47	-5.836	0.000	0.710
90.00	-10.02	-16.61	0.00	-320.29	0.00	320.29	1032.77	516.39	1105.80	553.72	55.77	-6.193	0.000	0.589
95.00	-9.55	-16.18	0.00	-237.23	0.00	237.23	1014.14	507.07	1054.14	527.85	62.41	-6.492	0.000	0.460
98.00	-8.46	-14.58	0.00	-188.69	0.00	188.69	1002.64	501.32	1023.37	512.45	66.53	-6.641	0.000	0.377
100.00	-8.29	-14.42	0.00	-159.53	0.00	159.53	994.83	497.42	1002.97	502.23	69.33	-6.728	0.000	0.327
105.00	-7.92	-13.98	0.00	-87.45	0.00	87.45	974.85	487.42	952.34	476.88	76.45	-6.886	0.000	0.192
108.00	-2.86	-5.74	0.00	-45.50	0.00	45.50	962.53	481.27	922.25	461.81	80.79	-6.942	0.000	0.102
110.00	-2.75	-5.57	0.00	-34.02	0.00	34.02	954.18	477.09	902.32	451.83	83.70	-6.966	0.000	0.078
114.00	-1.63	-3.82	0.00	-11.74	0.00	11.74	937.17	468.59	862.79	432.04	89.53	-6.994	0.000	0.029
115.00	-1.58	-3.74	0.00	-7.92	0.00	7.92	932.85	466.42	852.98	427.13	91.00	-6.997	0.000	0.020
117.00	-0.15	-0.84	0.00	-0.44	0.00	0.44	924.13	462.06	833.45	417.34	93.92	-7.000	0.000	0.001
117.50	-0.02	-0.04	0.00	-0.02	0.00	0.02	921.93	460.96	828.58	414.91	94.65	-7.000	0.000	0.000
118.00	0.00	-0.04	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	95.38	-7.000	0.000	0.000

## Wind Loading - Shaft

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Iterations** 25

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	22.791	25.07	319.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	22.791	25.07	317.77	0.650	0.000	1.00	3.289	2.14	85.8	0.0	117.1
5.00		1.00	0.85	22.791	25.07	312.82	0.650	0.000	4.00	13.028	8.47	339.7	0.0	463.9
10.00		1.00	0.85	22.791	25.07	306.63	0.650	0.000	5.00	15.997	10.40	417.1	0.0	569.5
15.00		1.00	0.85	22.791	25.07	300.45	0.650	0.000	5.00	15.678	10.19	408.8	0.0	558.0
19.00	RT2	1.00	0.89	23.922	26.31	302.75	0.650	0.000	4.00	12.312	8.00	337.0	0.0	438.2
20.00		1.00	0.90	24.182	26.60	303.11	0.650	0.000	1.00	3.046	1.98	84.3	0.0	108.4
25.00		1.00	0.95	25.345	27.88	303.80	0.650	0.000	5.00	15.039	9.78	436.1	0.0	535.1
30.00		1.00	0.98	26.337	28.97	303.03	0.650	0.000	5.00	14.720	9.57	443.5	0.0	523.6
35.00		1.00	1.01	27.206	29.93	301.23	0.650	0.000	5.00	14.400	9.36	448.2	0.0	512.2
40.00		1.00	1.04	27.981	30.78	298.64	0.650	0.000	5.00	14.081	9.15	450.7	0.0	500.7
40.75	Bot - Section 2	1.00	1.05	28.091	30.90	298.20	0.650	0.000	0.75	2.085	1.35	67.0	0.0	74.1
44.00	RB3	1.00	1.06	28.548	31.40	296.12	0.650	0.000	3.25	9.088	5.91	296.8	0.0	577.2
45.00	Top - Section 1	1.00	1.07	28.684	31.55	295.43	0.650	0.000	1.00	2.769	1.80	90.9	0.0	175.8
50.00	RT3	1.00	1.09	29.327	32.26	296.36	0.650	0.000	5.00	13.653	8.87	458.1	0.0	389.1
55.00		1.00	1.12	29.922	32.91	292.26	0.650	0.000	5.00	13.334	8.67	456.4	0.0	379.9
60.00		1.00	1.14	30.475	33.52	287.80	0.650	0.000	5.00	13.015	8.46	453.7	0.0	370.7
65.00		1.00	1.16	30.993	34.09	283.02	0.650	0.000	5.00	12.695	8.25	450.1	0.0	361.5
70.00		1.00	1.17	31.480	34.63	277.97	0.650	0.000	5.00	12.376	8.04	445.7	0.0	352.4
75.00		1.00	1.19	31.941	35.13	272.67	0.650	0.000	5.00	12.056	7.84	440.5	0.0	343.2
77.25	Bot - Section 3	1.00	1.20	32.140	35.35	270.22	0.650	0.000	2.25	5.321	3.46	195.6	0.0	151.4
80.00		1.00	1.21	32.377	35.62	267.16	0.650	0.000	2.75	6.503	4.23	240.9	0.0	321.7
80.75	Top - Section 2	1.00	1.21	32.441	35.69	266.32	0.650	0.000	0.75	1.757	1.14	65.2	0.0	86.9
85.00		1.00	1.22	32.793	36.07	265.14	0.650	0.000	4.25	9.819	6.38	368.4	0.0	210.0
90.00		1.00	1.24	33.190	36.51	259.27	0.650	0.000	5.00	11.257	7.32	427.4	0.0	240.7
95.00		1.00	1.25	33.570	36.93	253.25	0.650	0.000	5.00	10.937	7.11	420.0	0.0	233.9
98.00	Appurtenance(s)	1.00	1.26	33.791	37.17	249.56	0.650	0.000	3.00	6.409	4.17	247.8	0.0	137.0
100.00		1.00	1.27	33.935	37.33	247.07	0.650	0.000	2.00	4.209	2.74	163.4	0.0	90.0
105.00		1.00	1.28	34.285	37.71	240.76	0.650	0.000	5.00	10.298	6.69	403.9	0.0	220.1
108.00	Appurtenance(s)	1.00	1.29	34.489	37.94	236.91	0.650	0.000	3.00	6.026	3.92	237.7	0.0	128.8
110.00		1.00	1.29	34.623	38.08	234.32	0.650	0.000	2.00	3.953	2.57	156.6	0.0	84.5
114.00	Appurtenance(s)	1.00	1.30	34.884	38.37	229.08	0.650	0.000	4.00	7.753	5.04	309.4	0.0	165.6
115.00		1.00	1.30	34.948	38.44	227.76	0.650	0.000	1.00	1.906	1.24	76.2	0.0	40.7
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	225.10	0.650	0.000	2.00	3.774	2.45	151.4	0.0	80.6
117.50	Appurtenance(s)	1.00	1.31	35.107	38.62	224.44	0.650	0.000	0.50	0.936	0.61	37.6	0.0	20.0
118.00		1.00	1.31	35.138	38.65	223.77	0.650	0.000	0.50	0.932	0.61	37.5	0.0	19.9
<b>Totals:</b>									<b>118.00</b>			<b>10,149.3</b>		<b>9,582.3</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

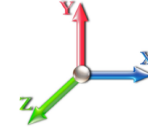


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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	117.50	56.3"x12.6"x6.3" - Panel	3	35.107	38.617	0.63	0.80	12.02	151.20	0.000	0.000	742.73	0.00	0.00
2	117.00	Low Profile Platform-flat	1	35.075	38.583	1.00	1.00	25.00	1080.00	0.000	0.000	1543.31	0.00	0.00
3	117.00	ACU-A20-N	4	35.075	38.583	0.54	0.80	0.30	3.60	0.000	0.000	18.53	0.00	0.00
4	117.00	APXVSP18-C-A20	3	35.075	38.583	0.66	0.80	15.98	153.90	0.000	0.000	986.23	0.00	0.00
5	114.00	800 Filter	3	34.884	38.372	0.54	0.80	1.08	23.76	0.000	0.000	66.15	0.00	0.00
6	114.00	800 MHz RRH	3	34.884	38.372	0.54	0.80	4.00	143.10	0.000	0.000	245.82	0.00	0.00
7	114.00	1900MHz RRH	3	34.884	38.372	0.54	0.80	4.45	162.00	0.000	0.000	273.47	0.00	0.00
8	114.00	Flush Mount	1	34.884	38.372	1.00	1.00	5.00	315.00	0.000	0.000	306.98	0.00	0.00
9	114.00	26.1"x18.6"x6.7" RRU	3	34.884	38.372	0.54	0.80	6.51	172.53	0.000	0.000	399.83	0.00	0.00
10	108.00	Ericsson Radio 4449	3	34.489	37.938	0.50	0.75	2.49	199.80	0.000	0.000	150.99	0.00	0.00
11	108.00	Low Profile Platform	1	34.489	37.938	1.00	1.00	25.00	1080.00	0.000	0.000	1517.52	0.00	0.00
12	108.00	RFS	3	34.489	37.938	0.52	0.75	31.88	345.60	0.000	0.000	1935.02	0.00	0.00
13	108.00	Corner Braces	3	34.489	37.938	1.00	1.00	15.00	945.00	0.000	0.000	910.51	0.00	0.00
14	108.00	Horizontal Rail	1	34.489	37.938	1.00	1.00	6.75	235.55	0.000	0.000	409.73	0.00	0.00
15	108.00	(3) PRK-SFS-L (V-Braces)	1	34.489	37.938	1.00	1.00	6.70	577.80	0.000	0.000	406.70	0.00	0.00
16	108.00	PRK-1245 (kicker kit)	1	34.489	37.938	1.00	1.00	9.50	465.30	0.000	0.000	576.66	0.00	0.00
17	108.00	AIR 21 B2A B4P	3	34.489	37.938	0.65	0.75	11.78	244.08	0.000	0.000	715.31	0.00	0.00
18	108.00	AIR 21 B4A B2P	3	34.489	37.938	0.65	0.75	11.78	244.08	0.000	0.000	715.31	0.00	0.00
19	98.00	Sabre C10899050	1	33.791	37.170	1.00	1.00	10.00	583.20	0.000	0.000	594.72	0.00	0.00
20	98.00	CCI DTMABP7819VG12A	3	33.791	37.170	0.54	0.80	1.83	51.84	0.000	0.000	109.02	0.00	0.00
21	98.00	KMW AM-X-CD-14-65-00T	3	33.791	37.170	0.60	0.80	9.00	98.28	0.000	0.000	535.25	0.00	0.00

**Totals:** 7,275.62

**13,159.75**

## Total Applied Force Summary

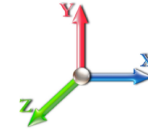
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

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



**Iterations** 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
1.00		85.75	137.75	0.00	0.00
5.00		339.67	546.40	0.00	0.00
10.00		417.10	672.68	0.00	0.00
15.00		408.77	661.22	0.00	0.00
19.00		336.96	520.72	0.00	0.00
20.00		84.27	129.03	0.00	0.00
25.00		436.06	638.28	0.00	0.00
30.00		443.50	626.82	0.00	0.00
35.00		448.18	615.35	0.00	0.00
40.00		450.74	603.88	0.00	0.00
40.75		66.99	89.59	0.00	0.00
44.00		296.80	644.25	0.00	0.00
45.00		90.86	196.48	0.00	0.00
50.00		458.08	492.23	0.00	0.00
55.00		456.43	483.06	0.00	0.00
60.00		453.73	473.88	0.00	0.00
65.00		450.11	464.71	0.00	0.00
70.00		445.69	455.54	0.00	0.00
75.00		440.54	446.36	0.00	0.00
77.25		195.65	197.87	0.00	0.00
80.00		240.87	378.44	0.00	0.00
80.75		65.20	102.37	0.00	0.00
85.00		368.38	297.74	0.00	0.00
90.00		427.41	343.92	0.00	0.00
95.00		420.04	337.04	0.00	0.00
98.00	(7) attachments	1486.73	932.24	0.00	0.00
100.00		163.39	120.00	0.00	0.00
105.00		403.92	295.20	0.00	0.00
108.00	(19) attachments	7575.48	4511.02	0.00	0.00
110.00		156.58	91.82	0.00	0.00
114.00	(13) attachments	1601.65	996.73	0.00	0.00
115.00		76.22	44.40	0.00	0.00
117.00	(8) attachments	2699.51	1325.47	0.00	0.00
117.50	(3) attachments	780.30	171.18	0.00	0.00
118.00		37.48	19.91	0.00	0.00
	<b>Totals:</b>	<b>23,309.02</b>	<b>19,063.57</b>	<b>0.00</b>	<b>0.00</b>

## Linear Appurtenance Segment Forces (Factored)

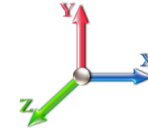
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 105 mph Wind

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



**Iterations** 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
1.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	22.791	0.00	0.25
5.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	22.791	0.00	0.98
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.23
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.23
19.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	23.922	0.00	0.98
20.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	24.182	0.00	0.25
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	25.345	0.00	1.23
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	26.337	0.00	1.23
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.206	0.00	1.23
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.981	0.00	1.23
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	28.091	0.00	0.18
44.00	Safety Cable	Yes	3.25	0.000	0.38	0.10	0.00	0.011	0.000	28.548	0.00	0.80
45.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.012	0.000	28.684	0.00	0.25
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.327	0.00	1.23
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.922	0.00	1.23
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.475	0.00	1.23
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.993	0.00	1.23
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.480	0.00	1.23
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.941	0.00	1.23
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	32.140	0.00	0.55
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	32.377	0.00	0.68
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	32.441	0.00	0.18
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	32.793	0.00	1.04
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.190	0.00	1.23
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.570	0.00	1.23
98.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	33.791	0.00	0.74
100.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.015	0.000	33.935	0.00	0.49
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	34.285	0.00	1.23
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	34.489	0.00	0.74
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	34.623	0.00	0.49
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	34.884	0.00	0.98
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	34.948	0.00	0.25
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	35.075	0.00	0.49
<b>Totals:</b>											<b>0.0</b>	<b>28.7</b>

## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



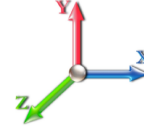
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**Load Case:** 0.9D + 1.6W 105 mph Wind

**Iterations** 25

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-19.05	-23.32	0.00	-2127.1	0.00	2127.13	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.745
1.00	-18.86	-23.28	0.00	-2103.8	0.00	2103.81	2655.70	1327.85	4197.91	2102.08	0.01	-0.061	0.000	0.616
5.00	-18.22	-23.01	0.00	-2010.7	0.00	2010.70	2627.56	1313.78	4087.72	2046.90	0.14	-0.262	0.000	0.601
10.00	-17.46	-22.66	0.00	-1895.6	0.00	1895.67	2591.79	1295.89	3951.04	1978.45	0.55	-0.509	0.000	0.581
15.00	-16.71	-22.31	0.00	-1782.3	0.00	1782.37	2555.34	1277.67	3815.58	1910.62	1.22	-0.755	0.000	0.561
19.00	-16.15	-22.00	0.00	-1693.1	0.00	1693.13	2525.69	1262.85	3708.14	1856.83	1.93	-0.951	0.000	0.544
19.00	-16.15	-22.00	0.00	-1693.1	0.00	1693.13	2525.69	1262.85	3708.14	1856.83	1.93	-0.951	0.000	0.544
20.00	-15.94	-21.98	0.00	-1671.1	0.00	1671.13	2518.21	1259.11	3681.41	1843.44	2.14	-1.000	0.000	0.913
25.00	-15.15	-21.64	0.00	-1561.2	0.00	1561.25	2480.41	1240.21	3548.60	1776.94	3.40	-1.406	0.000	0.885
30.00	-14.39	-21.28	0.00	-1453.0	0.00	1453.08	2441.94	1220.97	3417.21	1711.15	5.09	-1.810	0.000	0.855
35.00	-13.65	-20.90	0.00	-1346.7	0.00	1346.70	2402.79	1201.39	3287.30	1646.09	7.20	-2.211	0.000	0.824
40.00	-12.98	-20.48	0.00	-1242.1	0.00	1242.19	2362.96	1181.48	3158.94	1581.82	9.73	-2.607	0.000	0.791
40.75	-12.84	-20.44	0.00	-1226.8	0.00	1226.84	2356.93	1178.46	3139.82	1572.24	10.14	-2.668	0.000	0.786
44.00	-12.16	-20.15	0.00	-1160.4	0.00	1160.40	2330.61	1165.31	3057.40	1530.97	12.05	-2.925	0.000	0.468
45.00	-11.91	-20.08	0.00	-1140.2	0.00	1140.25	1757.80	878.90	2340.38	1171.93	12.67	-2.974	0.000	0.505
50.00	-11.36	-19.64	0.00	-1039.8	0.00	1039.88	1730.99	865.49	2250.57	1126.96	15.90	-3.208	0.000	0.524
55.00	-10.79	-19.22	0.00	-941.68	0.00	941.68	1703.50	851.75	2161.57	1082.39	19.40	-3.458	0.000	0.877
60.00	-10.21	-18.81	0.00	-845.58	0.00	845.58	1675.34	837.67	2073.46	1038.27	23.25	-3.889	0.000	0.821
65.00	-9.65	-18.40	0.00	-751.51	0.00	751.51	1646.50	823.25	1986.29	994.62	27.54	-4.303	0.000	0.762
70.00	-9.11	-17.98	0.00	-659.52	0.00	659.52	1616.99	808.49	1900.13	951.48	32.26	-4.697	0.000	0.699
75.00	-8.62	-17.54	0.00	-569.61	0.00	569.61	1586.80	793.40	1815.05	908.87	37.37	-5.069	0.000	0.633
77.25	-8.39	-17.36	0.00	-530.14	0.00	530.14	1573.00	786.50	1777.13	889.88	39.80	-5.232	0.000	0.602
80.00	-8.00	-17.10	0.00	-482.41	0.00	482.41	1555.94	777.97	1731.10	866.84	42.86	-5.421	0.000	0.562
80.75	-7.86	-17.05	0.00	-469.58	0.00	469.58	1065.47	532.73	1202.43	602.11	43.72	-5.472	0.000	0.788
85.00	-7.51	-16.69	0.00	-397.13	0.00	397.13	1050.73	525.37	1157.88	579.80	48.70	-5.737	0.000	0.693
90.00	-7.12	-16.27	0.00	-313.68	0.00	313.68	1032.77	516.39	1105.80	553.72	54.90	-6.087	0.000	0.574
95.00	-6.77	-15.84	0.00	-232.32	0.00	232.32	1014.14	507.07	1054.14	527.85	61.42	-6.379	0.000	0.448
98.00	-5.98	-14.27	0.00	-184.79	0.00	184.79	1002.64	501.32	1023.37	512.45	65.47	-6.526	0.000	0.367
100.00	-5.85	-14.11	0.00	-156.25	0.00	156.25	994.83	497.42	1002.97	502.23	68.22	-6.610	0.000	0.318
105.00	-5.58	-13.68	0.00	-85.70	0.00	85.70	974.85	487.42	952.34	476.88	75.22	-6.765	0.000	0.186
108.00	-1.99	-5.63	0.00	-44.65	0.00	44.65	962.53	481.27	922.25	461.81	79.48	-6.820	0.000	0.099
110.00	-1.92	-5.46	0.00	-33.39	0.00	33.39	954.18	477.09	902.32	451.83	82.34	-6.843	0.000	0.076
114.00	-1.12	-3.75	0.00	-11.54	0.00	11.54	937.17	468.59	862.79	432.04	88.07	-6.871	0.000	0.028
115.00	-1.08	-3.67	0.00	-7.78	0.00	7.78	932.85	466.42	852.98	427.13	89.51	-6.875	0.000	0.019
117.00	-0.09	-0.83	0.00	-0.44	0.00	0.44	924.13	462.06	833.45	417.34	92.38	-6.877	0.000	0.001
117.50	-0.02	-0.04	0.00	-0.02	0.00	0.02	921.93	460.96	828.58	414.91	93.10	-6.877	0.000	0.000
118.00	0.00	-0.04	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	93.82	-6.877	0.000	0.000

## Wind Loading - Shaft

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

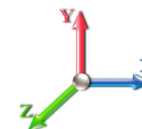


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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



**Iterations** 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	5.168	5.68	0.00	1.200	1.057	1.00	3.465	4.16	23.6	52.8	208.9
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	4.00	13.856	16.63	94.5	245.4	863.9
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	17.107	20.53	116.7	323.2	1082.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	16.833	20.20	114.8	330.5	1074.5
19.00	RT2	1.00	0.89	5.425	5.97	0.00	1.200	1.419	4.00	13.259	15.91	94.9	266.7	850.9
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	1.00	3.284	3.94	23.8	66.7	211.3
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	16.255	19.51	123.3	334.7	1048.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	15.958	19.15	125.8	334.0	1032.2
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	15.658	18.79	127.5	332.3	1015.2
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	15.355	18.43	128.6	329.7	997.3
40.75	Bot - Section 2	1.00	1.05	6.370	7.01	0.00	1.200	1.532	0.75	2.276	2.73	19.1	49.4	148.2
44.00	RB3	1.00	1.06	6.474	7.12	0.00	1.200	1.544	3.25	9.924	11.91	84.8	215.8	985.4
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	1.00	3.027	3.63	26.0	66.3	300.7
50.00	RT3	1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	14.957	17.95	131.3	327.6	846.3
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	14.650	17.58	131.2	323.4	829.9
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	14.342	17.21	130.8	318.8	813.1
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	14.033	16.84	130.2	313.9	796.0
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	13.723	16.47	129.3	308.7	778.6
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	13.413	16.10	128.2	303.3	760.9
77.25	Bot - Section 3	1.00	1.20	7.288	8.02	0.00	1.200	1.633	2.25	5.934	7.12	57.1	135.3	337.3
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.75	7.254	8.70	70.3	165.8	594.7
80.75	Top - Section 2	1.00	1.21	7.356	8.09	0.00	1.200	1.640	0.75	1.962	2.35	19.0	45.1	160.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	4.25	10.987	13.18	107.8	251.2	531.3
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	12.639	15.17	125.6	289.5	610.5
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	12.327	14.79	123.9	283.3	595.1
98.00	Appurtenance(s)	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	7.245	8.69	73.3	167.7	350.4
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	2.00	4.767	5.72	48.4	110.8	230.7
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	11.702	14.04	120.1	270.4	563.9
108.00	Appurtenance(s)	1.00	1.29	7.821	8.60	0.00	1.200	1.689	3.00	6.870	8.24	70.9	159.8	331.5
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	2.00	4.517	5.42	46.8	105.5	218.1
114.00	Appurtenance(s)	1.00	1.30	7.910	8.70	0.00	1.200	1.698	4.00	8.885	10.66	92.8	206.7	427.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.00	2.190	2.63	22.9	51.4	105.7
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	1.702	2.00	4.342	5.21	45.6	101.7	209.2
117.50	Appurtenance(s)	1.00	1.31	7.961	8.76	0.00	1.200	1.703	0.50	1.078	1.29	11.3	25.4	52.0
118.00		1.00	1.31	7.968	8.76	0.00	1.200	1.704	0.50	1.074	1.29	11.3	25.3	51.8
<b>Totals:</b>									<b>118.00</b>			<b>2,931.7</b>	<b>20,014.6</b>	



## Discrete Appurtenance Forces

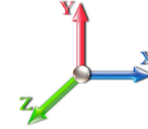
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	117.50	56.3"x12.6"x6.3" - Panel	3	7.961	8.757	0.63	0.80	14.08	668.93	0.000	0.000	123.27	0.00	0.00	
2	117.00	Low Profile Platform-flat	1	7.954	8.749	1.00	1.00	45.43	2161.43	0.000	0.000	397.45	0.00	0.00	
3	117.00	ACU-A20-N	4	7.954	8.749	0.54	0.80	0.92	16.36	0.000	0.000	8.06	0.00	0.00	
4	117.00	APXVSP18-C-A20	3	7.954	8.749	0.66	0.80	21.40	562.53	0.000	0.000	187.27	0.00	0.00	
5	114.00	800 Filter	3	7.910	8.701	0.54	0.80	1.76	30.20	0.000	0.000	15.30	0.00	0.00	
6	114.00	800 MHz RRH	3	7.910	8.701	0.54	0.80	5.79	343.37	0.000	0.000	50.41	0.00	0.00	
7	114.00	1900MHz RRH	3	7.910	8.701	0.54	0.80	6.44	387.83	0.000	0.000	56.02	0.00	0.00	
8	114.00	Flush Mount	1	7.910	8.701	1.00	1.00	8.40	605.26	0.000	0.000	73.05	0.00	0.00	
9	114.00	26.1"x18.6"x6.7" RRU	3	7.910	8.701	0.54	0.80	8.98	428.08	0.000	0.000	78.14	0.00	0.00	
10	108.00	Ericsson Radio 4449	3	7.821	8.603	0.50	0.75	3.27	462.88	0.000	0.000	28.12	0.00	0.00	
11	108.00	Low Profile Platform	1	7.821	8.603	1.00	1.00	45.27	2153.29	0.000	0.000	389.41	0.00	0.00	
12	108.00	RFS	3	7.821	8.603	0.52	0.75	34.77	1669.09	0.000	0.000	299.12	0.00	0.00	
13	108.00	Corner Braces	3	7.821	8.603	1.00	1.00	25.13	1811.16	0.000	0.000	216.21	0.00	0.00	
14	108.00	Horizontal Rail	1	7.821	8.603	1.00	1.00	13.13	876.34	0.000	0.000	112.99	0.00	0.00	
15	108.00	(3) PRK-SFS-L (V-Braces)	1	7.821	8.603	1.00	1.00	13.49	1948.78	0.000	0.000	116.04	0.00	0.00	
16	108.00	PRK-1245 (kicker kit)	1	7.821	8.603	1.00	1.00	19.13	926.65	0.000	0.000	164.54	0.00	0.00	
17	108.00	AIR 21 B2A B4P	3	7.821	8.603	0.65	0.75	13.83	812.66	0.000	0.000	119.01	0.00	0.00	
18	108.00	AIR 21 B4A B2P	3	7.821	8.603	0.65	0.75	13.83	812.66	0.000	0.000	119.01	0.00	0.00	
19	98.00	Sabre C10899050	1	7.662	8.429	1.00	1.00	16.69	1761.81	0.000	0.000	140.67	0.00	0.00	
20	98.00	CCI DTMABP7819VG12A	3	7.662	8.429	0.54	0.80	2.22	165.77	0.000	0.000	18.69	0.00	0.00	
21	98.00	KMW AM-X-CD-14-65-00T	3	7.662	8.429	0.60	0.80	10.68	505.08	0.000	0.000	89.99	0.00	0.00	
<b>Totals:</b>									<b>19,110.17</b>						<b>2,802.78</b>

## Total Applied Force Summary

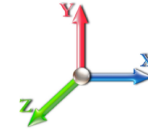
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
1.00		23.64	238.14	0.00	0.00
5.00		94.52	982.98	0.00	0.00
10.00		116.70	1232.94	0.00	0.00
15.00		114.83	1225.93	0.00	0.00
19.00		94.94	972.49	0.00	0.00
20.00		23.77	241.71	0.00	0.00
25.00		123.31	1200.89	0.00	0.00
30.00		125.80	1185.50	0.00	0.00
35.00		127.50	1168.93	0.00	0.00
40.00		128.60	1151.48	0.00	0.00
40.75		19.14	171.34	0.00	0.00
44.00		84.80	1085.78	0.00	0.00
45.00		25.99	331.62	0.00	0.00
50.00		131.29	1001.18	0.00	0.00
55.00		131.20	985.08	0.00	0.00
60.00		130.82	968.56	0.00	0.00
65.00		130.18	951.69	0.00	0.00
70.00		129.31	934.52	0.00	0.00
75.00		128.24	917.07	0.00	0.00
77.25		57.08	407.60	0.00	0.00
80.00		70.30	680.76	0.00	0.00
80.75		19.05	184.41	0.00	0.00
85.00		107.85	664.44	0.00	0.00
90.00		125.56	767.36	0.00	0.00
95.00		123.86	752.16	0.00	0.00
98.00	(7) attachments	322.63	2877.33	0.00	0.00
100.00		48.42	278.64	0.00	0.00
105.00		120.09	683.83	0.00	0.00
108.00	(19) attachments	1635.38	11877.07	0.00	0.00
110.00		46.81	235.93	0.00	0.00
114.00	(13) attachments	365.70	2257.96	0.00	0.00
115.00		22.90	114.62	0.00	0.00
117.00	(8) attachments	638.35	2967.39	0.00	0.00
117.50	(3) attachments	134.60	720.93	0.00	0.00
118.00		11.30	51.83	0.00	0.00
	<b>Totals:</b>	<b>5,734.47</b>	<b>42,470.10</b>	<b>0.00</b>	<b>0.00</b>

## Linear Appurtenance Segment Forces (Factored)

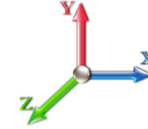
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
1.00	Safety Cable	Yes	1.00	0.000	0.38	0.21	0.00	0.010	0.000	5.168	0.00	2.01
5.00	Safety Cable	Yes	4.00	0.000	0.38	0.95	0.00	0.010	0.000	5.168	0.00	10.35
10.00	Safety Cable	Yes	5.00	0.000	0.38	1.27	0.00	0.010	0.000	5.168	0.00	14.46
15.00	Safety Cable	Yes	5.00	0.000	0.38	1.31	0.00	0.010	0.000	5.168	0.00	15.46
19.00	Safety Cable	Yes	4.00	0.000	0.38	1.07	0.00	0.010	0.000	5.425	0.00	12.86
20.00	Safety Cable	Yes	1.00	0.000	0.38	0.27	0.00	0.010	0.000	5.483	0.00	3.24
25.00	Safety Cable	Yes	5.00	0.000	0.38	1.37	0.00	0.011	0.000	5.747	0.00	16.83
30.00	Safety Cable	Yes	5.00	0.000	0.38	1.40	0.00	0.011	0.000	5.972	0.00	17.35
35.00	Safety Cable	Yes	5.00	0.000	0.38	1.42	0.00	0.011	0.000	6.169	0.00	17.80
40.00	Safety Cable	Yes	5.00	0.000	0.38	1.43	0.00	0.011	0.000	6.345	0.00	18.21
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.22	0.00	0.011	0.000	6.370	0.00	2.74
44.00	Safety Cable	Yes	3.25	0.000	0.38	0.94	0.00	0.011	0.000	6.474	0.00	12.03
45.00	Safety Cable	Yes	1.00	0.000	0.38	0.29	0.00	0.012	0.000	6.504	0.00	3.72
50.00	Safety Cable	Yes	5.00	0.000	0.38	1.46	0.00	0.012	0.000	6.650	0.00	18.91
55.00	Safety Cable	Yes	5.00	0.000	0.38	1.47	0.00	0.012	0.000	6.785	0.00	19.22
60.00	Safety Cable	Yes	5.00	0.000	0.38	1.49	0.00	0.012	0.000	6.910	0.00	19.51
65.00	Safety Cable	Yes	5.00	0.000	0.38	1.50	0.00	0.012	0.000	7.028	0.00	19.78
70.00	Safety Cable	Yes	5.00	0.000	0.38	1.51	0.00	0.013	0.000	7.138	0.00	20.03
75.00	Safety Cable	Yes	5.00	0.000	0.38	1.52	0.00	0.013	0.000	7.243	0.00	20.27
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.68	0.00	0.013	0.000	7.288	0.00	9.17
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.84	0.00	0.014	0.000	7.342	0.00	11.27
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.23	0.00	0.014	0.000	7.356	0.00	3.08
85.00	Safety Cable	Yes	4.25	0.000	0.38	1.30	0.00	0.014	0.000	7.436	0.00	17.60
90.00	Safety Cable	Yes	5.00	0.000	0.38	1.54	0.00	0.014	0.000	7.526	0.00	20.91
95.00	Safety Cable	Yes	5.00	0.000	0.38	1.55	0.00	0.014	0.000	7.612	0.00	21.11
98.00	Safety Cable	Yes	3.00	0.000	0.38	0.93	0.00	0.015	0.000	7.662	0.00	12.73
100.00	Safety Cable	Yes	2.00	0.000	0.38	0.62	0.00	0.015	0.000	7.695	0.00	8.52
105.00	Safety Cable	Yes	5.00	0.000	0.38	1.56	0.00	0.015	0.000	7.774	0.00	21.48
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.94	0.00	0.016	0.000	7.821	0.00	12.95
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.63	0.00	0.016	0.000	7.851	0.00	8.66
114.00	Safety Cable	Yes	4.00	0.000	0.38	1.26	0.00	0.016	0.000	7.910	0.00	17.43
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.31	0.00	0.017	0.000	7.925	0.00	4.36
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.63	0.00	0.017	0.000	7.954	0.00	8.75
<b>Totals:</b>											<b>0.0</b>	<b>442.8</b>

## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Iterations** 24

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



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.47	-5.74	0.00	-532.31	0.00	532.31	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.197
1.00	-42.23	-5.74	0.00	-526.57	0.00	526.57	2655.70	1327.85	4197.91	2102.08	0.00	-0.015	0.000	0.163
5.00	-41.24	-5.69	0.00	-503.61	0.00	503.61	2627.56	1313.78	4087.72	2046.90	0.04	-0.066	0.000	0.159
10.00	-40.00	-5.61	0.00	-475.19	0.00	475.19	2591.79	1295.89	3951.04	1978.45	0.14	-0.128	0.000	0.154
15.00	-38.77	-5.53	0.00	-447.14	0.00	447.14	2555.34	1277.67	3815.58	1910.62	0.30	-0.189	0.000	0.149
19.00	-37.79	-5.45	0.00	-425.02	0.00	425.02	2525.69	1262.85	3708.14	1856.83	0.48	-0.238	0.000	0.145
19.00	-37.79	-5.45	0.00	-425.02	0.00	425.02	2525.69	1262.85	3708.14	1856.83	0.48	-0.238	0.000	0.145
20.00	-37.55	-5.46	0.00	-419.57	0.00	419.57	2518.21	1259.11	3681.41	1843.44	0.54	-0.251	0.000	0.243
25.00	-36.34	-5.40	0.00	-392.25	0.00	392.25	2480.41	1240.21	3548.60	1776.94	0.85	-0.353	0.000	0.235
30.00	-35.14	-5.33	0.00	-365.26	0.00	365.26	2441.94	1220.97	3417.21	1711.15	1.28	-0.454	0.000	0.228
35.00	-33.97	-5.25	0.00	-338.63	0.00	338.63	2402.79	1201.39	3287.30	1646.09	1.81	-0.555	0.000	0.220
40.00	-32.81	-5.14	0.00	-312.39	0.00	312.39	2362.96	1181.48	3158.94	1581.82	2.44	-0.655	0.000	0.211
40.75	-32.64	-5.14	0.00	-308.53	0.00	308.53	2356.93	1178.46	3139.82	1572.24	2.54	-0.670	0.000	0.210
44.00	-31.55	-5.06	0.00	-291.82	0.00	291.82	2330.61	1165.31	3057.40	1530.97	3.02	-0.735	0.000	0.125
45.00	-31.21	-5.05	0.00	-286.76	0.00	286.76	1757.80	878.90	2340.38	1171.93	3.18	-0.747	0.000	0.135
50.00	-30.21	-4.94	0.00	-261.49	0.00	261.49	1730.99	865.49	2250.57	1126.96	3.99	-0.806	0.000	0.141
55.00	-29.22	-4.84	0.00	-236.78	0.00	236.78	1703.50	851.75	2161.57	1082.39	4.87	-0.869	0.000	0.236
60.00	-28.24	-4.75	0.00	-212.58	0.00	212.58	1675.34	837.67	2073.46	1038.27	5.84	-0.977	0.000	0.222
65.00	-27.29	-4.65	0.00	-188.86	0.00	188.86	1646.50	823.25	1986.29	994.62	6.92	-1.081	0.000	0.206
70.00	-26.35	-4.54	0.00	-165.62	0.00	165.62	1616.99	808.49	1900.13	951.48	8.10	-1.180	0.000	0.190
75.00	-25.43	-4.43	0.00	-142.91	0.00	142.91	1586.80	793.40	1815.05	908.87	9.39	-1.273	0.000	0.173
77.25	-25.02	-4.38	0.00	-132.95	0.00	132.95	1573.00	786.50	1777.13	889.88	10.00	-1.314	0.000	0.165
80.00	-24.34	-4.30	0.00	-120.91	0.00	120.91	1555.94	777.97	1731.10	866.84	10.77	-1.362	0.000	0.155
80.75	-24.15	-4.30	0.00	-117.68	0.00	117.68	1065.47	532.73	1202.43	602.11	10.99	-1.374	0.000	0.218
85.00	-23.48	-4.21	0.00	-99.42	0.00	99.42	1050.73	525.37	1157.88	579.80	12.24	-1.441	0.000	0.194
90.00	-22.71	-4.09	0.00	-78.39	0.00	78.39	1032.77	516.39	1105.80	553.72	13.80	-1.528	0.000	0.164
95.00	-21.96	-3.97	0.00	-57.93	0.00	57.93	1014.14	507.07	1054.14	527.85	15.44	-1.601	0.000	0.131
98.00	-19.09	-3.57	0.00	-46.02	0.00	46.02	1002.64	501.32	1023.37	512.45	16.46	-1.638	0.000	0.109
100.00	-18.81	-3.53	0.00	-38.87	0.00	38.87	994.83	497.42	1002.97	502.23	17.15	-1.659	0.000	0.096
105.00	-18.13	-3.40	0.00	-21.23	0.00	21.23	974.85	487.42	952.34	476.88	18.91	-1.697	0.000	0.063
108.00	-6.31	-1.41	0.00	-11.05	0.00	11.05	962.53	481.27	922.25	461.81	19.98	-1.711	0.000	0.030
110.00	-6.07	-1.36	0.00	-8.23	0.00	8.23	954.18	477.09	902.32	451.83	20.70	-1.717	0.000	0.025
114.00	-3.83	-0.92	0.00	-2.81	0.00	2.81	937.17	468.59	862.79	432.04	22.14	-1.724	0.000	0.011
115.00	-3.71	-0.90	0.00	-1.88	0.00	1.88	932.85	466.42	852.98	427.13	22.50	-1.724	0.000	0.008
117.00	-0.77	-0.17	0.00	-0.09	0.00	0.09	924.13	462.06	833.45	417.34	23.22	-1.725	0.000	0.001
117.50	-0.05	-0.01	0.00	-0.01	0.00	0.01	921.93	460.96	828.58	414.91	23.40	-1.725	0.000	0.000
118.00	0.00	-0.01	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	23.58	-1.725	0.000	0.000

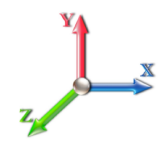
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E				<b>Iterations</b> 23	
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.17	<b>Ss</b>	0.16
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.34	<b>SA</b>	0.02
				<b>Seismic Importance Factor</b>	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
1.00	RT1 RB2	130.12	0.00	0.01	0.01	1.28	
5.00		515.40	0.00	0.04	0.02	13.42	
10.00		632.78	0.01	0.06	0.03	20.90	
15.00		620.04	0.03	0.07	0.04	22.13	
19.00	RT2	486.86	0.05	0.07	0.04	17.91	
20.00		120.44	0.05	0.07	0.04	4.46	
25.00		594.56	0.08	0.07	0.04	22.72	
30.00		581.82	0.12	0.07	0.03	23.07	
35.00		569.08	0.17	0.07	0.03	23.44	
40.00		556.34	0.22	0.06	0.02	23.39	
40.75	Bot - Section 2	82.35	0.23	0.06	0.02	3.46	
44.00	RB3	641.32	0.26	0.05	0.02	26.39	
45.00	Top - Section 1	195.38	0.27	0.05	0.01	7.92	
50.00	RT3	432.28	0.34	0.04	0.01	14.54	
55.00		422.09	0.41	0.01	0.01	7.32	
60.00		411.89	0.49	-0.01	0.01	-3.26	
65.00		401.70	0.57	-0.04	0.01	-12.79	
70.00		391.51	0.67	-0.08	0.02	-17.92	
75.00		381.32	0.76	-0.10	0.04	-18.89	
77.25	Bot - Section 3	168.27	0.81	-0.11	0.06	-8.16	
80.00		357.43	0.87	-0.12	0.08	-16.16	
80.75	Top - Section 2	96.55	0.89	-0.12	0.08	-4.24	
85.00		233.37	0.98	-0.11	0.12	-7.92	
90.00		267.48	1.10	-0.07	0.19	-4.29	
95.00		259.84	1.23	0.03	0.27	2.19	
98.00	Appurtenance(s)	967.03	1.30	0.13	0.34	25.48	
100.00		99.96	1.36	0.21	0.39	3.97	
105.00		244.55	1.50	0.49	0.54	19.09	
108.00	Appurtenance(s)	4962.1	1.58	0.73	0.65	519.13	
110.00		93.84	1.64	0.92	0.73	11.62	
114.00	Appurtenance(s)	1091.1	1.76	1.38	0.92	181.08	
115.00		45.24	1.80	1.52	0.97	8.02	
117.00	Appurtenance(s)	1464.5	1.86	1.82	1.08	294.19	
117.50	Appurtenance(s)	190.20	1.87	1.90	1.11	39.37	
118.00		22.12	1.89	1.98	1.14	4.72	
<b>Totals:</b>		<b>18,731.0</b>				<b>1,247.5</b>	<b>Total Wind: 23,309.0</b>

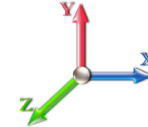
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.2D + 1.0E		<b>Iterations</b> 23
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.17	<b>Ss</b> 0.16
<b>Dead Load Factor</b> 1.20	<b>Seismic Load Factor</b> 1.00	<b>S1</b> 0.03
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.34	<b>SA</b> 0.02
	<b>Seismic Importance Factor</b> 1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.42	-1.34	0.00	-137.11	0.00	137.11	2662.66	1331.33	4225.57	2115.93	0.00	0.00	0.00	0.055
1.00	-25.23	-1.34	0.00	-135.77	0.00	135.77	2655.70	1327.85	4197.91	2102.08	0.00	0.00	0.00	0.045
5.00	-24.51	-1.34	0.00	-130.40	0.00	130.40	2627.56	1313.78	4087.72	2046.90	0.01	-0.02	0.00	0.044
10.00	-23.61	-1.32	0.00	-123.71	0.00	123.71	2591.79	1295.89	3951.04	1978.45	0.04	-0.03	0.00	0.043
15.00	-22.73	-1.31	0.00	-117.10	0.00	117.10	2555.34	1277.67	3815.58	1910.62	0.08	-0.05	0.00	0.042
19.00	-22.03	-1.29	0.00	-111.88	0.00	111.88	2525.69	1262.85	3708.14	1856.83	0.13	-0.06	0.00	0.041
19.00	-22.03	-1.29	0.00	-111.88	0.00	111.88	2525.69	1262.85	3708.14	1856.83	0.13	-0.06	0.00	0.041
20.00	-21.86	-1.29	0.00	-110.59	0.00	110.59	2518.21	1259.11	3681.41	1843.44	0.14	-0.07	0.00	0.069
25.00	-21.01	-1.28	0.00	-104.14	0.00	104.14	2480.41	1240.21	3548.60	1776.94	0.22	-0.09	0.00	0.067
30.00	-20.17	-1.26	0.00	-97.75	0.00	97.75	2441.94	1220.97	3417.21	1711.15	0.33	-0.12	0.00	0.065
35.00	-19.35	-1.25	0.00	-91.45	0.00	91.45	2402.79	1201.39	3287.30	1646.09	0.47	-0.15	0.00	0.064
40.00	-18.54	-1.22	0.00	-85.22	0.00	85.22	2362.96	1181.48	3158.94	1581.82	0.64	-0.17	0.00	0.062
40.75	-18.43	-1.22	0.00	-84.30	0.00	84.30	2356.93	1178.46	3139.82	1572.24	0.67	-0.18	0.00	0.061
44.00	-17.57	-1.20	0.00	-80.32	0.00	80.32	2330.61	1165.31	3057.40	1530.97	0.79	-0.20	0.00	0.037
45.00	-17.30	-1.19	0.00	-79.12	0.00	79.12	1757.80	878.90	2340.38	1171.93	0.84	-0.20	0.00	0.040
50.00	-16.65	-1.18	0.00	-73.16	0.00	73.16	1730.99	865.49	2250.57	1126.96	1.05	-0.22	0.00	0.042
55.00	-16.00	-1.18	0.00	-67.25	0.00	67.25	1703.50	851.75	2161.57	1082.39	1.29	-0.23	0.00	0.072
60.00	-15.37	-1.18	0.00	-61.36	0.00	61.36	1675.34	837.67	2073.46	1038.27	1.55	-0.26	0.00	0.068
65.00	-14.75	-1.19	0.00	-55.45	0.00	55.45	1646.50	823.25	1986.29	994.62	1.84	-0.29	0.00	0.065
70.00	-14.14	-1.19	0.00	-49.51	0.00	49.51	1616.99	808.49	1900.13	951.48	2.16	-0.32	0.00	0.061
75.00	-13.55	-1.19	0.00	-43.55	0.00	43.55	1586.80	793.40	1815.05	908.87	2.52	-0.35	0.00	0.056
77.25	-13.28	-1.19	0.00	-40.86	0.00	40.86	1573.00	786.50	1777.13	889.88	2.69	-0.36	0.00	0.054
80.00	-12.78	-1.19	0.00	-37.58	0.00	37.58	1555.94	777.97	1731.10	866.84	2.90	-0.38	0.00	0.052
80.75	-12.64	-1.20	0.00	-36.68	0.00	36.68	1065.47	532.73	1202.43	602.11	2.96	-0.38	0.00	0.073
85.00	-12.24	-1.20	0.00	-31.60	0.00	31.60	1050.73	525.37	1157.88	579.80	3.31	-0.40	0.00	0.066
90.00	-11.78	-1.20	0.00	-25.61	0.00	25.61	1032.77	516.39	1105.80	553.72	3.75	-0.43	0.00	0.058
95.00	-11.33	-1.20	0.00	-19.61	0.00	19.61	1014.14	507.07	1054.14	527.85	4.21	-0.46	0.00	0.048
98.00	-10.09	-1.16	0.00	-16.02	0.00	16.02	1002.64	501.32	1023.37	512.45	4.51	-0.47	0.00	0.041
100.00	-9.93	-1.16	0.00	-13.69	0.00	13.69	994.83	497.42	1002.97	502.23	4.70	-0.48	0.00	0.037
105.00	-9.54	-1.14	0.00	-7.89	0.00	7.89	974.85	487.42	952.34	476.88	5.21	-0.49	0.00	0.026
108.00	-3.53	-0.57	0.00	-4.47	0.00	4.47	962.53	481.27	922.25	461.81	5.52	-0.49	0.00	0.013
110.00	-3.41	-0.56	0.00	-3.33	0.00	3.33	954.18	477.09	902.32	451.83	5.73	-0.50	0.00	0.011
114.00	-2.08	-0.36	0.00	-1.10	0.00	1.10	937.17	468.59	862.79	432.04	6.15	-0.50	0.00	0.005
115.00	-2.02	-0.36	0.00	-0.74	0.00	0.74	932.85	466.42	852.98	427.13	6.25	-0.50	0.00	0.004
117.00	-0.25	-0.05	0.00	-0.03	0.00	0.03	924.13	462.06	833.45	417.34	6.46	-0.50	0.00	0.000
117.50	-0.03	0.00	0.00	0.00	0.00	0.00	921.93	460.96	828.58	414.91	6.51	-0.50	0.00	0.000
118.00	0.00	0.00	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	6.56	-0.50	0.00	0.000

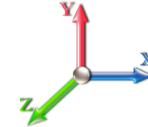
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 22	
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.17	<b>Ss</b>	0.16
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.34	<b>SA</b>	0.02
				<b>Seismic Importance Factor</b>	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
1.00	RT1 RB2	130.12	0.00	0.01	0.01	1.28	
5.00		515.40	0.00	0.04	0.02	13.42	
10.00		632.78	0.01	0.06	0.03	20.90	
15.00		620.04	0.03	0.07	0.04	22.13	
19.00	RT2	486.86	0.05	0.07	0.04	17.91	
20.00		120.44	0.05	0.07	0.04	4.46	
25.00		594.56	0.08	0.07	0.04	22.72	
30.00		581.82	0.12	0.07	0.03	23.07	
35.00		569.08	0.17	0.07	0.03	23.44	
40.00		556.34	0.22	0.06	0.02	23.39	
40.75	Bot - Section 2	82.35	0.23	0.06	0.02	3.46	
44.00	RB3	641.32	0.26	0.05	0.02	26.39	
45.00	Top - Section 1	195.38	0.27	0.05	0.01	7.92	
50.00	RT3	432.28	0.34	0.04	0.01	14.54	
55.00		422.09	0.41	0.01	0.01	7.32	
60.00		411.89	0.49	-0.01	0.01	-3.26	
65.00		401.70	0.57	-0.04	0.01	-12.79	
70.00		391.51	0.67	-0.08	0.02	-17.92	
75.00		381.32	0.76	-0.10	0.04	-18.89	
77.25	Bot - Section 3	168.27	0.81	-0.11	0.06	-8.16	
80.00		357.43	0.87	-0.12	0.08	-16.16	
80.75	Top - Section 2	96.55	0.89	-0.12	0.08	-4.24	
85.00		233.37	0.98	-0.11	0.12	-7.92	
90.00		267.48	1.10	-0.07	0.19	-4.29	
95.00		259.84	1.23	0.03	0.27	2.19	
98.00	Appurtenance(s)	967.03	1.30	0.13	0.34	25.48	
100.00		99.96	1.36	0.21	0.39	3.97	
105.00		244.55	1.50	0.49	0.54	19.09	
108.00	Appurtenance(s)	4962.1	1.58	0.73	0.65	519.13	
110.00		93.84	1.64	0.92	0.73	11.62	
114.00	Appurtenance(s)	1091.1	1.76	1.38	0.92	181.08	
115.00		45.24	1.80	1.52	0.97	8.02	
117.00	Appurtenance(s)	1464.5	1.86	1.82	1.08	294.19	
117.50	Appurtenance(s)	190.20	1.87	1.90	1.11	39.37	
118.00		22.12	1.89	1.98	1.14	4.72	
<b>Totals:</b>		<b>18,731.0</b>				<b>1,247.5</b>	<b>Total Wind: 23,309.0</b>

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

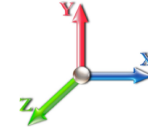
## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E		<b>Iterations</b> 22
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.17	<b>Ss</b> 0.16
<b>Dead Load Factor</b> 0.90	<b>Seismic Load Factor</b> 1.00	<b>S1</b> 0.03
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.34	<b>SA</b> 0.02
	<b>Seismic Importance Factor</b> 1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-19.06	-1.34	0.00	-135.27	0.00	135.27	2662.66	1331.33	4225.57	2115.93	0.00	0.00	0.00	0.052
1.00	-18.93	-1.34	0.00	-133.93	0.00	133.93	2655.70	1327.85	4197.91	2102.08	0.00	0.00	0.00	0.043
5.00	-18.38	-1.33	0.00	-128.56	0.00	128.56	2627.56	1313.78	4087.72	2046.90	0.01	-0.02	0.00	0.042
10.00	-17.71	-1.32	0.00	-121.90	0.00	121.90	2591.79	1295.89	3951.04	1978.45	0.04	-0.03	0.00	0.041
15.00	-17.04	-1.30	0.00	-115.31	0.00	115.31	2555.34	1277.67	3815.58	1910.62	0.08	-0.05	0.00	0.040
19.00	-16.52	-1.28	0.00	-110.12	0.00	110.12	2525.69	1262.85	3708.14	1856.83	0.12	-0.06	0.00	0.039
19.00	-16.52	-1.28	0.00	-110.12	0.00	110.12	2525.69	1262.85	3708.14	1856.83	0.12	-0.06	0.00	0.039
20.00	-16.39	-1.28	0.00	-108.84	0.00	108.84	2518.21	1259.11	3681.41	1843.44	0.14	-0.06	0.00	0.066
25.00	-15.76	-1.27	0.00	-102.43	0.00	102.43	2480.41	1240.21	3548.60	1776.94	0.22	-0.09	0.00	0.064
30.00	-15.13	-1.25	0.00	-96.10	0.00	96.10	2441.94	1220.97	3417.21	1711.15	0.33	-0.12	0.00	0.062
35.00	-14.51	-1.23	0.00	-89.86	0.00	89.86	2402.79	1201.39	3287.30	1646.09	0.46	-0.14	0.00	0.061
40.00	-13.91	-1.21	0.00	-83.70	0.00	83.70	2362.96	1181.48	3158.94	1581.82	0.63	-0.17	0.00	0.059
40.75	-13.82	-1.21	0.00	-82.80	0.00	82.80	2356.93	1178.46	3139.82	1572.24	0.66	-0.17	0.00	0.059
44.00	-13.17	-1.18	0.00	-78.87	0.00	78.87	2330.61	1165.31	3057.40	1530.97	0.78	-0.19	0.00	0.035
45.00	-12.98	-1.18	0.00	-77.69	0.00	77.69	1757.80	878.90	2340.38	1171.93	0.82	-0.20	0.00	0.038
50.00	-12.48	-1.16	0.00	-71.81	0.00	71.81	1730.99	865.49	2250.57	1126.96	1.04	-0.21	0.00	0.040
55.00	-12.00	-1.16	0.00	-66.00	0.00	66.00	1703.50	851.75	2161.57	1082.39	1.27	-0.23	0.00	0.068
60.00	-11.53	-1.16	0.00	-60.20	0.00	60.20	1675.34	837.67	2073.46	1038.27	1.52	-0.26	0.00	0.065
65.00	-11.06	-1.17	0.00	-54.39	0.00	54.39	1646.50	823.25	1986.29	994.62	1.81	-0.29	0.00	0.061
70.00	-10.61	-1.17	0.00	-48.56	0.00	48.56	1616.99	808.49	1900.13	951.48	2.13	-0.32	0.00	0.058
75.00	-10.16	-1.17	0.00	-42.71	0.00	42.71	1586.80	793.40	1815.05	908.87	2.48	-0.35	0.00	0.053
77.25	-9.96	-1.17	0.00	-40.08	0.00	40.08	1573.00	786.50	1777.13	889.88	2.64	-0.36	0.00	0.051
80.00	-9.58	-1.17	0.00	-36.86	0.00	36.86	1555.94	777.97	1731.10	866.84	2.85	-0.37	0.00	0.049
80.75	-9.48	-1.17	0.00	-35.98	0.00	35.98	1065.47	532.73	1202.43	602.11	2.91	-0.38	0.00	0.069
85.00	-9.18	-1.17	0.00	-31.00	0.00	31.00	1050.73	525.37	1157.88	579.80	3.26	-0.40	0.00	0.062
90.00	-8.84	-1.18	0.00	-25.13	0.00	25.13	1032.77	516.39	1105.80	553.72	3.69	-0.42	0.00	0.054
95.00	-8.50	-1.17	0.00	-19.25	0.00	19.25	1014.14	507.07	1054.14	527.85	4.14	-0.45	0.00	0.045
98.00	-7.57	-1.14	0.00	-15.73	0.00	15.73	1002.64	501.32	1023.37	512.45	4.43	-0.46	0.00	0.038
100.00	-7.45	-1.14	0.00	-13.45	0.00	13.45	994.83	497.42	1002.97	502.23	4.62	-0.47	0.00	0.034
105.00	-7.15	-1.12	0.00	-7.76	0.00	7.76	974.85	487.42	952.34	476.88	5.12	-0.48	0.00	0.024
108.00	-2.64	-0.56	0.00	-4.40	0.00	4.40	962.53	481.27	922.25	461.81	5.43	-0.49	0.00	0.012
110.00	-2.55	-0.55	0.00	-3.28	0.00	3.28	954.18	477.09	902.32	451.83	5.63	-0.49	0.00	0.010
114.00	-1.56	-0.36	0.00	-1.09	0.00	1.09	937.17	468.59	862.79	432.04	6.04	-0.49	0.00	0.004
115.00	-1.51	-0.35	0.00	-0.73	0.00	0.73	932.85	466.42	852.98	427.13	6.14	-0.49	0.00	0.003
117.00	-0.19	-0.05	0.00	-0.03	0.00	0.03	924.13	462.06	833.45	417.34	6.35	-0.49	0.00	0.000
117.50	-0.02	0.00	0.00	0.00	0.00	0.00	921.93	460.96	828.58	414.91	6.40	-0.49	0.00	0.000
118.00	0.00	0.00	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	6.45	-0.49	0.00	0.000



## Wind Loading - Shaft

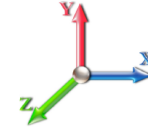
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	7.442	8.19	182.29	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	7.442	8.19	181.58	0.650	0.000	1.00	3.289	2.14	17.5	0.0	130.1
5.00		1.00	0.85	7.442	8.19	178.75	0.650	0.000	4.00	13.028	8.47	69.3	0.0	515.4
10.00		1.00	0.85	7.442	8.19	175.22	0.650	0.000	5.00	15.997	10.40	85.1	0.0	632.8
15.00		1.00	0.85	7.442	8.19	171.69	0.650	0.000	5.00	15.678	10.19	83.4	0.0	620.0
19.00	RT2	1.00	0.89	7.811	8.59	173.00	0.650	0.000	4.00	12.312	8.00	68.8	0.0	486.9
20.00		1.00	0.90	7.896	8.69	173.21	0.650	0.000	1.00	3.046	1.98	17.2	0.0	120.4
25.00		1.00	0.95	8.276	9.10	173.60	0.650	0.000	5.00	15.039	9.78	89.0	0.0	594.6
30.00		1.00	0.98	8.600	9.46	173.16	0.650	0.000	5.00	14.720	9.57	90.5	0.0	581.8
35.00		1.00	1.01	8.883	9.77	172.13	0.650	0.000	5.00	14.400	9.36	91.5	0.0	569.1
40.00		1.00	1.04	9.137	10.05	170.65	0.650	0.000	5.00	14.081	9.15	92.0	0.0	556.3
40.75	Bot - Section 2	1.00	1.05	9.173	10.09	170.40	0.650	0.000	0.75	2.085	1.35	13.7	0.0	82.4
44.00	RB3	1.00	1.06	9.322	10.25	169.21	0.650	0.000	3.25	9.088	5.91	60.6	0.0	641.3
45.00	Top - Section 1	1.00	1.07	9.366	10.30	168.82	0.650	0.000	1.00	2.769	1.80	18.5	0.0	195.4
50.00	RT3	1.00	1.09	9.576	10.53	169.35	0.650	0.000	5.00	13.653	8.87	93.5	0.0	432.3
55.00		1.00	1.12	9.770	10.75	167.01	0.650	0.000	5.00	13.334	8.67	93.1	0.0	422.1
60.00		1.00	1.14	9.951	10.95	164.46	0.650	0.000	5.00	13.015	8.46	92.6	0.0	411.9
65.00		1.00	1.16	10.120	11.13	161.73	0.650	0.000	5.00	12.695	8.25	91.9	0.0	401.7
70.00		1.00	1.17	10.279	11.31	158.84	0.650	0.000	5.00	12.376	8.04	91.0	0.0	391.5
75.00		1.00	1.19	10.430	11.47	155.81	0.650	0.000	5.00	12.056	7.84	89.9	0.0	381.3
77.25	Bot - Section 3	1.00	1.20	10.495	11.54	154.41	0.650	0.000	2.25	5.321	3.46	39.9	0.0	168.3
80.00		1.00	1.21	10.572	11.63	152.66	0.650	0.000	2.75	6.503	4.23	49.2	0.0	357.4
80.75	Top - Section 2	1.00	1.21	10.593	11.65	152.18	0.650	0.000	0.75	1.757	1.14	13.3	0.0	96.5
85.00		1.00	1.22	10.708	11.78	151.51	0.650	0.000	4.25	9.819	6.38	75.2	0.0	233.4
90.00		1.00	1.24	10.838	11.92	148.16	0.650	0.000	5.00	11.257	7.32	87.2	0.0	267.5
95.00		1.00	1.25	10.962	12.06	144.71	0.650	0.000	5.00	10.937	7.11	85.7	0.0	259.8
98.00	Appurtenance(s)	1.00	1.26	11.034	12.14	142.60	0.650	0.000	3.00	6.409	4.17	50.6	0.0	152.2
100.00		1.00	1.27	11.081	12.19	141.18	0.650	0.000	2.00	4.209	2.74	33.3	0.0	100.0
105.00		1.00	1.28	11.195	12.31	137.58	0.650	0.000	5.00	10.298	6.69	82.4	0.0	244.5
108.00	Appurtenance(s)	1.00	1.29	11.262	12.39	135.38	0.650	0.000	3.00	6.026	3.92	48.5	0.0	143.1
110.00		1.00	1.29	11.305	12.44	133.90	0.650	0.000	2.00	3.953	2.57	32.0	0.0	93.8
114.00	Appurtenance(s)	1.00	1.30	11.391	12.53	130.90	0.650	0.000	4.00	7.753	5.04	63.1	0.0	184.0
115.00		1.00	1.30	11.412	12.55	130.15	0.650	0.000	1.00	1.906	1.24	15.6	0.0	45.2
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	128.63	0.650	0.000	2.00	3.774	2.45	30.9	0.0	89.6
117.50	Appurtenance(s)	1.00	1.31	11.463	12.61	128.25	0.650	0.000	0.50	0.936	0.61	7.7	0.0	22.2
118.00		1.00	1.31	11.474	12.62	127.87	0.650	0.000	0.50	0.932	0.61	7.6	0.0	22.1
<b>Totals:</b>									<b>118.00</b>			<b>2,071.3</b>		<b>10,647.0</b>

## Discrete Appurtenance Forces

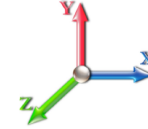
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	117.50	56.3"x12.6"x6.3" - Panel	3	11.463	12.610	0.63	0.80	12.02	168.00	0.000	0.000	151.58	0.00	0.00
2	117.00	Low Profile Platform-flat	1	11.453	12.598	1.00	1.00	25.00	1200.00	0.000	0.000	314.96	0.00	0.00
3	117.00	ACU-A20-N	4	11.453	12.598	0.54	0.80	0.30	4.00	0.000	0.000	3.78	0.00	0.00
4	117.00	APXVSP18-C-A20	3	11.453	12.598	0.66	0.80	15.98	171.00	0.000	0.000	201.27	0.00	0.00
5	114.00	800 Filter	3	11.391	12.530	0.54	0.80	1.08	26.40	0.000	0.000	13.50	0.00	0.00
6	114.00	800 MHz RRH	3	11.391	12.530	0.54	0.80	4.00	159.00	0.000	0.000	50.17	0.00	0.00
7	114.00	1900MHz RRH	3	11.391	12.530	0.54	0.80	4.45	180.00	0.000	0.000	55.81	0.00	0.00
8	114.00	Flush Mount	1	11.391	12.530	1.00	1.00	5.00	350.00	0.000	0.000	62.65	0.00	0.00
9	114.00	26.1"x18.6"x6.7" RRU	3	11.391	12.530	0.54	0.80	6.51	191.70	0.000	0.000	81.60	0.00	0.00
10	108.00	Ericsson Radio 4449	3	11.262	12.388	0.50	0.75	2.49	222.00	0.000	0.000	30.81	0.00	0.00
11	108.00	Low Profile Platform	1	11.262	12.388	1.00	1.00	25.00	1200.00	0.000	0.000	309.70	0.00	0.00
12	108.00	RFS	3	11.262	12.388	0.52	0.75	31.88	384.00	0.000	0.000	394.90	0.00	0.00
13	108.00	Corner Braces	3	11.262	12.388	1.00	1.00	15.00	1050.00	0.000	0.000	185.82	0.00	0.00
14	108.00	Horizontal Rail	1	11.262	12.388	1.00	1.00	6.75	261.72	0.000	0.000	83.62	0.00	0.00
15	108.00	(3) PRK-SFS-L (V-Braces)	1	11.262	12.388	1.00	1.00	6.70	642.00	0.000	0.000	83.00	0.00	0.00
16	108.00	PRK-1245 (kicker kit)	1	11.262	12.388	1.00	1.00	9.50	517.00	0.000	0.000	117.69	0.00	0.00
17	108.00	AIR 21 B2A B4P	3	11.262	12.388	0.65	0.75	11.78	271.20	0.000	0.000	145.98	0.00	0.00
18	108.00	AIR 21 B4A B2P	3	11.262	12.388	0.65	0.75	11.78	271.20	0.000	0.000	145.98	0.00	0.00
19	98.00	Sabre C10899050	1	11.034	12.137	1.00	1.00	10.00	648.00	0.000	0.000	121.37	0.00	0.00
20	98.00	CCI DTMABP7819VG12A	3	11.034	12.137	0.54	0.80	1.83	57.60	0.000	0.000	22.25	0.00	0.00
21	98.00	KMW AM-X-CD-14-65-00T	3	11.034	12.137	0.60	0.80	9.00	109.20	0.000	0.000	109.23	0.00	0.00
<b>Totals:</b>									<b>8,084.02</b>			<b>2,685.66</b>		

## Total Applied Force Summary

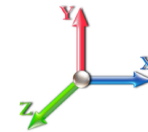
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
1.00		17.50	153.05	0.00	0.00
5.00		69.32	607.11	0.00	0.00
10.00		85.12	747.43	0.00	0.00
15.00		83.42	734.68	0.00	0.00
19.00		68.77	578.57	0.00	0.00
20.00		17.20	143.37	0.00	0.00
25.00		88.99	709.20	0.00	0.00
30.00		90.51	696.46	0.00	0.00
35.00		91.47	683.72	0.00	0.00
40.00		91.99	670.98	0.00	0.00
40.75		13.67	99.55	0.00	0.00
44.00		60.57	715.83	0.00	0.00
45.00		18.54	218.31	0.00	0.00
50.00		93.49	546.92	0.00	0.00
55.00		93.15	536.73	0.00	0.00
60.00		92.60	526.54	0.00	0.00
65.00		91.86	516.35	0.00	0.00
70.00		90.96	506.15	0.00	0.00
75.00		89.91	495.96	0.00	0.00
77.25		39.93	219.86	0.00	0.00
80.00		49.16	420.49	0.00	0.00
80.75		13.31	113.74	0.00	0.00
85.00		75.18	330.82	0.00	0.00
90.00		87.23	382.13	0.00	0.00
95.00		85.72	374.48	0.00	0.00
98.00	(7) attachments	303.41	1035.82	0.00	0.00
100.00		33.34	133.34	0.00	0.00
105.00		82.43	327.99	0.00	0.00
108.00	(19) attachments	1546.02	5012.25	0.00	0.00
110.00		31.96	102.02	0.00	0.00
114.00	(13) attachments	326.87	1107.48	0.00	0.00
115.00		15.55	49.33	0.00	0.00
117.00	(8) attachments	550.92	1472.74	0.00	0.00
117.50	(3) attachments	159.25	190.20	0.00	0.00
118.00		7.65	22.12	0.00	0.00
	<b>Totals:</b>	<b>4,756.94</b>	<b>21,181.74</b>	<b>0.00</b>	<b>0.00</b>

## Linear Appurtenance Segment Forces (Factored)

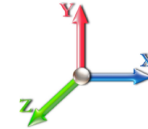
<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
1.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	7.442	0.00	0.27
5.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	7.442	0.00	1.09
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.442	0.00	1.37
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.442	0.00	1.37
19.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.010	0.000	7.811	0.00	1.09
20.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.010	0.000	7.896	0.00	0.27
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.276	0.00	1.37
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.600	0.00	1.37
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.883	0.00	1.37
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	9.137	0.00	1.37
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	9.173	0.00	0.20
44.00	Safety Cable	Yes	3.25	0.000	0.38	0.10	0.00	0.011	0.000	9.322	0.00	0.89
45.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.012	0.000	9.366	0.00	0.27
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.576	0.00	1.37
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.770	0.00	1.37
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.951	0.00	1.37
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	10.120	0.00	1.37
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	10.279	0.00	1.37
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	10.430	0.00	1.37
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	10.495	0.00	0.61
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	10.572	0.00	0.75
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	10.593	0.00	0.20
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	10.708	0.00	1.16
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	10.838	0.00	1.37
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	10.962	0.00	1.37
98.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.015	0.000	11.034	0.00	0.82
100.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.015	0.000	11.081	0.00	0.55
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	11.195	0.00	1.37
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	11.262	0.00	0.82
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	11.305	0.00	0.55
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	11.391	0.00	1.09
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	11.412	0.00	0.27
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	11.453	0.00	0.55
<b>Totals:</b>											<b>0.0</b>	<b>31.9</b>

## Calculated Forces

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Iterations** 23

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-21.18	-4.76	0.00	-436.73	0.00	436.73	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.158
1.00	-21.03	-4.75	0.00	-431.98	0.00	431.98	2655.70	1327.85	4197.91	2102.08	0.00	-0.013	0.000	0.131
5.00	-20.42	-4.70	0.00	-412.98	0.00	412.98	2627.56	1313.78	4087.72	2046.90	0.03	-0.054	0.000	0.127
10.00	-19.66	-4.63	0.00	-389.49	0.00	389.49	2591.79	1295.89	3951.04	1978.45	0.11	-0.105	0.000	0.123
15.00	-18.93	-4.56	0.00	-366.35	0.00	366.35	2555.34	1277.67	3815.58	1910.62	0.25	-0.155	0.000	0.119
19.00	-18.35	-4.50	0.00	-348.12	0.00	348.12	2525.69	1262.85	3708.14	1856.83	0.40	-0.195	0.000	0.115
19.00	-18.35	-4.50	0.00	-348.12	0.00	348.12	2525.69	1262.85	3708.14	1856.83	0.40	-0.195	0.000	0.115
20.00	-18.20	-4.49	0.00	-343.62	0.00	343.62	2518.21	1259.11	3681.41	1843.44	0.44	-0.205	0.000	0.194
25.00	-17.48	-4.43	0.00	-321.15	0.00	321.15	2480.41	1240.21	3548.60	1776.94	0.70	-0.289	0.000	0.188
30.00	-16.78	-4.36	0.00	-299.02	0.00	299.02	2441.94	1220.97	3417.21	1711.15	1.05	-0.372	0.000	0.182
35.00	-16.09	-4.28	0.00	-277.24	0.00	277.24	2402.79	1201.39	3287.30	1646.09	1.48	-0.455	0.000	0.175
40.00	-15.42	-4.20	0.00	-255.83	0.00	255.83	2362.96	1181.48	3158.94	1581.82	2.00	-0.536	0.000	0.168
40.75	-15.32	-4.19	0.00	-252.68	0.00	252.68	2356.93	1178.46	3139.82	1572.24	2.09	-0.549	0.000	0.167
44.00	-14.60	-4.13	0.00	-239.06	0.00	239.06	2330.61	1165.31	3057.40	1530.97	2.48	-0.602	0.000	0.100
45.00	-14.38	-4.12	0.00	-234.92	0.00	234.92	1757.80	878.90	2340.38	1171.93	2.60	-0.612	0.000	0.108
50.00	-13.83	-4.03	0.00	-214.33	0.00	214.33	1730.99	865.49	2250.57	1126.96	3.27	-0.660	0.000	0.112
55.00	-13.29	-3.95	0.00	-194.18	0.00	194.18	1703.50	851.75	2161.57	1082.39	3.99	-0.712	0.000	0.187
60.00	-12.76	-3.87	0.00	-174.44	0.00	174.44	1675.34	837.67	2073.46	1038.27	4.78	-0.800	0.000	0.176
65.00	-12.24	-3.79	0.00	-155.10	0.00	155.10	1646.50	823.25	1986.29	994.62	5.67	-0.886	0.000	0.163
70.00	-11.73	-3.70	0.00	-136.17	0.00	136.17	1616.99	808.49	1900.13	951.48	6.64	-0.967	0.000	0.150
75.00	-11.23	-3.62	0.00	-117.65	0.00	117.65	1586.80	793.40	1815.05	908.87	7.69	-1.044	0.000	0.137
77.25	-11.01	-3.58	0.00	-109.52	0.00	109.52	1573.00	786.50	1777.13	889.88	8.19	-1.078	0.000	0.130
80.00	-10.59	-3.53	0.00	-99.67	0.00	99.67	1555.94	777.97	1731.10	866.84	8.83	-1.117	0.000	0.122
80.75	-10.47	-3.52	0.00	-97.03	0.00	97.03	1065.47	532.73	1202.43	602.11	9.00	-1.127	0.000	0.171
85.00	-10.14	-3.45	0.00	-82.09	0.00	82.09	1050.73	525.37	1157.88	579.80	10.03	-1.182	0.000	0.151
90.00	-9.75	-3.36	0.00	-64.86	0.00	64.86	1032.77	516.39	1105.80	553.72	11.31	-1.254	0.000	0.127
95.00	-9.38	-3.28	0.00	-48.05	0.00	48.05	1014.14	507.07	1054.14	527.85	12.66	-1.315	0.000	0.100
98.00	-8.35	-2.95	0.00	-38.22	0.00	38.22	1002.64	501.32	1023.37	512.45	13.49	-1.345	0.000	0.083
100.00	-8.22	-2.92	0.00	-32.32	0.00	32.32	994.83	497.42	1002.97	502.23	14.06	-1.363	0.000	0.073
105.00	-7.89	-2.83	0.00	-17.72	0.00	17.72	974.85	487.42	952.34	476.88	15.51	-1.395	0.000	0.045
108.00	-2.92	-1.16	0.00	-9.23	0.00	9.23	962.53	481.27	922.25	461.81	16.39	-1.406	0.000	0.023
110.00	-2.81	-1.13	0.00	-6.90	0.00	6.90	954.18	477.09	902.32	451.83	16.98	-1.411	0.000	0.018
114.00	-1.72	-0.78	0.00	-2.38	0.00	2.38	937.17	468.59	862.79	432.04	18.16	-1.417	0.000	0.007
115.00	-1.67	-0.76	0.00	-1.61	0.00	1.61	932.85	466.42	852.98	427.13	18.46	-1.417	0.000	0.006
117.00	-0.21	-0.17	0.00	-0.09	0.00	0.09	924.13	462.06	833.45	417.34	19.05	-1.418	0.000	0.000
117.50	-0.02	-0.01	0.00	0.00	0.00	0.00	921.93	460.96	828.58	414.91	19.20	-1.418	0.000	0.000
118.00	0.00	-0.01	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	19.35	-1.418	0.000	0.000

## Final Analysis Summary

<b>Structure:</b> CT46142-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	23.3	0.00	25.40	0.00	0.00	2152.80
0.9D + 1.6W 105 mph Wind	23.3	0.00	19.05	0.00	0.00	2127.13
1.2D + 1.0Di + 1.0Wi 50 mph Wind	5.7	0.00	42.47	0.00	0.00	532.31
1.2D + 1.0E	1.3	0.00	25.42	0.00	0.00	137.11
0.9D + 1.0E	1.3	0.00	19.06	0.00	0.00	135.27
1.0D + 1.0W 60 mph Wind	4.8	0.00	21.18	0.00	0.00	436.73

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 105 mph Wind	-21.39	-22.10	0.00	-1695.7	0.00	-1695.7	2518.21	1259.1	3681.41	1843.44	20.00	0.929
0.9D + 1.6W 105 mph Wind	-15.94	-21.98	0.00	-1671.1	0.00	-1671.1	2518.21	1259.1	3681.41	1843.44	20.00	0.913
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-37.55	-5.46	0.00	-419.57	0.00	-419.57	2518.21	1259.1	3681.41	1843.44	20.00	0.243
1.2D + 1.0E	-12.64	-1.20	0.00	-36.68	0.00	-36.68	1065.47	532.73	1202.43	602.11	80.75	0.073
0.9D + 1.0E	-9.48	-1.17	0.00	-35.98	0.00	-35.98	1065.47	532.73	1202.43	602.11	80.75	0.069
1.0D + 1.0W 60 mph Wind	-18.20	-4.49	0.00	-343.62	0.00	-343.62	2518.21	1259.1	3681.41	1843.44	20.00	0.194

### Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	1.0	(3) SOL-2 1/4" William R71	299.4	3.59	25.3	221.0	25.3	9	0	328.4	25.3			220.98	459.1	468.91	0.481
1.0	19.0	(3) LNP-LP6X125-B-20T	319.4	7.66	25.3	328.4	25.3			297.9	25.3	12	13	328.39	395.0	360.94	0.910
44.0	50.0	(3) LNP-LP6X100-G-10TT	348.2	8.36	25.3	214.4	25.3	9	10	222.3	25.3	9	11	222.33	297.8	288.75	0.770

## Base Plate Summary

<b>Structure:</b> CT46142-A-SB	<b>Code:</b> EIA/TIA-222-G	11/18/2020
<b>Site Name:</b> South Ledyard- Town Dump	<b>Exposure:</b> C	
<b>Height:</b> 118.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 55.00	<b>Bolt Circle:</b> 45.00
<b>Moment (kip-ft):</b> 1461.00	<b>Width (in):</b> 44.00	<b>Number Bolts:</b> 8.00
<b>Axial (kip):</b> 19.00	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 17.00	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.25
Analysis (1.2D + 1.6W)	<b>Clip Length (in):</b> 8.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 2152.80	<b>Effective Len (in):</b> 12.49	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 25.40	<b>Moment (kip-in):</b> 885.38	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 23.32	<b>Allow Stress (ksi):</b> 74.25	<b>Cluster Dist (in):</b> 6.00
	<b>Applied Stress (ksi):</b> 68.31	<b>Start Angle (deg):</b> 45.00
	<b>Stress Ratio:</b> 0.92	Compression
		<b>Force (kip):</b> 180.40
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.72
		Tension
		<b>Force (kip):</b> 169.78
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.68



# Monopole Mat Foundation Design

Date  
11/18/2020

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:	South Ledyard Town Dump	Structure Height (Ft.):	118
Site Number:	CT46142-A-SBA	Engineer Name:	B. Davis
Engr. Number:	99403	Engineer Login ID:	

**Foundation Info Obtained from:**

Drawings/Calculations
Monopole
Analysis

**Structure Type:**

**Analysis or Design?**

**Base Reactions (Factored):**

Axial Load (Kips):	25.4	Shear Force (Kips):	23.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2152.8

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	0.75	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	19.5	Width of Pad (ft.):	19.5

Final Length of pad (ft)	19.5	Final width of pad (ft):	19.5
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**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	20	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
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):	12	Qty. of Rebar in Pad (W):	12
---------------------------	----	---------------------------	----

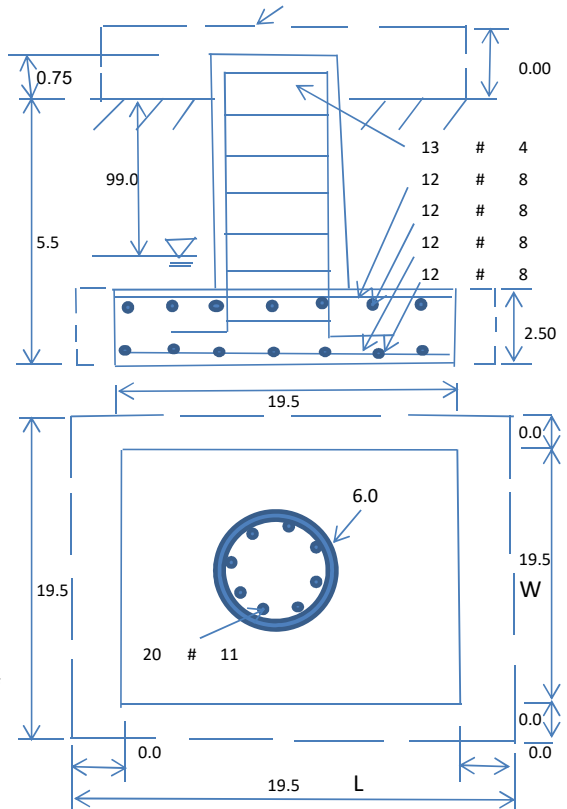
Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	12	Qty. of Rebar in Pad (W):	12
---------------------------	----	---------------------------	----

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	37.6	Pcf	Angle from Top of Pad:	30
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Bottm of Pad:	25
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Reduction factor on the maximum soil bearing pressure:	1.00
Consider soil hor. resist. for OTM.:	Yes					



**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1055.93	Total Dry Soil Weight (Kips):	105.59
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	105.59	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1056.65	Total Dry Concrete Weight (Kips):	158.50
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	158.50	Total Vertical Load on Base (Kips):	289.49

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	3859	< Allowable Factored Soil Bearing (psf):	9000	0.43	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	2565.0	> Design Factored Momont (kips-ft):	2227	0.87	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.15				OK!



**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

**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.56	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn, Kips-Ft):	4355.8	> Design Factored Moment (Mu, Kips-Ft):	2240.2	0.51	OK!
Calculated Shear Capacity (Kips):	488.1	> Design Factored Shear (Kips):	23.3	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	1684.8	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5357.4	> Design Factored Axial Load (Pu Kips):	25.4	0.00	OK!
Moment & Axial Strength Combination:	0.51	OK! Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI			

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	509.5	> One-Way Factored Shear (L-D. Kips):	168.6	0.33	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	509.5	> One-Way Factored Shear (W-D., Kips)	168.6	0.33	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	448.3	> One-Way Factored Shear (C-C, Kips):	170.6	0.38	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0015	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0015		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1110.2	> Moment at Bottom ( L-Dir. K-Ft):	668.7	0.60	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1110.2	> Moment at Bottom ( W-Dir. K-Ft):	668.7	0.60	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	1562.0	> Moment at Bottom ( C-C Dir. K-Ft):	945.7	0.61	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0015	OK! Upper Steel Reinf. Ratio (W-Dir. ):	0.0015		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	1110.2	> Moment at the top (L-Dir K-Ft):	312.4	0.28	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1110.2	> Moment at the top (W-Dir K-Ft):	312.4	0.28	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	1562.0	> Moment at the top (C-C Dir. K-Ft):	294.3	0.19	OK!

**(3).Check Punching Shear Capacity due to Moment in the Pier:**

Moment transferred by punching shear:	861.1	k-ft.	Max. factored shear stress $v_{u\_cd}$ :	4.4	Psi
Max. factored shear stress $v_{u\_AB}$ :	9.3	Psi	Factored shear Strength $\phi v_n$ :	164.3	Psi
Max. factored shear stress $v_u$ :	9.3	Psi	Check Usage of Punching Shear Capacity:	0.06	OK!

# EXHIBIT 9

PER THE INTERNATIONAL BUILDING CODE THIS STRUCTURE IS CLASSIFIED AS:

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

# MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 118' PENNSUMMIT MONOPOLE TOWER

PROPOSED CARRIER: T-MOBILE

SITE: CT46142-A-SBA / SOUTH LEDYARD- TOWN DUMP

COORDINATES (LATITUDE: 41.392666°, LONGITUDE: -71.969805°)

## CONSTRUCTION CLASS

THE RIGGING PLAN FOR THIS SITE WOULD BE A  
MINIMUM OF A CLASS III AND THE CONTRACTOR  
SHALL MAKE FINAL DETERMINATION

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

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	0
A-2	INSTALLATION OF NEW ANCHOR ROD DETAILS	0
A-3	REINFORCEMENT ASSEMBLY	0
A-4	REINFORCEMENT ASSEMBLY	0
SPEC-1	NEXGEN2 BLIND BOLT ASSEMBLY INSTALLATION GUIDE	0
SPEC-2	NEXGEN2 BLIND BOLT ASSEMBLY INSTALLATION GUIDE	0
LP-AT-PH	INSTALLATION AT HANDHOLE LOCATION DETAILS	0

**NOTE:**

1. THE MODIFICATION DRAWINGS ARE BASED ON THE  
TES PROJECT NO. 99202, DATED 11/03/2020.



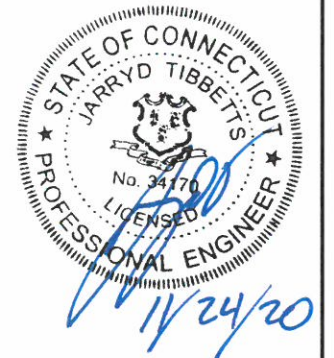
**Tower Engineering Solutions**  
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5900 BROKEN SOUND PARKWAY, NW  
BOCA RATON, FL 33487  
(800)-487-SITE

TES JOB NO:  
99403

CUSTOMER SITE NO:  
CT46142-A-SBA  
CUSTOMER SITE NAME:  
SOUTH LEDYARD- TOWN DUMP  
130 WELLES ROAD  
GROTON, CT 06340



DRAWN BY: H.R.      CHECKED BY: BGD/A.D.

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R.	11/24/20

SHEET TITLE:

TITLE SHEET

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SHEET NUMBER:      REV #:  
T-1                              0

**BILL OF MATERIALS**

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	LENGTH	SHEET LIST (INSTALLATION)	SHEET LIST (FABRICATE)	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES	
MATERIAL & HARDWARE										
2	2	LP6X125-BL4.75-20T	6" x 1.25" Flat Bar with Left Bolt Bracket, Base Section with 4.75" Offset, 20 ft. Long. Termination on one end	20'-0"	A-3	LP6X125-BL4.75-20T	636.3	1272.6	Galvanized	
1	1	LP6X125-BR4.75-20T	6" x 1.25" Flat Bar with Right Bolt Bracket, Base Section with 4.75" Offset, 20 ft. Long. Termination on one end	20'-0"	A-3	LP6X125-BR4.75-20T	636.3	636.3	Galvanized	
3	3	LP6X100-G-10TT	6" x 1.00" Flat Bar, 10 ft. Long, Standard, Termination at both ends	10'-0"	A-4	LP6X100-G-10TT	211.2	633.7	Galvanized	
3	3	R71-18	Williams 2 1/4" Dia. All-thread Rod (150 ksi) X 12.5 Ft. Long	12.50	A-2	---	176.3	528.8	Galvanized	
6	6	R73-18	Williams 2 1/4" Dia. R73 Hex Nuts	---	A-2	---	---	---	Galvanized	
6	6	PLW-1	PL 1 1/4" X 4 1/2" FLAT WASHER, A572 Grade 65	---	A-2	F-A	3.7	22.2	Galvanized	
132	139	HB16-2	Lindapter 5/8" Type HB Hollo-Bolt (HCF, M16x100)	---	A-3, A-4	---	---	---	Galvanized	
24	26	2NG2048	M20x95 NEXGEN2 BLIND Bolt Assembly	---	A-3	F-C	---	---	Galvanized	
Following Items are Non-standard Parts										
3	3	---	LANCO /HENRY 287 WHITE ACRYLIC ELASTOMERIC COATING AND SEALER OR EQUIV (GALLON)	---	A-1	---	---	---	PROVIDED BY CONTRACTOR	
			<b>ALL APLXXXX, LPXXXX AND RLPXXXX ARE PATENTED PRODUCTS AND CANNOT BE FABRICATED BY THIRD PARTIES. THESE PARTS ARE AVAILABLE FROM:</b> <b>METROSITE, LLC.</b> <b>180 IND PARK BLVD COMMERCE, GA 30529</b> <b>OFFICE: (706) 335-7045</b> <b>FAX: (706) 335-7056</b>							
			<small>NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.</small>							
							<b>TOTAL WEIGHT (LBS) =</b>	<b>3093.6</b>		



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CUSTOMER SITE NO:  
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REV.	DESCRIPTION	BY	DATE
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SHEET NUMBER: <b>BOM</b>	REV #: <b>0</b>
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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.

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

**VERIFICATION AND INSPECTION**

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

**POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:**

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

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING<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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TES JOB NO:  
**99403**

CUSTOMER SITE NO:  
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CUSTOMER SITE NAME:  
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DRAWN BY: H.R. | CHECKED BY: BGD/A.D.

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SHEET NUMBER: | REV #:

**GN-1** | **0**

**NOTES:**

1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE MONOPOLE AND ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. TEMPORARY RELOCATION OF EXISTING EQUIPMENT AROUND THE FOUNDATION MAY BE REQUIRED DURING CONSTRUCTION.

**SCOPE OF WORK**

1. INSTALL NEW (3) ANCHOR ROD REINFORCEMENTS. SEE SHEET A-2 FOR DETAILS.
2. INSTALL NEW (2) LP6X125-BL4.75-20T AND (1) LP6X125-BR4.75-20T FLAT BAR REINFORCEMENTS FROM ±1'-0" TO ±21'-0" ELEV. SEE SHEET A-3 FOR DETAILS.
3. INSTALL NEW (3) LP6X100-G-10TT FLAT BAR REINFORCEMENTS FROM ±42'-0" TO ±52'-0" ELEV. SEE SHEET A-4 FOR DETAILS.
4. APPLY FOUNDATION COATING.
5. 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.



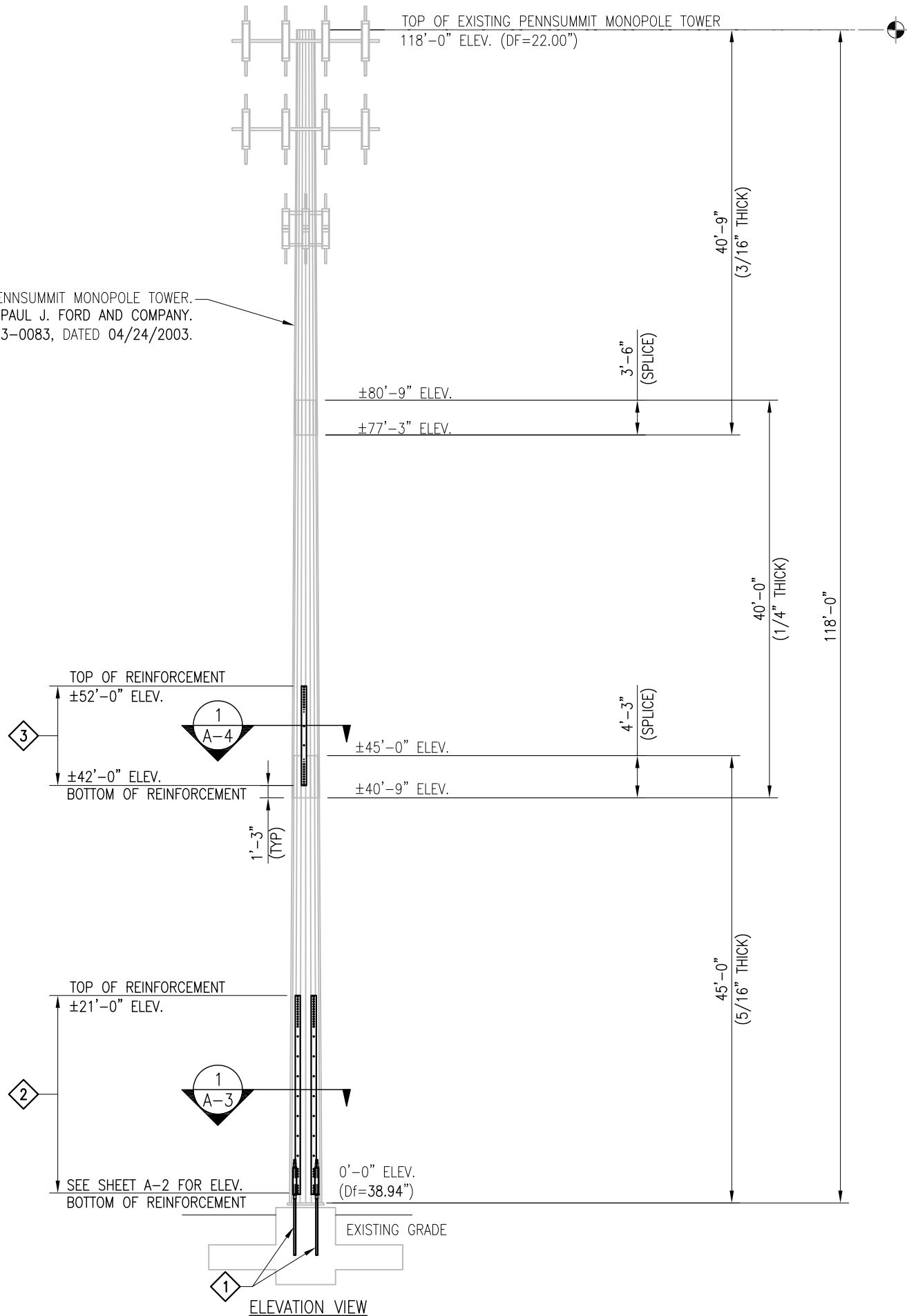
**PHOTO 1**



**PHOTO 2**

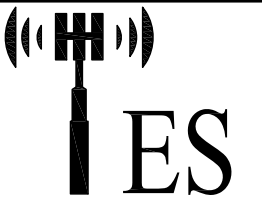
NEW BANDING MAY BE REQUIRED.  
(TYP)

EXISTING 18-SIDED PENNSUMMIT MONOPOLE TOWER.  
REFERENCE PAUL J. FORD AND COMPANY.  
JOB# 29203-0083, DATED 04/24/2003.



**FOUNDATION COATING NOTES:**

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



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CUSTOMER SITE NO:  
CT46142-A-SBA  
CUSTOMER SITE NAME:  
SOUTH LEDYARD- TOWN DUMP  
130 WELLES ROAD  
GROTON, CT 06340

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REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R.	11/24/20

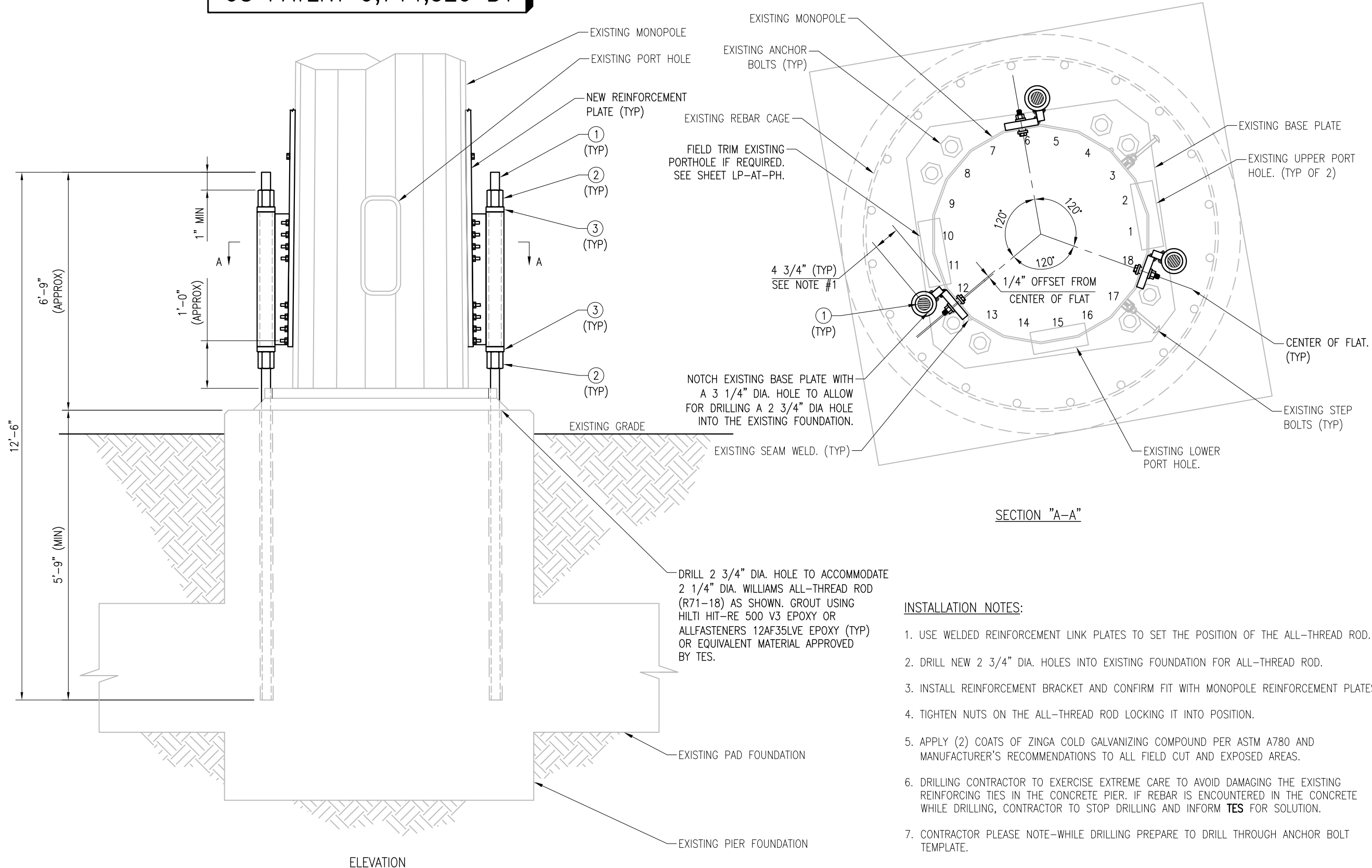
SHEET TITLE:

**TOWER PROFILE**

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

US PATENT 9,714,520 B1



**NOTE:**  
SEE NOTES ON SHEET GN-1 FOR POST-INSTALLED EPOXY INJECTED ANCHOR BOLTS

**INSTALLATION NOTES:**

1. USE WELDED REINFORCEMENT LINK PLATES TO SET THE POSITION OF THE ALL-THREAD ROD.
2. DRILL NEW 2 3/4" DIA. HOLES INTO EXISTING FOUNDATION FOR ALL-THREAD ROD.
3. INSTALL REINFORCEMENT BRACKET AND CONFIRM FIT WITH MONOPOLE REINFORCEMENT PLATES.
4. TIGHTEN NUTS ON THE ALL-THREAD ROD LOCKING IT INTO POSITION.
5. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS TO ALL FIELD CUT AND EXPOSED AREAS.
6. DRILLING CONTRACTOR TO EXERCISE EXTREME CARE TO AVOID DAMAGING THE EXISTING REINFORCING TIES IN THE CONCRETE PIER. IF REBAR IS ENCOUNTERED IN THE CONCRETE WHILE DRILLING, CONTRACTOR TO STOP DRILLING AND INFORM **TES** FOR SOLUTION.
7. CONTRACTOR PLEASE NOTE--WHILE DRILLING PREPARE TO DRILL THROUGH ANCHOR BOLT TEMPLATE.
8. SEE SHEETS SPEC-1 & 2 FOR NEXGEN2 BLIND BOLT INSTALLATION. IT IS REQUIRED THAT THE CONTRACTOR TAKE PHOTOS OF THE INSTALLED BOLT FOR VERIFICATION OF PROPER INSTALLATION.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	R71-18	12'-6" WILLIAMS 2 1/4" DIA. ALL-THREAD ROD (150 KSI)
2	6	R73-18	2 1/4" NUT (WILLIAMS R73-18) (TYP)
3	6	PLW-1	PL 1 1/4" X 4 1/2" FLAT WASHER, A572-65



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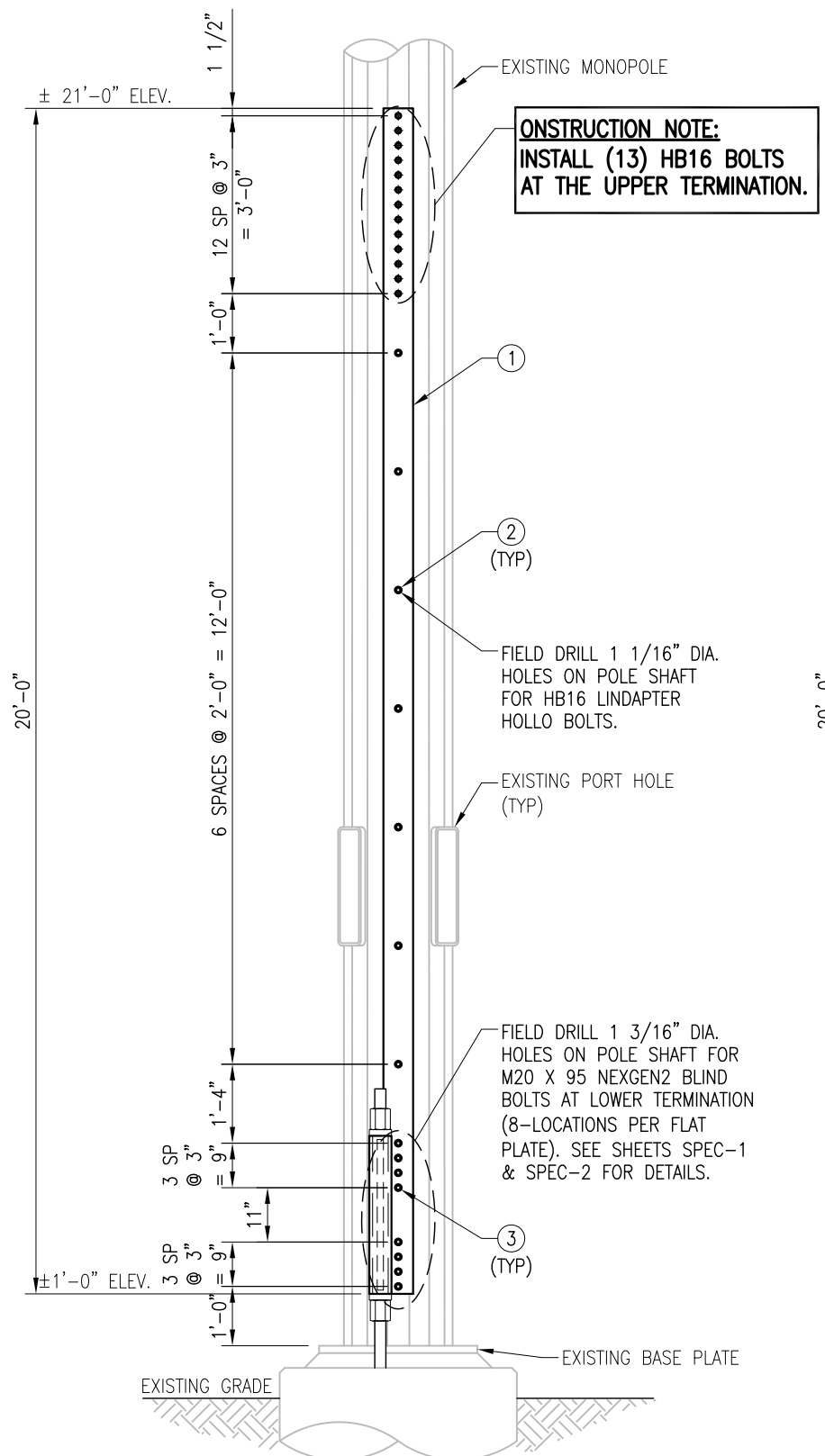
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R.	11/24/20

SHEET TITLE:  
**INSTALLATION OF NEW ANCHOR ROD DETAILS**

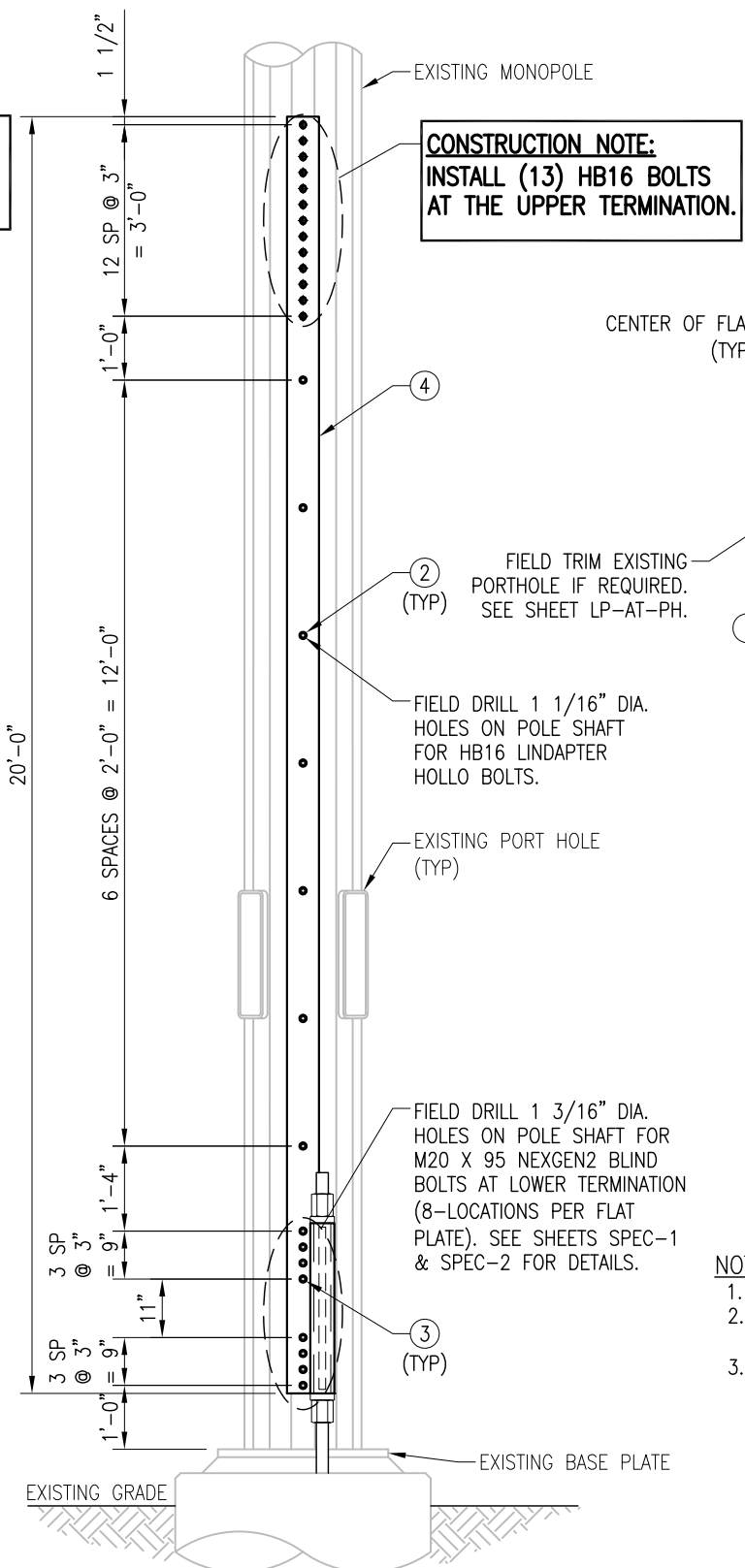
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**A-2**  
REV #:  
**0**

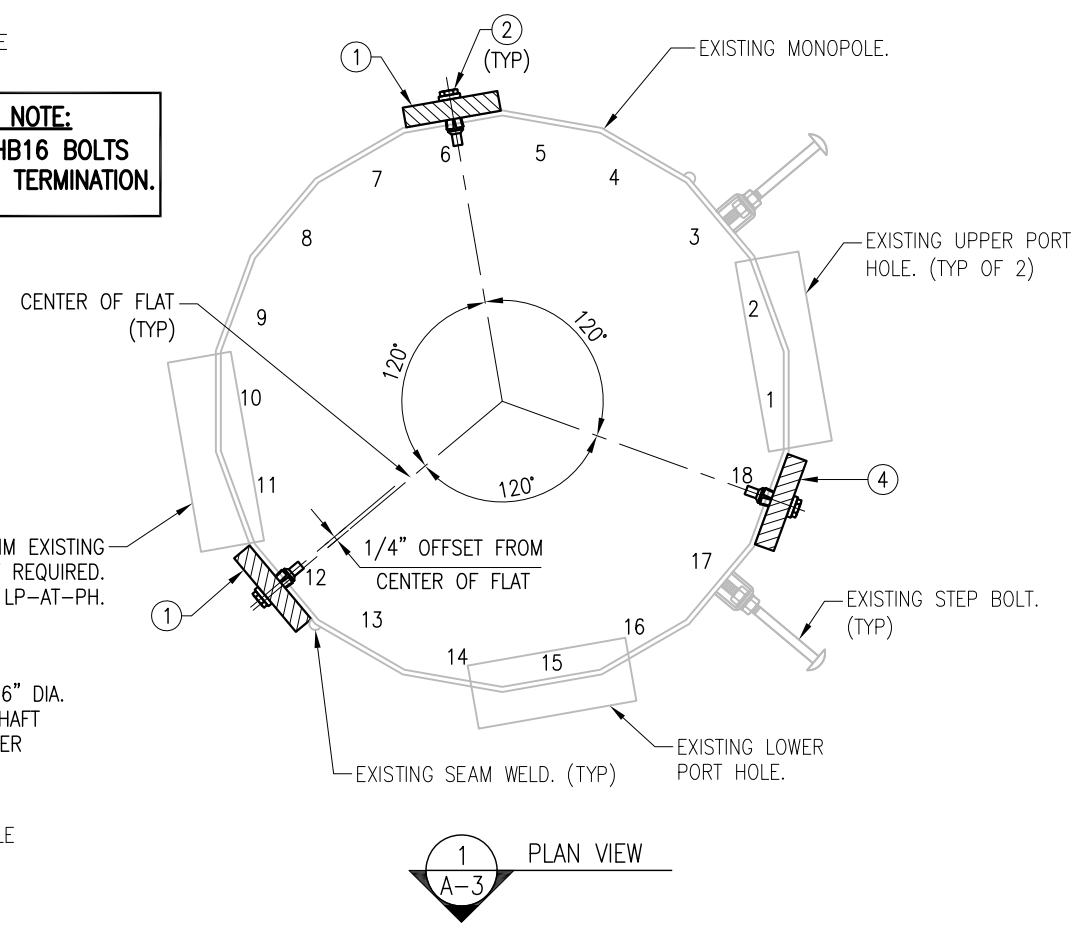
US PATENT 9,714,520 B1



ELEVATION VIEW  
REFER TO PLAN VIEW  
(±1'-0" TO ±21'-0" ELEV.)  
(ON FLATS #6 AND 12)



ELEVATION VIEW  
REFER TO PLAN VIEW  
(±1'-0" TO ±21'-0" ELEV.)  
(ON FLAT #18)



1 PLAN VIEW  
A-3

- NOTES:
1. REFER TO SHEET A-2 FOR FLAT BAR ORIENTATION.
  2. INSTALLATION TORQUE FOR HOLLO BOLTS: SEE SHEET GN-1
  3. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS TO ALL FIELD DRILLED AND EXPOSED AREAS.

ITEM NO.	QTY.	PART NO.	DESCRIPTION (BASE SECTION)
1	2	LP6X125-BL4.75-20T	PL 6" X 1 1/4" X 20'-0" A572-65 WELDMENT
2	60	HB16-2	LINDAPTER 5/8" TYPE HB HOLLO-BOLT (HCF)
3	24	2NG2048	M20 X 95 NEXGEN2 BLIND BOLT ASSEMBLY
4	1	LP6X125-BR4.75-20T	PL 6" X 1 1/4" X 20'-0" A572-65 WELDMENT



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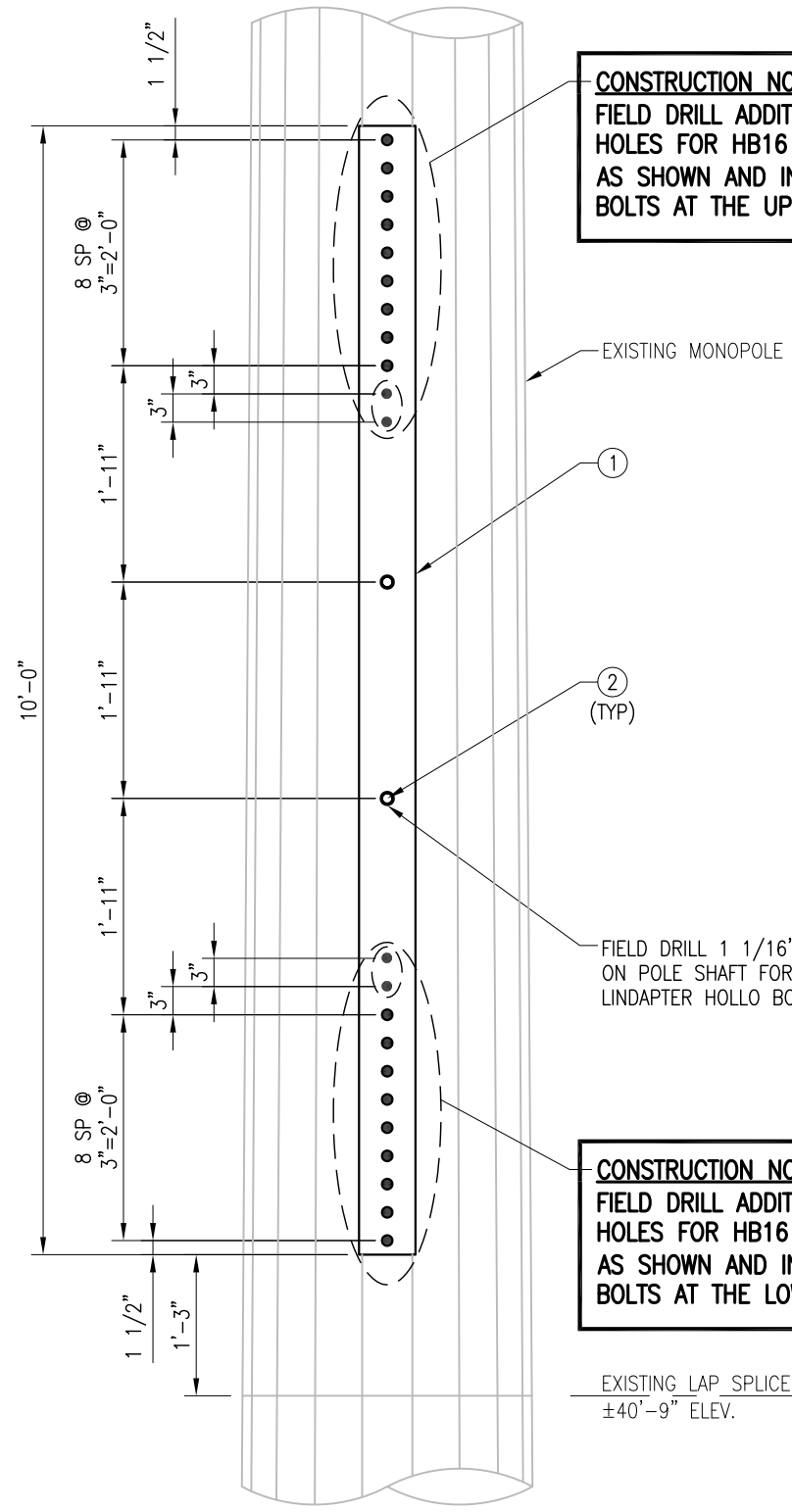
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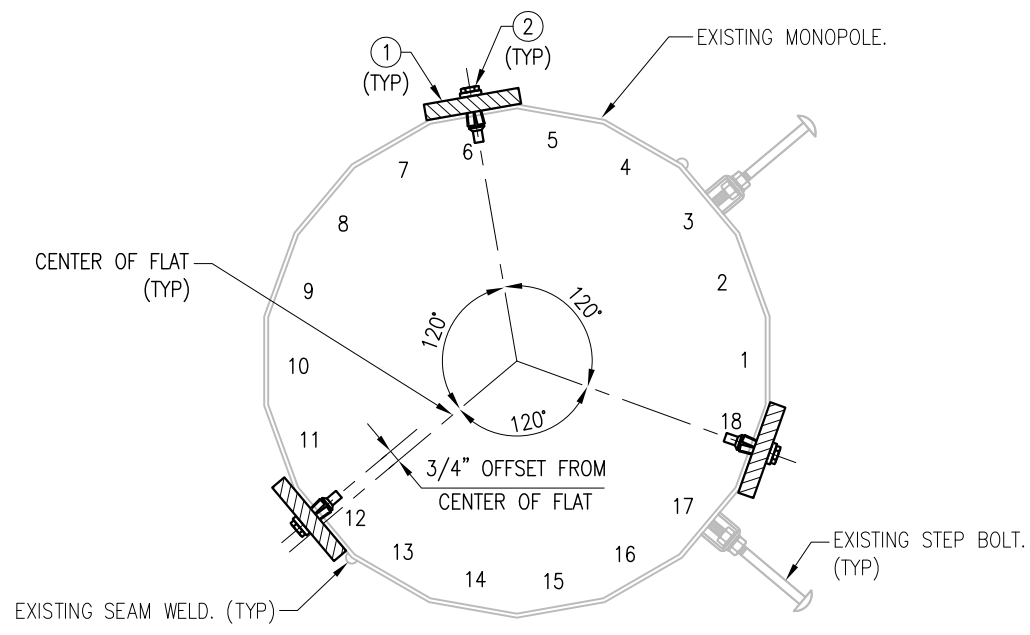


**CONSTRUCTION NOTE:**  
 FIELD DRILL ADDITIONAL (2) 1 1/16" DIA. HOLES FOR HB16 LINDAPTER HOLLO BOLT AS SHOWN AND INSTALL (11) HB16 BOLTS AT THE UPPER TERMINATION.



**CONSTRUCTION NOTE:**  
 FIELD DRILL ADDITIONAL (2) 1 1/16" DIA. HOLES FOR HB16 LINDAPTER HOLLO BOLT AS SHOWN AND INSTALL (11) HB16 BOLTS AT THE LOWER TERMINATION.

ELEVATION VIEW  
 REFER TO PLAN VIEW  
 (±42'-0" TO ±52'-0" ELEV.)  
 (ON FLATS #6, 12 AND 18)



- NOTES:**
1. REFER TO SHEET A-2 FOR FLAT BAR ORIENTATION.
  2. INSTALLATION TORQUE FOR HOLLO BOLTS: SEE SHEET GN-1
  3. APPLY (2) COATS OF ZINGA COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS TO ALL FIELD DRILLED AND EXPOSED AREAS.

ITEM NO.	QTY.	PART NO.	DESCRIPTION (BASE SECTION)
1	3	LP6X100-G-10TT	PL 1" X 6" X 10'-0" A572-65
2	72	HB16-2	LINDAPTER 5/8" TYPE HB HOLLO-BOLT (HCF)



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# NEXGEN2

## BLIND BOLT ASSEMBLY

### INSTALLATION GUIDE



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#### PRE-INSTALL BOLT ON INSTALL TOOL:



1 Thread the installation tool tip into the splined end of the bolt.



2 Remove the nut, the face washer and the spring shear sleeve and slide along the handle of the tool.



3 Move the collapsible washer to the correct location on the tool and fold in place.

#### INSTALLATION:



1 Install the bolt into the hole followed by the collapsible washer.



2 Rotate the tool 180°.



3 Pulling back, rock the tool side-to-side to engage the collapsible washer.



4 Engage the spring shear sleeve into the shear plane.



5 Slide the face washer forward and move the nut up to fasten to the bolt. Tighten the nut snug tight at this point.



6 Remove the tool by unscrewing it from bolt (counterclockwise).



7 Using the shear wrench engage the outer socket with the splined end of the bolt. Press the trigger until correct tension has been achieved (the bolt spline separates from the bolt).



8 Press the small trigger on the shear wrench to eject the bolt spline. The application is now complete.

THIS INSTALLATION GUIDE WAS CREATED BY ALLFASTENERS.  
 IT WAS ATTACHED FOR REFERENCE ONLY.

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SHEET TITLE:  
 NEXGEN2 BLIND BOLT  
 ASSEMBLY INSTALLATION  
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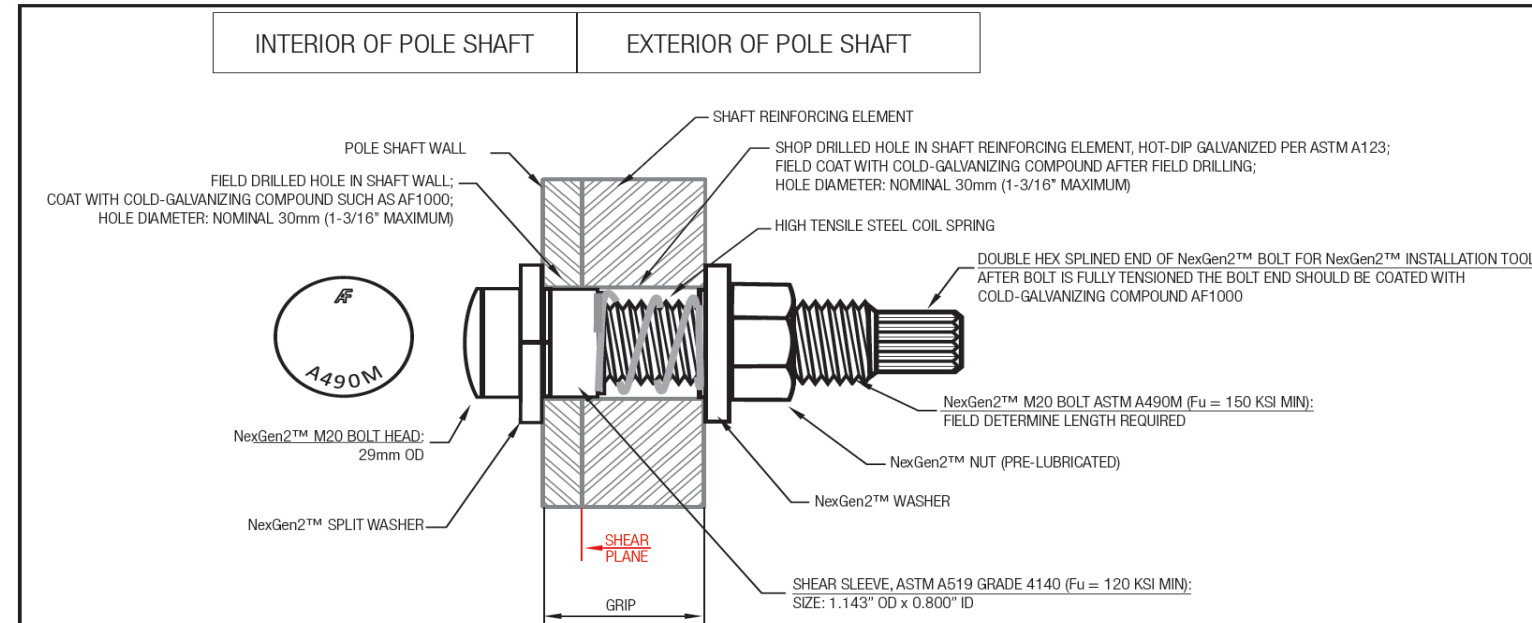
Pre-Tension



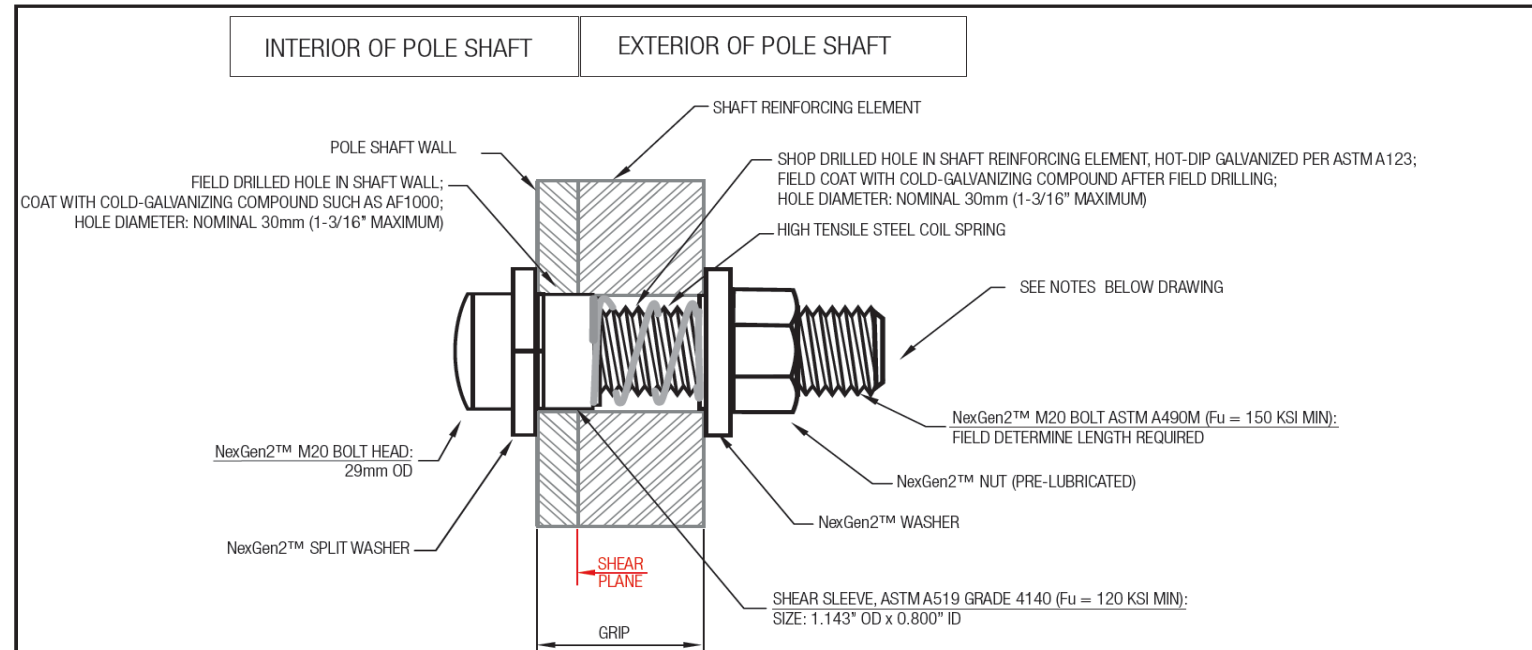
Post-Tension



TYPICAL NG2™ BOLT DETAIL: **PRE-TENSION**



TYPICAL NG2™ BOLT DETAIL: **POST-TENSION**



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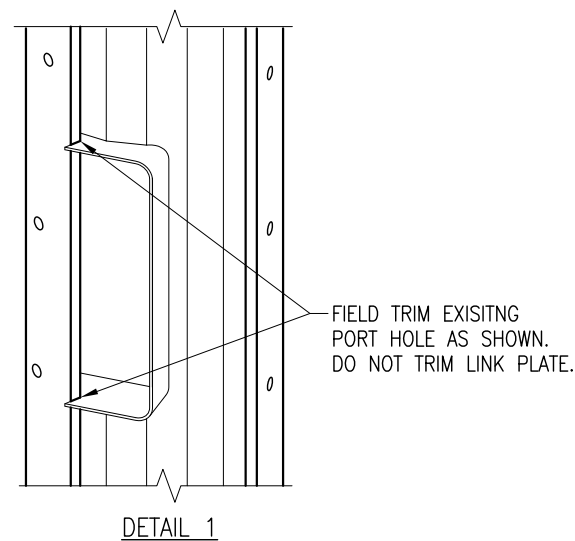
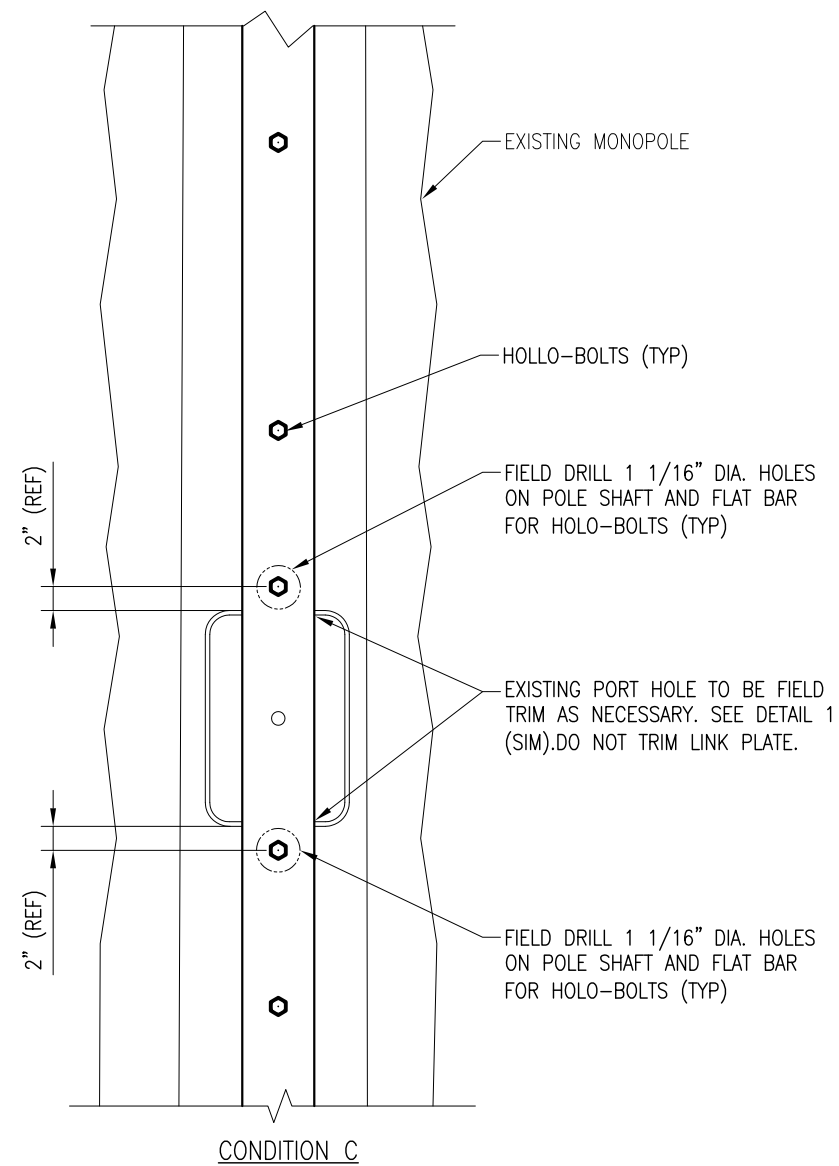
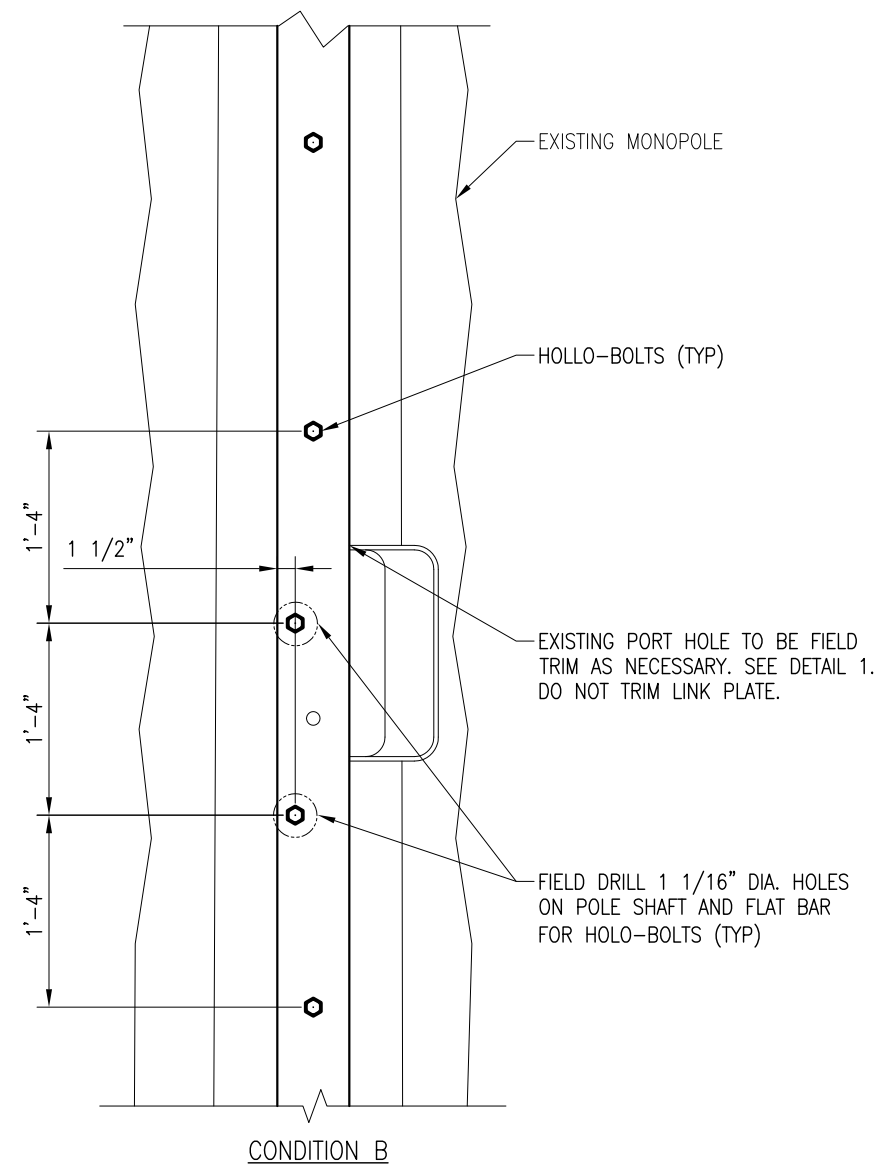
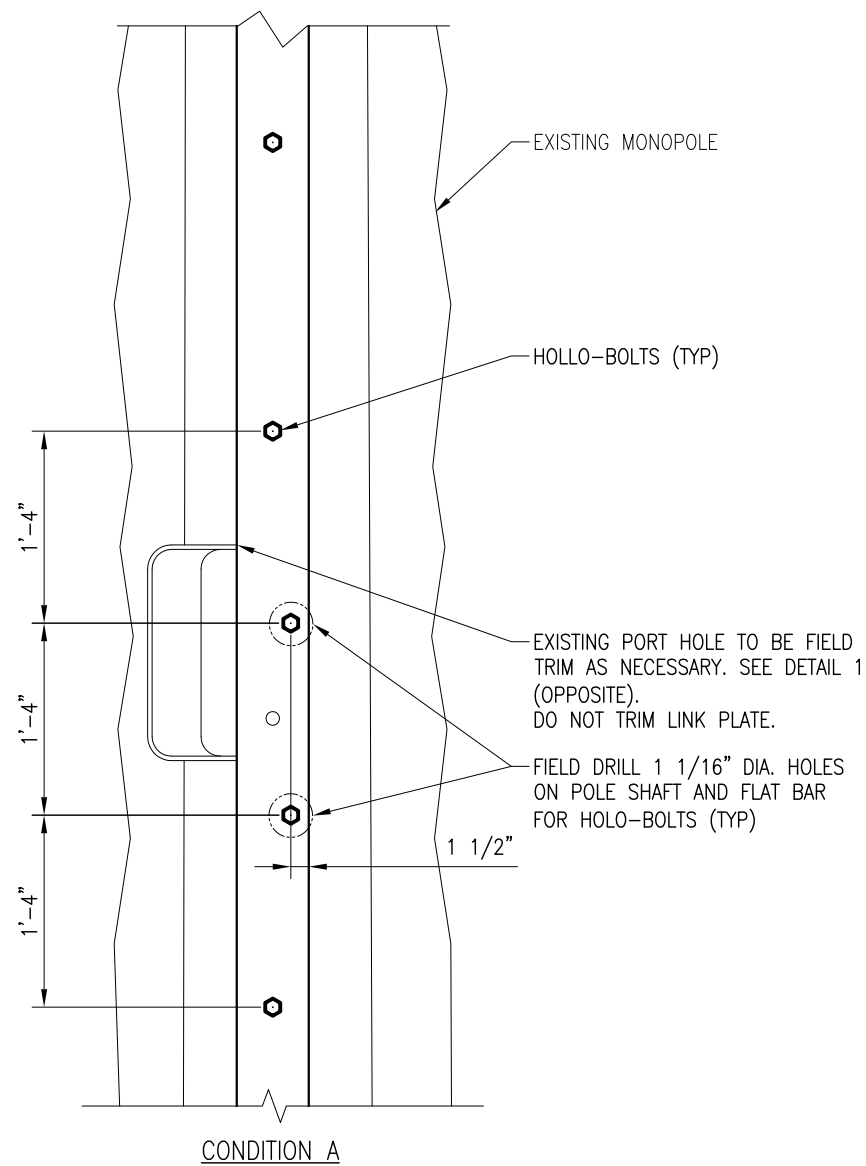
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 ASSEMBLY INSTALLATION  
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SHEET NUMBER: SPEC-2 REV #: 0



- NOTES:
1. REFER TO SHEET A-2 FOR FLAT BAR LOCATION.
  2. DO NOT TRIM LINK PLATE.



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SHEET TITLE:  
**INSTALLATION AT  
 HANDHOLE LOCATION  
 DETAILS**

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# EXHIBIT 10

## Antenna Mount Structural Analysis



Source: SBA Date: 09.13.2018

SBA Site: CT46142-A South Ledyard-Town Dump  
T-Mobile Site Number: CTNL225A  
Project: L600 Project

Prepared For: T-Mobile

Mount Description: (3) T-Arms  
w/ Handrail and Kicker Augments

Site Location: 130 Welles Rd, Groton, CT  
New London County  
41.392666°, -71.969805°

Design Codes: ANSI/TIA-222-G  
IBC 2015 w/ 2018 CT Building Code

Analysis Load Case: T-Mobile Final Configuration  
Analysis Result: Adequate @ 50% - **Once Augmented**  
**See Conclusion**



Revision 0  
June 13, 2019

CTNL225A\_A and E\_Structural\_L600 06.13.19 - Pass with Augments

## **1.0 Introduction**

An antenna mount structural analysis has been performed on T-Mobile's existing mount assembly **with augments** located at the CT46142-A South Ledyard-Town Dump communications site in New London County, CT considering the final equipment loading configuration listed in Section 3.0.

## **2.0 Analysis Criteria**

An elastic three-dimensional model of the mount structure has been analyzed pursuant to the following criteria considering wind forces in 30° increments:

- 2018 Connecticut State Building Code.
- IBC 2015 - International Building Code.
- ANSI/TIA-222-G - Structural Standard for Antenna Supporting Structures and Antennas.
- AISC - Steel Construction Manual.
- ANSI/AWS D1.1 - Structural Welding Code.

Wind w/o ice = 135 mph (3-sec gust Ultimate Wind Speed)
Wind w/o ice = 105 mph (3-sec gust Basic Wind Speed)
Wind w/ ice = 50 mph (3-sec gust Basic) with 3/4" Design Ice, Escalated with Height
Topographic Category 1; Exposure Category C; Structure Class (Risk Category) II
Gust Effect Factor = 1.0; Directionality Factor = 0.95
Site Class D "Stiff Soil"; $F_a = 1.6$ ; $F_v = 2.4$ ; $S_{Ds} = 0.171$
Maintenance Loads**:
$L_m = 0$ lb @ Worst Case Mount Pipe (Concurrent with 30 mph Wind Speed)
$L_v = 0$ lb @ Worst Case Member Location (Center Span or Cantilever)
** The mount face horizontal boom rails of T-Arm mount assemblies are not rated for rigging, hoisting or maintenance loading.

The following documents were provided:

<ul style="list-style-type: none"> <li>• <u>Mount and Tower Record Documents</u> SBA</li> <li>• <u>Tower Structural Analysis</u> TES, 1/14/19.</li> <li>• <u>Colo Application</u> SBA 600 MHz, App # 117053 v1.</li> <li>• <u>RFDS</u> T-Mobile L600 Project, V3.1, CTNL225A, 5/21/19.</li> </ul>
---

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

### 3.0 Appurtenance Information

**Table 3.1 – T-Mobile Final Configuration<sup>1,2,3</sup>**

COR	(Quantity) Appurtenance Make/Model	Mount Description
108.0'±	(3) ERICSSON AIR21 B2A/B4P	(3) T-Arms w/ Handrail and Kicker Augments
	(3) RFS APXVAARR24_43-U-NA20	
	(3) ERICSSON AIR21 B2P/B4A	
	(3) ERICSSON 4449 B71+B12 RRH	

1. Refer to antenna installation Construction Drawings (by others, when applicable) for additional information regarding final antenna and equipment orientations.
2. Panel antennas to be installed as follows:
  - 2.1. AIR21 panels to remain installed on mount pipes in Positions 1 and 3 similar to existing.
  - 2.2. AARR panels to be installed on New Pipe2.5STD mount pipe in Position 2 (middle position).
3. RRH/TMA units to be installed as follows:
  - 3.1. 4449 RRHs to be installed on mount pipe behind panels in Position 2.

### 4.0 Analysis Results

**Table 4.1 – Augmented Mount Capacity**

Load Case	Governing Mount Component <sup>1</sup>	% Capacity <sup>2</sup>	Result
Final T-Mobile Configuration	New V-Brace Angle	14%	<b>Adequate Once Augmented<sup>3</sup></b>
	Standoff	36%	
	Bottom Rail	35%	
	Pipe2.0STD Mount Pipe	35%	
	New Pipe2.5STD Mount Pipe	38%	
	New PRK Double Angles	45%	
	New Handrail	44%	
	Standoff Plate	50%	

1. Refer to the Calculations & Software Output portion of this report for mount component and structural information.
2. Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.2. 105% is an acceptable allowable stress percentage for mount components.
3. Refer to Section 5.0 for information regarding required mount augments.



**Table 4.2 – Structural Component Material Strengths**

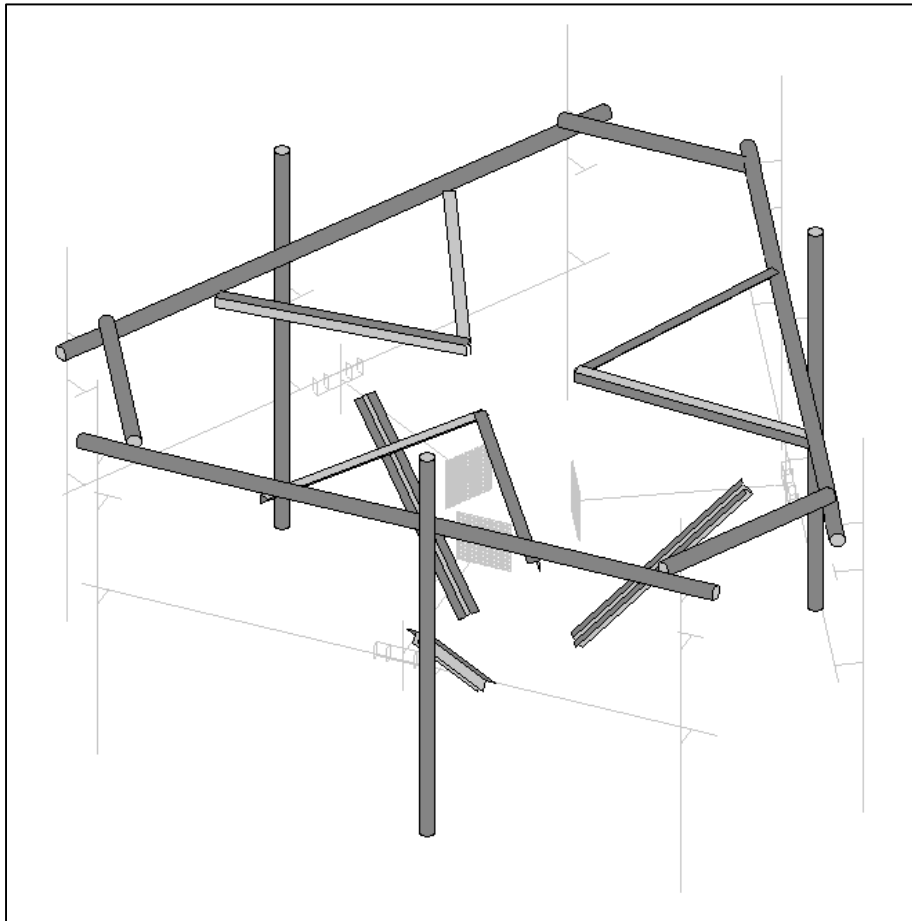
Structural Component	Nominal Strength/Material <sup>1</sup>
Pipe	$F_y = 35$ ksi (A53, Gr. B)
Tube	$F_y = 46$ ksi (A500, Gr. B)
Structural Shapes (L, C, W, etc.), Plate / Bar	$F_y = 36$ ksi (A36)
Uni-Strut	$F_y = 33$ ksi (A570, Gr. 33)
Connection Bolts	A325
Stainless Steel Bolts	18-8 Stainless, Grade 316/304 $F_y = 74$ ksi (Yield) & $F_u = 29$ ksi (Tension)
U-Bolts / Threaded Rod	SAE J429 Grade 2 (Substitution: ASTM A449) $F_y = 57$ ksi (Yield) & $F_u = 74$ ksi (Tension)
Welds	E70XX Electrodes

1. Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.

## **5.0 Conclusion & Recommendations**

Based on T-Mobile's final equipment loading configuration, the mount assemblies do not have sufficient capacity to support the loading considered in this analysis pursuant to the listed standards. Structural modifications (augment) will be required and are briefly summarized below:

- Install **Platform Reinforcement Kit**; located 3.0' below the existing standoff centerline and attaching to the existing standoff member end near the face rail.
  - Sitepro1 PRK-1245L, (1) total.
- Install **V-Brace Kit**; located 3.0' above the existing mount face rail centerline.
  - Sitepro1 PRK-SFS-L, (1) total. Attach ring mount in kit to monopole shaft and SFS angle gate clamp brackets to new handrail w/ a horiz. spread of approximately 5.2'.
  - Pipe2.5STD x 12.5' (match existing) Horizontal Rail, (3) total. Attach PRK-SFS-L kit angles to new horizontal rail.
  - Pipe2.5STD x ~5' long corner braces, (3) total. Attach to new horizontal rail w/ Sitepro1 PUCK brackets, (6) total.
  - Sitepro1 SCX<sub>x</sub>-K, (9) total. Attach all mount pipes to existing and new rails.
  - (3) new Pipe2.5STD mount pipes will be required to span between existing rail and new rail at Position 2 panel antenna.



Once the recommended augments are successfully implemented, the **augmented** mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

**Augmentation Requirements:**

- Antennas and equipment shall be installed centered vertically on the mount front face bottom rail (limit vertical installation eccentricity) same as existing. This analysis accounts for vertical eccentricities necessary to install all panel antennas at the same relative top tip elevation.
- Panel antennas to be installed as follows:
  - AIR21 panels to remain installed on mount pipes in Positions 1 and 3 similar to existing.
  - AARR panels to be installed on New Pipe2.5STD mount pipe in Position 2 (middle position).
- RRH/TMA units to be installed as follows:
  - 4449 RRHs to be installed on mount pipe behind panels in Position 2.
- In order to obtain a mount structure capable of supporting the currently proposed final loading configuration, upgrade augments must be installed in accordance with GeoStructural's mount augment *recommendations*.

All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study, nor have they been provided a mount mapping to verify existing conditions and the results of this analysis are based solely on the information provided.

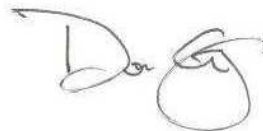
This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

Prepared by:



**Jesse Drennen, PE, MLE**  
208.761.7986  
[jesse.drennen@geostructural.com](mailto:jesse.drennen@geostructural.com)

Reviewed and Approved by:



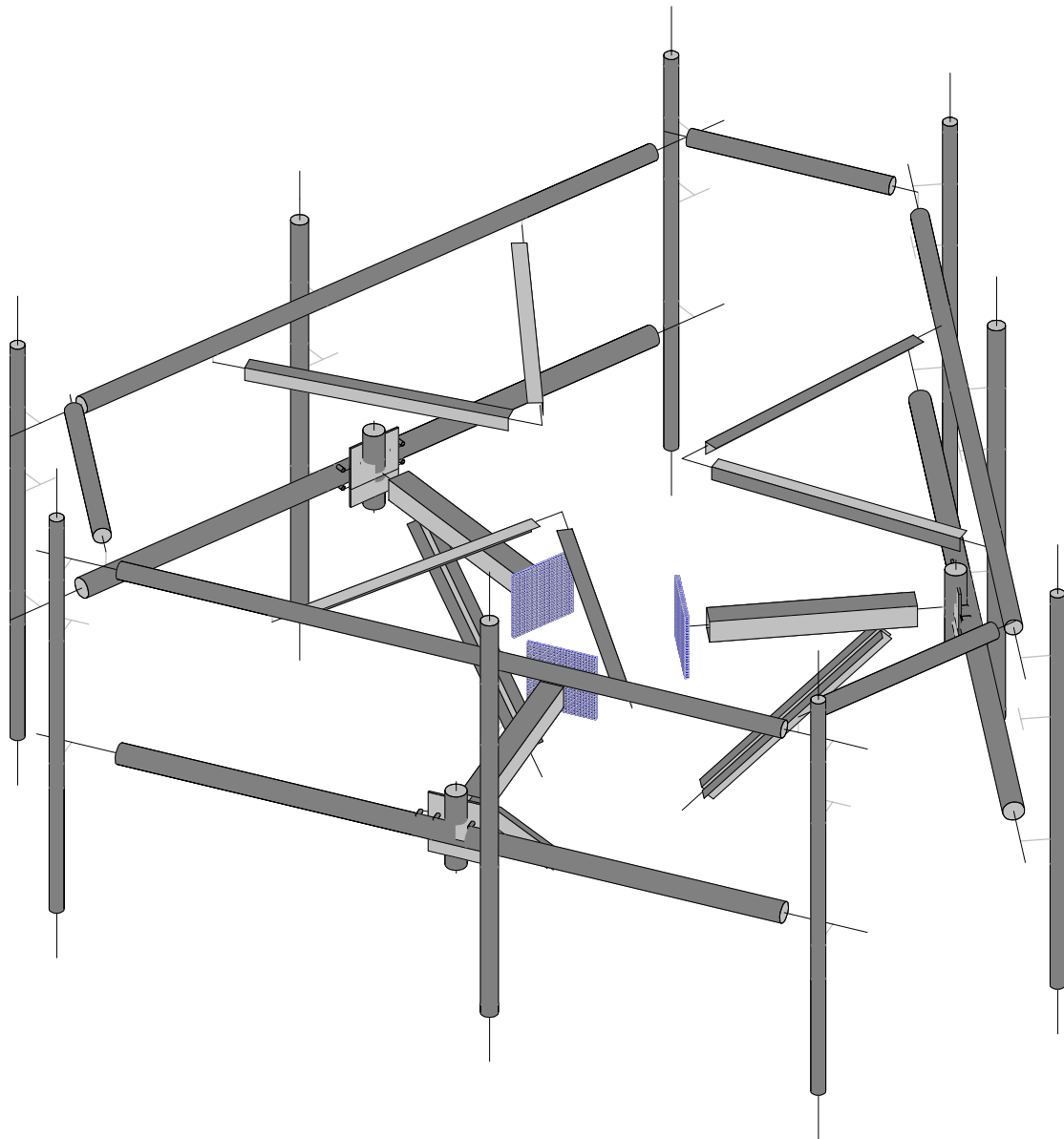
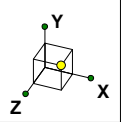
**Don George, PE, SE, MLSE**  
208.602.6569  
[don.george@geostructural.com](mailto:don.george@geostructural.com)

## **6.0 Standard Conditions**

- All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study to verify existing conditions and the results of this analysis are based solely on the information provided. It has been assumed that the tower, antenna support structure and foundation have been constructed according to the provided existing drawings, previous structural analysis reports, mapping documents, etc.
- The default Structure Classification is Class II in accordance with ANSI/TIA-222-G §A.2.2 & §A.15.3 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.
- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222-G §15.5 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.
- This analysis verifies the adequacy of the main components of the structure. Not all connections, welds, bolts, plates, etc. were individually detailed and analyzed. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.
- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.
- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.
- This analysis report does not constitute a maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied. If desired, GeoStructural can provide these services under a subsequent contract.
- This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If desired, GeoStructural can provide these services under a subsequent contract.

## **7.0 Calculations & Software Output**

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Envelope Only Solution

GeoStructural, LLC

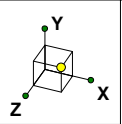
Jesse Drennen, PE

CTNL225A

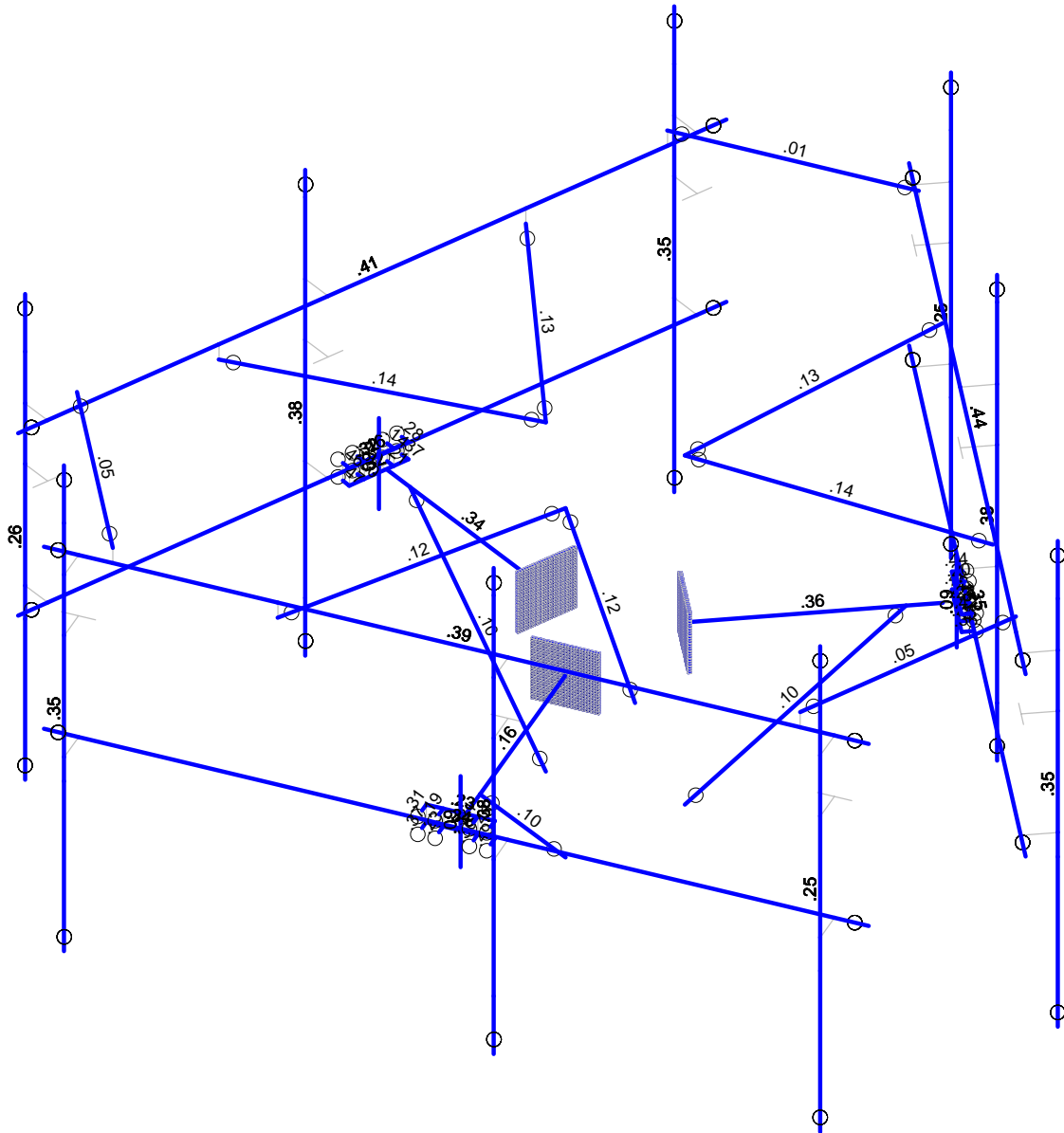
SK - 5

June 13, 2019 at 2:47 PM

CTNL225A\_Mount Analysis\_R0 19...



Code Check ( Env )	
Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

GeoStructural, LLC

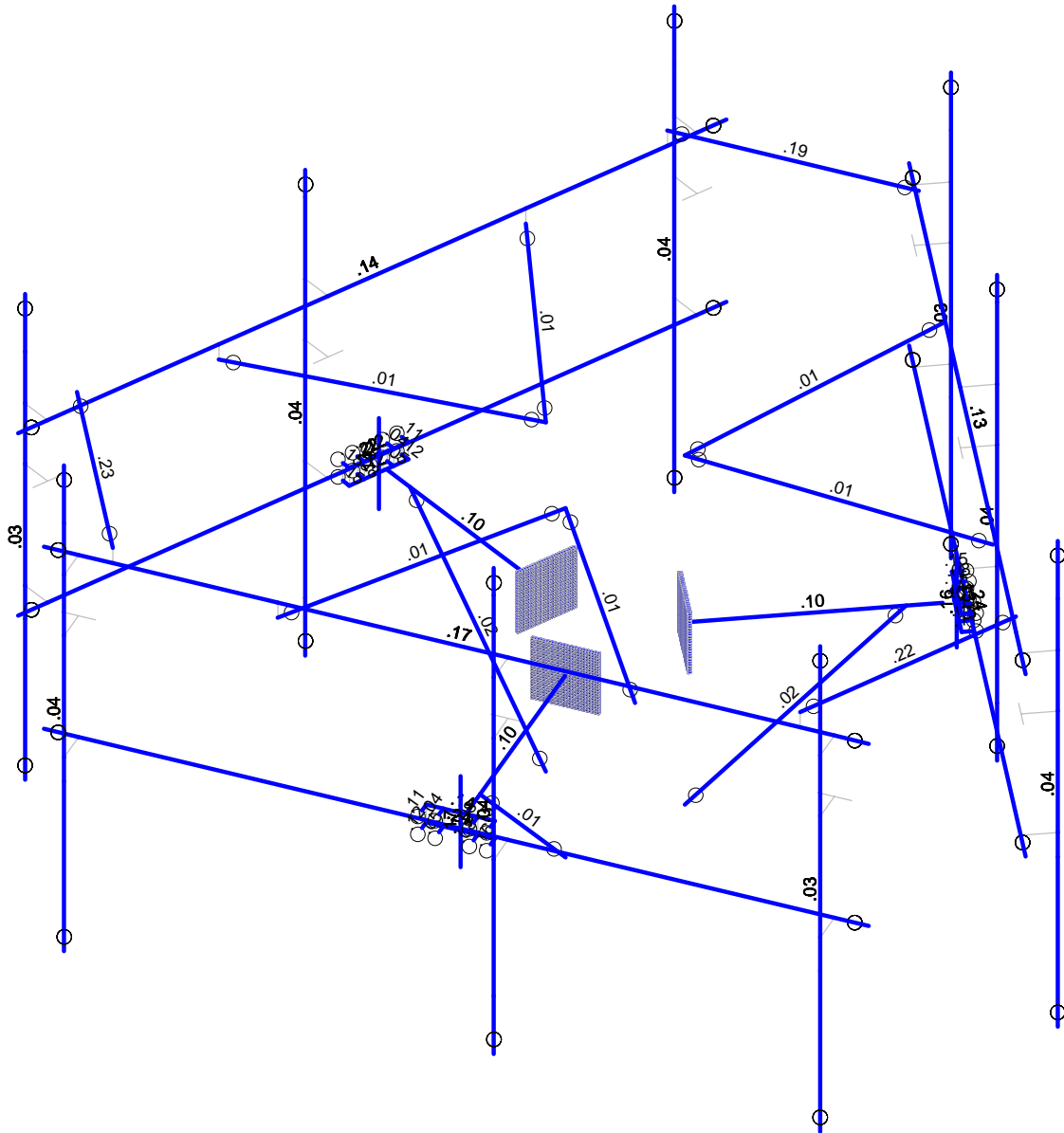
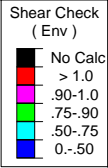
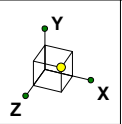
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CTNL225A

SK - 6

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CTNL225A\_Mount Analysis\_R0 19...



Member Shear Checks Displayed (Enveloped)  
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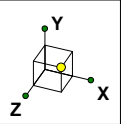
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SK - 7

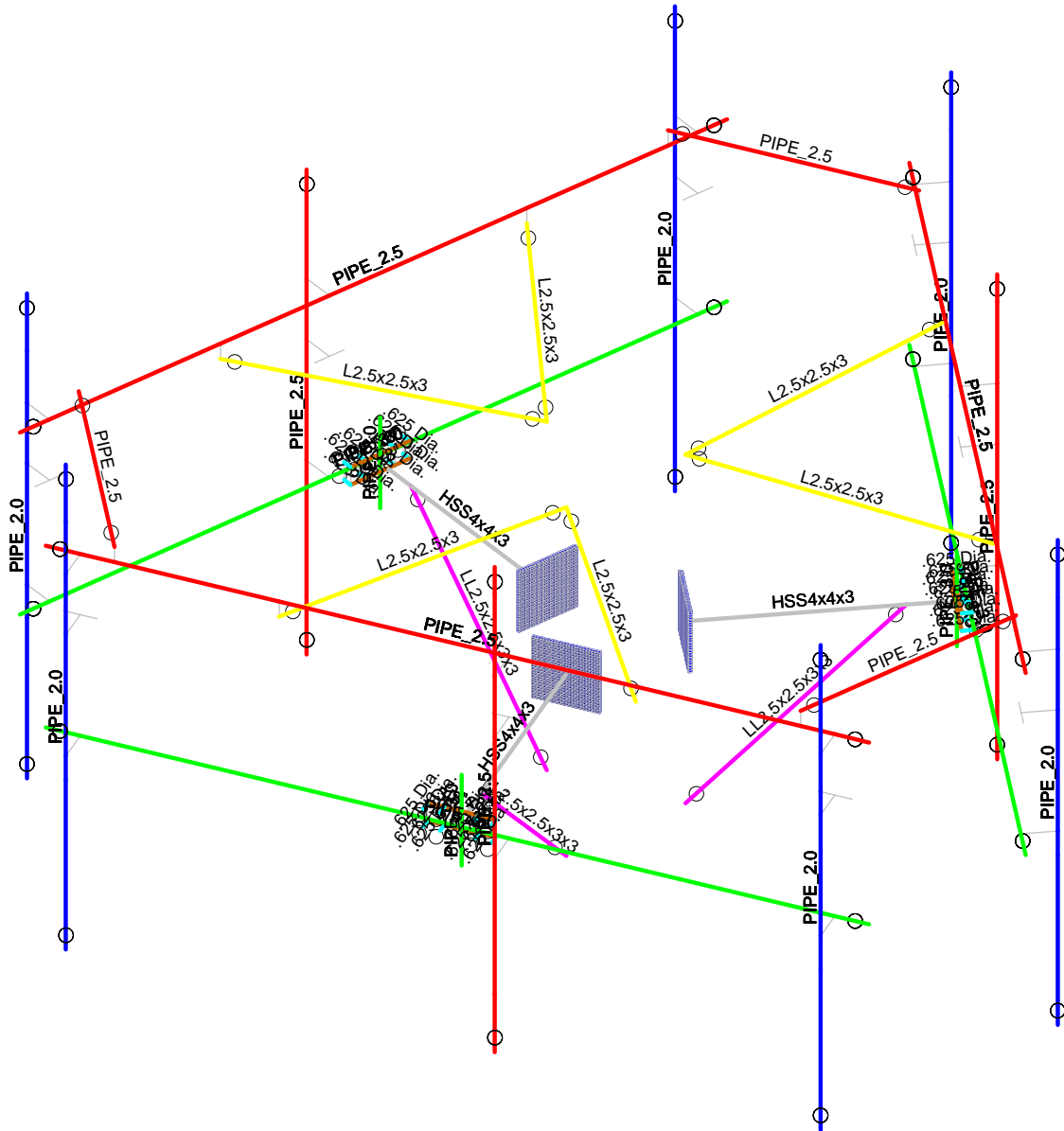
June 13, 2019 at 2:47 PM

CTNL225A\_Mount Analysis\_R0 19...





Section Sets	
Blue	PIPE_2.0
Green	PIPE_3.0
Red	PIPE_2.5
Grey	HSS4x4x3
Magenta	LL2.5x2.5x3
Cyan	.625 Dia.
Brown	3/8"x8"
Yellow	L2.5x2.5x3
Purple	RIGID



Envelope Only Solution

GeoStructural, LLC

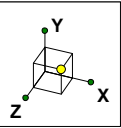
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CTNL225A

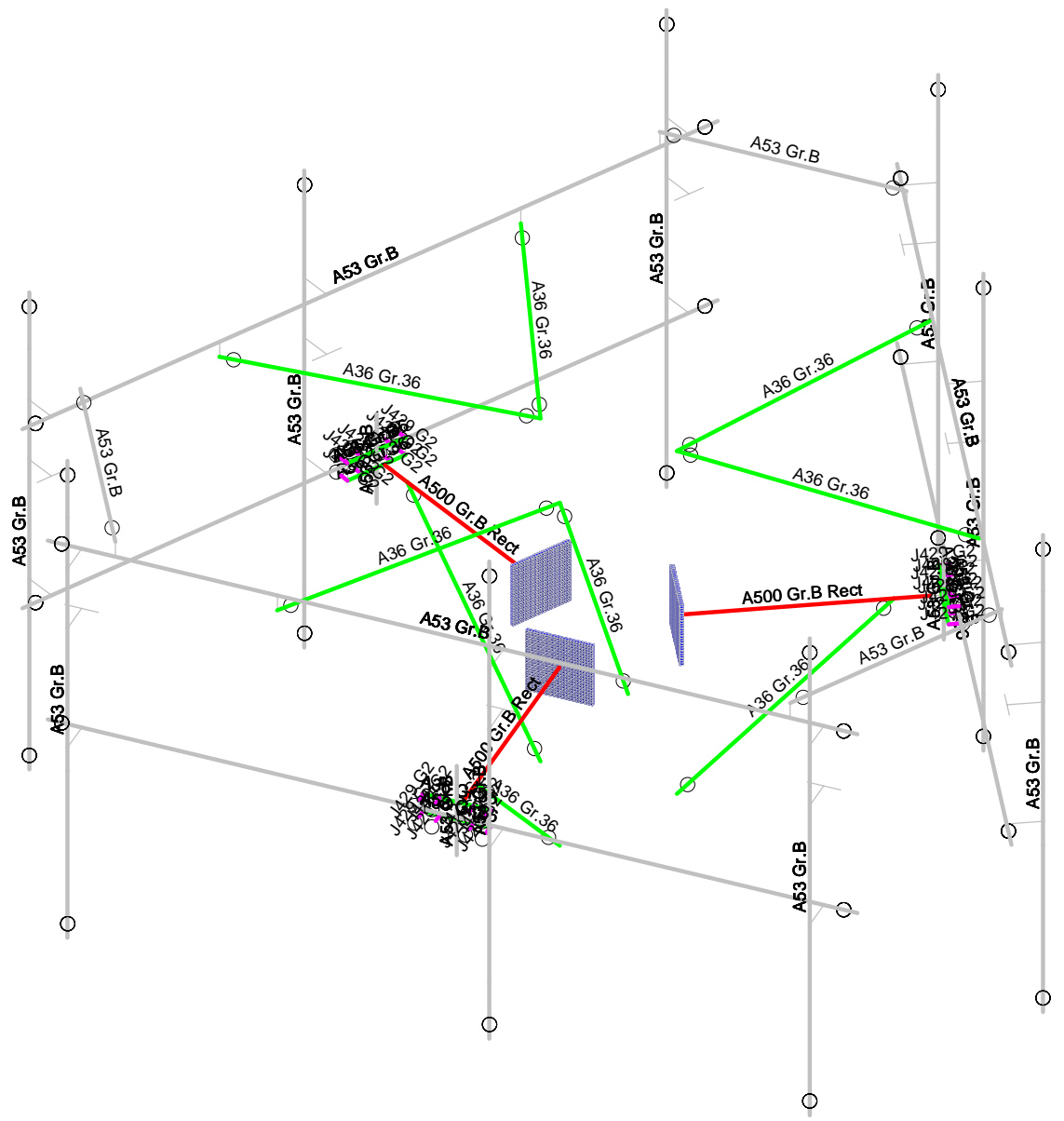
SK - 8

June 13, 2019 at 2:47 PM

CTNL225A\_Mount Analysis\_R0 19...



Material Sets	
<span style="color: blue;">■</span>	RIGID
<span style="color: green;">■</span>	A36 Gr.36
<span style="color: red;">■</span>	A500 Gr.B Rect
<span style="color: gray;">■</span>	A53 Gr.B
<span style="color: magenta;">■</span>	J429 G2



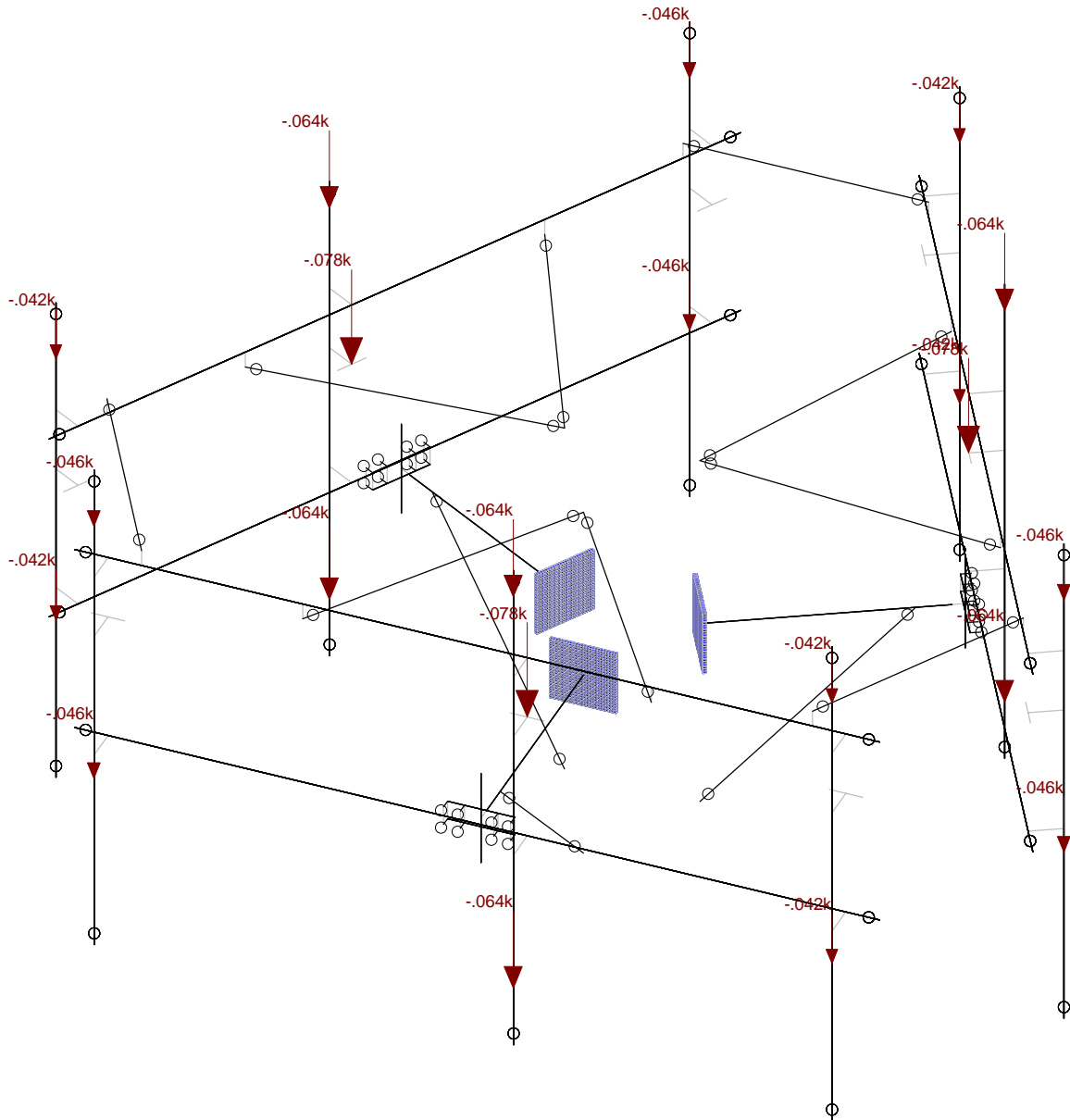
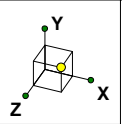
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CTNL225A_Mount Analysis_R0 19...





Loads: BLC 1, D  
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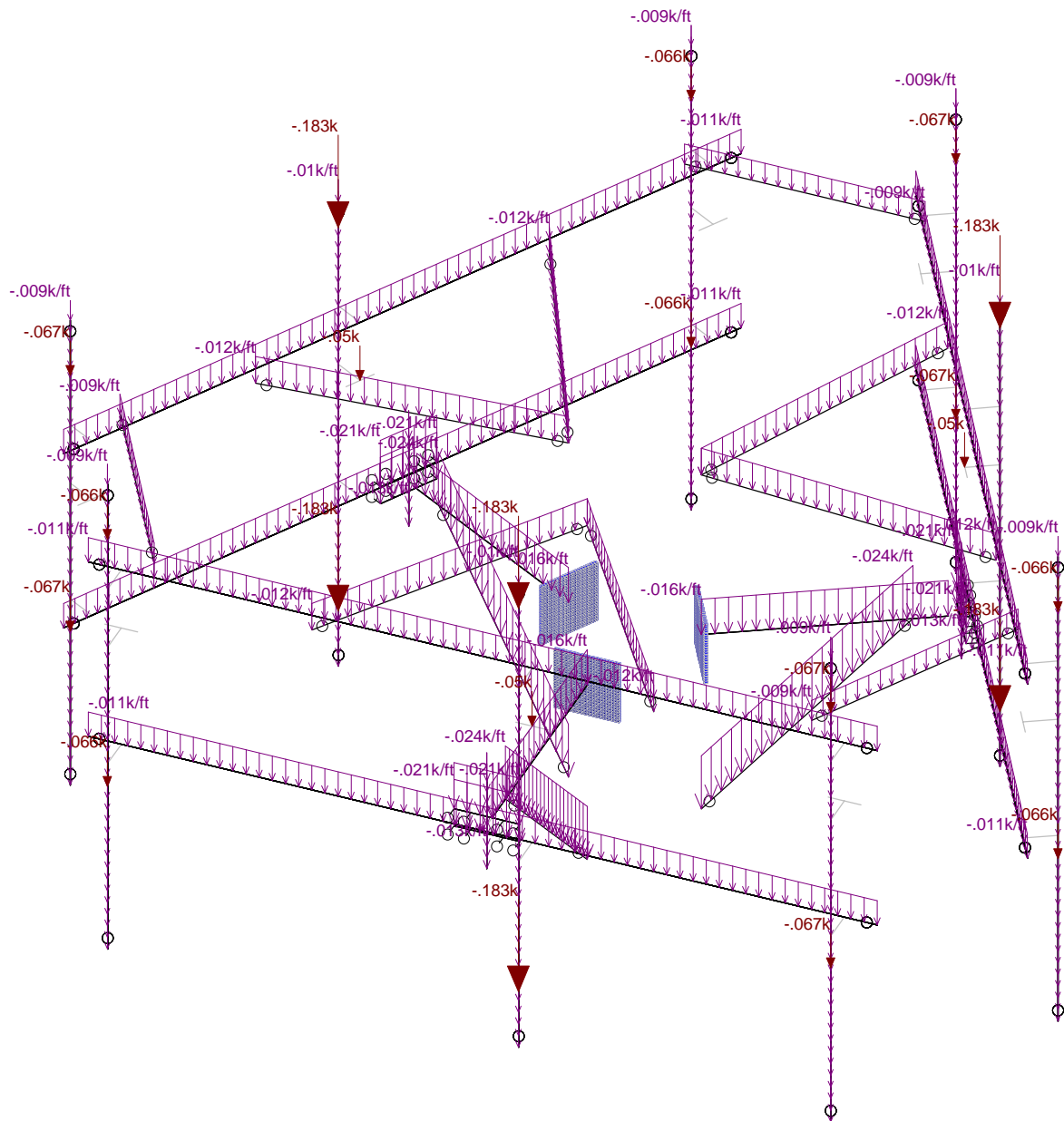
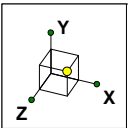
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SK - 11

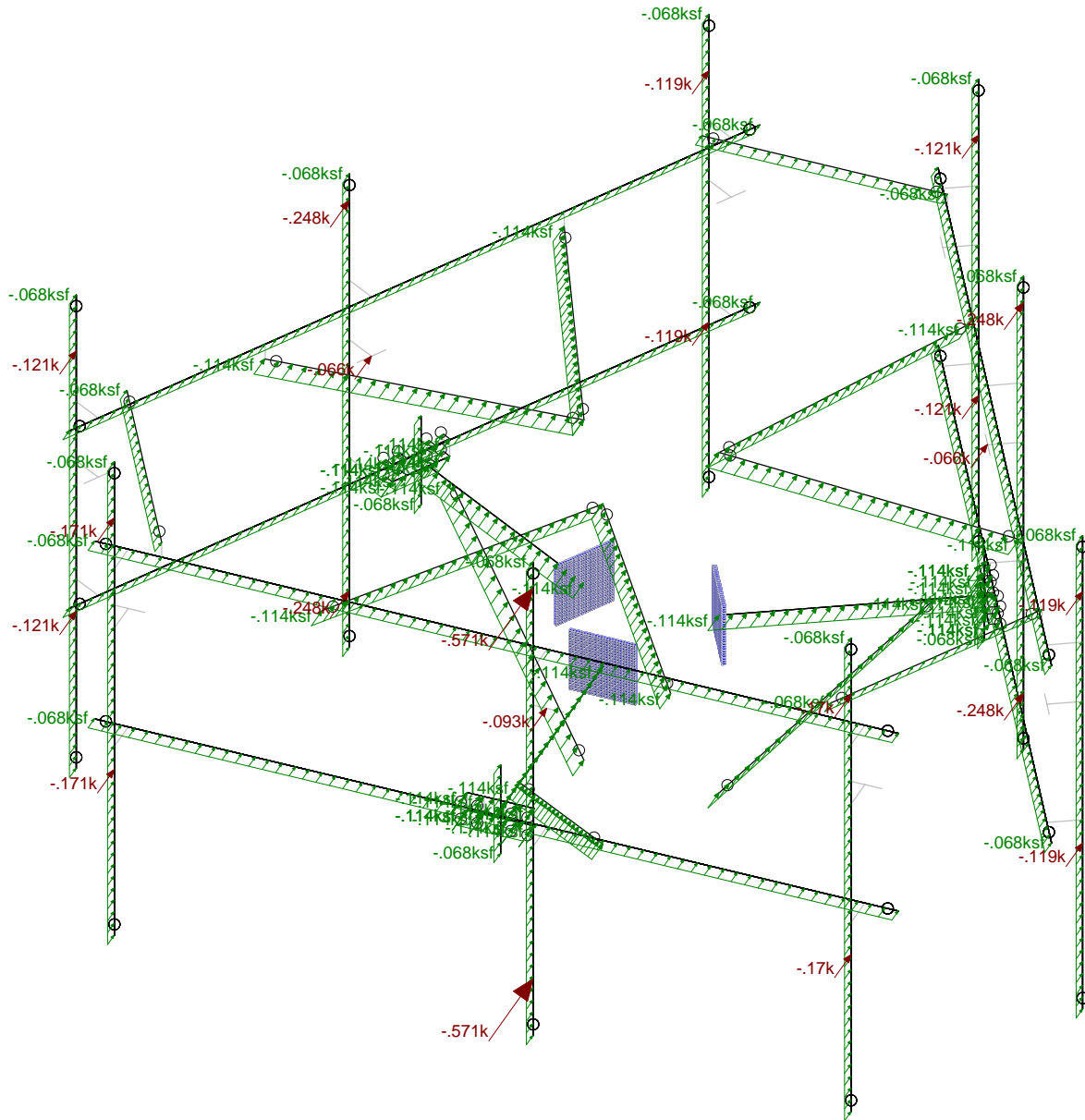
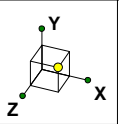
June 13, 2019 at 2:47 PM

CTNL225A\_Mount Analysis\_R0 19...



Loads: BLC 2, Di  
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		CTNL225A_Mount Analysis_R0 19...



Loads: BLC 5, Woz  
Envelope Only Solution

GeoStructural, LLC

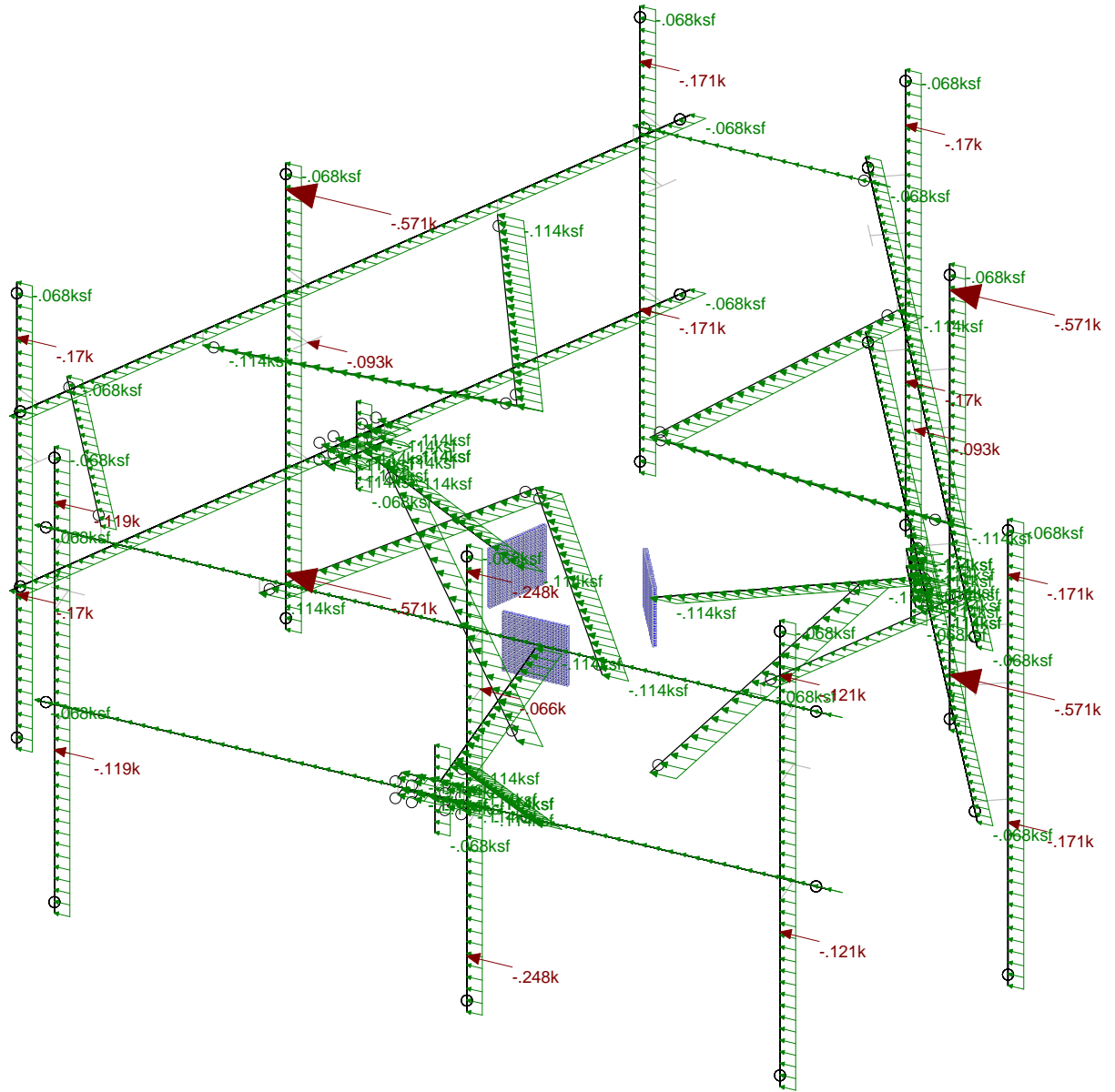
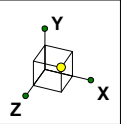
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SK - 13

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Loads: BLC 6, Wox  
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CTNL225A\_Mount Analysis\_R0 19...

### Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	D	DL		-1		22				
2	Di	SL				22		42		
3	Lm [500]	LL								
4	Lv [250]	LL								
5	Woz	WL				22		63		
6	Wox	WL				22		63		
7	Wiz	WL				22		63		
8	Wix	WL				22		63		
9	Ez	EL				22				
10	Ex	EL				22				

### Load Combination Design

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1) 1.4D				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes





**Load Combination Design (Continued)**

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
42	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	6) 1.2D+1.5Lv				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A500 Gr.B RND_1	29000	11154	.3	.65	.527	42	1.4	58	1.3
8	A500 Gr.B Rect 1	29000	11154	.3	.65	.527	46	1.4	58	1.3
9	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
10	J429 G2	29000	11154	.3	.65	.49	57	1.5	75	1.2

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE 2.0	PIPE 2.0	Beam	Pipe Def...	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	PIPE 3.0	PIPE 3.0	Beam	Pipe Def...	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	PIPE 2.5	PIPE 2.5	Beam	Pipe Def...	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	HSS4x4x3	HSS4x4x3	Beam	Tube Def...	A500 Gr.B Rect	Typical	2.58	6.21	6.21	10
5	3/8"x2.5"	3/8"x2.5"	Beam	Rectangu...	A36 Gr.36	Typical	.938	.011	.488	.04

**Hot Rolled Steel Section Sets (Continued)**

	Label	Shape	Type	Design List	Material	Design R...	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> ]
6	LL2.5x2.5x3x3	LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical	1.8	2.46	1.07	.023
7	.625 Dia.	.625 Dia.	Beam	Round D...	J429 G2	Typical	.307	.007	.007	.015
8	3/8"x8"	3/8"x8"	Beam	Rectangu..	A36 Gr.36	Typical	3	.035	16	.136
9	L2.5x2.5x3	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011

**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	N18						
2	N40						
3	N41						
4	N42						
5	N43						
6	N138	Reaction	Reaction	Reaction			
7	N120	Reaction	Reaction	Reaction			
8	N569	Reaction	Reaction	Reaction			
9	N586						
10	N587	Reaction	Reaction	Reaction			
11	N696						
12	N734						
13	N756						
14	N757						
15	N758						
16	N759						
17	N836	Reaction	Reaction	Reaction			
18	N854	Reaction	Reaction	Reaction			
19	N1285	Reaction	Reaction	Reaction			
20	N1302						
21	N1303	Reaction	Reaction	Reaction			
22	N1412						
23	N1450						
24	N1472						
25	N1473						
26	N1474						
27	N1475						
28	N1552	Reaction	Reaction	Reaction			
29	N1570	Reaction	Reaction	Reaction			
30	N2001	Reaction	Reaction	Reaction			
31	N2018						
32	N2019	Reaction	Reaction	Reaction			
33	N2128						
34	N2149	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
35	N2150						
36	N2152	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
37	N2153						
38	N2155	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
39	N2156						
40	N2191	Reaction	Reaction	Reaction			
41	N2196A	Reaction	Reaction	Reaction			
42	N2201	Reaction	Reaction	Reaction			



**Member Primary Data**

Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N3		3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
2	M2	N7	N1		RIGID	None	None	RIGID	Typical
3	M3	N8	N3		RIGID	None	None	RIGID	Typical
4	M4	N5	N2		RIGID	None	None	RIGID	Typical
5	M5	N6	N4		RIGID	None	None	RIGID	Typical
6	M6	N1	N2		.625 Dia.	Beam	Round Default	J429 G2	Typical
7	M7	N3	N4		.625 Dia.	Beam	Round Default	J429 G2	Typical
8	M8	N7	N5		.625 Dia.	Beam	Round Default	J429 G2	Typical
9	M9	N8	N6		.625 Dia.	Beam	Round Default	J429 G2	Typical
10	M10	N8	N7	180	3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
11	M11	N9	N19		RIGID	None	None	RIGID	Typical
12	M12	N10	N11		PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
13	M13	N12	N13		PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
14	M14	N14	N15		RIGID	None	None	RIGID	Typical
15	M15	N16	N17		PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
16	M16	N18	N19		HSS4x4x3	Beam	Tube Default	A500 Gr.B...	Typical
17	M17	N26	N27		RIGID	None	None	RIGID	Typical
18	M18	N29	N28		RIGID	None	None	RIGID	Typical
19	M19	N32	N31		RIGID	None	None	RIGID	Typical
20	M20	N30	N31		.625 Dia.	Beam	Round Default	J429 G2	Typical
21	M21	N33	N32		.625 Dia.	Beam	Round Default	J429 G2	Typical
22	M22	N37	N36		RIGID	None	None	RIGID	Typical
23	M23	N35	N36		.625 Dia.	Beam	Round Default	J429 G2	Typical
24	M24	N38	N37		.625 Dia.	Beam	Round Default	J429 G2	Typical
25	M25	N33	N30		RIGID	None	None	RIGID	Typical
26	M26	N38	N35		RIGID	None	None	RIGID	Typical
27	M27	N664	N250		RIGID	None	None	RIGID	Typical
28	M28	N665	N251		RIGID	None	None	RIGID	Typical
29	M29	N666	N252		RIGID	None	None	RIGID	Typical
30	M30	N667	N253		RIGID	None	None	RIGID	Typical
31	M31	N668	N254		RIGID	None	None	RIGID	Typical
32	M32	N669	N255		RIGID	None	None	RIGID	Typical
33	M33	N670	N256		RIGID	None	None	RIGID	Typical
34	M34	N671	N257		RIGID	None	None	RIGID	Typical
35	M35	N672	N258		RIGID	None	None	RIGID	Typical
36	M36	N674	N283		RIGID	None	None	RIGID	Typical
37	M37	N676	N308		RIGID	None	None	RIGID	Typical
38	M38	N678	N333		RIGID	None	None	RIGID	Typical
39	M39	N680	N357		RIGID	None	None	RIGID	Typical
40	M40	N682	N382		RIGID	None	None	RIGID	Typical
41	M41	N684	N407		RIGID	None	None	RIGID	Typical
42	M42	N686	N432		RIGID	None	None	RIGID	Typical
43	M43	N695	N457		RIGID	None	None	RIGID	Typical
44	M44	N694	N456		RIGID	None	None	RIGID	Typical
45	M45	N693	N455		RIGID	None	None	RIGID	Typical
46	M46	N692	N454		RIGID	None	None	RIGID	Typical
47	M47	N691	N453		RIGID	None	None	RIGID	Typical
48	M48	N690	N452		RIGID	None	None	RIGID	Typical
49	M49	N689	N451		RIGID	None	None	RIGID	Typical
50	M50	N688	N450		RIGID	None	None	RIGID	Typical
51	M51	N687	N449		RIGID	None	None	RIGID	Typical
52	M52	N685	N424		RIGID	None	None	RIGID	Typical
53	M53	N683	N399		RIGID	None	None	RIGID	Typical
54	M54	N681	N374		RIGID	None	None	RIGID	Typical
55	M55	N679	N350		RIGID	None	None	RIGID	Typical
56	M56	N677	N325		RIGID	None	None	RIGID	Typical
57	M57	N675	N300		RIGID	None	None	RIGID	Typical



**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
58	M58	N673	N275			RIGID	None	None	RIGID	Typical
59	M59	N664	N672			RIGID	None	None	RIGID	Typical
60	M60	N672	N695			RIGID	None	None	RIGID	Typical
61	M61	N695	N687			RIGID	None	None	RIGID	Typical
62	M62	N687	N664			RIGID	None	None	RIGID	Typical
63	M63	N696	N680			RIGID	None	None	RIGID	Typical
64	M64	N696	N668			RIGID	None	None	RIGID	Typical
65	M65	N696	N679			RIGID	None	None	RIGID	Typical
66	M66	N696	N691			RIGID	None	None	RIGID	Typical
67	M67	N697	N698			PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
68	M68	N699	N700			RIGID	None	None	RIGID	Typical
69	M69	N703	N704			RIGID	None	None	RIGID	Typical
70	M70	N706	N705			RIGID	None	None	RIGID	Typical
71	M71	N707	N708			PIPE 2.5	Beam	Pipe Default	A53 Gr.B	Typical
72	M72	N709	N710			RIGID	None	None	RIGID	Typical
73	M73	N713	N714			RIGID	None	None	RIGID	Typical
74	M74	N716	N715			RIGID	None	None	RIGID	Typical
75	M75	N717	N719			3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
76	M76	N723	N717			RIGID	None	None	RIGID	Typical
77	M77	N724	N719			RIGID	None	None	RIGID	Typical
78	M78	N721	N718			RIGID	None	None	RIGID	Typical
79	M79	N722	N720			RIGID	None	None	RIGID	Typical
80	M80	N717	N718			.625 Dia.	Beam	Round Default	J429 G2	Typical
81	M81	N719	N720			.625 Dia.	Beam	Round Default	J429 G2	Typical
82	M82	N723	N721			.625 Dia.	Beam	Round Default	J429 G2	Typical
83	M83	N724	N722			.625 Dia.	Beam	Round Default	J429 G2	Typical
84	M84	N724	N723		180	3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
85	M85	N725	N735			RIGID	None	None	RIGID	Typical
86	M86	N726	N727			PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
87	M87	N728	N729			PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
88	M88	N730	N731			RIGID	None	None	RIGID	Typical
89	M89	N732	N733			PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
90	M90	N734	N735			HSS4x4x3	Beam	Tube Default	A500 Gr.B...	Typical
91	M91	N742	N743			RIGID	None	None	RIGID	Typical
92	M92	N745	N744			RIGID	None	None	RIGID	Typical
93	M93	N748	N747			RIGID	None	None	RIGID	Typical
94	M94	N746	N747			.625 Dia.	Beam	Round Default	J429 G2	Typical
95	M95	N749	N748			.625 Dia.	Beam	Round Default	J429 G2	Typical
96	M96	N753	N752			RIGID	None	None	RIGID	Typical
97	M97	N751	N752			.625 Dia.	Beam	Round Default	J429 G2	Typical
98	M98	N754	N753			.625 Dia.	Beam	Round Default	J429 G2	Typical
99	M99	N749	N746			RIGID	None	None	RIGID	Typical
100	M100	N754	N751			RIGID	None	None	RIGID	Typical
101	M101	N1380	N966			RIGID	None	None	RIGID	Typical
102	M102	N1381	N967			RIGID	None	None	RIGID	Typical
103	M103	N1382	N968			RIGID	None	None	RIGID	Typical
104	M104	N1383	N969			RIGID	None	None	RIGID	Typical
105	M105	N1384	N970			RIGID	None	None	RIGID	Typical
106	M106	N1385	N971			RIGID	None	None	RIGID	Typical
107	M107	N1386	N972			RIGID	None	None	RIGID	Typical
108	M108	N1387	N973			RIGID	None	None	RIGID	Typical
109	M109	N1388	N974			RIGID	None	None	RIGID	Typical
110	M110	N1390	N999			RIGID	None	None	RIGID	Typical
111	M111	N1392	N1024			RIGID	None	None	RIGID	Typical
112	M112	N1394	N1049			RIGID	None	None	RIGID	Typical
113	M113	N1396	N1073			RIGID	None	None	RIGID	Typical
114	M114	N1398	N1098			RIGID	None	None	RIGID	Typical



**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
115	M115	N1400	N1123			RIGID	None	None	RIGID	Typical
116	M116	N1402	N1148			RIGID	None	None	RIGID	Typical
117	M117	N1411	N1173			RIGID	None	None	RIGID	Typical
118	M118	N1410	N1172			RIGID	None	None	RIGID	Typical
119	M119	N1409	N1171			RIGID	None	None	RIGID	Typical
120	M120	N1408	N1170			RIGID	None	None	RIGID	Typical
121	M121	N1407	N1169			RIGID	None	None	RIGID	Typical
122	M122	N1406	N1168			RIGID	None	None	RIGID	Typical
123	M123	N1405	N1167			RIGID	None	None	RIGID	Typical
124	M124	N1404	N1166			RIGID	None	None	RIGID	Typical
125	M125	N1403	N1165			RIGID	None	None	RIGID	Typical
126	M126	N1401	N1140			RIGID	None	None	RIGID	Typical
127	M127	N1399	N1115			RIGID	None	None	RIGID	Typical
128	M128	N1397	N1090			RIGID	None	None	RIGID	Typical
129	M129	N1395	N1066			RIGID	None	None	RIGID	Typical
130	M130	N1393	N1041			RIGID	None	None	RIGID	Typical
131	M131	N1391	N1016			RIGID	None	None	RIGID	Typical
132	M132	N1389	N991			RIGID	None	None	RIGID	Typical
133	M133	N1380	N1388			RIGID	None	None	RIGID	Typical
134	M134	N1388	N1411			RIGID	None	None	RIGID	Typical
135	M135	N1411	N1403			RIGID	None	None	RIGID	Typical
136	M136	N1403	N1380			RIGID	None	None	RIGID	Typical
137	M137	N1412	N1396			RIGID	None	None	RIGID	Typical
138	M138	N1412	N1384			RIGID	None	None	RIGID	Typical
139	M139	N1412	N1395			RIGID	None	None	RIGID	Typical
140	M140	N1412	N1407			RIGID	None	None	RIGID	Typical
141	M141	N1413	N1414			PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
142	M142	N1415	N1416			RIGID	None	None	RIGID	Typical
143	M143	N1419	N1420			RIGID	None	None	RIGID	Typical
144	M144	N1422	N1421			RIGID	None	None	RIGID	Typical
145	M145	N1423	N1424			PIPE 2.5	Beam	Pipe Default	A53 Gr.B	Typical
146	M146	N1425	N1426			RIGID	None	None	RIGID	Typical
147	M147	N1429	N1430			RIGID	None	None	RIGID	Typical
148	M148	N1432	N1431			RIGID	None	None	RIGID	Typical
149	M149	N1433	N1435			3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
150	M150	N1439	N1433			RIGID	None	None	RIGID	Typical
151	M151	N1440	N1435			RIGID	None	None	RIGID	Typical
152	M152	N1437	N1434			RIGID	None	None	RIGID	Typical
153	M153	N1438	N1436			RIGID	None	None	RIGID	Typical
154	M154	N1433	N1434			.625 Dia.	Beam	Round Default	J429 G2	Typical
155	M155	N1435	N1436			.625 Dia.	Beam	Round Default	J429 G2	Typical
156	M156	N1439	N1437			.625 Dia.	Beam	Round Default	J429 G2	Typical
157	M157	N1440	N1438			.625 Dia.	Beam	Round Default	J429 G2	Typical
158	M158	N1440	N1439		180	3/8"x8"	Beam	Rectangular D...	A36 Gr.36	Typical
159	M159	N1441	N1451			RIGID	None	None	RIGID	Typical
160	M160	N1442	N1443			PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
161	M161	N1444	N1445			PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
162	M162	N1446	N1447			RIGID	None	None	RIGID	Typical
163	M163	N1448	N1449			PIPE 3.0	Beam	Pipe Default	A53 Gr.B	Typical
164	M164	N1450	N1451			HSS4x4x3	Beam	Tube Default	A500 Gr.B...	Typical
165	M165	N1458	N1459			RIGID	None	None	RIGID	Typical
166	M166	N1461	N1460			RIGID	None	None	RIGID	Typical
167	M167	N1464	N1463			RIGID	None	None	RIGID	Typical
168	M168	N1462	N1463			.625 Dia.	Beam	Round Default	J429 G2	Typical
169	M169	N1465	N1464			.625 Dia.	Beam	Round Default	J429 G2	Typical
170	M170	N1469	N1468			RIGID	None	None	RIGID	Typical
171	M171	N1467	N1468			.625 Dia.	Beam	Round Default	J429 G2	Typical



**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
172	M172	N1470	N1469			.625 Dia.	Beam	Round Default	J429 G2	Typical
173	M173	N1465	N1462			RIGID	None	None	RIGID	Typical
174	M174	N1470	N1467			RIGID	None	None	RIGID	Typical
175	M175	N2096	N1682			RIGID	None	None	RIGID	Typical
176	M176	N2097	N1683			RIGID	None	None	RIGID	Typical
177	M177	N2098	N1684			RIGID	None	None	RIGID	Typical
178	M178	N2099	N1685			RIGID	None	None	RIGID	Typical
179	M179	N2100	N1686			RIGID	None	None	RIGID	Typical
180	M180	N2101	N1687			RIGID	None	None	RIGID	Typical
181	M181	N2102	N1688			RIGID	None	None	RIGID	Typical
182	M182	N2103	N1689			RIGID	None	None	RIGID	Typical
183	M183	N2104	N1690			RIGID	None	None	RIGID	Typical
184	M184	N2106	N1715			RIGID	None	None	RIGID	Typical
185	M185	N2108	N1740			RIGID	None	None	RIGID	Typical
186	M186	N2110	N1765			RIGID	None	None	RIGID	Typical
187	M187	N2112	N1789			RIGID	None	None	RIGID	Typical
188	M188	N2114	N1814			RIGID	None	None	RIGID	Typical
189	M189	N2116	N1839			RIGID	None	None	RIGID	Typical
190	M190	N2118	N1864			RIGID	None	None	RIGID	Typical
191	M191	N2127	N1889			RIGID	None	None	RIGID	Typical
192	M192	N2126	N1888			RIGID	None	None	RIGID	Typical
193	M193	N2125	N1887			RIGID	None	None	RIGID	Typical
194	M194	N2124	N1886			RIGID	None	None	RIGID	Typical
195	M195	N2123	N1885			RIGID	None	None	RIGID	Typical
196	M196	N2122	N1884			RIGID	None	None	RIGID	Typical
197	M197	N2121	N1883			RIGID	None	None	RIGID	Typical
198	M198	N2120	N1882			RIGID	None	None	RIGID	Typical
199	M199	N2119	N1881			RIGID	None	None	RIGID	Typical
200	M200	N2117	N1856			RIGID	None	None	RIGID	Typical
201	M201	N2115	N1831			RIGID	None	None	RIGID	Typical
202	M202	N2113	N1806			RIGID	None	None	RIGID	Typical
203	M203	N2111	N1782			RIGID	None	None	RIGID	Typical
204	M204	N2109	N1757			RIGID	None	None	RIGID	Typical
205	M205	N2107	N1732			RIGID	None	None	RIGID	Typical
206	M206	N2105	N1707			RIGID	None	None	RIGID	Typical
207	M207	N2096	N2104			RIGID	None	None	RIGID	Typical
208	M208	N2104	N2127			RIGID	None	None	RIGID	Typical
209	M209	N2127	N2119			RIGID	None	None	RIGID	Typical
210	M210	N2119	N2096			RIGID	None	None	RIGID	Typical
211	M211	N2128	N2112			RIGID	None	None	RIGID	Typical
212	M212	N2128	N2100			RIGID	None	None	RIGID	Typical
213	M213	N2128	N2111			RIGID	None	None	RIGID	Typical
214	M214	N2128	N2123			RIGID	None	None	RIGID	Typical
215	M215	N2129	N2130			PIPE 2.0	Beam	Pipe Default	A53 Gr.B	Typical
216	M216	N2131	N2132			RIGID	None	None	RIGID	Typical
217	M217	N2135	N2136			RIGID	None	None	RIGID	Typical
218	M218	N2138	N2137			RIGID	None	None	RIGID	Typical
219	M219	N2139	N2140			PIPE 2.5	Beam	Pipe Default	A53 Gr.B	Typical
220	M220	N2141	N2142			RIGID	None	None	RIGID	Typical
221	M221	N2145	N2146			RIGID	None	None	RIGID	Typical
222	M222	N2148	N2147			RIGID	None	None	RIGID	Typical
223	M223	N2150	N2149			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
224	M224	N2153	N2152			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
225	M225	N2156	N2155			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
226	M226	N2155A	N2156A			RIGID	None	None	RIGID	Typical
227	M227	N2157	N2158			PIPE 2.5	Beam	Pipe Default	A53 Gr.B	Typical
228	M228	N2159	N2160			RIGID	None	None	RIGID	Typical



**Member Primary Data (Continued)**

Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
229	M229	N2161	N2162			RIGID	None	RIGID	Typical
230	M230	N2163	N2164			RIGID	None	RIGID	Typical
231	M231	N2165	N2166			PIPE 2.5	Beam	Pipe Default	A53 Gr.B
232	M232	N2167	N2168			RIGID	None	RIGID	Typical
233	M233	N2169	N2170			RIGID	None	RIGID	Typical
234	M234	N2171	N2172			RIGID	None	RIGID	Typical
235	M235	N2173	N2174			PIPE 2.5	Beam	Pipe Default	A53 Gr.B
236	M236	N2175	N2176			RIGID	None	RIGID	Typical
237	M237	N2177	N2178			RIGID	None	RIGID	Typical
238	M238	N2185	N2179			RIGID	None	RIGID	Typical
239	M239	N2186	N2184			RIGID	None	RIGID	Typical
240	M240	N2186	N2185			PIPE 2.5	Beam	Pipe Default	A53 Gr.B
241	M241	N2189	N2180			RIGID	None	RIGID	Typical
242	M242	N2190	N2182			RIGID	None	RIGID	Typical
243	M243	N2190	N2189			PIPE 2.5	Beam	Pipe Default	A53 Gr.B
244	M244	N2193	N2181			RIGID	None	RIGID	Typical
245	M245	N2194	N2183			RIGID	None	RIGID	Typical
246	M246	N2194	N2193			PIPE 2.5	Beam	Pipe Default	A53 Gr.B
247	M247	N2192	N2193A			RIGID	None	RIGID	Typical
248	M248	N2193A	N2191	90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
249	M249	N2195	N2196			RIGID	None	RIGID	Typical
250	M250	N2196	N2191	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
251	M251	N2197	N2198			RIGID	None	RIGID	Typical
252	M252	N2198	N2196A	90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
253	M253	N2199	N2200			RIGID	None	RIGID	Typical
254	M254	N2200	N2196A	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
255	M255	N2202	N2203			RIGID	None	RIGID	Typical
256	M256	N2203	N2201	90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
257	M257	N2204	N2205			RIGID	None	RIGID	Typical
258	M258	N2205	N2201	180	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical

**Member Advanced Data**

Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1					Yes				None
2	M2					Yes	** NA **			None
3	M3					Yes	** NA **			None
4	M4					Yes	** NA **			None
5	M5					Yes	** NA **			None
6	M6	BenPIN				Yes				None
7	M7	BenPIN				Yes				None
8	M8	BenPIN				Yes				None
9	M9	BenPIN				Yes				None
10	M10					Yes				None
11	M11					Yes	** NA **			None
12	M12					Yes				None
13	M13	BenPIN	BenPIN			Yes				None
14	M14					Yes	** NA **			None
15	M15	BenPIN	BenPIN			Yes				None
16	M16					Yes	Default			None
17	M17					Yes	** NA **			None
18	M18					Yes	** NA **			None
19	M19					Yes	** NA **			None
20	M20	BenPIN				Yes				None
21	M21	BenPIN				Yes				None
22	M22					Yes	** NA **			None

**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
23	M23	BenPIN					Yes				None
24	M24	BenPIN					Yes				None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60						Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65						Yes	** NA **			None
66	M66						Yes	** NA **			None
67	M67	BenPIN	BenPIN				Yes				None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None
70	M70						Yes	** NA **			None
71	M71	BenPIN	BenPIN				Yes				None
72	M72						Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes	** NA **			None
76	M76						Yes	** NA **			None
77	M77						Yes	** NA **			None
78	M78						Yes	** NA **			None
79	M79						Yes	** NA **			None





**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
80	M80	BenPIN					Yes				None
81	M81	BenPIN					Yes				None
82	M82	BenPIN					Yes				None
83	M83	BenPIN					Yes				None
84	M84						Yes				None
85	M85						Yes	** NA **			None
86	M86						Yes				None
87	M87	BenPIN	BenPIN				Yes				None
88	M88						Yes	** NA **			None
89	M89	BenPIN	BenPIN				Yes				None
90	M90						Yes	Default			None
91	M91						Yes	** NA **			None
92	M92						Yes	** NA **			None
93	M93						Yes	** NA **			None
94	M94	BenPIN					Yes				None
95	M95	BenPIN					Yes				None
96	M96						Yes	** NA **			None
97	M97	BenPIN					Yes				None
98	M98	BenPIN					Yes				None
99	M99						Yes	** NA **			None
100	M100						Yes	** NA **			None
101	M101						Yes	** NA **			None
102	M102						Yes	** NA **			None
103	M103						Yes	** NA **			None
104	M104						Yes	** NA **			None
105	M105						Yes	** NA **			None
106	M106						Yes	** NA **			None
107	M107						Yes	** NA **			None
108	M108						Yes	** NA **			None
109	M109						Yes	** NA **			None
110	M110						Yes	** NA **			None
111	M111						Yes	** NA **			None
112	M112						Yes	** NA **			None
113	M113						Yes	** NA **			None
114	M114						Yes	** NA **			None
115	M115						Yes	** NA **			None
116	M116						Yes	** NA **			None
117	M117						Yes	** NA **			None
118	M118						Yes	** NA **			None
119	M119						Yes	** NA **			None
120	M120						Yes	** NA **			None
121	M121						Yes	** NA **			None
122	M122						Yes	** NA **			None
123	M123						Yes	** NA **			None
124	M124						Yes	** NA **			None
125	M125						Yes	** NA **			None
126	M126						Yes	** NA **			None
127	M127						Yes	** NA **			None
128	M128						Yes	** NA **			None
129	M129						Yes	** NA **			None
130	M130						Yes	** NA **			None
131	M131						Yes	** NA **			None
132	M132						Yes	** NA **			None
133	M133						Yes	** NA **			None
134	M134						Yes	** NA **			None
135	M135						Yes	** NA **			None
136	M136						Yes	** NA **			None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
137	M137						Yes	** NA **			None
138	M138						Yes	** NA **			None
139	M139						Yes	** NA **			None
140	M140						Yes	** NA **			None
141	M141	BenPIN	BenPIN				Yes				None
142	M142						Yes	** NA **			None
143	M143						Yes	** NA **			None
144	M144						Yes	** NA **			None
145	M145	BenPIN	BenPIN				Yes				None
146	M146						Yes	** NA **			None
147	M147						Yes	** NA **			None
148	M148						Yes	** NA **			None
149	M149						Yes				None
150	M150						Yes	** NA **			None
151	M151						Yes	** NA **			None
152	M152						Yes	** NA **			None
153	M153						Yes	** NA **			None
154	M154	BenPIN					Yes				None
155	M155	BenPIN					Yes				None
156	M156	BenPIN					Yes				None
157	M157	BenPIN					Yes				None
158	M158						Yes				None
159	M159						Yes	** NA **			None
160	M160						Yes				None
161	M161	BenPIN	BenPIN				Yes				None
162	M162						Yes	** NA **			None
163	M163	BenPIN	BenPIN				Yes				None
164	M164						Yes	Default			None
165	M165						Yes	** NA **			None
166	M166						Yes	** NA **			None
167	M167						Yes	** NA **			None
168	M168	BenPIN					Yes				None
169	M169	BenPIN					Yes				None
170	M170						Yes	** NA **			None
171	M171	BenPIN					Yes				None
172	M172	BenPIN					Yes				None
173	M173						Yes	** NA **			None
174	M174						Yes	** NA **			None
175	M175						Yes	** NA **			None
176	M176						Yes	** NA **			None
177	M177						Yes	** NA **			None
178	M178						Yes	** NA **			None
179	M179						Yes	** NA **			None
180	M180						Yes	** NA **			None
181	M181						Yes	** NA **			None
182	M182						Yes	** NA **			None
183	M183						Yes	** NA **			None
184	M184						Yes	** NA **			None
185	M185						Yes	** NA **			None
186	M186						Yes	** NA **			None
187	M187						Yes	** NA **			None
188	M188						Yes	** NA **			None
189	M189						Yes	** NA **			None
190	M190						Yes	** NA **			None
191	M191						Yes	** NA **			None
192	M192						Yes	** NA **			None
193	M193						Yes	** NA **			None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
194	M194						Yes	** NA **			None
195	M195						Yes	** NA **			None
196	M196						Yes	** NA **			None
197	M197						Yes	** NA **			None
198	M198						Yes	** NA **			None
199	M199						Yes	** NA **			None
200	M200						Yes	** NA **			None
201	M201						Yes	** NA **			None
202	M202						Yes	** NA **			None
203	M203						Yes	** NA **			None
204	M204						Yes	** NA **			None
205	M205						Yes	** NA **			None
206	M206						Yes	** NA **			None
207	M207						Yes	** NA **			None
208	M208						Yes	** NA **			None
209	M209						Yes	** NA **			None
210	M210						Yes	** NA **			None
211	M211						Yes	** NA **			None
212	M212						Yes	** NA **			None
213	M213						Yes	** NA **			None
214	M214						Yes	** NA **			None
215	M215	BenPIN	BenPIN				Yes				None
216	M216						Yes	** NA **			None
217	M217						Yes	** NA **			None
218	M218						Yes	** NA **			None
219	M219	BenPIN	BenPIN				Yes				None
220	M220						Yes	** NA **			None
221	M221						Yes	** NA **			None
222	M222						Yes	** NA **			None
223	M223	BenPIN	BenPIN				Yes				None
224	M224	BenPIN	BenPIN				Yes				None
225	M225	BenPIN	BenPIN				Yes				None
226	M226		BenPIN				Yes	** NA **			None
227	M227	BenPIN	BenPIN				Yes				None
228	M228		BenPIN				Yes	** NA **			None
229	M229		BenPIN				Yes	** NA **			None
230	M230		BenPIN				Yes	** NA **			None
231	M231	BenPIN	BenPIN				Yes				None
232	M232		BenPIN				Yes	** NA **			None
233	M233		BenPIN				Yes	** NA **			None
234	M234		BenPIN				Yes	** NA **			None
235	M235	BenPIN	BenPIN				Yes				None
236	M236		BenPIN				Yes	** NA **			None
237	M237		BenPIN				Yes	** NA **			None
238	M238						Yes	** NA **			None
239	M239						Yes	** NA **			None
240	M240	BenPIN	BenPIN				Yes				None
241	M241						Yes	** NA **			None
242	M242						Yes	** NA **			None
243	M243	BenPIN	BenPIN				Yes				None
244	M244						Yes	** NA **			None
245	M245						Yes	** NA **			None
246	M246	BenPIN	BenPIN				Yes				None
247	M247						Yes	** NA **			None
248	M248	BenPIN	BenPIN				Yes				None
249	M249						Yes	** NA **			None
250	M250	BenPIN	BenPIN				Yes				None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
251	M251						Yes	** NA **			None
252	M252	BenPIN	BenPIN				Yes				None
253	M253						Yes	** NA **			None
254	M254	BenPIN	BenPIN				Yes				None
255	M255						Yes	** NA **			None
256	M256	BenPIN	BenPIN				Yes				None
257	M257						Yes	** NA **			None
258	M258	BenPIN	BenPIN				Yes				None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	3/8"x8"	1			Lbyy						Lateral
2	M6	.625 Dia.	.146			Lbyy						Lateral
3	M7	.625 Dia.	.146			Lbyy						Lateral
4	M8	.625 Dia.	.146			Lbyy						Lateral
5	M9	.625 Dia.	.146			Lbyy						Lateral
6	M10	3/8"x8"	1			Lbyy						Lateral
7	M12	PIPE 3.0	1.5			Lbyy						Lateral
8	M13	PIPE 2.0	8			Lbyy						Lateral
9	M15	PIPE 3.0	12			Lbyy						Lateral
10	M16	HSS4x4x3	3.5			Lbyy						Lateral
11	M20	.625 Dia.	.146			Lbyy						Lateral
12	M21	.625 Dia.	.146			Lbyy						Lateral
13	M23	.625 Dia.	.146			Lbyy						Lateral
14	M24	.625 Dia.	.146			Lbyy						Lateral
15	M67	PIPE 2.0	8			Lbyy						Lateral
16	M71	PIPE 2.5	8			Lbyy						Lateral
17	M75	3/8"x8"	1			Lbyy						Lateral
18	M80	.625 Dia.	.146			Lbyy						Lateral
19	M81	.625 Dia.	.146			Lbyy						Lateral
20	M82	.625 Dia.	.146			Lbyy						Lateral
21	M83	.625 Dia.	.146			Lbyy						Lateral
22	M84	3/8"x8"	1			Lbyy						Lateral
23	M86	PIPE 3.0	1.5			Lbyy						Lateral
24	M87	PIPE 2.0	8			Lbyy						Lateral
25	M89	PIPE 3.0	12			Lbyy						Lateral
26	M90	HSS4x4x3	3.5			Lbyy						Lateral
27	M94	.625 Dia.	.146			Lbyy						Lateral
28	M95	.625 Dia.	.146			Lbyy						Lateral
29	M97	.625 Dia.	.146			Lbyy						Lateral
30	M98	.625 Dia.	.146			Lbyy						Lateral
31	M141	PIPE 2.0	8			Lbyy						Lateral
32	M145	PIPE 2.5	8			Lbyy						Lateral
33	M149	3/8"x8"	1			Lbyy						Lateral
34	M154	.625 Dia.	.146			Lbyy						Lateral
35	M155	.625 Dia.	.146			Lbyy						Lateral
36	M156	.625 Dia.	.146			Lbyy						Lateral
37	M157	.625 Dia.	.146			Lbyy						Lateral
38	M158	3/8"x8"	1			Lbyy						Lateral
39	M160	PIPE 3.0	1.5			Lbyy						Lateral
40	M161	PIPE 2.0	8			Lbyy						Lateral
41	M163	PIPE 3.0	12			Lbyy						Lateral
42	M164	HSS4x4x3	3.5			Lbyy						Lateral
43	M168	.625 Dia.	.146			Lbyy						Lateral
44	M169	.625 Dia.	.146			Lbyy						Lateral

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

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
45	M171	.625 Dia.	.146			Lbyy						Lateral
46	M172	.625 Dia.	.146			Lbyy						Lateral
47	M215	PIPE 2.0	8			Lbyy						Lateral
48	M219	PIPE 2.5	8			Lbyy						Lateral
49	M223	LL2.5x2.5x3...	4.243			Lbyy						Lateral
50	M224	LL2.5x2.5x3...	4.243			Lbyy						Lateral
51	M225	LL2.5x2.5x3...	4.243			Lbyy						Lateral
52	M227	PIPE 2.5	12			Lbyy						Lateral
53	M231	PIPE 2.5	12			Lbyy						Lateral
54	M235	PIPE 2.5	12			Lbyy						Lateral
55	M240	PIPE 2.5	3.66			Lbyy						Lateral
56	M243	PIPE 2.5	3.66			Lbyy						Lateral
57	M246	PIPE 2.5	3.66			Lbyy						Lateral
58	M248	L2.5x2.5x3	4.632			Lbyy						Lateral
59	M250	L2.5x2.5x3	4.632			Lbyy						Lateral
60	M252	L2.5x2.5x3	4.632			Lbyy						Lateral
61	M254	L2.5x2.5x3	4.632			Lbyy						Lateral
62	M256	L2.5x2.5x3	4.632			Lbyy						Lateral
63	M258	L2.5x2.5x3	4.632			Lbyy						Lateral

**Envelope Joint Reactions**

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N138	max	.008	22	.217	18	.937	24	0	74	0	74	0	74
2		min	-.125	37	-.255	12	-1.268	6	0	1	0	1	0	1
3	N120	max	.034	24	.172	22	.758	16	0	74	0	74	0	74
4		min	-.045	6	-.305	4	-1.1	10	0	1	0	1	0	1
5	N569	max	.335	5	.096	22	.653	17	0	74	0	74	0	74
6		min	-.312	23	-.243	28	-1.195	11	0	1	0	1	0	1
7	N587	max	.367	5	.137	18	.703	24	0	74	0	74	0	74
8		min	-.286	23	-.178	12	-1.239	6	0	1	0	1	0	1
9	N836	max	2.017	21	.077	25	1.692	4	0	74	0	74	0	74
10		min	-2.308	3	-.251	32	-1.494	22	0	1	0	1	0	1
11	N854	max	2.822	16	.116	22	1.412	10	0	74	0	74	0	74
12		min	-3.041	10	-.158	4	-1.206	16	0	1	0	1	0	1
13	N1285	max	2.051	22	.129	23	1.83	4	0	74	0	74	0	74
14		min	-2.565	4	-.252	5	-1.554	22	0	1	0	1	0	1
15	N1303	max	2.534	16	.045	15	1.357	10	0	74	0	74	0	74
16		min	-3.004	10	-.084	10	-1.175	16	0	1	0	1	0	1
17	N1552	max	2.9	6	.086	19	1.27	6	0	74	0	74	0	74
18		min	-2.638	24	-.253	37	-1.135	24	0	1	0	1	0	1
19	N1570	max	2.176	13	.163	15	1.558	12	0	74	0	74	0	74
20		min	-1.845	19	-.198	9	-1.432	18	0	1	0	1	0	1
21	N2001	max	2.806	6	.015	23	1.32	6	0	74	0	74	0	74
22		min	-2.389	24	-.232	29	-1.046	24	0	1	0	1	0	1
23	N2019	max	2.365	12	.198	17	1.775	12	0	74	0	74	0	74
24		min	-1.906	18	-.231	11	-1.409	18	0	1	0	1	0	1
25	N2149	max	.049	17	3.017	26	2.962	26	0	74	.001	5	.001	5
26		min	-.048	23	.531	20	.448	20	0	1	0	23	0	23
27	N2152	max	2.563	30	3.013	30	-.233	24	.002	10	.002	10	.001	16
28		min	.4	23	.561	24	-1.481	30	-.002	16	-.002	16	-.001	10
29	N2155	max	-.401	16	3.013	34	-.233	16	.002	18	.002	12	0	18
30		min	-2.563	34	.56	16	-1.48	34	-.002	12	-.002	18	-.001	12
31	N2191	max	.794	17	.076	32	1.708	14	0	74	0	74	0	74
32		min	-.815	11	.005	14	-2.054	8	0	1	0	1	0	1
33	N2196A	max	1.466	18	.076	36	1.218	13	0	74	0	74	0	74



**Envelope Joint Reactions (Continued)**

Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
34		min	-1.769	11	.006	18	-1.029	19	0	1	0	1	0	1
35	N2201	max	1.887	5	.076	28	1.128	3	0	74	0	74	0	74
36		min	-1.559	23	.006	22	-.979	21	0	1	0	1	0	1
37	N2174	max	NC		NC		NC		NC		NC		LOCKED	
38		min	NC		NC		NC		NC		NC		LOCKED	
39	N2173	max	NC		NC		NC		NC		NC		LOCKED	
40		min	NC		NC		NC		NC		NC		LOCKED	
41	N1448	max	NC		NC		NC		NC		NC		LOCKED	
42		min	NC		NC		NC		NC		NC		LOCKED	
43	N1449	max	NC		NC		NC		NC		NC		LOCKED	
44		min	NC		NC		NC		NC		NC		LOCKED	
45	N733	max	NC		NC		NC		NC		NC		LOCKED	
46		min	NC		NC		NC		NC		NC		LOCKED	
47	N2166	max	NC		NC		NC		NC		NC		LOCKED	
48		min	NC		NC		NC		NC		NC		LOCKED	
49	N2165	max	NC		NC		NC		NC		NC		LOCKED	
50		min	NC		NC		NC		NC		NC		LOCKED	
51	N732	max	NC		NC		NC		NC		NC		LOCKED	
52		min	NC		NC		NC		NC		NC		LOCKED	
53	Totals:	max	8.247	17	7.456	28	7.561	2						
54		min	-8.247	11	2.06	70	-7.561	20						

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

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
1	M7	.625 Dia.	.492	.146	28	.159	0	28	15.575	15.739	.164	.164	1...	H1-1b	
2	M81	.625 Dia.	.481	.146	31	.154	0	31	15.575	15.739	.164	.164	1...	H1-1b	
3	M155	.625 Dia.	.474	.146	36	.152	0	36	15.575	15.739	.164	.164	1...	H1-1b	
4	M9	.625 Dia.	.461	.146	30	.153	0	29	15.575	15.739	.164	.164	1...	H1-1b	
5	M157	.625 Dia.	.456	.146	28	.146	0	26	15.575	15.739	.164	.164	1...	H1-1b	
6	M83	.625 Dia.	.437	.146	33	.146	0	31	15.575	15.739	.164	.164	1...	H1-1b	
7	M231	PIPE 2.5	.436	3.5	11	.130	3.5	9	15.797	50.715	3.596	3.596	2...	H1-1b	
8	M1	3/8"x8"	.433	.5	3	.135	.5	y	2	47.894	97.2	.759	16.2	1...	H1-1b
9	M82	.625 Dia.	.423	.146	11	.114	0	35	15.575	15.739	.164	.164	1...	H1-1b	
10	M235	PIPE 2.5	.407	8.5	5	.140	6.75	13	15.797	50.715	3.596	3.596	1...	H1-1b	
11	M75	3/8"x8"	.396	.5	6	.129	.5	y	6	47.894	97.2	.759	16.2	1...	H1-1b
12	M227	PIPE 2.5	.392	3.5	7	.167	6.75	5	15.797	50.715	3.596	3.596	1...	H1-1b	
13	M219	PIPE 2.5	.375	4.833	5	.041	4.833	17	30.038	50.715	3.596	3.596	2...	H1-1b	
14	M145	PIPE 2.5	.375	4.833	11	.041	4.833	23	30.038	50.715	3.596	3.596	2...	H1-1b	
15	M71	PIPE 2.5	.375	4.833	8	.041	4.833	20	30.038	50.715	3.596	3.596	2...	H1-1b	
16	M6	.625 Dia.	.370	.146	13	.116	0	37	15.575	15.739	.164	.164	1...	H1-1b	
17	M154	.625 Dia.	.368	.146	9	.119	0	34	15.575	15.739	.164	.164	1...	H1-1b	
18	M90	HSS4x4x3	.360	.036	4	.099	3.026	y	31	101.673	106.812	12.662	12.662	1...	H1-1b
19	M80	.625 Dia.	.358	.146	5	.113	0	30	15.575	15.739	.164	.164	1...	H1-1b	
20	M67	PIPE 2.0	.353	4.75	27	.040	1.833	28	14.916	32.13	1.872	1.872	1...	H1-1b	
21	M141	PIPE 2.0	.353	4.75	30	.039	1.833	31	14.916	32.13	1.872	1.872	2...	H1-1b	
22	M215	PIPE 2.0	.348	4.75	35	.039	1.833	36	14.916	32.13	1.872	1.872	2...	H1-1b	
23	M89	PIPE 3.0	.347	6.25	6	.238	6.5	11	30.165	65.205	5.749	5.749	1...	H1-1b	
24	M15	PIPE 3.0	.342	6.25	2	.235	6.5	8	30.165	65.205	5.749	5.749	1...	H1-1b	
25	M164	HSS4x4x3	.336	.036	12	.101	3.026	y	27	101.673	106.812	12.662	12.662	1...	H1-1b
26	M149	3/8"x8"	.323	.5	11	.119	.5	y	10	47.894	97.2	.759	16.2	1...	H1-1b
27	M163	PIPE 3.0	.319	5.75	10	.221	6.5	4	30.165	65.205	5.749	5.749	1...	H1-1b	
28	M8	.625 Dia.	.311	.146	8	.111	0	34	15.575	15.739	.164	.164	1...	H1-1b	
29	M171	.625 Dia.	.301	.146	11	.080	0	36	15.575	15.739	.164	.164	1...	H1-1b	
30	M23	.625 Dia.	.298	.146	3	.084	0	28	15.575	15.739	.164	.164	1...	H1-1b	
31	M156	.625 Dia.	.283	.146	37	.112	0	35	15.575	15.739	.164	.164	1...	H1-1b	



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

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn v...	phi*Mn z...	Cb	Eqn	
32	M95	.625 Dia.	.277	.146	11	.066	0	11	15.575	15.739	.164	.164	1...	H1-1b	
33	M97	.625 Dia.	.260	.146	7	.082	0	31	15.575	15.739	.164	.164	1...	H1-1b	
34	M161	PIPE 2.0	.256	4.75	34	.030	1.833	33	14.916	32.13	1.872	1.872	2...	H1-1b	
35	M172	.625 Dia.	.253	.146	5	.076	0	27	15.575	15.739	.164	.164	1...	H1-1b	
36	M13	PIPE 2.0	.251	4.75	37	.030	1.833	36	14.916	32.13	1.872	1.872	1...	H1-1b	
37	M87	PIPE 2.0	.250	4.75	30	.029	1.833	28	14.916	32.13	1.872	1.872	2...	H1-1b	
38	M94	.625 Dia.	.235	.146	5	.048	0	11	15.575	15.739	.164	.164	1...	H1-1b	
39	M10	3/8"x8"	.230	.5	4	.138	.49	y	2	47.894	97.2	.759	16.2	1...	H1-1b
40	M20	.625 Dia.	.226	.146	13	.048	0	12	15.575	15.739	.164	.164	1...	H1-1b	
41	M24	.625 Dia.	.209	.146	31	.079	0	29	15.575	15.739	.164	.164	1...	H1-1b	
42	M168	.625 Dia.	.208	.146	9	.046	0	33	15.575	15.739	.164	.164	1...	H1-1b	
43	M98	.625 Dia.	.201	.146	26	.076	0	30	15.575	15.739	.164	.164	1...	H1-1b	
44	M21	.625 Dia.	.188	.146	9	.044	.146	10	15.575	15.739	.164	.164	1...	H1-1b	
45	M16	HSS4x4x3	.163	2.99	26	.104	3.026	y	29	101.673	106.812	12.662	12.662	1...	H1-1b
46	M158	3/8"x8"	.155	.5	13	.121	.5	y	10	47.894	97.2	.759	16.2	1...	H1-1b
47	M84	3/8"x8"	.149	.5	7	.131	.49	y	6	47.894	97.2	.759	16.2	1...	H1-1b
48	M258	L2.5x2.5x3	.142	2.316	25	.008	4.632	z	20	14.418	29.192	.873	1.692	1...	H2-1
49	M169	.625 Dia.	.136	.146	13	.043	0	35	15.575	15.739	.164	.164	1...	H1-1b	
50	M252	L2.5x2.5x3	.136	2.316	15	.008	4.632	y	20	14.418	29.192	.873	1.692	1...	H2-1
51	M254	L2.5x2.5x3	.133	2.364	18	.007	0	z	17	14.418	29.192	.873	1.692	1...	H2-1
52	M256	L2.5x2.5x3	.130	2.364	22	.007	4.632	y	23	14.418	29.192	.873	1.692	1...	H2-1
53	M250	L2.5x2.5x3	.125	2.413	16	.006	4.632	z	24	14.418	29.192	.873	1.692	1...	H2-1
54	M248	L2.5x2.5x3	.117	2.413	24	.006	4.632	y	22	14.418	29.192	.873	1.692	1...	H2-1
55	M223	LL2.5x2.5x3x3	.096	4.243	26	.009	0	z	5	44.024	58.32	3.954	2.55	1	H1-1b*
56	M224	LL2.5x2.5x3x3	.096	4.243	30	.019	0	z	10	44.024	58.32	3.954	2.55	1...	H1-1b*
57	M225	LL2.5x2.5x3x3	.096	4.243	34	.018	0	z	12	44.024	58.32	3.954	2.55	1...	H1-1b*
58	M12	PIPE 3.0	.094	.75	2	.173	.75	3	64.424	65.205	5.749	5.749	1...	H1-1b	
59	M86	PIPE 3.0	.086	.75	6	.162	.75	6	64.424	65.205	5.749	5.749	1...	H1-1b	
60	M160	PIPE 3.0	.086	.75	10	.141	.75	11	64.424	65.205	5.749	5.749	1...	H1-1b	
61	M240	PIPE 2.5	.055	1.677	4	.230	0	3	45.45	50.715	3.596	3.596	1...	H3-6	
62	M243	PIPE 2.5	.047	2.02	7	.218	3.66	7	45.45	50.715	3.596	3.596	1...	H3-6	
63	M246	PIPE 2.5	.014	1.83	2	.188	3.66	11	45.45	50.715	3.596	3.596	1...	H1-1b	

**Envelope Plate/Shell Principal Stresses**

Plate	Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC		
1	P786	max	T	28.262	10	15.056	10	6.603	10	2.275	18	24.493	10
2		min		-13.703	16	-25.991	16	.039	29	.528	19	.107	41
3		max	B	25.714	16	13.709	16	6.484	10	2.288	24	24.308	10
4		min		-15.074	10	-28.042	10	.05	41	-.571	13	.089	41
5	P954	max	T	27.81	10	14.892	10	6.459	10	2.356	30	24.104	10
6		min		-12.914	16	-23.927	16	.115	13	-.783	54	.272	13
7		max	B	23.771	16	12.919	16	6.354	10	.887	24	23.92	10
8		min		-14.885	10	-27.592	10	.047	13	-.677	14	.237	13
9	P943	max	T	26.709	4	14.023	4	6.343	4	2.249	24	23.14	4
10		min		-11.71	22	-22.09	22	.268	46	.682	25	.733	46
11		max	B	21.864	22	11.714	22	6.143	4	2.354	58	22.879	4
12		min		-14.112	4	-26.398	4	.2	46	-.779	71	.673	46
13	P1351	max	T	26.596	6	14.206	6	6.195	6	2.312	15	23.051	6
14		min		-12.798	24	-24.339	24	.043	74	-.776	3	.132	49
15		max	B	24.049	24	12.843	24	6.124	6	1.248	21	22.886	6
16		min		-14.156	6	-26.403	6	.016	47	-.728	22	.077	47
17	P736	max	T	26.1	10	9.95	10	8.075	10	2.285	18	22.815	10
18		min		-8.647	16	-23.914	16	.059	64	.6	19	.293	41
19		max	B	23.563	16	8.836	16	7.88	10	2.356	55	22.556	10
20		min		-10.079	10	-25.838	10	.067	64	-.785	1	.208	41

**Envelope Plate/Shell Principal Stresses (Continued)**

Plate	Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC		
5664	min	.005	72	-1.043	24	.011	15	-.751	47	.02	15		
5665	P5	max	T	.779	17	0	67	.712	11	2.356	24	1.238	11
5666	min	-.002	2	-.815	11	.043	65	-.772	12	.083	64	.083	64
5667	max	.776	11	.001	2	.678	11	2.329	17	1.179	11	1.179	11
5668	min	0	66	-.704	17	.043	65	-.777	4	.086	65	.086	65
5669	P2	max	T	.852	17	0	2	.631	11	2.125	25	1.22	11
5670	min	.004	66	-1.174	11	.019	66	.547	14	.037	66	.037	66
5671	max	1.212	11	0	66	.655	11	2.144	7	1.264	11	1.264	11
5672	min	.012	2	-.928	17	.007	66	.538	20	.015	66	.015	66
5673	P25	max	T	.846	17	-.006	2	.626	11	1.043	7	1.21	11
5674	min	.003	66	-1.163	11	.018	66	-.553	20	.035	66	.035	66
5675	max	1.197	10	-.001	66	.644	10	1.037	25	1.245	10	1.245	10
5676	min	.008	7	-.907	17	.009	66	-.532	15	.018	66	.018	66
5677	P480	max	T	.77	6	-.009	21	.651	6	2.299	15	1.134	6
5678	min	-.002	14	-.565	5	.048	2	-.422	2	.094	2	.094	2
5679	max	.462	5	.007	2	.59	6	2.332	10	1.033	6	1.033	6
5680	min	.002	21	-.74	6	.063	2	-.014	21	.119	72	.119	72
5681	P457	max	T	.736	11	-.022	20	.647	11	2.257	19	1.124	11
5682	min	.024	3	-.558	11	.05	3	-.771	6	.09	3	.09	3
5683	max	.488	12	.002	3	.58	11	2.348	2	1.01	11	1.01	11
5684	min	.025	20	-.682	11	.071	66	-.688	25	.124	66	.124	66
5685	P120	max	T	.794	6	.005	3	.639	6	1.938	15	1.118	6
5686	min	.063	15	-.57	24	.03	15	-.734	10	.062	15	.062	15
5687	max	.535	6	-.046	15	.639	6	.9	25	1.112	6	1.112	6
5688	min	-.009	15	-.743	6	.019	15	-.611	17	.042	15	.042	15
5689	P73	max	T	.775	17	-.005	66	.59	10	2.125	66	1.099	10
5690	min	.003	66	-.996	11	.004	66	-.742	65	.007	66	.007	66
5691	max	1.043	10	-.019	64	.607	10	1.058	24	1.138	10	1.138	10
5692	min	.003	66	-.865	17	.015	65	-.496	15	.028	65	.028	65
5693	P97	max	T	.694	10	-.002	66	.556	10	2.136	23	.973	10
5694	min	.059	66	-.468	16	.03	66	.613	16	.06	66	.06	66
5695	max	.448	10	-.087	66	.549	10	2.322	18	.956	10	.956	10
5696	min	.001	66	-.65	10	.044	66	-.782	6	.088	66	.088	66
5697	P24	max	T	.477	24	-.005	10	.322	6	2.355	13	.632	6
5698	min	0	72	-.62	6	.009	72	-.785	14	.017	72	.017	72
5699	max	.639	6	0	72	.333	6	2.356	35	.653	6	.653	6
5700	min	.009	10	-.508	24	.005	72	-.785	46	.009	72	.009	72
5701	P576	max	T	.367	24	-.002	2	.313	6	2.356	52	.615	6
5702	min	.001	21	-.604	6	.007	21	-.785	56	.014	21	.014	21
5703	max	.625	6	0	9	.326	6	2.343	21	.639	6	.639	6
5704	min	-.001	2	-.374	24	.002	2	-.784	22	.004	21	.004	21
5705	P553	max	T	.348	17	-.003	3	.305	11	2.345	17	.6	11
5706	min	.002	66	-.589	11	.029	66	.779	23	.057	66	.057	66
5707	max	.619	11	-.002	20	.323	11	2.356	54	.633	11	.633	11
5708	min	.002	3	-.365	17	.031	3	-.785	65	.061	66	.061	66
5709	P1	max	T	.387	17	0	2	.277	11	2.354	8	.545	11
5710	min	.001	66	-.535	11	.009	66	-.785	21	.017	66	.017	66
5711	max	.55	10	0	66	.286	10	2.35	14	.562	10	.562	10
5712	min	.003	7	-.415	17	.004	66	-.782	15	.009	66	.009	66



# EXHIBIT 11

# Transcom Engineering, Inc.

Wireless Network Design and Deployment

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## Radio Frequency Emissions Analysis Report

**T-MOBILE** Existing Facility

**Site ID: CTNL225A**

Towerco Groton Monopole  
132 Welles Rd  
Mystic, CT 06355

**June 11, 2019**

**Transcom Engineering Project Number: 737001-0091**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>10.81 %</b>

# Transcom Engineering, Inc.

Wireless Network Design and Deployment

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June 11, 2019

T-MOBILE

Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, CT 6009

## Emissions Analysis for Site: **CTNL225A – Towerco Groton Monopole**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **132 Welles Rd, Mystic, CT**, 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz & 700 MHz 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) and 2100 MHz (AWS) 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.

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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.

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Wireless Network Design and Deployment

## CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **132 Welles Rd, Mystic, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	1900 MHz (PCS)	1	40
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

*Table 1: Channel Data Table*

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The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR21 B2A/B4P	108
A	2	Ericsson AIR21 B4A/B2P	108
A	3	RFS APXVAARR24_43-U-NA20	108
B	1	Ericsson AIR21 B2A/B4P	108
B	2	Ericsson AIR21 B4A/B2P	108
B	3	RFS APXVAARR24_43-U-NA20	108
C	1	Ericsson AIR21 B2A/B4P	108
C	2	Ericsson AIR21 B4A/B2P	108
C	3	RFS APXVAARR24_43-U-NA20	108

*Table 2: Antenna Data*

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

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## RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.54
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.61
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.00
Sector A Composite MPE%							<b>4.15</b>
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.54
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.61
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.00
Sector B Composite MPE%							<b>4.15</b>
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.54
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.61
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	2.00
Sector C Composite MPE%							<b>4.15</b>

*Table 3: T-MOBILE Emissions Levels*

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

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	4.15 %
AT&T	2.39 %
Sprint	4.27 %
<b>Site Total MPE %:</b>	<b>10.81 %</b>

*Table 4: All Carrier MPE Contributions*

T-MOBILE Sector A Total:	4.15 %
T-MOBILE Sector B Total:	4.15 %
T-MOBILE Sector C Total:	4.15 %
Site Total:	10.81 %

*Table 5: Site MPE Summary*



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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# 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 1900 MHz (PCS) UMTS	1	1,556.18	108	5.38	1900 MHz (PCS)	1000	0.54%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	108	16.13	2100 MHz (AWS)	1000	1.61%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	108	5.45	600 MHz	400	1.36%
T-Mobile 700 MHz LTE	2	432.54	108	2.99	700 MHz	467	0.64%
						<b>Total:</b>	<b>4.15%</b>

*Table 6: T-MOBILE Maximum Sector MPE Power Values*

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## 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:	4.15 %
Sector B:	4.15 %
Sector C:	4.15 %
T-MOBILE Maximum Total (per sector):	4.15 %
Site Total:	10.81 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **10.81 %** 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.



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