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

June 7, 2021

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

Notice of Exempt Modification
111 Stone Hill Rd.
Voluntown, CT 06384
Sprint, now a part of T-Mobile USA #: CTNL086A_Sprint Keep
Latitude: 41.606411
Longitude: -71.851133

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 175-foot level of the existing 180-foot Monopole Tower at 111 Stone Hill Rd., Voluntown, CT. The tower is owned by SBA Towers II, LLC. The property is owned by the Thomas M. and Patricia A. Sweet. T-Mobile/T-Mobile now intends to remove six (6) antennas and replace with six (6) new L600/700/1900/2100 antennas and install three (3) new 2500 MHz antennas for a total of nine (9) antennas.

The new antennas support 5G services and would be installed at the 175-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) RFS APXVTM14-C-I20 antennas (remove) – (3) RFS APX16DWV-16DWVS-E-A20 600/700/1900/2100 MHz antennas (replace)
- (3) Commscope NNVV-65B-R4 antennas (remove) – (3) RFS APXVAALL24_43-U-NA20 600/700/1900 MHz antennas (replace)
- (3) Alcatel Lucent 1900 MHz RRUs (remove) – (3) Ericsson 4415 B66A RRUs (replace)
- (3) Alcatel Lucent 800 MHz RRUs (remove) – (3) Ericsson 4424 B25 RRUs (replace)
- (3) Alcatel TD-RRH8x20-25 RRUs (remove) – (3) Ericsson 4449 B71+B85 RRUs (replace)
- (3) 1-1/4" Fiber (remove) – (3) Hybrid 6x24 1.99" (replace)

Install New:

- (3) Ericsson AIR6449 B41 2500 MHz antennas
- (3) SitePro1 VFA12-HD w/Stiff Arms

Existing Equipment to Remain:

- (3) Sector Frames

Entitlements Only:

- (3) Alcatel Lucent 800 MHz RRUs

GROUND

Install New:

- (1) Ericsson 6160 Equipment cabinet
- 15' x 25' Lease Area for future generator

Remain:

- (1) ½" coax for GPS antenna
- Existing Ice Bridge

Remove:

- Existing Steel Frame
- Existing Sprint Fiber Mgt. Box
- Existing Sprint MM-BTS cabinet

Although the original zoning approval could not be located, this facility was approved by the Town of Voluntown's Department of Building Inspection via a Certificate of Occupancy December 1, 2001, Certificate #01-CO-23 and Building Permit #002511 for construction of a 180-foot telecommunications tower. Additionally, the Town of Voluntown approved an Application for Driveway Construction Permit #01-09 on October 2001 and approved by the Board of Selectman November 2001. 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 Voluntown's First Selectman, Tracey Hanson, Planning & Zoning Chair, Scott B. Davidson, and to the property owners, Thomas M. & Patricia A. Sweet. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

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

Sincerely,

G. Scott Shepherd
Property 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: Tracey Hanson, First Selectman / with attachments
Voluntown Town Hall, 115 Main St., P.O. Box 96 Voluntown, CT 06384
Scott B. Davidson, Planning & Zoning Chair / with attachments
Voluntown Town Hall, 115 Main St., P.O. Box 96 Voluntown, CT 06384
Thomas M. & Patricia A. Sweet / with attachments
497 Ekonk Hill Rd., Voluntown, CT 06384 (SBA record on file)

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	Town of Voluntown (10/2001, 12/1/01)
Exhibit 6	Construction Drawings	Chappell Engineering 4/23/21
Exhibit 7	Structural Analysis	TES dated 5/27/21
Exhibit 8	Mount Analysis	TES dated 4/30/21
Exhibit 9	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

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2020.

Voluntown Town Hall

115 Main Street, Voluntown CT

Information on the Property Records for the Municipality of Voluntown was last updated on 6/3/2021.

Parcel Information

Location:	111 STONE HILL RD	Property Use:	Residential	Primary Use:	Residential
Unique ID:	RP-00696	Map Block Lot:	043 006-00 0111	Acres:	2.00
490 Acres:	0.00	Zone:	VD	Volume / Page:	0060/0733
Developers Map / Lot:		Census:	7081		

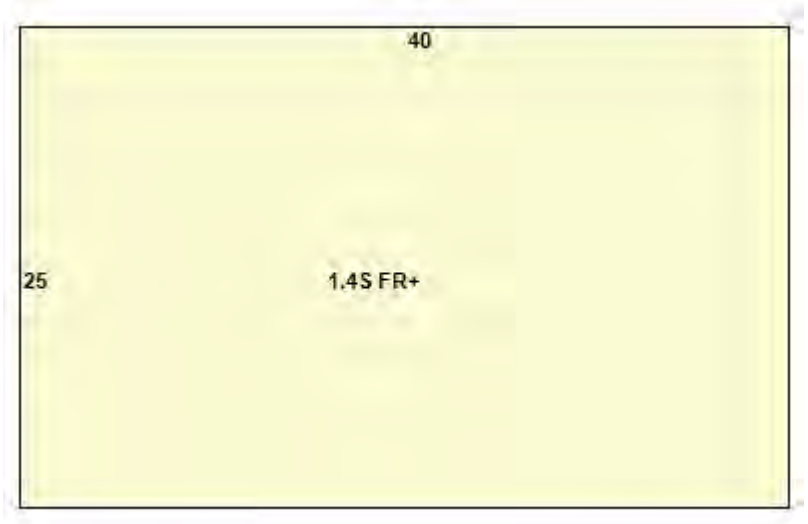
Value Information

	Appraised Value	Assessed Value
Land	55,480	38,830
Buildings	120,450	84,320
Detached Outbuildings	0	0
Total	175,930	123,150

Owner's Information

Owner's Data
SWEET THOMAS M & PATRICIA A 497 EKONK HILL RD VOLUNTOWN, CT 06384

Building 1



Building Use:	Single Family	Style:	Cape	Living Area:	1,400
Stories:	1.40	Construction:	Wood Frame	Year Built:	1974
Total Rooms:	6	Bedrooms:	2	Full Baths:	1

Half Baths:	0	Fireplaces:	0	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	0	Basement Area:	1,000
Basement Finished Area:	0	Basement Garages:	0	Roof Material:	Asphalt
Siding:	Vinyl Siding	Units:			

Special Features

Basement Sink	1
Generator	1
Laundry Sink	1

Attached Components

Owner History - Sales

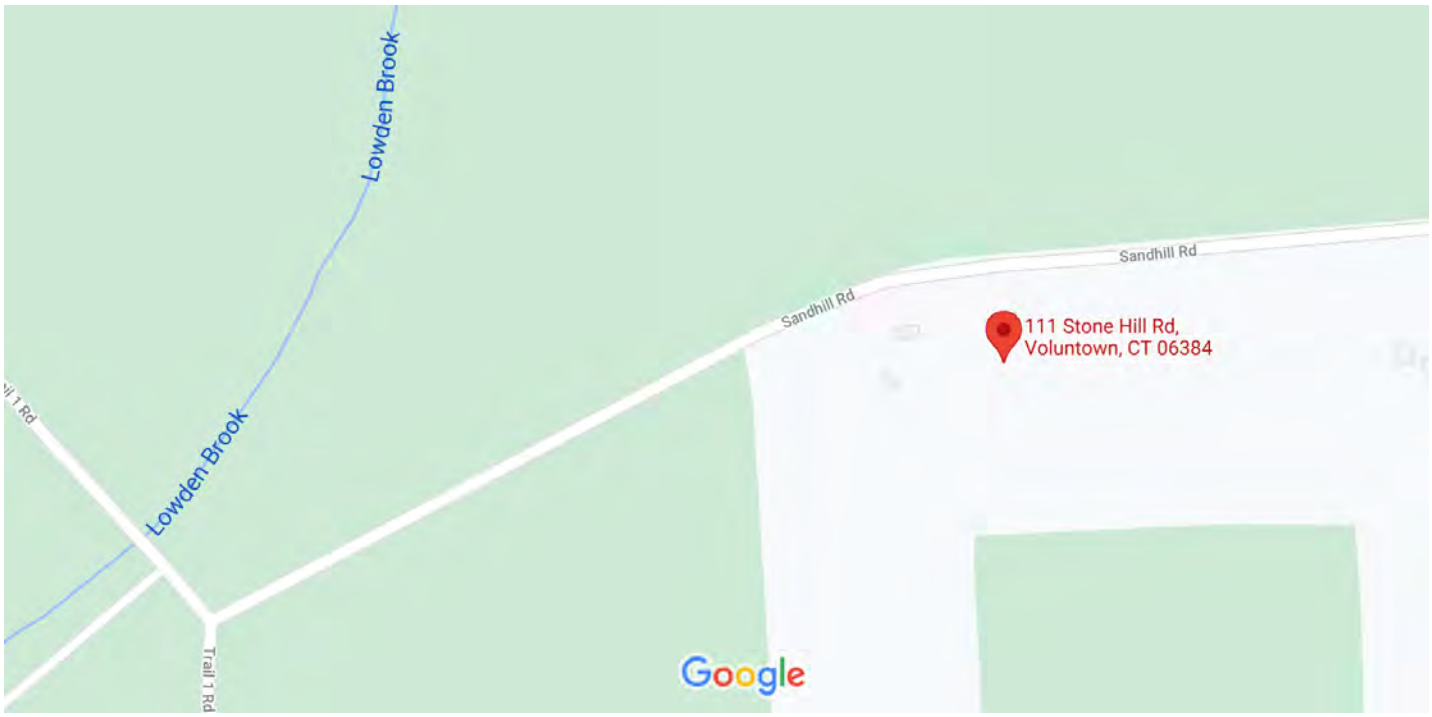
Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
SWEET THOMAS M & PATRICIA A	0060	0733			No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
4107	Perrmit	08/21/2018		Closed	REPLACE EXISTING ANTENNAS ON CELL TOWER
2560	Unknown	04/25/2006		Closed	200 AMP NDERGD
2546	Unknown	03/10/2006		Closed	CING-EQUIP-SHEL
2530	Unknown	06/14/2001		Closed	4 METERS

EXHIBIT 4

Google Maps 111 Stone Hill Rd



Map data ©2021 200 ft

111 Stone Hill Rd

Directions Save Nearby Send to your phone Share

111 Stone Hill Rd, Voluntown, CT 06384

J44W+H8 Voluntown, Connecticut

Photos

EXHIBIT 5

SITE NAME: Voluntown SITE ID: CT10024-A

Transaction: Mariner Tower Jill

ZONING/PERMITTING COMPLETION FORM

Address: 111 Stone Hill Road, Voluntown, CT

Landlord/Parcel ID:

Jurisdiction: Connecticut Siting Council Zoning District:

Zoning Approval Type: Special Exception – Town of Voluntown Case #:

Approval Date: 12/13/2000 Approved Height: 180 Tower Build Date:

Conditions of Approval:		Yes	No	N/A
Removal Bond	$5K	☒	☐	☐
Site Plan Submittal		☐	☒	☐
Fall Zone		☐	☒	☐
Periodic Inspections		☐	☒	☐
Periodic Reporting		☐	☒	☐
Approval Renewal		☐	☒	☐
Additional Conditions		☐	☒	☐

Approvals obtained by town. Cell towers currently fall under complete jurisdiction of Connecticut Siting Council (CSC). No CSC Review on this tower/no Certificate of Environmental Compatibility & Public Need issued. CSC is aware of of this tower. Any modifications/collocations must go through CSC Review.

JURISDICTION POC/DEPT.

Planning/Zoning: Carriann Mulcahy (CSC)

Phone: 860-827-2940 Fax:

Bldg./Code Enforcement: Peter Zvingilas or Barbara

Phone: 860-376-3867 Fax:

Submitted by: Patches Coates Date: 4/25/07
Zoning Compliance

TO BE COMPLETED BY CORPORATE

	Yes	No	N/A	
Zoning Approval Attached (required)	☒	☐	☐	PE
Ordinance Attached (required)	☐	☒	☐	
Building Permit Attached (required) 2511	☒	☐	☐	Date Recd 4/28/01
Certificate of Occupancy or Compliance (CO) attached (required)	☒	☐	☐	12/1/01

Zoning Manager Approval: Diane E. Borchardt Date 4/25/2007
Diane E. Borchardt, AICP

Voluntown Planning and Zoning Commission
December 13, 2000

The regular meeting of the Voluntown Planning and Zoning Commission was called to order at 7:05 P.M. on December 13, 2000 at the Voluntown Town Hall, Voluntown, CT. Members present were Ken Hollister, Ken Weseman, and Dwayne Davis. Alternates present were David Nieminen and Dawn Maldonado. They will both serve as full voting members. Also present was Peter Zvingilas, Zoning Enforcement Officer.

The minutes of the November 8, 2000 meeting were read. With no additions or deletions, Ken Weseman made a motion to accept the minutes as read. Dwayne Davis seconded it and all were in favor.

Peter Zvingilas, Z.E.O., reported things were quiet. He has not spoken with Nathan Lazourack concerning the Paint Ball Facility. SNET did speak to Peter. This was discussed. Ken Weseman moved that the Z.E.O. not issue any zoning permits until SNET comes back before the Planning & Zoning Board. David Nieminen seconded it and all were in favor. The Paint Ball Facility mylar was signed and filed in the Town records. The Chairman will take care of the Special Exception and put the notice in the paper to start the 15 day appeal period. There was some discussion as to the possibility of a cell tower being placed on Sand Hill Road. Nothing had come before the Board yet.

Old Business: As stated, the Paint Ball Facility mylar was signed, the Special Exception will be signed and the legal notice will be put in the paper.

Correspondence: A letter dated November 2000 was received from the Town Clerk requesting a 2001 meeting schedule. Ken Weseman made a motion to continue on the second Wednesday each month when an agenda exists to be held at 7:00 P.M. at the Town Hall, Voluntown, CT and also move that, if no opposition, the Chairman and Secretary remain the same. Ken Hollister seconded it and all were in favor. A letter dated 12-7-00 was received from the Siting Council stating there was a judgment on jurisdiction. The Siting Council has jurisdiction with assistance from the Town. More information will follow in 60 days. A letter dated 12-13-00 was received from Atty. Kepple, which the Chairman read. In Atty. Kepple's opinion a telecommunication tower was a type of public utility, which is an exception to the one use per lot regulation.

First on the Agenda: Telecommunication Tower, Stone Hill Road and Route 49 North. Mike Roman had nothing new, other than Sprint and SNET would like to go on the tower. The Chairman went over the telecommunication tower regulation and site plan requirements. Users were discussed; they will need to go to the Z.E.O. on their own to set up. The ruling per the letter from the Siting Council was discussed. Ken Weseman stated that Mr. Roman needed to be aware that if something comes down from the Siting Council, if the tower is granted, it would be his problem. Bonding, per zoning regulation 9.5.14 was discussed. Ken Hollister made a motion to have a bond for $5000, for demolition purposes, as a stipulation in the Special Exception. Ken Weseman seconded it and all were in favor. Ken Weseman made a motion to accept the application proposed before the board with the stipulation a $5000 bond be put on the tower per

P & Z Meeting of December 13, 2000 continued

Regulation 9.5.14 part f: abandonment and the site plan be signed and the Special Exception signed when the satisfactory bond is presented to the Chairman. Dwayne Davis seconded it and all were in favor. A mylar and four copies of the print will be needed. The Special Exception will be taken care of and a notice will be published in the paper to start the 15 day appeal period.

Second on the Agenda: Richard Serra, Council of Governments. The Board and Richard discussed the Siting Council issue. Mr. Liska and Mr. Medrychowski were present with questions concerning cell towers and the regulations. Since the Board was updating regulations, they could submit possible additions to the cell tower regulations to be looked at by the Board. These would need to be in writing by the next meeting. The Board was thanked for their time. Richard Serra handed out the subdivision regulation draft and the Board went over all the changes. A draft of the Road Ordinance was passed out. Richard then handed out the Zoning Regulation draft. The changes were gone over, including the new zoning maps and especially the new commercial overlay district. There were a few minor changes and the Commission is to look them over. Ken Weseman made a motion to hold the Public Hearing in January 2001. Dwayne Davis seconded it and all were in favor.

For the Board's the Chairman had heard from Atty. Kepple that Patrick Reynaud's road may be a county road. His surveyor may have found info concerning this.

Ken Weseman made a motion to adjourn the meeting at 8:36 P.M. Ken Hollister seconded it and all were in favor.

Respectfully submitted,

Ken Weseman, Chairman

Copy to ZBO
Copy to Z.B.A.

COPY

Pete

Voluntown Planning and Zoning Commission
April 11, 2001

The regular meeting of the Voluntown Planning and Zoning Commission was called to order at 7:00 P.M. at the Voluntown Town Hall, Voluntown, CT. Members present were Ken Hollister, Flo Harman, Ken Weseman, and Dwayne Davis. Alternate David Nieminen was present and will be a full voting member.

The minutes of the March 14, 2001 meeting were read. With no additions or deletions, Ken Weseman made a motion to accept the minutes as read. Dwayne Davis seconded it and all were in favor.

Zoning Enforcement Officer was not present.

Old Business: There were verbiage changes between Earthgro and the Zoning Board of Appeals. Nothing that changed the intent of the letter. Dwayne Davis stated that the Selectmen had not signed off on the letter, as of the last Board meeting, because of a few discrepancies. A letter dated April 2, 2001 was received from Attorney Kepple requesting all the information on the approved cell tower located on Tom Sweet's property and the pending tower on Route 138, be sent to his office. Crown Atlantic Verizon has convinced the Siting Council to reopen the meeting and it will be held on April 26, 2001 at 3:00 P.M. in New Britain. Mrs. Reynaud was present and wanted to give the board some paperwork. The Chairman stated that the matter with the road needed to be settled. A complete subdivision map needs to be done and they need to contact Mr. Mullen to do this. The Board would like to see this subdivision completed, but it needs to meet all regulations. Mrs. Reynaud needs to have Mr. Mullin or Attorney Duda take care of the matter.

First on the Agenda: Vivian Roode, Brown Road. This is still pending . A request for a 65 day extension will be needed by the next meeting. A letter will be sent to Mrs. Roode reminding her of this, if they are not ready.

Second on the Agenda: Telecommunication Tower, Rockville Road. No one present. Ken Weseman made a motion to table until next month's meeting. Dwayne Davis seconded it and all were in favor.

Third on the Agenda: SPAFAS, Charles River Laboratories, Pendleton Hill Road. The application and $60 fee was received. Mr. Richard Lawrence of Lawrence Associates presented the site plan. Also present was John Sabrowski, Project Manager and Robert Sirpenski. The SPAFAS facility in Voluntown is on 11 acres. They have been before Inland Wetlands and received approval, there is no disturbance of wetlands. The new building would be 40 x 248, approximately the same size as the existing building. Mr. Lawrence stated everything complies with zoning. Ken Weseman state the application falls between agriculture and commercial and it is a major development zone. They are making a change to an existing site plan and are enlarging a permitted use. The Chairman was not sure if a Public Hearing is needed and will check with the Town Attorney. The new entrance to the back of the building over Fish Kill Road was discussed. It was questioned if they had contacted the State about this access, it would probably be D.E.P. not D.O.T. The Board would like something from the State acknowledging this. The building set up and design was discussed. Dwayne Davis questioned if they were working with the Fire Marshal and they are. One set of prints were left, in case the access road

P & Z Meeting of April 11, 2001 continued

needed to be changed. The Board has no problem with what was submitted, but needs an answer from the Attorney concerning the Public Hearing issue and something from D.E.P. If a Public Hearing is needed and the Attorney gets back soon enough, it will be set up for May 16th. The regular meeting is being moved down a week to May 16, 2001. The Chairman will be in contact with them.

Mike Roman arrived late and requested to withdraw the application for the Telecommunication Tower on Rockville Road. Mr. Roman is looking at a site down the road in Rhode Island, instead. Mr. Roman wanted to discuss the $5,000 bond for the Stone Hill Road tower. He questioned why the bond was needed, since the Town would be on the tower. The Chairman explained that it was a zoning regulation and that Planning and Zoning makes and enforces the regulations. The other option would be to go to Z.B.A. and ask to vary the regulation. Mr. Roman will comply, if he has to.

Fourth on the Agenda: Non-residential zoning permits. There were two changes of uses in the Riverside Mall. A floor covering shop and a paintball shop. The Z.E.O. was suppose to leave paperwork and the Chairman did not know the status of this.

Ken Weseman made a motion to adjourn the meeting at 8:18 P.M. Ken Hollister seconded it and all were in favor.

Respectfully submitted,

Flo Harman, Secretary

Copy to Z.E.O.
Copy to Z.B.A.

482 BUILDING
9.60 STATE EDUCATION
$491.60

BUILDING PERMIT

PERMIT FEE

No 002511

TOWN OF VOLUNTOWN

Voluntown, Connecticut

APPLICATION FOR
BUILDING PERMIT OR MAJOR REPAIR
EXCEEDING $200.00

Applicant or taxpayer's name: Coastal Towers LLC Phone 376-1069
860 684 3060

HOME ADDRESS: 1050 Buckley Highway, Union CT

Date of application: 04/28/01

PERMIT

No 002511

Exact location of work to be done: STONE HILL Rd, VOLUNTOWN
TOM SWEET PROPERTY

Work to be done and its estimated cost: Build 180 ft. COMMUNICATION TOWER
(Please give detailed description) Est Value $60,000

Signed
Applicant or Agent

PASSED ☒

REJECTED ☐

Date: 04/28/01

Reason:

Signed: Daniel P. Kitchel
Building Inspector

TOWN OF VOLUNTOWN
CONNECTICUT
DEPARTMENT OF BUILDING INSPECTION

CERTIFICATE OF OCCUPANCY

DATE OF CERTIFICATE OF OCCUPANCY:	2001-DEC-01
CERTIFICATE OF OCCUPANCY NUMBER:	01-CO-23
BUILDING PERMIT NUMBER:	002511
ZONE:	R
CITY OR CCD:	N/A
APPLICANTS NAME:	COASTAL TOWERS, LLC
APPLICANTS ADDRESS:	1050 BUCKLEY DRIVE
PHONE NUMBER:	376-1069
ARCHITECT NAME/ADDRESS:	N/A
BUILDER NAME/ADDRESS:	COASTAL TOWERS LLC
THIS IS TO CERTIFY THE LAND/BUILDING AT:	111 STONE HILL ROAD

CONFORMS SUBSTANTIALLY TO THE REQUIREMENTS OF THE BUILDING CODE AND THE ZONING ORDINANCE OF THE TOWN OF VOLUNTOWN AND IS HEREBY APPROVED FOR OCCUPANCY AS INDICATED BELOW. ANY CHANGE OR EXTENSION OF THE USE HEREIN APPROVED REQUIRES A NEW CERTIFICATE OF OCCUPANCY.

APPROVED FOR OCCUPANCY AS: 180 FT COMMUNICATIONS TOWER

PETE ZVINGILAS
ZONING OFFICER
TOWN OF VOLUNTOWN

DANIEL P. KITCHEL
BUILDING OFFICIAL
TOWN OF VOLUNTOWN

TOWN OF VOLUNTOWN, CT

APPLICATION FOR DRIVEWAY CONSTRUCTION PERMIT

Date 6/13/01 Fee _____

1. Applicant TOM SWEET
2. Address 491 EXONK HILL RD. VOLUNTOWN CT
3. Location of proposed driveway:
   a. Street name STONE HILL RD.
   b. (N S E W) side of street EAST
   c. Closest intersection RT-49
   d. Closest utility pole # 852 CL&P
4. Interest in property:
   Owner TOM SWEET Agent _____
   Lessee _____ Other _____
5. Dimension of lot: Frontage _____
6. Tax Assessor Map #: Block#: 43 Lot : 5
7. Reason for Driveway Construction Permit
   a. One Residential Unit (non-shared driveway) _____
   b. Two Residential Units(shared driveway) _____
   c. Three Residential Unites (shared driveway) _____
   d. Business/Commercial Building _____
   e. Industrial Building _____
   f. Other COMMUNICATION'S TOWER ON EXISTING DRIVEWAY
8. Maintenance agreement attached _____ Construction agreement attached _____
9. Date Application was received by the Board _____

SIGNATURE OF OWNER Thomas Owen and/or
SIGNATURE OF AGENT _____
MAILING ADDRESS 491 EXONK HILL RD PHONE 564-2553

Complete Application
Received by the Board on _____
Application Number (#) _____

DATE ISSUED 10/01 DATE DENIED _____ DATE WITHDRAWN _____

BOND AMOUNT _____ BOND DUE DATE _____
Western Surety Bond
APPLICATION NUMBER (#) 01-09

Approved 10/01
Board of Selectmen

Any person violating any provision of this ordinance shall be fined not more than one hundred dollars ($100.00) for each offense. Each day of any such violation shall constitute a separate offense and be subjected to separate punishment.

STRUCTURAL ANALYSIS

1. Rohn Structural Analysis Summary for 180 ft Model SSV Self Supporting Tower Analysis, prepared by UNR-ROHN, 11 Pgs., dated 4-24-01.

It is our opinion that the tower's structural system complies with the minimum structural requirements of the Connecticut State Building Code as required under P.A. 89-255.

Please call if you should have any questions.

Very truly yours,

Thomas K. Gillespie, P.E.

STATE OF CONNECTICUT
THOMAS K GILLESPIE
No. 15228
LICENSED
PROFESSIONAL ENGINEER

cc: W. Kemp, New England Site Management (684-3060)

EXHIBIT 6

CTNL086A/CT54XC704
VOLUNTOWN
SST SBA

111 STONE HILL ROAD
VOLUNTOWN, CT 06384
NEW LONDON COUNTY

SITE NO.: CTNL086A
CARRIER SITE ID.: CT54XC704

RF DESIGN GUIDELINE: 67D5A998C 6160 (GSM ONLY)

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

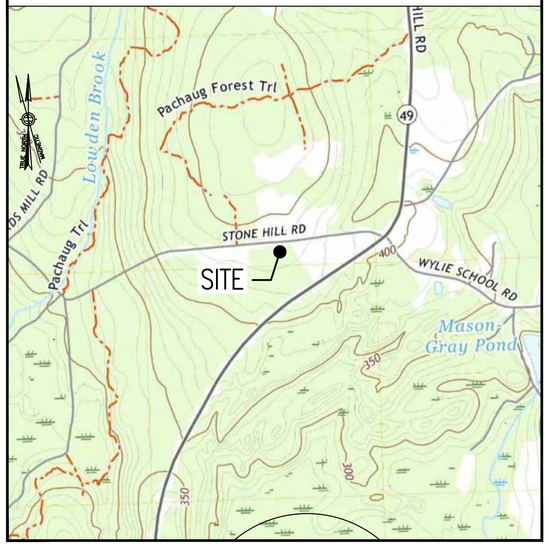
LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS BY CERTIFIED CLIMBER
SECTOR B:	ACCESS BY CERTIFIED CLIMBER
SECTOR C:	ACCESS BY CERTIFIED CLIMBER
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

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: 1"=1000'



DIRECTIONS

FROM COMMERCE WAY TRAVELING NE TOWARDS N BOUNDARY RD/S WASHINGTON ST, TURN LEFT ONTO S WASHINGTON ST, TURN RIGHT ONTO MA-123 E, TURN LEFT TO MERGE ONTO I-495 N RAMP TOWARDS MANSFIELD/MARLBORO, TAKE EXIT 13B TO MERGE ONTO I-95 S TOWARD PROVIDENCE, RI, KEEP RIGHT AT THE FORK TO STAY ON I-95 S, TAKE EXIT 5A TO MERGE ONTO RI-102 S, TURN RIGHT ONTO RI-102 S/RI-3 S, TURN RIGHT ONTO RI-165 W, CONTINUE ONTO CT-165 W, TURN RIGHT ONTO CT-49 N (EKONK HILL RD), TURN LEFT ONTO SANDHILL RD OR STONE HILL RD, SITE WILL BE ON THE LEFT.

SHEET INDEX

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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.

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.

PROJECT SCOPE OF WORK

REMOVE 6 ANTENNAS, 12 RRHs, 3 SECTOR MOUNTS, 4 HYBRID CABLES, 2 CABINETS, 1 BOOSTER, 1 FIBER MANAGEMENT BOX, INCLUDING H-FRAME, AND STEEL FRAME SUPPORT. INSTALL B160, 6160, SLACK BOX, 9 ANTENNAS, 9 RRUs, 3 HEAVY DUTY V-FRAME SECTOR MOUNTS, 3 HYBRID CABLES, PURCELL CABINET AND FUTURE GENERATOR.

PROJECT SUMMARY

SITE NUMBER:	CTNL086A
SITE NAME:	CTNL086A/CT54XC704 VOLUNTOWN SST SBA
SBA SITE NUMBER:	CT10024-A-02
SBA SITE NAME:	VOLUNTOWN
SITE ADDRESS:	111 STONE HILL ROAD VOLUNTOWN, CT 06384
ASSESSOR'S ACCOUNT NO.:	MAP 043 BLOCK 005-0A LOT 0497
ZONING DISTRICT:	RD, RURAL DISTRICT
CONSTRUCTION TYPE:	SPRINT RETAIN
LAND OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
TOWER OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
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: 41.60650635° N41°36'23.42" LONGITUDE: -71.85102844° W71°51'03.70"

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
OFFICE: (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
4/23/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	04/22/21	ISSUED FOR CONSTRUCTION	BDJ
0	04/16/21	ISSUED FOR REVIEW	BDJ

SITE NAME:
CTNL086A/CT54XC704
VOLUNTOWN
SST SBA
SITE ADDRESS:
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

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 FAMILARIZE 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 (400PSI) 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 (¾"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.

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STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED PROFESSIONAL CIVIL ENGINEER
4/23/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

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1	04/22/21	ISSUED FOR CONSTRUCTION	BDJ
0	04/16/21	ISSUED FOR REVIEW	BDJ

SITE NAME:
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VOLUNTOWN
SST SBA
SITE ADDRESS:
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
GENERAL NOTES

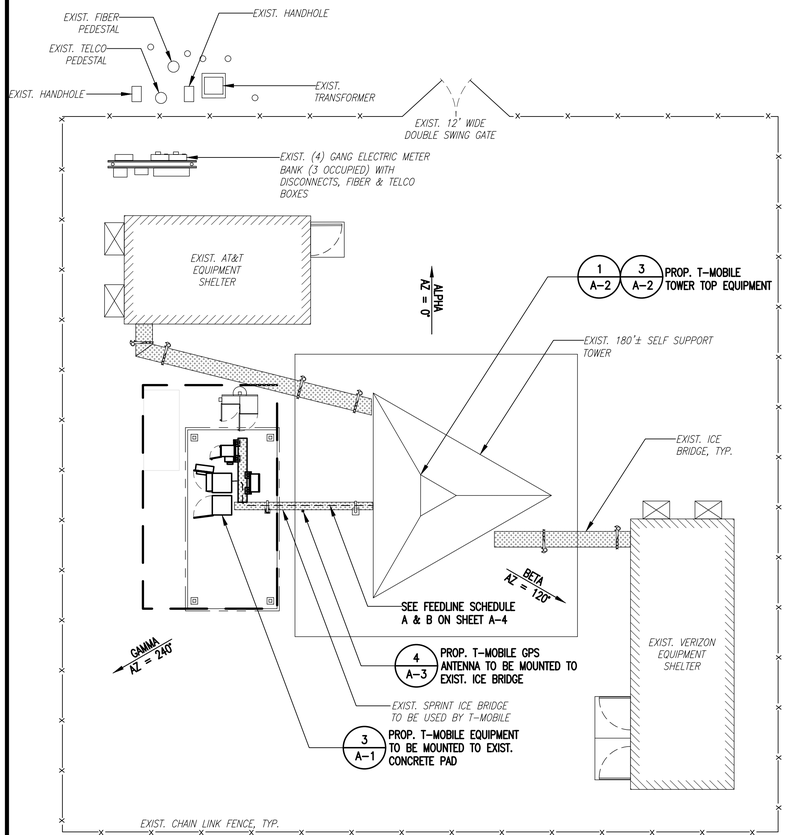
SHEET NUMBER
GN-1

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

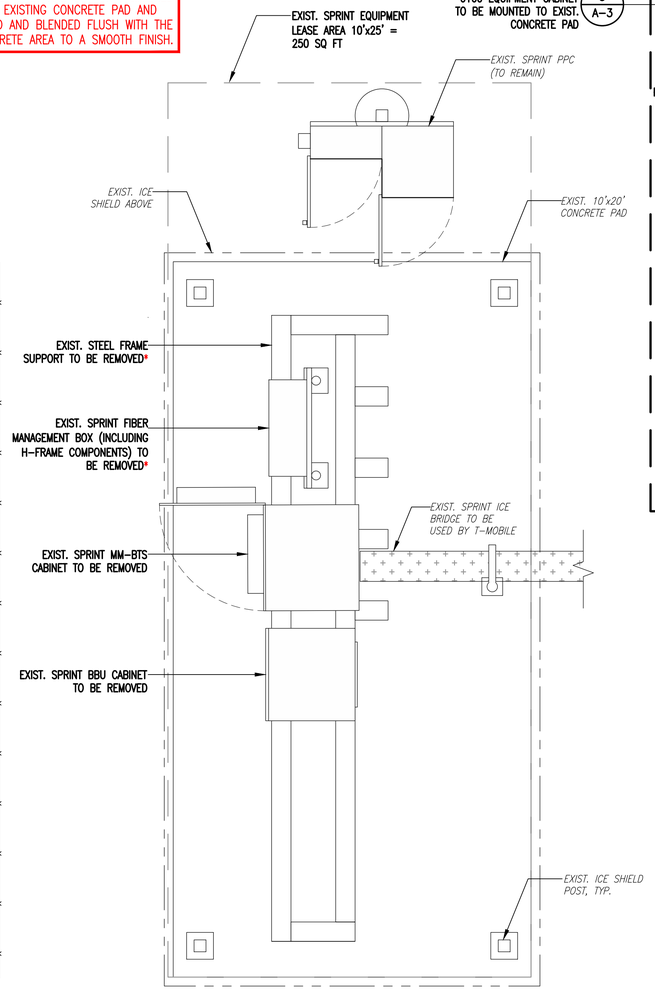
SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED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

TRUE NORTH
MAGNETIC

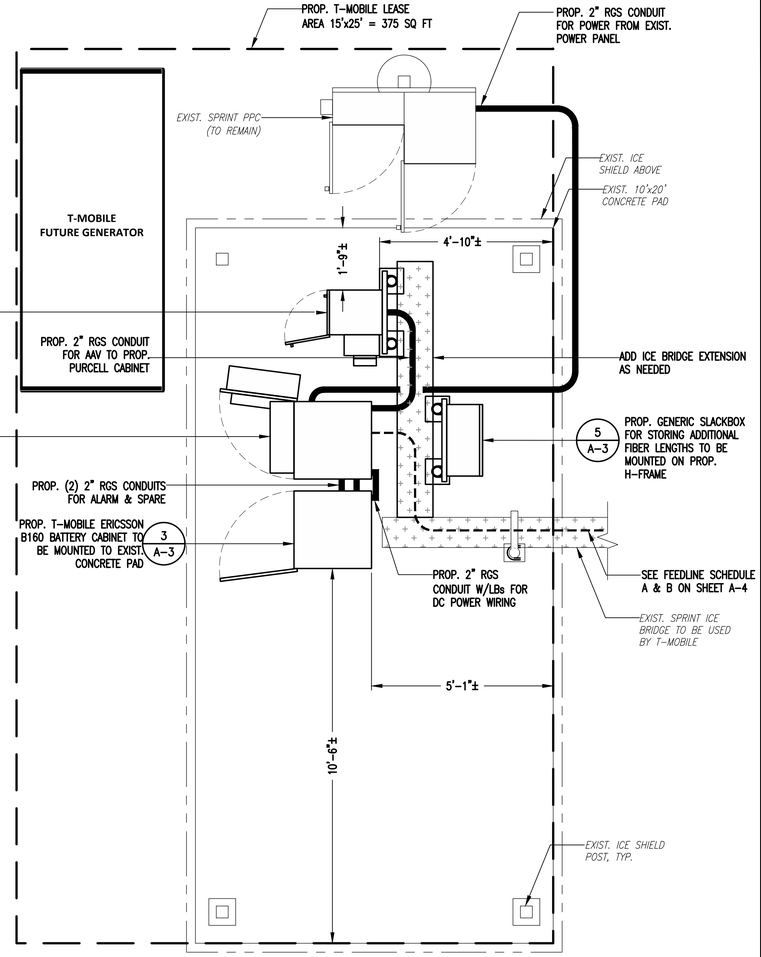
*CONSTRUCTION NOTE: EXISTING CONCRETE ANCHORS CAN REMAIN PROVIDED THEY ARE CUT OR HAMMERED BELOW SURFACE OF EXISTING CONCRETE PAD AND HOLES ARE GROUTED AND BLENDED FLUSH WITH THE SURROUNDING CONCRETE AREA TO A SMOOTH FINISH.



COMPOUND PLAN
SCALE: 1" = 8'-0"
1 A-1
0 4' 8' 16' 24'



EXISTING EQUIPENT PLAN
SCALE: 1" = 2'-0"
2 A-1
NORTH



PROPOSED EQUIPENT PLAN
SCALE: 1" = 2'-0"
3 A-1
NORTH

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SST SBA

SITE ADDRESS:
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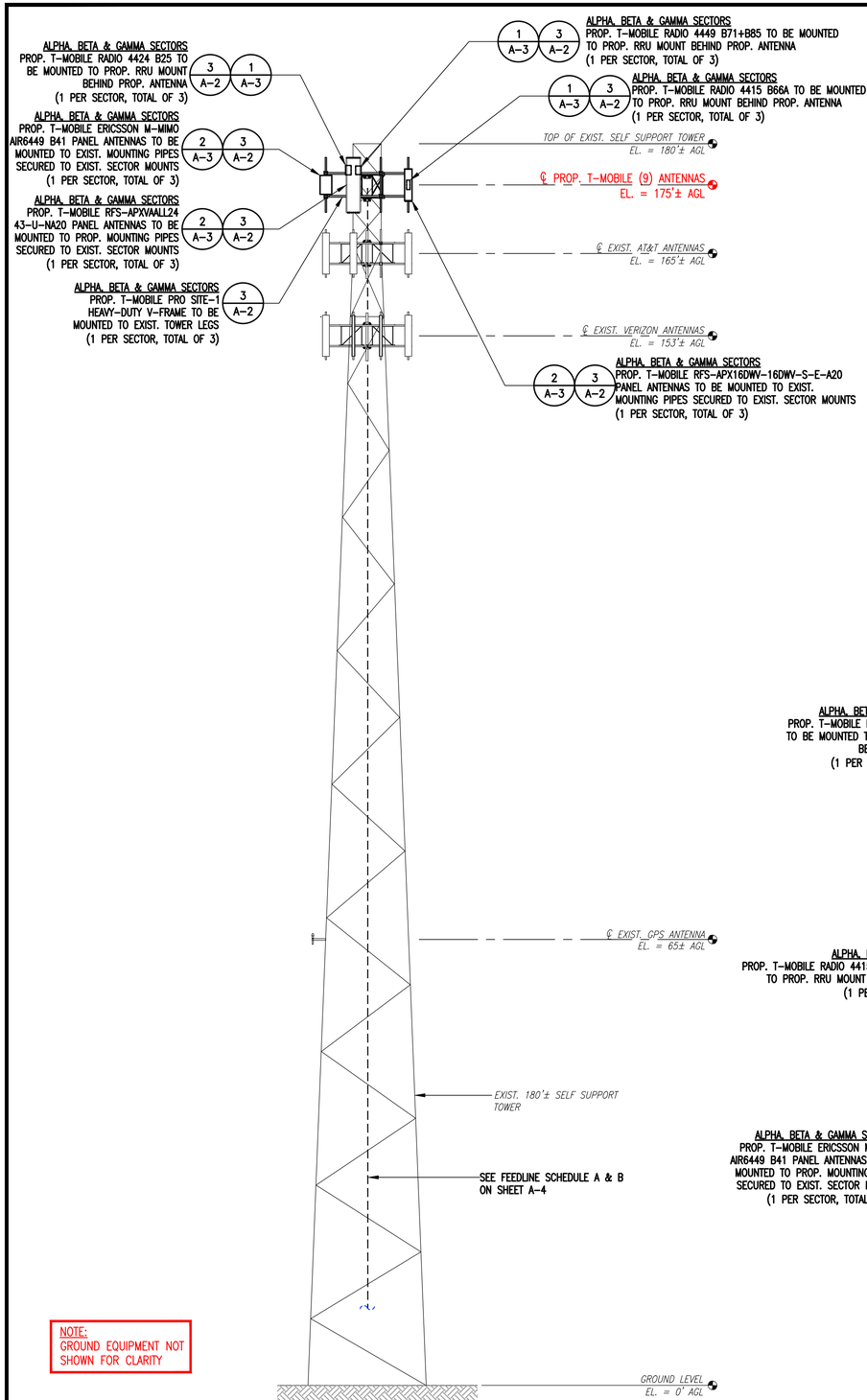
VOLUNTOWN, CT 06384

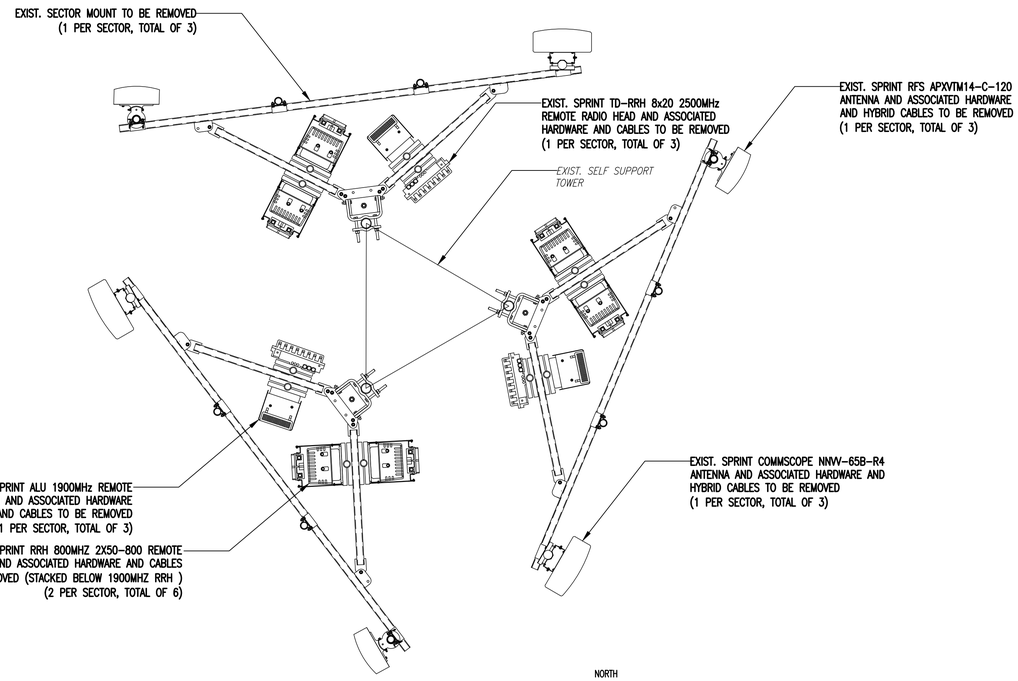
SHEET TITLE
COMPOUND & EQUIPMENT PLANS

SHEET NUMBER
A-1

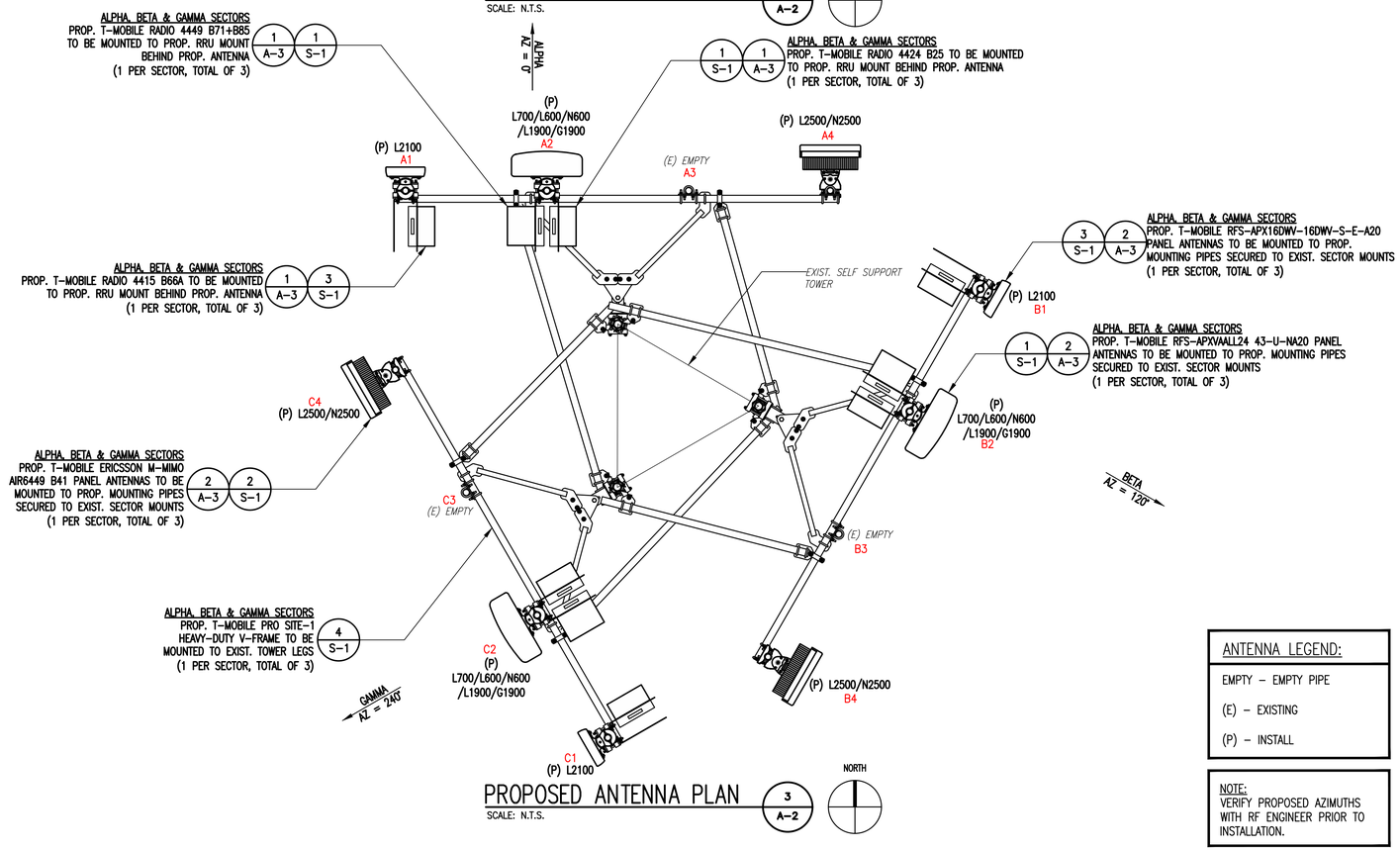


NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION 1/A-2
SCALE: 1" = 10'-0"
0 5' 10' 20' 30'



EXISTING ANTENNA PLAN 2/A-2
SCALE: N.T.S.



PROPOSED ANTENNA PLAN 3/A-2
SCALE: N.T.S.

ANTENNA LEGEND:

EMPTY – EMPTY PIPE

(E) – EXISTING

(P) – INSTALL

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

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SHEET TITLE
ELEVATION & ANTENNA PLANS

SHEET NUMBER
A-2

ERICSSON RADIO 4424 B25

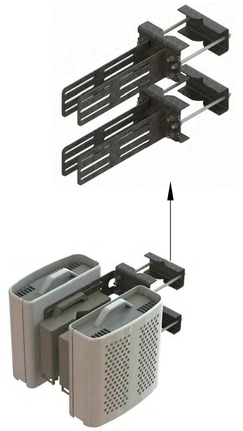
DIMENSIONS: 16.5"H x 13.5"W x 9.6"D
WEIGHT: 88.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

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



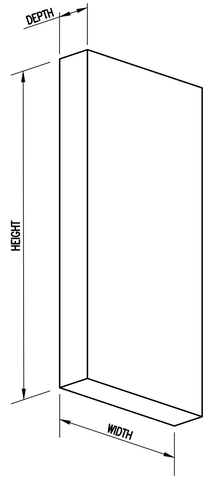
COMMSCOPE RADIO MOUNT RR-FA2

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

RADIO & MOUNT DETAILS 1 A-3
SCALE: N.T.S.

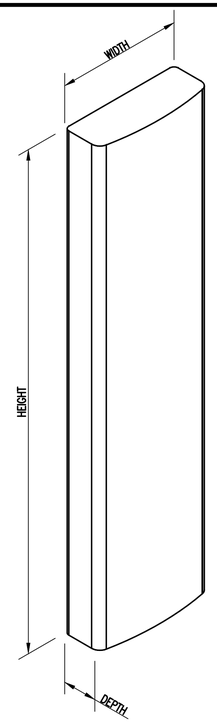
ERICSSON M-MIMO AIR6449 B41 ANTENNA

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



RFS APX16DWV-16VDWV-S-E-A20

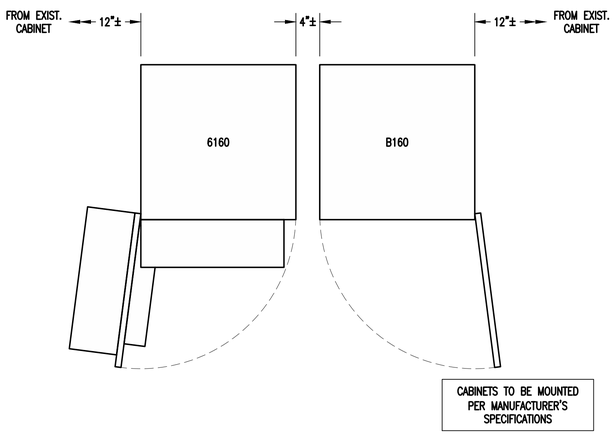
DIMENSIONS: 55.9"H x 13.0"W x 3.15"D
WEIGHT: 53.9 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3



RFS APXVAALL24_43-U-NA20 ANTENNA

DIMENSIONS: 95.9"H x 24.0"W x 8.5"D
WEIGHT: 122.8 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS 2 A-3
SCALE: N.T.S.



ERICSSON 6161 SITE SUPPORT CABINET

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

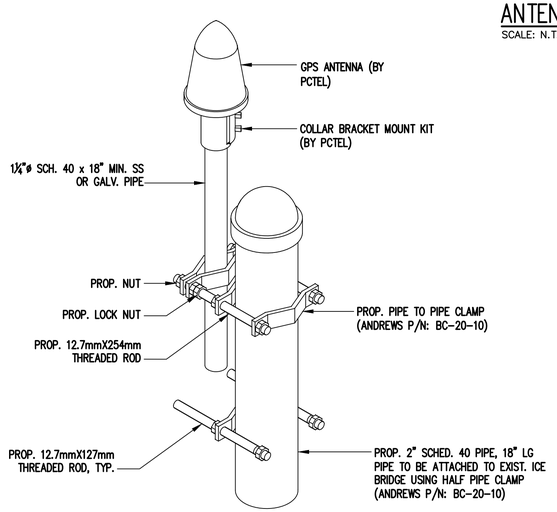
ERICSSON B160 BATTERY CABINET

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

PURCELL SITE SUPPORT CABINET RAC24

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

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



1. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1"-1½" DIAMETER GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
2. THE MOUNTING PLATE SHALL BE FASTENED AS SHOWN AND ATTACHED TO THE APPROPRIATE SUPPORT STRUCTURE USING U-BOLTS. THE SUPPORT PIPE SHALL THEN BE ATTACHED TO THE MOUNTING PLATE USING THE OVERSIZE U-BOLTS PROVIDED TO ALLOW ADJUSTMENT. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.

GPS ANTENNA DETAILS 4 A-3
SCALE: N.T.S.

SLACKBOX - HOFFMAN 32FH91 NEMA 3R ENCLOSURE

DIMENSIONS: 24.0"H x 24.0"W x 12.0"D
QUANTITY: TOTAL OF 1

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

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SST SBA

SITE ADDRESS:
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

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	175'-0"± AGL	0°	0°	2°	L2100	ERICSSON RADIO 4415 B66A	(P) (3) 1-¾" (6x24) HCS FIBER CABLES
	A2 RFS APXVAALL24_43-U-NA20	175'-0"± AGL	0°	0°	2°	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
						L1900/G1900	ERICSSON RADIO 4424 B25	
	A3 *EMPTY*						-	
	A4 ERICSSON M-MIMO AIR6449 B41	175'-0"± AGL	0°	0°	2°	L2500/N2500	-	
BETA	B1 RFS-APX16DWV-16DWV-S-E-A20	175'-0"± AGL	120°	0°	2°	L2100	ERICSSON RADIO 4415 B66A	
	B2 RFS APXVAALL24_43-U-NA20	175'-0"± AGL	120°	0°	2°	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
						L1900/G1900	ERICSSON RADIO 4424 B25	
	B3 *EMPTY*						-	
	B4 ERICSSON M-MIMO AIR6449 B41	175'-0"± AGL	120°	0°	2°	L2500/N2500	-	
GAMMA	C1 RFS-APX16DWV-16DWV-S-E-A20	175'-0"± AGL	240°	0°	2°	L2100	ERICSSON RADIO 4415 B66A	
	C2 RFS APXVAALL24_43-U-NA20	175'-0"± AGL	240°	0°	2°	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
						L1900/G1900	ERICSSON RADIO 4424 B25	
	C3 *EMPTY*						-	
	C4 ERICSSON M-MIMO AIR6449 B41	175'-0"± AGL	240°	0°	2°	L2500/N2500	-	

CABLE NOTE: ALL EXISTING SPRINT CABLES TO BE REMOVED, EXCEPT 1/2" COAX CABLE USED FOR SPRINT GPS ANTENNA TO REMAIN. SEE FEEDLINE SCHEDULE A & B BELOW.

NOTE: RFDS REV1 – 04/02/21

FEEDLINE SCHEDULE

SCHEDULE	FEEDLINES	LOCATION
A	*EXISTING TO REMAIN:* *(1) ½" COAX CABLE FOR GPS ANTENNA* *EXISTING TO BE REMOVED:* *ALL SPRINT CABLES*	ROUTED PER STRUCTURAL ANALYSIS
B	PROPOSED: (3) 1-¾" (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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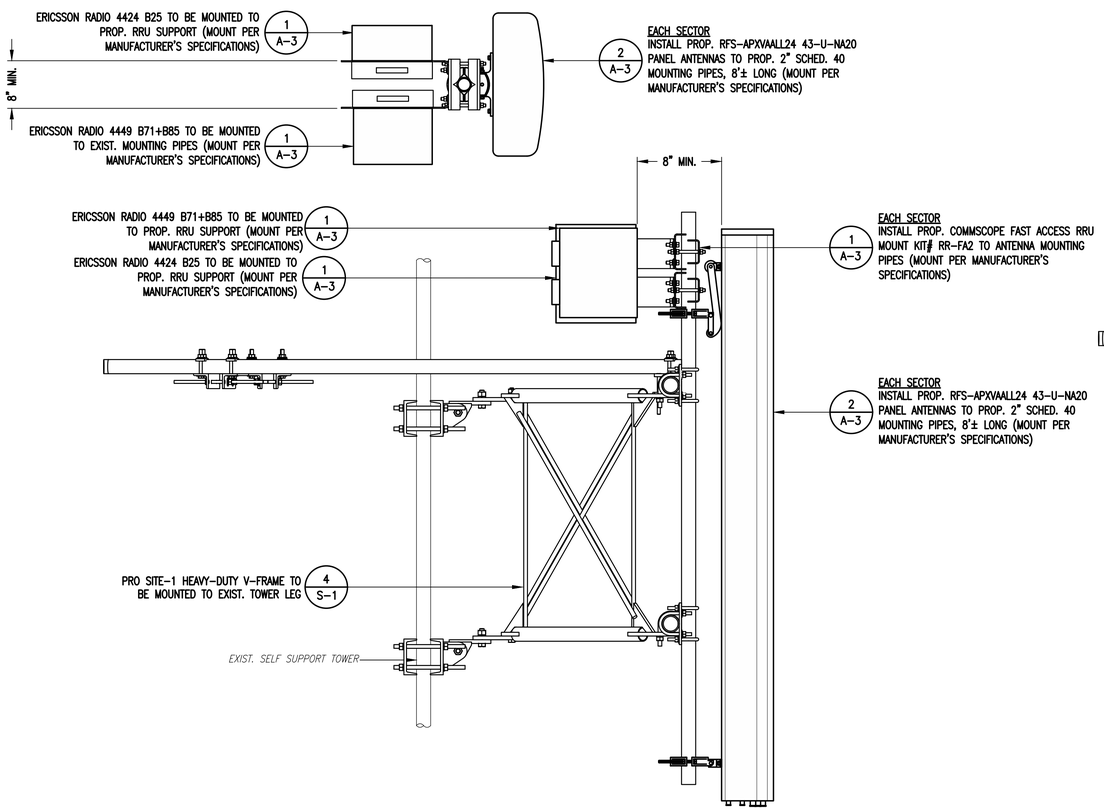
SHEET TITLE
ANTENNA & FEEDLINE CHARTS

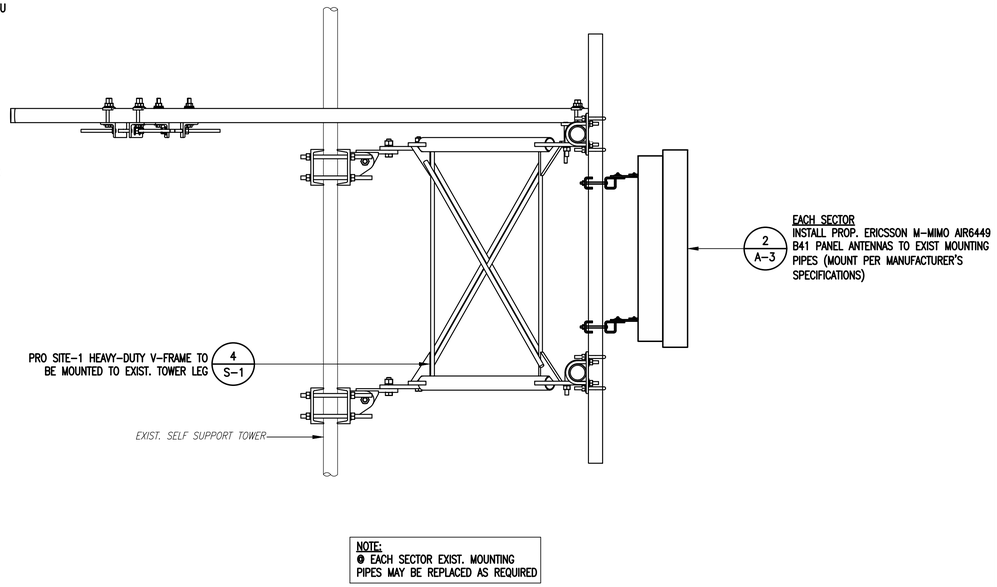
SHEET NUMBER
A-4



ANTENNA & RADIO MOUNT DETAIL

SCALE: N.T.S.

1 S-1

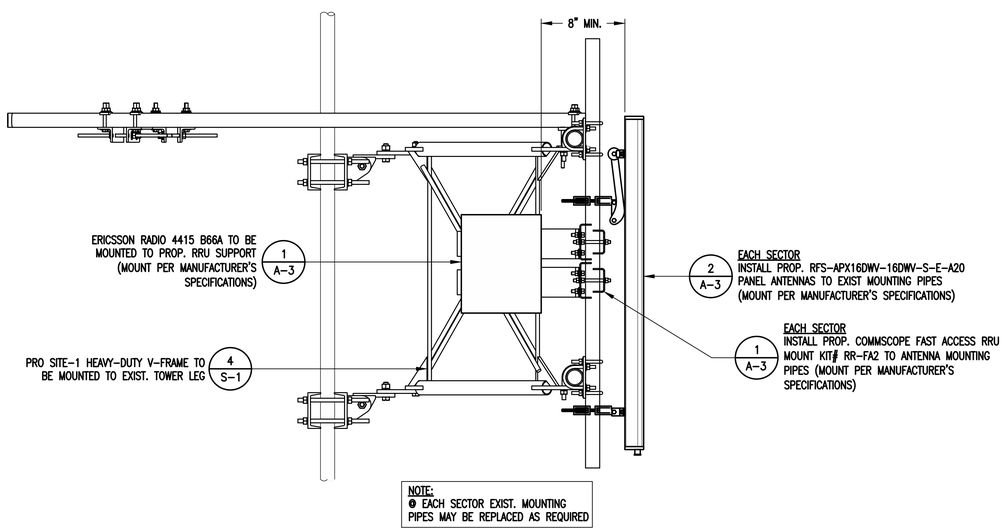


NOTE:
❶ EACH SECTOR EXIST. MOUNTING PIPES MAY BE REPLACED AS REQUIRED

ANTENNA MOUNT DETAIL

SCALE: N.T.S.

2 S-1

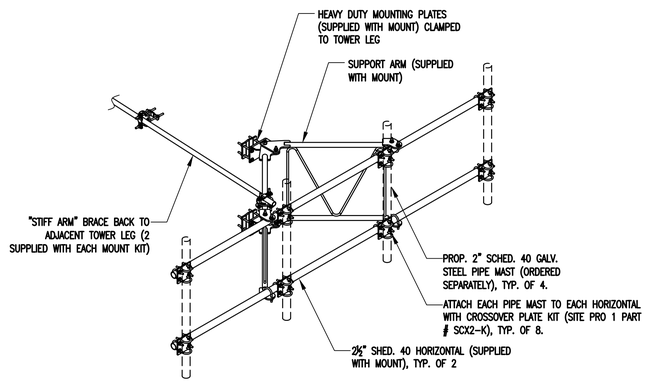


NOTE:
❶ EACH SECTOR EXIST. MOUNTING PIPES MAY BE REPLACED AS REQUIRED

ANTENNA MOUNT DETAIL

SCALE: N.T.S.

3 S-1



SITE-PRO 1 12'-6" HEAVY-DUTY V-FRAME
PART NUMBER: VFA12-HD
(TOTAL OF 3 REQUIRED)

TYPICAL SITE PRO 1, 12'-6" HEAVY DUTY V-FRAME ASSEMBLY

SCALE: N.T.S.

4 S-1

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
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STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED
PROFESSIONAL CIVIL ENGINEER
4/23/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

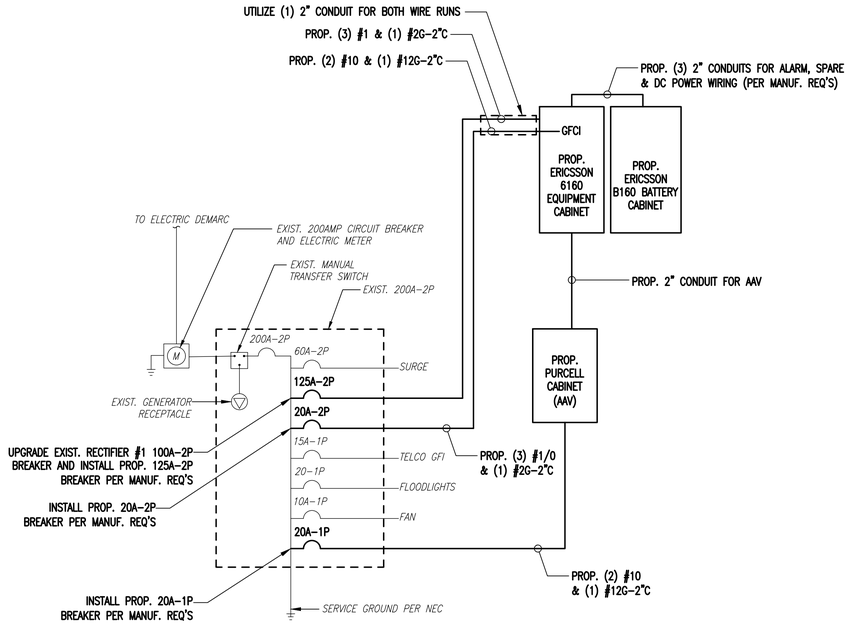
REV.	DATE	DESCRIPTION	BY
1	04/22/21	ISSUED FOR CONSTRUCTION	BDJ
0	04/16/21	ISSUED FOR REVIEW	BDJ

SITE NAME:
CTNL086A/CT54XC704
VOLUNTOWN
SST SBA

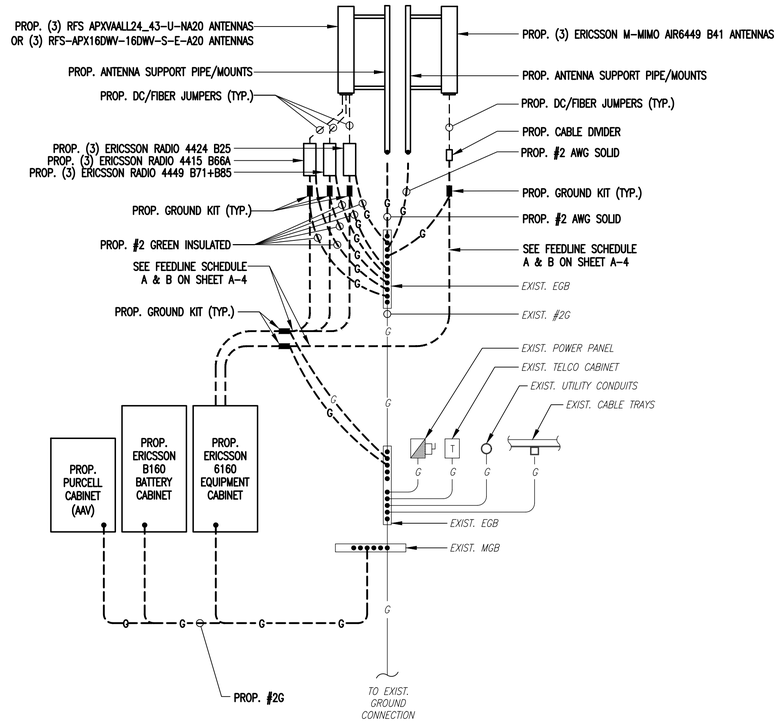
SITE ADDRESS:
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
ANTENNA MOUNTING DETAILS

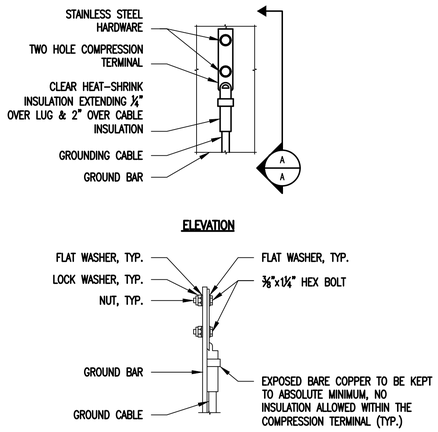
SHEET NUMBER
S-1



ONE LINE DIAGRAM (1 / E-1)
SCALE: NOT TO SCALE

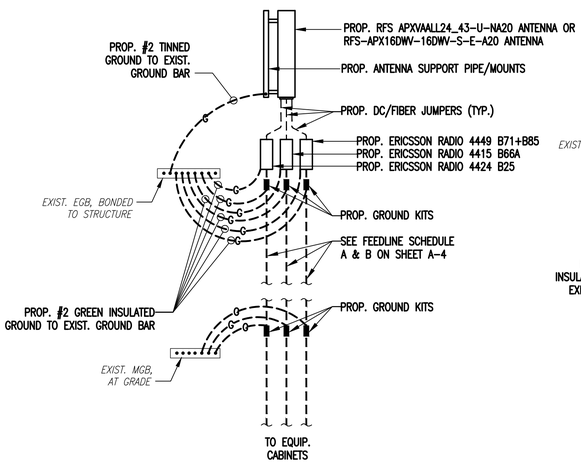


GROUNDING RISER DIAGRAM (2 / E-1)
SCALE: NOT TO SCALE

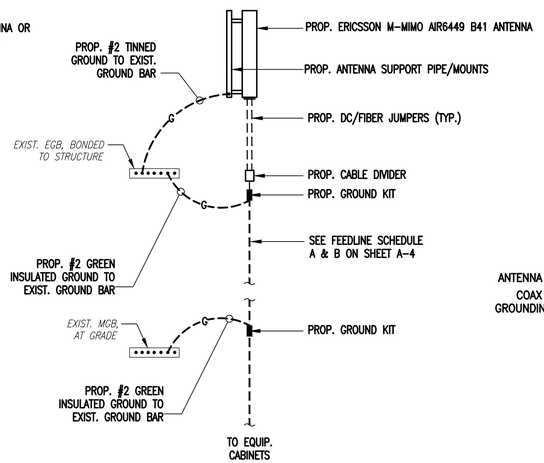


NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

TYPICAL GROUND BAR CONNECTIONS DETAIL (3 / E-1)
SCALE: NOT TO SCALE

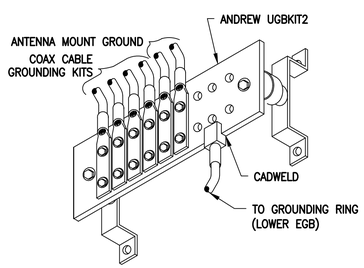


L700/L600/N600/L1900/G1900 ANTENNA & L2100 ANTENNA



L2500/N2500 ANTENNA

COAX CABLE CONNECTION AND GROUNDING DETAIL (4 / E-1)
SCALE: NOT TO SCALE



GROUND BAR (EGB) (5 / E-1)
SCALE: NOT TO SCALE

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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STATE OF CONNECTICUT · JAMES M. FITZGERALD · No. 25997 · LICENSED PROFESSIONAL CIVIL ENGINEER
4/23/2021

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	04/22/21	ISSUED FOR CONSTRUCTION	BDJ
0	04/16/21	ISSUED FOR REVIEW	BDJ

SITE NAME:
CTNL086A/CT54XC704
VOLUNTOWN
SST SBA
SITE ADDRESS:
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER
E-1

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 180 ft Rohn Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT10024-A

Customer Site Name: Voluntown

Carrier Name: T-Mobile Sprint (App#: 154224, v2)

Carrier Site ID / Name: CT54XC704 / Voluntown

Site Location: 111 Stone Hill Road

Voluntown, Connecticut

New London County

Latitude: 41.606411

Longitude: -71.851133

Analysis Result:

Max Structural Usage: 75.1% [Pass]

Max Foundation Usage: 60% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +0.4%

Report Prepared By: Ram Kodali

Introduction

The purpose of this report is to summarize the analysis results on the 180 ft Rohn Self Supporting 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	Rohn, Dwg # A000853, dated 4/3/2000
Foundation Drawing	Rohn, Dwg # AC10521-1, dated 3/21/2001
Geotechnical Report	DR. Clawrence Welti, dated 3/5/2001
Mount Analysis	TES, Project # 107413, dated 4/29/2021

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 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

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
-	175.0	3	RFS APXVTM14-C-I20 - Panel	(3) Sector Frames	(4) 1.25" Fiber	T-Mobile Sprint
-		3	Commscope NNVV-65B-R4 - Panel			
-		3	ALU 1900 Mhz			
-		6	ALU 800 Mhz			
-		3	ALU TD-RRH8x20-25			
7	165.0	6	7770 - Panel	(3) Sector Frames	(12) 1 5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
8		3	HPA-65R-BU8AA - Panel			
9		3	800 10966 - Panel			
10		6	LGP21401 TMA			
11		6	LGP21903			
12		3	RRUS 8843 B2 B66A			
13		3	4449 B5/B12			
14		3	DBCT108F1V92-1			
15		1	DC6-48-60-18-8F			
16		1	DC6-48-60-18-8C			
17	153.0	6	Antel BXA-70063-6CF - Panel	(3) Sector Frames	(12) 1 5/8"	Verizon
18		6	BXA-171063-12CF - Panel			
19		2	DB-T1-6Z-8AB-0Z			
20		3	RRH2x40-AWS			
21		3	RRH2x40-07			

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
1	175.0	3	RFS APX16DWV-16DWVS-E-A20 - Panel	Site Pro (3) VFA12-HD w/ Stiff Arms	(3) 1.99" Hybrid - 6x24	T-Mobile Sprint
2		3	RFS APXVAALL24-43-U-NA20 - Panel			
3		3	Ericsson AIR6449 B41 - Panel			
4		3	Ericsson 4415 B66A			
5		3	Ericsson 4424 B25			
6		3	Ericsson 4449 B71 + B85			

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
Max. Usage:	**75.1%**	**73.3%**	**4.2%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	360.2	317.5	37.1

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

Service Load Condition (Rigidity)

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2579 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the 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: CT10024-A-SBA

Site Name:	Voluntown			**Code:**	EIA/TIA-222-G	5/27/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 1

Tower Engineering Solutions

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	PX 8" DIA PIPE	SAE 4X4X0.25	
3	PSP ROHN 8 EHS	SAE 3.5X3.5X0.25	
4	PX 6" DIA PIPE	SAE 3X3X0.25	
5	PSP ROHN 6 EHS	SAE 2.5X2.5X0.25	
6	PX 5" DIA PIPE	SAE 2.5X2.5X0.25	
7	PX 4" DIA PIPE	SAE 2X2X0.25	
8	PX 3" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25
9	PST 2-1/2" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25

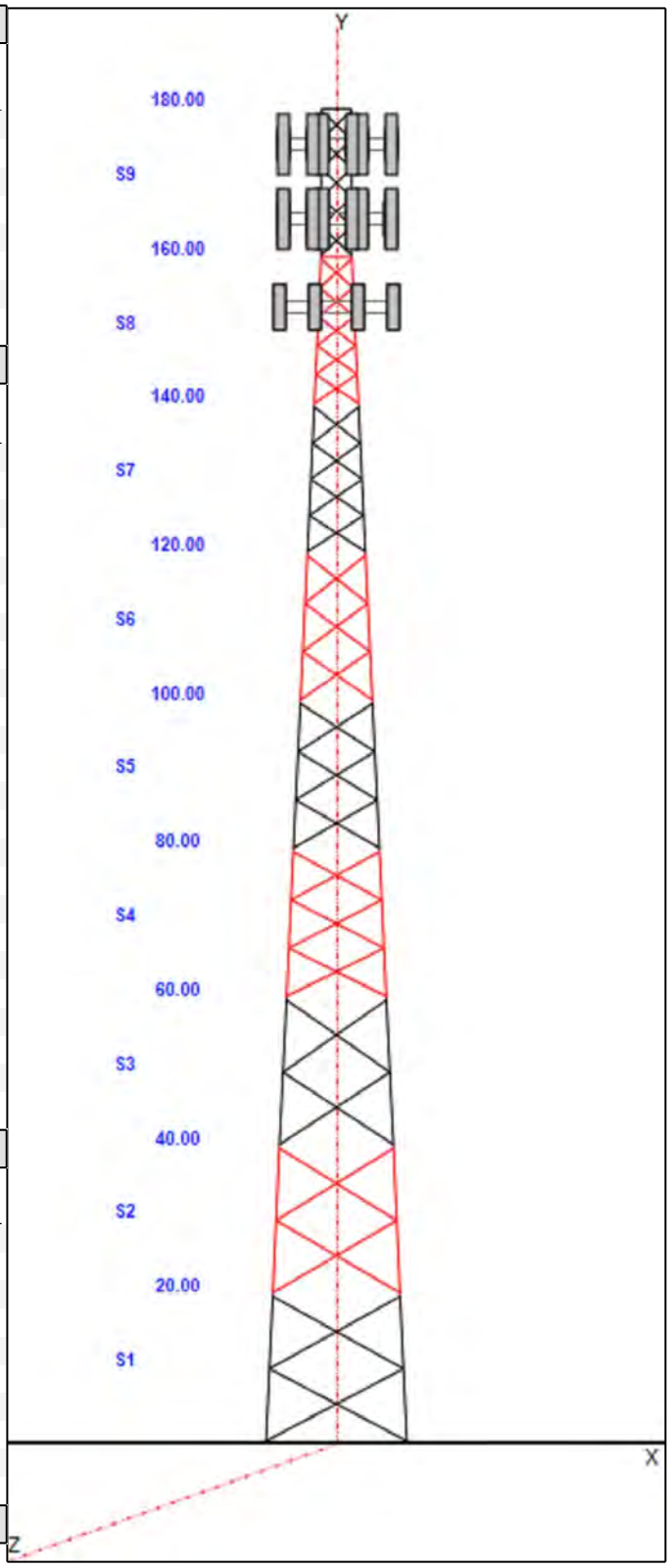
Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
175.00	175.00	3	APX16DWV-16DWVS-E-A20
175.00	175.00	3	VFA12-HD w/ Stiff Arms
175.00	175.00	3	APXVAALL24-43-U-NA20
175.00	175.00	3	4415 B66A
175.00	175.00	3	4424 B25
175.00	175.00	3	4449 B71 + B85
175.00	175.00	3	AIR6449 B41
165.00	165.00	3	800 10966
165.00	165.00	3	DBCT108F1V92-1
165.00	165.00	3	4449 B5/B12
165.00	165.00	1	DC6-48-60-18-8C
165.00	165.00	3	Sector Frames
165.00	165.00	6	7770.00
165.00	165.00	3	HPA-65R-BU8AA
165.00	165.00	6	LGP21401 TMA
165.00	165.00	6	LGP21903
165.00	165.00	3	RRUS 8843 B2 B66A
165.00	165.00	1	DC6-48-60-18-8F
153.00	153.00	3	Sector Frames
153.00	153.00	6	Antel BXA-70063-6CF
153.00	153.00	6	BXA-171063-12CF
153.00	153.00	2	DB-T1-6Z-8AB-0Z
153.00	153.00	3	RRH2x40-AWS
153.00	153.00	3	RRH2x40-07

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	180.00	1	Safety Cable
0.00	180.00	1	Step bolts (ladder)
0.00	175.00	3	1.99" Hybrid - 6x24
0.00	175.00	1	W/G Ladder
0.00	165.00	12	1 5/8" Coax
0.00	165.00	2	1/2" Fiber
0.00	165.00	4	3/4" DC
0.00	165.00	1	W/G Ladder
0.00	160.00	1	W/G Ladder
0.00	153.00	12	1 5/8" Coax

Base Reactions



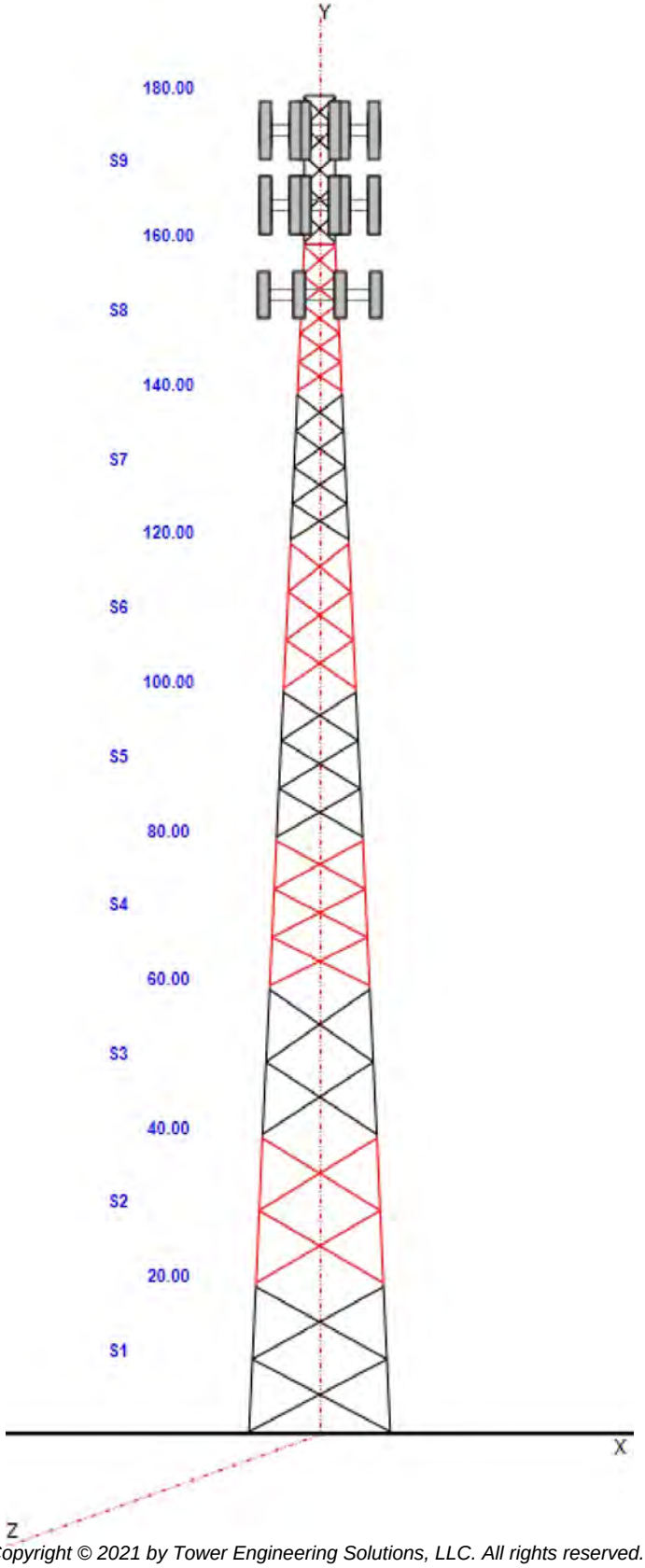
Structure: CT10024-A-SBA

Site Name:	Voluntown			**Code:**	EIA/TIA-222-G	5/27/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 2

Leg			Overturning		
Max Uplift:	-317.51	(kips	Moment:	6296.82	(ft-kips)
Max Down:	360.17	(kips	Total Down:	47.70	(kips)
Max Shear:	37.06	(kips	Total Shear:	60.63	(kips)

Structure: CT10024-A-SBA

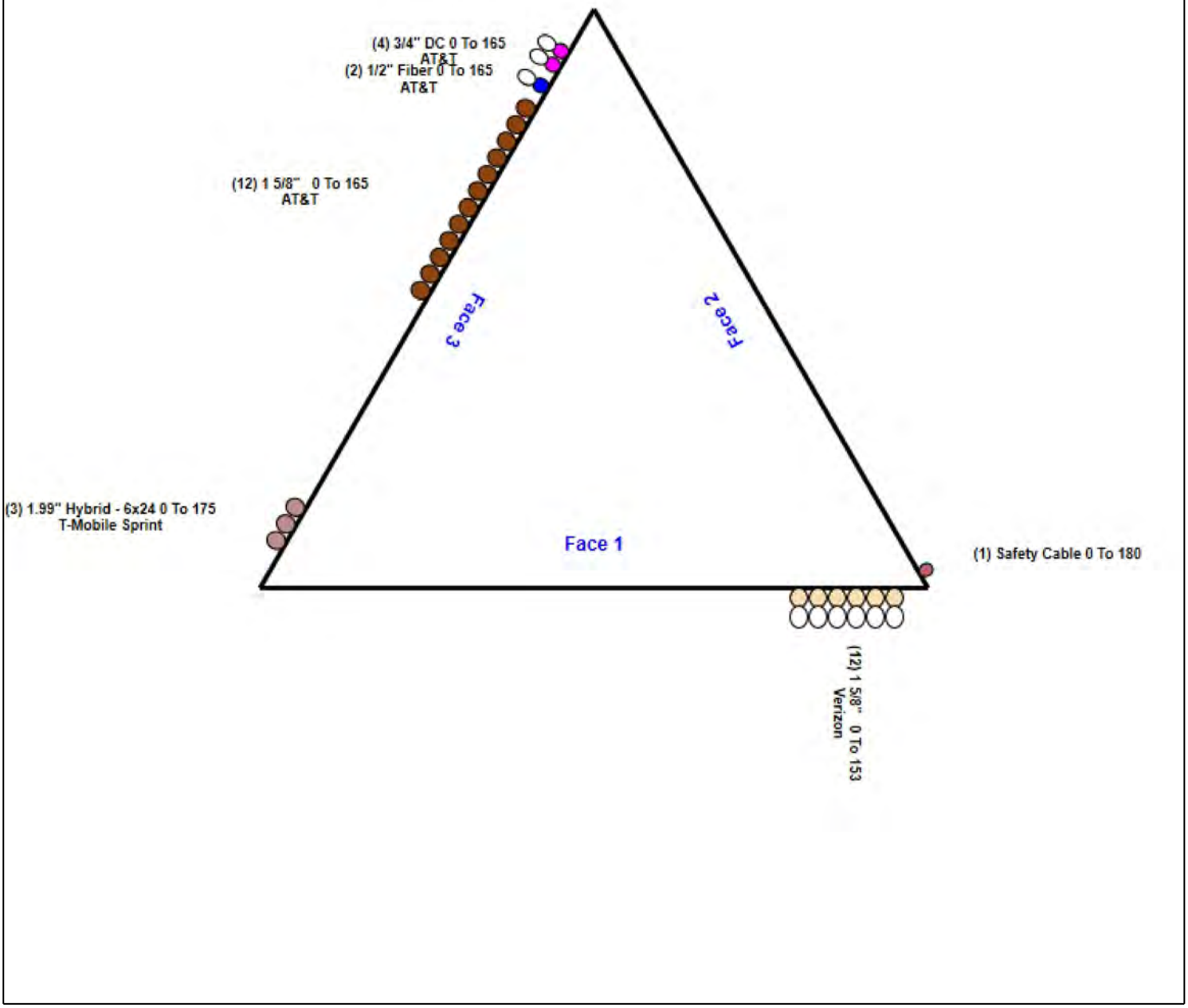
Site Name:	Voluntown			**Code:**	EIA/TIA-222-G	5/27/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	105.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 3



Structure: CT10024-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Voluntown
Height: 180.00 (ft)

5/27/2021



Loading Summary

Structure:	CT10024-A-SBA		**Code:**	EIA/TIA-222-G	5/27/2021
Site Name:	Voluntown		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 5

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)
175.00	APX16DWV-16DWVS-E-A20	3	40.70	6.610	159.23	8.815	55.900	13.300	3.100	0.80	0.62	0.000
175.00	VFA12-HD w/ Stiff Arms	3	683.00	18.900	1358.92	42.948	0.000	0.000	0.000	0.75	0.75	0.000
175.00	APXVAALL24-43-U-NA20	3	143.30	20.240	603.28	22.143	95.900	24.000	8.500	0.80	0.72	0.000
175.00	4415 B66A	3	46.20	1.860	96.53	2.440	13.500	16.500	4.800	0.80	0.67	0.000
175.00	4424 B25	3	88.00	2.050	175.73	2.654	17.100	14.400	11.300	0.80	0.67	0.000
175.00	4449 B71 + B85	3	73.20	1.970	131.67	2.546	17.900	13.200	10.600	0.80	0.67	0.000
175.00	AIR6449 B41	3	103.00	5.650	241.85	6.612	33.100	20.500	8.300	0.80	0.71	0.000
165.00	800 10966	3	125.70	17.360	488.48	19.191	96.000	20.000	6.900	0.80	0.72	0.000
165.00	DBCT108F1V92-1	3	7.00	0.710	21.53	1.341	7.000	10.400	1.800	0.80	0.67	0.000
165.00	4449 B5/B12	3	71.00	1.970	125.05	2.524	17.900	13.200	9.400	0.80	0.67	0.000
165.00	DC6-48-60-18-8C	1	20.00	1.260	73.43	1.928	23.500	9.700	9.700	0.90	0.90	0.000
165.00	Sector Frames	3	450.00	14.000	806.27	21.125	0.000	0.000	0.000	0.75	0.75	0.000
165.00	7770.00	6	35.00	5.500	172.27	6.580	55.000	11.000	5.000	0.80	0.73	0.000
165.00	HPA-65R-BU8AA	3	68.00	12.980	363.32	14.617	92.400	14.800	7.400	0.80	0.79	0.000
165.00	LGP21401 TMA	6	14.10	1.290	39.42	2.136	14.400	9.200	2.600	0.80	0.67	0.000
165.00	LGP21903	6	5.50	0.270	14.03	0.673	4.400	6.300	3.000	0.80	0.67	0.000
165.00	RRUS 8843 B2 B66A	3	72.00	1.640	119.43	2.143	14.900	13.200	10.900	0.80	0.67	0.000
165.00	DC6-48-60-18-8F	1	31.80	0.920	94.40	1.363	24.000	11.000	11.000	0.90	0.90	0.000
153.00	Sector Frames	3	500.00	17.500	1198.09	31.427	0.000	0.000	0.000	0.75	0.75	0.000
153.00	Antel BXA-70063-6CF	6	17.00	7.570	165.30	10.334	71.000	11.200	5.200	0.80	0.73	0.000
153.00	BXA-171063-12CF	6	15.00	4.780	110.82	7.139	72.400	6.100	4.100	0.80	0.84	0.000
153.00	DB-T1-6Z-8AB-0Z	2	18.90	4.800	139.98	5.805	24.000	24.000	10.000	0.90	0.90	0.000
153.00	RRH2x40-AWS	3	44.00	2.160	104.73	3.208	24.400	10.600	6.700	0.80	0.67	0.000
153.00	RRH2x40-07	3	50.70	1.930	109.49	2.849	15.400	15.000	8.200	0.80	0.67	0.000
	Totals:	**82**	**8,306.60**		**21,769.59**						**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
0.00	180.00	Safety Cable	1	0.38	0.27	100.00	2	Individual NR		N	1.00	1.00	
0.00	180.00	Step bolts (ladder)	1	0.63	1.04	100.00	2	Individual NR		N	1.00	1.00	
0.00	175.00	1.99" Hybrid - 6x24	3	1.99	0.95	100.00	3	Individual IR		N	1.00	1.00	
0.00	175.00	W/G Ladder	1	2.50	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	165.00	1 5/8" Coax	12	1.98	1.04	100.00	3	Individual NR		N	1.00	1.00	
0.00	165.00	1/2" Fiber	2	0.65	0.16	50.00	3	Block		N	1.00	1.00	
0.00	165.00	3/4" DC	4	0.75	0.40	50.00	3	Block		N	0.50	1.00	
0.00	165.00	W/G Ladder	1	2.00	6.00		3	Individual NR		N	1.00	1.00	
0.00	160.00	W/G Ladder	1	2.50	6.00		1	Individual NR		N	1.00	1.00	
0.00	153.00	1 5/8" Coax	12	1.98	1.04	50.00	1	Block		N	0.50	1.00	

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

TES 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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	40.70	91.27	0.00	6,442.2	0.0	3176.70	1964.07	5,140.78
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.43	91.27	0.00	6,271.0	0.0	3427.08	2269.66	5,696.75
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	91.27	0.00	5,139.9	0.0	3275.90	2527.36	5,803.26
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	31.63	91.27	0.00	4,874.2	0.0	3344.00	2712.88	6,056.88
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	25.52	91.27	0.00	4,032.3	0.0	2839.21	2860.28	5,699.48
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	22.66	91.27	0.00	3,723.5	0.0	2610.76	2983.70	5,594.46
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.26	91.27	0.00	3,102.6	0.0	2280.91	3090.50	5,371.41
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.15	82.88	0.00	2,660.0	0.0	2124.88	2845.50	4,970.39
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,481.6	0.0	1885.43	810.11	2,695.54
														37,727.4	**0.0**			**47,028.94**

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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.94	91.27	0.00	6,442.2	0.0	2727.02	1964.07	4,691.09
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.15	91.27	0.00	6,271.0	0.0	2955.92	2269.66	5,225.58
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	91.27	0.00	5,139.9	0.0	2859.33	2527.36	5,386.69
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	27.19	91.27	0.00	4,874.2	0.0	2874.35	2712.88	5,587.23
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	22.28	91.27	0.00	4,032.3	0.0	2478.65	2860.28	5,338.92
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	19.85	91.27	0.00	3,723.5	0.0	2286.89	2983.70	5,270.59
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	16.94	91.27	0.00	3,102.6	0.0	2005.93	3090.50	5,096.43
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	15.82	82.88	0.00	2,660.0	0.0	1852.65	2845.50	4,698.16
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,481.6	0.0	1639.46	810.11	2,449.57
														37,727.4	**0.0**			**43,744.26**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	36.38	91.27	0.00	6,442.2	0.0	2839.44	1964.07	4,803.51
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.47	91.27	0.00	6,271.0	0.0	3073.71	2269.66	5,343.37
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	91.27	0.00	5,139.9	0.0	2963.47	2527.36	5,490.83
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	28.30	91.27	0.00	4,874.2	0.0	2991.76	2712.88	5,704.64
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	23.09	91.27	0.00	4,032.3	0.0	2568.79	2860.28	5,429.06
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	20.55	91.27	0.00	3,723.5	0.0	2367.86	2983.70	5,351.56
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	17.52	91.27	0.00	3,102.6	0.0	2074.67	3090.50	5,165.18
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.40	82.88	0.00	2,660.0	0.0	1920.71	2845.50	4,766.21
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,481.6	0.0	1700.95	810.11	2,511.06
														37,727.4	**0.0**			**44,565.43**

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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	40.70	91.27	0.00	4,831.6	0.0	3176.70	1964.07	5,140.78
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.43	91.27	0.00	4,703.3	0.0	3427.08	2269.66	5,696.75
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	91.27	0.00	3,854.9	0.0	3275.90	2527.36	5,803.26
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	31.63	91.27	0.00	3,655.6	0.0	3344.00	2712.88	6,056.88
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	25.52	91.27	0.00	3,024.3	0.0	2839.21	2860.28	5,699.48
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	22.66	91.27	0.00	2,792.6	0.0	2610.76	2983.70	5,594.46
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.26	91.27	0.00	2,327.0	0.0	2280.91	3090.50	5,371.41
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.15	82.88	0.00	1,995.0	0.0	2124.88	2845.50	4,970.39
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,111.2	0.0	1885.43	810.11	2,695.54
														28,295.6	**0.0**			**47,028.94**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

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 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.94	91.27	0.00	4,831.6	0.0	2727.02	1964.07	4,691.09
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.15	91.27	0.00	4,703.3	0.0	2955.92	2269.66	5,225.58
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	91.27	0.00	3,854.9	0.0	2859.33	2527.36	5,386.69
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	27.19	91.27	0.00	3,655.6	0.0	2874.35	2712.88	5,587.23
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	22.28	91.27	0.00	3,024.3	0.0	2478.65	2860.28	5,338.92
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	19.85	91.27	0.00	2,792.6	0.0	2286.89	2983.70	5,270.59
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	16.94	91.27	0.00	2,327.0	0.0	2005.93	3090.50	5,096.43
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	15.82	82.88	0.00	1,995.0	0.0	1852.65	2845.50	4,698.16
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,111.2	0.0	1639.46	810.11	2,449.57
														28,295.6	**0.0**			**43,744.26**

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

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

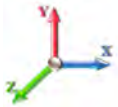
Dead Load Factor: 0.90

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	10.0	20.39	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	36.38	91.27	0.00	4,831.6	0.0	2839.44	1964.07	4,803.51
2	30.0	23.56	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.47	91.27	0.00	4,703.3	0.0	3073.71	2269.66	5,343.37
3	50.0	26.24	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	91.27	0.00	3,854.9	0.0	2963.47	2527.36	5,490.83
4	70.0	28.17	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	28.30	91.27	0.00	3,655.6	0.0	2991.76	2712.88	5,704.64
5	90.0	29.70	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	23.09	91.27	0.00	3,024.3	0.0	2568.79	2860.28	5,429.06
6	110.0	30.98	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	20.55	91.27	0.00	2,792.6	0.0	2367.86	2983.70	5,351.56
7	130.0	32.09	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	17.52	91.27	0.00	2,327.0	0.0	2074.67	3090.50	5,165.18
8	150.0	33.07	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.40	82.88	0.00	1,995.0	0.0	1920.71	2845.50	4,766.21
9	170.0	33.95	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,111.2	0.0	1700.95	810.11	2,511.06
														28,295.6	**0.0**			**44,565.43**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	



Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 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	10.0	4.62	28.808	57.50	28.70	0.21	2.58	1.00	1.00	1.33	61.90	112.35	75.43	12,909.	6467.4	627.28	691.32	1,318.60
2	30.0	5.34	26.417	59.05	30.26	0.22	2.52	1.00	1.00	1.49	60.62	114.41	84.19	13,416.	7145.7	692.76	830.86	1,523.62
3	50.0	5.95	21.031	58.79	29.99	0.23	2.48	1.00	1.00	1.56	55.22	115.45	88.61	12,224.	7084.4	693.50	941.72	1,635.23
4	70.0	6.39	22.214	57.76	35.64	0.27	2.38	1.00	1.00	1.62	56.32	116.16	91.64	12,235.	7360.8	726.21	995.21	1,721.42
5	90.0	6.73	16.204	55.61	33.49	0.28	2.34	1.00	1.00	1.66	49.23	116.71	93.97	10,989.	6957.4	659.79	1051.67	1,711.46
6	110.0	7.02	14.054	49.69	31.11	0.30	2.28	1.00	1.00	1.69	43.88	117.16	95.88	10,444.	6721.0	598.59	1086.97	1,685.56
7	130.0	7.28	11.609	47.35	32.32	0.35	2.16	1.00	1.00	1.72	40.86	117.54	97.49	9,610.3	6507.7	546.11	1080.27	1,626.39
8	150.0	7.50	11.624	44.56	32.87	0.45	1.97	1.00	1.00	1.75	41.09	107.45	98.90	8,909.2	6249.2	515.14	918.58	1,433.71
9	170.0	7.70	10.350	40.43	30.85	0.50	1.90	1.00	1.00	1.77	37.97	33.95	35.34	4,887.6	3406.0	473.23	292.22	765.45
														95,627.0	**57899.6**			**13,421.44**

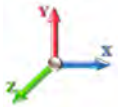
Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

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	10.0	4.62	28.808	57.50	28.70	0.21	2.58	0.80	1.00	1.33	56.14	112.35	75.43	12,909.	6467.4	568.89	691.32	1,260.21
2	30.0	5.34	26.417	59.05	30.26	0.22	2.52	0.80	1.00	1.49	55.34	114.41	84.19	13,416.	7145.7	632.38	830.86	1,463.25
3	50.0	5.95	21.031	58.79	29.99	0.23	2.48	0.80	1.00	1.56	51.01	115.45	88.61	12,224.	7084.4	640.68	941.72	1,582.40
4	70.0	6.39	22.214	57.76	35.64	0.27	2.38	0.80	1.00	1.62	51.88	116.16	91.64	12,235.	7360.8	668.93	995.21	1,664.14
5	90.0	6.73	16.204	55.61	33.49	0.28	2.34	0.80	1.00	1.66	45.99	116.71	93.97	10,989.	6957.4	616.36	1051.67	1,668.03
6	110.0	7.02	14.054	49.69	31.11	0.30	2.28	0.80	1.00	1.69	41.07	117.16	95.88	10,444.	6721.0	560.24	1086.97	1,647.22
7	130.0	7.28	11.609	47.35	32.32	0.35	2.16	0.80	1.00	1.72	38.54	117.54	97.49	9,610.3	6507.7	515.08	1080.27	1,595.36
8	150.0	7.50	11.624	44.56	32.87	0.45	1.97	0.80	1.00	1.75	38.76	107.45	98.90	8,909.2	6249.2	485.99	918.58	1,404.57
9	170.0	7.70	10.350	40.43	30.85	0.50	1.90	0.80	1.00	1.77	35.90	33.95	35.34	4,887.6	3406.0	447.43	292.22	739.65
														95,627.0	**57899.6**			**13,024.81**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	



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	10.0	4.62	28.808	57.50	28.70	0.21	2.58	0.85	1.00	1.33	57.58	112.35	75.43	12,909.	6467.4	583.49	691.32	1,274.80
2	30.0	5.34	26.417	59.05	30.26	0.22	2.52	0.85	1.00	1.49	56.66	114.41	84.19	13,416.	7145.7	647.48	830.86	1,478.34
3	50.0	5.95	21.031	58.79	29.99	0.23	2.48	0.85	1.00	1.56	52.06	115.45	88.61	12,224.	7084.4	653.88	941.72	1,595.61
4	70.0	6.39	22.214	57.76	35.64	0.27	2.38	0.85	1.00	1.62	52.99	116.16	91.64	12,235.	7360.8	683.25	995.21	1,678.46
5	90.0	6.73	16.204	55.61	33.49	0.28	2.34	0.85	1.00	1.66	46.80	116.71	93.97	10,989.	6957.4	627.21	1051.67	1,678.89
6	110.0	7.02	14.054	49.69	31.11	0.30	2.28	0.85	1.00	1.69	41.77	117.16	95.88	10,444.	6721.0	569.83	1086.97	1,656.80
7	130.0	7.28	11.609	47.35	32.32	0.35	2.16	0.85	1.00	1.72	39.12	117.54	97.49	9,610.3	6507.7	522.84	1080.27	1,603.11
8	150.0	7.50	11.624	44.56	32.87	0.45	1.97	0.85	1.00	1.75	39.35	107.45	98.90	8,909.2	6249.2	493.28	918.58	1,411.85
9	170.0	7.70	10.350	40.43	30.85	0.50	1.90	0.85	1.00	1.77	36.42	33.95	35.34	4,887.6	3406.0	453.88	292.22	746.10
														95,627.0	**57899.6**			**13,123.97**

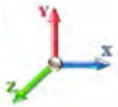
Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

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	10.0	6.66	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	44.05	91.27	0.00	5,368.5	0.0	701.66	400.83	1,102.49
2	30.0	7.69	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	41.30	91.27	0.00	5,225.9	0.0	751.66	463.20	1,214.85
3	50.0	8.57	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	35.62	91.27	0.00	4,283.2	0.0	719.87	515.79	1,235.66
4	70.0	9.20	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.38	91.27	0.00	4,061.8	0.0	741.68	553.65	1,295.32
5	90.0	9.70	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	28.28	91.27	0.00	3,360.3	0.0	642.06	583.73	1,225.79
6	110.0	10.12	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	24.62	91.27	0.00	3,102.9	0.0	578.87	608.92	1,187.79
7	130.0	10.48	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	20.16	91.27	0.00	2,585.5	0.0	487.37	630.72	1,118.09
8	150.0	10.80	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.33	82.88	0.00	2,216.7	0.0	438.13	580.72	1,018.84
9	170.0	11.09	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,234.7	0.0	384.78	165.33	550.11
														31,439.5	**0.0**			**9,948.95**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



Tower Engineering Solutions

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

Wind Load Factor: 1.00 — **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	10.0	6.66	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	38.29	91.27	0.00	5,368.5	0.0	609.89	400.83	1,010.72
2	30.0	7.69	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	36.02	91.27	0.00	5,225.9	0.0	655.50	463.20	1,118.70
3	50.0	8.57	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	31.41	91.27	0.00	4,283.2	0.0	634.85	515.79	1,150.64
4	70.0	9.20	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	29.94	91.27	0.00	4,061.8	0.0	645.83	553.65	1,199.48
5	90.0	9.70	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	25.04	91.27	0.00	3,360.3	0.0	568.48	583.73	1,152.21
6	110.0	10.12	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	21.81	91.27	0.00	3,102.9	0.0	512.78	608.92	1,121.70
7	130.0	10.48	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	17.84	91.27	0.00	2,585.5	0.0	431.25	630.72	1,061.97
8	150.0	10.80	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	16.01	82.88	0.00	2,216.7	0.0	382.57	580.72	963.28
9	170.0	11.09	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,234.7	0.0	334.58	165.33	499.91
														31,439.5	**0.0**			**9,278.61**

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

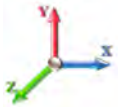
Dead Load Factor: 1.00

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	10.0	6.66	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	39.73	91.27	0.00	5,368.5	0.0	632.83	400.83	1,033.66
2	30.0	7.69	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	37.34	91.27	0.00	5,225.9	0.0	679.54	463.20	1,142.74
3	50.0	8.57	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	32.46	91.27	0.00	4,283.2	0.0	656.11	515.79	1,171.90
4	70.0	9.20	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	31.05	91.27	0.00	4,061.8	0.0	669.79	553.65	1,223.44
5	90.0	9.70	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	25.85	91.27	0.00	3,360.3	0.0	586.87	583.73	1,170.60
6	110.0	10.12	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	22.51	91.27	0.00	3,102.9	0.0	529.30	608.92	1,138.22
7	130.0	10.48	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	18.42	91.27	0.00	2,585.5	0.0	445.28	630.72	1,076.00
8	150.0	10.80	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.59	82.88	0.00	2,216.7	0.0	396.46	580.72	977.17
9	170.0	11.09	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,234.7	0.0	347.13	165.33	512.46
														31,439.5	**0.0**			**9,446.19**

Force/Stress Compression Summary

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	



Tower Engineering Solutions

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	20	PX - 8" DIA PIPE	-351.88	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.73	50.00	508.62	69.2	Member X
2	40	PX - 8" DIA PIPE	-316.56	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.72	50.00	508.65	62.2	Member X
3	60	PSP - ROHN 8 EHS	-279.09	1.2D + 1.6W Normal Wind	9.77	100	100	100	40.15	50.00	388.77	71.8	Member X
4	80	PX - 6" DIA PIPE	-245.61	1.2D + 1.6W Normal Wind	6.51	100	100	100	35.68	50.00	344.41	71.3	Member X
5	100	PSP - ROHN 6 EHS	-207.16	1.2D + 1.6W Normal Wind	6.51	100	100	100	35.12	50.00	276.03	75.1	Member X
6	120	PX - 5" DIA PIPE	-168.97	1.2D + 1.6W Normal Wind	6.51	100	100	100	42.47	50.00	240.98	70.1	Member X
7	140	PX - 4" DIA PIPE	-129.32	1.2D + 1.6W Normal Wind	4.88	100	100	100	39.60	50.00	176.96	73.1	Member X
8	160	PX - 3" DIA PIPE	-82.46	1.2D + 1.6W Normal Wind	3.91	100	100	100	41.12	50.00	120.09	68.7	Member X
9	180	PST - 2-1/2" DIA PIPE	-33.92	1.2D + 1.6W Normal Wind	0.25	100	100	100	3.17	50.00	76.62	44.3	Member X

HORIZONTAL MEMBERS

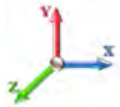
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	100										0.00	0	0				
6	120										0.00	0	0				
7	140										0.00	0	0				
8	160	SAE - 2X2X0.25	-0.45	0.9D + 1.6W Normal Wind	4.58	100	100	100	140.56	36.00	10.75	1	1	12.43	13.05	4	Member Z
9	180	SAE - 2X2X0.25	-0.30	0.9D + 1.6W Normal Wind	4.58	100	100	100	140.56	36.00	10.75	1	1	12.43	13.05	3	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	-10.6	0.9D + 1.6W 90° Wind	21.87	48	48	48	158.45	50.00	17.46	1	1	17.89	16.0	66	Bolt Bear
2	40	SAE - 4X4X0.25	-10.7	0.9D + 1.6W 90° Wind	20.11	48	48	48	145.72	50.00	20.64	1	1	17.89	16.0	67	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	-9.06	0.9D + 1.6W 90° Wind	19.20	48	48	48	159.33	50.00	15.04	1	1	17.89	16.0	60	Member Z
4	80	SAE - 3X3X0.25	-8.23	1.2D + 1.6W 90° Wind	15.95	48	48	48	155.22	50.00	13.50	1	1	17.89	16.0	61	Member Z
5	100	SAE - 2.5X2.5X0.25	-7.18	1.2D + 1.6W 90° Wind	14.12	48	48	48	165.68	36.00	9.79	1	1	12.43	13.0	73	Member Z
6	120	SAE - 2.5X2.5X0.25	-7.13	1.2D + 1.6W 90° Wind	11.14	48	48	48	130.71	36.00	15.68	1	1	12.43	13.0	57	Bolt Shear
7	140	SAE - 2X2X0.25	-5.95	1.2D + 1.6W 90° Wind	9.72	49	49	49	146.13	36.00	9.94	1	1	12.43	13.0	60	Member Z
8	160	SAE - 2X2X0.25	-5.79	1.2D + 1.6W 90° Wind	6.83	49	49	49	107.03	36.00	16.66	1	1	12.43	13.0	47	Bolt Shear
9	180	SAE - 2X2X0.25	-5.50	1.2D + 1.6W 90° Wind	6.02	49	49	49	97.85	36.00	18.40	1	1	12.43	13.0	44	Bolt Shear

Force/Stress Tension Summary

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-G	5/27/2021	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	319.26	0.9D + 1.6W 60° Wind	50	574.20	55.6	Member
2	40	PX - 8" DIA PIPE	290.47	0.9D + 1.6W 60° Wind	50	574.20	50.6	Member
3	60	PSP - ROHN 8 EHS	257.60	0.9D + 1.6W 60° Wind	50	437.40	58.9	Member
4	80	PX - 6" DIA PIPE	226.75	0.9D + 1.6W 60° Wind	50	378.00	60.0	Member
5	100	PSP - ROHN 6 EHS	192.90	0.9D + 1.6W 60° Wind	50	302.09	63.9	Member
6	120	PX - 5" DIA PIPE	159.08	0.9D + 1.6W 60° Wind	50	274.95	57.9	Member
7	140	PX - 4" DIA PIPE	121.84	0.9D + 1.6W 60° Wind	50	198.45	61.4	Member
8	160	PX - 3" DIA PIPE	78.14	0.9D + 1.6W 60° Wind	50	135.90	57.5	Member
9	180	PST - 2-1/2" DIA PIPE	28.03	0.9D + 1.6W 60° Wind	50	76.68	36.5	Member

HORIZONTAL MEMBERS

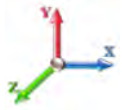
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			50	0.00	0	0					
2	40	-			50	0.00	0	0					
3	60	-			50	0.00	0	0					
4	80	-			50	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	-			36	0.00	0	0					
8	160	SAE - 2X2X0.25	0.43	1.2D + 1.6W 60° Wind	36	30.46	1	1	12.43	13.05	11.35	3.8	Blck Shear
9	180	SAE - 2X2X0.25	0.34	1.2D + 1.6W 60° Wind	36	30.46	1	1	12.43	13.05	11.35	3.0	Blck Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	10.35	0.9D + 1.6W 90° Wind	50	62.93	1	1	17.89	16.09	18.89	64.4	Bolt Bear
2	40	SAE - 4X4X0.25	10.56	0.9D + 1.6W 90° Wind	50	62.93	1	1	17.89	16.09	18.89	65.7	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	8.86	0.9D + 1.6W 90° Wind	50	53.79	1	1	17.89	16.09	18.89	55.0	Bolt Bear
4	80	SAE - 3X3X0.25	8.20	1.2D + 1.6W 90° Wind	50	44.65	1	1	17.89	16.09	15.84	51.8	Blck Shear
5	100	SAE - 2.5X2.5X0.25	7.17	1.2D + 1.6W 90° Wind	36	32.71	1	1	12.43	13.05	12.71	57.7	Bolt Shear
6	120	SAE - 2.5X2.5X0.25	6.91	1.2D + 1.6W 90° Wind	36	32.71	1	1	12.43	13.05	12.71	55.6	Bolt Shear
7	140	SAE - 2X2X0.25	6.50	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	65.1	Blck Shear
8	160	SAE - 2X2X0.25	5.65	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	56.6	Blck Shear
9	180	SAE - 2X2X0.25	5.37	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	53.7	Blck Shear

Support Forces Summary

Structure:	CT10024-A-SBA		**Code:**	EIA/TIA-222-G	5/27/2021
Site Name:	Voluntown		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 15



TES Tower Engineering Solutions

Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	360.17	-37.06	
	1a	13.01	-156.24	-11.79	
	1b	-13.01	-156.24	-11.79	
1.2D + 1.6W 60° Wind	1	-3.34	180.81	-18.11	
	1a	-17.35	180.81	6.16	
	1b	-28.97	-313.93	-16.73	
1.2D + 1.6W 90° Wind	1	-3.99	15.91	-0.97	
	1a	-27.85	304.66	13.83	
	1b	-26.34	-272.87	-12.86	
0.9D + 1.6W Normal Wind	1	0.00	355.78	-36.79	
	1a	13.22	-160.01	-11.92	
	1b	-13.22	-160.01	-11.92	
0.9D + 1.6W 60° Wind	1	-3.35	176.64	-17.85	
	1a	-17.13	176.64	6.03	
	1b	-29.19	-317.51	-16.85	
0.9D + 1.6W 90° Wind	1	-3.99	11.93	-0.71	
	1a	-27.62	300.34	13.69	
	1b	-26.56	-276.50	-12.98	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	129.08	-8.88	
	1a	4.33	-6.15	-3.65	
	1b	-4.33	-6.15	-3.65	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.96	83.14	-3.95	
	1a	-3.90	83.14	1.15	
	1b	-8.81	-49.50	-5.09	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-1.12	38.93	0.75	
	1a	-6.73	115.91	3.24	
	1b	-8.04	-38.06	-3.99	
1.0D + 1.0W Normal Wind	1	0.00	84.61	-8.42	
	1a	2.14	-22.43	-2.14	
	1b	-2.14	-22.43	-2.14	
1.0D + 1.0W 60° Wind	1	-0.72	47.46	-4.45	
	1a	-4.22	47.46	1.60	
	1b	-5.48	-55.17	-3.17	
1.0D + 1.0W 90° Wind	1	-0.85	13.25	-0.86	
	1a	-6.42	73.14	3.21	
	1b	-4.94	-46.64	-2.35	

Max Reactions

Leg			Overturning		
Max Uplift:	-317.51	(kips)	Moment:	6296.82	(ft-kips)
Max Down:	360.17	(kips)	Total Down:	47.70	(kips)
Max Shear:	37.06	(kips)	Total Shear:	60.63	(kips)

Analysis Summary

Structure:	CT10024-A-SBA		**Code:**	EIA/TIA-222-G	5/27/2021
Site Name:	Voluntown		**Exposure:**	C	
Height:	180.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 16

Max Reactions

Leg			Overturning		
Max Uplift:	-317.51	(kips)	Moment:	6296.82	(ft-kips)
Max Down:	360.17	(kips)	Total Down:	47.70	(kips)
Max Shear:	37.06	(kips)	Total Shear:	60.63	(kips)

Anchor Bolts

Bolt Size (in.):	1.00	Number Bolts:	10
Yield Strength (Ksi):	109.00	Tensile Strength (Ksi):	125.00
Detail Type:	D	Length:	1.00

Interaction Ratio: 0.72

Max Usages

Max Leg: 75.1% (1.2D + 1.6W Normal Wind - Sect 5)
Max Diag: 73.3% (1.2D + 1.6W 90° Wind - Sect 5)
Max Horiz: 4.2% (0.9D + 1.6W Normal Wind - Sect 8)

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	151.95	1.1912	0.0403	1.0838
	164.15	1.4332	0.0437	1.1593
	175.85	1.6798	0.0439	1.2223
0.9D + 1.6W 105 mph Wind at 90° From Face	151.95	1.2011	-0.0469	1.0891
	164.15	1.4448	-0.0512	1.1758
	175.85	1.6934	-0.0512	1.2301
0.9D + 1.6W 105 mph Wind at Normal To Face	151.95	1.2319	0.0413	1.1157
	164.15	1.4807	0.0453	1.1935
	175.85	1.7351	0.0450	1.2553
1.0D + 1.0W 60 mph Wind at 60° From Face	151.95	0.2453	0.0078	0.2222
	164.15	0.2949	0.0083	0.2374
	175.85	0.3455	0.0081	0.2516
1.0D + 1.0W 60 mph Wind at 90° From Face	151.95	0.2474	-0.0091	0.2233
	164.15	0.2975	-0.0097	0.2410
	175.85	0.3484	-0.0094	0.2531
1.0D + 1.0W 60 mph Wind at Normal To Face	151.95	0.2538	0.0079	0.2288
	164.15	0.3050	0.0085	0.2448
	175.85	0.3570	-0.0082	0.2579
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	151.95	0.3088	0.0101	0.2708
	164.15	0.3687	0.0108	0.2888
	175.85	0.4305	0.0106	0.3075
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	151.95	0.3100	-0.0119	0.2714
	164.15	0.3702	-0.0127	0.2922
	175.85	0.4323	-0.0126	0.3082

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	151.95	0.3134	0.0102	0.2748
	164.15	0.3742	0.0110	0.2938
	175.85	0.4369	0.0109	0.3099
1.2D + 1.6W 105 mph Wind at 60° From Face	151.95	1.1935	0.0404	1.0865
	164.15	1.4362	0.0438	1.1624
	175.85	1.6835	0.0440	1.2262
1.2D + 1.6W 105 mph Wind at 90° From Face	151.95	1.2034	-0.0470	1.0919
	164.15	1.4478	-0.0513	1.1790
	175.85	1.6971	-0.0513	1.2339
1.2D + 1.6W 105 mph Wind at Normal To Face	151.95	1.2343	-0.0414	1.1186
	164.15	1.4838	0.0454	1.1968
	175.85	1.7389	-0.0451	1.2590

Mat Foundation Design for Self Supporting Tower

			Date: 5/27/2021
Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	180
Site Nmber:	CT10024-A-SBA	Engineer Name:	Rama K.
Engr. Number:	107931	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

Analysis or Design? Analysis

Number of Tower Legs: 3 Legs

Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	360.2	Uplift Force (Kips):	317.5
Shear Force (Kips):	37.1		

(2). Tower Base:

Total Vertical Load (Kips):	47.7	Total Shear Force (Kips):	60.6
Moment (Kips-ft):	6296.8		

Foundation Geometries:

Leg distance (Center-to-Center ft.):		21.1	Mods required -Yes/No ?:	No	
Diameter of Pier (ft.):	Round	0.0	Pier Height A. G. (ft.):	0.00	
Tower center to mat center (ft):			Depth of Base BG (ft.):	5.5	
Length of Pad (ft.):		31.5	Width of Pad (ft.):	31.5	
Thickness of Pad (ft):		5.50			

Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)		Tie steel yield (ksi):	60	
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

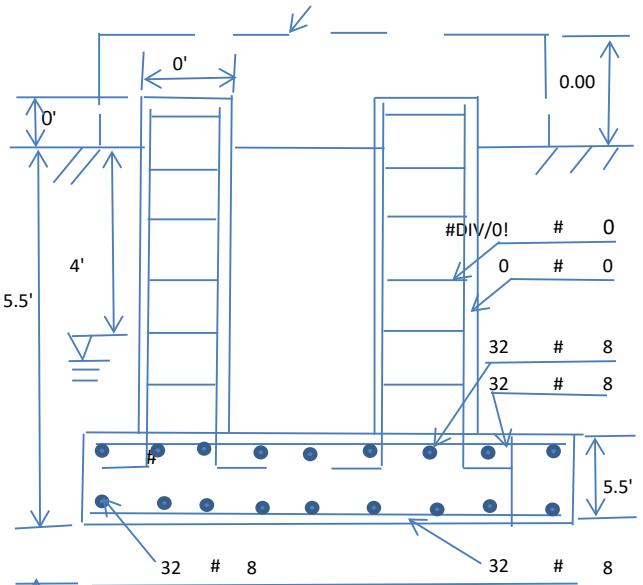
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32

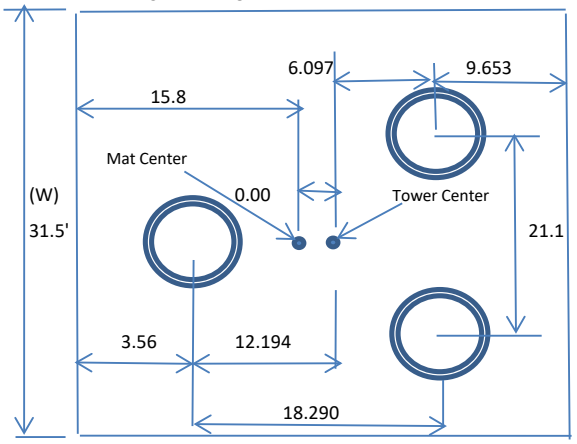
Rebar at the top of the concrete pad:

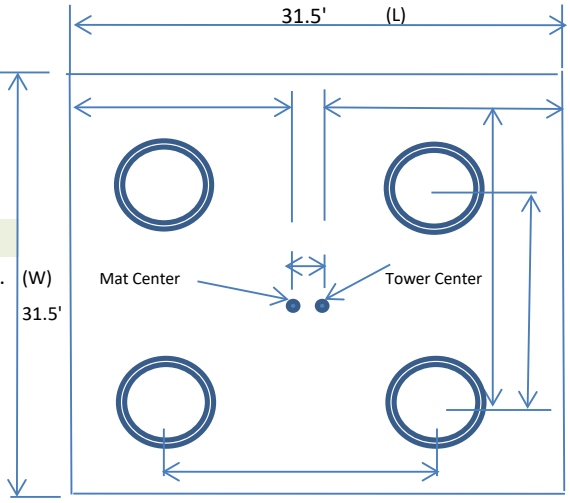
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	4.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	12000	Consider ties in concrete shear strength:		Yes
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg.
		Depth to ignor lateral resistance	1.0	Ft.







Apply 1.35 for e/w per G/H: 1.35

Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75		
Total Dry Soil Volume (cu. Ft.):		0.10	Total Dry Soil Weight (Kips):	0.01		
Total Buoyant Soil Volume (cu. Ft.):		0.00	Total Buoyant Soil Weight (Kips):	0.00		
Total Effective Soil Weight (Kips):		0.01	Weight from the Concrete Block at Top (K):	0.00		
Total Dry Concrete Volume (cu. Ft.):		3968.90	Total Dry Concrete Weight (Kips):	595.34		
Total Buoyant Concrete Volume (cu. Ft.):		1488.38	Total Buoyant Concrete Weight (Kips):	130.38		
Total Effective Concrete Weight (Kips):		725.72	Total Vertical Load on Base (Kips):	773.42		

Check Soil Capacities:					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2371.38	<	Allowable Factored Soil Bearing (psf):	9000	0.26	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11038.4	>	Design Factored Momont (kips-ft):	6631	0.60	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.66	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

(2).Concrete Pad:

One-Way Design Shear Capacity (L or W Direction, Kips):	2241.2	>	One-Way Factored Shear (L/W-Dir Kips	374.4	0.17	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	1677.6	>	One-Way Factored Shear (Dia. Dir, Kips	340.1	0.20	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0011		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0009		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	7042.7	>	Moment at Bottom (L-Direct. K-Ft):	3324.5	0.47	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	6976.8	>	Moment at Bottom (Dia. Dir. K-Ft):	2430.7	0.35	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0011		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0009		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	7042.7	>	Moment at the top (L-Dir Kips-Ft):	1750.3	0.25	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	6976.8	>	Moment at the top (Dia. Dir., K-Ft):	915.1	0.13	OK!
Punching Failure Capacity (Kips):	2176.3	>	Punch. Failure Factored Shear (K):	360.2	0.17	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 180-Ft Self Support Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT10024-A-SBA / Voluntown

Customer Site Name: Voluntown

Carrier Name: T-Mobile Sprint (App#: 154224-2)

Carrier Site ID / Name: CT54XC704 / Voluntown

Site Location: 111 Stone Hill Road

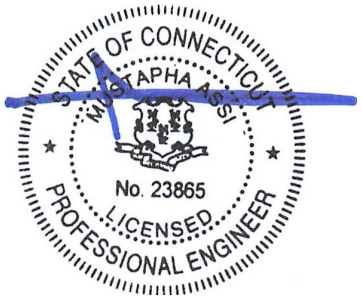
Voluntown, Connecticut

New London County

Latitude: 41.606411

Longitude: -71.851133

Exp.10/31/2021



04/30/2021

Analysis Result:

Max Structural Usage: 47.7% [Pass]

Report Prepared By : Noah Kessler

NOTE: The proposed mount (3) SitePro1 VFA12-HD w/ Stiff Arms is not currently installed. It is assumed that the mount will be installed according to the manufacturing drawings, and it was assumed that the mount can be installed properly on the tower. The analysis results are void if the proposed equipment is not installed in accordance with this report. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

Introduction

The purpose of this report is to summarize the analysis results on the (3) SitePro1 VFA12-HD w/ Stiff Arms at 175.00' 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	(3) SitePro1 VFA12-HD w/ Stiff Arms
Antenna Loading	Provided by Collo App# 154224, v2
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 133 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 103 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 0.75" radial ice concurrent
Operational Wind Speed: 30 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) SitePro1 VFA12-HD w/ Stiff Arms at 175.00' elevation

Final Antenna Configuration

3	RFS APX16DWV-16DWVS-E-A20
3	RFS APXVAALL24-43-U-NA20
3	Ericsson AIR6449 B41
3	Ericsson 4415 B66A
3	Ericsson 4424 B25
3	Ericsson 4449 B71 + B85

Analysis Results

Our calculations have determined that under design wind load the proposed mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 47.7%, which occurs in the standoff member. 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.

NOTE: The proposed mount (3) SitePro1 VFA12-HD w/ Stiff Arms is not currently installed. It is assumed that the mount will be installed according to the manufacturing drawings, and it was assumed that the mount can be installed properly on the tower. The analysis results are void if the proposed equipment is not installed in accordance with this report. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

Attachments

1. Mount Drawing
2. Antenna Placement Diagram
3. Analysis Calculations

Standard Conditions

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

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

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

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

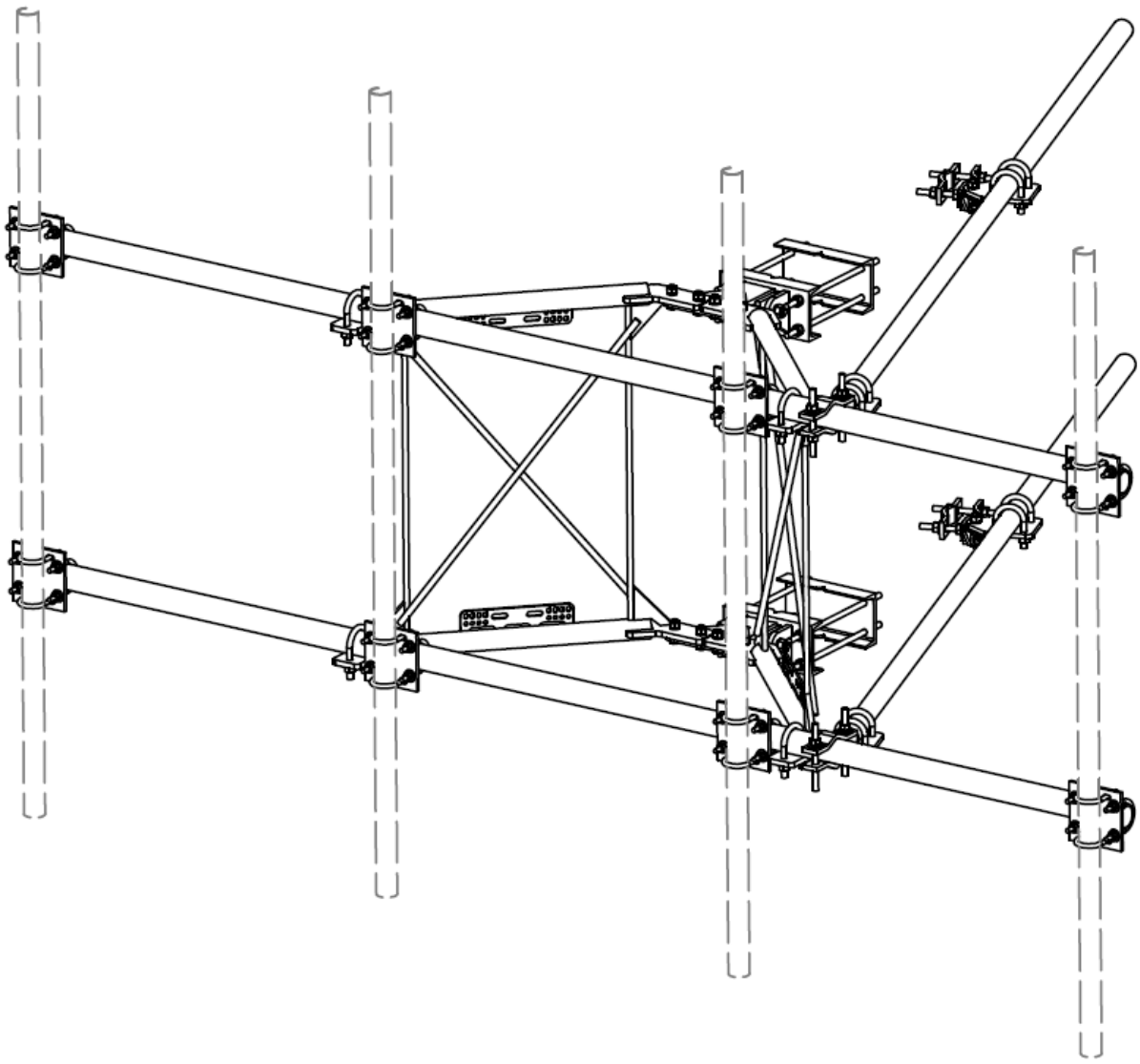
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.

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

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

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

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



Structure: CT10024-A-SBA - Voluntown

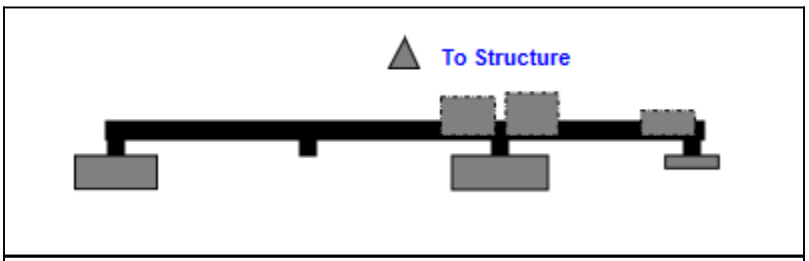
Sector: A

Structure Type: Self Support

Mount Elev: 175.00

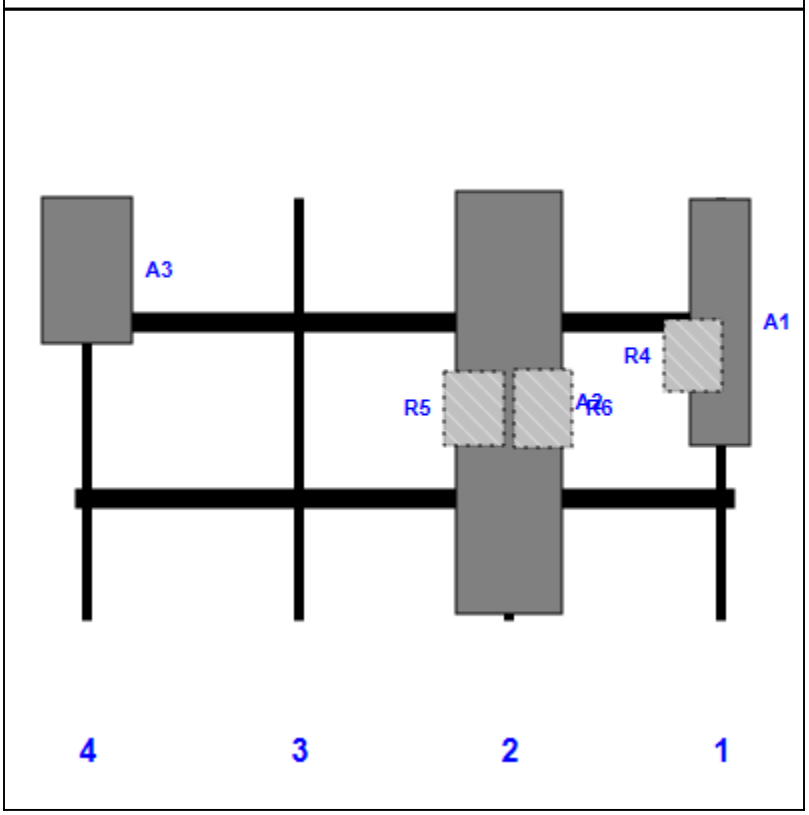
4/29/2021

Plan View



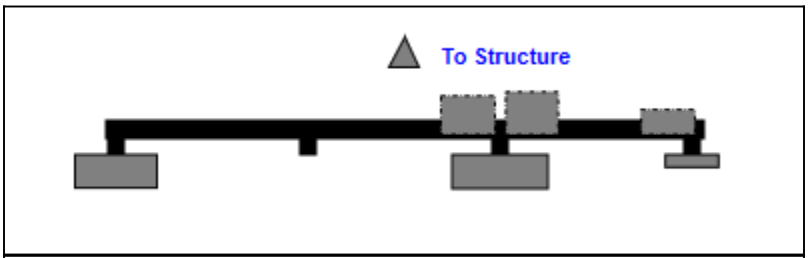
Front View

Looking Toward Structure



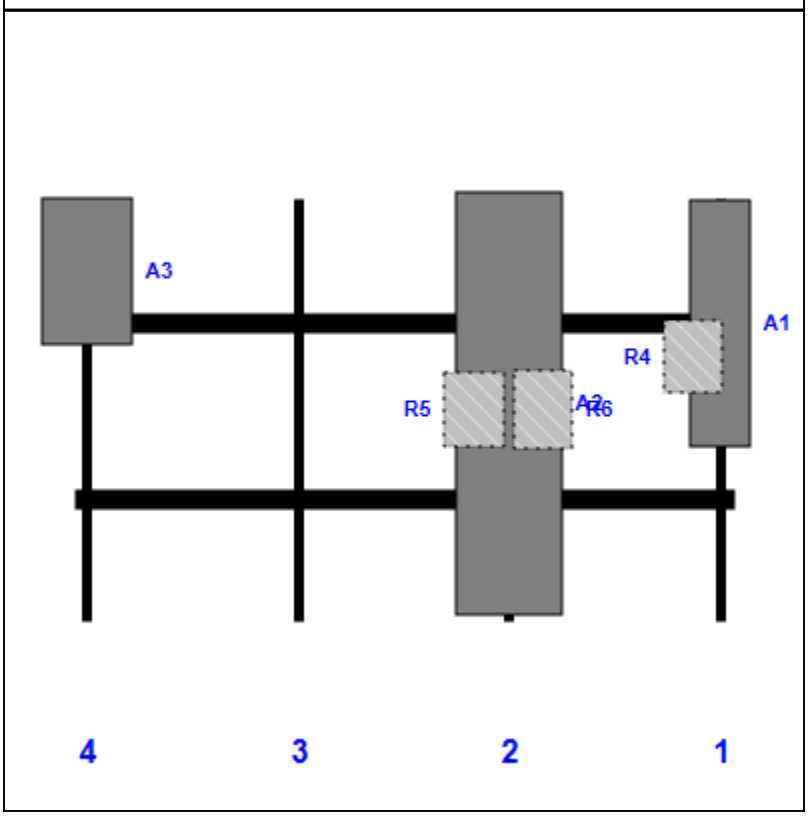
Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	APX16DWV-16DWVS-E-A20	55.90	13.30	147.00	1	a	Front	28.50			
R4	4415 B66A	16.50	13.40	147.00	1	a	Behind	36.00	-6.00		
A2	APXVAALL24-43-U-NA20	95.90	24.00	99.00	2	a	Front	46.50			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00	-8.00		
R6	4449 B71 + B85	17.90	13.10	99.00	2	a	Behind	48.00	8.00		
A3	AIR6449 B41	33.10	20.50	3.00	4	a	Front	16.50			

Plan View



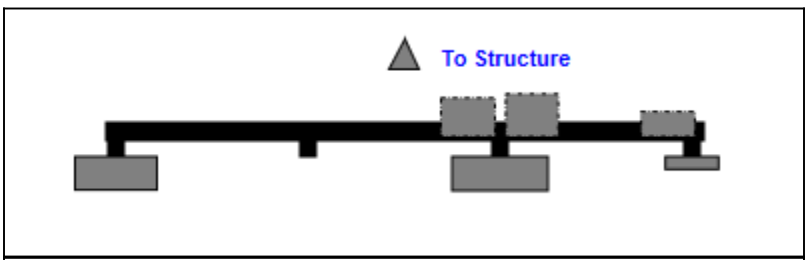
Front View

Looking Toward Structure



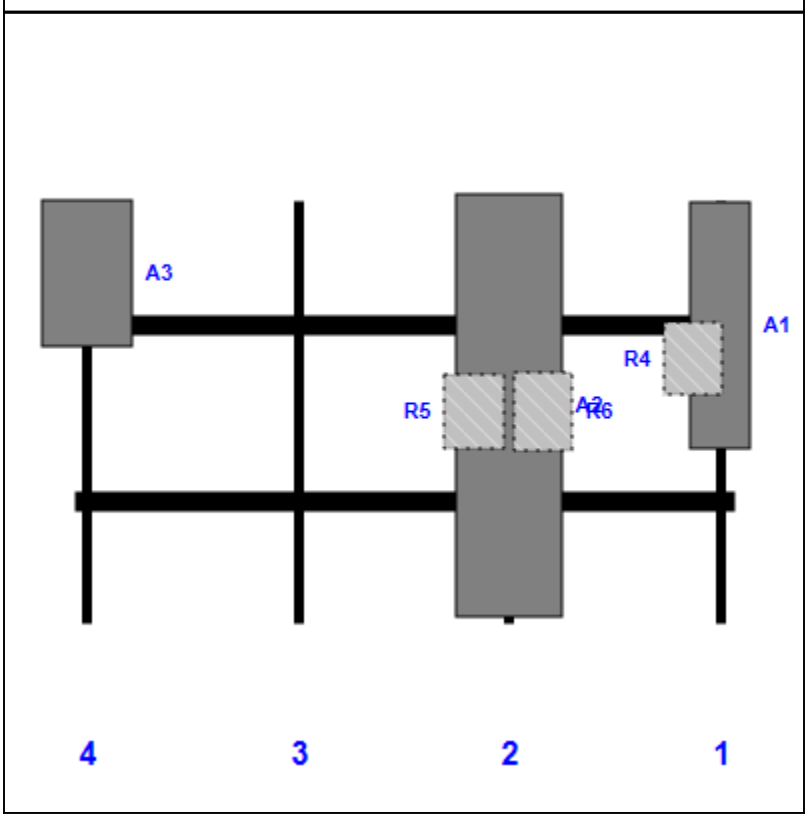
Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	APX16DWV-16DWVS-E-A20	55.90	13.30	147.00	1	a	Front	28.50			
R4	4415 B66A	16.50	13.40	147.00	1	a	Behind	36.00	-6.00		
A2	APXVAALL24-43-U-NA20	95.90	24.00	99.00	2	a	Front	46.50			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00	-8.00		
R6	4449 B71 + B85	17.90	13.10	99.00	2	a	Behind	48.00	8.00		
A3	AIR6449 B41	33.10	20.50	3.00	4	a	Front	16.50			

Plan View

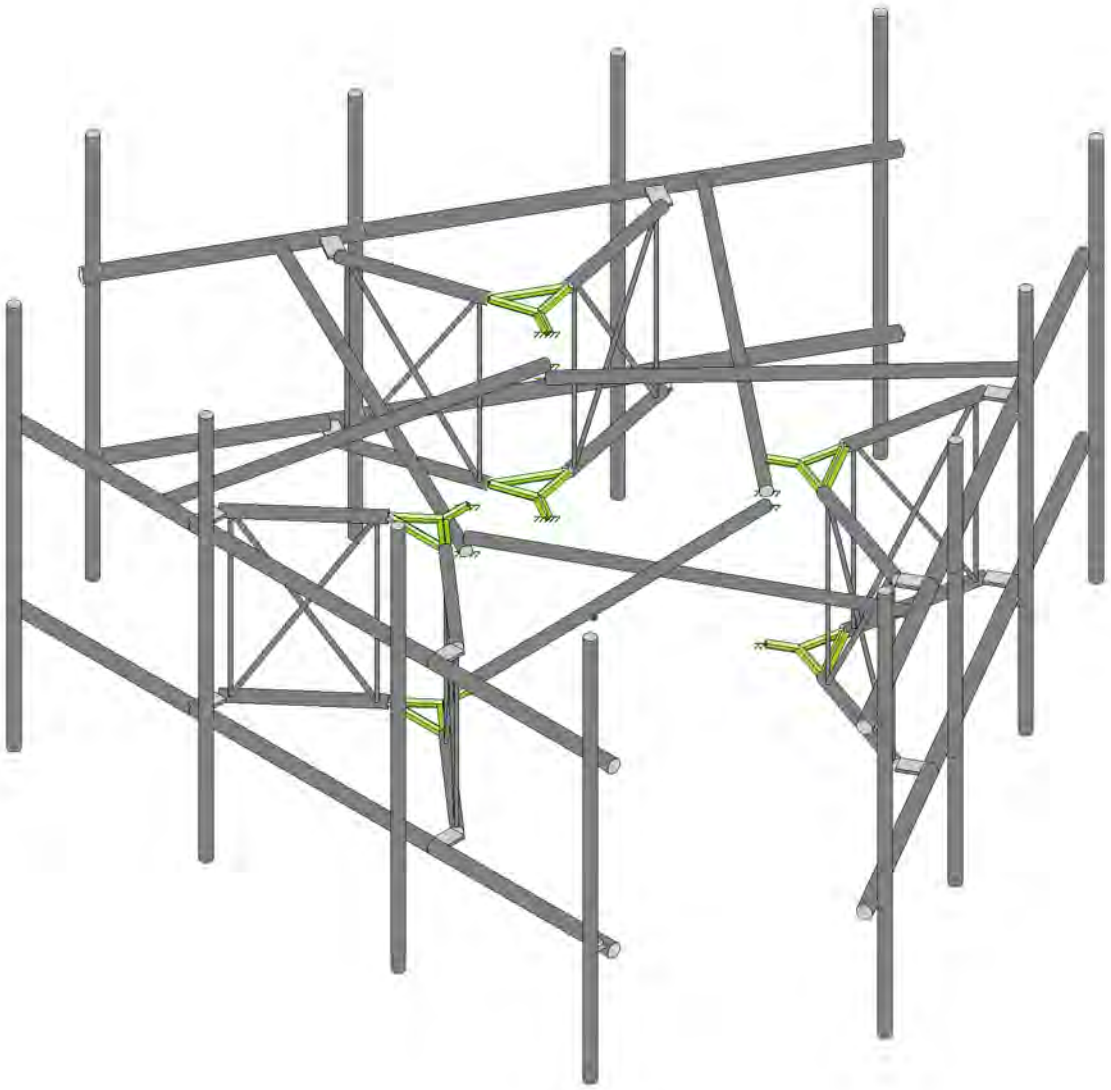


Front View

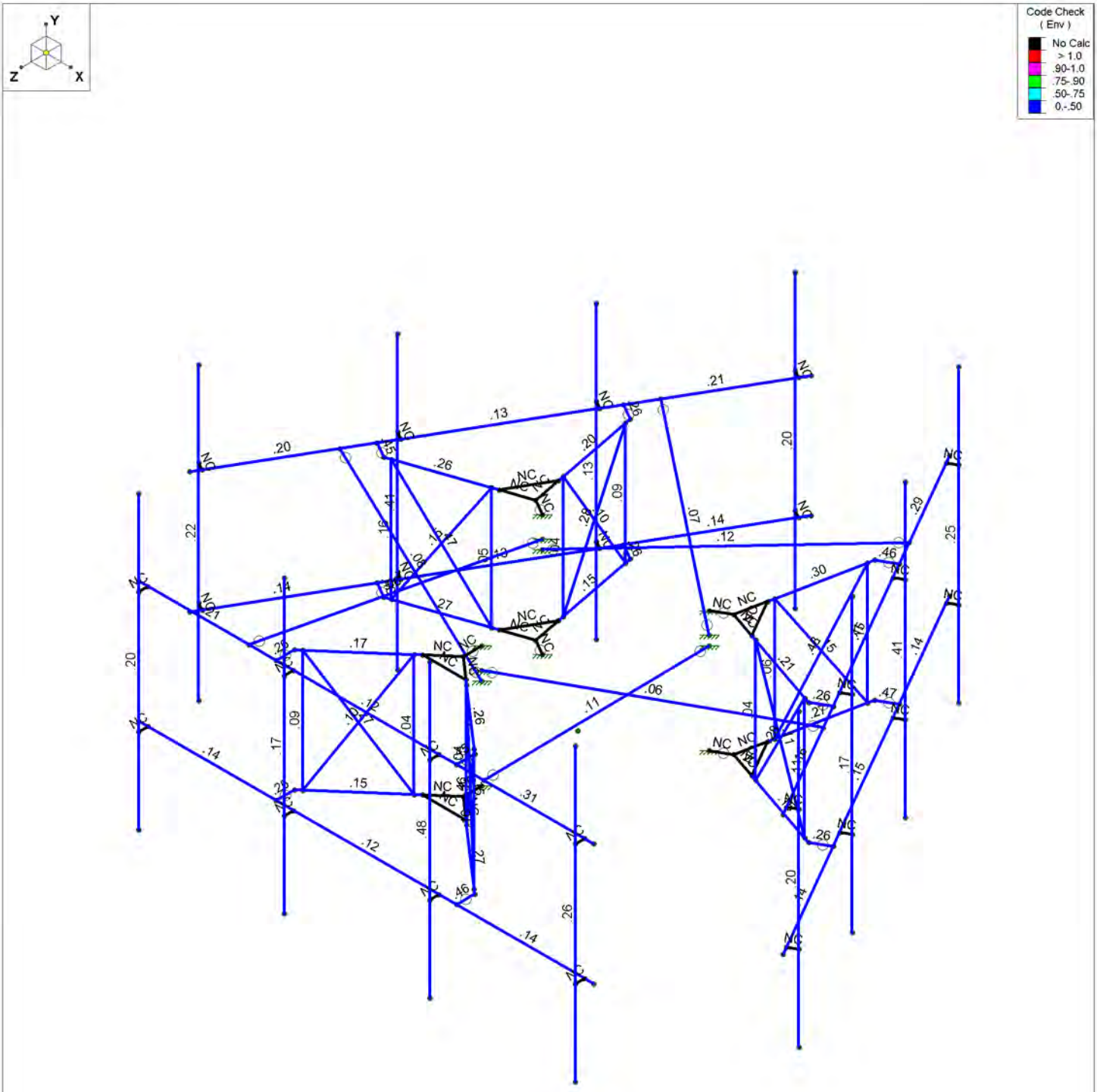
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist Left	Pipe #	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	APX16DWV-16DWVS-E-A20	55.90	13.30	147.00	1	a	Front	28.50			
R4	4415 B66A	16.50	13.40	147.00	1	a	Behind	36.00	-6.00		
A2	APXVAALL24-43-U-NA20	95.90	24.00	99.00	2	a	Front	46.50			
R5	4424 B25	16.50	13.50	99.00	2	a	Behind	48.00	-8.00		
R6	4449 B71 + B85	17.90	13.10	99.00	2	a	Behind	48.00	8.00		
A3	AIR6449 B41	33.10	20.50	3.00	4	a	Front	16.50			

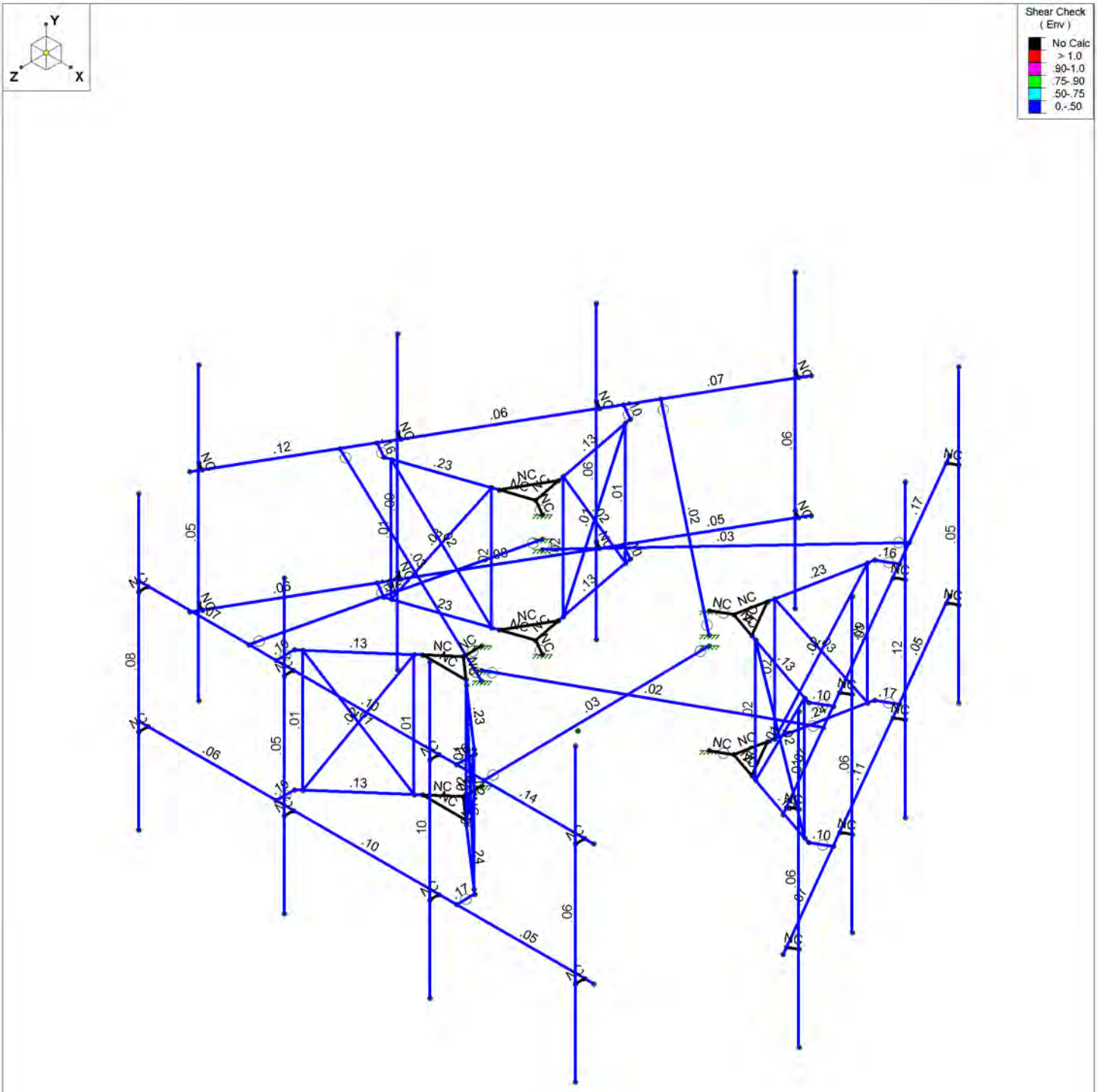


Tower Engineering Solutio...	CT10024-A-SBA_MT_LO_Loads Only_G	SK - 1
		Apr 29, 2021 at 5:36 PM
TES Project No. 107413		CT10024-A-SBA_107413_G_RISA_...



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

Tower Engineering Solutio...	CT10024-A-SBA_MT_LO_Loads Only_G	SK - 4
		Apr 29, 2021 at 5:42 PM
TES Project No. 107413		CT10024-A-SBA_107413_G_RISA_...



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

Tower Engineering Solutio...	CT10024-A-SBA_MT_LO_Loads Only_G	SK - 5
		Apr 29, 2021 at 5:42 PM
TES Project No. 107413		CT10024-A-SBA_107413_G_RISA_...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					27			
2	Antenna Di	None					27			
3	Antenna W Front	None					27			
4	Antenna Wi Front	None					27			
5	Antenna W Side	None					27			
6	Antenna Wi Side	None					27			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						84		
11	Structure W Front	None						84		
12	Structure Wi Front	None						84		
13	Structure W Side	None						84		
14	Structure Wi Side	None						84		

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6														
2	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6														
3	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6														
4	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6														
5	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1										
6	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1										
7	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1										
8	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1										
9	1.2D+1.5L...	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16												
10	1.2D+1.5L...	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 Diaphragm
1	N2	0	0	3.144	0	
2	N3	-2.479167	0	5.309361	0	
3	N5	2.479167	0	5.309361	0	
4	N5A	-2.479167	0	5.809361	0	
5	N6	2.479167	0	5.809361	0	
6	N7	-6.25	0	5.809361	0	
7	N9	6.25	0	5.809361	0	
8	N16	0	3.333333	3.144	0	
9	N17	-2.479167	3.333333	5.309361	0	
10	N18	2.479167	3.333333	5.309361	0	
11	N19	-2.479167	3.333333	5.809361	0	
12	N20	2.479167	3.333333	5.809361	0	
13	N21	-6.25	3.333333	5.809361	0	
14	N22	6.25	3.333333	5.809361	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
15	N29	-6	0	5.809361	0	
16	N30	-6	3.333333	5.809361	0	
17	N19A	-0.596256	3.333333	3.664783	0	
18	N20A	-0.596256	0	3.664783	0	
19	N21A	0.596256	3.333333	3.664783	0	
20	N22A	0.596256	0	3.664783	0	
21	N23	-2	0	5.809361	0	
22	N24	-2	3.333333	5.809361	0	
23	N25	6	0	5.809361	0	
24	N26	6	3.333333	5.809361	0	
25	N27	2	0	5.809361	0	
26	N28	2	3.333333	5.809361	0	
27	N29A	-6	5.666667	6.059361	0	
28	N30A	-2	5.666667	6.059361	0	
29	N31	6	5.666667	6.059361	0	
30	N32	2	5.666667	6.059361	0	
31	N33	-6	-2.333333	6.059361	0	
32	N34	-2	-2.333333	6.059361	0	
33	N35	6	-2.333333	6.059361	0	
34	N36	2	-2.333333	6.059361	0	
35	N41	0	0	2.644	0	
36	N42	0	3.333333	2.644	0	
37	N43	2.28977	2.5	-1.322	0	
38	N45	-0.721783	3.333333	3.774421	0	
39	N46	-0.721783	0	3.774421	0	
40	N47	0.721783	3.333333	3.774421	0	
41	N48	0.721783	0	3.774421	0	
42	N49	-2.353641	3.333333	5.199723	0	
43	N50	-2.353641	0	5.199723	0	
44	N51	2.353641	3.333333	5.199723	0	
45	N52	2.353641	0	5.199723	0	
46	N53A	3.229167	3.333333	5.809361	0	
47	N51A	-6	0	6.059361	0	
48	N52A	-6	3.333333	6.059361	0	
49	N53B	-2	0	6.059361	0	
50	N54A	-2	3.333333	6.059361	0	
51	N55	6	0	6.059361	0	
52	N56	6	3.333333	6.059361	0	
53	N57	2	0	6.059361	0	
54	N58	2	3.333333	6.059361	0	
55	N55A	-2.28977	2.75	-1.322	0	
56	N56A	-3.229163	3.333333	5.809361	0	
57	N57A	0	0	0	0	
58	N58A	2.722784	0	-1.572	0	
59	N59	5.837625	0	-0.507659	0	
60	N60	3.358458	0	-4.801702	0	
61	N61	6.270638	0	-0.757659	0	
62	N62	3.791471	0	-5.051702	0	
63	N63	8.156054	0	2.507978	0	
64	N64	1.906054	0	-8.317339	0	
65	N65	2.722784	3.333333	-1.572	0	
66	N66	5.837625	3.333333	-0.507659	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
67	N67	3.358458	3.333333	-4.801702	0	
68	N68	6.270638	3.333333	-0.757659	0	
69	N69	3.791471	3.333333	-5.051702	0	
70	N70	8.156054	3.333333	2.507978	0	
71	N71	1.906054	3.333333	-8.317339	0	
72	N72	8.031054	0	2.291472	0	
73	N73	8.031054	3.333333	2.291472	0	
74	N74	3.471923	3.333333	-1.316019	0	
75	N75	3.471923	0	-1.316019	0	
76	N76	2.875668	3.333333	-2.348764	0	
77	N77	2.875668	0	-2.348764	0	
78	N78	6.031054	0	-1.17263	0	
79	N79	6.031054	3.333333	-1.17263	0	
80	N80	2.031054	0	-8.100833	0	
81	N81	2.031054	3.333333	-8.100833	0	
82	N82	4.031054	0	-4.636731	0	
83	N83	4.031054	3.333333	-4.636731	0	
84	N84	8.24756	5.666667	2.166472	0	
85	N85	6.24756	5.666667	-1.29763	0	
86	N86	2.24756	5.666667	-8.225833	0	
87	N87	4.24756	5.666667	-4.761731	0	
88	N88	8.24756	-2.333333	2.166472	0	
89	N89	6.24756	-2.333333	-1.29763	0	
90	N90	2.24756	-2.333333	-8.225833	0	
91	N91	4.24756	-2.333333	-4.761731	0	
92	N92	2.289771	0	-1.322	0	
93	N93	2.289771	3.333333	-1.322	0	
94	N94	-2.28977	2.5	-1.322	0	
95	N95	3.629636	3.333333	-1.262129	0	
96	N96	3.629636	0	-1.262129	0	
97	N97	2.907853	3.333333	-2.512293	0	
98	N98	2.907853	0	-2.512293	0	
99	N99	5.679913	3.333333	-0.561549	0	
100	N100	5.679913	0	-0.561549	0	
101	N101	3.326272	3.333333	-4.638175	0	
102	N102	3.326272	0	-4.638175	0	
103	N103	3.416471	3.333333	-5.701221	0	
104	N104	8.24756	0	2.166472	0	
105	N105	8.24756	3.333333	2.166472	0	
106	N106	6.24756	0	-1.29763	0	
107	N107	6.24756	3.333333	-1.29763	0	
108	N108	2.24756	0	-8.225833	0	
109	N109	2.24756	3.333333	-8.225833	0	
110	N110	4.24756	0	-4.761731	0	
111	N111	4.24756	3.333333	-4.761731	0	
112	N112	0	2.75	2.644	0	
113	N113	6.645636	3.333333	-0.108143	0	
114	N115	-2.722784	0	-1.572	0	
115	N116	-3.358458	0	-4.801702	0	
116	N117	-5.837625	0	-0.507659	0	
117	N118	-3.791471	0	-5.051702	0	
118	N119	-6.270638	0	-0.757659	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
119	N120	-1.906054	0	-8.317339	0	
120	N121	-8.156054	0	2.507978	0	
121	N122	-2.722784	3.333333	-1.572	0	
122	N123	-3.358458	3.333333	-4.801702	0	
123	N124	-5.837625	3.333333	-0.507659	0	
124	N125	-3.791471	3.333333	-5.051702	0	
125	N126	-6.270638	3.333333	-0.757659	0	
126	N127	-1.906054	3.333333	-8.317339	0	
127	N128	-8.156054	3.333333	2.507978	0	
128	N129	-2.031054	0	-8.100833	0	
129	N130	-2.031054	3.333333	-8.100833	0	
130	N131	-2.875668	3.333333	-2.348764	0	
131	N132	-2.875668	0	-2.348764	0	
132	N133	-3.471923	3.333333	-1.316019	0	
133	N134	-3.471923	0	-1.316019	0	
134	N135	-4.031054	0	-4.636731	0	
135	N136	-4.031054	3.333333	-4.636731	0	
136	N137	-8.031054	0	2.291472	0	
137	N138	-8.031054	3.333333	2.291472	0	
138	N139	-6.031054	0	-1.17263	0	
139	N140	-6.031054	3.333333	-1.17263	0	
140	N141	-2.24756	5.666667	-8.225833	0	
141	N142	-4.24756	5.666667	-4.761731	0	
142	N143	-8.24756	5.666667	2.166472	0	
143	N144	-6.24756	5.666667	-1.29763	0	
144	N145	-2.24756	-2.333333	-8.225833	0	
145	N146	-4.24756	-2.333333	-4.761731	0	
146	N147	-8.24756	-2.333333	2.166472	0	
147	N148	-6.24756	-2.333333	-1.29763	0	
148	N149	-2.289771	0	-1.322	0	
149	N150	-2.289771	3.333333	-1.322	0	
150	N151	0	2.5	2.644	0	
151	N152	-2.907853	3.333333	-2.512293	0	
152	N153	-2.907853	0	-2.512293	0	
153	N154	-3.629636	3.333333	-1.262129	0	
154	N155	-3.629636	0	-1.262129	0	
155	N156	-3.326272	3.333333	-4.638175	0	
156	N157	-3.326272	0	-4.638175	0	
157	N158	-5.679913	3.333333	-0.561549	0	
158	N159	-5.679913	0	-0.561549	0	
159	N160	-6.645638	3.333333	-0.10814	0	
160	N161	-2.24756	0	-8.225833	0	
161	N162	-2.24756	3.333333	-8.225833	0	
162	N163	-4.24756	0	-4.761731	0	
163	N164	-4.24756	3.333333	-4.761731	0	
164	N165	-8.24756	0	2.166472	0	
165	N166	-8.24756	3.333333	2.166472	0	
166	N167	-6.24756	0	-1.29763	0	
167	N168	-6.24756	3.333333	-1.29763	0	
168	N169	2.28977	2.75	-1.322	0	
169	N170	-3.416473	3.333333	-5.701218	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	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 Hori...	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Stanodff Verti...	SR_0.625_HRA_H...	Beam	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
4	Standoff Diag...	SR_0.75	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
5	Face Horizontal	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Tie-back	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Connection Pl...	PL5/8x3.5	Beam	RECT	A36 Gr.36	Typical	2.188	.071	2.233	.253

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(...	Section/Shape	Type	Design List	Material	Design R...
1	M3	N3	N5A		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
2	M4	N5	N6		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
3	M7	N17	N19		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
4	M8	N18	N20		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
5	M13	N21	N19			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
6	M14	N19	N20			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
7	M15	N20	N22			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
8	M16	N7	N5A			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
9	M17	N5A	N6			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
10	M18	N6	N9			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
11	M15A	N19A	N17			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
12	M16A	N20A	N3			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
13	M17A	N21A	N18			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
14	M18A	N22A	N5			Standoff Horizontal	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			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
20	MP3A	N30A	N34			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
21	MP2A	N32	N36			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
22	MP1A	N31	N35			Mount Pipe	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	N43			Tie-back	Beam	Pipe	A53 Gr.B	Typical
26	M27	N45	N46			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
27	M28	N49	N50			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
28	M29	N47	N48			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
29	M30	N51	N52			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
30	M31	N45	N50			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
31	M32	N49	N46			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
32	M33	N47	N52			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
33	M34	N51	N48			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
34	M34A	N19A	N21A			RIGID	Beam	None	RIGID	DR1
35	M35	N20A	N22A			RIGID	Beam	None	RIGID	DR1
36	M37	N26	N56			RIGID	Beam	None	RIGID	DR1
37	M38	N25	N55			RIGID	Beam	None	RIGID	DR1
38	M39	N28	N58			RIGID	Beam	None	RIGID	DR1
39	M40	N27	N57			RIGID	Beam	None	RIGID	DR1
40	M41	N24	N54A			RIGID	Beam	None	RIGID	DR1
41	M42	N23	N53B			RIGID	Beam	None	RIGID	DR1
42	M43	N30	N52A			RIGID	Beam	None	RIGID	DR1
43	M44	N29	N51A			RIGID	Beam	None	RIGID	DR1
44	M44A	N56A	N55A			Tie-back	Beam	Pipe	A53 Gr.B	Typical
45	M45	N59	N61		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
46	M46	N60	N62		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
47	M47	N66	N68		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
48	M48	N67	N69		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
49	M49	N70	N68			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
50	M50	N68	N69			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
51	M51	N69	N71			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
52	M52	N63	N61			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
53	M53	N61	N62			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
54	M54	N62	N64			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
55	M55	N74	N66			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
56	M56	N75	N59			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
57	M57	N76	N67			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
58	M58	N77	N60			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
59	M59	N65	N74			RIGID	Beam	None	RIGID	DR1
60	M60	N65	N76			RIGID	Beam	None	RIGID	DR1
61	M61	N58A	N75			RIGID	Beam	None	RIGID	DR1
62	M62	N58A	N77			RIGID	Beam	None	RIGID	DR1
63	MP4C	N84	N88			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
64	MP3C	N85	N89			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
65	MP2C	N87	N91			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
66	MP1C	N86	N90			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
67	M67	N93	N65			RIGID	Beam	None	RIGID	DR1
68	M68	N92	N58A			RIGID	Beam	None	RIGID	DR1
69	M69	N103	N94			Tie-back	Beam	Pipe	A53 Gr.B	Typical
70	M70	N95	N96			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
71	M71	N99	N100			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
72	M72	N97	N98			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
73	M73	N101	N102			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
74	M74	N95	N100			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
75	M75	N99	N96			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
76	M76	N97	N102			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
77	M77	N101	N98			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
78	M78	N74	N76			RIGID	Beam	None	RIGID	DR1
79	M79	N75	N77			RIGID	Beam	None	RIGID	DR1
80	M80	N81	N109			RIGID	Beam	None	RIGID	DR1
81	M81	N80	N108			RIGID	Beam	None	RIGID	DR1
82	M82	N83	N111			RIGID	Beam	None	RIGID	DR1
83	M83	N82	N110			RIGID	Beam	None	RIGID	DR1
84	M84	N79	N107			RIGID	Beam	None	RIGID	DR1
85	M85	N78	N106			RIGID	Beam	None	RIGID	DR1
86	M86	N73	N105			RIGID	Beam	None	RIGID	DR1
87	M87	N72	N104			RIGID	Beam	None	RIGID	DR1
88	M88	N113	N112			Tie-back	Beam	Pipe	A53 Gr.B	Typical
89	M89	N116	N118		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
90	M90	N117	N119		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
91	M91	N123	N125		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
92	M92	N124	N126		90	Connection Plate	Beam	RECT	A36 Gr....	Typical
93	M93	N127	N125			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
94	M94	N125	N126			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
95	M95	N126	N128			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
96	M96	N120	N118			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
97	M97	N118	N119			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
98	M98	N119	N121			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
99	M99	N131	N123			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
100	M100	N132	N116			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
101	M101	N133	N124			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
102	M102	N134	N117			Standoff Horizontal	Beam	Pipe	A53 Gr.B	Typical
103	M103	N122	N131			RIGID	Beam	None	RIGID	DR1

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
104	M104	N122	N133			RIGID	Beam	None	RIGID	DR1
105	M105	N115	N132			RIGID	Beam	None	RIGID	DR1
106	M106	N115	N134			RIGID	Beam	None	RIGID	DR1
107	MP4B	N141	N145			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
108	MP3B	N142	N146			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
109	MP2B	N144	N148			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
110	MP1B	N143	N147			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
111	M111	N150	N122			RIGID	Beam	None	RIGID	DR1
112	M112	N149	N115			RIGID	Beam	None	RIGID	DR1
113	M113	N160	N151			Tie-back	Beam	Pipe	A53 Gr.B	Typical
114	M114	N152	N153			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
115	M115	N156	N157			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
116	M116	N154	N155			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
117	M117	N158	N159			Stanodff Vertical	Beam	BAR	A36 Gr....	Typical
118	M118	N152	N157			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
119	M119	N156	N153			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
120	M120	N154	N159			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
121	M121	N158	N155			Standoff Diagonal	Beam	BAR	A36 Gr....	Typical
122	M122	N131	N133			RIGID	Beam	None	RIGID	DR1
123	M123	N132	N134			RIGID	Beam	None	RIGID	DR1
124	M124	N138	N166			RIGID	Beam	None	RIGID	DR1
125	M125	N137	N165			RIGID	Beam	None	RIGID	DR1
126	M126	N140	N168			RIGID	Beam	None	RIGID	DR1
127	M127	N139	N167			RIGID	Beam	None	RIGID	DR1
128	M128	N136	N164			RIGID	Beam	None	RIGID	DR1
129	M129	N135	N163			RIGID	Beam	None	RIGID	DR1
130	M130	N130	N162			RIGID	Beam	None	RIGID	DR1
131	M131	N129	N161			RIGID	Beam	None	RIGID	DR1
132	M132	N170	N169			Tie-back	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

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

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
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	M37						Yes			None
37	M38						Yes			None
38	M39						Yes			None
39	M40						Yes			None
40	M41						Yes			None
41	M42						Yes			None
42	M43						Yes			None
43	M44						Yes			None
44	M44A	BenPIN	BenPIN				Yes			None
45	M45		BenPIN				Yes			None
46	M46		BenPIN				Yes			None
47	M47		BenPIN				Yes			None
48	M48		BenPIN				Yes			None
49	M49						Yes			None
50	M50						Yes			None
51	M51						Yes			None
52	M52						Yes			None
53	M53						Yes			None
54	M54						Yes			None
55	M55						Yes			None
56	M56						Yes			None
57	M57						Yes			None
58	M58						Yes			None
59	M59						Yes			None
60	M60						Yes			None
61	M61						Yes			None
62	M62						Yes			None
63	MP4C						Yes			None
64	MP3C						Yes			None
65	MP2C						Yes			None
66	MP1C						Yes			None
67	M67		OOOOXO				Yes			None
68	M68		OOOOXO				Yes			None
69	M69	BenPIN	BenPIN				Yes			None
70	M70						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 ...
71	M71						Yes			None
72	M72						Yes			None
73	M73						Yes			None
74	M74						Yes			None
75	M75						Yes			None
76	M76						Yes			None
77	M77						Yes			None
78	M78						Yes			None
79	M79						Yes			None
80	M80						Yes			None
81	M81						Yes			None
82	M82						Yes			None
83	M83						Yes			None
84	M84						Yes			None
85	M85						Yes			None
86	M86						Yes			None
87	M87						Yes			None
88	M88	BenPIN	BenPIN				Yes			None
89	M89		BenPIN				Yes			None
90	M90		BenPIN				Yes			None
91	M91		BenPIN				Yes			None
92	M92		BenPIN				Yes			None
93	M93						Yes			None
94	M94						Yes			None
95	M95						Yes			None
96	M96						Yes			None
97	M97						Yes			None
98	M98						Yes			None
99	M99						Yes			None
100	M100						Yes			None
101	M101						Yes			None
102	M102						Yes			None
103	M103						Yes			None
104	M104						Yes			None
105	M105						Yes			None
106	M106						Yes			None
107	MP4B						Yes			None
108	MP3B						Yes			None
109	MP2B						Yes			None
110	MP1B						Yes			None
111	M111		OOOOXO				Yes			None
112	M112		OOOOXO				Yes			None
113	M113	BenPIN	BenPIN				Yes			None
114	M114						Yes			None
115	M115						Yes			None
116	M116						Yes			None
117	M117						Yes			None
118	M118						Yes			None
119	M119						Yes			None
120	M120						Yes			None
121	M121						Yes			None
122	M122						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 ...
123	M123						Yes			None
124	M124						Yes			None
125	M125						Yes			None
126	M126						Yes			None
127	M127						Yes			None
128	M128						Yes			None
129	M129						Yes			None
130	M130						Yes			None
131	M131						Yes			None
132	M132	BenPIN	BenPIN				Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M3	Connection ...	.5			Lbyy						Lateral
2	M4	Connection ...	.5			Lbyy						Lateral
3	M7	Connection ...	.5			Lbyy						Lateral
4	M8	Connection ...	.5			Lbyy						Lateral
5	M13	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
6	M14	Face Horizo...	4.958			Lbyy						Lateral
7	M15	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
8	M16	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
9	M17	Face Horizo...	4.958			Lbyy						Lateral
10	M18	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
11	M15A	Standoff Ho...	2.5			Lbyy						Lateral
12	M16A	Standoff Ho...	2.5			Lbyy						Lateral
13	M17A	Standoff Ho...	2.5			Lbyy						Lateral
14	M18A	Standoff Ho...	2.5			Lbyy						Lateral
15	MP4A	Mount Pipe	8			Lbyy						Lateral
16	MP3A	Mount Pipe	8			Lbyy						Lateral
17	MP2A	Mount Pipe	8			Lbyy						Lateral
18	MP1A	Mount Pipe	8			Lbyy						Lateral
19	M26	Tie-back	7.241			Lbyy						Lateral
20	M27	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
21	M28	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
22	M29	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
23	M30	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
24	M31	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
25	M32	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
26	M33	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
27	M34	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
28	M44A	Tie-back	7.217			Lbyy						Lateral
29	M45	Connection ...	.5			Lbyy						Lateral
30	M46	Connection ...	.5			Lbyy						Lateral
31	M47	Connection ...	.5			Lbyy						Lateral
32	M48	Connection ...	.5			Lbyy						Lateral
33	M49	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
34	M50	Face Horizo...	4.958			Lbyy						Lateral
35	M51	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
36	M52	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
37	M53	Face Horizo...	4.958			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
38	M54	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
39	M55	Standoff Ho...	2.5			Lbyy						Lateral
40	M56	Standoff Ho...	2.5			Lbyy						Lateral
41	M57	Standoff Ho...	2.5			Lbyy						Lateral
42	M58	Standoff Ho...	2.5			Lbyy						Lateral
43	MP4C	Mount Pipe	8			Lbyy						Lateral
44	MP3C	Mount Pipe	8			Lbyy						Lateral
45	MP2C	Mount Pipe	8			Lbyy						Lateral
46	MP1C	Mount Pipe	8			Lbyy						Lateral
47	M69	Tie-back	7.241			Lbyy						Lateral
48	M70	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
49	M71	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
50	M72	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
51	M73	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
52	M74	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
53	M75	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
54	M76	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
55	M77	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
56	M88	Tie-back	7.217			Lbyy						Lateral
57	M89	Connection ...	.5			Lbyy						Lateral
58	M90	Connection ...	.5			Lbyy						Lateral
59	M91	Connection ...	.5			Lbyy						Lateral
60	M92	Connection ...	.5			Lbyy						Lateral
61	M93	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
62	M94	Face Horizo...	4.958			Lbyy						Lateral
63	M95	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
64	M96	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
65	M97	Face Horizo...	4.958			Lbyy						Lateral
66	M98	Face Horizo...	3.771			Lbyy			2.1	2.1		Lateral
67	M99	Standoff Ho...	2.5			Lbyy						Lateral
68	M100	Standoff Ho...	2.5			Lbyy						Lateral
69	M101	Standoff Ho...	2.5			Lbyy						Lateral
70	M102	Standoff Ho...	2.5			Lbyy						Lateral
71	MP4B	Mount Pipe	8			Lbyy						Lateral
72	MP3B	Mount Pipe	8			Lbyy						Lateral
73	MP2B	Mount Pipe	8			Lbyy						Lateral
74	MP1B	Mount Pipe	8			Lbyy						Lateral
75	M113	Tie-back	7.241			Lbyy						Lateral
76	M114	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
77	M115	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
78	M116	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
79	M117	Stanodff Ve...	3.333			Lbyy			.65	.65		Lateral
80	M118	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
81	M119	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
82	M120	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
83	M121	Standoff Dia...	3.976			Lbyy			.65	.65		Lateral
84	M132	Tie-back	7.217			Lbyy						Lateral

Cold Formed Steel Design Parameters

Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp to..	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	R	y sway	z sway
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 Loads and Enforced Displacements

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

Member Area Loads

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N42	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N43	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N55A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N92	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N93	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N94	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N112	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N149	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N150	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
11	N151	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	N169	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	851.815	4	1458.142	6	144.496	2	-.388	1	.426	4	.2	2
2		min	-1143.998	3	276.273	1	-2017.501	5	-1.724	6	-.572	3	-.119	1
3	N41	max	706.196	4	1414.202	6	1875.54	5	-.488	1	.353	4	.437	10
4		min	-413.905	3	443.724	1	-66.807	2	-1.71	6	-.207	3	-.088	3
5	N43	max	240.163	1	227.341	1	1827.265	1	.005	8	.005	8	.04	8
6		min	-230.731	2	-188.823	2	-1761.125	2	0	1	0	1	-.001	1
7	N55A	max	107.358	2	86.269	1	881.911	1	.004	7	0	2	0	2
8		min	-115.238	1	-51.421	2	-819.667	2	0	2	-.003	7	-.032	7
9	N92	max	1398.105	8	1413.181	7	204.395	1	1.006	7	.362	2	1.412	5
10		min	-268.175	3	453.848	4	-1487.804	6	.155	4	-.215	1	.398	2
11	N93	max	166.034	1	1453.566	7	1632.468	8	1.014	7	.456	2	1.404	7
12		min	-1519.128	6	299.073	4	-650.901	3	.085	4	-.602	1	.411	4

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
13	N94	max	1657.234	4	253.371	4	1214.201	3	.033	7	.005	7	.004	4
14		min	-1607.559	3	-214.703	3	-1254.99	4	-.006	4	0	4	-.025	7
15	N112	max	923.281	2	95.912	2	393.422	1	.007	3	0	3	.013	8
16		min	-863.529	1	-60.341	1	-417.333	2	-.031	8	-.003	8	-.003	3
17	N149	max	102.323	4	1412.374	8	468.663	1	.747	6	.38	1	-.432	2
18		min	-1919.962	7	449.473	3	-823.799	2	.142	1	-.233	2	-1.556	5
19	N150	max	2060.223	6	1442.506	8	1179.725	3	.735	6	.472	1	-.388	2
20		min	-138.544	1	358.324	3	-761.07	4	.224	1	-.618	2	-1.563	5
21	N151	max	1178.225	1	169.875	2	524.227	1	.003	2	.005	5	.001	2
22		min	-1237.264	2	-131.856	1	-547.209	2	-.038	5	0	2	-.016	5
23	N169	max	947.235	4	114.259	3	708.638	4	.026	6	0	1	.02	6
24		min	-997.221	3	-78.99	4	-747.662	3	-.003	1	-.003	6	-.002	1
25	Totals:	max	6171.646	4	8771.348	5	6057.084	1						
26		min	-6171.644	3	3100.837	2	-6057.083	2						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc ...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M77	SR 0.75	.477	0	7	.016	0		7	3758.9	14320.8	.184	.184	3...	H1-1a
2	MP2A	PIPE 2.0	.476	2.333	1	.102	2.333		1	14916.0...	32130	1.872	1.872	4...	H1-1b
3	M121	SR 0.75	.469	0	5	.016	0		8	3758.9	14320.8	.184	.184	3...	H1-1a
4	M46	PL5/8x3.5	.467	0	7	.169	0	y	7	66866.46	70875	.923	5.168	1...	H1-1b
5	M90	PL5/8x3.5	.464	0	5	.170	0	y	5	66866.46	70875	.923	5.168	1...	H1-1b
6	M34	SR 0.75	.462	0	6	.016	0		6	3758.9	14320.8	.184	.184	3...	H1-1a
7	M4	PL5/8x3.5	.457	0	6	.167	0	y	8	66866.46	70875	.923	5.168	1...	H1-1b
8	M48	PL5/8x3.5	.456	0	7	.163	0	y	7	66866.46	70875	.923	5.168	1...	H1-1b
9	M92	PL5/8x3.5	.455	0	5	.161	0	y	8	66866.46	70875	.923	5.168	1...	H1-1b
10	M8	PL5/8x3.5	.450	0	5	.161	0	y	6	66866.46	70875	.923	5.168	1...	H1-1b
11	MP2B	PIPE 2.0	.408	2.333	3	.086	2.333		2	14916.0...	32130	1.872	1.872	1...	H1-1b
12	MP2C	PIPE 2.0	.406	2.333	4	.116	2.333		4	14916.0...	32130	1.872	1.872	1...	H1-1b
13	M15	PIPE 2.5	.310	.746	1	.143	.746		1	30358.0...	50715	3.596	3.596	1...	H1-1b
14	M57	PIPE 2.0	.298	2.5	4	.232	2.344		7	29810.2...	32130	1.872	1.872	2...	H1-1b
15	M51	PIPE 2.5	.290	.746	3	.167	.746		4	30358.0...	50715	3.596	3.596	2...	H1-1b
16	M75	SR 0.75	.281	0	5	.009	3.976		4	3758.9	14320.8	.184	.184	3...	H1-1a
17	M119	SR 0.75	.277	0	8	.012	0		3	3758.9	14320.8	.184	.184	3...	H1-1a
18	M58	PIPE 2.0	.273	2.318	7	.239	2.344		7	29810.2...	32130	1.872	1.872	2...	H1-1b
19	M32	SR 0.75	.273	0	7	.012	3.976		1	3758.9	14320.8	.184	.184	3...	H1-1a
20	M102	PIPE 2.0	.269	2.318	5	.234	2.344		5	29810.2...	32130	1.872	1.872	2...	H1-1b
21	M18A	PIPE 2.0	.267	2.318	6	.237	2.344		6	29810.2...	32130	1.872	1.872	2...	H1-1b
22	M47	PL5/8x3.5	.263	0	5	.103	.5	y	8	66866.46	70875	.923	5.168	1...	H1-1b
23	M101	PIPE 2.0	.262	2.318	6	.233	2.344		5	29810.2...	32130	1.872	1.872	2...	H1-1b
24	M17A	PIPE 2.0	.261	2.318	5	.231	2.344		8	29810.2...	32130	1.872	1.872	2...	H1-1b
25	M7	PL5/8x3.5	.261	0	5	.101	0	y	5	66866.46	70875	.923	5.168	1...	H1-1b
26	M91	PL5/8x3.5	.260	0	6	.103	0	y	6	66866.46	70875	.923	5.168	1...	H1-1b
27	MP1A	PIPE 2.0	.259	2.333	2	.061	2.333		2	14916.0...	32130	1.872	1.872	4...	H1-1b
28	M89	PL5/8x3.5	.257	0	6	.102	0	y	6	66866.46	70875	.923	5.168	1...	H1-1b
29	M45	PL5/8x3.5	.255	0	8	.101	0	y	8	66866.46	70875	.923	5.168	1...	H1-1b
30	M3	PL5/8x3.5	.254	0	7	.100	0	y	7	66866.46	70875	.923	5.168	1...	H1-1b
31	MP1C	PIPE 2.0	.248	2.333	4	.054	2.333		4	14916.0...	32130	1.872	1.872	2...	H1-1b
32	MP1B	PIPE 2.0	.216	2.333	8	.052	2.333		4	14916.0...	32130	1.872	1.872	3...	H1-1b
33	M13	PIPE 2.5	.215	3.025	1	.075	3.025		2	30358.0...	50715	3.596	3.596	1...	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc ...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
34	M93	PIPE_2.5	.206	3.025	3	.071	3.025		4	30358.0...	50715	3.596	3.596	1...	H1-1b
35	M55	PIPE_2.0	.206	2.5	2	.130	2.344		5	29810.2...	32130	1.872	1.872	2...	H1-1b
36	MP4B	PIPE_2.0	.205	2.333	5	.065	2.333		3	14916.0...	32130	1.872	1.872	4...	H1-1b
37	MP4C	PIPE_2.0	.204	2.333	7	.064	2.333		4	14916.0...	32130	1.872	1.872	3...	H1-1b
38	MP4A	PIPE_2.0	.203	2.333	8	.082	2.333		1	14916.0...	32130	1.872	1.872	4...	H1-1b
39	M95	PIPE_2.5	.202	.746	3	.117	.746		2	30358.0...	50715	3.596	3.596	1...	H1-1b
40	M99	PIPE_2.0	.200	2.5	3	.130	2.344		6	29810.2...	32130	1.872	1.872	2...	H1-1b
41	M15A	PIPE_2.0	.171	2.5	4	.130	2.344		7	29810.2...	32130	1.872	1.872	2...	H1-1b
42	MP3C	PIPE_2.0	.171	2.333	3	.061	2.333		3	14916.0...	32130	1.872	1.872	2...	H1-1b
43	MP3A	PIPE_2.0	.171	2.333	2	.047	2.333		4	14916.0...	32130	1.872	1.872	4...	H1-1b
44	M73	SR_0.625_...	.167	0	7	.006	0		7	2503.081	9940.19	.104	.104	2...	H1-1b
45	M117	SR_0.625_...	.160	0	5	.006	0		5	2503.081	9940.19	.104	.104	2...	H1-1b
46	M30	SR_0.625_...	.159	0	6	.006	3.333		5	2503.081	9940.19	.104	.104	2...	H1-1b
47	M49	PIPE_2.5	.156	3.771	3	.071	3.025		2	30358.0...	50715	3.596	3.596	1...	H1-1b
48	M50	PIPE_2.5	.154	0	3	.092	4.958		4	41472.48	50715	3.596	3.596	2...	H1-1b
49	M53	PIPE_2.5	.149	.516	4	.113	.516		4	41472.48	50715	3.596	3.596	2...	H1-1b
50	M76	SR_0.75	.149	3.976	6	.028	0		3	3758.9	14320.8	.184	.184	3...	H1-1b
51	M100	PIPE_2.0	.149	2.344	6	.131	0		8	29810.2...	32130	1.872	1.872	2...	H1-1b
52	M56	PIPE_2.0	.148	2.344	8	.132	0		5	29810.2...	32130	1.872	1.872	2...	H1-1b
53	M16A	PIPE_2.0	.147	2.344	7	.129	0		7	29810.2...	32130	1.872	1.872	2...	H1-1b
54	M120	SR_0.75	.147	3.976	7	.025	0		1	3758.9	14320.8	.184	.184	3...	H1-1b
55	M33	SR_0.75	.145	3.976	8	.020	0		4	3758.9	14320.8	.184	.184	3...	H1-1b
56	M98	PIPE_2.5	.144	0	8	.059	0		4	30358.0...	50715	3.596	3.596	2...	H1-1b
57	M18	PIPE_2.5	.142	0	6	.046	0		2	30358.0...	50715	3.596	3.596	2...	H1-1b
58	M54	PIPE_2.5	.141	0	5	.048	0		1	30358.0...	50715	3.596	3.596	2...	H1-1b
59	M52	PIPE_2.5	.138	3.771	8	.068	3.771		3	30358.0...	50715	3.596	3.596	2...	H1-1b
60	M96	PIPE_2.5	.137	3.771	6	.048	3.771		1	30358.0...	50715	3.596	3.596	2...	H1-1b
61	M16	PIPE_2.5	.135	3.771	7	.062	3.771		2	30358.0...	50715	3.596	3.596	2...	H1-1b
62	M97	PIPE_2.5	.132	4.958	4	.079	4.958		4	41472.48	50715	3.596	3.596	2...	H1-1b
63	MP3B	PIPE_2.0	.130	5.667	1	.057	2.333		1	14916.0...	32130	1.872	1.872	3...	H1-1b
64	M94	PIPE_2.5	.130	0	1	.059	4.958		2	41472.48	50715	3.596	3.596	3...	H1-1b
65	M69	PIPE_2.0	.122	7.241	4	.030	7.241		7	17135.0...	32130	1.872	1.872	1...	H1-1b*
66	M17	PIPE_2.5	.120	0	2	.101	.516		1	41472.48	50715	3.596	3.596	3...	H1-1b
67	M14	PIPE_2.5	.117	0	6	.095	4.958		1	41472.48	50715	3.596	3.596	2...	H1-1b
68	M26	PIPE_2.0	.108	7.241	1	.029	0		8	17135.0...	32130	1.872	1.872	1...	H1-1b*
69	M71	SR_0.625_...	.108	3.333	4	.009	3.333		4	2503.081	9940.19	.104	.104	2...	H1-1b
70	M74	SR_0.75	.105	3.976	8	.021	3.976		4	3758.9	14320.8	.184	.184	3	H1-1b
71	M31	SR_0.75	.103	3.976	5	.018	0		3	3758.9	14320.8	.184	.184	3...	H1-1b
72	M118	SR_0.75	.102	3.976	6	.021	3.976		2	3758.9	14320.8	.184	.184	3...	H1-1b
73	M28	SR_0.625_...	.095	3.333	5	.010	3.333		1	2503.081	9940.19	.104	.104	2...	H1-1b
74	M115	SR_0.625_...	.093	0	8	.007	0		4	2503.081	9940.19	.104	.104	2...	H1-1b
75	M113	PIPE_2.0	.080	7.241	2	.030	0		5	17135.0...	32130	1.872	1.872	1...	H1-1b*
76	M132	PIPE_2.0	.073	7.217	3	.025	7.217		6	17207.9...	32130	1.872	1.872	1...	H1-1b*
77	M88	PIPE_2.0	.063	3.608	2	.025	7.217		8	17207.9...	32130	1.872	1.872	1...	H1-1b
78	M72	SR_0.625_...	.058	0	3	.023	0		4	2503.081	9940.19	.104	.104	2...	H1-1b
79	M44A	PIPE_2.0	.058	3.608	4	.025	0		7	17207.9...	32130	1.872	1.872	1...	H1-1b
80	M116	SR_0.625_...	.052	0	1	.020	0		2	2503.081	9940.19	.104	.104	2...	H1-1b
81	M29	SR_0.625_...	.044	0	2	.015	0		1	2503.081	9940.19	.104	.104	2...	H1-1b
82	M70	SR_0.625_...	.044	3.333	3	.020	3.333		4	2503.081	9940.19	.104	.104	2...	H1-1b
83	M27	SR_0.625_...	.042	0	3	.014	0		3	2503.081	9940.19	.104	.104	2...	H1-1b
84	M114	SR_0.625_...	.041	0	2	.018	0		2	2503.081	9940.19	.104	.104	2...	H1-1b

Envelope None Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pn[lb]	Tn[lb]	Mnyy[k-ft]	Mnzz[k-ft]	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

Envelope AA ADM1-15: LRFD - Building Aluminum Code Checks

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt[..	phi*Mn...	phi*Mn...	phi*Vny...	phi*Vnz...	Cb	Eqn
No Data to Print ...																

EXHIBIT 9

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Self-support tower 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.

CTNL086A
CTNL086A/CT54XC704 VOLUNTOWN SST SBA
453 Ekonk Hill Rd, Voluntown, CT 06384

Contents

Overview

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following T-Mobile wireless self-support tower 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 180' self support tower in Voluntown, Connecticut. Access to the facility is restricted to authorized personnel and facility management.

Analysis Site Data

Site ID:	CTNL086A
Site Name:	CTNL086A/CT54XC704 VOLUNTOWN SST SBA
Site Address:	453 Ekonk Hill Rd, Voluntown, CT 06384
Site Latitude:	41.606506
Site Longitude:	-71.85103
Facility Type:	Self-support tower

Compliance Summary

Status:	T-Mobile will be compliant with FCC Regulations Upon Installation of Signage
Site Modeled Composite MPE% (General Public Limit):	0.13 %
T-Mobile Max Modeled MPE% (General Public Limit):	0.13 %
Lock or Control Measures if Present:	Not Restricted

In addition to the T-Mobile antennas and radio equipment there are antennas and radio equipment for AT&T, Verizon which have been included in this analysis as part of the overall site compliance determination.

*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.

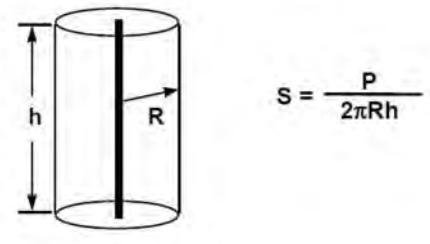


Figure 1: Distribution of power over an imaginary cylinder in all directions

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.

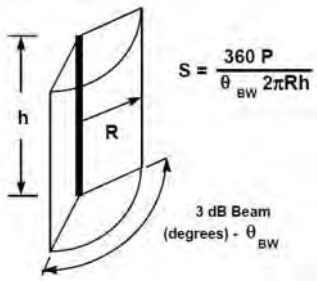


Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW)

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	175	172.67
A2	T-Mobile	L700	40	4	3707.83	RFS	APXVAALL24 43-U-NA20	13.65	0	175	171.00
A2	T-Mobile	L600	40	2	1577.94	RFS	APXVAALL24 43-U-NA20	12.95	0	175	171.00
A2	T-Mobile	N600	30	2	1183.45	RFS	APXVAALL24 43-U-NA20	12.95	0	175	171.00
A2	T-Mobile	L1900	40	4	5612.03	RFS	APXVAALL24 43-U-NA20	15.45	0	175	171.00
A2	T-Mobile	G1900	15	1	526.13	RFS	APXVAALL24 43-U-NA20	15.45	0	175	171.00
A3	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR 6449 LTE BrM	15.15	0	175	173.62
A3	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR 6449 NR BrM	15.15	0	175	173.62
A3	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR 6449 LTE TB	22.35	0	175	173.62
A3	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR 6449 NR TB	22.35	0	175	173.62
B4	T-Mobile	L2100	40	4	6747.14	RFS	APX16DWV-16DWVS-E-A20	16.25	120	175	172.67
B5	T-Mobile	L700	40	4	3707.83	RFS	APXVAALL24 43-U-NA20	13.65	120	175	171.00
B5	T-Mobile	L600	40	2	1577.94	RFS	APXVAALL24 43-U-NA20	12.95	120	175	171.00
B5	T-Mobile	N600	30	2	1183.45	RFS	APXVAALL24 43-U-NA20	12.95	120	175	171.00
B5	T-Mobile	L1900	40	4	5612.03	RFS	APXVAALL24 43-U-NA20	15.45	120	175	171.00
B5	T-Mobile	G1900	15	1	526.13	RFS	APXVAALL24 43-U-NA20	15.45	120	175	171.00
B6	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR 6449 LTE BrM	15.15	120	175	173.62
B6	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR 6449 NR BrM	15.15	120	175	173.62
B6	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR 6449 LTE TB	22.35	120	175	173.62
B6	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR 6449 NR TB	22.35	120	175	173.62
C7	T-Mobile	L2100	40	4	6747.14	RFS	APX16DWV-16DWVS-E-A20	16.25	240	175	172.67
C8	T-Mobile	L700	40	4	3707.83	RFS	APXVAALL24 43-U-NA20	13.65	240	175	171.00
C8	T-Mobile	L600	40	2	1577.94	RFS	APXVAALL24 43-U-NA20	12.95	240	175	171.00
C8	T-Mobile	N600	30	2	1183.45	RFS	APXVAALL24 43-U-NA20	12.95	240	175	171.00
C8	T-Mobile	L1900	40	4	5612.03	RFS	APXVAALL24 43-U-NA20	15.45	240	175	171.00
C8	T-Mobile	G1900	15	1	526.13	RFS	APXVAALL24 43-U-NA20	15.45	240	175	171.00
C9	T-Mobile	L2500	30	1	982.02	ERICSSON	AIR 6449 LTE BrM	15.15	240	175	173.62
C9	T-Mobile	N2500	30	1	982.02	ERICSSON	AIR 6449 NR BrM	15.15	240	175	173.62
C9	T-Mobile	L2500	90	1	15461.18	ERICSSON	AIR 6449 LTE TB	22.35	240	175	173.62
C9	T-Mobile	N2500	90	1	15461.18	ERICSSON	AIR 6449 NR TB	22.35	240	175	173.62
10	AT&T	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	0	165	162.00
11	AT&T	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	0	165	162.00
12	AT&T	1900	30	4	4604.49	GENERIC	PANEL 6FT	15.84	0	165	162.00
12	AT&T	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	0	165	162.00
13	AT&T	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	120	165	162.00

Sector	Operator	Frequency Band	TX Power Per Channel	Tx #	ERP	Antenna Make	Antenna Model	Gain (dBd)	Az (°)	Antenna Centerline Height (ft)	Z Value (ft)**
14	AT&T	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	120	165	162.00
15	AT&T	1900	30	4	4604.49	GENERIC	PANEL 6FT	15.84	120	165	162.00
15	AT&T	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	120	165	162.00
16	AT&T	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	240	165	162.00
17	AT&T	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	240	165	162.00
18	AT&T	1900	30	4	4604.49	GENERIC	PANEL 6FT	15.84	240	165	162.00
18	AT&T	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	240	165	162.00
19	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	0	153	150.00
20	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	0	153	150.00
21	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	0	153	150.00
22	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	0	153	150.00
23	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	120	153	150.00
24	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	120	153	150.00
25	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	120	153	150.00
26	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	120	153	150.00
27	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	240	153	150.00
28	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	240	153	150.00
29	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	240	153	150.00
30	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	240	153	150.00

*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:	**0.13%**	**All Sectors**
Accessible **Occupational** MPE Limits:	**0.03%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.13%**
Ground Level **Occupational** MPE Limits:	**0.03%**

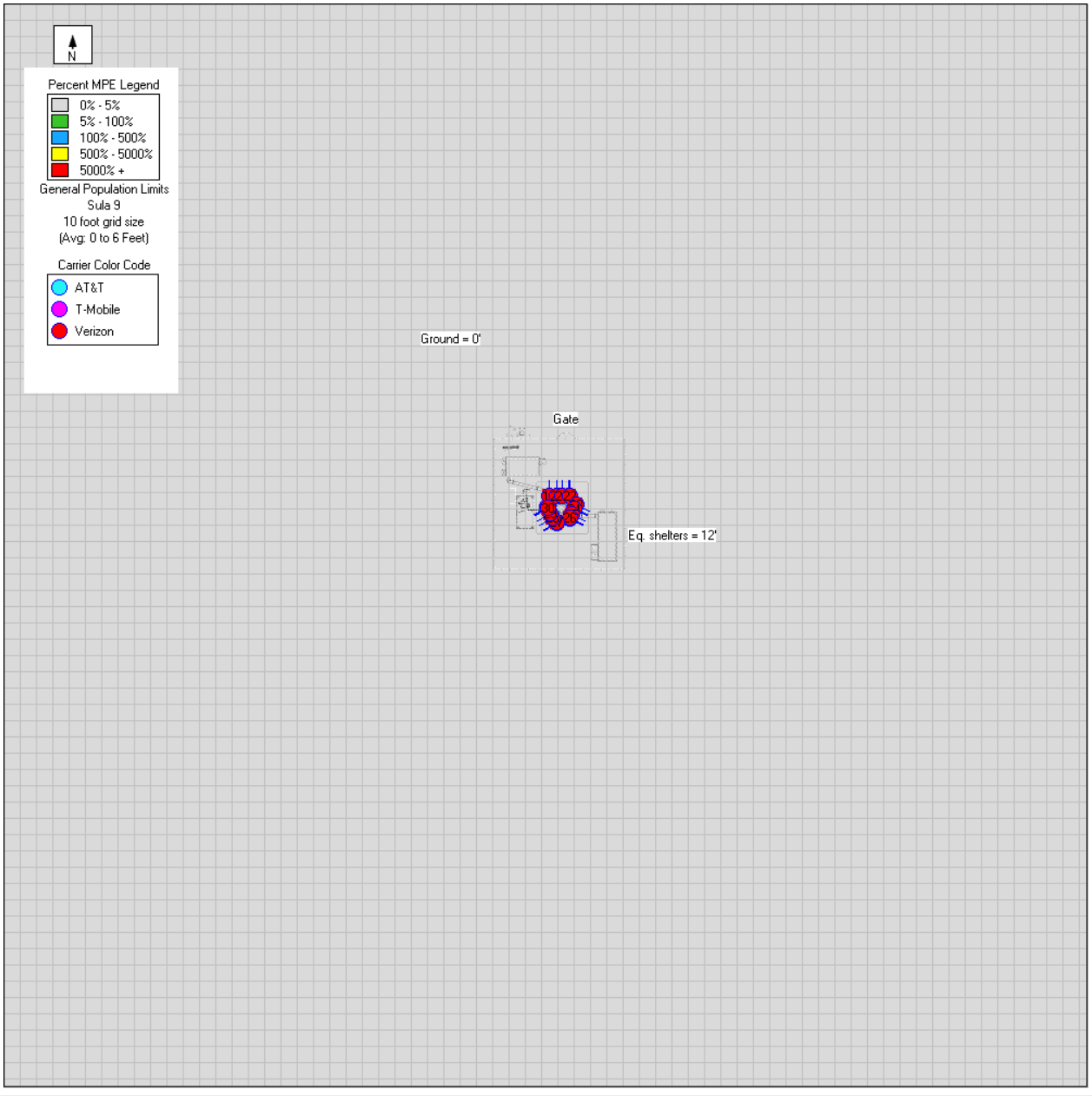
Sector A: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.13%**	**N/A**
Accessible **Occupational** MPE Limits:	**0.03%**	**N/A**

Sector B: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.13%**	**N/A**
Accessible **Occupational** MPE Limits:	**0.03%**	**N/A**

Sector C: Transmitting over Ground	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.13%**	**N/A**
Accessible **Occupational** MPE Limits:	**0.03%**	**N/A**

**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.*

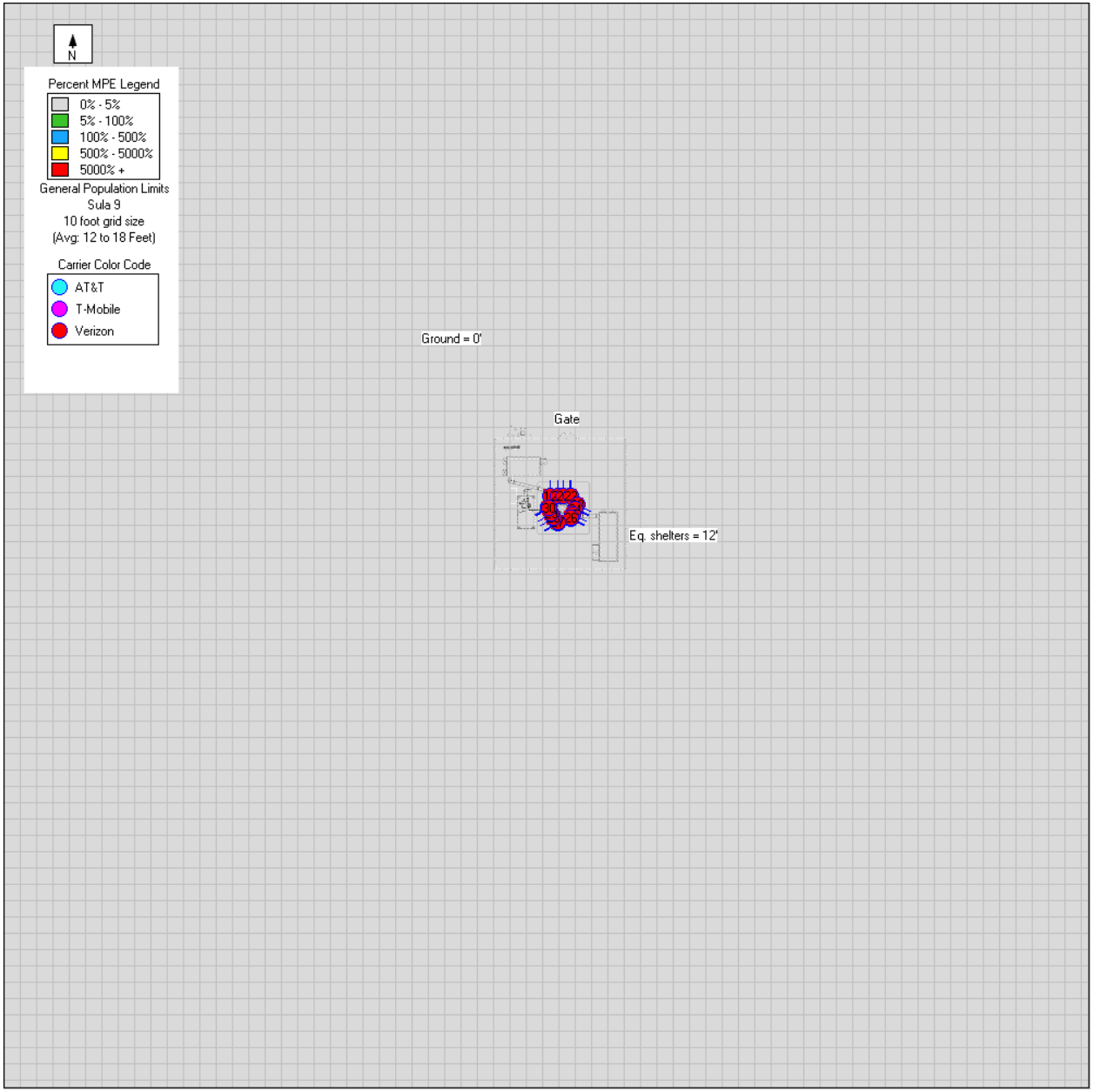
APPENDIX A: Emissions Thresholds for Walking Surfaces and Signage



Ground (0ft.)

Emissions Thresholds for Walking Surfaces for:

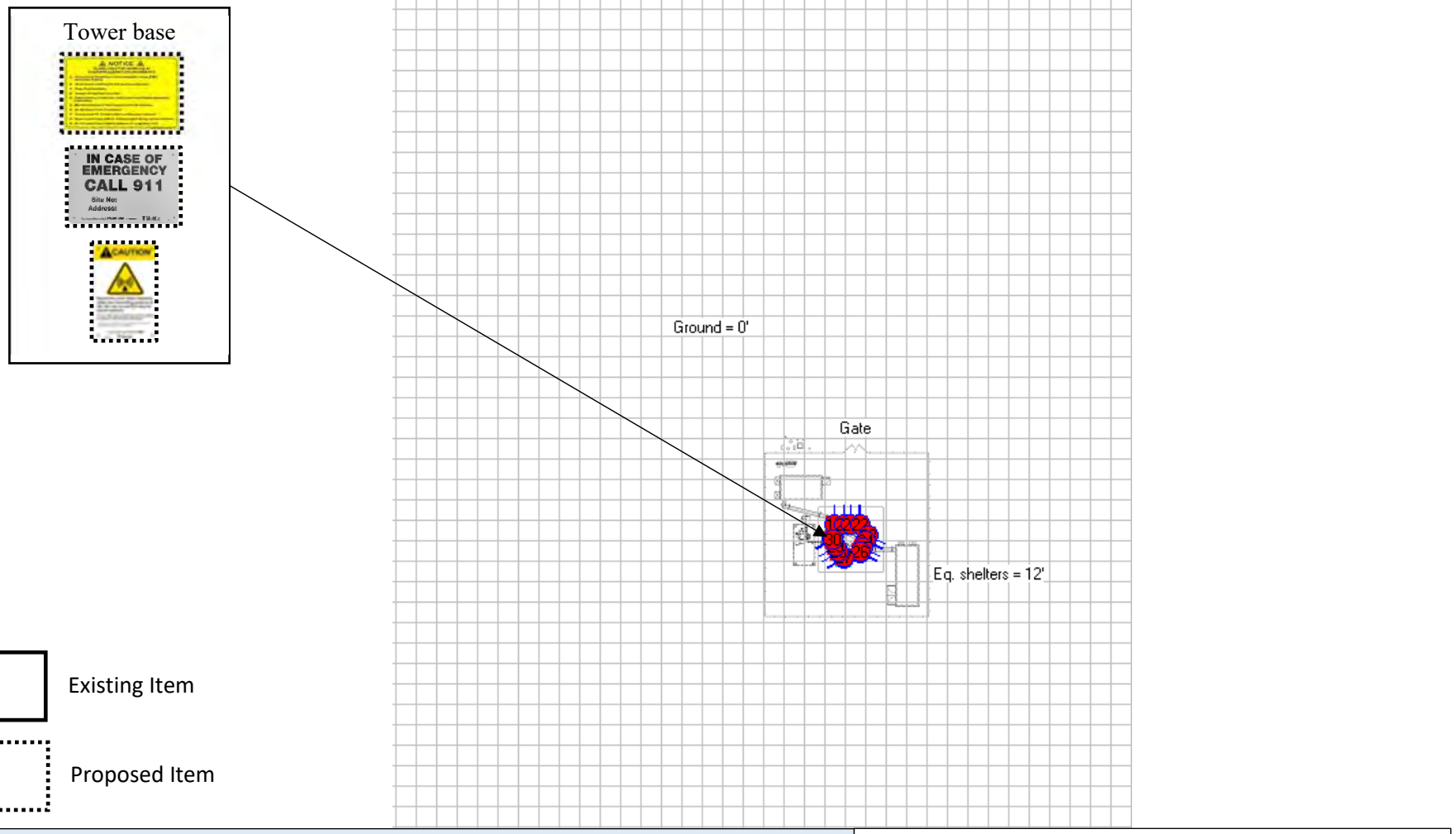
CTNL086A / CTNL086A/CT54XC704 VOLUNTOWN SST SBA



Equipment shelters (12ft.)

Emissions Thresholds for Walking Surfaces for:

CTNL086A / CTNL086A/CT54XC704 VOLUNTOWN SST SBA



Signage Count									
	1		0		1		0		1

Signage Diagram

Signage for:

CTNL086A/ CTNL086A/CT54XC704 VOLUNTOWN SST SBA

Compliance Actions

Tower Base	• Install (1) Guideline, (1) Emergency, and (1) Caution sign at the base of the tower.
Alpha Sector	• No Action Needed.
Beta Sector	• No Action Needed.
Gamma Sector	• No Action Needed.
Notes:	• If there is a fixed climbing point on the tower, the proposed signage should be installed near the climbing point.

APPENDIX B: RF Signage Description Table

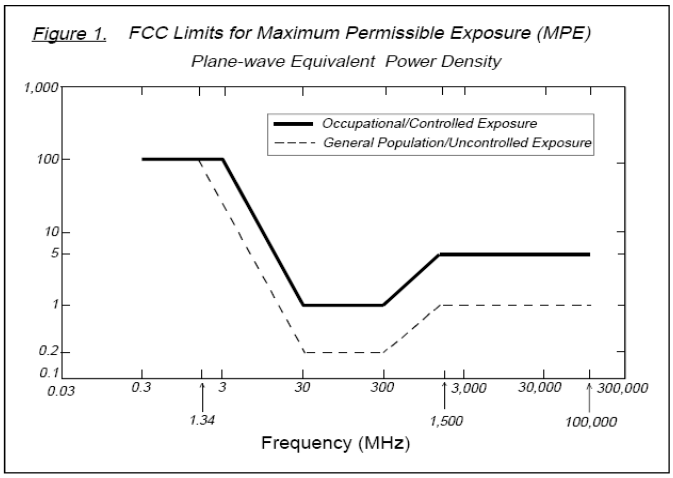
Sign	Description
	**RF Guideline Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
 	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. 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, Erin Kavanaugh, 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.

Erin Kavanaugh

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