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@sbasite.com

July 15, 2021

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

RE: Notice of Exempt Modification
419 Ekonk Hill Rd., Sterling, CT
Latitude: 41.662222
Longitude: -71.846944
Sprint, now a part of T-Mobile USA #: CTHA854A_Sprint Keep

Dear Ms. Bachman:

Sprint, now a part of T-Mobile USA, hereinafter referred to as "Sprint/T-Mobile" currently maintains six (6) antennas at the 170-foot level of the existing 200-foot Guyed Tower at 419 Ekonk Hill Rd., Sterling, CT. The 200-foot tower is owned by SBA Structures, LLC. The property is also owned by SBA Structures, LLC. Sprint/T-Mobile now intends to remove six (6) existing antennas and replace with six (6) new L700/L600/1900/2100 MHz antennas and install three (3) new 2500MHz antennas for a total of (9) antennas.

The new antennas support 5G services and would be installed at the 170-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- (3) Commscope NNVV-65B-R4 (remove) – (3) RFS APXVAALL24_43-U-NA20 600/700/1900MHz antennas (replace)
- (3) RFS APXVTM14-C-I20 (remove) – (3) RFS APX16DWV-16DWVS-E-A20 2100MHz antennas (replace)
- (3) ALU TD-RRH8x20-25 RRUs (remove) – (3) Ericsson 4449 B71 + B85 RRUs (replace)
- (3) ALU 800 MHz RRUs (remove) – (3) Ericsson 4424 B25 RRUs (replace)
- (3) ALU 1900 MHz RRUs (remove) – (3) Ericsson 4415 B66A RRUs (replace)
- (3) 1-1/4" Fiber (remove) – (3) 1.99" Hybrid (replace)

Install New:

- (3) Ericsson AIR6449 B41 2500MHz antennas

Existing Equipment to Remain:

- (3) Sector Frames SitePro VFA12-HD

Entitlements:

- (3) ALU 800 MHz RRUs
- (1) 1-1/4" Fiber

GROUND

Remove and Replace:

- Replace existing GPS antenna with new GPS antenna

Install New:

- (1) Purcell RAC24 Cabinet mounted to existing canopy post
- (1) Ericsson B160 Battery cabinet
- (1) Slackbox
- Breakers within existing PPC
- (1) Ericsson 6160 Equipment cabinet
- (5) 2" RGS conduit

Remain:

- (1) 20' x 8' concrete pad
- Ice Canopy
- PPC Cabinet
- Telco Cabinet
- Cable bridge

Remove:

- Sprint steel frame mounted to existing concrete pad
- Battery backup cabinet
- Sprint cabinet
- Sprint Fiber distribution box mounted existing H-Frame

The Telecommunications tower located at 421 Ekonk Hill Rd., Sterling CT was originally constructed January 1, 1998. Despite our efforts we were unsuccessful in obtaining the original zoning approval. Please note that the Town of Sterling was also unsuccessful with locating these zoning documents. We were however, able to obtain a fairly recent Notice of Exempt modifications approval from the CSC EM-Sprint-136-180621 dated July 9, 2018 for modifications to equipment on the tower. 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 Town of Sterling's First Selectman, Lincoln A. Cooper and Zoning Enforcement Officer, Melissa Gil. (Separate notice is not being sent to tower owner, or property owner, as both belong 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@sbasite.com

Attachments

cc: Lincoln A. Cooper, First Selectman / with attachments
Town of Sterling, 1183 Plainfield Pike, P.O. Box 157, Oneco, CT 06373-0157
Melissa Gil, Zoning Enforcement Officer / with attachments
Town of Sterling, 1183 Plainfield Pike, P.O. Box 157, Oneco, CT 06373-0157

EXHIBIT LIST

Exhibit 1	Check Copy	To be invoiced at a later date per Covid guidelines
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	CSC EM-Sprint-136-180621 (7/9/18)
Exhibit 6	Construction Drawings	Chappell Engineering 5/4/21
Exhibit 7	Structural Analysis	TES 6/29/21
Exhibit	Mount Analysis	TES 6/1/21
Exhibit 8	EME Report	Centerline 5/17/21

EXHIBIT 1

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

EXHIBIT 2

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.

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EXHIBIT 3

tyler clt division

RESIDENTIAL PROPERTY RECORD CARD 2016

TOWN OF STERLING

Situs : 421 EKONK HILL RD	Map ID: 10017200	Class: Land w/ OBYs	Card: 1 of 1	Printed: March 9, 2016

CURRENT OWNER

SBA STRUCTURES INC

ATTN TAX DEPT - CT20001-A
8051 CONGRESS AVE
BOCA RATON FL 33487 1307

GENERAL INFORMATION

Living Units	0
Neighborhood	200
Alternate Id	03633-034-009A
Vol / Pg	73/1100
District	
Zoning	
Class	500

Property Notes

TOWER IS DECLARED AS PP
POWERSCOURT DRIVE
"SBA SITE ID# 20001-A; FCC# 1060082;
LEASING: 800-487-SITE EMERGENCY: 800-

Land Information

Type		Size	Influence Factors	Influence %	Value
Primary	AC	1.4000			35,200

Total Acres: 1.4
Spot: Location:

Assessment Information

	Assessed	Appraised	Cost	Income	
Land	24,640	35,200	35,200	0	35,200
Building	0	0	0	0	0
Total	24,640	35,200	35,200	0	35,200

Value Flag COST APPROACH
Gross Building:

Manual Override Reason
Base Date of Value 10-01-2012
Effective Date of Value 10-01-2016

Entrance Information

Date	ID	Entry Code	Source
02/28/07	AS	Exterior	Other

Permit Information

Date Issued	Number	Price	Purpose	% Complet
01/30/13	13-09	750	CFX	Disconnect Existing Bts (Base Tra

Sales/Ownership History

Transfer Date	Price	Type	Validity	Deed Reference	Deed Type	Grantee

tyler clt division

RESIDENTIAL PROPERTY RECORD CARD 2016

TOWN OF STERLING

Situs : 421 EKONK HILL RD	Parcel Id: 10017200	Class: Land w/ OBYs	Card: 1 of 1	Printed: March 9, 2016

Dwelling Information

Style		Year Built	
Story height		Eff Year Built	
Attic		Year Remodeled	
Exterior Walls		Amenities	
Masonry Trim	x		
Color		In-law Apt	No

Basement

Basement		# Car Bsmt Gar	
FBLA Size	x	FBLA Type	
Rec Rm Size	x	Rec Rm Type	

Heating & Cooling / Fireplaces

Heat Type		Stacks	
Fuel Type		Openings	
System Type		Pre-Fab	

Room Detail

Bedrooms		Full Baths	
Family Rooms		Half Baths	
Kitchens		Extra Fixtures	
Total Rooms			
Kitchen Type		Bath Type	
Kitchen Remod		Bath Remod	

Adjustments

Int vs Ext		Unfinished Area	
Cathedral Ceiling	x	Unheated Area	

Grade & Depreciation

Grade	C	Market Adj	
Condition		Functional	
CDU	AVERAGE	Economic	
Cost & Design	0	% Good Ovr	
% Complete			

Dwelling Computations

Base Price		% Good	
Plumbing		% Good Override	
Basement		Functional	
Heating		Economic	
Attic		% Complete	
Other Features	0	C&D Factor	
		Adj Factor	
Subtotal		Additions	
Ground Floor Area			
Total Living Area		Dwelling Value	

Building Notes

Outbuilding Data

Type	Size 1	Size 2	Area	Qty	Yr Blt	Grade	Condition	Value
Frame Shed		x		1	1998	C	A	
Frame Shed		x		1	1998	C	A	

Condominium / Mobile Home Information

Complex Name			
Condo Model			
Unit Number			
Unit Level		Unit Location	
Unit Parking		Unit View	
Model (MH)		Model Make (MH)	

Addition Details

Line #	Low	1st	2nd	3rd	Value

EXHIBIT 4

Google Maps

Imagery ©2021 Maxar Technologies, Map data ©2021 50 ft

Home
Set location

Work
Set location

Light traffic in this area
Typical conditions

Search this area 79°

Groceries Restaurants Takeout Hotels More

EXHIBIT 5

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

July 9, 2018

Kri Pelletier
Property Specialist
SBA Communications Corporation
134 Flanders Rd., Suite 125
Westborough, MA 01581

RE: **EM-SPRINT-136-180621** - Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 421 Ekonk Hill Road (Route 49), Sterling, Connecticut.

Dear Ms. Pelletier:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. Prior to Sprint's antenna installation, the existing mount assembly shall be replaced in accordance with the Antenna Mount Structural Analysis prepared by Geostructural, LLC dated May 4, 2018 and stamped and signed by Gregory Durgin.;

2. Within 45 days following completion of the equipment installation, Sprint shall provide documentation certified by a Professional Engineer that its installation complied with the recommendations of the Antenna Mount Structural Analysis;

3. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;

4. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

5. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

6. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by Sprint shall be removed within 60 days of the date the antenna ceased to function;

7. The validity of this action shall expire one year from the date of this letter; and

8. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 19, 2018. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission

pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman/cw

Melanie A. Bachman
Executive Director

MAB/FOC/jmb

c: The Honorable Russell M. Gray, First Selectman, Town of Sterling
Demian A. Sorrentino, Zoning Enforcement Officer, Town of Sterling

EXHIBIT 6

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

CTHA854A

421 EKONK HILL ROAD
MOOSUP, CT 06354
WINDHAM COUNTY

SITE NO.: CTHA854A
CARRIER SITE ID: CT33XC009

RF DESIGN GUIDELINE: 67D5A998C 6160 (GSM ONLY)

SCOPE OF WORK

REMOVE:
- 6 ANTENNAS
- 12 RRUs
- 2 SPRINT CABINETS
- 1 FIBER DISTRIBUTION BOX
- ALL SPRINT CABLES

INSTALL:
- 9 ANTENNAS
- 9 RRUs
- 1 B160 BATTERY CABINET
- 1 6160 CABINET
- 1 SLACKBOX
- 1 PURCELL CABINET
- 3 HYBRID CABLES

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.
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
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.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

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

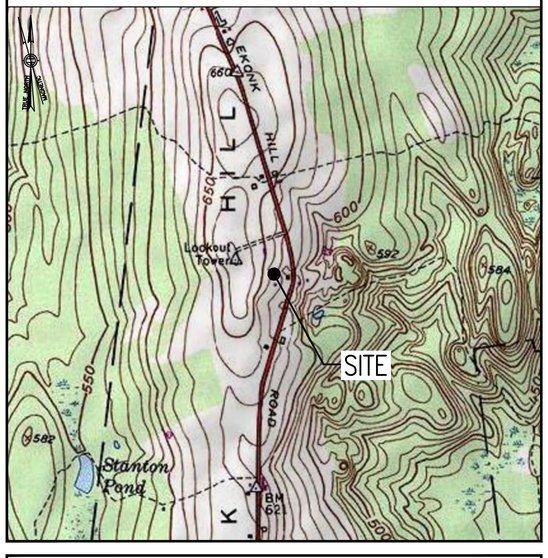
GENERAL NOTES

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.
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.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOINT 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.
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.
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.
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.
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.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
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.
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.
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.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
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.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
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.

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

VICINITY MAP

SCALE: 1" = 1000'-0"



DIRECTIONS

TURN LEFT ONTO S WASHINGTON ST. TURN RIGHT ONTO MA-123 E. TURN LEFT TO MERGE ONTO I-495 NORTH TOWARD MANSFIELD/MARLBORO. MERGE ONTO I-495 NORTH. TAKE EXIT 13B TO MERGE ONTO I-95 SOUTH TOWARD PROVIDENCE RI. TAKE EXIT 6 FOR I-295 SOUTH. FOLLOW SIGNS INTO RHODE ISLAND. TAKE EXIT. 9C FOR US-67 WEST. SLIGHT LEFT ONTO DANIELSON PIKE. SLIGHT LEFT ONTO ROACKLAND ROAD. MERGE ONTO RI-102 SOUTH/RI-14 WEST. TURN RIGHT ONTO RI-14 WEST. FOLLOW SIGNS INTO CT. RI-14 WEST TURNS INTO CT-14 WEST. TURN LEFT ONTO CT-14A WEST. TURN LEFT ONTO CT-49 SOUTH. SITE WILL BE ON THE RIGHT.

SHEET INDEX

SHT. NO.	DESCRIPTION	VER.
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
A-4	ANTENNA & FEEDLINE CHARTS	1
E-1	ELECTRIC & GROUNDING DETAILS	1

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.

PROJECT SUMMARY

SITE NUMBER:	CTHA854A
SBA SITE NUMBER:	CT20001-A
SBA SITE NAME:	STRELING CT TOWER
SITE ADDRESS:	421 EKONK HILL ROAD MOOSUP, CT 06354
PROPERTY OWNER:	SBA STRUCTURES INC. 8501 CONGRESS AVENUE BOCA RATON, FL 33487
TOWER OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	WINDHAM
ZONING DISTRICT:	RESIDENTIAL
STRUCTURE TYPE:	GUYED TOWER
STRUCTURE HEIGHT:	200'
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: 41.662309° N41°39'44.31" LONGITUDE: -71.847112° W71°50'49.60"

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).

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

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

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

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED
PROFESSIONAL CIVIL ENGINEER
5/4/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/23/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTHA854A

SITE ADDRESS:
421 EKONK HILL ROAD
MOOSUP, CT 06354

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.231

GENERAL NOTES:

1. 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

2. 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.

3. 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.

4. 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.

5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.

9. 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.

10. 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.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AND RETURN DISTURBED AREAS TO ORIGINAL CONDITIONS.

13. 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.

14. 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.

15. CONSTRUCTION SHALL COMPLY WITH ALL T–MOBILE STANDARDS AND SPECIFICATIONS.

16. 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.

17. 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.

18. 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:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. 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.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.

6. 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.

7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

8. 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.

9. 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.

10. 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.

11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T–MOBILE SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

1. 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.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS

3. 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, UNO.

4. 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 .....1½ IN.

5. A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.

7. 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.

8. 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.

9. 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:

1. 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".

2. 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.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (⅞"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.

4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ⅝" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.

5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL

6. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. 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.

4. 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.

5. 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:

1. HAND OPERATED DOUBLE DRUN, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T–MOBILE ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.

2. COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.

3. 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:

1. WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

2. SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.

3. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

4. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.

5. 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.

6. 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.

7. 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).

8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.

9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

10. 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.

11. 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.

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.

13. 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.

14. 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).

15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

17. 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.

18. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

20. 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.

21. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

22. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.

23. CABINETS, BOXES AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

24. CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

25. 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.

26. 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.

27. 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.

28. 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.

29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

30. 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.

31. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

32. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

T-MOBILE
NORTHEAST LLC

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

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

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201 BOSTON POST ROAD WEST, SUITE 101
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(508) 481–7400
www.chappellengineering.com

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25937
LICENSED
PROFESSIONAL CIVIL ENGINEER
5/4/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/23/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTHA854A

SITE ADDRESS:
421 EKONK HILL ROAD
MOOSUP, CT 06354

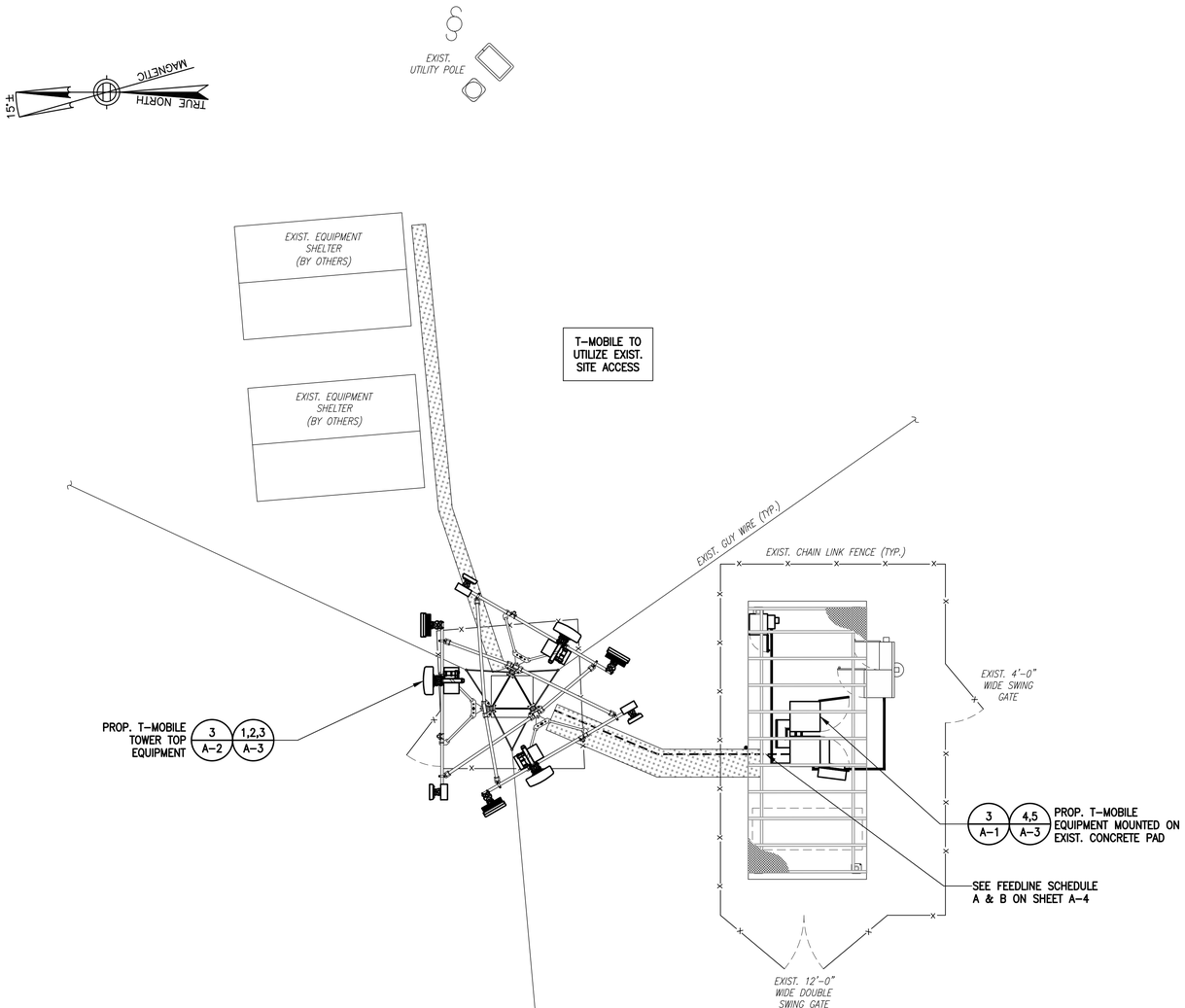
SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

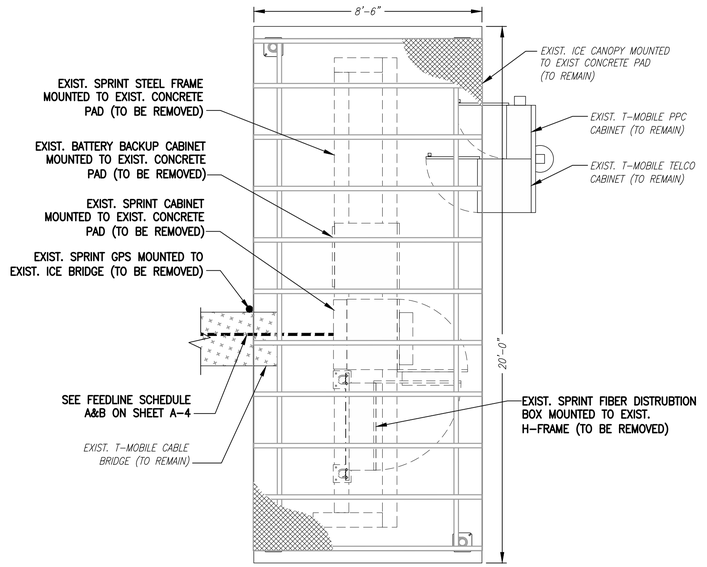
1815.231

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.

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).



COMPOUND PLAN 1 A-1
SCALE: 1" = 5'-0"
0 5'-0" 10'-0 15'-0"



EXISTING EQUIPMENT PLAN 2 A-1
SCALE: 3/8" = 1'-0"
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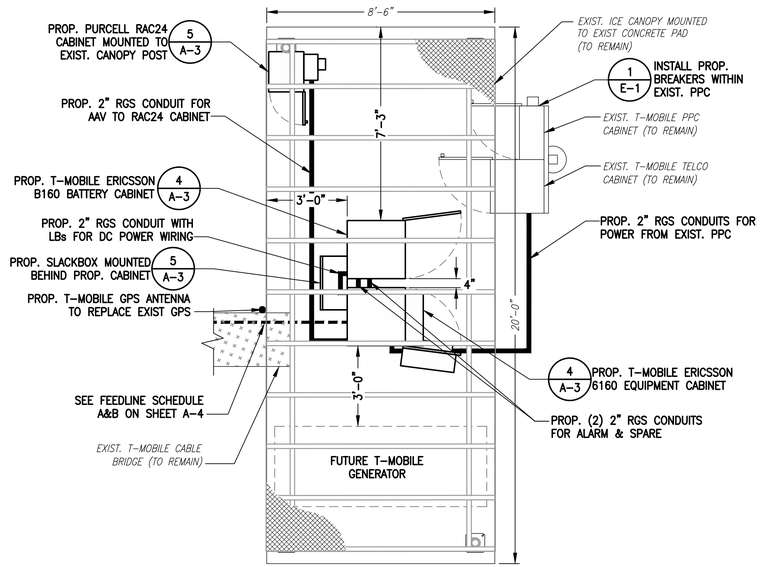

PROPOSED EQUIPMENT PLAN 3 A-1
SCALE: 3/8" = 1'-0"
0 2'-8" 5'-4" 8'-0"

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

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

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www.chappellengineering.com

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25937
LICENSED PROFESSIONAL CIVIL ENGINEER
5/4/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/23/21	ISSUED FOR REVIEW	JRV

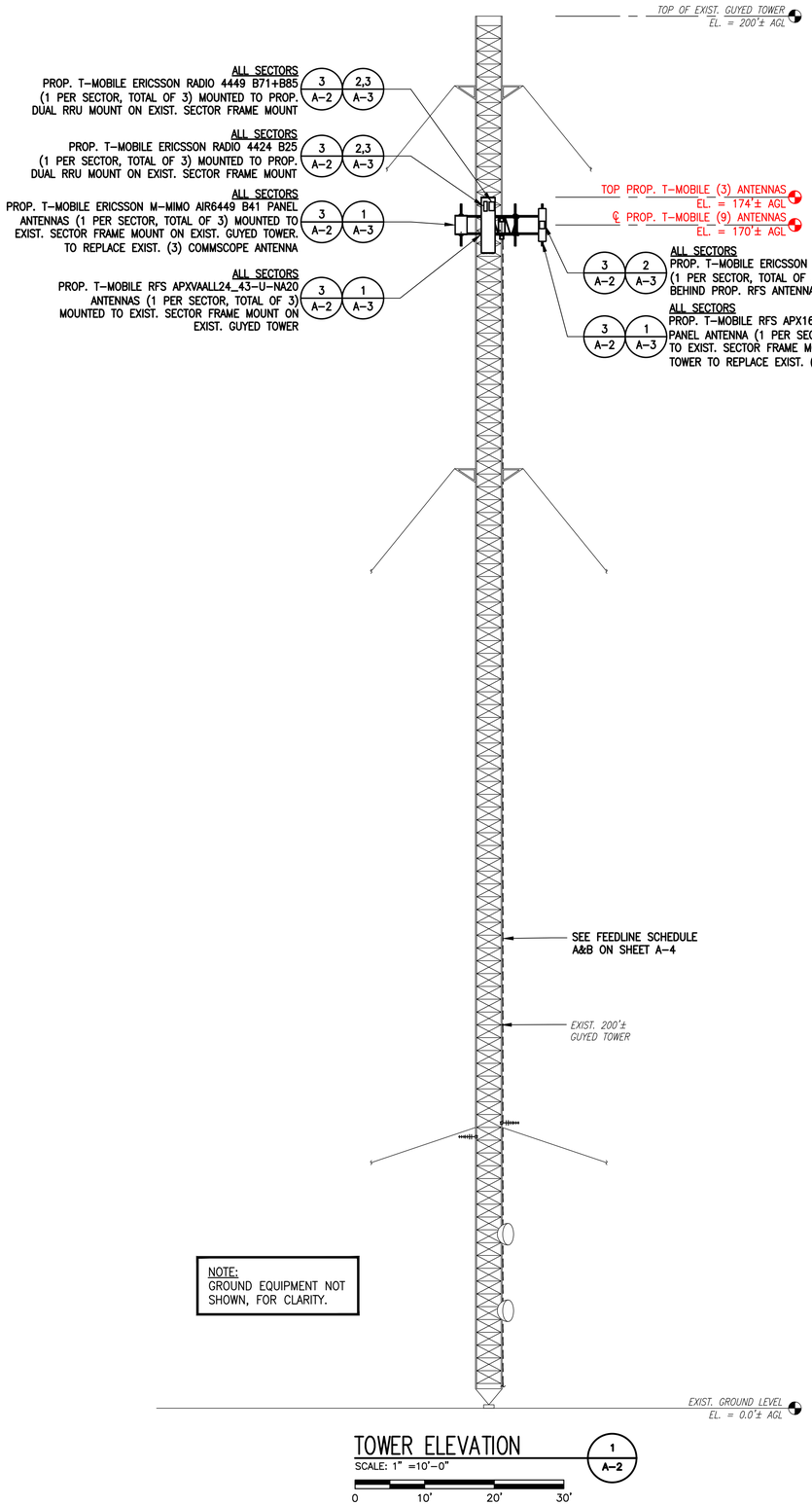
SITE NUMBER:
CTHA854A

SITE ADDRESS:
421 EKONK HILL ROAD
MOOSUP, CT 06354

SHEET TITLE
COMPOUND & EQUIPMENT PLANS

SHEET NUMBER
A-1

1815.231



NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

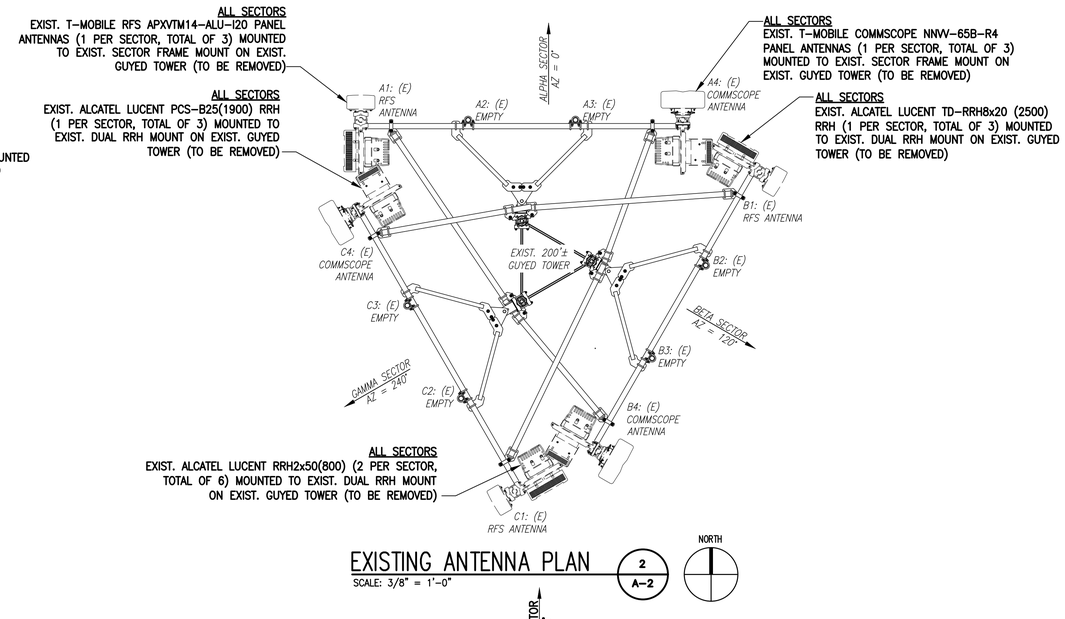
TOWER ELEVATION 1 A-2
SCALE: 1" =10'-0"

0 10' 20' 30'

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

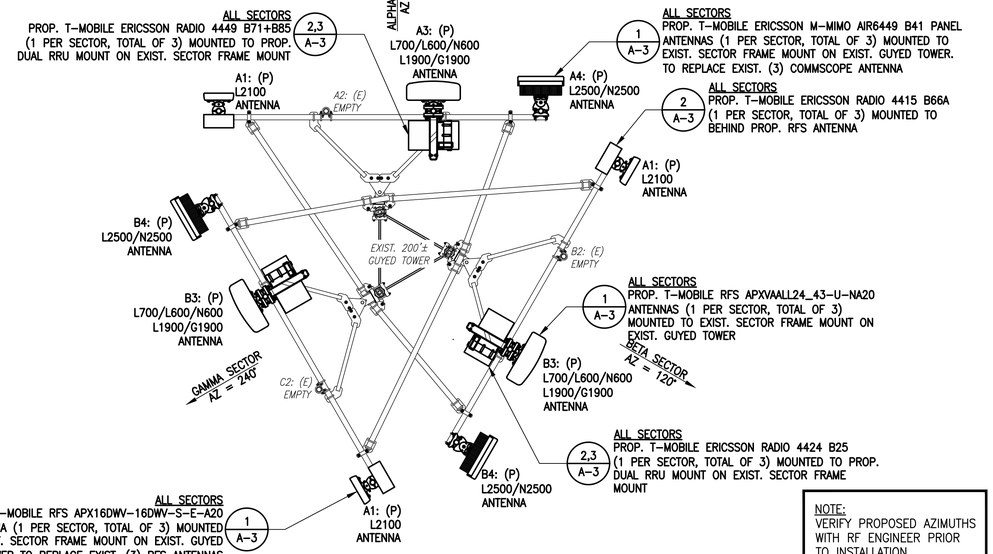
RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).



EXISTING ANTENNA PLAN 2 A-2
SCALE: 3/8" = 1'-0"

NORTH



PROPOSED ANTENNA PLAN 3 A-2
SCALE: 3/8" = 1'-0"

NORTH

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

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

(E) – EXISTING
(P) – INSTALL
(F) – FUTURE

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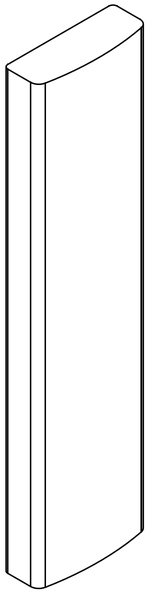
SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLANS

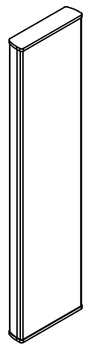
SHEET NUMBER
A-2

1815.231



RFS APXVAALL24_43-U-NA20 ANTENNA

DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3



RFS APX16DWV-16DWV-S-E-A20 ANTENNA

DIMENSIONS: 55.9"H x 13.0"W x 3.15"D
WEIGHT: 40.7 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ERICSSON M-MIMO AIR6449 B41 ANTENNA

DIMENSIONS: 33.1"H x 20.5"W x 8.3"D
WEIGHT: 103.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS
SCALE: N.T.S.
1 / A-3

ERICSSON RADIO 4415 B66A

DIMENSIONS: 16.5"H x 13.4"W x 5.9"D
WEIGHT: 46.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

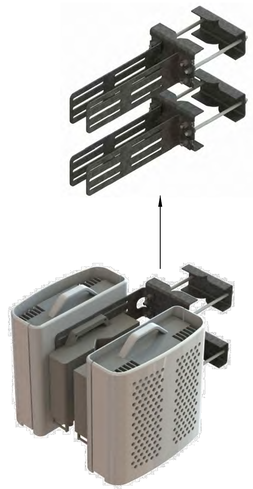
ERICSSON RADIO 4449 B71+B85

DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ERICSSON RADIO 4424 B25

DIMENSIONS: 16.5"H x 13.5"W x 9.6"D
WEIGHT: 88.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

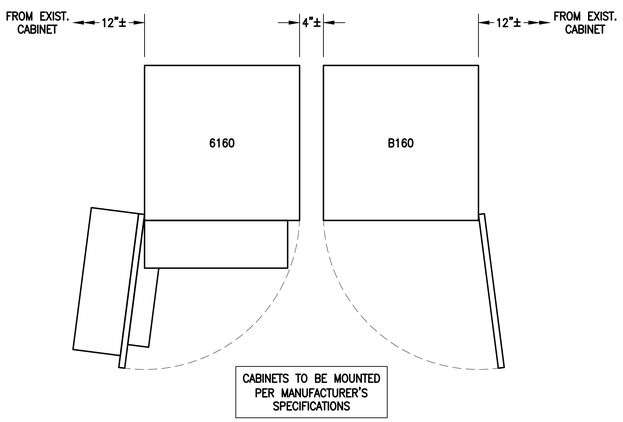
RADIO DETAILS
SCALE: N.T.S.
2 / A-3



COMMSCOPE RR-FA2 FAST ACCESS DUAL RRU MOUNT KIT

DIMENSIONS: 16.4"H x 8.6"W x 18"L
WEIGHT: 36.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

RADIO MOUNT DETAIL
SCALE: N.T.S.
3 / A-3



ERICSSON 6160 SITE SUPPORT CABINET

DIMENSIONS: 63.25"H x 26.0"W x 34.0"D
QUANTITY: TOTAL OF 1

ERICSSON B160 BATTERY CABINET

DIMENSIONS: 63.25"H x 26.0"W x 26.0"D
QUANTITY: TOTAL OF 1

EQUIPMENT DETAIL
SCALE: N.T.S.
3 / A-3

SLACKBOX

MODEL: 32FH91 OR EQUAL
QUANTITY: TOTAL OF 1

PURCELL SITE SUPPORT CABINET RAC24

DIMENSIONS: 24.0"H x 15.7"W x 20.0"D
TOTAL OF 1

SSC DETAILS
SCALE: N.T.S.
5 / A-3

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SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

1815.231

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	SIGNAL CABLES
ALPHA	A1 RFS APX16DWV-16DWV-S-E-A20	170'± AGL	0°	0°	2°	L2100	RADIO 4415 B66A	(3) 2" (6x24) HCS FIBER CABLES
	A3 RFS APXVAALL24_43-U-NA20	170'± AGL	0°	0°	2°	L700/L600/N600	RADIO 4449 B71+B85	
						L1900/G1900	RADIO 4424 B25	
	A4 ERICSSON M-MIMO AIR6449 B41	170'± AGL	0°	0°	2°	L2500/N2500	–	
BETA	B1 RFS APX16DWV-16DWV-S-E-A20	170'± AGL	120°	0°	2°	L2100	RADIO 4415 B66A	
	B3 RFS APXVAALL24_43-U-NA20	170'± AGL	120°	0°	2°	L700/L600/N600	RADIO 4449 B71+B85	
						L1900/G1900	RADIO 4424 B25	
	B4 ERICSSON M-MIMO AIR6449 B41	170'± AGL	120°	0°	2°	L2500/N2500	–	
GAMMA	C1 RFS APX16DWV-16DWV-S-E-A20	170'± AGL	240°	0°	2°	L2100	RADIO 4415 B66A	
	C3 RFS APXVAALL24_43-U-NA20	170'± AGL	240°	0°	2°	L700/L600/N600	RADIO 4449 B71+B85	
						L1900/G1900	RADIO 4424 B25	
	C4 ERICSSON M-MIMO AIR6449 B41	170'± AGL	240°	0°	2°	L2500/N2500	–	

CABLE NOTE: ALL SPRINT CABLES & ASSOCIATED HARDWARE TO BE REMOVED. SEE FEEDLINE SCHEDULE A & B BELOW.

NOTE: RFDS REV1 – 03/30/21

FEEDLINE SCHEDULE

SCHEDULE	FEEDLINES	LOCATION
A	*EXISTING TO REMAIN:* *(1) ½" COAX CABLE FOR GPS ANTENNA*	ROUTED PER STRUCTURAL ANALYSIS
	EXISTING TO BE REMOVED: *SPRINT CABLES AND ASSOCIATED HARDWARE TO BE REMOVED*	
B	PROPOSED: (3) 2" (6x24) HCS FIBER CABLES	

NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

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NORTON, MA 02766
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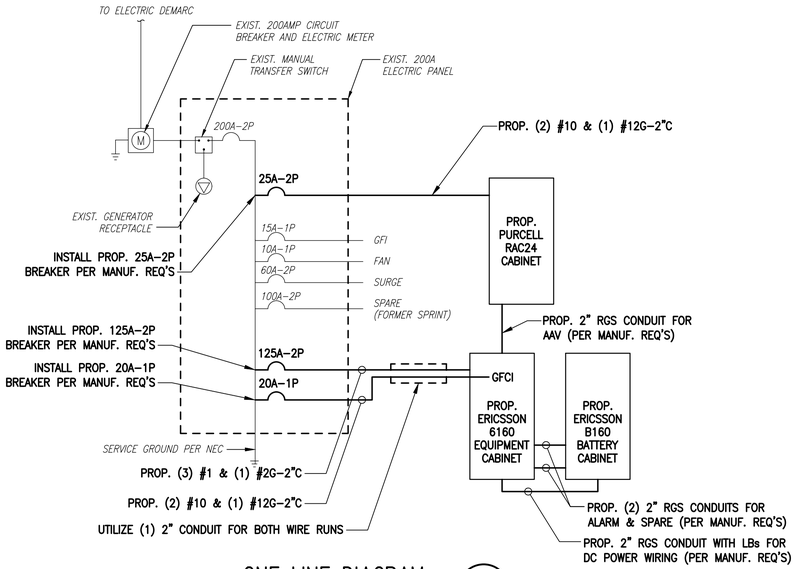
SHEET TITLE
ANTENNA & FEEDLINE CHARTS

SHEET NUMBER
A-4

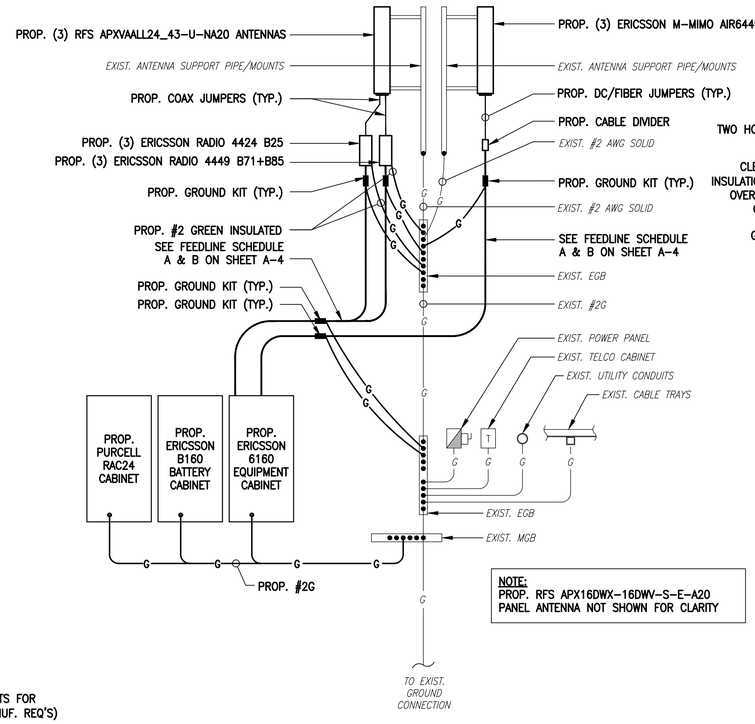
1815.231



ONE LINE DIAGRAM

SCALE: NOT TO SCALE

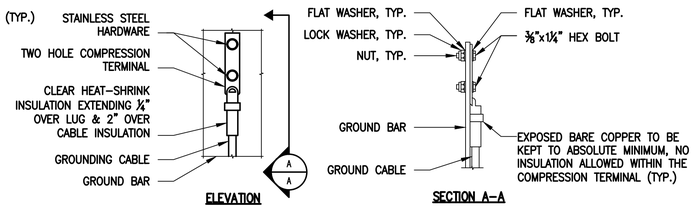
1 / E-1



GROUNDING RISER DIAGRAM

SCALE: NOT TO SCALE

2 / E-1



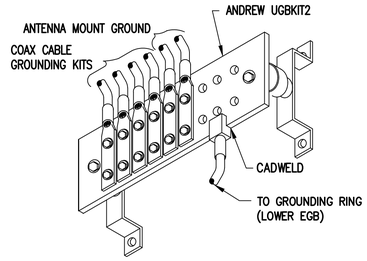
NOTES:

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

TYPICAL GROUND BAR CONNECTIONS DETAIL

SCALE: NOT TO SCALE

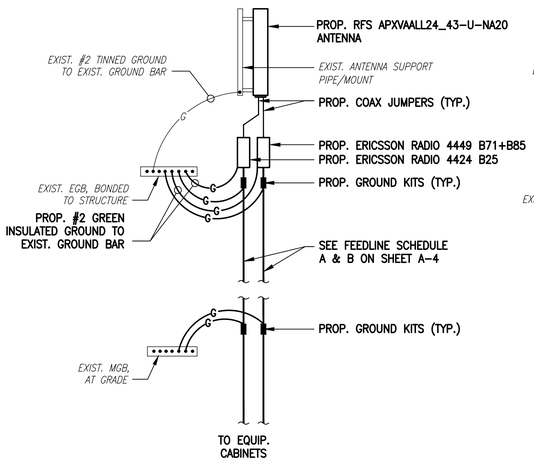
3 / E-1



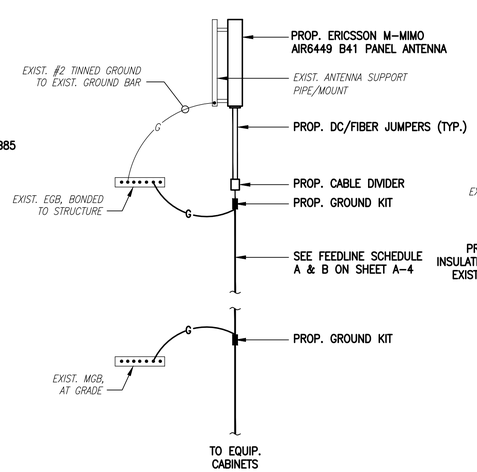
GROUND BAR (EGB)

SCALE: NOT TO SCALE

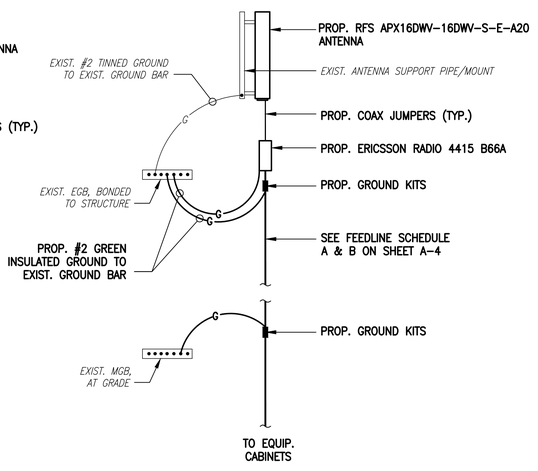
5 / E-1



L700/L600/N600/L1900/G1900 ANTENNA



L2500/N2500 ANTENNA



L2100 ANTENNA

COAX CABLE CONNECTION AND GROUNDING DETAIL

SCALE: NOT TO SCALE

4 / E-1

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. 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.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHNINSULATION.
8. 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.
9. 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.
10. 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.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. 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".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. 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.
16. 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.
17. 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.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. 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.
21. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

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SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.231

EXHIBIT 7

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

Structural Analysis Report

Existing 200 ft Pirod Guyed Tower
Customer Name: SBA Communications Corp
Customer Site Number: CT20001-A
Customer Site Name: STERLING CT TOWER
Carrier Name: T-Mobile Sprint (App#: 154220, V1)
Carrier Site ID / Name: CT33XC009 / Sterling
Site Location: 419 Ekonk Hill Road (Rt-49)
Sterling, Connecticut
WINDHAM County
Latitude: 41.662222
Longitude: -71.846944

Analysis Result:

Max Structural Usage: 61.1% [Pass]
Max Foundation Usage: 44.4% [Pass]
Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 200 ft Pirod Guyed Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Original design drawings prepared by PiROD. Inc. Dated 11-04-1988. Drawing No 112268-B. Job No A-106,708.
Foundation Drawing	Original foundation drawings prepared by PiROD. Inc. Dated 11-04-1988. Drawing No 112268-B. Job No A-106,708.
Geotechnical Report	Geotechnical report prepared by FDH Engineering, Inc. Dated 08-09-2012. Project No 1207123EG1.
Modification Drawings	N/A
Mount Analysis	TES MA Job #106822, dated 06/01/2021

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESTowers,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 135.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.169, S_1 = 0.061

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	195.0	1	120" Omni	(1) Side Arm	(1) 7/8"	Marc Dodge
2	178.0	1	Decibel DB809 Omni	(1) Side Arm	(1) 7/8"	American Messaging
-	170.0	3	RFS - APXVTM14-C-I20 - Panel	(3) Sector Frames SiteProVFA12-HD	(4) 1-1/4" Hybrid	Sprint Nextel
-		3	CommScope - NNVV-65B-R4 - Panel			
-		3	ALU 1900 Mhz			
-		6	ALU 800 Mhz			
-		3	ALU TD-RRH8x20-25			
9	140.0	1	Decibel DB809 Omni	(1) Side Arm	(2) 1/4"	Arch Wireless
10	99.0	1	ASPC680 (96") Omni	(1) Side Arm	(1) 1/2"	Plainfield Municipal
11	41.0	1	Larsen YA2-540 (36") - Yagi	Direct	(1) 7/8"	
12	39.0	1	Larsen YA2-540 (36") - Yagi	Direct	(1) 3/8"	
13	25.0	1	36" - Dish	(1) Pipe Mount	(2) 1/4"	American Messaging
14	14.0	1	36" - Dish	(1) Pipe Mount	(1) 7/8"	Arch Wireless

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
3	170.0	3	RFS APXVAALL24_43-U-NA20 Panel	(3) Sector Frames SiteProVFA12-HD	(3) 1.99" Hybrid 6x24	T-Mobile Sprint
4		3	RFS APX16DWV-16DWVS-E-A20 Panel			
5		3	Ericsson AIR6449 B41 Panel			
6		3	Ericsson 4449 B71 + B85 RRU			
7		3	Ericsson 4424 B25 RRU			
8		3	Ericsson 4415 B66A RRU			

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

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals	Guy Wires
Max. Usage:	**46.8%**	**37.9%**	**21.7%**	**61.1%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Base Reactions		Inner Anchors	
Reactions (kips)	Axial	Shear	Uplift	Shear
Analysis Reactions	93.2	1.3	25.5	23.9

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):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
25.0	36" Dish	American Messaging	0.010	0.043
14.0	36" Dish	Arch Wireless	0.019	0.055

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

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

Standard Conditions

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

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

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

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

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

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

Structure: CT20001-A-SBA

Site Name:	STERLING CT TOWER			**Code:**	EIA/TIA-222-G	6/29/2021
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	200.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 1

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-11	SOL 1 3/4" SOLID	SOL 3/4" SOLID	SOL 3/4" SOLID

Discrete Appurtenances

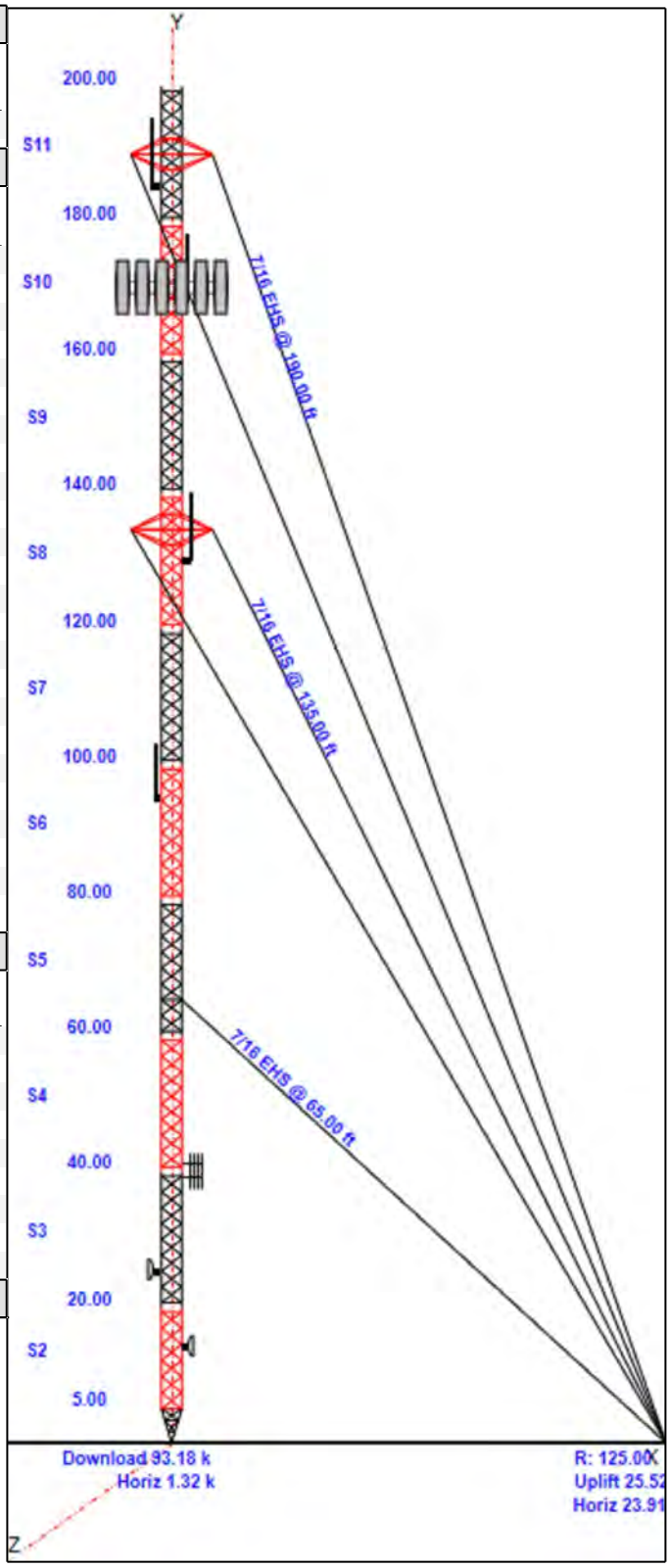
Attach Elev (ft)	Force Elev (ft)	Qty	Description
200.00	200.00	1	Beacon
190.00	190.00	1	Torque Arms
185.00	190.00	1	120" Omni
185.00	185.00	1	Side Arm
170.00	170.00	1	(3) SitePro VFA12-HD Sector Frames
170.00	170.00	3	APXVAALL24_43-U-NA20
170.00	170.00	3	APX16DWV-16DWVS-E-A20
170.00	170.00	3	AIR6449 B41
170.00	170.00	3	4449 B71 + B85
170.00	170.00	3	4424 B25
170.00	170.00	3	4415 B66A
168.00	173.00	1	Decibel DB809
168.00	168.00	1	Side Arm
135.00	135.00	1	Torque Arms
130.00	135.00	1	Decibel DB809
130.00	130.00	1	Side Arm
95.00	99.00	1	ASPC680 (96")
95.00	95.00	1	Side Arm
41.00	41.00	1	Larsen YA2-540 (36")
39.00	39.00	1	Larsen YA2-540 (36")
25.00	25.00	1	36" Dish
25.00	25.00	1	Pipe Mount
14.00	14.00	1	36" Dish
14.00	14.00	1	Pipe Mount

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
3.00	185.00	1	7/8" Coax
3.00	170.00	3	1.99" Hybrid 6x24
3.00	168.00	1	7/8" Coax
3.00	130.00	2	1/4" Coax
3.00	95.00	1	1/2" Coax
3.00	41.00	1	7/8" Coax
3.00	39.00	1	3/8" Coax
3.00	25.00	2	1/4" Coax
3.00	14.00	1	7/8" Coax

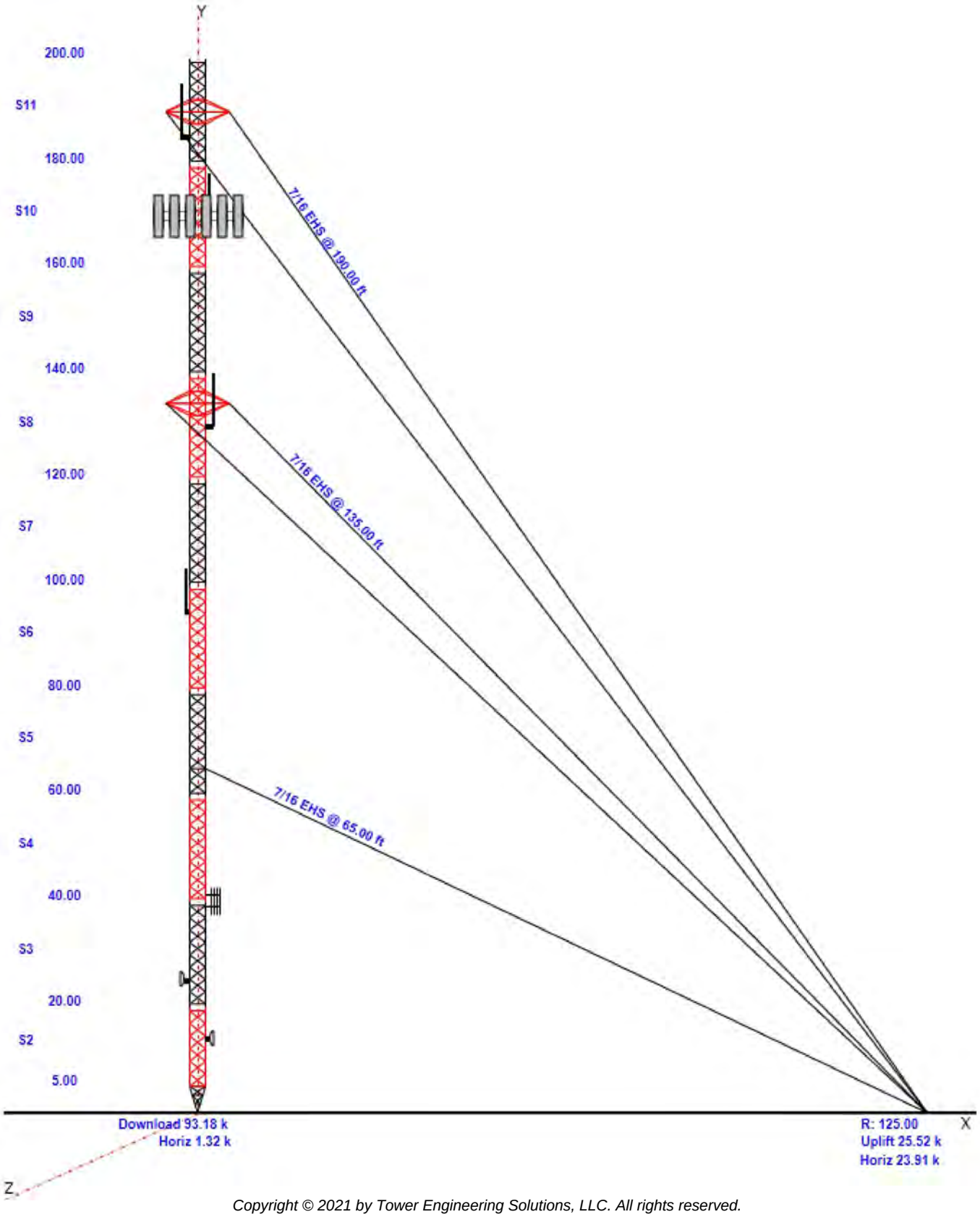
Max Guy Wire

61.06% @ 134.6665 ft - 7/16 EHS



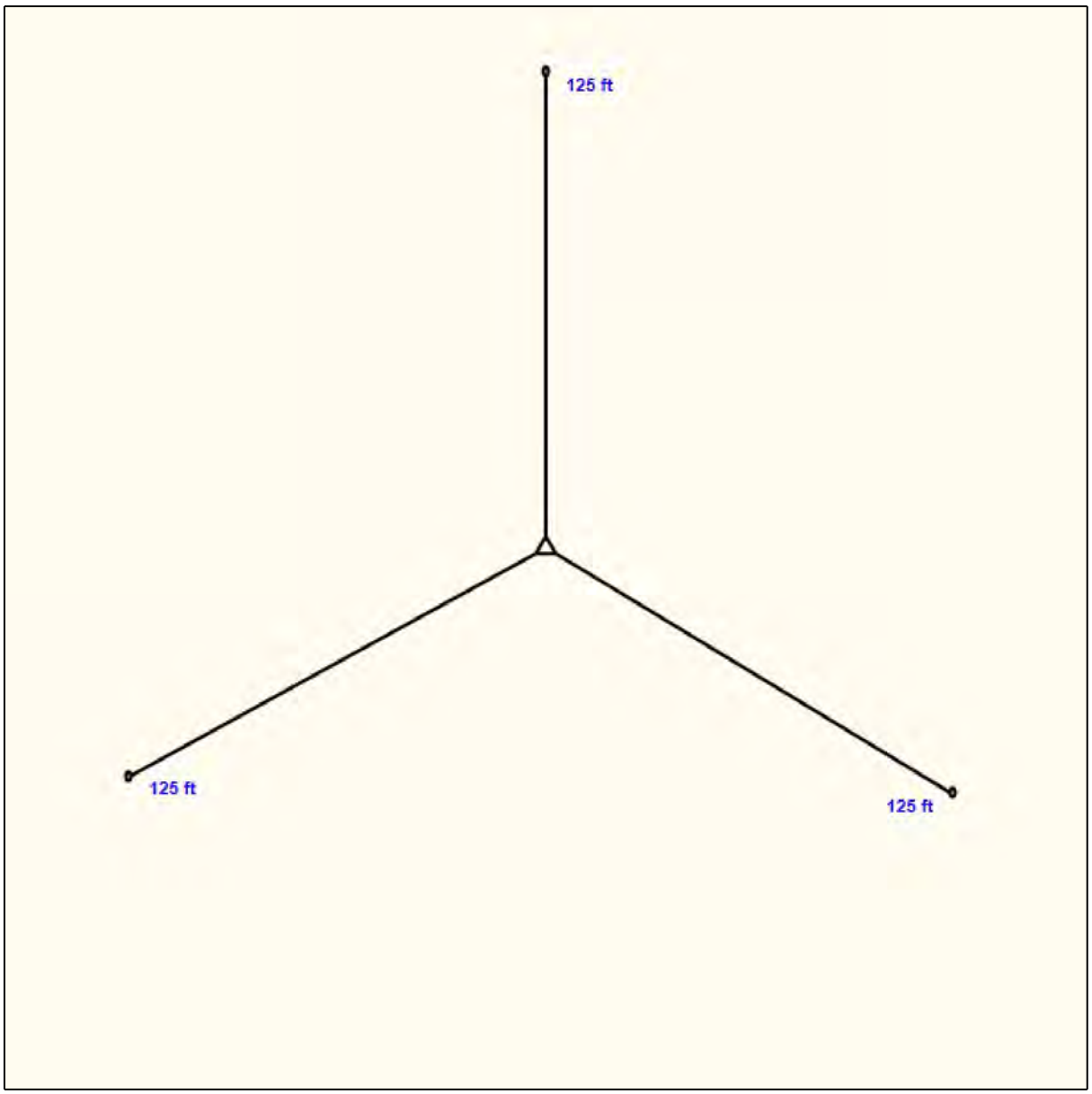
Structure: CT20001-A-SBA

Site Name:	STERLING CT TOWER			**Code:**	EIA/TIA-222-G	6/29/2021
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	200.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 2



Anchor Drops with Guy Radius - Structure: CT20001-A-SBA

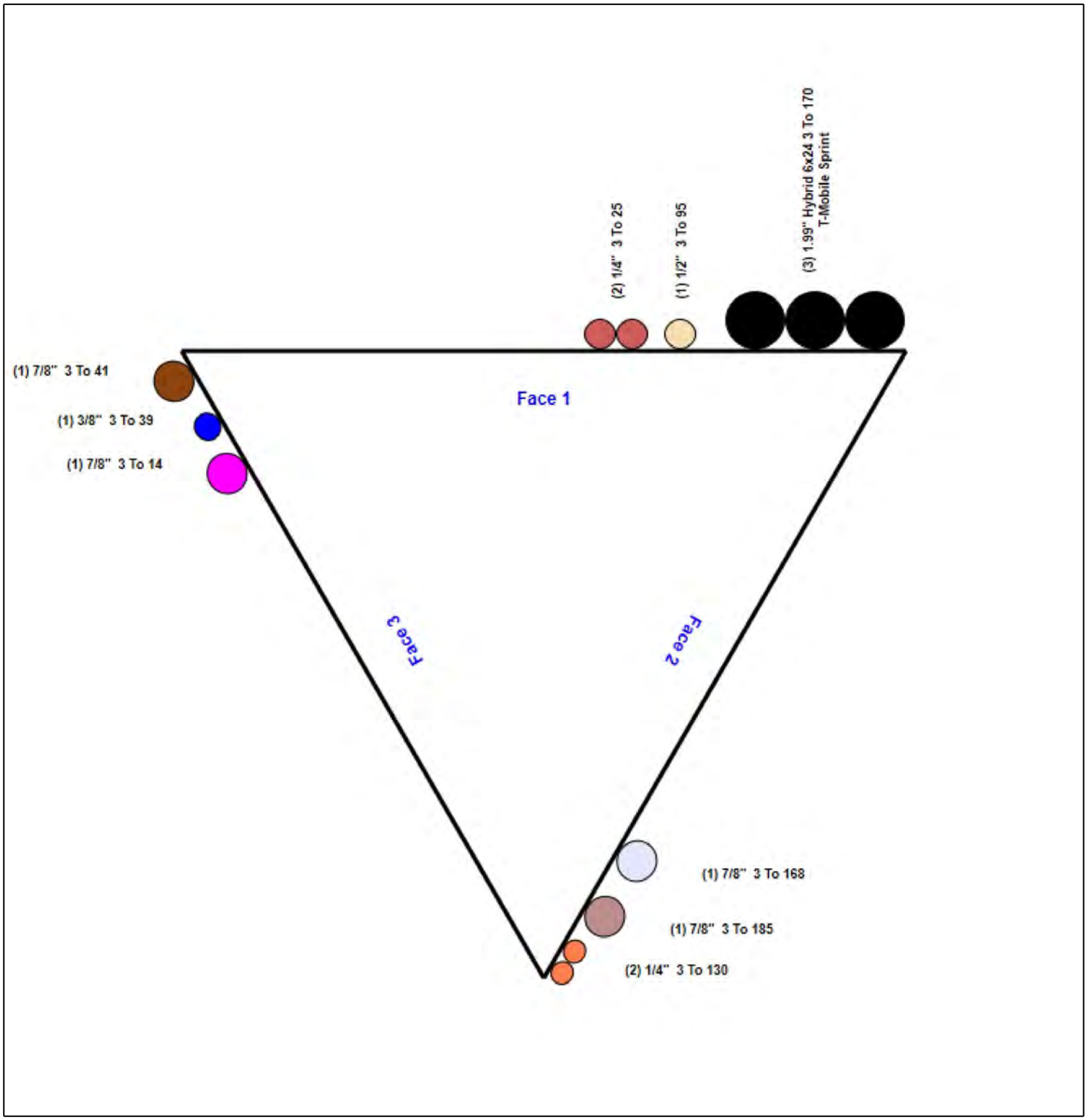
Site Name:	STERLING CT TOWER			**Code:**	EIA/TIA-222-G	6/29/2021
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	200.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 3



Structure: CT20001-A-SBA - Coax Line Placement

Type: Guyed
Site Name: STERLING CT TOWER
Height: 200.00 (ft)

6/29/2021



Loading Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 5	

Discrete Appurtenances Properties

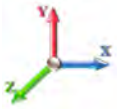
Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
200.00	Beacon	1	15.00	2.400	32.87	2.400	0.000	0.000	0.000	1.00	1.00	0.000
190.00	Torque Arms	1	300.00	5.000	557.32	9.289	0.000	0.000	0.000	1.00	1.00	0.000
185.00	120" Omni	1	30.00	3.000	144.25	7.902	l20.000	3.000	3.000	1.00	1.00	5.000
185.00	Side Arm	1	40.00	2.630	122.20	8.741	20.000	0.000	0.000	1.00	1.00	0.000
170.00	(3) SitePro VFA12-HD Sector	1	2322.0	50.700	4619.92	115.21	0.000	0.000	0.000	0.75	1.00	0.000
170.00	APXVAALL24_43-U-NA20	3	128.00	20.240	551.87	22.165	95.900	24.000	7.800	0.80	0.70	0.000
170.00	APX16DWV-16DWVS-E-A20	3	40.70	6.610	159.23	8.815	55.900	13.300	3.100	0.80	0.66	0.000
170.00	AIR6449 B41	3	103.00	5.650	241.85	6.612	33.100	20.500	8.300	0.80	0.71	0.000
170.00	4449 B71 + B85	3	73.20	1.970	131.67	2.546	17.900	13.200	10.600	0.80	0.67	0.000
170.00	4424 B25	3	46.20	2.050	133.93	2.654	17.100	14.400	11.300	0.80	0.67	0.000
170.00	4415 B66A	3	44.10	1.860	92.14	2.440	13.500	16.500	4.800	0.80	0.67	0.000
168.00	Decibel DB809	1	30.00	3.000	122.42	6.652	l20.000	3.000	3.000	1.00	1.00	5.000
168.00	Side Arm	1	40.00	2.630	121.29	8.674	10.000	0.000	0.000	1.00	1.00	0.000
135.00	Torque Arms	1	300.00	5.000	547.74	9.129	0.000	0.000	0.000	1.00	1.00	0.000
130.00	Decibel DB809	1	25.00	3.000	99.98	6.555	l20.000	3.000	3.000	1.00	1.00	5.000
130.00	Side Arm	1	40.00	2.630	119.14	8.514	20.000	0.000	0.000	1.00	1.00	0.000
95.00	ASPC680 (96")	1	25.00	2.400	83.07	5.016	96.000	3.000	3.000	1.00	1.00	4.000
95.00	Side Arm	1	40.00	2.630	116.28	8.301	10.000	0.000	0.000	1.00	1.00	0.000
41.00	Larsen YA2-540 (36")	1	10.00	2.980	90.65	8.605	36.000	36.000	3.000	1.00	1.00	0.000
39.00	Larsen YA2-540 (36")	1	10.00	2.980	86.64	8.325	36.000	36.000	3.000	0.00	0.00	0.000
25.00	36" Dish	1	100.00	11.760	248.58	13.857	0.000	0.000	0.000	0.00	0.00	0.000
25.00	Pipe Mount	1	50.00	1.600	135.43	4.691	10.000	0.000	0.000	1.00	1.00	0.000
14.00	36" Dish	1	100.00	11.760	236.12	13.681	0.000	0.000	0.000	0.00	0.00	0.000
14.00	Pipe Mount	1	50.00	1.600	128.27	4.432	10.000	0.000	0.000	1.00	1.00	0.000
	Totals:	**36**	**4,832.60**		**11,544.26**						**Number of Appurtenances :**	**24**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
3.00	185.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
3.00	170.00	1.99" Hybrid 6x24	3	1.99	1.10	100.00	1	Individual IR		N	0.50	1.00	
3.00	168.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
3.00	130.00	1/4" Coax	2	0.25	0.04	100.00	2	Individual IR		N	0.25	1.00	
3.00	95.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	
3.00	41.00	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
3.00	39.00	3/8" Coax	1	0.44	0.08	100.00	3	Individual NR		N	1.00	1.00	
3.00	25.00	1/4" Coax	2	0.65	0.16	100.00	1	Individual IR		N	0.25	1.00	
3.00	14.00	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	



Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 105 mph Wind at Normal To Face

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	1.00	1.00	0.00	1.55	2.22	0.00	260.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	1.00	1.00	0.00	4.34	16.07	0.00	828.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	18.66	0.00	1,077.2	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.66	0.00	1,061.6	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	1.00	1.00	0.00	5.82	15.57	0.00	1,083.1	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.30	0.00	1,060.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.48	0.00	1,057.1	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.07	0.00	1,056.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	13.65	0.00	1,055.0	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	7.56	0.00	1,007.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	0.46	0.00	953.9	0.0	738.69	15.74	754.43
														10,500.0	**0.0**			**9,892.45**

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 105 mph Wind at 60° From Face

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

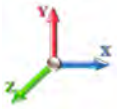
Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	0.80	1.00	0.00	1.55	2.22	0.00	260.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	0.80	1.00	0.00	4.34	16.07	0.00	828.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	18.66	0.00	1,077.2	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.66	0.00	1,061.6	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	0.80	1.00	0.00	5.82	15.57	0.00	1,083.1	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.30	0.00	1,060.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.48	0.00	1,057.1	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.07	0.00	1,056.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	13.65	0.00	1,055.0	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	7.56	0.00	1,007.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	0.46	0.00	953.9	0.0	738.69	15.74	754.43
														10,500.0	**0.0**			**9,892.45**

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	



Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 105 mph Wind at 90° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	0.85	1.00	0.00	1.55	2.22	0.00	260.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	0.85	1.00	0.00	4.34	16.07	0.00	828.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	18.66	0.00	1,077.2	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.66	0.00	1,061.6	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	0.85	1.00	0.00	5.82	15.57	0.00	1,083.1	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.30	0.00	1,060.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.48	0.00	1,057.1	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.07	0.00	1,056.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	13.65	0.00	1,055.0	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	7.56	0.00	1,007.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	0.46	0.00	953.9	0.0	738.69	15.74	754.43
														10,500.0	**0.0**			**9,892.45**

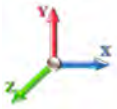
Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 105 mph Wind at Normal To Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	1.00	1.00	0.00	1.55	2.22	0.00	195.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	1.00	1.00	0.00	4.34	16.07	0.00	621.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	18.66	0.00	807.9	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.66	0.00	796.2	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	1.00	1.00	0.00	5.82	15.57	0.00	812.3	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.30	0.00	795.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.48	0.00	792.8	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.07	0.00	792.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	13.65	0.00	791.2	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	7.56	0.00	755.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	0.46	0.00	715.4	0.0	738.69	15.74	754.43
														7,875.0	**0.0**			**9,892.45**

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	



Tower Engineering Solutions

Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 105 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	0.80	1.00	0.00	1.55	2.22	0.00	195.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	0.80	1.00	0.00	4.34	16.07	0.00	621.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	18.66	0.00	807.9	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.66	0.00	796.2	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	0.80	1.00	0.00	5.82	15.57	0.00	812.3	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.30	0.00	795.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.48	0.00	792.8	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.07	0.00	792.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	13.65	0.00	791.2	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	7.56	0.00	755.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	0.46	0.00	715.4	0.0	738.69	15.74	754.43
														7,875.0	**0.0**			**9,892.45**

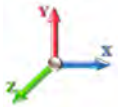
Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 105 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	20.39	0.000	2.51	0.00	0.31	2.28	0.85	1.00	0.00	1.55	2.22	0.00	195.0	0.0	97.98	44.26	142.24
2	12.5	20.39	0.000	7.50	0.00	0.16	2.74	0.85	1.00	0.00	4.34	16.07	0.00	621.2	0.0	329.33	320.88	650.21
3	30.0	23.56	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	18.66	0.00	807.9	0.0	500.84	430.45	931.29
4	50.0	26.24	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.66	0.00	796.2	0.0	557.70	402.35	960.05
5	70.0	28.17	0.000	10.06	0.00	0.16	2.74	0.85	1.00	0.00	5.82	15.57	0.00	812.3	0.0	609.34	429.34	1,038.68
6	90.0	29.70	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.30	0.00	795.0	0.0	631.17	444.79	1,075.95
7	110.0	30.98	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.48	0.00	792.8	0.0	658.40	439.33	1,097.74
8	130.0	32.09	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.07	0.00	792.0	0.0	681.97	441.97	1,123.94
9	150.0	33.07	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	13.65	0.00	791.2	0.0	702.83	441.99	1,144.82
10	170.0	33.95	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	7.56	0.00	755.9	0.0	721.59	251.50	973.09
11	190.0	34.76	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	0.46	0.00	715.4	0.0	738.69	15.74	754.43
														7,875.0	**0.0**			**9,892.45**

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	7.76	5.24	0.84	1.85	1.00	1.00	1.16	7.19	3.63	2.32	533.3	273.3	52.44	4.88	57.32
2	12.5	4.62	0.000	26.11	18.61	0.52	1.88	1.00	1.00	1.36	18.20	28.15	19.06	2,277.9	1449.6	134.49	120.20	254.69
3	30.0	5.34	0.000	36.29	26.45	0.53	1.86	1.00	1.00	1.49	25.68	31.99	24.52	3,103.8	2026.6	216.81	158.90	375.72
4	50.0	5.95	0.000	37.68	27.84	0.55	1.84	1.00	1.00	1.56	27.06	28.17	15.90	3,051.6	1990.0	251.90	135.32	387.21
5	70.0	6.39	0.000	39.66	29.60	0.58	1.82	1.00	1.00	1.62	29.14	28.43	16.17	3,218.3	2135.2	287.46	138.02	425.48
6	90.0	6.73	0.000	39.36	29.52	0.58	1.82	1.00	1.00	1.66	28.79	28.43	15.20	3,210.8	2150.8	300.15	144.79	444.94
7	110.0	7.02	0.000	39.96	30.12	0.58	1.82	1.00	1.00	1.69	29.42	27.85	11.28	3,203.6	2146.5	318.89	134.96	453.85
8	130.0	7.28	0.000	40.47	30.63	0.59	1.81	1.00	1.00	1.72	29.95	24.54	11.47	3,199.4	2143.3	335.48	125.59	461.06
9	150.0	7.50	0.000	40.91	31.07	0.60	1.81	1.00	1.00	1.75	30.43	21.13	11.63	3,185.3	2130.3	350.45	114.94	465.39
10	170.0	7.70	0.000	41.30	31.46	0.60	1.80	1.00	1.00	1.77	30.85	11.34	8.25	2,916.1	1908.2	364.14	68.36	432.51
11	190.0	7.88	0.000	41.66	31.81	0.60	1.80	1.00	1.00	1.79	31.23	0.46	1.49	2,559.0	1605.0	376.82	6.20	383.02
														30,458.9	**19958.8**			**4,141.20**

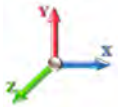
Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	7.76	5.24	0.84	1.85	0.80	1.00	1.16	7.19	3.63	2.32	533.3	273.3	52.44	4.88	57.32
2	12.5	4.62	0.000	26.11	18.61	0.52	1.88	0.80	1.00	1.36	18.20	28.15	19.06	2,277.9	1449.6	134.49	120.20	254.69
3	30.0	5.34	0.000	36.29	26.45	0.53	1.86	0.80	1.00	1.49	25.68	31.99	24.52	3,103.8	2026.6	216.81	158.90	375.72
4	50.0	5.95	0.000	37.68	27.84	0.55	1.84	0.80	1.00	1.56	27.06	28.17	15.90	3,051.6	1990.0	251.90	135.32	387.21
5	70.0	6.39	0.000	39.66	29.60	0.58	1.82	0.80	1.00	1.62	29.14	28.43	16.17	3,218.3	2135.2	287.46	138.02	425.48
6	90.0	6.73	0.000	39.36	29.52	0.58	1.82	0.80	1.00	1.66	28.79	28.43	15.20	3,210.8	2150.8	300.15	144.79	444.94
7	110.0	7.02	0.000	39.96	30.12	0.58	1.82	0.80	1.00	1.69	29.42	27.85	11.28	3,203.6	2146.5	318.89	134.96	453.85
8	130.0	7.28	0.000	40.47	30.63	0.59	1.81	0.80	1.00	1.72	29.95	24.54	11.47	3,199.4	2143.3	335.48	125.59	461.06
9	150.0	7.50	0.000	40.91	31.07	0.60	1.81	0.80	1.00	1.75	30.43	21.13	11.63	3,185.3	2130.3	350.45	114.94	465.39
10	170.0	7.70	0.000	41.30	31.46	0.60	1.80	0.80	1.00	1.77	30.85	11.34	8.25	2,916.1	1908.2	364.14	68.36	432.51
11	190.0	7.88	0.000	41.66	31.81	0.60	1.80	0.80	1.00	1.79	31.23	0.46	1.49	2,559.0	1605.0	376.82	6.20	383.02
														30,458.9	**19958.8**			**4,141.20**

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	



Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	4.62	0.000	7.76	5.24	0.84	1.85	0.85	1.00	1.16	7.19	3.63	2.32	533.3	273.3	52.44	4.88	57.32
2	12.5	4.62	0.000	26.11	18.61	0.52	1.88	0.85	1.00	1.36	18.20	28.15	19.06	2,277.9	1449.6	134.49	120.20	254.69
3	30.0	5.34	0.000	36.29	26.45	0.53	1.86	0.85	1.00	1.49	25.68	31.99	24.52	3,103.8	2026.6	216.81	158.90	375.72
4	50.0	5.95	0.000	37.68	27.84	0.55	1.84	0.85	1.00	1.56	27.06	28.17	15.90	3,051.6	1990.0	251.90	135.32	387.21
5	70.0	6.39	0.000	39.66	29.60	0.58	1.82	0.85	1.00	1.62	29.14	28.43	16.17	3,218.3	2135.2	287.46	138.02	425.48
6	90.0	6.73	0.000	39.36	29.52	0.58	1.82	0.85	1.00	1.66	28.79	28.43	15.20	3,210.8	2150.8	300.15	144.79	444.94
7	110.0	7.02	0.000	39.96	30.12	0.58	1.82	0.85	1.00	1.69	29.42	27.85	11.28	3,203.6	2146.5	318.89	134.96	453.85
8	130.0	7.28	0.000	40.47	30.63	0.59	1.81	0.85	1.00	1.72	29.95	24.54	11.47	3,199.4	2143.3	335.48	125.59	461.06
9	150.0	7.50	0.000	40.91	31.07	0.60	1.81	0.85	1.00	1.75	30.43	21.13	11.63	3,185.3	2130.3	350.45	114.94	465.39
10	170.0	7.70	0.000	41.30	31.46	0.60	1.80	0.85	1.00	1.77	30.85	11.34	8.25	2,916.1	1908.2	364.14	68.36	432.51
11	190.0	7.88	0.000	41.66	31.81	0.60	1.80	0.85	1.00	1.79	31.23	0.46	1.49	2,559.0	1605.0	376.82	6.20	383.02
														30,458.9	**19958.8**			**4,141.20**

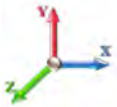
Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	6.66	0.000	2.51	0.00	0.31	2.28	1.00	1.00	0.00	1.55	2.22	0.00	216.7	0.0	20.00	9.03	29.03
2	12.5	6.66	0.000	7.50	0.00	0.16	2.74	1.00	1.00	0.00	4.34	16.07	0.00	690.2	0.0	67.21	65.49	132.70
3	30.0	7.69	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	18.66	0.00	897.7	0.0	102.21	87.85	190.06
4	50.0	8.57	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.66	0.00	884.7	0.0	113.82	82.11	195.93
5	70.0	9.20	0.000	10.06	0.00	0.16	2.74	1.00	1.00	0.00	5.82	15.57	0.00	902.6	0.0	124.36	87.62	211.98
6	90.0	9.70	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	15.30	0.00	883.3	0.0	128.81	90.77	219.58
7	110.0	10.12	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.48	0.00	880.9	0.0	134.37	89.66	224.03
8	130.0	10.48	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	14.07	0.00	880.0	0.0	139.18	90.20	229.38
9	150.0	10.80	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	13.65	0.00	879.1	0.0	143.43	90.20	233.64
10	170.0	11.09	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	7.56	0.00	839.9	0.0	147.26	51.33	198.59
11	190.0	11.35	0.000	9.84	0.00	0.16	2.75	1.00	1.00	0.00	5.69	0.46	0.00	794.9	0.0	150.75	3.21	153.97
														8,750.0	**0.0**			**2,018.87**

Section Forces

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



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Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	6.66	0.000	2.51	0.00	0.31	2.28	0.80	1.00	0.00	1.55	2.22	0.00	216.7	0.0	20.00	9.03	29.03
2	12.5	6.66	0.000	7.50	0.00	0.16	2.74	0.80	1.00	0.00	4.34	16.07	0.00	690.2	0.0	67.21	65.49	132.70
3	30.0	7.69	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	18.66	0.00	897.7	0.0	102.21	87.85	190.06
4	50.0	8.57	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.66	0.00	884.7	0.0	113.82	82.11	195.93
5	70.0	9.20	0.000	10.06	0.00	0.16	2.74	0.80	1.00	0.00	5.82	15.57	0.00	902.6	0.0	124.36	87.62	211.98
6	90.0	9.70	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	15.30	0.00	883.3	0.0	128.81	90.77	219.58
7	110.0	10.12	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.48	0.00	880.9	0.0	134.37	89.66	224.03
8	130.0	10.48	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	14.07	0.00	880.0	0.0	139.18	90.20	229.38
9	150.0	10.80	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	13.65	0.00	879.1	0.0	143.43	90.20	233.64
10	170.0	11.09	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	7.56	0.00	839.9	0.0	147.26	51.33	198.59
11	190.0	11.35	0.000	9.84	0.00	0.16	2.75	0.80	1.00	0.00	5.69	0.46	0.00	794.9	0.0	150.75	3.21	153.97
														8,750.0	**0.0**			**2,018.87**

Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

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

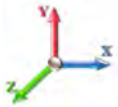
Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.5	6.66	0.000	2.51	0.00	0.31	2.28	0.85	1.00	0.00	1.55	2.22	0.00	216.7	0.0	20.00	9.03	29.03
2	12.5	6.66	0.000	7.50	0.00	0.16	2.74	0.85	1.00	0.00	4.34	16.07	0.00	690.2	0.0	67.21	65.49	132.70
3	30.0	7.69	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	18.66	0.00	897.7	0.0	102.21	87.85	190.06
4	50.0	8.57	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.66	0.00	884.7	0.0	113.82	82.11	195.93
5	70.0	9.20	0.000	10.06	0.00	0.16	2.74	0.85	1.00	0.00	5.82	15.57	0.00	902.6	0.0	124.36	87.62	211.98
6	90.0	9.70	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	15.30	0.00	883.3	0.0	128.81	90.77	219.58
7	110.0	10.12	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.48	0.00	880.9	0.0	134.37	89.66	224.03
8	130.0	10.48	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	14.07	0.00	880.0	0.0	139.18	90.20	229.38
9	150.0	10.80	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	13.65	0.00	879.1	0.0	143.43	90.20	233.64
10	170.0	11.09	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	7.56	0.00	839.9	0.0	147.26	51.33	198.59
11	190.0	11.35	0.000	9.84	0.00	0.16	2.75	0.85	1.00	0.00	5.69	0.46	0.00	794.9	0.0	150.75	3.21	153.97
														8,750.0	**0.0**			**2,018.87**

Force/Stress Compression Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	



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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5	SOL - 1 3/4" SOLID	-34.18	1.2D + 1.0Di + 1.0Wi 60° Wind	1.76	100	100	100	48.38	50.00	91.21	37.5	Member X
2	20	SOL - 1 3/4" SOLID	-34.06	1.2D + 1.0Di + 1.0Wi 60° Wind	2.39	100	100	100	65.52	50.00	79.08	43.1	Member X
3	40	SOL - 1 3/4" SOLID	-34.33	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	42.8	Member X
4	60	SOL - 1 3/4" SOLID	-31.98	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	39.9	Member X
5	80	SOL - 1 3/4" SOLID	-30.75	1.2D + 1.6W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	38.3	Member X
6	100	SOL - 1 3/4" SOLID	-27.49	1.2D + 1.0Di + 1.0Wi 90° Wind	2.33	100	100	100	64.00	50.00	80.23	34.3	Member X
7	120	SOL - 1 3/4" SOLID	-27.06	1.2D + 1.0Di + 1.0Wi 90° Wind	2.33	100	100	100	64.00	50.00	80.23	33.7	Member X
8	140	SOL - 1 3/4" SOLID	-25.84	1.2D + 1.6W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	32.2	Member X
9	160	SOL - 1 3/4" SOLID	-24.75	1.2D + 1.6W 60° Wind	2.33	100	100	100	64.00	50.00	80.23	30.9	Member X
10	180	SOL - 1 3/4" SOLID	-37.56	1.2D + 1.6W 60° Wind	2.33	100	100	100	64.00	50.00	80.23	46.8	Member X
11	200	SOL - 1 3/4" SOLID	-25.51	1.2D + 1.6W 60° Wind	2.33	100	100	100	64.00	50.00	80.23	31.8	Member X

HORIZONTAL MEMBERS

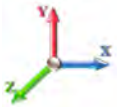
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5										0.00	0	0				
2	20	SOL - 3/4" SOLID	-0.12	0.9D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			2	Member X
3	40	SOL - 3/4" SOLID	-0.12	0.9D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			2	Member X
4	60	SOL - 3/4" SOLID	-0.52	0.9D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			9	Member X
5	80	SOL - 3/4" SOLID	-0.49	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			9	Member X
6	100	SOL - 3/4" SOLID	-0.29	0.9D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			5	Member X
7	120	SOL - 3/4" SOLID	-0.15	0.9D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			3	Member X
8	140	SOL - 3/4" SOLID	-0.46	0.9D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			8	Member X
9	160	SOL - 3/4" SOLID	-1.20	1.2D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			22	Member X
10	180	SOL - 3/4" SOLID	-0.65	0.9D + 1.6W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			12	Member X
11	200	SOL - 3/4" SOLID	-0.71	1.2D + 1.6W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			13	Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5	SOL - 3/4" SOLID	-2.54	1.2D + 1.0Di + 1.0Wi 90° Wind	2.26	50	50	50	65.11	50.00	14.58	0	0			17	Member X
2	20	SOL - 3/4" SOLID	-0.69	1.2D + 1.6W 60° Wind	3.83	50	50	50	110.45	50.00	8.15	0	0			8	Member X
3	40	SOL - 3/4" SOLID	-0.82	1.2D + 1.6W Normal Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			10	Member X
4	60	SOL - 3/4" SOLID	-1.38	1.2D + 1.6W Normal Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			17	Member X
5	80	SOL - 3/4" SOLID	-1.44	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			17	Member X
6	100	SOL - 3/4" SOLID	-0.95	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			11	Member X
7	120	SOL - 3/4" SOLID	-0.68	1.2D + 1.6W 60° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			8	Member X
8	140	SOL - 3/4" SOLID	-3.13	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			38	Member X
9	160	SOL - 3/4" SOLID	-2.58	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			31	Member X
10	180	SOL - 3/4" SOLID	-1.90	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			23	Member X
11	200	SOL - 3/4" SOLID	-2.57	1.2D + 1.6W 90° Wind	3.80	50	50	50	109.46	50.00	8.28	0	0			31	Member X

Force/Stress Tension Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5				0	0.00		
2	20				0	0.00		
3	40				0	0.00		
4	60				0	0.00		
5	80				0	0.00		
6	100				0	0.00		
7	120				0	0.00		
8	140	SOL - 1 3/4" SOLID	7.03	0.9D + 1.6W 60° Wind	50	108.24	6.5	Member
9	160	SOL - 1 3/4" SOLID	9.97	0.9D + 1.6W Normal Wind	50	108.24	9.2	Member
10	180	SOL - 1 3/4" SOLID	21.72	0.9D + 1.6W Normal Wind	50	108.24	20.1	Member
11	200	SOL - 1 3/4" SOLID	12.76	0.9D + 1.6W Normal Wind	50	108.24	11.8	Member

HORIZONTAL MEMBERS

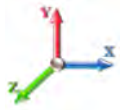
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	5	SOL - 3/4" SOLID	3.26	1.2D + 1.0Di + 1.0Wi 9(	50	19.88	0	0				16.4	Member
2	20	SOL - 3/4" SOLID	3.26	1.2D + 1.0Di + 1.0Wi 9(	50	19.88	0	0				16.4	Member
3	40	SOL - 3/4" SOLID	0.36	1.2D + 1.6W 60° Wind	50	19.88	0	0				1.8	Member
4	60	SOL - 3/4" SOLID	0.71	1.2D + 1.6W 60° Wind	50	19.88	0	0				3.6	Member
5	80	SOL - 3/4" SOLID	0.80	1.2D + 1.6W Normal Wi	50	19.88	0	0				4.0	Member
6	100	SOL - 3/4" SOLID	0.46	1.2D + 1.6W 60° Wind	50	19.88	0	0				2.3	Member
7	120	SOL - 3/4" SOLID	0.39	1.2D + 1.6W 60° Wind	50	19.88	0	0				1.9	Member
8	140	SOL - 3/4" SOLID	1.12	1.2D + 1.6W Normal Wi	50	19.88	0	0				5.6	Member
9	160	SOL - 3/4" SOLID	1.34	1.2D + 1.6W 60° Wind	50	19.88	0	0				6.8	Member
10	180	SOL - 3/4" SOLID	0.83	1.2D + 1.6W 60° Wind	50	19.88	0	0				4.2	Member
11	200	SOL - 3/4" SOLID	1.03	1.2D + 1.6W Normal Wi	50	19.88	0	0				5.2	Member

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	5	SOL - 3/4" SOLID	0.00		50	0.00	0	0					
2	20	SOL - 3/4" SOLID	0.65	1.2D + 1.6W 90° Wind	50	19.88	0	0				3.2	Member
3	40	SOL - 3/4" SOLID	0.48	0.9D + 1.6W Normal Wi	50	19.88	0	0				2.4	Member
4	60	SOL - 3/4" SOLID	1.04	1.2D + 1.6W 60° Wind	50	19.88	0	0				5.2	Member
5	80	SOL - 3/4" SOLID	1.15	1.2D + 1.6W Normal Wi	50	19.88	0	0				5.8	Member
6	100	SOL - 3/4" SOLID	0.72	0.9D + 1.6W 90° Wind	50	19.88	0	0				3.6	Member
7	120	SOL - 3/4" SOLID	0.56	0.9D + 1.6W 60° Wind	50	19.88	0	0				2.8	Member
8	140	SOL - 3/4" SOLID	2.36	0.9D + 1.6W 90° Wind	50	19.88	0	0				11.9	Member
9	160	SOL - 3/4" SOLID	2.48	1.2D + 1.6W 90° Wind	50	19.88	0	0				12.5	Member
10	180	SOL - 3/4" SOLID	1.79	1.2D + 1.6W 90° Wind	50	19.88	0	0				9.0	Member
11	200	SOL - 3/4" SOLID	2.02	0.9D + 1.6W 90° Wind	50	19.88	0	0				10.1	Member

Support Forces Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	



Tower Engineering Solutions

Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	62.73	-1.11	
	A1	0.00	-2.64	1.40	
	A1b	16.65	-21.26	-10.58	
	A1a	-16.65	-21.26	-10.58	
1.2D + 1.6W 60° Wind	1	-1.13	56.67	-0.65	
	A1	-0.75	-6.93	5.61	
	A1b	4.49	-6.96	-3.45	
	A1a	-20.70	-25.51	-11.95	
1.2D + 1.6W 90° Wind	1	-1.20	60.38	-0.09	
	A1	-0.96	-14.32	12.92	
	A1b	1.85	-3.60	-1.49	
	A1a	-20.56	-25.03	-11.34	
0.9D + 1.6W Normal Wind	1	0.00	58.65	-1.14	
	A1	0.00	-2.65	1.41	
	A1b	16.64	-21.24	-10.57	
	A1a	-16.64	-21.25	-10.57	
0.9D + 1.6W 60° Wind	1	-1.14	52.66	-0.66	
	A1	-0.75	-6.96	5.64	
	A1b	4.51	-6.98	-3.46	
	A1a	-20.70	-25.52	-11.96	
0.9D + 1.6W 90° Wind	1	-1.22	56.32	-0.09	
	A1	-0.96	-14.33	12.92	
	A1b	1.86	-3.61	-1.50	
	A1a	-20.54	-25.02	-11.34	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.01	92.41	-0.50	
	A1	0.00	-7.65	8.06	
	A1b	13.78	-15.51	-8.94	
	A1a	-13.79	-15.52	-8.94	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.33	93.18	-0.19	
	A1	-0.85	-10.63	10.91	
	A1b	9.02	-10.64	-6.19	
	A1a	-16.78	-18.52	-9.69	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.44	92.82	0.06	
	A1	-1.04	-13.07	13.64	
	A1b	7.38	-8.49	-4.76	
	A1a	-16.35	-17.70	-8.94	
1.0D + 1.0W Normal Wind	1	0.00	35.44	-0.31	
	A1	0.00	-4.51	4.14	
	A1b	6.54	-8.10	-3.95	
	A1a	-6.54	-8.10	-3.95	
1.0D + 1.0W 60° Wind	1	-0.26	35.66	-0.15	
	A1	-0.15	-5.79	5.34	
	A1b	4.55	-5.80	-2.80	
	A1a	-7.69	-9.41	-4.44	

1.0D + 1.0W 90° Wind	1	-0.31	35.55	0.01
	A1	-0.18	-6.96	6.50
	A1b	3.81	-4.85	-2.29
	A1a	-7.43	-9.04	-4.20

Max Reactions (kips)	Base	Anchor 1
Vertical	93.18	25.52
Horizontal	1.32	23.91

Cable Forces Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	

Load Case	Elevation (ft)	Cable	Node 1	Node 2	Allow Tension (kips)	Applied Tension (kips)	Use %
1.2D + 1.6W Normal Wind	65.33	7/16 EHS	A1	34	12.48	0.03	0
			A1b	34a	12.48	5.38	43
			A1a	34b	12.48	5.39	43
	134.67		A1	T2	12.48	0.54	4
			A1a	T2b	12.48	6.20	50
			A1b	T2a	12.48	6.25	50
			A1b	T2	12.48	6.24	50
			A1a	T2a	12.48	6.29	50
			A1	T2b	12.48	0.54	4
	190.00		A1	T3	12.48	1.09	9
			A1a	T3b	12.48	6.16	49
			A1b	T3a	12.48	5.74	46
			A1b	T3	12.48	6.14	49
			A1a	T3a	12.48	5.72	46
			A1	T3b	12.48	1.09	9
1.2D + 1.6W 60° Wind	65.33		A1	34	12.48	1.35	11
			A1b	34a	12.48	1.33	11
			A1a	34b	12.48	6.53	52
	134.67		A1	T2	12.48	1.75	14
			A1a	T2b	12.48	7.62	61
			A1b	T2a	12.48	1.68	13
			A1b	T2	12.48	1.74	14
			A1a	T2a	12.48	7.60	61
			A1	T2b	12.48	1.68	13
	190.00		A1	T3	12.48	2.42	19
			A1a	T3b	12.48	7.05	57
			A1b	T3a	12.48	2.24	18
			A1b	T3	12.48	2.41	19
			A1a	T3a	12.48	6.99	56
			A1	T3b	12.48	2.20	18
1.2D + 1.6W 90° Wind	65.33		A1	34	12.48	3.55	28
			A1b	34a	12.48	0.37	3
			A1a	34b	12.48	6.49	52
	134.67		A1	T2	12.48	4.05	32
			A1a	T2b	12.48	7.53	60
			A1b	T2a	12.48	0.76	6
			A1b	T2	12.48	0.81	7
			A1a	T2a	12.48	7.42	59
			A1	T2b	12.48	3.98	32
	190.00		A1	T3	12.48	4.41	35
			A1a	T3b	12.48	6.75	54
			A1b	T3a	12.48	1.32	11
			A1b	T3	12.48	1.39	11
			A1a	T3a	12.48	6.97	56
			A1	T3b	12.48	3.94	32
0.9D + 1.6W Normal Wind	65.33		A1	34	12.48	0.03	0
			A1b	34a	12.48	5.38	43
			A1a	34b	12.48	5.38	43
	134.67		A1	T2	12.48	0.54	4
			A1a	T2b	12.48	6.20	50
			A1b	T2a	12.48	6.25	50
			A1b	T2	12.48	6.24	50
			A1a	T2a	12.48	6.29	50

0.9D + 1.6W Normal Wind	134.67	7/16 EHS	A1	T2b	12.48	0.54	4
	190.00		A1	T3	12.48	1.10	9
			A1a	T3b	12.48	6.16	49
			A1b	T3a	12.48	5.74	46
			A1b	T3	12.48	6.14	49
			A1a	T3a	12.48	5.72	46
			A1	T3b	12.48	1.10	9
0.9D + 1.6W 60° Wind	65.33		A1	34	12.48	1.35	11
			A1b	34a	12.48	1.33	11
			A1a	34b	12.48	6.53	52
	134.67		A1	T2	12.48	1.76	14
			A1a	T2b	12.48	7.62	61
			A1b	T2a	12.48	1.69	14
			A1b	T2	12.48	1.75	14
			A1a	T2a	12.48	7.60	61
			A1	T2b	12.48	1.68	14
	190.00		A1	T3	12.48	2.42	19
			A1a	T3b	12.48	7.06	57
			A1b	T3a	12.48	2.25	18
			A1b	T3	12.48	2.42	19
			A1a	T3a	12.48	7.00	56
			A1	T3b	12.48	2.21	18
0.9D + 1.6W 90° Wind	65.33		A1	34	12.48	3.54	28
			A1b	34a	12.48	0.37	3
			A1a	34b	12.48	6.48	52
	134.67		A1	T2	12.48	4.05	32
			A1a	T2b	12.48	7.52	60
			A1b	T2a	12.48	0.76	6
			A1b	T2	12.48	0.82	7
			A1a	T2a	12.48	7.41	59
			A1	T2b	12.48	3.98	32
	190.00		A1	T3	12.48	4.41	35
			A1a	T3b	12.48	6.75	54
			A1b	T3a	12.48	1.33	11
			A1b	T3	12.48	1.40	11
			A1a	T3a	12.48	6.97	56
			A1	T3b	12.48	3.94	32
1.2D + 1.0Di + 1.0Wi Normal Wind	65.33		A1	34	12.48	2.84	23
			A1b	34a	12.48	4.97	40
			A1a	34b	12.48	4.98	40
	134.67		A1	T2	12.48	2.82	23
			A1a	T2b	12.48	5.24	42
			A1b	T2a	12.48	5.06	41
			A1b	T2	12.48	5.24	42
			A1a	T2a	12.48	5.07	41
			A1	T2b	12.48	2.83	23
	190.00		A1	T3	12.48	3.05	24
			A1a	T3b	12.48	5.58	45
			A1b	T3a	12.48	5.35	43
			A1b	T3	12.48	5.57	45
			A1a	T3a	12.48	5.34	43
			A1	T3b	12.48	3.05	24
1.2D + 1.0Di + 1.0Wi 60° Wind	65.33		A1	34	12.48	3.45	28
			A1b	34a	12.48	3.44	28
			A1a	34b	12.48	5.63	45
	134.67		A1	T2	12.48	3.69	30
			A1a	T2b	12.48	6.05	49
			A1b	T2a	12.48	3.52	28
			A1b	T2	12.48	3.69	30
			A1a	T2a	12.48	6.05	48
			A1	T2b	12.48	3.52	28
	190.00		A1	T3	12.48	4.20	34
			A1a	T3b	12.48	6.36	51
			A1b	T3a	12.48	3.94	32
			A1b	T3	12.48	4.20	34
			A1a	T3a	12.48	6.35	51

1.2D + 1.0Di + 1.0Wi 60° Wind	190.00	7/16 EHS	A1	T3b	12.48	3.92	31
1.2D + 1.0Di + 1.0Wi 90° Wind	65.33		A1	34	12.48	4.21	34
			A1b	34a	12.48	2.94	24
			A1a	34b	12.48	5.50	44
	134.67		A1	T2	12.48	4.48	36
			A1a	T2b	12.48	5.79	46
			A1b	T2a	12.48	2.97	24
			A1b	T2	12.48	3.03	24
			A1a	T2a	12.48	5.85	47
			A1	T2b	12.48	4.26	34
	190.00		A1	T3	12.48	4.92	39
			A1a	T3b	12.48	6.05	49
			A1b	T3a	12.48	3.30	26
			A1b	T3	12.48	3.47	28
			A1a	T3a	12.48	6.14	49
			A1	T3b	12.48	4.61	37
1.0D + 1.0W Normal Wind	65.33		A1	34	12.48	1.39	11
			A1b	34a	12.48	2.34	19
			A1a	34b	12.48	2.35	19
	134.67		A1	T2	12.48	1.19	10
			A1a	T2b	12.48	2.32	19
			A1b	T2a	12.48	2.31	19
			A1b	T2	12.48	2.33	19
			A1a	T2a	12.48	2.32	19
			A1	T2b	12.48	1.20	10
	190.00		A1	T3	12.48	1.38	11
			A1a	T3b	12.48	2.37	19
			A1b	T3a	12.48	2.27	18
			A1b	T3	12.48	2.36	19
			A1a	T3a	12.48	2.27	18
			A1	T3b	12.48	1.37	11
1.0D + 1.0W 60° Wind	65.33		A1	34	12.48	1.70	14
			A1b	34a	12.48	1.69	14
			A1a	34b	12.48	2.69	22
	134.67		A1	T2	12.48	1.61	13
			A1a	T2b	12.48	2.73	22
			A1b	T2a	12.48	1.58	13
			A1b	T2	12.48	1.60	13
			A1a	T2a	12.48	2.73	22
			A1	T2b	12.48	1.58	13
	190.00		A1	T3	12.48	1.78	14
			A1a	T3b	12.48	2.66	21
			A1b	T3a	12.48	1.67	13
			A1b	T3	12.48	1.77	14
			A1a	T3a	12.48	2.65	21
			A1	T3b	12.48	1.66	13
1.0D + 1.0W 90° Wind	65.33		A1	34	12.48	2.02	16
			A1b	34a	12.48	1.45	12
			A1a	34b	12.48	2.60	21
	134.67		A1	T2	12.48	1.97	16
			A1a	T2b	12.48	2.62	21
			A1b	T2a	12.48	1.29	10
			A1b	T2	12.48	1.30	10
			A1a	T2a	12.48	2.61	21
			A1	T2b	12.48	1.95	16
	190.00		A1	T3	12.48	2.09	17
			A1a	T3b	12.48	2.54	20
			A1b	T3a	12.48	1.45	12
			A1b	T3	12.48	1.50	12
			A1a	T3a	12.48	2.58	21
			A1	T3b	12.48	1.96	16

Analysis Summary

Structure:	CT20001-A-SBA	**Code:**	EIA/TIA-222-G	6/29/2021	
Site Name:	STERLING CT TOWER	**Exposure:**	C		
Height:	200.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 20	

Max Reactions

Base:	93.18 (Vertical)	1.32 (Horizontal)
Anchor 1:	25.52 (Vertical)	23.91 (Horizontal)

Max Usages

Max Leg: 46.8% (1.2D + 1.6W 60° Wind - Sect 10)
Max Diag: 37.9% (1.2D + 1.6W 90° Wind - Sect 8)
Max Horiz: 21.7% (1.2D + 1.6W Normal Wind - Sect 9)
Max Cable: 61.1% (0.9D + 1.6W 60° Wind) - Elev: 135 ft

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 105 mph Wind at 60° From Face	14.56	0.0847	0.0662	0.3200
	25.33	0.1458	0.0641	0.2698
	39.33	0.1993	0.0736	0.0975
	40.67	0.2003	0.0743	0.0713
	94.67	0.4122	0.0742	0.2317
	130.00	0.5572	0.0236	0.2240
	134.67	0.5791	0.0171	0.2800
	167.67	0.7877	0.0647	0.1944
	170.00	0.7979	0.0651	0.1950
	185.33	0.8085	0.0575	0.1674
	190.00	0.8062	0.0639	0.0351
	200.00	0.8040	0.0619	0.0500
0.9D + 1.6W 105 mph Wind at 90° From Face	14.56	0.1023	0.2416	0.3967
	25.33	0.1840	0.2275	0.3437
	39.33	0.2455	0.2264	0.1903
	40.67	0.2487	0.2256	0.1737
	94.67	0.5454	0.1328	0.2577
	130.00	0.7331	0.0601	0.1803
	134.67	0.7609	0.0555	0.3370
	167.67	0.9918	0.0630	0.1064
	170.00	1.0051	0.0685	0.2484
	185.33	1.0253	0.0696	0.1411
	190.00	1.0262	0.0749	0.0376
	200.00	1.0309	0.0732	0.0910
0.9D + 1.6W 105 mph Wind at Normal To Face	14.56	0.1186	-0.2023	0.4212
	25.33	0.1887	-0.1818	0.3733
	39.33	0.2673	-0.1556	0.2202
	40.67	0.2715	-0.1528	0.2070
	94.67	0.6007	-0.0643	0.4826
	130.00	0.8274	-0.0210	0.5083
	134.67	0.8579	-0.0230	0.3930
	167.67	1.1225	-0.0029	0.4634
	170.00	1.1347	0.0074	0.2632
	185.33	1.1668	0.0150	0.2072
	190.00	1.1726	0.0181	0.0682
	200.00	1.1855	0.0168	0.1348

1.0D + 1.0W 60 mph Wind at 60° From Face	14.56	0.0145	0.0040	0.0544
	25.33	0.0246	0.0020	0.0429
	39.33	0.0326	0.0028	0.0136
	40.67	0.0326	0.0030	0.0008
	94.67	0.0598	0.0021	0.0292
	130.00	0.0766	0.0012	0.0304
	134.67	0.0790	0.0013	0.0352
	167.67	0.1077	0.0032	0.0282
	170.00	0.1089	0.0036	0.0187
	185.33	0.1054	0.0067	0.0478
	190.00	0.1033	0.0081	0.0258
	200.00	0.0995	0.0076	0.0099
1.0D + 1.0W 60 mph Wind at 90° From Face	14.56	0.0140	0.0191	0.0545
	25.33	0.0252	0.0098	0.0419
	39.33	0.0314	0.0074	0.0138
	40.67	0.0314	0.0076	0.0057
	94.67	0.0574	0.0043	0.0120
	130.00	0.0708	0.0061	0.0086
	134.67	0.0731	0.0067	0.0296
	167.67	0.0980	0.0062	0.0182
	170.00	0.0991	0.0068	0.0160
	185.33	0.0939	0.0132	0.0624
	190.00	0.0913	0.0152	0.0353
	200.00	0.0863	0.0145	0.0189
1.0D + 1.0W 60 mph Wind at Normal To Face	14.56	0.0151	-0.0180	0.0503
	25.33	0.0230	-0.0083	0.0396
	39.33	0.0301	-0.0037	0.0133
	40.67	0.0302	-0.0036	0.0104
	94.67	0.0520	-0.0013	0.0425
	130.00	0.0629	-0.0020	0.0477
	134.67	0.0645	-0.0032	0.0241
	167.67	0.0862	0.0004	0.0409
	170.00	0.0865	0.0011	0.0080
	185.33	0.0794	0.0026	0.0093
	190.00	0.0764	0.0031	0.0389
	200.00	0.0702	0.0028	0.0238
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	14.56	0.0406	0.0160	0.1576
	25.33	0.0700	0.0114	0.1335
	39.33	0.0981	0.0126	0.0802
	40.67	0.0992	0.0129	0.0459
	94.67	0.1845	0.0092	0.0725
	130.00	0.2151	0.0039	0.0440
	134.67	0.2182	0.0037	0.0414
	167.67	0.2540	0.0111	0.0472
	170.00	0.2547	0.0126	0.0108
	185.33	0.2441	0.0176	0.1046
	190.00	0.2385	0.0205	0.0720
	200.00	0.2272	0.0197	0.0519
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	14.56	0.0425	0.0752	0.1693
	25.33	0.0766	0.0639	0.1407
	39.33	0.1018	0.0630	0.0864
	40.67	0.1032	0.0633	0.0581
	94.67	0.1772	0.0482	0.0456
	130.00	0.1791	0.0469	0.1037
	134.67	0.1803	0.0475	0.0772
	167.67	0.1891	0.0732	0.1523
	170.00	0.1901	0.0756	0.1272
	185.33	0.1785	0.0914	0.2300
	190.00	0.1751	0.0954	0.1928
	200.00	0.1731	0.0946	0.1719

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	14.56	0.0459	-0.0071	0.1696
	25.33	0.0762	-0.0048	0.1440
	39.33	0.1065	-0.0017	0.0896
	40.67	0.1082	-0.0015	0.0735
	94.67	0.1582	0.0002	0.0290
	130.00	0.1228	-0.0021	0.0569
	134.67	0.1142	-0.0039	0.1064
	167.67	0.0530	0.0022	0.1233
	170.00	0.0459	0.0046	0.1984
	185.33	0.0169	0.0076	0.2059
	190.00	0.0382	0.0089	0.2657
	200.00	0.0832	0.0083	0.2459
1.2D + 1.6W 105 mph Wind at 60° From Face	14.56	0.0850	0.0675	0.3213
	25.33	0.1464	0.0658	0.2707
	39.33	0.2000	0.0754	0.0969
	40.67	0.2010	0.0762	0.0695
	94.67	0.4134	0.0760	0.2326
	130.00	0.5590	0.0239	0.2250
	134.67	0.5809	0.0172	0.2813
	167.67	0.7904	0.0653	0.1951
	170.00	0.8006	0.0656	0.1960
	185.33	0.8114	0.0579	0.1674
	190.00	0.8091	0.0643	0.0349
	200.00	0.8071	0.0623	0.0506
1.2D + 1.6W 105 mph Wind at 90° From Face	14.56	0.1030	0.2424	0.3993
	25.33	0.1851	0.2281	0.3458
	39.33	0.2470	0.2271	0.1909
	40.67	0.2502	0.2263	0.1737
	94.67	0.5485	0.1331	0.2598
	130.00	0.7375	0.0601	0.1823
	134.67	0.7655	0.0555	0.3392
	167.67	0.9976	0.0629	0.1081
	170.00	1.0110	0.0686	0.2501
	185.33	1.0316	0.0697	0.1401
	190.00	1.0325	0.0750	0.0384
	200.00	1.0375	0.0733	0.0923
1.2D + 1.6W 105 mph Wind at Normal To Face	14.56	0.1193	-0.2035	0.4237
	25.33	0.1898	-0.1828	0.3755
	39.33	0.2689	-0.1564	0.2209
	40.67	0.2731	-0.1536	0.2071
	94.67	0.6043	-0.0646	0.4852
	130.00	0.8325	-0.0210	0.5111
	134.67	0.8632	-0.0231	0.3957
	167.67	1.1295	-0.0029	0.4659
	170.00	1.1419	0.0074	0.2653
	185.33	1.1745	0.0150	0.2092
	190.00	1.1805	0.0182	0.0703
	200.00	1.1937	0.0168	0.1369

Guyed Tower Base Design

			Date: 6/29/2021
Customer Name:	SBA Communications Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	200
Site Nmber:	CT20001-A-SBA	**Engineer Name:**	D. Zhou
Engr. Number:	109875	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Guyed Tower

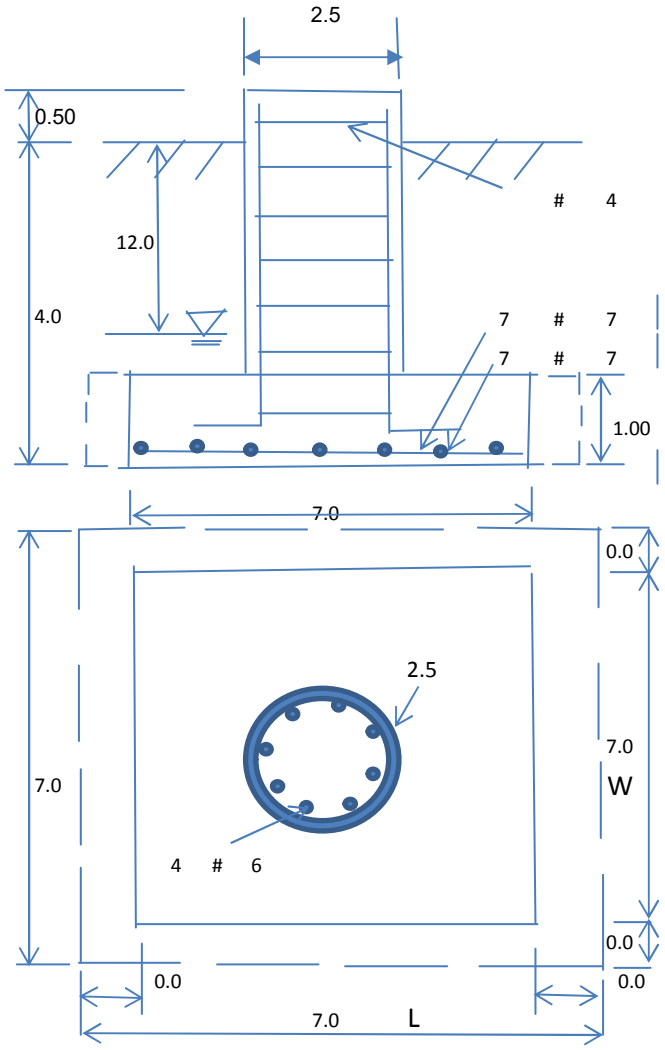
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	93.2	Shear Force (Kips):	1.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	2.5	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	1.00
Length of Pad (ft.):	7	Width of Pad (ft.):	7
Final Length of pad (ft)	7.0	Final width of pad (ft):	7.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	6	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	4	Tie Spacing (in):	16.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	7	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	7	Qty. of Rebar in Pad (W):	7	

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	12.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	30
					Angle from Bottm of Pad:	25

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

Total Dry Soil Volume (cu. Ft.):	132.27	Total Dry Soil Weight (Kips):	16.53
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	16.53	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	66.18	Total Dry Concrete Weight (Kips):	9.93
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	9.93	Total Vertical Load on Base (Kips):	119.64

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2000.8	<	Allowable Factored Soil Bearing (psf):	18000	0.11	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	882.0	>	Design Factored Axial Load (Kips):	96	0.11	OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	0.44		Tie / Stirrup Area (sq. in./each):	0.20	
Calculated Moment Capacity (Mn,Kips-Ft):	92.1	>	Design Factored Moment (Mu, Kips-Ft	4.6	0.05 OK!
Calculated Shear Capacity (Kips):	103.1	>	Design Factored Shear (Kips):	1.3	0.01 OK!
Calculated Tension Capacity (Tn, Kips):	95.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	1246.6	>	Design Factored Axial Load (Pu Kips):	93.2	0.07 OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.12	OK!			
Pier Reinforcement Ratio:	0.002				
(2).Concrete Pad:					
One-Way Design Shear Capacity (L-Dir. Kips);	68.2	>	One-Way Factored Shear (L-Dir Kips):	20.9	0.31 OK!
One-Way Design Shear Capacity (W-Dir. Kips):	68.2	>	One-Way Factored Shear (W-Dir Kips)	20.9	0.31 OK!
Two-Way Design Shear Capacity (Kips):	196.8	>	Two-Way Factored Shear (Kips):	77.8	0.40 OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0058	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0058	OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	153.5	>	Moment at Bottom (L-Direct. K-Ft):	34.4	0.22 OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	153.5	>	Moment at Bottom (W-Dir. Kips-Ft):	34.4	0.22 OK!

Last revised on 5/4/2

Guy Anchor Analysis and Design

Customer Name:	SBA Communications Corp	**EIA/TIA Standa**
Site Name:	0	**Structure Heig**
Site Nmber:	CT20001-A-SBA	**Engineer Nam**
Engr. Number:	109875	**Engineer Logi**

Foundation Info Obtained from: Drawings/Calculations **Number of Anchors:** 1 Set Failure model:

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	65.0	Pcf	Cohesion of Soils (psf):
Water Table B.G.S. (ft):	4.3	Unit Weight of Water:	62.4	pcf	Internal Angle of Friction (º)
Ultimate lateral pressure (psf):	3600	Ultimate Skin Friction:		Psf	Coefficient of Shear Friction
Conical Failure Angle from Top:	30	Failure Angle from Bottm	20		

Material Properties:

Concrete Strength (psi):	3000	Unit Weight of Concrete:	150.0	psf	Horizontal Rebar Yield (psi):
Shear Strength Reduction Factor:	0.75				Flexure Strength Reduction

A. Inner Anchors:

Radius (ft.): 125

1. Design Reactions (Factored):

Uplift (Kips:)	25.5	Shear (Kips)	23.9	Angle of force resultant (Ø)

2. Foundation Geometries:

Block Base Depth B.G.S. (ft):	8.0	Block with/without toe?	No		Water Table below grade (ft
Length of Anchor Block (L, ft.):	9.0	Width of Anchor Block:	4.0	ft.	Thickness of Anchor Block (t
Concrete Block @ top of Anchor?	No				

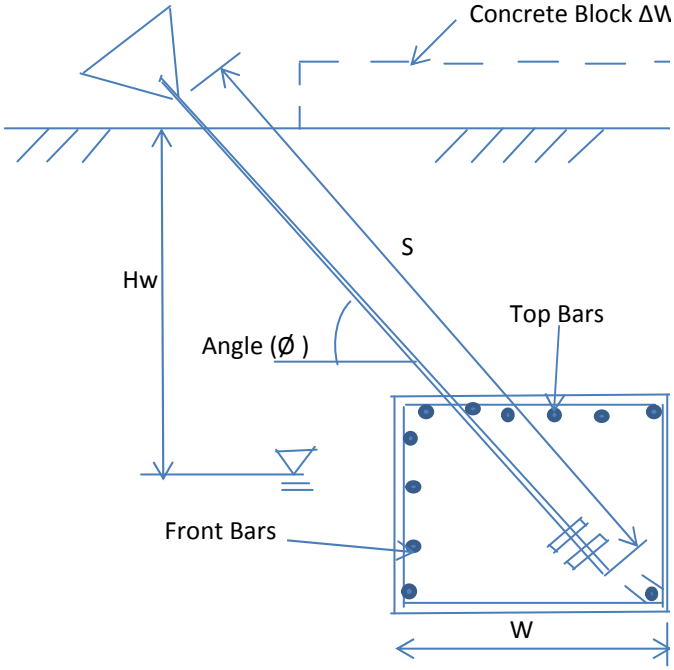
(1). Inner Anchors: *Radius (ft.):* 125

H (ft.):	8.0	*Hw(ft.):*	99.0
L (ft.):	9.0	*W (ft.):*	4.0
T (ft.):	2.5	*Angle (Ø):*	46.9
S (ft.):	11.65		

Top bars: 4 # 5

Front bars: 3 # 5

Concrete Volume (Cu. Yd.)/Each: 3.33



3. Foundation Analysis and Design:

Total Dry Soil Volume (cu. Ft.):	483.12	Total Dry Soil Weight (Kips):
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):
Total Effective Soil Weight (Kips):	60.39	Weight of the Concrete Block at Top (Kips):
Total Dry Concrete Volume (cu. Ft.):	90.00	Total Dry Concrete Weight (Kip):
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):
Total Effective Concrete Weight (Kips):	13.50	Weight Reduction Factor:
Uplift Strength Reduction Factor on Soil:	0.75	Shear Strength Reduction Factor:

4. Check Soil and Foundation Capacities:

Nominal Factored Uplift Resistance:	57.44	Kips >	Design Uplift Force (Kips):
Ultimate Shear Friction Resistance at base:	11.41	Kips	Ultimate Resistance Pressure:
Factored Shear Resistance:	69.31	Kips >	Design Shear Force (Kips):

5. Design Concrete Block:

Rebar Size (#):	5	Wind Load Factor on Concrete Design:
Qty. of the Rebar at top of the block:	4	Qty. of the Rebar in the front of the block:
Area of Single Rebar (sq. in.):	0.31	Factor for concrete compression zone:
One Way Shear due to Shear Force (Kips):	12.0	One Way Shear Capacity for shear (kips):
One Way Shear due to Uplift (Kips):	12.8	One Way Shear Capacity for uplift (kips):
Moment due to Shear Load (Kips-ft):	26.9	Flexural Capacity for Shear Load (Kips-ft):
Moment due to uplift Load (Kips-ft):	28.7	Flexural Capacity for uplift Load (Kips-ft):
Ratio of Design Moment/Moment capacity:	0.20	Minimum ratio of rebar (top & front) :
Max. Ratio of Shear Force/Shear capacity:	0.12	OK!

0.0 0.0

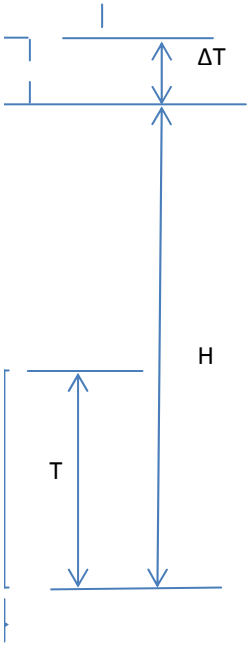
020

	Date
	6/29/2021
ard:	EIA-222-G
ght (Ft.):	200
e:	D. Zhou
n ID:	

New

	0
)	40
ı:	0.50
	60000
Factor:	0.9
):	46.9
t):	99.00
ft.):	2.5

/ x ΔL x ΔT



06/29/21

71.48	
0.00	
0.00	
13.50	
0.00	
0.9	
0.75	
25.5	OK!
3600.0	Psf
23.9	OK!
1.00	
3	
0.85	
108.4	OK!
102.5	OK!
184.1	OK!
145.0	OK!
0.10	OK!

EXHIBIT 8

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

Antenna Mount Analysis Report

Existing 200-Ft Guyed Tower
Customer Name: SBA Communications Corp
Customer Site Number: CT20001-A-SBA / STERLING CT TOWER
Customer Site Name: STERLING CT TOWER
Carrier Name: T-Mobile Sprint (App#: 154220, V1)
Carrier Site ID / Name: CT33XC009 / Sterling
Site Location: 419 Ekonk Hill Road (Rt-49)
Sterling, Connecticut
WINDHAM County
Latitude: 41.662222
Longitude: -71.846944

Analysis Result:

Max Structural Usage: 42.7% [Pass]

Report Prepared By : Mariana Franco

Introduction

The purpose of this report is to summarize the analysis results on the (3) SitePro VFA12-HD Sector frames at 170.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Mapping by TEP Dated: 05/03/21
Antenna Loading	SBA Application #: 154220, v1
Modification Drawings	n/a

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 135.0 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 105 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 0.75" radial ice concurrent
Operational Wind Speed: 60 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G
Exposure Category: C
Structure Class: II
Topographic Category: 1
Crest Height (Ft): 0

The site is a Risk Category II structure per IBC Table 1604.5. This site does not support emergency communication equipment for first responders such as fire departments, police, hospitals, ambulance services or any of the facilities listed for Risk Categories III and IV. The scope of work detailed in this structural analysis does not include items that are a part of emergency service as the 911 or essential facility service of an emergency response system.

Mount Information

(3) SitePro VFA12-HD Sector frames at 170.00' elevation

Final Antenna Configuration

3 RFS APXVAALL24_43-U-NA20
3 RFS APX16DWV-16DWVS-E-A20
3 Ericsson AIR6449 B41
3 Ericsson 4449 B71 + B85
3 Ericsson 4424 B25
3 Ericsson 4415 B66A

In addition to the proposed equipment loading, a 500 lb serviceability load was also considered in this analysis in accordance with TIA requirements.

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 42.7%, which occurs in the v-arm diagonal. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.

2. The analysis is based on the presumption that the antenna mount members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion. The mount analysis is not a condition assessment of the mount.

4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.

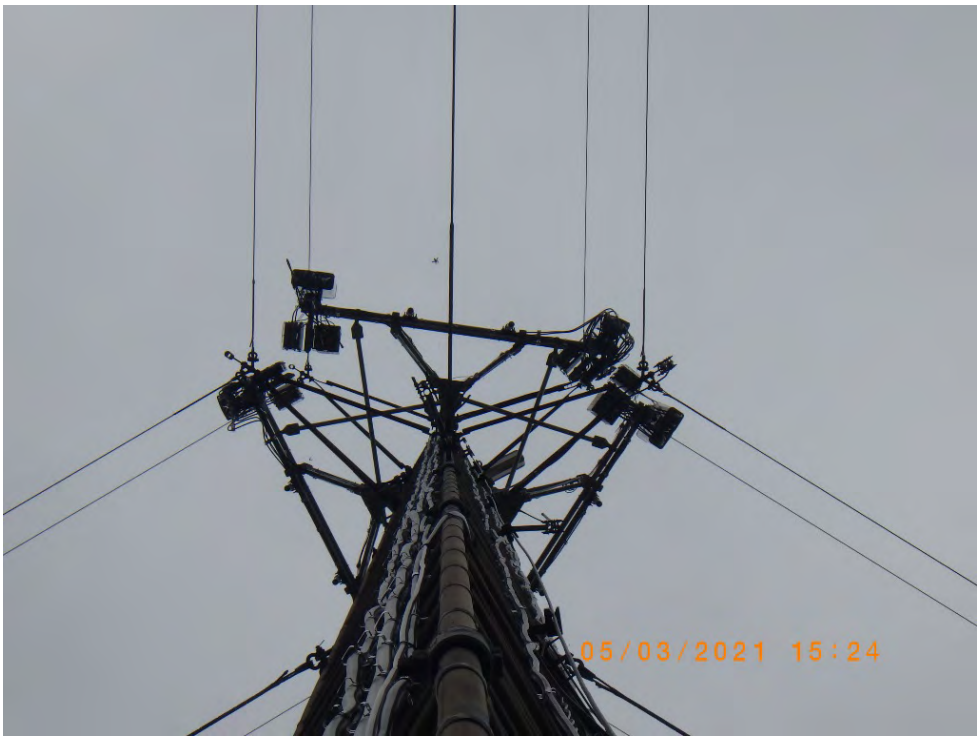
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.

6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.

7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.

8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.

9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.


05/03/2021 15:24


05/03/2021 16:25

Structure: CT20001-A-SBA - STERLING CT TOWER

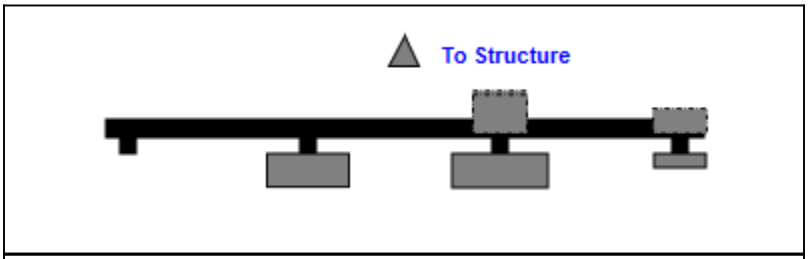
Sector: A

Structure Type: Guyed

Mount Elev: 170.00

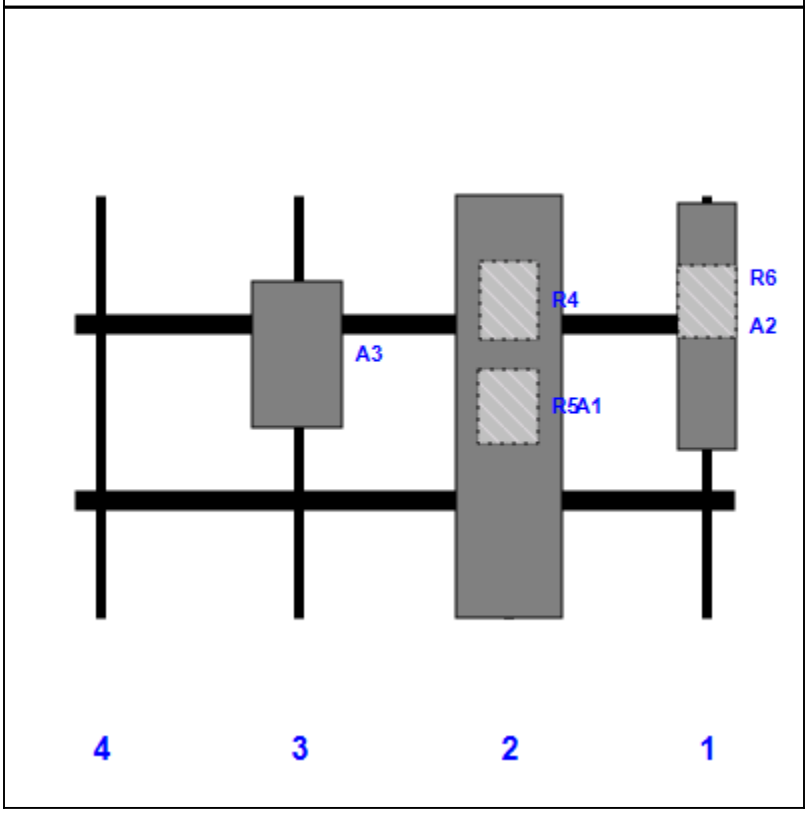
6/1/2021

Plan View



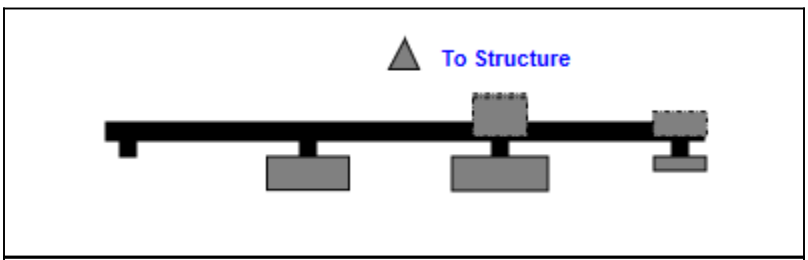
Front View

Looking Toward Structure



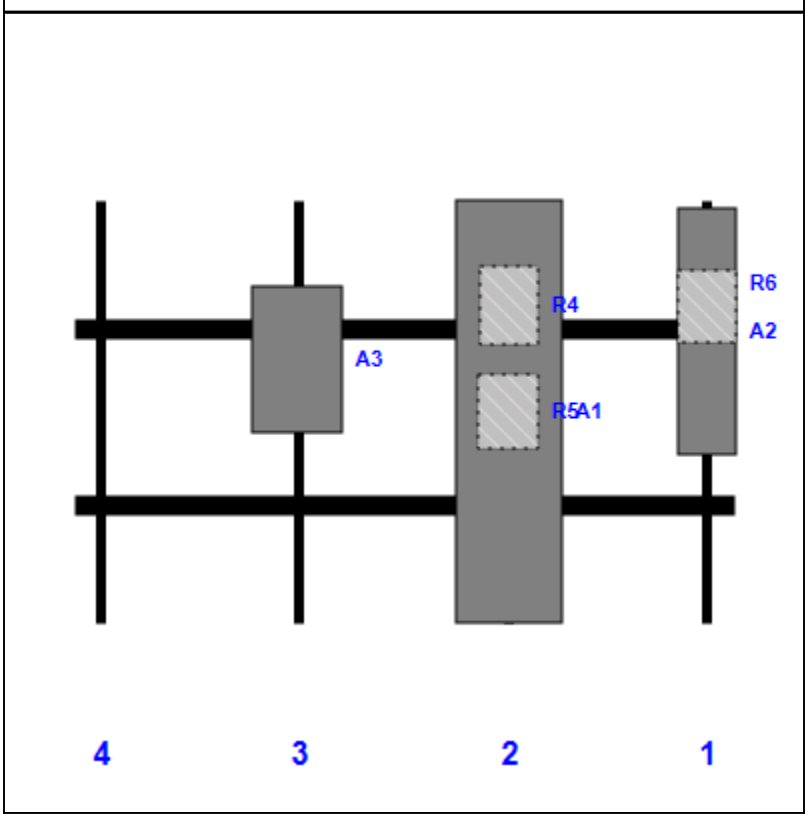
Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A2	APX16DWV-16DWVS-E-A20	55.90	13.00	144.00	1	a	Front	30.00			
R6	4415 B66A	16.50	13.40	144.00	1	a	Behind	24.00			
A1	APXVAALL24_43-U-NA20	95.90	24.00	99.00	2	a	Front	48.00			
R4	4449 B71 + B85	17.90	13.20	99.00	2	a	Behind	24.00			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00			
A3	AIR6449 B41	33.10	20.50	51.00	3	a	Front	36.00			

Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
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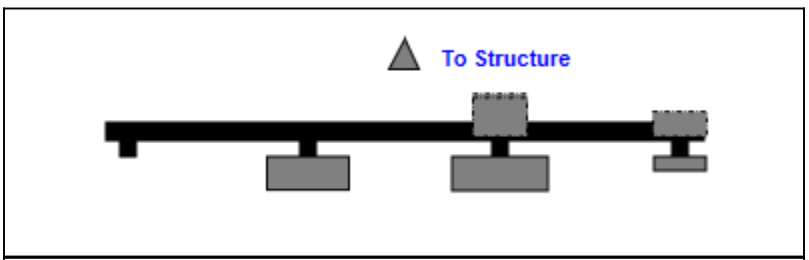
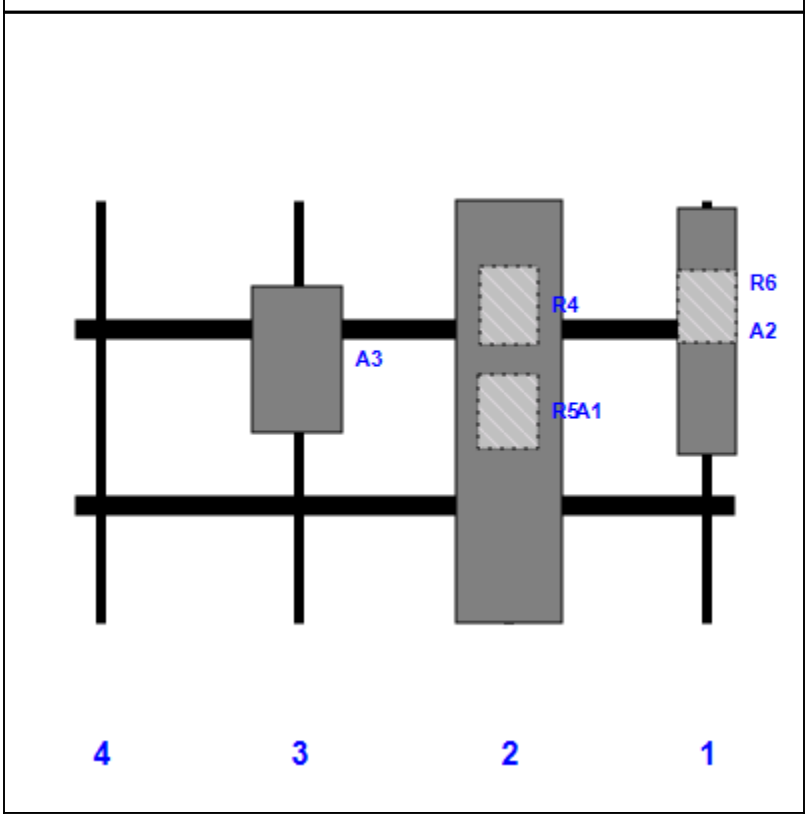
R6	4415 B66A	16.50	13.40	144.00	1	a	Behind	24.00			
A1	APXVAALL24_43-U-NA20	95.90	24.00	99.00	2	a	Front	48.00			
R4	4449 B71 + B85	17.90	13.20	99.00	2	a	Behind	24.00			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00			
A3	AIR6449 B41	33.10	20.50	51.00	3	a	Front	36.00			

Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A2	APX16DWV-16DWVS-E-A20	55.90	13.00	144.00	1	a	Front	30.00			
R6	4415 B66A	16.50	13.40	144.00	1	a	Behind	24.00			
A1	APXVAALL24_43-U-NA20	95.90	24.00	99.00	2	a	Front	48.00			
R4	4449 B71 + B85	17.90	13.20	99.00	2	a	Behind	24.00			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00			
A3	AIR6449 B41	33.10	20.50	51.00	3	a	Front	36.00			

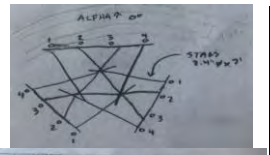
V3.0 Updated on 8-21-2020

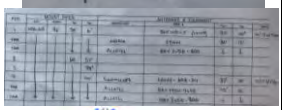
Antenna Mount Mapping Form (PATENT PENDING)

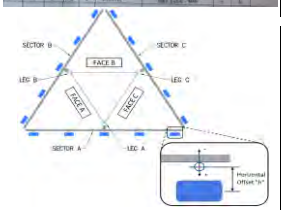
MASER CONSULTING

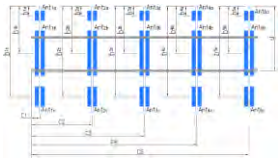
FCC #: 1060082

Tower Owner:	SBA	Mapping Date:	5/5/2021
Site Name:	SBA_STERLING	Tower Type:	Guyed Tower
Site Number or ID:	CT20001-A	Tower Height (Ft.):	200
Mapping Contractor:	TEP	Mount Elevation (Ft.):	170







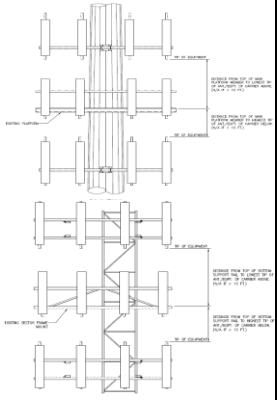


Antenna Layout (Looking Out From Tower)

Mount Azimuth (Degree) for Each Sector			Tower Leg Azimuth (Degree) for Each Sector		
Sector A:	0.00	Deg	Leg A:	0.00	Deg
Sector B:	120.00	Deg	Leg B:	120.00	Deg
Sector C:	240.00	Deg	Leg C:	240.00	Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information

Location:	300.00	Deg	Outside Face C
Climbing Facility	Corrosion Type:		Good condition.
	Access:		Climbing path was unobstructed.
	Condition:		Good condition.



Mount Pipe Configuration and Geometries [Unit = Inches]

Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "v"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "v"	Horizontal Offset "C1, C2, C3, etc."
A1	2.875"Øx0.203"x96"L	59.00	6.00	C1	2.875"Øx0.203"x96"L	59.00	6.00
A2	2.875"Øx0.203"x96"L	69.00	52.00	C2	2.875"Øx0.203"x96"L	69.00	52.00
A3	2.875"Øx0.203"x96"L	69.00	99.00	C3	2.875"Øx0.203"x96"L	69.00	99.00
A4	2.875"Øx0.203"x96"L	69.00	144.00	C4	2.875"Øx0.203"x96"L	69.00	144.00
A5				C5			
A6				C6			
B1	2.875"Øx0.203"x96"L	59.00	6.00	D1			
B2	2.875"Øx0.203"x96"L	69.00	52.00	D2			
B3	2.875"Øx0.203"x96"L	69.00	99.00	D3			
B4	2.875"Øx0.203"x96"L	69.00	144.00	D4			
B5				D5			
B6				D6			

Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	20.00
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	7
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	

Please enter additional infomation or comments below.

(3) FH 1 1/4, (1) 1.55"Ø Hybrid

Tower Face Width at Mount Elev. (ft.):	3	Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	1.8

	Enter antenna model. If not labeled, enter "Unknown".						Mounting Locations [Units are inches and degrees]			Photos of antennas
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{4a},...." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
Sector A										
Ant_{1a}	Nokia FZHN	16.70	5.00	14.60		170.25	36.00	12.00	0.00	119
Ant_{2a}	APXVTM14-ALU-I20	12.50	7.00	56.50		170.167	37.00	10.00	0.00	117
Ant_{3a}	ALU RRH2x50-800	13.00	10.80	19.70		170.25	36.00	12.00	0.00	124
Ant_{4a}										
Ant_{5a}										
Ant_{6a}										
Ant_{7a}										
Ant_{8a}	ALU RRH 1900-4x45	11.80	7.20	25.80		170.333	45.00	16.00	0.00	135
Ant_{9a}	Commscope NNVV-6	19.61	7.75	71.97		171.417	32.00	10.00	0.00	133
Ant_{10a}	ALU RRH 2x50-800	13.00	10.80	19.70		170.333	45.00	16.00	0.00	137
Ant_{11a}										
Ant_{12a}										
Ant_{13a}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector B										
Ant_{1b}	Nokia FZHN	16.70	5.00	14.60		170.25	36.00	12.00	120.00	146
Ant_{2b}	APXVTM14-ALU-I20	12.50	7.00	56.50		170.167	37.00	10.00	120.00	142
Ant_{3b}	ALU RRH2x50-800	13.00	10.80	19.70		170.25	36.00	12.00	120.00	150
Ant_{4b}										
Ant_{5b}										
Ant_{6b}										
Ant_{7b}										
Ant_{8b}	ALU RRH 4x45	11.80	7.20	25.80		170.333	45.00	16.00	120.00	161
Ant_{9b}	Commscope NNVV-6	19.61	7.75	71.97		171.417	32.00	10.00	120.00	158
Ant_{10b}	ALU RRH 2x50-800	13.00	10.80	19.70		170.333	45.00	16.00	120.00	164
Ant_{11b}										
Ant_{12b}										
Ant_{13b}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector C										
Ant_{1c}	Nokia FZHN	16.70	5.00	14.60		170.25	36.00	12.00	240.00	173
Ant_{2c}	APXVTM14-ALU-I20	12.50	7.00	56.50		170.167	37.00	10.00	240.00	169
Ant_{3c}	ALU RRH2x50-800	13.00	10.80	19.70		170.25	36.00	12.00	240.00	175
Ant_{4c}										
Ant_{5c}										
Ant_{6c}										
Ant_{7c}										
Ant_{8c}										
Ant_{9c}	ALU RRH 4x45	11.80	7.20	25.80		170.333	45.00	16.00	240.00	184
Ant_{10c}	Commscope NNVV-6	19.61	7.75	71.97		171.417	32.00	10.00	240.00	182
Ant_{11c}	ALU RRH 2x50-800	13.00	10.80	19.70		170.333	45.00	16.00	240.00	186
Ant_{12c}										
Ant_{13c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector D										
Ant_{1d}										
Ant_{2d}										
Ant_{3d}										
Ant_{4d}										
Ant_{5d}										
Ant_{6d}										
Ant_{7d}										
Ant_{8d}										
Ant_{9d}										
Ant_{10d}										
Ant_{11d}										
Ant_{12d}										
Ant_{13d}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping

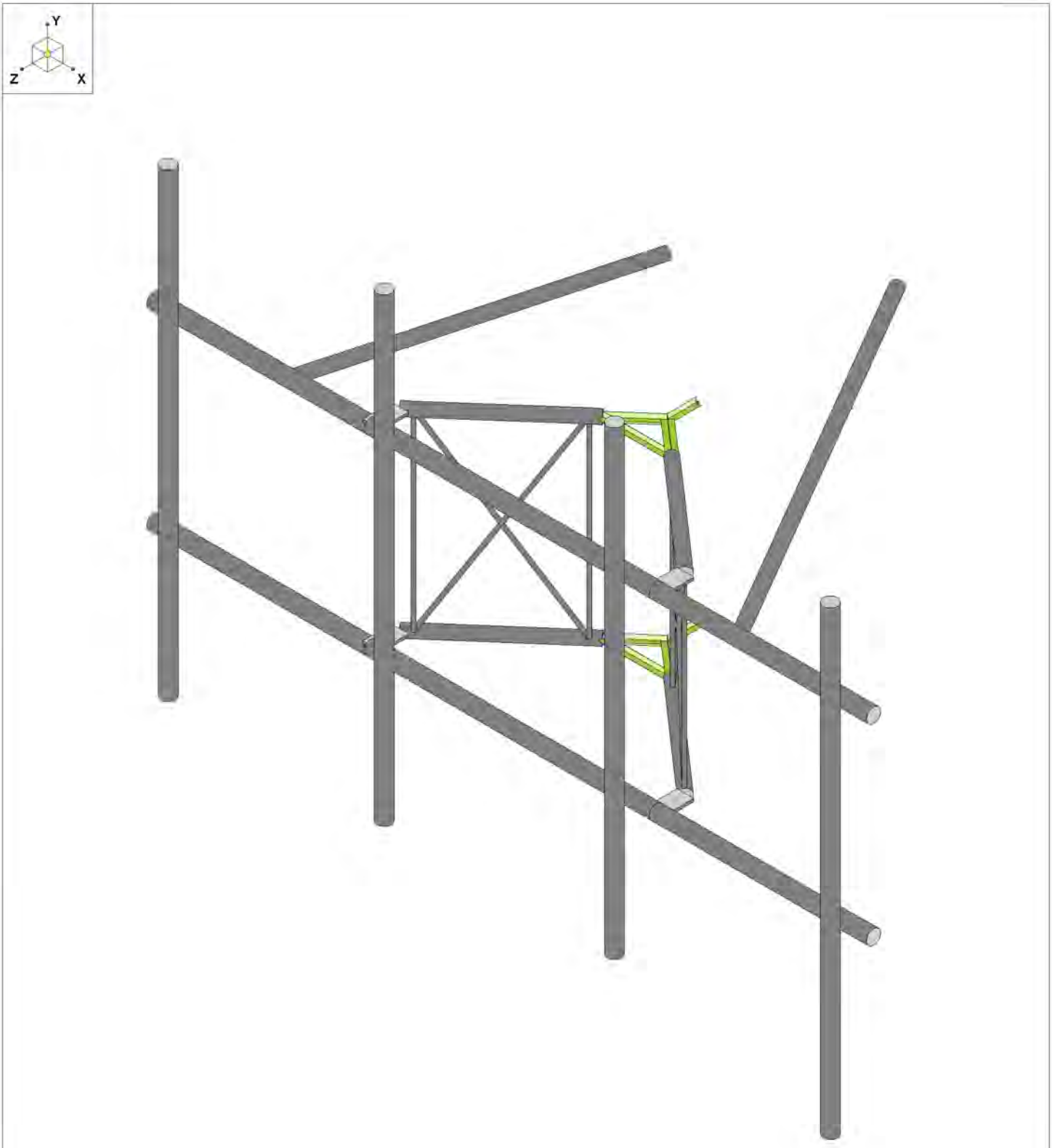
Issue #	Description of Issue	Photo #
1	Corrosion was present on the threaded rods at the mount to tower leg connection.	96, 209
2	Corrosion was present at the upper cut end of multiple mount pipes.	153, 154, 177, 202
3		
4		
5		
6		
7		
8		

Mapping Notes

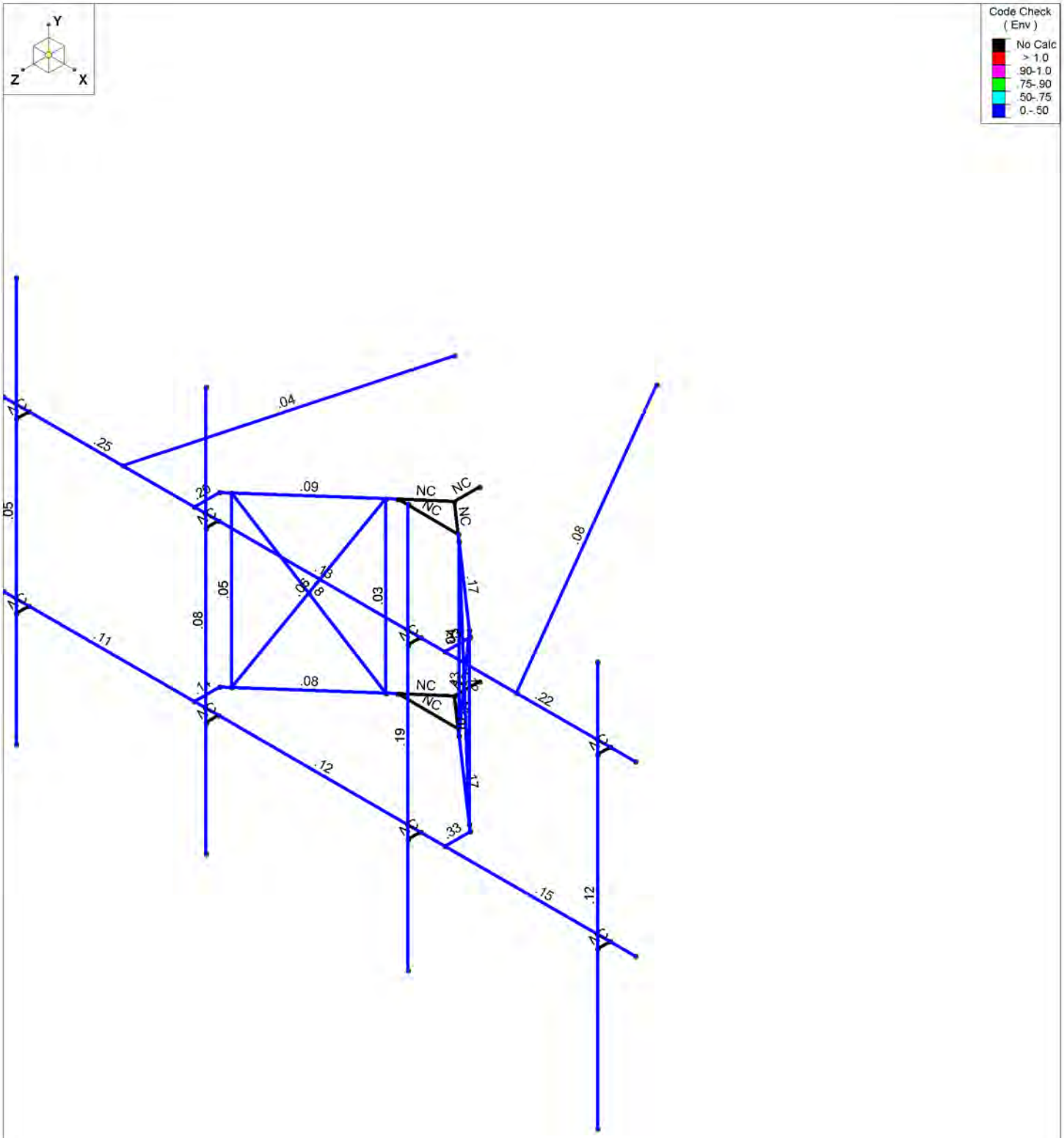
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions

1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.

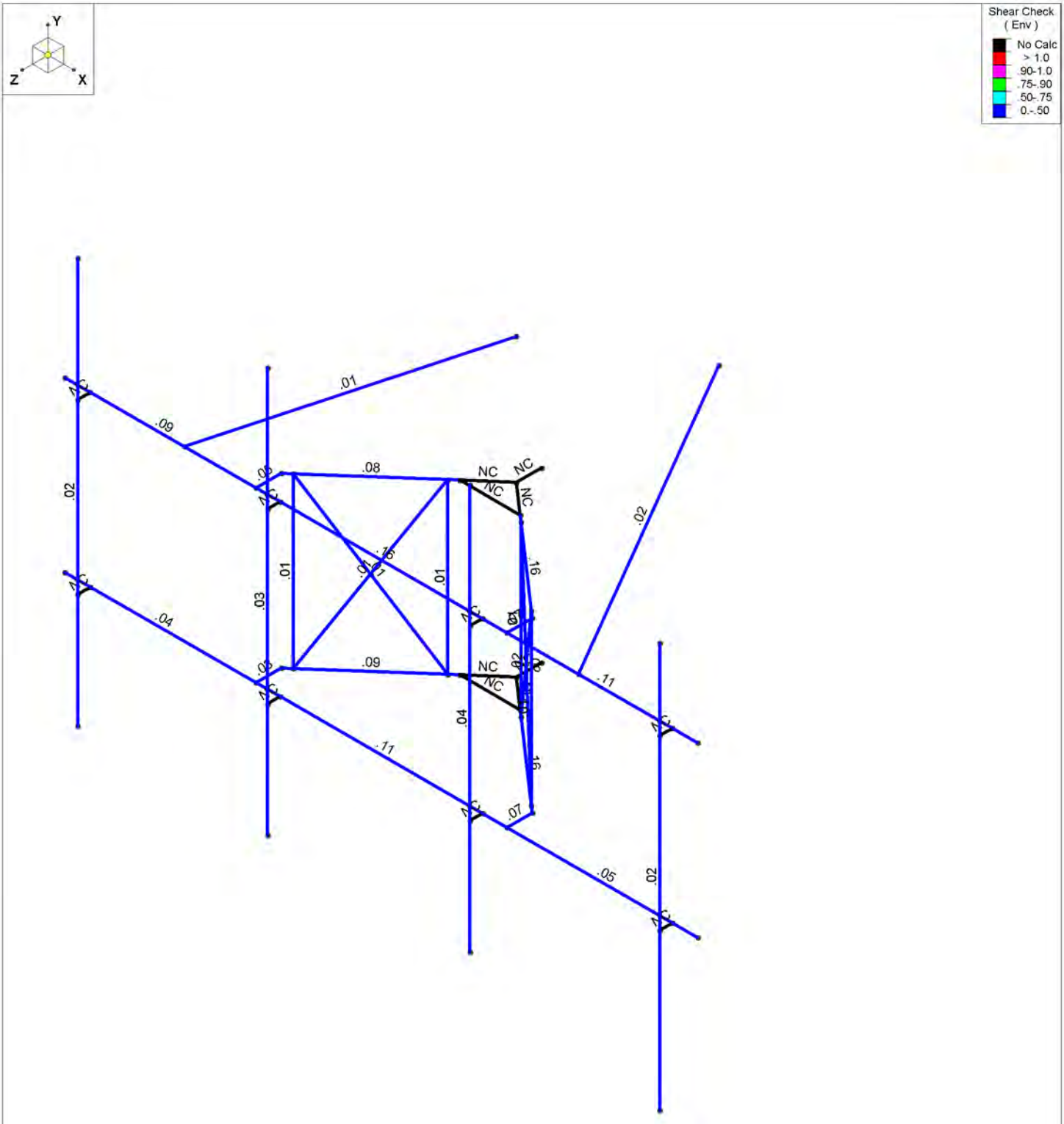


Tower Engineering Solutio...	CT20001-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 1
		June 1, 2021 at 3:13 PM
TES Project No. 106822		CT20001-A-SBA_106822_G_RISA_...



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Tower Engineering Solutio...	CT20001-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 2
		June 1, 2021 at 3:14 PM
TES Project No. 106822		CT20001-A-SBA_106822_G_RISA_...



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Tower Engineering Solutio...	CT20001-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 3
		June 1, 2021 at 3:15 PM
TES Project No. 106822		CT20001-A-SBA_106822_G_RISA_...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Antenna D	None					9			
2	Antenna Di	None					9			
3	Antenna W Front	None					9			
4	Antenna Wi Front	None					9			
5	Antenna W Side	None					9			
6	Antenna Wi Side	None					9			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						28		
11	Structure W Front	None						28		
12	Structure Wi Front	None						28		
13	Structure W Side	None						28		
14	Structure Wi Side	None						28		

Load Combinations

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

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N2	0	0	1	0	
2	N3	-2.479167	0	3.165361	0	
3	N5	2.479167	0	3.165361	0	
4	N5A	-2.479167	0	3.665361	0	
5	N6	2.479167	0	3.665361	0	
6	N7	-6.25	0	3.665361	0	
7	N9	6.25	0	3.665361	0	
8	N16	0	3.333333	1	0	
9	N17	-2.479167	3.333333	3.165361	0	
10	N18	2.479167	3.333333	3.165361	0	
11	N19	-2.479167	3.333333	3.665361	0	
12	N20	2.479167	3.333333	3.665361	0	
13	N21	-6.25	3.333333	3.665361	0	
14	N22	6.25	3.333333	3.665361	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N29	-5.75	0	3.665361	0	
16	N30	-5.75	3.333333	3.665361	0	
17	N19A	-0.596256	3.333333	1.520783	0	
18	N20A	-0.596256	0	1.520783	0	
19	N21A	0.596256	3.333333	1.520783	0	
20	N22A	0.596256	0	1.520783	0	
21	N23	-2	0	3.665361	0	
22	N24	-2	3.333333	3.665361	0	
23	N25	5.75	0	3.665361	0	
24	N26	5.75	3.333333	3.665361	0	
25	N27	2	0	3.665361	0	
26	N28	2	3.333333	3.665361	0	
27	N29A	-5.75	5.749967	3.915361	0	
28	N30A	-2	5.749967	3.915361	0	
29	N31	5.75	4.916667	3.915361	0	
30	N32	2	5.749967	3.915361	0	
31	N33	-5.75	-2.250033	3.915361	0	
32	N34	-2	-2.250033	3.915361	0	
33	N35	5.75	-3.083333	3.915361	0	
34	N36	2	-2.250033	3.915361	0	
35	N41	0	0	.5	0	
36	N42	0	3.333333	.5	0	
37	N45	-0.721783	3.333333	1.630421	0	
38	N46	-0.721783	0	1.630421	0	
39	N47	0.721783	3.333333	1.630421	0	
40	N48	0.721783	0	1.630421	0	
41	N49	-2.353641	3.333333	3.055723	0	
42	N50	-2.353641	0	3.055723	0	
43	N51	2.353641	3.333333	3.055723	0	
44	N52	2.353641	0	3.055723	0	
45	N53	-1.537712	1.666667	2.343072	0	
46	N54	1.537712	1.666667	2.343072	0	
47	N53A	3.895167	3.333333	3.665361	0	
48	N50A	-3.895167	3.333333	3.665361	0	
49	N51A	-5.75	0	3.915361	0	
50	N52A	-5.75	3.333333	3.915361	0	
51	N53B	-2	0	3.915361	0	
52	N54A	-2	3.333333	3.915361	0	
53	N55	5.75	0	3.915361	0	
54	N56	5.75	3.333333	3.915361	0	
55	N57	2	0	3.915361	0	
56	N58	2	3.333333	3.915361	0	
57	N62	0	3.333333	-3	0	
58	N63	-2.5	3.333333	-1.5	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	standoff H	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	Stanodff V	SR_0.625	Beam	BAR	A36 Gr.36	Typical	.307	.007	.007	.015

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
4	Standoff D	SR_0.75	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
5	Front face	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Stabilizer	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF	4CU5.25X0375	Beam	CU	A570 Gr.33	Typical	4.854	13.238	12.817	.228

Aluminum Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	AL1A	AACS14X13.9	Beam	AA Channel	3003-H14	Typical	11.8	44.7	401	1.19

Hot Rolled Steel Properties

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

Cold Formed Steel Properties

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

Aluminum Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M3	N3	N5A		90	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical
2	M4	N5	N6		90	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical
3	M7	N17	N19		90	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical
4	M8	N18	N20		90	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical
5	M13	N21	N19			Front face	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
6	M14	N19	N20			Front face	Beam	Pipe	A53 Gr.B	Typical
7	M15	N20	N22			Front face	Beam	Pipe	A53 Gr.B	Typical
8	M16	N7	N5A			Front face	Beam	Pipe	A53 Gr.B	Typical
9	M17	N5A	N6			Front face	Beam	Pipe	A53 Gr.B	Typical
10	M18	N6	N9			Front face	Beam	Pipe	A53 Gr.B	Typical
11	M15A	N19A	N17			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
12	M16A	N20A	N3			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
13	M17A	N21A	N18			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
14	M18A	N22A	N5			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
15	M15B	N16	N19A			RIGID	Beam	None	RIGID	DR1
16	M16B	N16	N21A			RIGID	Beam	None	RIGID	DR1
17	M17B	N2	N20A			RIGID	Beam	None	RIGID	DR1
18	M18B	N2	N22A			RIGID	Beam	None	RIGID	DR1
19	MP4A	N29A	N33			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
20	MP3A	N30A	N34			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
21	MP2A	N32	N36			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
22	MP1A	N31	N35			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
23	M24	N42	N16			RIGID	Beam	None	RIGID	DR1
24	M25	N41	N2			RIGID	Beam	None	RIGID	DR1
25	M26	N53A	N62			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
26	M27	N45	N46			Stanodff V	Beam	BAR	A36 Gr.36	Typical
27	M28	N49	N50			Stanodff V	Beam	BAR	A36 Gr.36	Typical
28	M29	N47	N48			Stanodff V	Beam	BAR	A36 Gr.36	Typical
29	M30	N51	N52			Stanodff V	Beam	BAR	A36 Gr.36	Typical
30	M31	N45	N50			Standoff D	Beam	BAR	A36 Gr.36	Typical
31	M32	N49	N46			Standoff D	Beam	BAR	A36 Gr.36	Typical
32	M33	N47	N52			Standoff D	Beam	BAR	A36 Gr.36	Typical
33	M34	N51	N48			Standoff D	Beam	BAR	A36 Gr.36	Typical
34	M34A	N19A	N21A			RIGID	Beam	None	RIGID	DR1
35	M35	N20A	N22A			RIGID	Beam	None	RIGID	DR1
36	M36	N50A	N63			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
37	M37	N26	N56			RIGID	Beam	None	RIGID	DR1
38	M38	N25	N55			RIGID	Beam	None	RIGID	DR1
39	M39	N28	N58			RIGID	Beam	None	RIGID	DR1
40	M40	N27	N57			RIGID	Beam	None	RIGID	DR1
41	M41	N24	N54A			RIGID	Beam	None	RIGID	DR1
42	M42	N23	N53B			RIGID	Beam	None	RIGID	DR1
43	M43	N30	N52A			RIGID	Beam	None	RIGID	DR1
44	M44	N29	N51A			RIGID	Beam	None	RIGID	DR1

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M3						Yes			None
2	M4						Yes			None
3	M7						Yes			None
4	M8						Yes			None
5	M13						Yes			None
6	M14						Yes			None
7	M15						Yes			None
8	M16						Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
9	M17						Yes			None
10	M18						Yes			None
11	M15A						Yes			None
12	M16A						Yes			None
13	M17A						Yes			None
14	M18A						Yes			None
15	M15B						Yes			None
16	M16B						Yes			None
17	M17B						Yes			None
18	M18B						Yes			None
19	MP4A						Yes			None
20	MP3A						Yes			None
21	MP2A						Yes			None
22	MP1A						Yes			None
23	M24		OOOOXO				Yes			None
24	M25		OOOOXO				Yes			None
25	M26	BenPIN	BenPIN				Yes			None
26	M27						Yes			None
27	M28						Yes			None
28	M29						Yes			None
29	M30						Yes			None
30	M31						Yes			None
31	M32						Yes			None
32	M33						Yes			None
33	M34						Yes			None
34	M34A						Yes			None
35	M35						Yes			None
36	M36	BenPIN	BenPIN				Yes			None
37	M37						Yes			None
38	M38						Yes			None
39	M39						Yes			None
40	M40						Yes			None
41	M41						Yes			None
42	M42						Yes			None
43	M43						Yes			None
44	M44						Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-torq...	Kyy	Kzz	Cb	Funct...
1	M3	PL5/8x3.5	.5			Lbyy						Lateral
2	M4	PL5/8x3.5	.5			Lbyy						Lateral
3	M7	PL5/8x3.5	.5			Lbyy						Lateral
4	M8	PL5/8x3.5	.5			Lbyy						Lateral
5	M13	Front face	3.771			Lbyy			2.1	2.1		Lateral
6	M14	Front face	4.958			Lbyy						Lateral
7	M15	Front face	3.771			Lbyy			2.1	2.1		Lateral
8	M16	Front face	3.771			Lbyy			2.1	2.1		Lateral
9	M17	Front face	4.958			Lbyy						Lateral
10	M18	Front face	3.771			Lbyy			2.1	2.1		Lateral
11	M15A	PIPE_2.0	2.5			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-torq...	Kyy	Kzz	Cb	Funct...
12	M16A	PIPE_2.0	2.5			Lbyy						Lateral
13	M17A	PIPE_2.0	2.5			Lbyy						Lateral
14	M18A	PIPE_2.0	2.5			Lbyy						Lateral
15	MP4A	PIPE_2.5	8			Lbyy						Lateral
16	MP3A	PIPE_2.5	8			Lbyy						Lateral
17	MP2A	PIPE_2.5	8			Lbyy						Lateral
18	MP1A	PIPE_2.5	8			Lbyy						Lateral
19	M26	Stabilizer	7.72			Lbyy						Lateral
20	M27	Stanodff V	3.333			Lbyy			.65	.65		Lateral
21	M28	Stanodff V	3.333			Lbyy			.65	.65		Lateral
22	M29	Stanodff V	3.333			Lbyy			.65	.65		Lateral
23	M30	Stanodff V	3.333			Lbyy			.65	.65		Lateral
24	M31	Standoff D	3.976			Lbyy			.65	.65		Lateral
25	M32	Standoff D	3.976			Lbyy			.65	.65		Lateral
26	M33	Standoff D	3.976			Lbyy			.65	.65		Lateral
27	M34	Standoff D	3.976			Lbyy			.65	.65		Lateral
28	M36	Stabilizer	5.35			Lbyy						Lateral

Cold Formed Steel Design Parameters

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

Aluminum Design Parameters

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N42	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N63	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N42	max	1331.989	4	1481.903	6	109.361	1	-.398	1	.666	4	.403	9
2		min	-1809.935	3	322.928	1	-1794.771	6	-1.696	6	-.905	3	-.092	1
3	N41	max	912.51	8	1504.082	5	2046.36	5	-.407	2	.456	8	.333	8
4		min	-277.549	3	330.621	2	-425.946	2	-1.723	5	-.139	3	-.053	3
5	N63	max	192.925	3	35.191	7	785.777	4	.005	3	0	1	.011	4
6		min	-184.438	4	11.095	4	-821.222	3	-.003	4	0	1	-.018	3
7	N62	max	663.716	1	50.887	6	1156.208	1	.013	8	0	1	.023	8
8		min	-690.788	2	15.788	1	-1204.301	2	-.003	3	0	1	-.005	3
9	Totals:	max	1564.16	4	2986.647	7	2676.888	1						
10		min	-1564.16	3	1080.445	4	-2676.888	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M3	1	max	414.338	1	448.665	1	-88.133	4	.004	2	.082	5	.067	4
2			min	-318.883	2	-365.918	2	-409.589	7	-.011	7	.03	2	-.043	3
3		2	max	414.338	1	448.665	1	-87.017	4	.004	2	.034	8	.082	4
4			min	-318.883	2	-365.918	2	-407.156	7	-.011	7	.004	3	-.068	3
5		3	max	414.338	1	448.665	1	-85.9	4	.004	2	.011	4	.097	4
6			min	-318.883	2	-365.918	2	-404.724	7	-.011	7	-.025	3	-.093	3
7		4	max	414.338	1	448.665	1	-84.784	4	.004	2	0	4	.138	2
8			min	-318.883	2	-365.918	2	-402.291	7	-.011	7	-.072	7	-.145	1
9		5	max	414.338	1	448.665	1	-83.667	4	.004	2	-.011	4	.184	2
10			min	-318.883	2	-365.918	2	-399.859	7	-.011	7	-.122	7	-.201	1
11	M4	1	max	729.679	1	562.257	2	89.187	1	.041	8	.177	6	.081	2
12			min	-536.757	2	-767.736	1	-946.365	6	-.006	9	.027	1	-.107	1
13		2	max	729.679	1	562.257	2	90.303	1	.041	8	.067	5	.017	4
14			min	-536.757	2	-767.736	1	-943.933	6	-.006	9	.007	2	-.017	3
15		3	max	729.679	1	562.257	2	91.42	1	.041	8	.05	1	.085	1
16			min	-536.757	2	-767.736	1	-941.5	6	-.006	9	-.092	10	-.06	2
17		4	max	729.679	1	562.257	2	92.536	1	.041	8	.061	1	.181	1
18			min	-536.757	2	-767.736	1	-939.068	6	-.006	9	-.177	6	-.13	2
19		5	max	729.679	1	562.257	2	93.653	1	.041	8	.073	1	.277	1
20			min	-536.757	2	-767.736	1	-936.635	6	-.006	9	-.294	6	-.2	2
21	M7	1	max	782.047	3	936.181	3	-31.095	2	.003	4	.085	7	.06	1
22			min	-839.914	4	-963.825	4	-426.041	7	-.012	5	.026	4	-.102	2
23		2	max	782.047	3	932.814	3	-29.978	2	.003	4	.035	6	.173	4
24			min	-839.914	4	-960.458	4	-423.608	7	-.012	5	.003	1	-.211	3
25		3	max	782.047	3	929.447	3	-28.862	2	.003	4	.019	2	.293	4
26			min	-839.914	4	-957.091	4	-421.176	7	-.012	5	-.034	1	-.328	3
27		4	max	782.047	3	926.08	3	-27.745	2	.003	4	.016	2	.412	4
28			min	-839.914	4	-953.724	4	-418.743	7	-.012	5	-.075	5	-.444	3
29		5	max	782.047	3	922.713	3	-26.629	2	.003	4	.012	2	.531	4
30			min	-839.914	4	-950.357	4	-416.311	7	-.012	5	-.127	5	-.559	3
31	M8	1	max	587.092	4	777.01	3	-77.959	2	.041	6	.178	5	.192	2
32			min	-731.956	3	-647.524	4	-931.103	5	0	1	.043	2	-.147	1
33		2	max	587.092	4	773.643	3	-76.843	2	.041	6	.067	6	.216	2
34			min	-731.956	3	-644.157	4	-928.67	5	0	1	.013	1	-.187	1
35		3	max	587.092	4	770.276	3	-75.726	2	.041	6	.023	2	.239	2
36			min	-731.956	3	-640.79	4	-926.238	5	0	1	-.058	1	-.227	1
37		4	max	587.092	4	766.91	3	-74.61	2	.041	6	.014	2	.271	4
38			min	-731.956	3	-637.423	4	-923.805	5	0	1	-.17	5	-.275	3
39		5	max	587.092	4	763.543	3	-73.493	2	.041	6	.005	2	.351	4
40			min	-731.956	3	-634.056	4	-921.373	5	0	1	-.285	5	-.371	3
41	M13	1	max	0	1	0	1	0	1	0	1	0	1	0	1
42			min	0	1	0	1	0	1	0	1	0	1	0	1
43		2	max	36.409	3	-19.103	2	72.934	3	.098	4	.082	3	-.019	1
44			min	-116.686	8	-77.51	5	-53.326	4	-.119	3	-.096	4	-.125	6
45		3	max	36.409	3	-25.301	2	72.934	3	.098	4	.151	3	.024	1
46			min	-116.686	8	-93.156	5	-53.326	4	-.119	3	-.147	4	-.054	2
47		4	max	285.979	3	-42.661	2	732.095	4	.095	4	.246	2	.066	5
48			min	-351.554	4	-143.848	5	-748.689	3	-.114	3	-.241	1	-.012	2
49		5	max	285.979	3	-48.858	2	732.095	4	.095	4	.865	4	.209	5
50			min	-351.554	4	-159.494	5	-748.689	3	-.114	3	-.875	3	.032	2
51	M14	1	max	639.899	2	256.696	7	311.65	1	.11	8	.334	4	.197	5

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
52			min	-681.256	1	-21.312	2	-386.636	2	-.031	3	-.316	3	.032	2
53		2	max	519.08	2	109.108	1	86.999	1	.061	4	.1	4	.113	1
54			min	-580.554	1	-101.229	2	-88.592	2	-.064	3	-.12	3	-.103	2
55		3	max	519.08	2	100.958	1	70.544	1	.061	4	.074	1	.039	3
56			min	-580.554	1	-109.378	2	-72.137	2	-.064	3	-.096	2	-.029	4
57		4	max	519.08	2	92.809	1	66.063	3	.061	4	.151	1	.168	2
58			min	-580.554	1	-117.528	2	-67.668	4	-.064	3	-.175	2	-.138	1
59		5	max	425.264	2	31.015	2	685.362	2	.193	2	.326	3	.453	8
60			min	-444.945	1	-591.703	5	-541.542	1	-.348	1	-.304	4	.053	3
61	M15	1	max	616.988	2	334.814	8	726.773	2	.188	2	.697	3	.491	8
62			min	-767.346	1	84.579	3	-729.131	1	-.149	1	-.655	4	.07	3
63		2	max	616.988	2	319.168	8	739.287	2	.188	2	.391	2	.183	8
64			min	-767.346	1	78.382	3	-741.645	1	-.149	1	-.349	1	-.007	3
65		3	max	70.942	4	252.772	8	358.715	1	.196	2	.548	2	.022	4
66			min	-280.664	7	56.194	3	-409.935	2	-.149	1	-.532	1	-.085	7
67		4	max	70.942	4	237.126	8	346.201	1	.196	2	.168	2	-.086	2
68			min	-280.664	7	49.996	3	-397.42	2	-.149	1	-.2	1	-.303	5
69		5	max	0	1	0	1	0	1	0	1	0	1	0	1
70			min	0	1	0	1	0	1	0	1	0	1	0	1
71	M16	1	max	0	1	0	1	0	1	0	1	0	1	0	1
72			min	0	1	0	1	0	1	0	1	0	1	0	1
73		2	max	105.552	7	-22.97	1	84.272	2	.093	4	.07	2	-.007	3
74			min	4.274	4	-90.48	6	-104.365	1	-.112	3	-.056	1	-.133	8
75		3	max	105.552	7	-29.167	1	96.787	2	.093	4	.155	2	.025	3
76			min	4.274	4	-106.126	6	-116.879	1	-.112	3	-.161	1	-.049	4
77		4	max	105.552	7	-35.365	1	109.301	2	.093	4	.252	2	.083	7
78			min	4.274	4	-121.772	6	-129.394	1	-.112	3	-.277	1	-.005	4
79		5	max	105.552	7	-41.562	1	121.816	2	.093	4	.361	2	.202	7
80			min	4.274	4	-137.418	6	-141.908	1	-.112	3	-.405	1	.046	4
81	M17	1	max	420.737	2	266.028	7	271.765	1	.107	8	.177	2	.191	7
82			min	-428.523	1	27.213	4	-197.77	2	-.03	3	-.204	1	.048	4
83		2	max	541.556	2	114.514	3	96.212	1	.141	2	.108	4	.111	3
84			min	-529.226	1	-106.52	4	-95.983	2	-.145	1	-.098	3	-.105	4
85		3	max	541.556	2	106.365	3	79.756	1	.141	2	.046	1	.032	4
86			min	-529.226	1	-114.67	4	-79.528	2	-.145	1	-.037	2	-.026	3
87		4	max	541.556	2	98.215	3	66.343	3	.141	2	.135	1	.18	4
88			min	-529.226	1	-122.819	4	-66.605	4	-.145	1	-.125	2	-.153	3
89		5	max	635.372	2	187.8	1	409.745	2	.052	1	.152	2	.436	7
90			min	-664.835	1	-640.775	6	-552.964	1	-.221	6	-.189	1	.089	1
91	M18	1	max	269.815	8	300.304	7	177.692	1	.117	4	.352	2	.474	6
92			min	-4.151	3	73.678	4	-126.441	2	-.074	3	-.466	1	.101	1
93		2	max	269.815	8	284.658	7	165.177	1	.117	4	.239	2	.202	6
94			min	-4.151	3	67.481	4	-113.926	2	-.074	3	-.305	1	.016	1
95		3	max	269.815	8	269.012	7	152.663	1	.117	4	.137	2	.018	2
96			min	-4.151	3	61.283	4	-101.412	2	-.074	3	-.155	1	-.068	5
97		4	max	269.815	8	253.366	7	140.148	1	.117	4	.051	7	-.064	4
98			min	-4.151	3	55.086	4	-88.897	2	-.074	3	-.017	4	-.314	7
99		5	max	0	1	0	1	0	1	0	1	0	1	0	1
100			min	0	1	0	1	0	1	0	1	0	1	0	1
101	M15A	1	max	869.462	3	477.886	7	106.246	2	.058	8	.091	1	.048	6
102			min	-1453.697	4	156.579	4	-75.717	1	.008	3	-.123	2	.011	1
103		2	max	1010.516	3	-7.817	2	93.244	2	.054	8	.047	1	0	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
104			min	-1334.136	4	-69.193	7	-63.467	1	.013	3	-.06	2	-.007	7
105		3	max	1007.121	3	-10.42	2	89.356	2	.054	8	.045	3	.039	7
106			min	-1330.74	4	-77.385	7	-59.579	1	.013	3	-.04	4	.005	2
107		4	max	1003.725	3	-13.023	2	85.468	2	.054	8	.072	3	.09	7
108			min	-1327.345	4	-85.578	7	-55.691	1	.013	3	-.048	4	.013	2
109		5	max	1219.32	3	426.031	7	76.462	2	.057	7	.102	2	.064	7
110			min	-1278.774	4	31.656	2	-48.479	1	.02	2	-.06	1	.015	4
111	M16A	1	max	1024.866	1	523.113	7	35.311	2	.058	6	.069	1	.054	7
112			min	-374.598	2	34.112	2	-53.283	1	.002	1	-.048	2	-.001	2
113		2	max	772.524	1	-17.213	4	21.913	2	.053	6	.038	1	0	4
114			min	-388.038	2	-62.518	7	-40.882	1	.009	1	-.028	2	-.006	6
115		3	max	769.128	1	-19.816	4	18.025	2	.053	6	.031	3	.036	7
116			min	-384.642	2	-70.711	7	-36.994	1	.009	1	-.033	4	.011	4
117		4	max	765.732	1	-22.419	4	14.137	2	.053	6	.038	3	.083	7
118			min	-381.246	2	-78.903	7	-33.106	1	.009	1	-.052	4	.024	4
119		5	max	610.018	1	409.498	7	4.229	3	.057	8	.043	3	.061	7
120			min	-485.746	2	88.175	4	-27.614	6	.018	3	-.067	4	.017	2
121	M17A	1	max	272.812	4	1004.136	6	102.699	1	.005	2	.1	2	.096	9
122			min	-1923.313	7	128.596	1	-134.562	2	-.103	5	-.069	1	-.018	1
123		2	max	555.017	4	-32.172	2	88.003	1	-.002	2	.042	3	-.003	3
124			min	-1267.014	3	-165.179	5	-119.542	2	-.1	5	-.031	4	-.013	8
125		3	max	551.621	4	-34.775	2	84.115	1	-.002	2	.046	1	.093	5
126			min	-1263.618	3	-173.372	5	-115.654	2	-.1	5	-.055	2	.017	2
127		4	max	548.225	4	-37.379	2	80.227	1	-.002	2	.098	1	.204	5
128			min	-1260.222	3	-181.564	5	-111.766	2	-.1	5	-.126	2	.039	2
129		5	max	873.588	4	931.271	5	70.62	1	-.013	2	.147	1	.145	7
130			min	-1067.247	3	77.999	2	-94.992	2	-.109	5	-.192	2	.047	4
131	M18A	1	max	2020.833	5	1010.739	8	78.995	1	-.005	1	.029	2	.089	5
132			min	-164.972	2	244.961	3	-59.363	2	-.101	6	-.049	1	-.008	2
133		2	max	1290.416	5	-.693	1	66.022	1	-.009	1	.025	3	.001	1
134			min	-394.779	2	-166.731	6	-46.449	2	-.098	6	-.033	4	-.013	6
135		3	max	1289.219	5	-3.296	1	62.134	1	-.009	1	.037	1	.094	6
136			min	-391.383	2	-174.924	6	-42.561	2	-.098	6	-.032	2	.002	1
137		4	max	1288.021	5	-5.9	1	58.246	1	-.009	1	.074	1	.205	6
138			min	-387.987	2	-183.116	6	-38.673	2	-.098	6	-.057	2	.005	1
139		5	max	1058.787	1	975.453	9	45.229	1	-.013	1	.107	1	.146	8
140			min	-776.053	2	-89.927	1	-33.788	2	-.108	6	-.081	2	.019	9
141	M15B	1	max	870.234	1	512.664	7	91.259	1	.119	8	-.005	3	.412	7
142			min	-1470.664	2	142.429	4	-71.287	2	.031	1	-.032	8	.117	2
143		2	max	870.234	1	512.664	7	91.259	1	.119	8	.01	1	.311	5
144			min	-1470.664	2	142.429	4	-71.287	2	.031	1	-.028	6	.089	2
145		3	max	870.234	1	512.664	7	91.259	1	.119	8	.028	1	.212	5
146			min	-1470.664	2	142.429	4	-71.287	2	.031	1	-.043	2	.06	2
147		4	max	870.234	1	512.664	7	91.259	1	.119	8	.046	1	.112	5
148			min	-1470.664	2	142.429	4	-71.287	2	.031	1	-.057	2	.032	2
149		5	max	870.234	1	512.664	7	91.259	1	.119	8	.064	1	.014	8
150			min	-1470.664	2	142.429	4	-71.287	2	.031	1	-.071	2	-.006	3
151	M16B	1	max	317.026	4	985.956	6	47.312	2	-.028	2	.032	8	.807	6
152			min	-1952.384	7	87.66	1	-58.363	1	-.105	5	.005	3	.082	1
153		2	max	317.026	4	985.956	6	47.312	2	-.028	2	.03	6	.612	6
154			min	-1952.384	7	87.66	1	-58.363	1	-.105	5	-.004	1	.064	1
155		3	max	317.026	4	985.956	6	47.312	2	-.028	2	.033	2	.417	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
156			min	-1952.384	7	87.66	1	-58.363	1	-.105	5	-.015	1	.047	1
157		4	max	317.026	4	985.956	6	47.312	2	-.028	2	.042	2	.222	6
158			min	-1952.384	7	87.66	1	-58.363	1	-.105	5	-.027	1	.03	1
159		5	max	317.026	4	985.956	6	47.312	2	-.028	2	.052	2	.034	9
160			min	-1952.384	7	87.66	1	-58.363	1	-.105	5	-.038	1	.006	4
161	M17B	1	max	1100.182	1	542.343	7	-5.745	1	.12	6	.039	5	.443	7
162			min	-457.942	2	52.368	2	-49.233	8	.039	3	-.004	2	.048	4
163		2	max	1100.182	1	542.343	7	-5.745	1	.12	6	.03	5	.335	7
164			min	-457.942	2	52.368	2	-49.233	8	.039	3	-.01	2	.037	4
165		3	max	1100.182	1	542.343	7	-5.745	1	.12	6	.028	1	.228	7
166			min	-457.942	2	52.368	2	-49.233	8	.039	3	-.016	2	.025	4
167		4	max	1100.182	1	542.343	7	-5.745	1	.12	6	.027	1	.121	7
168			min	-457.942	2	52.368	2	-49.233	8	.039	3	-.021	2	.013	4
169		5	max	1100.182	1	542.343	7	-5.745	1	.12	6	.025	1	.015	6
170			min	-457.942	2	52.368	2	-49.233	8	.039	3	-.027	2	-.001	1
171	M18B	1	max	2014.056	5	982.013	8	42.789	3	-.03	4	.004	2	.811	8
172			min	-239.757	2	235.272	3	-17.185	4	-.104	6	-.039	5	.199	3
173		2	max	2014.056	5	982.013	8	42.789	3	-.03	4	.007	2	.616	8
174			min	-239.757	2	235.272	3	-17.185	4	-.104	6	-.032	5	.152	3
175		3	max	2014.056	5	982.013	8	42.789	3	-.03	4	.01	2	.422	8
176			min	-239.757	2	235.272	3	-17.185	4	-.104	6	-.026	1	.106	3
177		4	max	2014.056	5	982.013	8	42.789	3	-.03	4	.013	2	.228	8
178			min	-239.757	2	235.272	3	-17.185	4	-.104	6	-.024	1	.059	3
179		5	max	2014.056	5	982.013	8	42.789	3	-.03	4	.019	3	.034	6
180			min	-239.757	2	235.272	3	-17.185	4	-.104	6	-.024	4	.005	2
181	MP4A	1	max	0	1	.006	1	.016	3	0	1	0	1	0	1
182			min	0	1	-.006	2	-.023	8	0	1	0	1	0	1
183		2	max	33.194	5	26.546	4	26.562	1	0	1	.027	1	.027	3
184			min	13.148	1	-26.545	3	-26.565	2	0	1	-.027	2	-.027	4
185		3	max	13.414	2	-16.691	3	72.983	3	.041	3	.017	1	.005	3
186			min	-9.539	1	-99.913	8	-53.195	4	-.045	4	-.019	2	-.009	4
187		4	max	-13.148	4	26.543	3	26.56	2	0	1	.027	1	.027	3
188			min	-33.194	6	-26.544	4	-26.557	1	0	1	-.027	2	-.027	4
189		5	max	0	1	.006	4	.022	8	0	1	0	1	0	1
190			min	0	1	-.007	7	-.015	3	0	1	0	1	0	1
191	MP3A	1	max	0	1	.011	3	.034	1	0	1	0	1	0	1
192			min	0	1	-.017	8	-.085	6	0	1	0	1	0	1
193		2	max	95.829	5	51.596	4	85.2	1	0	1	.027	1	.027	3
194			min	40.92	2	-51.599	3	-85.222	2	0	1	-.027	2	-.027	4
195		3	max	95.665	8	102.463	3	94.411	5	.068	3	.008	2	.029	4
196			min	2.836	3	-123.625	4	19.407	2	-.064	4	-.015	1	-.032	3
197		4	max	-13.148	2	26.548	3	26.554	2	0	1	.027	1	.027	3
198			min	-33.194	5	-26.547	4	-26.55	1	0	1	-.027	2	-.027	4
199		5	max	0	1	.005	8	.016	8	0	1	0	1	0	1
200			min	0	1	-.003	1	-.003	3	0	1	0	1	0	1
201	MP2A	1	max	0	1	.064	4	.245	1	0	1	0	1	0	1
202			min	0	1	-.176	7	-.343	6	0	1	0	1	0	1
203		2	max	387.282	5	261.042	4	524.73	1	0	1	.495	1	.229	3
204			min	112.992	1	-261.075	3	-524.782	2	0	1	-.495	2	-.229	4
205		3	max	395.397	2	139.738	3	202.157	8	.071	1	.224	1	.047	3
206			min	-277.218	1	-99.557	4	51.55	1	-.103	2	-.237	2	-.041	4
207		4	max	-72.548	4	228.124	3	493.705	2	0	1	.494	1	.228	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
208			min	-309.479	6	-228.11	4	-493.682	1	0	1	-.494	2	-.228	4
209		5	max	0	1	.127	8	.228	5	0	1	0	1	0	1
210			min	0	1	-.046	3	-.123	2	0	1	0	1	0	1
211	MP1A	1	max	0	1	.005	3	.031	4	0	1	0	1	0	1
212			min	0	1	-.085	8	-.057	7	0	1	0	1	0	1
213		2	max	-6.255	3	261.629	7	209.474	2	.036	3	.162	1	.304	7
214			min	-93.573	8	8.925	4	-158.261	1	-.027	4	-.227	2	.087	2
215		3	max	132.789	7	248.764	8	84.767	8	.036	3	.062	8	-.029	4
216			min	12.59	4	70.297	3	-28.189	3	-.027	4	-.019	3	-.193	7
217		4	max	-13.148	1	26.546	3	26.523	2	0	1	.026	1	.027	3
218			min	-33.194	7	-26.537	4	-26.52	1	0	1	-.026	2	-.027	4
219		5	max	0	1	.039	8	.03	1	0	1	0	1	0	1
220			min	0	1	-.004	3	-.027	2	0	1	0	1	0	1
221	M24	1	max	109.361	1	1481.903	6	1809.935	3	.403	9	.666	4	1.696	6
222			min	-1794.771	6	322.928	1	-1331.989	4	-.092	1	-.905	3	.398	1
223		2	max	109.361	1	1481.903	6	1809.935	3	.403	9	.499	4	1.511	6
224			min	-1794.771	6	322.928	1	-1331.989	4	-.092	1	-.679	3	.358	1
225		3	max	109.361	1	1481.903	6	1809.935	3	.403	9	.333	4	1.325	6
226			min	-1794.771	6	322.928	1	-1331.989	4	-.092	1	-.452	3	.318	1
227		4	max	109.361	1	1481.903	6	1809.935	3	.403	9	.166	4	1.14	6
228			min	-1794.771	6	322.928	1	-1331.989	4	-.092	1	-.226	3	.277	1
229		5	max	109.361	1	1481.903	6	1809.935	3	.403	9	0	1	.955	6
230			min	-1794.771	6	322.928	1	-1331.989	4	-.092	1	0	1	.237	1
231	M25	1	max	2046.36	5	1504.082	5	277.549	3	.333	8	.456	8	1.723	5
232			min	-425.946	2	330.621	2	-912.51	8	-.053	3	-.139	3	.407	2
233		2	max	2046.36	5	1504.082	5	277.549	3	.333	8	.342	8	1.535	5
234			min	-425.946	2	330.621	2	-912.51	8	-.053	3	-.104	3	.365	2
235		3	max	2046.36	5	1504.082	5	277.549	3	.333	8	.228	8	1.347	5
236			min	-425.946	2	330.621	2	-912.51	8	-.053	3	-.069	3	.324	2
237		4	max	2046.36	5	1504.082	5	277.549	3	.333	8	.114	8	1.159	5
238			min	-425.946	2	330.621	2	-912.51	8	-.053	3	-.035	3	.283	2
239		5	max	2046.36	5	1504.082	5	277.549	3	.333	8	0	1	.971	5
240			min	-425.946	2	330.621	2	-912.51	8	-.053	3	0	1	.241	2
241	M26	1	max	1296.248	1	50.598	5	31.554	4	.026	8	0	1	0	1
242			min	-1351.43	2	16.077	1	-31.554	3	-.005	3	0	1	0	1
243		2	max	1305.467	1	25.299	5	15.777	4	.026	8	.046	4	-.023	4
244			min	-1360.65	2	8.039	1	-15.777	3	-.005	3	-.046	3	-.073	5
245		3	max	1314.687	1	0	1	0	1	.026	8	.061	4	-.031	1
246			min	-1369.869	2	0	1	0	1	-.005	3	-.061	3	-.098	5
247		4	max	1323.907	1	-8.039	1	15.777	3	.026	8	.046	4	-.023	1
248			min	-1379.089	2	-25.299	5	-15.777	4	-.005	3	-.046	3	-.073	5
249		5	max	1333.127	1	-16.077	1	31.554	3	.026	8	0	1	0	1
250			min	-1388.309	2	-50.598	5	-31.554	4	-.005	3	0	1	0	1
251	M27	1	max	10.586	2	5.018	3	4.563	2	0	1	.002	5	.003	3
252			min	-15.712	1	-5.012	4	-4.545	1	0	2	-.002	6	-.003	4
253		2	max	11.63	2	2.613	3	2.247	6	0	1	0	2	0	8
254			min	-14.668	1	-2.607	4	-2.205	5	0	2	0	1	0	7
255		3	max	12.674	2	.228	1	.265	1	0	1	.001	2	.001	4
256			min	-13.624	1	-.219	2	-.247	2	0	2	-.001	1	-.001	3
257		4	max	13.718	2	2.21	8	2.67	1	0	1	0	6	0	4
258			min	-12.58	1	-2.214	7	-2.652	2	0	2	0	5	0	3
259		5	max	14.762	2	4.608	4	5.075	1	0	1	.003	1	.002	7

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
260			min	-11.536	1	-4.601	3	-5.056	2	0	2	-.003	2	-.002	8
261	M28	1	max	39.224	4	5.258	3	5.853	6	0	3	0	4	.003	3
262			min	-42.149	3	-5.339	4	-3.212	1	0	4	-.005	6	-.004	4
263		2	max	40.268	4	2.853	3	3.585	6	0	3	0	2	0	1
264			min	-41.105	3	-2.935	4	-.807	1	0	4	-.002	1	0	2
265		3	max	41.312	4	.557	1	1.72	7	0	3	.001	2	.001	4
266			min	-40.061	3	-.633	2	-.359	2	0	4	-.001	1	-.001	3
267		4	max	42.356	4	2.02	8	4.003	1	0	3	.001	6	0	4
268			min	-39.017	3	-2.25	7	-2.764	2	0	4	0	4	0	3
269		5	max	43.4	4	4.288	8	6.408	1	0	3	.005	5	.002	7
270			min	-37.973	3	-4.518	7	-5.169	2	0	4	-.003	2	-.002	8
271	M29	1	max	32.244	2	4.94	3	5.139	2	0	3	.003	1	.003	3
272			min	-37.637	1	-5.092	4	-4.985	1	0	4	-.003	2	-.003	4
273		2	max	33.288	2	2.536	3	2.734	2	0	3	0	3	0	4
274			min	-36.593	1	-2.688	4	-2.58	1	0	4	0	5	0	7
275		3	max	34.332	2	.15	1	.329	2	0	3	.001	2	.001	4
276			min	-35.549	1	-.299	2	-.175	1	0	4	-.001	1	-.001	3
277		4	max	35.376	2	2.122	4	2.444	5	0	3	0	2	0	4
278			min	-34.505	1	-2.414	7	-2.076	2	0	4	0	1	0	3
279		5	max	36.42	2	4.527	4	4.712	5	0	3	.003	5	.003	7
280			min	-33.461	1	-4.682	7	-4.481	2	0	4	-.002	2	-.002	4
281	M30	1	max	251.61	1	5.278	3	8.617	6	0	1	.001	1	.003	3
282			min	-254.487	2	-5.375	4	-4.256	1	0	2	-.009	6	-.004	4
283		2	max	252.654	1	2.873	3	6.349	6	0	1	0	3	0	1
284			min	-253.444	2	-2.97	4	-1.851	1	0	2	-.004	5	0	2
285		3	max	253.698	1	.468	3	4.183	8	0	1	.002	2	.001	4
286			min	-252.4	2	-.565	4	.55	3	0	2	-.002	1	-.001	3
287		4	max	254.742	1	1.992	8	6.073	5	0	1	.004	6	0	4
288			min	-251.356	2	-2.266	7	-.111	2	0	2	0	1	0	3
289		5	max	255.786	1	4.26	8	8.341	5	0	1	.009	5	.002	7
290			min	-250.312	2	-4.534	7	-2.516	2	0	2	0	3	-.002	8
291	M31	1	max	-204.962	4	6.427	7	5.268	2	0	2	.004	4	.003	7
292			min	-621.123	7	-.998	4	-5.412	1	0	1	-.004	3	0	4
293		2	max	-202.169	4	.901	7	2.848	2	0	2	.001	2	0	4
294			min	-616.133	7	-.014	2	-2.992	1	0	1	-.001	1	-.001	7
295		3	max	-199.377	4	1.842	3	2.724	3	.001	1	.003	2	0	7
296			min	-613.259	7	-4.625	7	-1.219	4	0	2	-.003	1	0	2
297		4	max	-189.412	4	-.704	4	4.985	1	.001	1	.002	7	0	8
298			min	-608.269	7	-2.247	7	-3.368	2	0	2	0	4	0	3
299		5	max	-186.619	4	.301	4	7.405	1	.001	1	.007	1	.005	7
300			min	-603.279	7	-7.774	7	-5.788	2	0	2	-.004	2	0	4
301	M32	1	max	642.197	7	7.629	8	4.896	4	.002	3	.005	7	.005	6
302			min	44.865	2	.672	3	-6.485	3	-.001	4	-.003	4	.001	2
303		2	max	649.273	7	2.542	7	2.831	4	.002	3	.002	5	0	7
304			min	45.217	2	.141	2	-4.42	3	-.001	4	0	2	0	2
305		3	max	664.44	7	4.77	8	2.28	2	.002	3	.003	4	.001	4
306			min	45.57	2	-2.74	4	-3.801	1	-.001	4	-.003	3	-.001	3
307		4	max	671.516	7	-.243	4	3.053	2	0	1	.002	4	0	3
308			min	41.058	2	-.803	7	-2.832	1	0	2	-.002	3	-.001	8
309		5	max	678.592	7	.595	3	5.473	2	0	1	.005	2	.002	8
310			min	41.41	2	-6.282	8	-5.252	1	0	2	-.005	1	0	1
311	M33	1	max	-203.938	1	7.55	8	6.805	1	0	8	.006	2	.003	8

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
312			min	-1362.305	6	-.489	3	-6.328	2	0	3	-.006	1	0	2
313		2	max	-203.585	1	2.024	8	4.385	1	0	8	0	5	0	3
314			min	-1355.339	6	.516	3	-3.908	2	0	3	0	1	-.001	8
315		3	max	-210.318	1	2.87	1	.487	1	0	1	.004	5	.001	1
316			min	-1348.374	6	-4.735	2	-6.247	6	-.002	8	-.002	2	-.002	2
317		4	max	-209.966	1	.121	1	-1.753	4	0	3	.001	1	.003	6
318			min	-1336.598	6	-5.621	6	-7.382	5	-.002	8	-.003	6	0	1
319		5	max	-209.614	1	-.222	3	.311	4	0	3	-.002	1	.01	8
320			min	-1329.633	6	-10.914	8	-9.341	5	-.002	8	-.011	5	.001	1
321	M34	1	max	1341.084	8	10.81	7	9.714	8	0	1	.002	3	.01	7
322			min	332.597	3	1.168	4	-4.052	3	-.002	8	-.011	8	.003	2
323		2	max	1348.16	8	5.575	5	8.043	8	0	1	0	2	.003	8
324			min	332.813	3	1.038	2	-1.987	3	-.002	8	-.003	5	0	2
325		3	max	1360.598	8	3.679	1	6.371	8	0	1	.005	8	0	2
326			min	333.029	3	-1.711	2	-.321	3	-.002	8	-.003	1	-.002	1
327		4	max	1367.674	8	-.026	1	3.187	1	0	7	.002	4	0	4
328			min	327.538	3	-2.032	6	-3.515	2	0	4	-.001	3	-.001	7
329		5	max	1374.75	8	.768	1	5.607	1	0	7	.003	1	.003	6
330			min	327.754	3	-7.402	7	-5.935	2	0	4	-.003	2	0	1
331	M34A	1	max	273.324	2	40.936	1	-.036	4	0	1	.052	2	.078	6
332			min	-249.331	1	-25.935	2	-11.98	8	-.032	9	-.026	1	.009	1
333		2	max	273.324	2	40.936	1	-.036	4	0	1	.051	2	.072	6
334			min	-249.331	1	-25.935	2	-11.98	8	-.032	9	-.028	1	-.003	1
335		3	max	273.324	2	40.936	1	-.036	4	0	1	.05	2	.067	6
336			min	-249.331	1	-25.935	2	-11.98	8	-.032	9	-.029	1	-.015	1
337		4	max	273.324	2	40.936	1	-.036	4	0	1	.049	2	.063	2
338			min	-249.331	1	-25.935	2	-11.98	8	-.032	9	-.03	1	-.028	1
339		5	max	273.324	2	40.936	1	-.036	4	0	1	.049	2	.07	2
340			min	-249.331	1	-25.935	2	-11.98	8	-.032	9	-.031	1	-.04	1
341	M35	1	max	104.977	2	28.837	10	14.418	7	.002	3	.021	2	.083	5
342			min	-87.86	1	-4.781	9	-6.719	2	-.029	8	-.044	1	-.005	2
343		2	max	104.977	2	28.837	10	14.418	7	.002	3	.019	2	.077	5
344			min	-87.86	1	-4.781	9	-6.719	2	-.029	8	-.04	1	-.011	2
345		3	max	104.977	2	28.837	10	14.418	7	.002	3	.017	2	.07	5
346			min	-87.86	1	-4.781	9	-6.719	2	-.029	8	-.035	1	-.016	2
347		4	max	104.977	2	28.837	10	14.418	7	.002	3	.015	2	.063	5
348			min	-87.86	1	-4.781	9	-6.719	2	-.029	8	-.031	1	-.022	2
349		5	max	104.977	2	28.837	10	14.418	7	.002	3	.013	2	.06	1
350			min	-87.86	1	-4.781	9	-6.719	2	-.029	8	-.027	1	-.027	2
351	M36	1	max	821.457	4	35.067	5	27.343	4	.011	4	0	1	0	1
352			min	-857.888	3	11.142	2	-27.343	3	-.018	3	0	1	0	1
353		2	max	817.764	4	17.534	5	13.671	4	.011	4	.027	4	-.011	1
354			min	-854.196	3	5.571	2	-13.671	3	-.018	3	-.027	3	-.035	5
355		3	max	814.072	4	0	1	0	1	.011	4	.037	4	-.015	2
356			min	-850.503	3	0	1	0	1	-.018	3	-.037	3	-.047	5
357		4	max	810.379	4	-5.571	1	13.671	3	.011	4	.027	4	-.011	2
358			min	-846.81	3	-17.534	5	-13.671	4	-.018	3	-.027	3	-.035	5
359		5	max	806.687	4	-11.142	1	27.343	3	.011	4	0	1	0	1
360			min	-843.118	3	-35.067	5	-27.343	4	-.018	3	0	1	0	1
361	M37	1	max	333.958	1	221.992	8	280.661	7	-.117	2	.045	4	.149	1
362			min	-385.109	2	43.883	3	-70.939	4	-.406	5	-.098	3	-.196	2
363		2	max	333.958	1	221.992	8	280.661	7	-.117	2	.04	4	.143	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
364			min	-385.109	2	43.883	3	-70.939	4	-.406	5	-.083	3	-.2	2
365		3	max	333.958	1	221.992	8	280.661	7	-.117	2	.036	4	.137	1
366			min	-385.109	2	43.883	3	-70.939	4	-.406	5	-.067	3	-.204	2
367		4	max	333.958	1	221.992	8	280.661	7	-.117	2	.031	4	.131	1
368			min	-385.109	2	43.883	3	-70.939	4	-.406	5	-.052	3	-.208	2
369		5	max	333.958	1	221.992	8	280.661	7	-.117	2	.027	4	.125	1
370			min	-385.109	2	43.883	3	-70.939	4	-.406	5	-.036	3	-.212	2
371	M38	1	max	127.312	1	237.318	7	4.132	3	-.089	4	.082	5	.074	3
372			min	-76.164	2	48.509	4	-269.805	8	-.426	7	.008	2	-.117	4
373		2	max	127.312	1	237.318	7	4.132	3	-.089	4	.066	5	.067	3
374			min	-76.164	2	48.509	4	-269.805	8	-.426	7	.003	2	-.12	4
375		3	max	127.312	1	237.318	7	4.132	3	-.089	4	.051	5	.059	3
376			min	-76.164	2	48.509	4	-269.805	8	-.426	7	-.004	4	-.123	4
377		4	max	127.312	1	237.318	7	4.132	3	-.089	4	.036	3	.052	3
378			min	-76.164	2	48.509	4	-269.805	8	-.426	7	-.016	4	-.126	4
379		5	max	127.312	1	237.318	7	4.132	3	-.089	4	.036	3	.045	3
380			min	-76.164	2	48.509	4	-269.805	8	-.426	7	-.027	4	-.139	8
381	M39	1	max	579.853	1	560.581	5	503.999	3	.125	2	.19	4	.223	2
382			min	-723.877	2	-157.558	2	-463.741	4	-.197	1	-.169	3	-.375	1
383		2	max	579.853	1	560.581	5	503.999	3	.125	2	.161	4	.233	2
384			min	-723.877	2	-157.558	2	-463.741	4	-.197	1	-.137	3	-.407	1
385		3	max	579.853	1	560.581	5	503.999	3	.125	2	.132	4	.243	2
386			min	-723.877	2	-157.558	2	-463.741	4	-.197	1	-.106	3	-.439	1
387		4	max	579.853	1	560.581	5	503.999	3	.125	2	.108	2	.253	2
388			min	-723.877	2	-157.558	2	-463.741	4	-.197	1	-.08	1	-.471	1
389		5	max	579.853	1	560.581	5	503.999	3	.125	2	.103	2	.262	2
390			min	-723.877	2	-157.558	2	-463.741	4	-.197	1	-.071	1	-.504	1
391	M40	1	max	600.117	1	583.232	6	139.441	3	.356	4	.105	1	.197	1
392			min	-456.091	2	-147.849	1	-179.743	4	-.421	3	-.126	2	-.343	2
393		2	max	600.117	1	583.232	6	139.441	3	.356	4	.097	1	.206	1
394			min	-456.091	2	-147.849	1	-179.743	4	-.421	3	-.12	2	-.375	2
395		3	max	600.117	1	583.232	6	139.441	3	.356	4	.088	1	.215	1
396			min	-456.091	2	-147.849	1	-179.743	4	-.421	3	-.114	2	-.408	2
397		4	max	600.117	1	583.232	6	139.441	3	.356	4	.08	1	.225	1
398			min	-456.091	2	-147.849	1	-179.743	4	-.421	3	-.109	2	-.441	2
399		5	max	600.117	1	583.232	6	139.441	3	.356	4	.071	1	.234	1
400			min	-456.091	2	-147.849	1	-179.743	4	-.421	3	-.103	2	-.474	2
401	M41	1	max	208.268	1	207.669	7	244.824	3	.221	2	.13	4	-.028	1
402			min	-281.377	2	50.614	4	-265.909	4	-.185	1	-.13	3	-.103	5
403		2	max	208.268	1	207.669	7	244.824	3	.221	2	.114	4	-.034	1
404			min	-281.377	2	50.614	4	-265.909	4	-.185	1	-.114	3	-.116	5
405		3	max	208.268	1	207.669	7	244.824	3	.221	2	.097	4	-.04	1
406			min	-281.377	2	50.614	4	-265.909	4	-.185	1	-.099	3	-.128	5
407		4	max	208.268	1	207.669	7	244.824	3	.221	2	.081	4	-.047	1
408			min	-281.377	2	50.614	4	-265.909	4	-.185	1	-.084	3	-.141	5
409		5	max	208.268	1	207.669	7	244.824	3	.221	2	.064	4	-.053	1
410			min	-281.377	2	50.614	4	-265.909	4	-.185	1	-.068	3	-.154	5
411	M42	1	max	158.813	1	217.752	8	120.967	2	.22	4	.075	3	.061	2
412			min	-85.703	2	53.782	3	-100.438	1	-.186	3	-.076	4	-.137	1
413		2	max	158.813	1	217.752	8	120.967	2	.22	4	.073	3	.054	2
414			min	-85.703	2	53.782	3	-100.438	1	-.186	3	-.073	4	-.142	1
415		3	max	158.813	1	217.752	8	120.967	2	.22	4	.072	3	.048	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
416			min	-85.703	2	53.782	3	-100.438	1	-.186	3	-.07	4	-.147	1
417		4	max	158.813	1	217.752	8	120.967	2	.22	4	.07	3	.041	2
418			min	-85.703	2	53.782	3	-100.438	1	-.186	3	-.067	4	-.154	5
419		5	max	158.813	1	217.752	8	120.967	2	.22	4	.068	3	.035	2
420			min	-85.703	2	53.782	3	-100.438	1	-.186	3	-.064	4	-.167	5
421	M43	1	max	53.181	4	61.919	5	36.489	3	.158	6	.073	4	.098	4
422			min	-72.987	3	12.819	2	-116.686	8	.037	1	-.05	3	-.119	3
423		2	max	53.181	4	61.919	5	36.489	3	.158	6	.066	4	.097	4
424			min	-72.987	3	12.819	2	-116.686	8	.037	1	-.048	3	-.12	3
425		3	max	53.181	4	61.919	5	36.489	3	.158	6	.059	4	.095	4
426			min	-72.987	3	12.819	2	-116.686	8	.037	1	-.045	3	-.122	3
427		4	max	53.181	4	61.919	5	36.489	3	.158	6	.052	4	.094	4
428			min	-72.987	3	12.819	2	-116.686	8	.037	1	-.043	3	-.124	3
429		5	max	53.181	4	61.919	5	36.489	3	.158	6	.045	4	.093	4
430			min	-72.987	3	12.819	2	-116.686	8	.037	1	-.041	3	-.126	3
431	M44	1	max	91.841	1	74.791	6	105.535	7	.173	8	.023	3	.093	4
432			min	-71.745	2	16.663	1	4.26	4	.021	3	-.046	4	-.112	3
433		2	max	91.841	1	74.791	6	105.535	7	.173	8	.028	3	.091	4
434			min	-71.745	2	16.663	1	4.26	4	.021	3	-.046	4	-.113	3
435		3	max	91.841	1	74.791	6	105.535	7	.173	8	.032	3	.089	4
436			min	-71.745	2	16.663	1	4.26	4	.021	3	-.046	4	-.115	3
437		4	max	91.841	1	74.791	6	105.535	7	.173	8	.036	3	.087	4
438			min	-71.745	2	16.663	1	4.26	4	.021	3	-.045	4	-.116	3
439		5	max	91.841	1	74.791	6	105.535	7	.173	8	.041	3	.085	4
440			min	-71.745	2	16.663	1	4.26	4	.021	3	-.045	4	-.118	3

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M3	PL5/8x3.5	.143	.5	7	.033	0	y	1	66866.46	70875	.923	5.168	2...	H1-1b
2	M4	PL5/8x3.5	.330	.5	2	.074	0	y	8	66866.46	70875	.923	5.168	2...	H1-1b
3	M7	PL5/8x3.5	.204	.5	3	.050	0	y	3	66866.46	70875	.923	5.168	1...	H1-1b
4	M8	PL5/8x3.5	.327	.5	5	.074	0	y	7	66866.46	70875	.923	5.168	2...	H1-1b
5	M13	PIPE_2.5	.249	3.771	3	.085	3.771		3	30358.0...	50715	3.596	3.596	2...	H1-1b
6	M14	PIPE_2.5	.127	4.958	8	.155	4.958		1	41472.48	50715	3.596	3.596	4...	H1-1b
7	M15	PIPE_2.5	.216	1.414	2	.109	1.414		2	30358.0...	50715	3.596	3.596	2...	H1-1b
8	M16	PIPE_2.5	.115	3.771	1	.041	3.771		3	30358.0...	50715	3.596	3.596	2...	H1-1b
9	M17	PIPE_2.5	.123	4.958	6	.112	4.958		6	41472.48	50715	3.596	3.596	4...	H1-1b
10	M18	PIPE_2.5	.149	0	5	.046	0		8	30358.0...	50715	3.596	3.596	1...	H1-1b
11	M15A	PIPE_2.0	.086	0	2	.084	0		8	29810.2...	32130	1.872	1.872	2...	H1-1b
12	M16A	PIPE_2.0	.075	2.318	5	.086	0		7	29810.2...	32130	1.872	1.872	2...	H1-1b
13	M17A	PIPE_2.0	.170	2.318	5	.162	2.344		5	29810.2...	32130	1.872	1.872	2...	H1-1b
14	M18A	PIPE_2.0	.170	2.318	6	.163	2.344		6	29810.2...	32130	1.872	1.872	2...	H1-1b
15	MP4A	PIPE_2.5	.047	2.417	8	.020	2.417		4	30038.4...	50715	3.596	3.596	4...	H1-1b
16	MP3A	PIPE_2.5	.076	2.417	2	.032	2.417		4	30038.4...	50715	3.596	3.596	4...	H1-1b
17	MP2A	PIPE_2.5	.193	2.333	2	.044	2.417		2	30038.4...	50715	3.596	3.596	4...	H1-1b
18	MP1A	PIPE_2.5	.124	4.917	8	.025	1.583		7	30038.4...	50715	3.596	3.596	1...	H1-1b
19	M26	PIPE_2.0	.085	7.72	1	.021	0		8	15724.2...	32130	1.872	1.872	1...	H1-1b*
20	M27	SR_0.625	.033	3.333	2	.006	3.333		2	2503.128	9940.196	.104	.104	2...	H1-1b
21	M28	SR_0.625	.052	3.333	5	.006	0		4	2503.128	9940.196	.104	.104	1...	H1-1b
22	M29	SR_0.625	.038	0	2	.005	0		4	2503.128	9940.196	.104	.104	2...	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
23	M30	SR_0.625	.102	3.333	1	.008	0		2	2503.128	9940.196	.104	.104	2...	H1-1b*
24	M31	SR_0.75	.064	3.976	5	.010	3.976		1	3758.9	14320.8	.184	.184	3...	H1-1b
25	M32	SR_0.75	.181	3.976	7	.014	0		3	3758.9	14320.8	.184	.184	3...	H1-1b*
26	M33	SR_0.75	.120	3.976	5	.018	3.976		8	3758.9	14320.8	.184	.184	3...	H1-1b
27	M34	SR_0.75	.427	0	8	.020	0		8	3758.9	14320.8	.184	.184	2...	H1-1a
28	M36	PIPE_2.0	.039	2.675	4	.014	5.35		3	22795.2...	32130	1.872	1.872	1...	H1-1b

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

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

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

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

EXHIBIT 9

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Monopole Facility

May 17, 2021

Analysis Format: Theoretical Calculations

Sign Count	
	1
	0
	1
	0
	1

Statement of Compliance

T-Mobile will be compliant with FCC Regulations once the mitigation measures recommended in this report are implemented.

CTHA854A
CTHA854A
421 Ekonk Hill Rd, Moosup, CT 06354

Contents

Overview

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following T-Mobile wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all existing equipment for T-Mobile .

The facility is located on a Monopole in Moosup, Connecticut. Access to the facility is restricted to authorized personnel and facility management.

Analysis Site Data

Site ID:	CTHA854A
Site Name:	CTHA854A
Site Address:	421 Ekonk Hill Rd, Moosup, CT 06354
Site Latitude:	41.662309
Site Longitude:	-71.84711
Facility Type:	Monopole

Compliance Summary

Status:	T-Mobile will be compliant with FCC Regulations Upon Installation of Signage
Site Modeled Composite MPE% (General Public Limit):	0.10 %
T-Mobile Max Modeled MPE% (General Public Limit):	0.10 %
Lock or Control Measures if Present:	No Fixed Access

There are no additional system operators located on this facility or considered as part of this analysis.

*To be conservative, all sites are considered uncontrolled for modeling purposes unless confirmed otherwise by a site visit.

FCC Guidelines

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ 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 public 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 public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600, 700, and 800 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$, and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS, 2100 MHz AWS, 2500 MHz, 3500 MHz CBRS, 5000 MHz LAA, 28GHz, and 39GHz bands is 1000 $\mu W/cm^2$. 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. Reference the Site Antenna Data Table for list of frequencies in operation at this site.

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, have been properly trained in RF safety 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, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Calculation Methodology & Data

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofMaster® software from Waterford Consultants LLC. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.

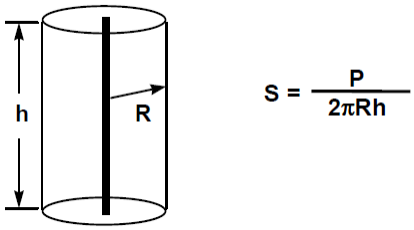


Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.

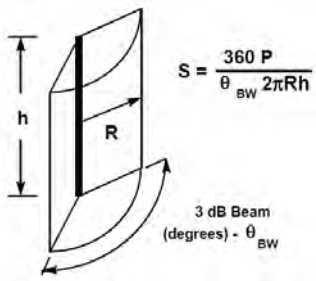


Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW)

The **proposed antenna configuration** for T-Mobile and any other known wireless carriers at this facility are shown below in **Table 1 – Site Antenna Data Table**.

All calculations for this facility were performed assuming that all radios were running at full power and were uncombined in their RF paths with the configuration shown in table 1. FCC OET Bulletin 65 – Edition 97-01 recommends that modeling of this nature should be done as described prior to yield a worst-case scenario. Due to the dynamic nature of many deployed systems the "real world" values will most likely be less than those shown in this report due to worst-case values being shown in all instances.

For all "Other" systems on this facility, exact equipment was used if available. In instances where "Other" system equipment was not available, standard radio configurations for these systems were utilized based upon prior experience with these systems on facilities in this area.

Site Antenna Data Table

Sector	Operator	Frequency Band	TX Power Per Channel	Tx #	ERP	Antenna Make	Antenna Model	Gain (dBd)	Az (°)	Antenna Centerline Height (ft)	Z Value (ft)**
A1	T-Mobile	L2100	40	4	6747.14	RFS	APX16DWV-16DWVS-E-A20	16.25	0	169.9	167.57
A2	T-Mobile	L700	40	4	2723.45	RFS	APXVAALL18_43-U-NA20	12.31	0	169.9	166.90
A2	T-Mobile	L600	40	2	1172.44	RFS	APXVAALL18_43-U-NA20	11.66	0	169.9	166.90
A2	T-Mobile	N600	30	2	879.33	RFS	APXVAALL18_43-U-NA20	11.66	0	169.9	166.90
A2	T-Mobile	L1900	40	4	5118.23	RFS	APXVAALL18_43-U-NA20	15.05	0	169.9	166.90
A2	T-Mobile	G1900	15	1	479.83	RFS	APXVAALL18_43-U-NA20	15.05	0	169.9	166.90
A3	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR6449	15.15	0	169.9	168.52
A3	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR6449	15.15	0	169.9	168.52
A3	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR6449	22.35	0	169.9	168.52
A3	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR6449	22.35	0	169.9	168.52
B4	T-Mobile	L2100	40	4	6747.14	RFS	APX16DWV-16DWVS-E-A20	16.25	120	169.9	167.57
B5	T-Mobile	L700	40	4	2723.45	RFS	APXVAALL18_43-U-NA20	12.31	120	169.9	166.90
B5	T-Mobile	L600	40	2	1172.44	RFS	APXVAALL18_43-U-NA20	11.66	120	169.9	166.90
B5	T-Mobile	N600	30	2	879.33	RFS	APXVAALL18_43-U-NA20	11.66	120	169.9	166.90
B5	T-Mobile	L1900	40	4	5118.23	RFS	APXVAALL18_43-U-NA20	15.05	120	169.9	166.90
B5	T-Mobile	G1900	15	1	479.83	RFS	APXVAALL18_43-U-NA20	15.05	120	169.9	166.90
B6	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR6449	15.15	120	169.9	168.52
B6	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR6449	15.15	120	169.9	168.52
B6	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR6449	22.35	120	169.9	168.52
B6	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR6449	22.35	120	169.9	168.52
C7	T-Mobile	L2100	40	4	6747.14	RFS	APX16DWV-16DWVS-E-A20	16.25	240	169.9	167.57
C8	T-Mobile	L700	40	4	2723.45	RFS	APXVAALL18_43-U-NA20	12.31	240	169.9	166.90
C8	T-Mobile	L600	40	2	1172.44	RFS	APXVAALL18_43-U-NA20	11.66	240	169.9	166.90
C8	T-Mobile	N600	30	2	879.33	RFS	APXVAALL18_43-U-NA20	11.66	240	169.9	166.90
C8	T-Mobile	L1900	40	4	5118.23	RFS	APXVAALL18_43-U-NA20	15.05	240	169.9	166.90
C8	T-Mobile	G1900	15	1	479.83	RFS	APXVAALL18_43-U-NA20	15.05	240	169.9	166.90
C9	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR6449	15.15	240	169.9	168.52
C9	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR6449	15.15	240	169.9	168.52
C9	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR6449	22.35	240	169.9	168.52
C9	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR6449	22.35	240	169.9	168.52

*Table 1: Total Site Antenna data table **(Z Value is distance from bottom of antenna to walking surface)*

Results

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population for exposure to RF emissions as specified by federal standards.

T-Mobile's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface.

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**0.10%**	**Sector A**
Accessible **Occupational** MPE Limits:	**0.02%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.10%**
Ground Level **Occupational** MPE Limits:	**0.02%**

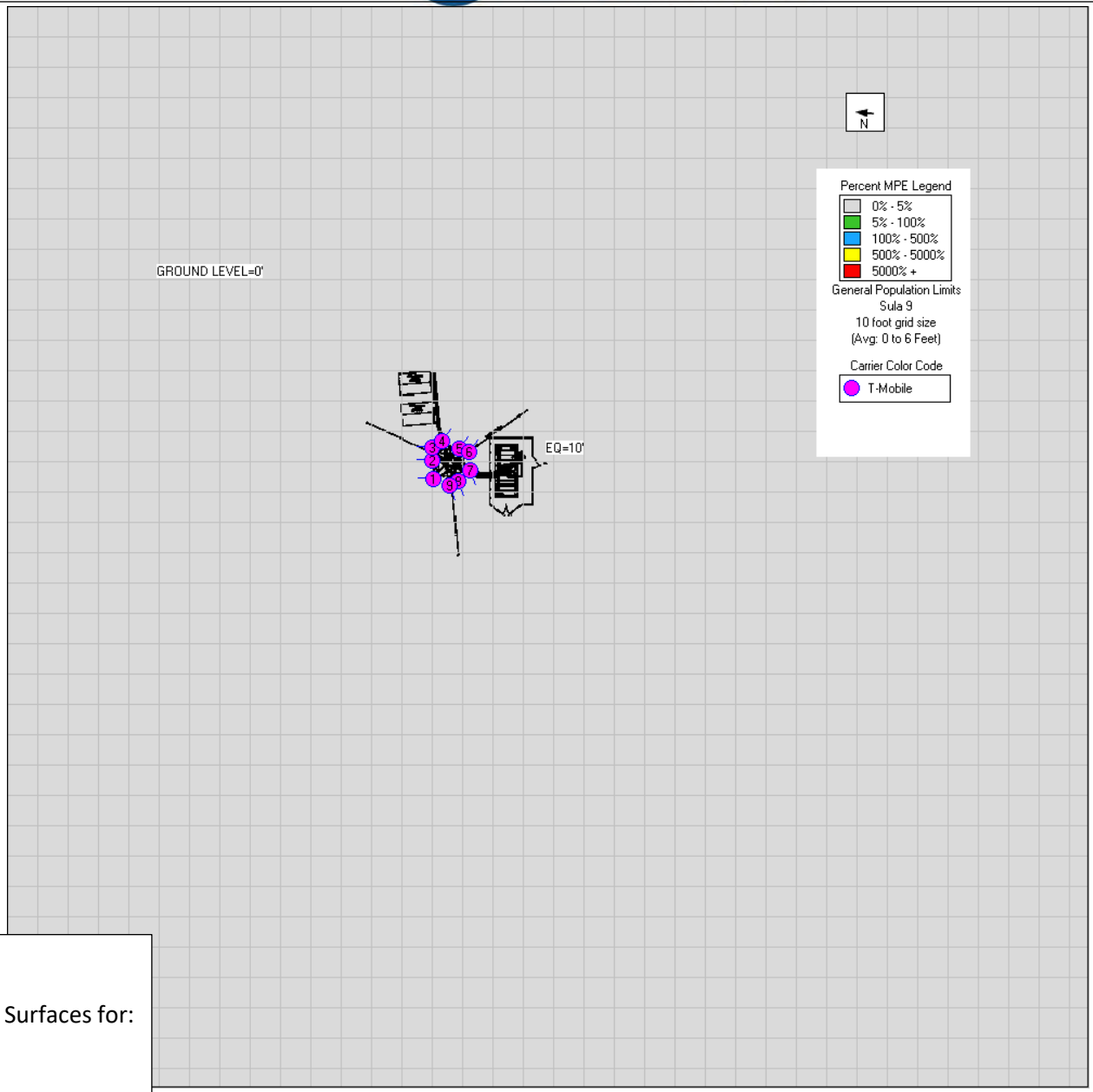
Sector A: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.10%**	**0**
Accessible **Occupational** MPE Limits:	**0.02%**	**0**

Sector B: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.10%**	**0**
Accessible **Occupational** MPE Limits:	**0.02%**	**0**

Sector C: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.10%**	**0**
Accessible **Occupational** MPE Limits:	**0.02%**	**0**

**Distance from Antenna is the distance in feet that the MPE limits are exceeded from the front face of the antenna, outward across an accessible area.*

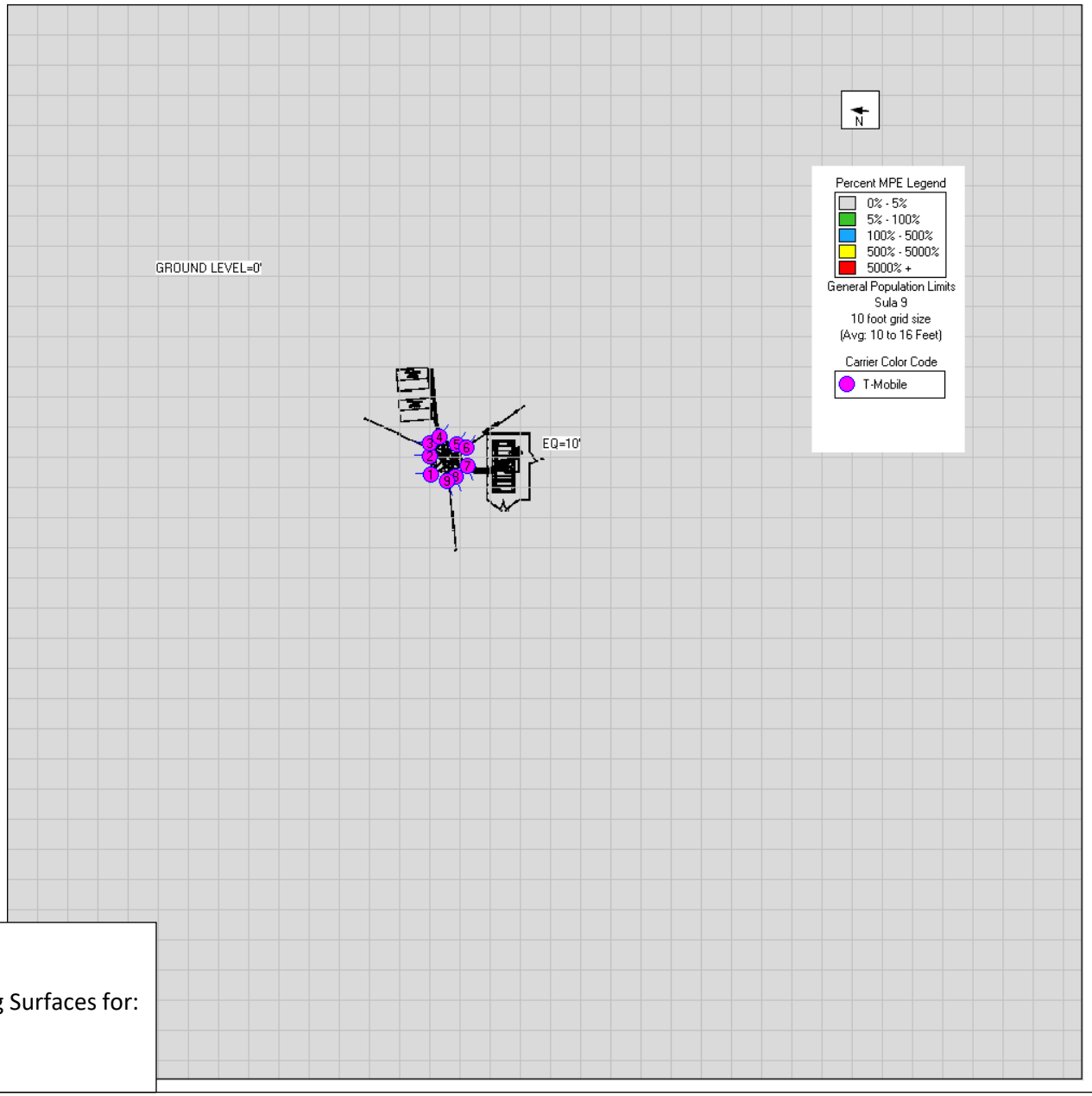
APPENDIX A: Emissions Thresholds for Walking Surfaces and Signage



Ground (0ft.)

Emissions Thresholds for Walking Surfaces for:

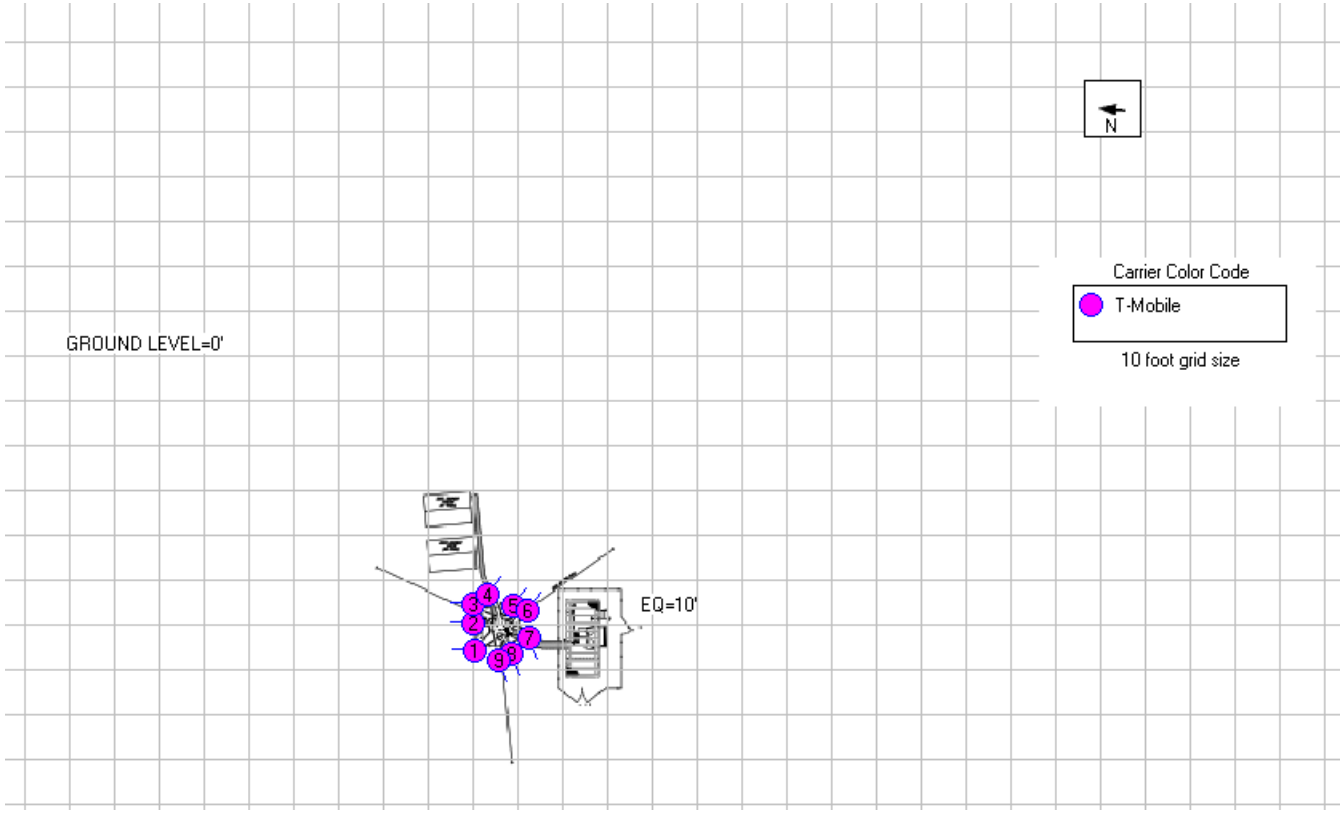
CTHA854A / CTHA854A



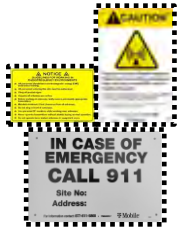
EQ (10ft.)

Emissions Thresholds for Walking Surfaces for:

CTHA854A / CTHA854A



Access



Existing Item

Proposed Item

Signage Count									
	1		0		1		0		1

Signage Diagram

Signage for:

CTHA854A/ CTHA854A

Compliance Actions

Access	• Install (1) Guideline sign on the inside of the access point. • Install (1) Notice sign on the inside of the access point. • Install (1) 911 Emergency sign on the inside of the access point.
Alpha Sector	• No Action Needed.
Beta Sector	• No Action Needed.
Gamma Sector	• No Action Needed.
Notes:	

APPENDIX B: RF Signage Description Table

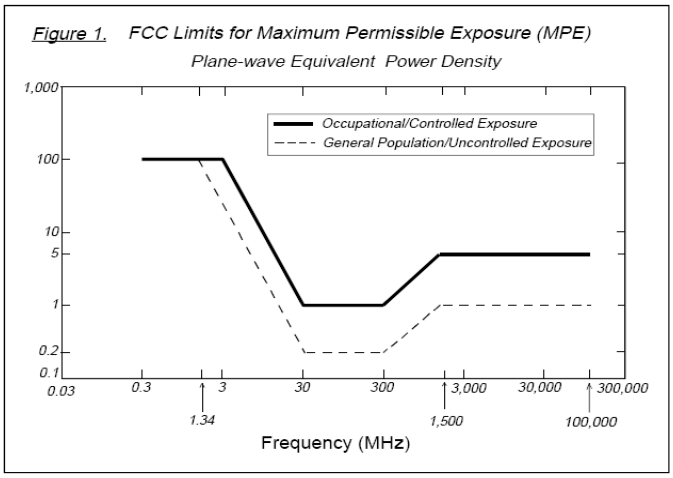
Sign	Description
	**RF Guideline Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
 	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. Must be placed anywhere the public can get within 30 feet vertically or horizontally of an antenna.
 	**Yellow Caution Sign** Used to inform individuals that they are entering an area that may exceed the either the FCC's General Population or Occupational Emissions limits. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.
 	**Orange Warning Sign (Previously Red)** Used to inform individuals that they are entering an area that may exceed 5x the FCC's Occupational emissions limit. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.

APPENDIX C: FCC Emissions Threshold Limits

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX D: Certifications

I, Alex Van Abbema, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Alex Van Abbema

5/17/2021

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Brandon Green

5/17/2021