NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

May 5, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
58 Montano Road, Glastonbury, CT 06033
Latitude: 41.699444
Longitude: -72.564000
Site #: CT13555-S _CTHA083C_SBA/T-Mobile

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing tower located at 58 Montano Road, Glastonbury, CT 06033. T-Mobile currently maintains nine (9) antennas at the 117-foot level of the existing 119-foot monopole tower. The property is owned by Rose Marie Shaw, and the tower is owned by SBA. T-Mobile now intends to remove (6) antennas install (3) antennas. The new antennas would be installed at the 117-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.

T-Mobile Planned Modifications:
Remove:
(3) ERICSSON AIR21 Antennas
(1) Coax – 1-5/8"
(1) Fiber Line – 1-5/8"

Remove and Replace:
(3) ERICSSON AIR21 Antennas (REMOVE) - (3) ERICSSON AIR6449 B41 Antennas (REPLACE)

Install New:
(3) ERICSSON 4460 B25+B66 RRU
(1) HCS Fiber Cable 1.9"

Existing to Remain:
(3) RFS APXVAARR24-43-U-NA20 Antennas
(3) ERICSSON 4449 B71+B85 RRU
(3) HCS Fiber Cable 1.9"
(8) Coax – 1-5/8" *
(3) Twin TMAs – KRY 112 144/1 *

*Equipment listed for entitlement purposed only

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

The facility was approved by the Connecticut Siting Council, Docket No. 359 on September 11, 2008. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Thomas Gullotta, Town Council Chair, Richard Johnson, Town Manager and Rebecca Augur, Director of Planning & Land Use Services for the Town of Glastonbury, as well as the property owner and the tower owner.

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 modifications 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 modifications 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 telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Thomas Gullotta, Town Council Chair
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

Richard Johnson, Town Manager
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

Rebecca Augur, Director of Planning & Land Use Services
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

Rose Marie Shaw – Property Owner
58 Montano Road
Glastonbury, CT 06033

SBA - Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 359 - Optasite Towers LLC and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 58 Montano Road or 618 Neipsic Road, Glastonbury, Connecticut.	}	Connecticut
	}	Siting
	}	Council

September 11, 2008

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Optasite Towers LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 58 Montano Road (Site A), Glastonbury, Connecticut. The Council denies certification of the proposed Site B at 618 Neipsic Road, Glastonbury, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The tower shall be designed and constructed to include a yield point at the height of 82 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Glastonbury for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and

    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Glastonbury public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Glastonbury. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

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

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

The parties and intervenors to this proceeding are:

APPLICANT	**ITS REPRESENTATIVE**
Optasite Towers LLC One Research Drive, Suite 200C Westborough, MA 01581	Carrie L. Larson, Esq. Pullman and Comley, LLC 90 State House Square Hartford, CT 06103
Omnipoint Communications, Inc. 35 Griffin Road South Bloomfield, CT 06002-1351	Julie Kohler, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

PARTY	**ITS REPRESENTATIVE**
Town of Glastonbury P.O. Box 6523 Glastonbury, CT 06033	Richard J. Johnson Town Manager Town of Glastonbury P.O. Box 6523 Glastonbury, CT 06033

PARTY	**ITS REPRESENTATIVE**
Imtiaz N. Wahla 461 Wickham Road Glastonbury, CT 06033	Sarosh N. Wahla, Esq. Wahla & Associates, P.C. 429 Capitol Avenue Hartford, CT 06106

INTERVENOR	**ITS REPRESENTATIVE**
Karl Wagener 588 Neipsic Road Glastonbury, CT 06033	Eric Knapp Branse, Willis & Knapp, LLC 148 Eastern Boulevard, Suite 301 Glastonbury, CT 06033-6523

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

August 17, 2015

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **PE1133-VER-20150706** – Cellco Partnership d/b/a Verizon Wireless sub-petition for a declaratory ruling for approval of an eligible facility request for modifications to an existing telecommunications facility located at 58 Montano Road, Glastonbury, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby approves your Eligible Facilities Request (EFR) to install antennas and associated equipment at the above-referenced facility pursuant to the Federal Communications Commission Wireless Infrastructure Report and Order, with the following conditions:

- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function;
- The validity of this action shall expire one year from the date of this letter; and
- The petitioner may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the EFR received on July 6, 2015.

Thank you for your attention and cooperation.

Very truly yours,

Melanie Bachman
Acting Executive Director

MB/MP

c: Honorable Stewart Beckett III, Chairman Town Council, Town of Glastonbury
Richard Johnson, Town Manager, Town of Glastonbury
Khara Dodds, Director of Planning and Land Use Services, Town of Glastonbury

Exhibit B

Property Card

☆ Parcel GIS ID 44800058

Owner Name: **SHAW ROSE MARIE**

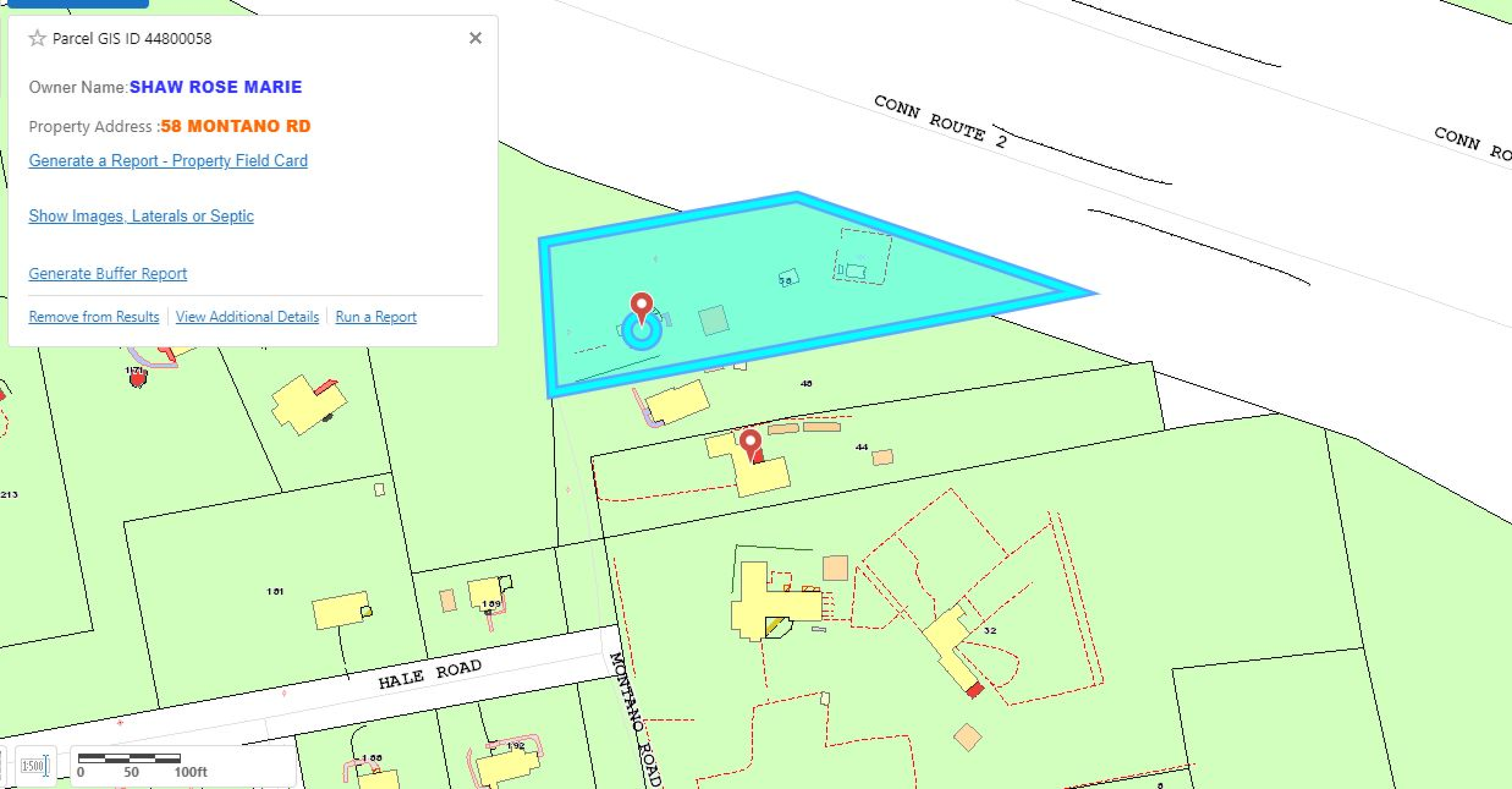
Property Address : **58 MONTANO RD**

Generate a Report - Property Field Card

Show Images, Laterals or Septic

Generate Buffer Report

Remove from Results | View Additional Details | Run a Report



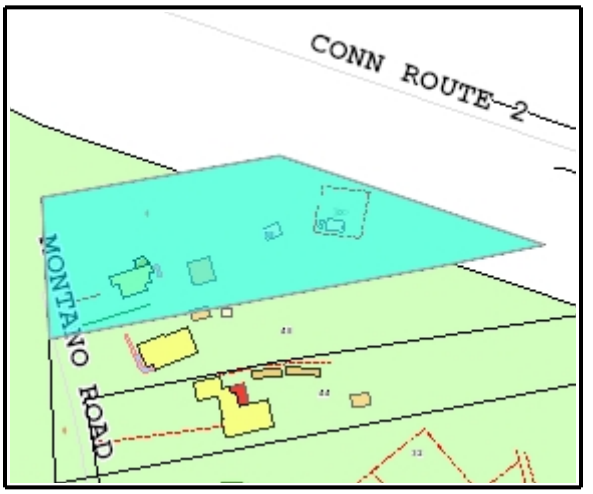
Town of Glastonbury GIS Parcel Report

Report Generated 6/17/2021 1:24:49 PM

Owner of Record

GIS ID: 44800058
Owner: SHAW ROSE MARIE
Co-Owner:
Address: 58 MONTANO RD
City, State ZIP: GLASTONBURY, CT 06033-3324

Account Number: 44800058
Property Address: 58 MONTANO RD



Property highlighted in blue

Parcel Information

Map/Street/Lot G7 / 4480 / S0021 **Property ID:** 8132
Developer Lot ID: **Water:** Well
Parcel Acreage: 1.30 **Sewer:** Sewer Nbrhd
Zoning Code: AA **Census:** 5204

Valuation Summary

Item	Appraised Value	Assessed Value
Buildings	60300	42200
Land	402500	281800
Appurtenances	5800	4100
Total	**468600**	**328100**

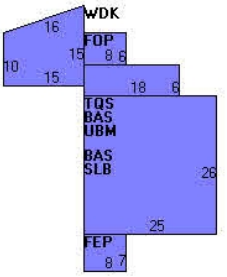
Owner of Record	Deed / Page	Sale Date	Sale Price
SHAW ROSE MARIE	1946/0211	2003-10-07	0
SHAW WILLIAM R+ROSE MARIE	0147/0396	1966-07-01	4500

Building Information

Building ID 8132

Year Constructed : 1931
Building Type : Residential
Style : Cape
Occupany : Single Family
Stories : 1.5
Building Zone : AA
Roof Type : Gable
Roof Material : Asphalt Shingl
Est. Gross S.F. : 2458
Est. Living S.F. : 1278

Number of Rooms : 7
Number of Bedrooms : 03
Number of Bathrooms : 1
Number of Half-Baths : 0
Exterior Wall : Wood Shingles
Interior Wall : Plaster
Interior Floor : Hardwood
Interior Floor #2 : No entry
Air Conditioning Type : None
Heat Type : Forced Air
Fuel Type : Oil



Subarea Type	Est. Gross S.F.	Est. Living S.F.
First Floor	758	758
Porch, Enclosed	56	0
Porch, Open	48	0
Slab	108	0
Three Quarter Story	650	520
Basement	650	0
Wood Deck	188	0

Outbuilding Type	Est. Gross S.F.	Comments
Garage	576.00	
Shed-Wood/Comp	192.00	
Shed-Wood/Comp	120.00	

Exhibit C

Construction Drawings

HA083/OPTA–MONTANO RD_FT

58A MONTANO ROAD
GLASTONBURY, CT 06033
HARTFORD COUNTY

SITE NO.: CTHA083C

SITE TYPE: 119'± MONOPOLE

RF DESIGN GUIDELINE: 67D5A998E OUTDOOR

APPROVALS

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

T–MOBILE TECHNICIAN SITE SAFETY NOTES

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

SCOPE OF WORK

REMOVE:
- 6 ANTENNAS
- 3 TMAS
- 2 EQUIPMENT CABINETS
- 6 COAX CABLES
- 1 HYBRID CABLE

INSTALL:
- 3 ANTENNAS
- 3 RADIOS
- 1 6160 EQUIPMENT CABINET
- 1 B160 BATTERY CABINET
- 1 SLACKBOX
- 1 HYBRID CABLE
- 1 125A–2P BREAKER
- 1 20A–1P BREAKER

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.

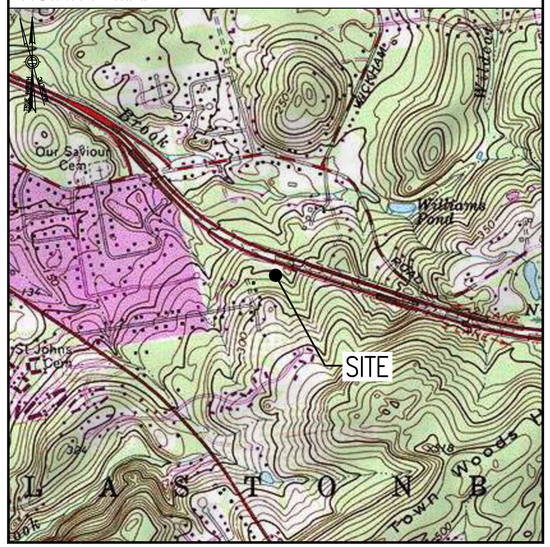
GENERAL NOTES

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

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

VICINITY MAP

SCALE: 1" = 1000'–0"



DIRECTIONS

MERGE ONTO I–495 NORTH TOWARD MANSFIELD/MARLBORO. TAKE EXIT 58 FOR I–90 WEST TOWARD ALBANY. TAKE EXIT 78 TOWARD I–84. CONTINUE ONTO I–84. KEEP LEFT TO STAY ON I–84. KEEP RIGHT TO STAY ON I–84 & FOLLOW SIGNS FOR I–91 NORTH/HARTFORD. USE THE LEFT LANE FOR EXIT 55 FOR CT–2 EAST TOWARD NORWICH. CONTINUE ONTO CT–2 EAST. USE LEFT LANE FOR EXIT 7 FOR CT–17 SOUTH TOWARD PORTLAND. KEEP LEFT & FOLLOW SIGNS FOR NEW LONDON TURNPIKE/EAST GLASTONBURY. MERGE ONTO NEW LONDON TURNPIKE. USE RIGHT LANE TO MERGE ONTO NEW LONDON TURNPIKE. TURN LEFT ONTO HALE ROAD. TURN LEFT ONTO MONTANO ROAD. SITE IS LOCATED ON THE RIGHT HAND SIDE.

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T–1	TITLE SHEET	0
GN–1	GENERAL NOTES	0
A–1	COMPOUND & EQUIPMENT PLANS	0
A–2	TOWER ELEVATION & ANTENNA PLANS	0
A–3	SITE DETAILS	0
A–4	ANTENNA & FEEDLINE CHARTS	0
E–1	ELECTRIC & GROUNDING DETAILS	0

DO NOT SCALE DRAWINGS

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

PROJECT SUMMARY

SITE NUMBER:	CTHA083C
SITE NAME:	HA083/OPTA–MONTANO RD_FT
SBA SITE NUMBER:	CT13555–S
SBA SITE NAME:	MONTANO
SITE ADDRESS:	58A MONTANO ROAD GLASTONBURY, CT 06033
PROPERTY OWNER:	ROSE MARIE SHAW 58 MONTANO ROAD GLASTONBURY, CT 06033
TOWER OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561–226–9523
COUNTY:	HARTFORD
ZONING DISTRICT:	RR (RURAL RESIDENTIAL)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	119'±
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: 41.699439° N41°41'57.98" LONGITUDE: –72.564000° W72°33'50.40"

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

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

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

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil ·Structural ·Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481–7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAMEK
No. 26876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/15/21	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CTHA083C

SITE ADDRESS:
58A MONTANO ROAD
GLASTONBURY, CT 06033

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.347

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – T-MOBILE
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – T-MOBILE
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, STATE AND FEDERAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

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

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

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

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

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER, T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR AND/OR LANDLORD PRIOR TO CONSTRUCTION.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

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

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

13. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

14. SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS AND POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.

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

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITES ARE IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. IF THE EXISTING CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

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

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.

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

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

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

6. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

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

8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.

9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

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

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (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
CLEMENT J. SA
No. 25376
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/15/21	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CTHA083C

SITE ADDRESS:
58A MONTANO ROAD
GLASTONBURY, CT 06033

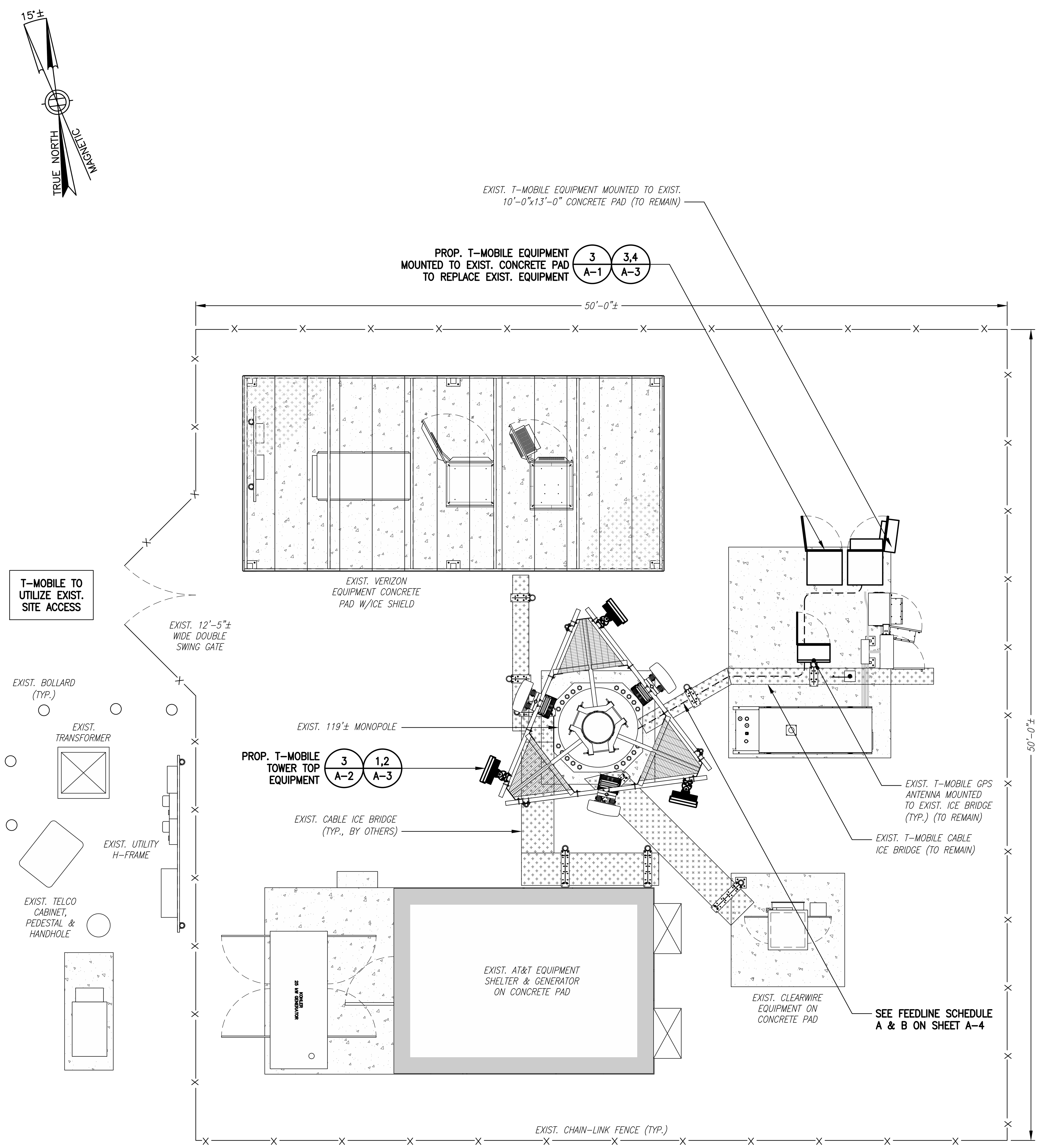
SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

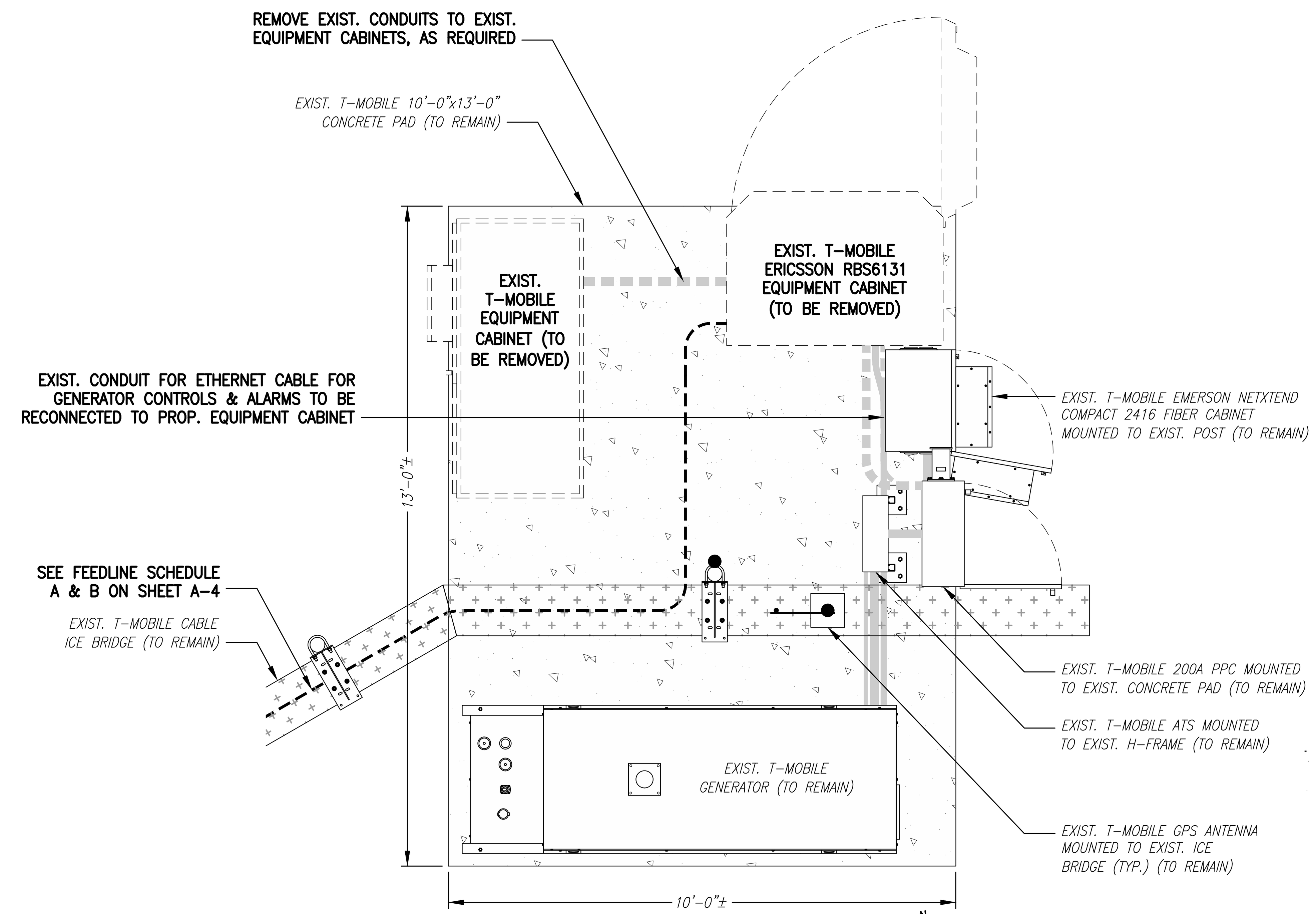
1815.347

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

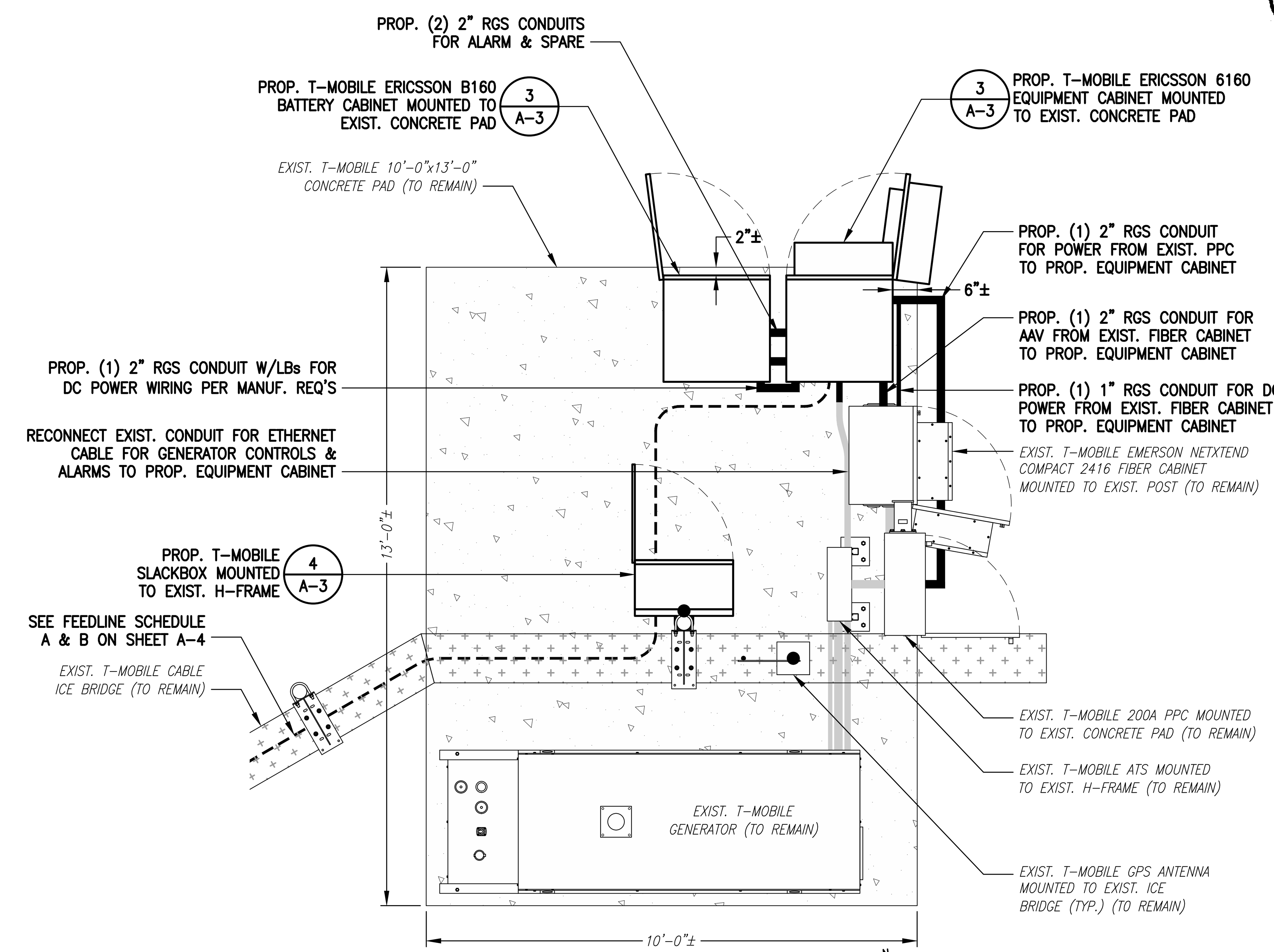
SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED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



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



EXISTING EQUIPMENT PLAN 2 A-1
SCALE: 1/2" = 1'-0"
0 2' 4' 6'



PROPOSED EQUIPMENT PLAN 3 A-1
SCALE: 1/2" = 1'-0"
0 2' 4' 6'

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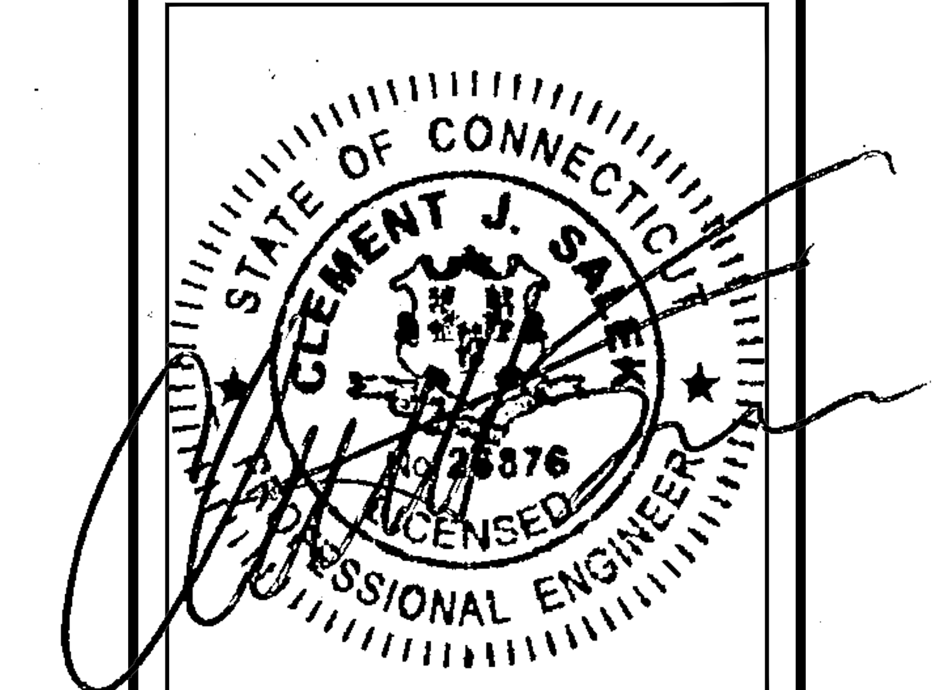


CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/15/21	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CTHA083C

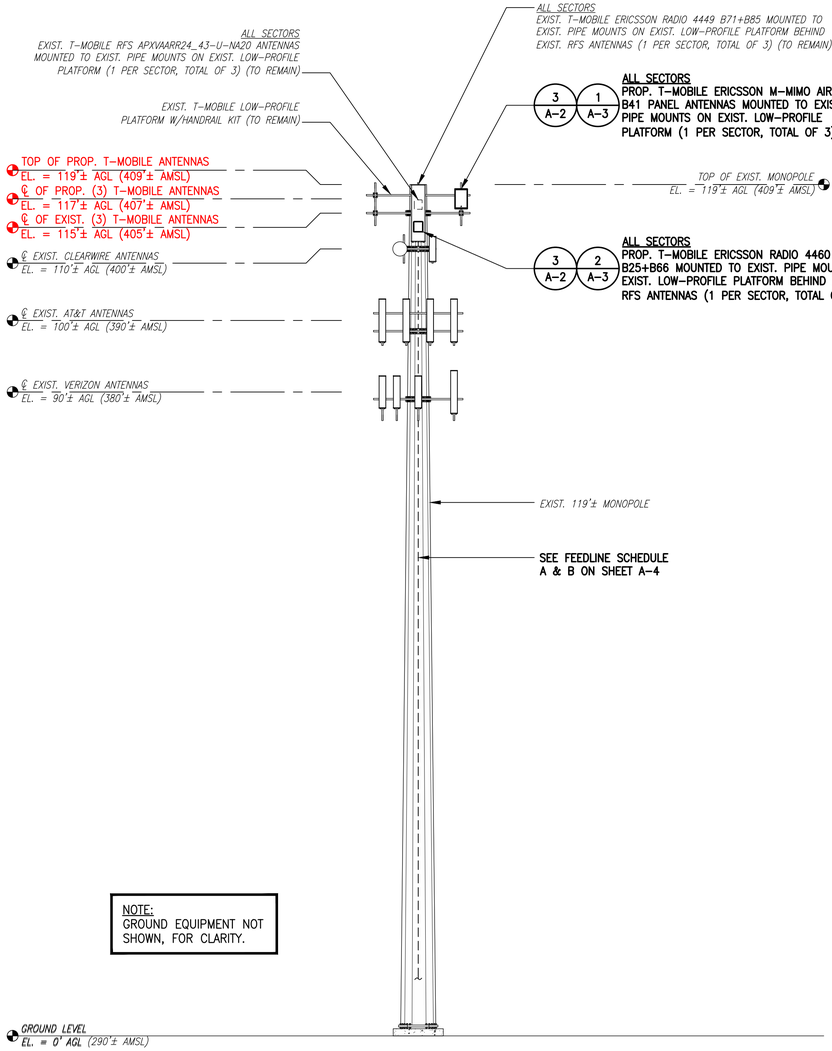
SITE ADDRESS:
58A MONTANO ROAD
GLASTONBURY, CT 06033

SHEET TITLE
COMPOUND & EQUIPMENT PLANS

SHEET NUMBER
A-1

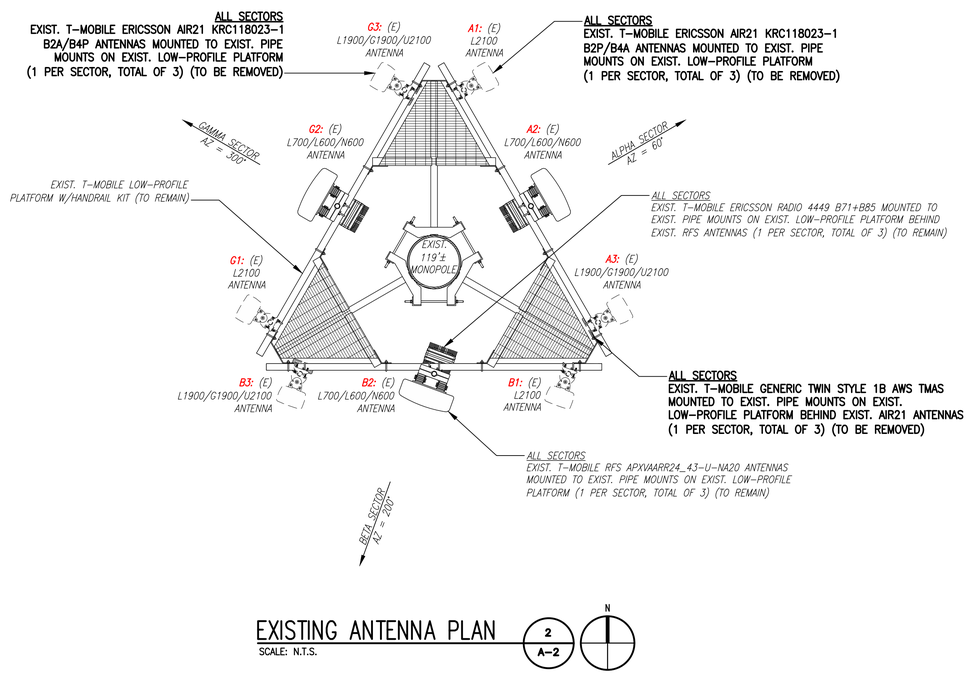
1815.347

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

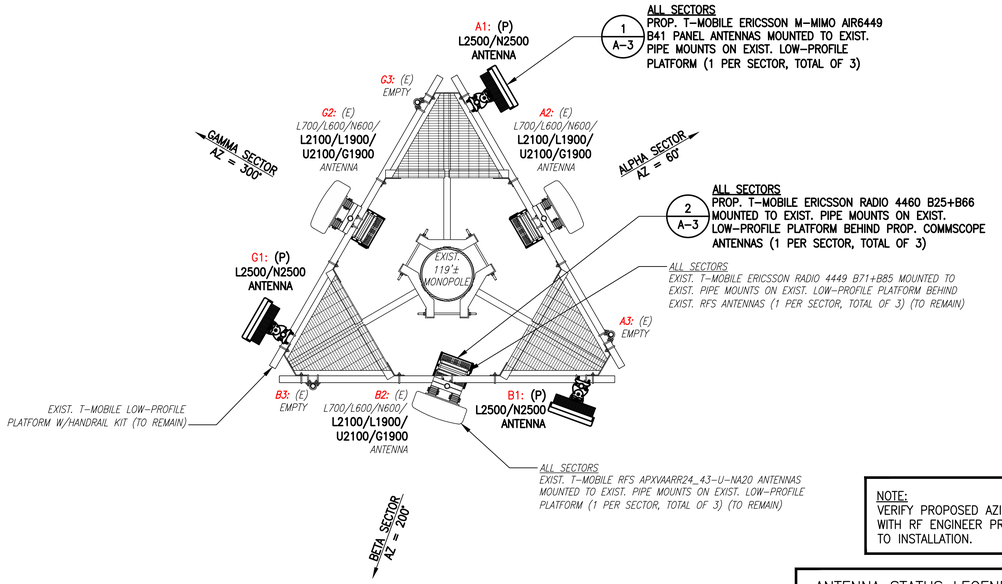


NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

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



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



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

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

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

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

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SBA
SBA COMMUNICATIONS CORP.
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201 BOSTON POST ROAD WEST, SUITE 101
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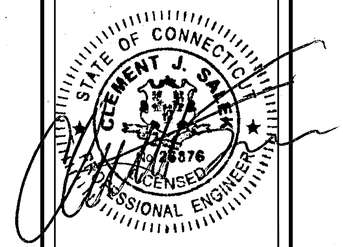
www.chappellengineering.com



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	11/15/21	ISSUED FOR REVIEW	CMC

SITE NUMBER:
CTHA083C

SITE ADDRESS:
58A MONTANO ROAD
GLASTONBURY, CT 06033

SHEET TITLE
TOWER ELEVATION & ANTENNA PLANS

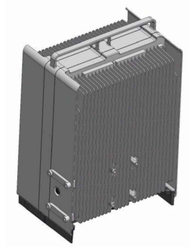
SHEET NUMBER
A-2

1815.347

ERICSSON M-MIMO AIR6449 B41 ANTENNA

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

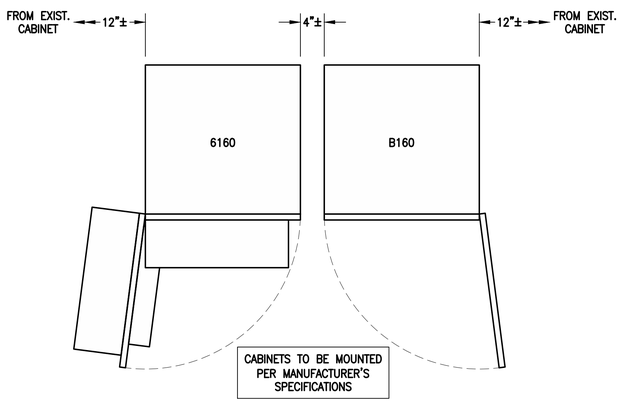
ANTENNA DETAILS (1 / A-3)
SCALE: N.T.S.



ERICSSON RADIO 4460 B25+B66

DIMENSIONS: 17.0"H x 15.1"W x 11.9"D
WEIGHT: 104.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

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



ERICSSON 6160 SITE SUPPORT CABINET

DIMENSIONS: 63.25"H x 26.0"W x 34.0"D
WEIGHT: 680.0 lbs
QUANTITY: TOTAL OF 1

ERICSSON B160 BATTERY CABINET

DIMENSIONS: 63.25"H x 26.0"W x 26.0"D
WEIGHT: 1771.0 lbs
QUANTITY: TOTAL OF 1

EQUIPMENT DETAIL (3 / 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 (4 / A-3)
SCALE: N.T.S.

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STATE OF CONNECTICUT
CLEMENT J. SAMEK
No. 26876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

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GLASTONBURY, CT 06033

SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

1815.347

FINAL ANTENNA CONFIGURATION

SECTOR		ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	A1	**ERICSSON M-MIMO AIR6449 B41**	**117'± AGL**	**60°**	**2°**	**2°**	**L2500/N2500**	**–**	
	A2	*RFS APXVAARR24_43-U-NA20*	*115'± AGL*	*60°*	**2°**	*2°*	*L700/L600/N600*	*ERICSSON RADIO 4449 B71+B85*	
						2°	**L2100/L1900/U1900/G1900**	**ERICSSON RADIO 4460 B25+B66**	
	A3	*EMPTY PIPE*	–	–	–	–	–	–	
BETA	B1	**ERICSSON M-MIMO AIR6449 B41**	**117'± AGL**	**200°**	**2°**	**2°**	**L2500/N2500**	**–**	
	B2	*RFS APXVAARR24_43-U-NA20*	*115'± AGL*	*200°*	*2°*	*2°*	*L700/L600/N600*	*ERICSSON RADIO 4449 B71+B85*	*EXIST. (3) 1-5/8" (6x12) HCS FIBER CABLES*
						2°	**L2100/L1900/U1900/G1900**	**ERICSSON RADIO 4460 B25+B66**	**PROP. (1) 2" (6x24) HCS FIBER CABLE**
	B3	*EMPTY PIPE*	–	–	–	–	–	–	
GAMMA	G1	**ERICSSON M-MIMO AIR6449 B41**	**117'± AGL**	**300°**	**2°**	**2°**	**L2500/N2500**	**–**	
	G2	*RFS APXVAARR24_43-U-NA20*	*115'± AGL*	*300°*	*2°*	*2°*	*L700/L600/N600*	*ERICSSON RADIO 4449 B71+B85*	
						2°	**L2100/L1900/U1900/G1900**	**ERICSSON RADIO 4460 B25+B66**	
	G3	*EMPTY PIPE*	–	–	–	–	–	–	

CABLE NOTE: **EXISTING (6) 1-5/8" COAX CABLES & (1) 1-1/4" (9x18) HCS FIBER CABLE TO BE REMOVED. SEE FEEDLINE SCHEDULE A & B BELOW.**

NOTE: **RFDS REV9 – 09/13/21**

FEEDLINE SCHEDULE

SCHEDULE	FEEDLINES		LOCATION
A	*EXISTING TO REMAIN:*	*(1) 1/2" COAX FOR GPS ANTENNA* *(3) 1-5/8" (6x12) HCS FIBER CABLES*	**ROUTED PER STRUCTURAL ANALYSIS**
	EXISTING TO BE REMOVED:	*(6) 1-5/8" COAX CABLES* *(1) 1-1/4" (9x18) HCS FIBER CABLE*	
B	**PROPOSED:**	**(1) 2" (6x24) HCS FIBER CABLE**	

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

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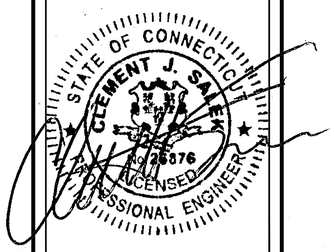

CHECKED BY: JMT

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SUBMITTALS

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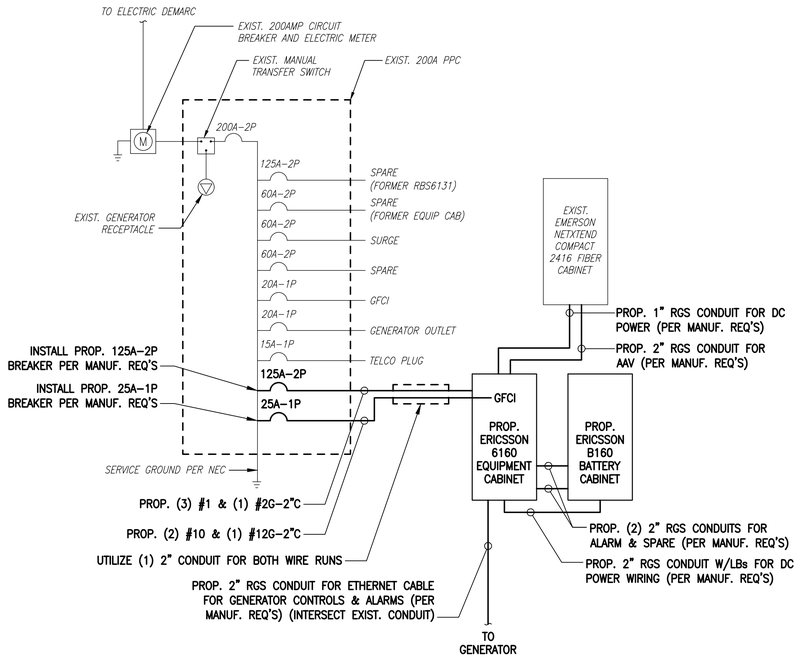
GLASTONBURY, CT 06033

SHEET TITLE
ANTENNA & FEEDLINE CHARTS

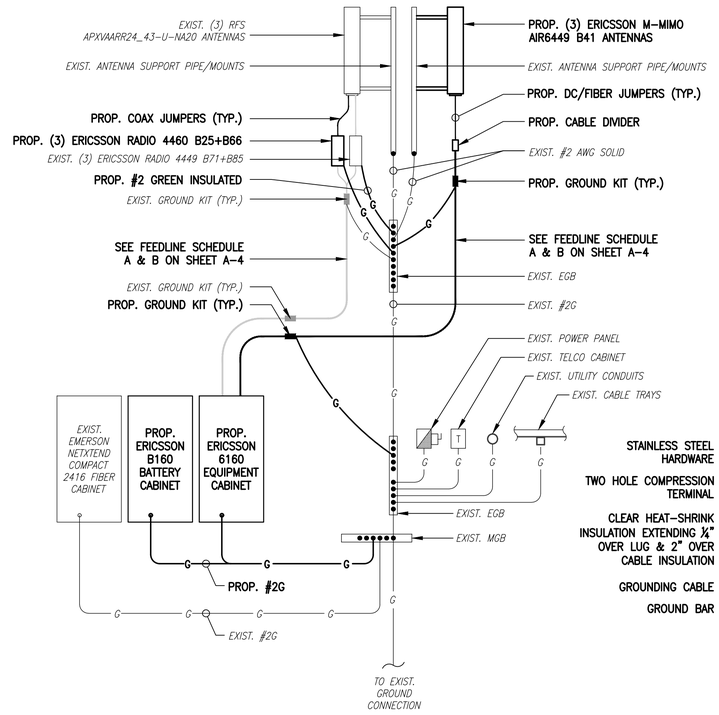
SHEET NUMBER
A-4

1815.347



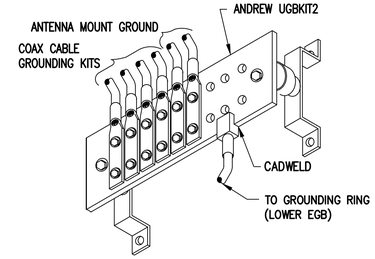
ONE LINE DIAGRAM

SCALE: NOT TO SCALE — 1 / E-1



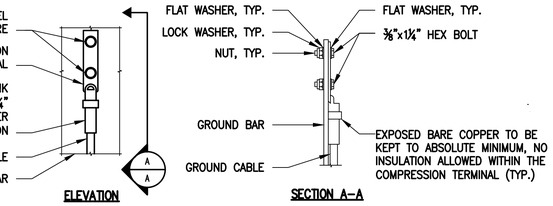
GROUNDING RISER DIAGRAM

SCALE: NOT TO SCALE — 2 / E-1



GROUND BAR (EGB)

SCALE: NOT TO SCALE — 5 / E-1



ELEVATION

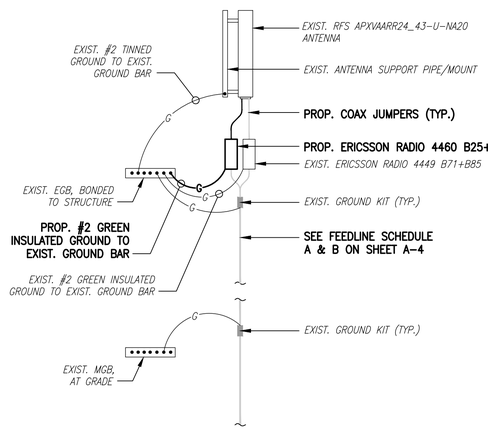
SECTION A-A

NOTES:

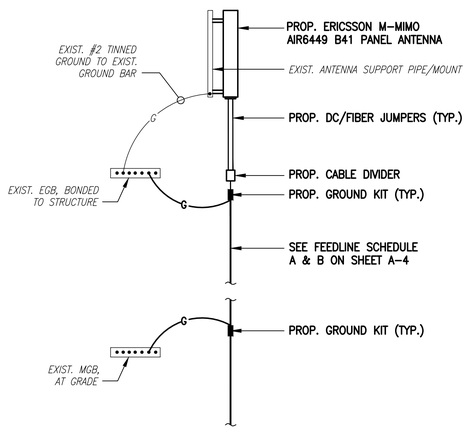
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

TYPICAL GROUND BAR CONNECTIONS DETAIL

SCALE: NOT TO SCALE — 3 / E-1



L700/L600/N600/
L2100/L1900/U1900/G1900 ANTENNA



L2500/N2500
ANTENNA

COAX CABLE CONNECTION AND GROUNDING DETAIL

SCALE: NOT TO SCALE — 4 / E-1

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHNINSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 8" 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 — CLEMENT J. SAMEK — No. 26876 — LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
CTHA083C

SITE ADDRESS:
58A MONTANO ROAD
GLASTONBURY, CT 06033

SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.347

Exhibit D

Structural Analysis Report

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

Structural Analysis Report

Existing 119 ft SABRE Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT13555-S
Customer Site Name: Montano
Carrier Name: T-Mobile (App#: 182170, V1)
Carrier Site ID / Name: CTHA083C / Montano
Site Location: 58A Montano Road
Glastonbury, Connecticut
Hartford County
Latitude: 41.699444
Longitude: -72.564000

Analysis Result:

Max Structural Usage: 35.3% [Pass]
Max Foundation Usage: 40.0% [Pass]
Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Younus Alkarawi

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

Structural Analysis Report

Existing 119 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13555-S

Customer Site Name: Montano

Carrier Name: T-Mobile (App#: 182170, V1)

Carrier Site ID / Name: CTHA083C / Montano

Site Location: 58A Montano Road

Glastonbury, Connecticut

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Latitude: 41.699444

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Analysis Result:

Max Structural Usage: 35.3% [Pass]

Max Foundation Usage: 40.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Younus Alkarawi

Introduction

The purpose of this report is to summarize the analysis results on the 119 ft SABRE Monopole 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	Tower Drawing prepared by Sabre, Job #09-11137 dated 11/19/08
Foundation Drawing	Foundation Drawing prepared by Sabre, Job #09-11137 dated 11/19/08
Geotechnical Report	Geotechnical Report prepared by TES; Project #082695.01 dated 10/27/08
Modification Drawings	N/A
Mount Analysis	T-Mobile MA by TES # 126848, Dated 03/29/2022

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" 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:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.18, S_1 = 0.063

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
-	117.0	3	Ericsson Air 21 B2A/B4P	Low Profile Platform	(9) 1 5/8" (4) 1 5/8" Fiber	T-Mobile
-		3	Ericsson Air32 KRD901146-1_B66A_B2A			
-		3	Ericsson KRY 112 144/1			
-		3	Ericsson Radio 4449 B71+B12			
-	115.0	3	RFS APXVAARR24_43-U-NA20			
7	110.0	2	Andrew - VHLP2-18 - Dish	(3) dual sector mounts	(2) 1/2" (3) 1.619" Hybrid	Sprint Nextel
8		3	Nokia - AAHC - Panel			
9	100.0	3	ALU IBC700-1 – Filter	Platform w/ Hand Rail and kickers	(2) 1/2" Fiber (8) 3/4" DC (3) 3/8" RET	AT&T
10		12	CCI - HPA-65R-BUU-H8 - Panel			
11		12	Ericsson - RRU-11			
12		6	Ericsson - RRU-12			
13		6	Ericsson - RRUS-A2 Module			
14		3	Ericsson - RRU-32			
15		4	Raycap DC6-48-60-18-8F			
16	90.0	3	Samsung VZS01 - Panel	Modified Low Profile Platform w/ Handrail	(2) 1 5/8" Hybrid	Verizon
17		6	Commscope NHH-65B-R2B - Panel			
18		1	RFS DB-C1-12C-24AB-0Z			
19		3	Andrew LNX-6514DS-A1M - Panel			
20		3	Samsung B2-B66A RRH-BR049 (RFV01U-D1A)			
21		3	Samsung B5-B13 RRH-BR04C (RFV01U-D2A)			
22		1	RFS DB-T1-6Z-8AB-0Z			

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	117.0	3	Ericsson AIR6449 B41 - Panel	Low Profile Platform	(8) 1 5/8" (3) 1 5/8" Fiber (1) 1.9" Fiber	T-Mobile
2		3	Ericsson Air32 KRD901146-1_B66A_B2A - Panel			
3		3	KRY 112 144/1			
4	115.0	3	RFS APXVAARR24_43-U-NA20 - Panel			
5		3	Ericsson 4449 B71 + B85 RRU			
6		3	Ericsson 4460 B25 + B66 RRU			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange connection
Max. Usage:	**35.3%**	**34.6%**	**26.9%**	**19.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2270.1	25.8	45.3

Two foundation design options were included in the referenced foundation design document. Since it is not known which option was installed, both designs were analyzed using the supplied documents and soils report and both were found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

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

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
110.0	Andrew - VHLP2-18 - Dish	Sprint Nextel	0.001	0.404

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

Conclusions

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

Standard Conditions

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

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

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

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

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

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

Usage Diagram - Max Ratio 35.29% at 0.0ft

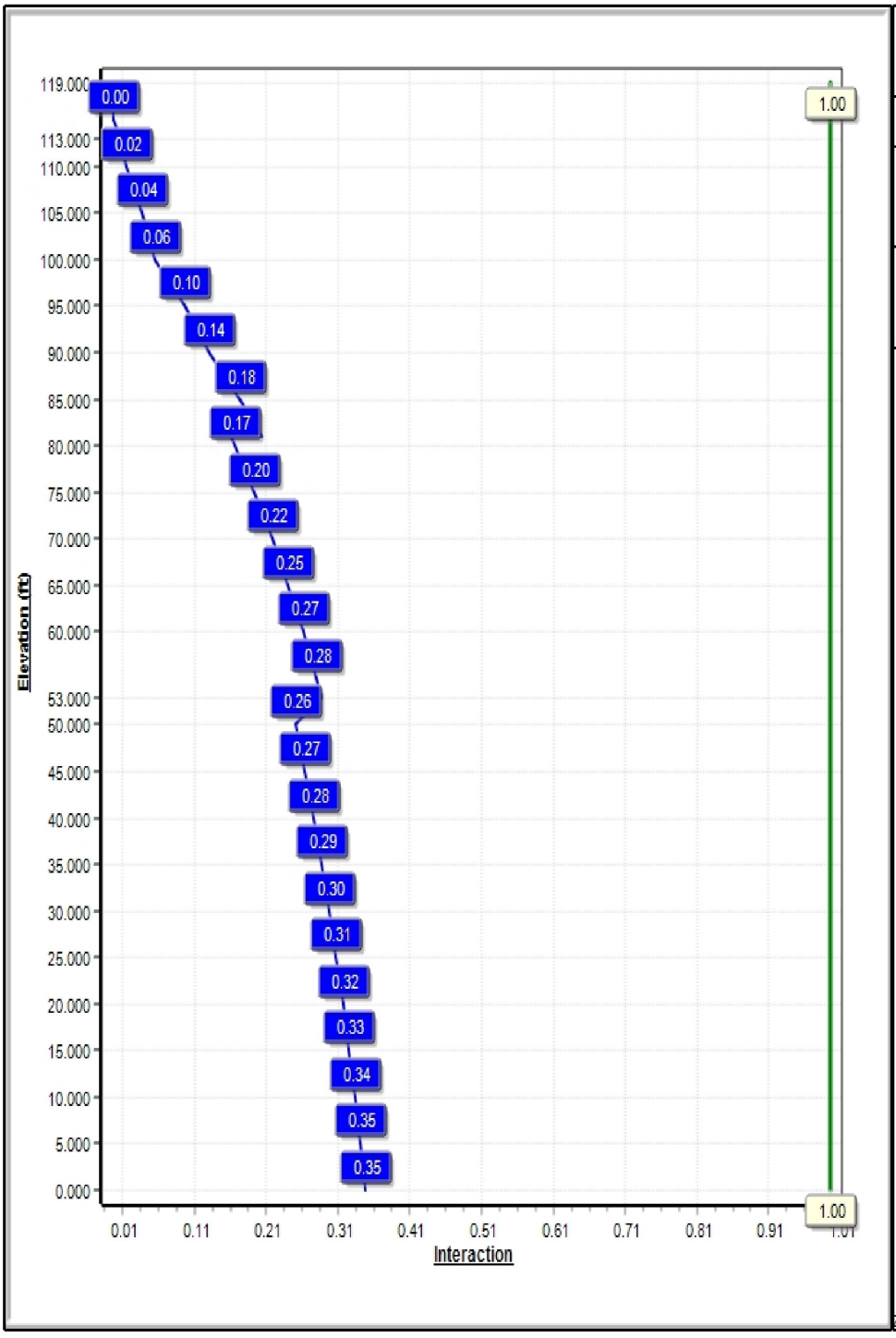
Structure:	CT13555-S-SBA	**Code:**	EIA/TIA-222-G	4/6/2022
Site Name:	Montano	**Exposure:**	B	
Height:	119.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

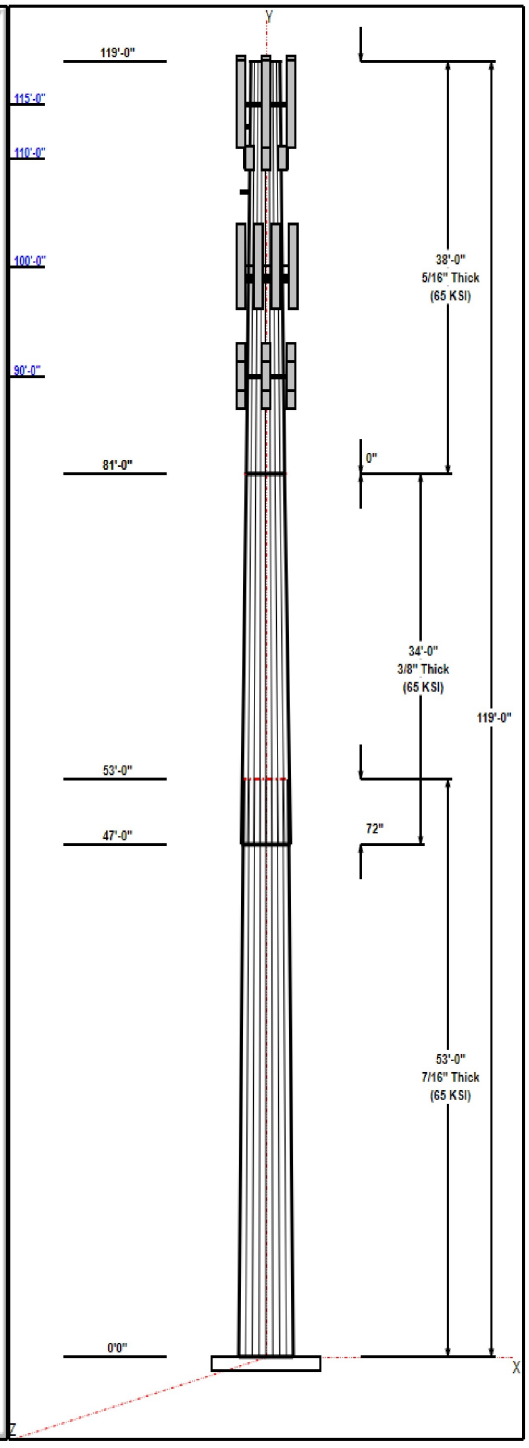
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 18





Structure: CT13555-S-SBA

Type: Tapered
Site Name: Montano
Height: 119.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.26403

4/6/2022

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.00	44.82	58.81	0.438		0.26403	65
2	34.00	38.17	47.15	0.375	Slip	0.26403	65
3	38.00	28.14	38.17	0.313	Butt	0.26403	65

Discrete Appurtenances

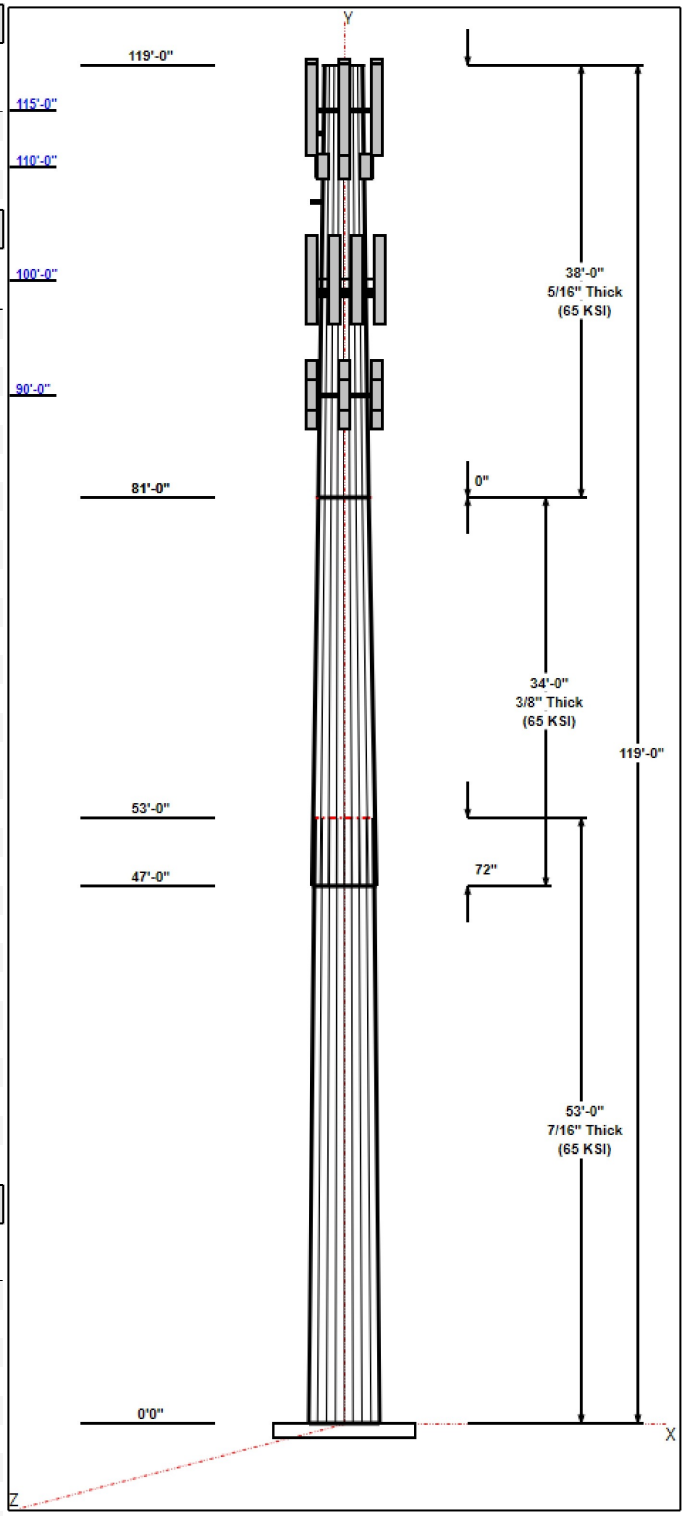
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
119.00	119.00	1	6' Lightning rod	
115.00	117.00	3	KRY 112 144/1	T-Mobile
115.00	115.00	1	Low Profile Platform	T-Mobile
115.00	117.00	3	Air32	T-Mobile
115.00	115.00	3	RFS	T-Mobile
115.00	117.00	3	Ericsson AIR6449 B41	T-Mobile
115.00	115.00	3	Ericsson 4449 B71 + B85	T-Mobile
115.00	115.00	3	Ericsson 4460 B25 + B66	T-Mobile
113.00	113.00	1	3 ft Standoff	Sprint Nextel
110.00	110.00	3	AAHC	Sprint Nextel
110.00	110.00	3	dual sector mounts	Sprint Nextel
110.00	110.00	2	VHLP2-18	Sprint Nextel
107.00	107.00	1	Ring Mount	Sprint Nextel
100.00	100.00	3	IBC700-1	AT&T
100.00	100.00	12	HPA-65R-BUU-H8	AT&T
100.00	100.00	12	RRU-11	AT&T
100.00	100.00	6	RRU-12	AT&T
100.00	100.00	6	RRUS-A2	AT&T
100.00	100.00	3	RRU-32	AT&T
100.00	100.00	4	DC6-48-60-18-8F	AT&T
100.00	100.00	1	Platform w/ Hand Rail	AT&T
90.00	90.00	3	Samsung VZS01	Verizon
90.00	90.00	6	Commscope	Verizon
90.00	90.00	1	RFS DB-C1-12C-24AB-0Z	Verizon
90.00	90.00	1	Modified Low Profile	Verizon
90.00	90.00	3	Andrew LNX-6514DS-A1M	Verizon
90.00	90.00	3	Samsung B2-B66A	Verizon
90.00	90.00	3	Samsung B5-B13	Verizon
90.00	90.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon
90.00	90.00	1	Mod	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	117.00	Inside	1 5/8" Coax	T-Mobile
0.00	117.00	Inside	1 5/8" Fiber	T-Mobile
0.00	117.00	Inside	1.9" Fiber	T-Mobile
0.00	110.00	Inside	1.619" Hybrid	Sprint Nextel
0.00	110.00	Inside	1/2" Coax	Sprint Nextel
0.00	100.00	Inside	1/2" Fiber	AT&T
0.00	100.00	Inside	3/4" DC	AT&T
0.00	100.00	Inside	3/8" RET	AT&T
0.00	90.00	Inside	1 5/8" Hybrid	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement



20	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	66.0	50.0	Clipped

Reactions

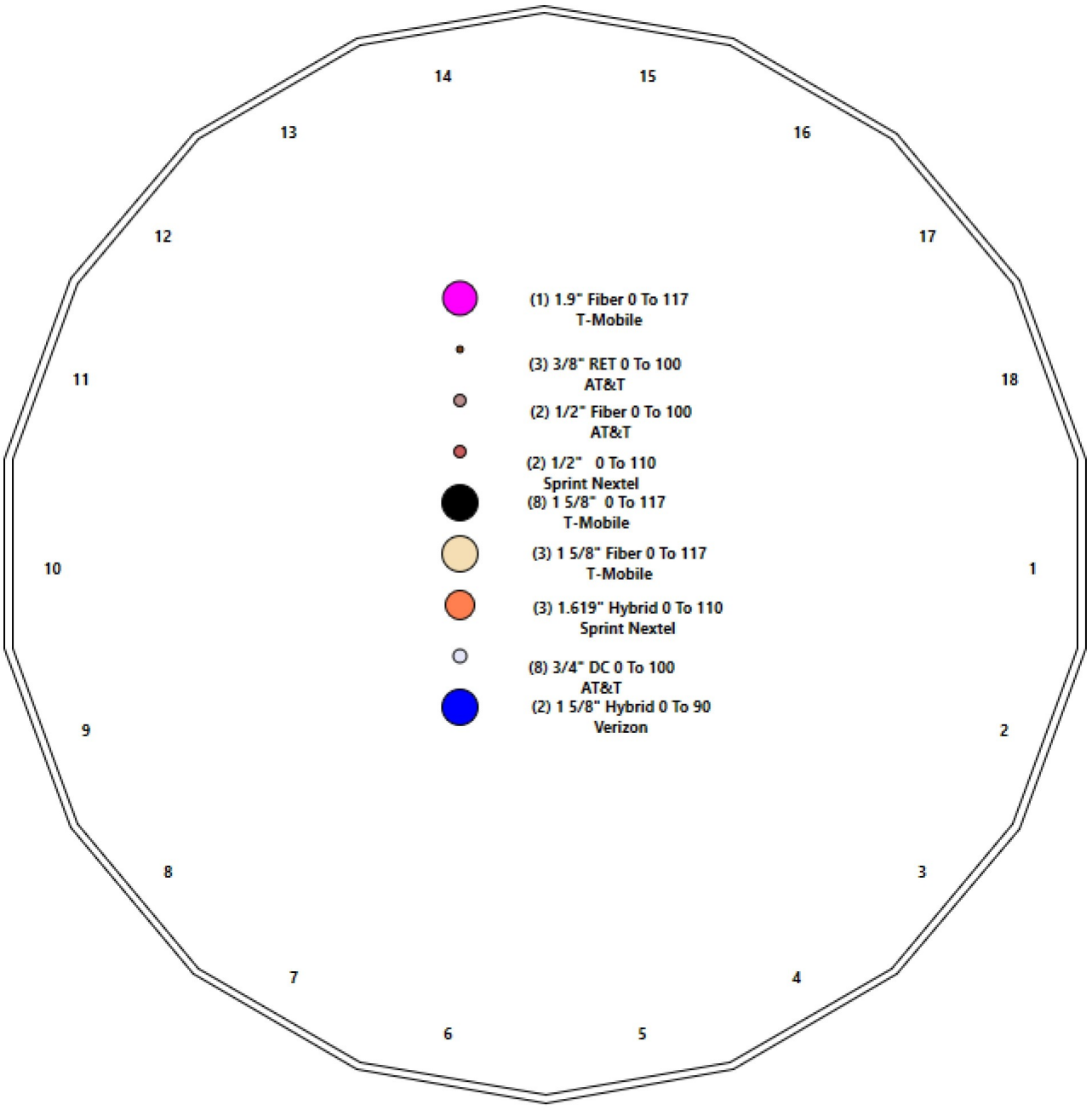
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	2270.1	25.8	45.3
0.9D + 1.6W 97 mph Wind	2259.4	25.8	34.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	621.9	7.2	82.1
1.2D + 1.0E	178.8	1.9	45.3
0.9D + 1.0E	177.9	1.9	34.0
1.0D + 1.0W 60 mph Wind	541.2	6.2	37.8

Structure: CT13555-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Montano
Height: 119.00 (ft)

4/6/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT13555-S-SBA		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.000	0.4375	65		0.00	12,866
2	18	34.000	0.3750	65	Slip	72.00	5,823
3	18	38.000	0.3125	65	Flange	0.00	4,212
					Total Shaft Weight:		**22,901**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	58.81	0.00	81.05	34893.72	22.29	134.42	44.82	53.00	61.62	15333.6	16.65	102.4	0.264034
2	47.15	47.00	55.67	15389.65	20.76	125.73	38.17	81.00	44.99	8120.67	16.54	101.8	0.264034
3	38.17	81.00	37.55	6800.85	20.13	122.15	28.14	119.00	27.60	2700.33	14.47	90.05	0.264034

Load Summary

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	119.00	6' Lightning rod	1	6.50	0.38	1.00	53.79	1.797	1.00	0.00	0.00
2	115.00	KRY 112 144/1	3	11.00	0.41	0.67	25.00	1.027	0.67	0.00	2.00
3	115.00	Low Profile Platform	1	1500.00	22.00	1.00	3199.45	44.931	1.00	0.00	0.00
4	115.00	Air32 KRD901146-1_B66A_B2A	3	132.20	6.51	0.87	384.84	8.055	0.87	0.00	2.00
5	115.00	RFS APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	691.39	22.735	0.70	0.00	0.00
6	115.00	Ericsson AIR6449 B41	3	103.00	5.65	0.71	281.03	6.884	0.07	0.00	2.00
7	115.00	Ericsson 4449 B71 + B85 RRU	3	73.20	1.97	0.67	148.17	2.709	0.67	0.00	0.00
8	115.00	Ericsson 4460 B25 + B66 RRU	3	109.00	2.85	0.67	202.36	3.726	0.67	0.00	0.00
9	113.00	3 ft Standoff	1	120.00	4.50	1.00	228.57	8.572	1.00	0.00	0.00
10	110.00	AAHC	3	104.00	4.20	0.75	280.52	5.295	0.75	0.00	0.00
11	110.00	dual sector mounts	3	350.00	4.00	1.00	728.99	7.609	1.00	0.00	0.00
12	110.00	VHLP2-18	2	27.00	4.68	1.00	153.50	6.327	1.00	1.00	0.00
13	107.00	Ring Mount	1	350.00	5.00	1.00	664.95	9.499	1.00	0.00	0.00
14	100.00	IBC700-1	3	63.30	1.31	0.91	127.63	2.459	0.91	0.00	0.00
15	100.00	HPA-65R-BUU-H8	12	60.80	12.98	0.78	450.81	15.083	0.78	0.00	0.00
16	100.00	RRU-11	12	54.00	2.52	0.70	175.56	3.375	0.71	0.00	0.00
17	100.00	RRU-12	6	58.00	2.81	0.70	176.94	3.700	0.71	0.00	0.00
18	100.00	RRUS-A2	6	22.00	1.86	0.61	69.98	3.107	0.63	0.00	0.00
19	100.00	RRU-32	3	77.00	3.87	0.85	231.03	4.349	0.85	0.00	0.00
20	100.00	DC6-48-60-18-8F	4	32.80	1.47	1.00	114.45	2.366	1.00	0.00	0.00
21	100.00	Platform w/ Hand Rail	1	1875.00	43.80	1.00	5025.63	92.735	1.00	0.00	0.00
22	90.00	Samsung VZS01	3	87.10	4.30	0.69	235.99	5.438	0.69	0.00	0.00
23	90.00	Commscope NHH-65B-R2B	6	43.70	8.08	0.83	312.33	9.747	0.83	0.00	0.00
24	90.00	RFS DB-C1-12C-24AB-0Z	1	30.00	4.06	0.88	222.76	5.140	0.88	0.00	0.00
25	90.00	Modified Low Profile Platform w/	1	1500.00	25.00	1.00	3158.30	50.427	1.00	0.00	0.00
26	90.00	Andrew LNX-6514DS-A1M	3	38.80	8.17	0.83	262.16	11.747	0.83	0.00	0.00
27	90.00	Samsung B2-B66A RRH-BR049	3	84.40	1.88	0.83	149.34	2.578	0.83	0.00	0.00
28	90.00	Samsung B5-B13 RRH-BR04C	3	70.30	1.88	0.78	131.92	2.578	0.78	0.00	0.00
29	90.00	RFS DB-T1-6Z-8AB-0Z	1	20.00	5.60	0.67	165.75	7.705	0.67	0.00	0.00
30	90.00	Mod	1	514.00	12.25	1.00	1286.81	27.418	1.00	0.00	0.00
		Totals:	**99**	**12,514.40**			**37,283.87**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	117.00	(8) 1 5/8" Coax	0.00	Inside
0.00	117.00	(3) 1 5/8" Fiber	0.00	Inside
0.00	117.00	(1) 1.9" Fiber	0.00	Inside
0.00	110.00	(3) 1.619" Hybrid	0.00	Inside
0.00	110.00	(2) 1/2" Coax	0.00	Inside
0.00	100.00	(2) 1/2" Fiber	0.00	Inside
0.00	100.00	(8) 3/4" DC	0.00	Inside
0.00	100.00	(3) 3/8" RET	0.00	Inside
0.00	90.00	(2) 1 5/8" Hybrid	0.00	Inside

Shaft Section Properties

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.4375	58.810	81.055	34893.7	22.29	134.42	75.2	1168.	0.0
5.00		0.4375	57.490	79.221	32579.4	21.76	131.41	75.8	1116.	1363.5
10.00		0.4375	56.170	77.388	30369.7	21.23	128.39	76.4	1064.	1332.3
15.00		0.4375	54.849	75.555	28262.2	20.70	125.37	77.1	1014.	1301.1
20.00		0.4375	53.529	73.722	26254.6	20.16	122.35	77.7	966.0	1269.9
25.00		0.4375	52.209	71.889	24344.4	19.63	119.34	78.3	918.4	1238.7
30.00		0.4375	50.889	70.056	22529.1	19.10	116.32	78.9	872.0	1207.5
35.00		0.4375	49.569	68.223	20806.4	18.57	113.30	79.6	826.7	1176.3
40.00		0.4375	48.249	66.389	19173.9	18.04	110.28	80.2	782.7	1145.1
45.00		0.4375	46.928	64.556	17629.0	17.50	107.27	80.8	739.9	1113.9
47.00	Bot - Section 2	0.4375	46.400	63.823	17035.1	17.29	106.06	81.1	723.1	436.8
50.00		0.4375	45.608	62.723	16169.5	16.97	104.25	81.4	698.3	1209.4
53.00	Top - Section 1	0.3750	45.566	53.787	13878.3	20.01	121.51	0.0	0.0	1188.6
55.00		0.3750	45.038	53.158	13397.5	19.77	120.10	78.2	585.9	363.9
60.00		0.3750	43.718	51.587	12244.2	19.15	116.58	78.9	551.6	891.1
65.00		0.3750	42.398	50.016	11159.1	18.53	113.06	79.6	518.4	864.3
70.00		0.3750	41.078	48.445	10140.1	17.90	109.54	80.3	486.2	837.6
75.00		0.3750	39.757	46.873	9185.1	17.28	106.02	81.1	455.0	810.9
80.00		0.3750	38.437	45.302	8292.0	16.66	102.50	81.8	424.9	784.1
81.00	Top - Section 2	0.3750	38.173	44.988	8120.7	16.54	101.80	81.9	419.0	153.6
81.00	Bot - Section 3	0.3125	38.173	37.552	6800.8	19.85	122.15	77.7	350.9	
85.00		0.3125	37.117	36.504	6247.4	19.53	118.77	78.4	331.5	504.0
90.00		0.3125	35.797	35.195	5599.0	18.79	114.55	79.3	308.1	609.9
95.00		0.3125	34.477	33.886	4997.0	18.04	110.33	80.2	285.5	587.7
100.00		0.3125	33.157	32.576	4439.8	17.30	106.10	81.1	263.7	565.4
105.00		0.3125	31.836	31.267	3925.7	16.55	101.88	81.9	242.9	543.1
107.00		0.3125	31.308	30.743	3731.7	16.26	100.19	82.3	234.8	211.0
110.00		0.3125	30.516	29.957	3452.9	15.81	97.65	82.5	222.9	309.8
113.00		0.3125	29.724	29.172	3188.3	15.36	95.12	82.5	211.3	301.8
115.00		0.3125	29.196	28.648	3019.6	15.06	93.43	82.5	203.7	196.7
119.00		0.3125	28.140	27.600	2700.3	14.47	90.05	82.5	189.0	382.8
										22901.0

Wind Loading - Shaft

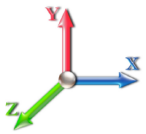
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 18

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	16.018	17.62	403.87	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	16.018	17.62	394.80	0.650	0.000	5.00	24.603	15.99	450.8	0.0	1636.2
10.00		1.00	0.70	16.018	17.62	385.74	0.650	0.000	5.00	24.044	15.63	440.6	0.0	1598.7
15.00		1.00	0.70	16.018	17.62	376.67	0.650	0.000	5.00	23.486	15.27	430.4	0.0	1561.3
20.00		1.00	0.70	16.018	17.62	367.60	0.650	0.000	5.00	22.927	14.90	420.1	0.0	1523.9
25.00		1.00	0.70	16.018	17.62	358.54	0.650	0.000	5.00	22.369	14.54	409.9	0.0	1486.4
30.00		1.00	0.70	16.031	17.63	349.62	0.650	0.000	5.00	21.810	14.18	400.0	0.0	1449.0
35.00		1.00	0.73	16.753	18.43	348.13	0.650	0.000	5.00	21.252	13.81	407.3	0.0	1411.6
40.00		1.00	0.76	17.405	19.15	345.39	0.650	0.000	5.00	20.693	13.45	412.0	0.0	1374.2
45.00		1.00	0.79	18.000	19.80	341.64	0.650	0.000	5.00	20.134	13.09	414.6	0.0	1336.7
47.00	Bot - Section 2	1.00	0.80	18.225	20.05	339.90	0.650	0.000	2.00	7.897	5.13	164.7	0.0	524.2
50.00		1.00	0.81	18.551	20.41	337.06	0.650	0.000	3.00	11.869	7.71	251.9	0.0	1451.3
53.00	Top - Section 1	1.00	0.82	18.862	20.75	333.98	0.650	0.000	3.00	11.668	7.58	251.8	0.0	1426.3
55.00		1.00	0.83	19.063	20.97	337.41	0.650	0.000	2.00	7.667	4.98	167.2	0.0	436.7
60.00		1.00	0.85	19.543	21.50	331.62	0.650	0.000	5.00	18.776	12.20	419.8	0.0	1069.3
65.00		1.00	0.87	19.995	21.99	325.30	0.650	0.000	5.00	18.218	11.84	416.7	0.0	1037.2
70.00		1.00	0.89	20.422	22.46	318.53	0.650	0.000	5.00	17.659	11.48	412.6	0.0	1005.1
75.00		1.00	0.91	20.829	22.91	311.34	0.650	0.000	5.00	17.100	11.12	407.5	0.0	973.0
80.00		1.00	0.93	21.217	23.34	303.79	0.650	0.000	5.00	16.542	10.75	401.5	0.0	941.0
81.00	Top - Section 2	1.00	0.93	21.292	23.42	302.24	0.650	0.000	1.00	3.241	2.11	79.0	0.0	184.3
85.00		1.00	0.94	21.587	23.75	295.91	0.650	0.000	4.00	12.742	8.28	314.7	0.0	604.8
90.00	Appurtenance(s)	1.00	0.96	21.943	24.14	287.73	0.650	0.000	5.00	15.425	10.03	387.2	0.0	731.9
95.00		1.00	0.97	22.284	24.51	279.26	0.650	0.000	5.00	14.866	9.66	379.0	0.0	705.2
100.00	Appurtenance(s)	1.00	0.99	22.613	24.87	270.54	0.650	0.000	5.00	14.308	9.30	370.1	0.0	678.5
105.00		1.00	1.00	22.931	25.22	261.59	0.650	0.000	5.00	13.749	8.94	360.7	0.0	651.7
107.00	Appurtenance(s)	1.00	1.01	23.055	25.36	257.94	0.650	0.000	2.00	5.343	3.47	140.9	0.0	253.2
110.00	Appurtenance(s)	1.00	1.02	23.238	25.56	252.41	0.650	0.000	3.00	7.847	5.10	208.6	0.0	371.8
113.00	Appurtenance(s)	1.00	1.02	23.417	25.76	246.81	0.650	0.000	3.00	7.646	4.97	204.8	0.0	362.2
115.00	Appurtenance(s)	1.00	1.03	23.535	25.89	243.03	0.650	0.000	2.00	4.986	3.24	134.2	0.0	236.1
119.00	Appurtenance(s)	1.00	1.04	23.766	26.14	235.39	0.650	0.000	4.00	9.703	6.31	263.8	0.0	459.4
								Totals:	**119.00**			**9,522.4**		**27,481.1**

Discrete Appurtenance Forces

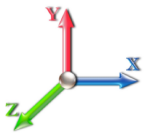
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	119.00	6' Lightning rod	1	23.766	26.142	1.00	1.00	0.38	7.80	0.000	0.000	15.89	0.00	0.00
2	115.00	Ericsson 4449 B71 + B85	3	23.535	25.888	0.54	0.80	3.17	263.52	0.000	0.000	131.21	0.00	0.00
3	115.00	RFS	3	23.535	25.888	0.56	0.80	34.00	460.80	0.000	0.000	1408.45	0.00	0.00
4	115.00	Ericsson AIR6449 B41	3	23.651	26.016	0.57	0.80	9.63	370.80	0.000	2.000	400.75	0.00	801.51
5	115.00	Air32	3	23.651	26.016	0.70	0.80	13.59	475.92	0.000	2.000	565.81	0.00	1131.62
6	115.00	Ericsson 4460 B25 + B66	3	23.535	25.888	0.54	0.80	4.58	392.40	0.000	0.000	189.82	0.00	0.00
7	115.00	KRY 112 144/1	3	23.651	26.016	0.54	0.80	0.66	39.60	0.000	2.000	27.44	0.00	54.89
8	115.00	Low Profile Platform	1	23.535	25.888	1.00	1.00	22.00	1800.00	0.000	0.000	911.26	0.00	0.00
9	113.00	3 ft Standoff	1	23.417	25.759	1.00	1.00	4.50	144.00	0.000	0.000	185.46	0.00	0.00
10	110.00	AAHC	3	23.238	25.561	0.60	0.80	7.56	374.40	0.000	0.000	309.19	0.00	0.00
11	110.00	VHLP2-18	2	23.238	25.561	1.00	1.00	9.36	64.80	2.291	0.000	382.81	548.16	0.00
12	110.00	dual sector mounts	3	23.238	25.561	1.00	1.00	12.00	1260.00	0.000	0.000	490.78	0.00	0.00
13	107.00	Ring Mount	1	23.055	25.360	1.00	1.00	5.00	420.00	0.000	0.000	202.88	0.00	0.00
14	100.00	Platform w/ Hand Rail	1	22.613	24.875	1.00	1.00	43.80	2250.00	0.000	0.000	1743.22	0.00	0.00
15	100.00	DC6-48-60-18-8F	4	22.613	24.875	0.75	0.75	4.41	157.44	0.000	0.000	175.52	0.00	0.00
16	100.00	RRU-32	3	22.613	24.875	0.64	0.75	7.38	277.20	0.000	0.000	293.88	0.00	0.00
17	100.00	RRU-12	6	22.613	24.875	0.53	0.75	8.89	417.60	0.000	0.000	353.80	0.00	0.00
18	100.00	RRU-11	12	22.613	24.875	0.53	0.75	15.99	777.60	0.000	0.000	636.37	0.00	0.00
19	100.00	HPA-65R-BUU-H8	12	22.613	24.875	0.58	0.75	91.00	875.52	0.000	0.000	3621.87	0.00	0.00
20	100.00	IBC700-1	3	22.613	24.875	0.68	0.75	2.68	227.88	0.000	0.000	106.63	0.00	0.00
21	100.00	RRUS-A2	6	22.613	24.875	0.46	0.75	5.12	158.40	0.000	0.000	203.87	0.00	0.00
22	90.00	Andrew LNX-6514DS-A1M	3	21.943	24.137	0.62	0.75	15.26	139.68	0.000	0.000	589.23	0.00	0.00
23	90.00	Samsung VZS01	3	21.943	24.137	0.52	0.75	6.68	313.56	0.000	0.000	257.81	0.00	0.00
24	90.00	Commscope	6	21.943	24.137	0.62	0.75	30.18	314.64	0.000	0.000	1165.48	0.00	0.00
25	90.00	RFS DB-C1-12C-24AB-0Z	1	21.943	24.137	0.66	0.75	2.68	36.00	0.000	0.000	103.48	0.00	0.00
26	90.00	Mod	1	21.943	24.137	1.00	1.00	12.25	616.80	0.000	0.000	473.09	0.00	0.00
27	90.00	Samsung B2-B66A	3	21.943	24.137	0.62	0.75	3.51	303.84	0.000	0.000	135.59	0.00	0.00
28	90.00	Samsung B5-B13	3	21.943	24.137	0.58	0.75	3.30	253.08	0.000	0.000	127.42	0.00	0.00
29	90.00	RFS DB-T1-6Z-8AB-0Z	1	21.943	24.137	0.50	0.75	2.81	24.00	0.000	0.000	108.67	0.00	0.00
30	90.00	Modified Low Profile	1	21.943	24.137	1.00	1.00	25.00	1800.00	0.000	0.000	965.48	0.00	0.00
							Totals:		**15,017.28**			**16,283.20**		

Total Applied Force Summary

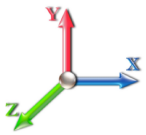
Structure:	CT13555-S-SBA		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		450.83	1764.19	0.00	0.00
10.00		440.60	1726.76	0.00	0.00
15.00		430.36	1689.34	0.00	0.00
20.00		420.13	1651.91	0.00	0.00
25.00		409.89	1614.48	0.00	0.00
30.00		400.00	1577.06	0.00	0.00
35.00		407.30	1539.63	0.00	0.00
40.00		412.02	1502.20	0.00	0.00
45.00		414.62	1464.78	0.00	0.00
47.00		164.66	575.43	0.00	0.00
50.00		251.88	1528.13	0.00	0.00
53.00		251.77	1503.11	0.00	0.00
55.00		167.20	487.91	0.00	0.00
60.00		419.77	1197.32	0.00	0.00
65.00		416.70	1165.24	0.00	0.00
70.00		412.57	1133.16	0.00	0.00
75.00		407.48	1101.08	0.00	0.00
80.00		401.50	1069.00	0.00	0.00
81.00		78.95	209.95	0.00	0.00
85.00		314.68	707.22	0.00	0.00
90.00	(22) attachments	4313.47	4661.57	0.00	0.00
95.00		378.99	820.04	0.00	0.00
100.00	(47) attachments	7505.29	5934.94	0.00	0.00
105.00		360.68	744.37	0.00	0.00
107.00	(1) attachments	343.81	710.26	0.00	0.00
110.00	(8) attachments	1391.39	2126.57	548.16	0.00
113.00	(1) attachments	390.30	549.80	0.00	0.00
115.00	(19) attachments	3768.99	4068.22	0.00	1988.02
119.00	(1) attachments	279.71	496.25	0.00	0.00
	Totals:	**25,805.55**	**45,319.91**	**548.16**	**1,988.02**

Calculated Forces

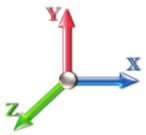
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 18

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.30	-25.84	-0.55	-2270.1	0.00	2270.13	5484.43	2742.22	13159.3	6589.47	0.00	0.000	0.000	0.353
5.00	-43.49	-25.46	-0.55	-2140.9	0.00	2140.92	5405.01	2702.51	12673.3	6346.09	0.05	-0.090	0.000	0.345
10.00	-41.73	-25.08	-0.55	-2013.6	0.00	2013.63	5323.53	2661.77	12191.2	6104.68	0.19	-0.181	0.000	0.338
15.00	-40.00	-24.71	-0.55	-1888.2	0.00	1888.23	5239.98	2619.99	11713.4	5865.43	0.43	-0.272	0.000	0.330
20.00	-38.31	-24.34	-0.55	-1764.7	0.00	1764.70	5154.37	2577.18	11240.2	5628.50	0.77	-0.364	0.000	0.321
25.00	-36.66	-23.98	-0.55	-1643.0	0.00	1643.00	5066.69	2533.35	10772.0	5394.05	1.20	-0.456	0.000	0.312
30.00	-35.05	-23.62	-0.55	-1523.1	0.00	1523.12	4976.95	2488.47	10309.2	5162.27	1.73	-0.549	0.000	0.302
35.00	-33.48	-23.25	-0.55	-1405.0	0.00	1405.02	4885.14	2442.57	9851.98	4933.31	2.35	-0.641	0.000	0.292
40.00	-31.95	-22.87	-0.55	-1288.7	0.00	1288.77	4791.27	2395.63	9400.73	4707.35	3.07	-0.733	0.000	0.281
45.00	-30.46	-22.47	-0.55	-1174.4	0.00	1174.41	4695.33	2347.66	8955.81	4484.56	3.89	-0.825	0.000	0.268
47.00	-29.87	-22.32	-0.55	-1129.4	0.00	1129.47	4656.37	2328.19	8779.69	4396.37	4.24	-0.862	0.000	0.263
50.00	-28.33	-22.07	-0.55	-1062.5	0.00	1062.51	4597.32	2298.66	8517.56	4265.11	4.80	-0.917	0.000	0.255
53.00	-26.81	-21.82	-0.55	-996.29	0.00	996.29	3769.04	1884.52	6995.75	3503.08	5.40	-0.971	0.000	0.292
55.00	-26.30	-21.67	-0.55	-952.65	0.00	952.65	3738.97	1869.49	6858.18	3434.19	5.81	-1.007	0.000	0.285
60.00	-25.08	-21.27	-0.55	-844.29	-0.01	844.29	3662.35	1831.18	6517.42	3263.55	6.92	-1.103	0.000	0.266
65.00	-23.89	-20.87	-0.55	-737.93	-0.01	737.93	3583.67	1791.83	6181.48	3095.34	8.13	-1.195	0.000	0.245
70.00	-22.73	-20.47	-0.55	-633.58	-0.01	633.58	3502.92	1751.46	5850.70	2929.70	9.43	-1.282	-0.001	0.223
75.00	-21.61	-20.06	-0.55	-531.25	-0.01	531.25	3420.10	1710.05	5525.41	2766.81	10.81	-1.364	-0.001	0.198
80.00	-20.54	-19.65	-0.55	-430.94	-0.01	430.94	3335.22	1667.61	5205.95	2606.84	12.28	-1.438	-0.001	0.172
81.00	-20.32	-19.58	-0.55	-411.29	-0.01	411.29	3318.00	1659.00	5142.79	2575.22	12.59	-1.453	-0.001	0.166
81.00	-20.32	-19.58	-0.55	-411.29	-0.01	411.29	2626.87	1313.44	4085.05	2045.56	12.59	-1.453	-0.001	0.209
85.00	-19.60	-19.27	-0.55	-332.97	-0.01	332.97	2576.62	1288.31	3894.21	1950.00	13.83	-1.505	-0.001	0.179
90.00	-15.04	-14.84	-0.55	-236.64	-0.01	236.64	2511.95	1255.98	3659.15	1832.29	15.44	-1.570	-0.001	0.135
95.00	-14.22	-14.45	-0.55	-162.42	-0.01	162.42	2445.22	1222.61	3428.26	1716.68	17.11	-1.620	-0.001	0.101
100.00	-8.50	-6.79	-0.55	-90.16	-0.01	90.16	2376.41	1188.21	3201.88	1603.32	18.83	-1.656	-0.001	0.060
105.00	-7.77	-6.41	-0.55	-56.23	-0.01	56.23	2305.55	1152.77	2980.36	1492.40	20.58	-1.680	-0.001	0.041
107.00	-7.07	-6.04	-0.55	-43.42	-0.02	43.42	2276.62	1138.31	2893.19	1448.75	21.29	-1.687	-0.001	0.033
110.00	-4.98	-4.59	0.00	-25.30	0.00	25.30	2225.68	1112.84	2755.45	1379.77	22.35	-1.695	-0.002	0.021
113.00	-4.44	-4.18	0.00	-11.53	0.00	11.53	2167.31	1083.66	2612.10	1307.99	23.42	-1.699	-0.002	0.011
115.00	-0.49	-0.29	0.00	-1.18	0.00	1.18	2128.40	1064.20	2518.66	1261.20	24.13	-1.701	-0.002	0.001
119.00	0.00	-0.28	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18	25.55	-1.701	-0.002	0.000

Wind Loading - Shaft

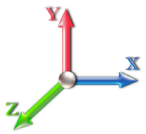
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 18

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	16.018	17.62	403.87	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	16.018	17.62	394.80	0.650	0.000	5.00	24.603	15.99	450.8	0.0	1227.1
10.00		1.00	0.70	16.018	17.62	385.74	0.650	0.000	5.00	24.044	15.63	440.6	0.0	1199.0
15.00		1.00	0.70	16.018	17.62	376.67	0.650	0.000	5.00	23.486	15.27	430.4	0.0	1171.0
20.00		1.00	0.70	16.018	17.62	367.60	0.650	0.000	5.00	22.927	14.90	420.1	0.0	1142.9
25.00		1.00	0.70	16.018	17.62	358.54	0.650	0.000	5.00	22.369	14.54	409.9	0.0	1114.8
30.00		1.00	0.70	16.031	17.63	349.62	0.650	0.000	5.00	21.810	14.18	400.0	0.0	1086.8
35.00		1.00	0.73	16.753	18.43	348.13	0.650	0.000	5.00	21.252	13.81	407.3	0.0	1058.7
40.00		1.00	0.76	17.405	19.15	345.39	0.650	0.000	5.00	20.693	13.45	412.0	0.0	1030.6
45.00		1.00	0.79	18.000	19.80	341.64	0.650	0.000	5.00	20.134	13.09	414.6	0.0	1002.6
47.00	Bot - Section 2	1.00	0.80	18.225	20.05	339.90	0.650	0.000	2.00	7.897	5.13	164.7	0.0	393.2
50.00		1.00	0.81	18.551	20.41	337.06	0.650	0.000	3.00	11.869	7.71	251.9	0.0	1088.5
53.00	Top - Section 1	1.00	0.82	18.862	20.75	333.98	0.650	0.000	3.00	11.668	7.58	251.8	0.0	1069.7
55.00		1.00	0.83	19.063	20.97	337.41	0.650	0.000	2.00	7.667	4.98	167.2	0.0	327.5
60.00		1.00	0.85	19.543	21.50	331.62	0.650	0.000	5.00	18.776	12.20	419.8	0.0	802.0
65.00		1.00	0.87	19.995	21.99	325.30	0.650	0.000	5.00	18.218	11.84	416.7	0.0	777.9
70.00		1.00	0.89	20.422	22.46	318.53	0.650	0.000	5.00	17.659	11.48	412.6	0.0	753.8
75.00		1.00	0.91	20.829	22.91	311.34	0.650	0.000	5.00	17.100	11.12	407.5	0.0	729.8
80.00		1.00	0.93	21.217	23.34	303.79	0.650	0.000	5.00	16.542	10.75	401.5	0.0	705.7
81.00	Top - Section 2	1.00	0.93	21.292	23.42	302.24	0.650	0.000	1.00	3.241	2.11	79.0	0.0	138.3
85.00		1.00	0.94	21.587	23.75	295.91	0.650	0.000	4.00	12.742	8.28	314.7	0.0	453.6
90.00	Appurtenance(s)	1.00	0.96	21.943	24.14	287.73	0.650	0.000	5.00	15.425	10.03	387.2	0.0	548.9
95.00		1.00	0.97	22.284	24.51	279.26	0.650	0.000	5.00	14.866	9.66	379.0	0.0	528.9
100.00	Appurtenance(s)	1.00	0.99	22.613	24.87	270.54	0.650	0.000	5.00	14.308	9.30	370.1	0.0	508.8
105.00		1.00	1.00	22.931	25.22	261.59	0.650	0.000	5.00	13.749	8.94	360.7	0.0	488.8
107.00	Appurtenance(s)	1.00	1.01	23.055	25.36	257.94	0.650	0.000	2.00	5.343	3.47	140.9	0.0	189.9
110.00	Appurtenance(s)	1.00	1.02	23.238	25.56	252.41	0.650	0.000	3.00	7.847	5.10	208.6	0.0	278.8
113.00	Appurtenance(s)	1.00	1.02	23.417	25.76	246.81	0.650	0.000	3.00	7.646	4.97	204.8	0.0	271.6
115.00	Appurtenance(s)	1.00	1.03	23.535	25.89	243.03	0.650	0.000	2.00	4.986	3.24	134.2	0.0	177.1
119.00	Appurtenance(s)	1.00	1.04	23.766	26.14	235.39	0.650	0.000	4.00	9.703	6.31	263.8	0.0	344.5
								Totals:	**119.00**			**9,522.4**		**20,610.9**

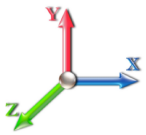
Discrete Appurtenance Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	119.00	6' Lightning rod	1	23.766	26.142	1.00	1.00	0.38	5.85	0.000	0.000	15.89	0.00	0.00
2	115.00	Ericsson 4449 B71 + B85	3	23.535	25.888	0.54	0.80	3.17	197.64	0.000	0.000	131.21	0.00	0.00
3	115.00	RFS	3	23.535	25.888	0.56	0.80	34.00	345.60	0.000	0.000	1408.45	0.00	0.00
4	115.00	Ericsson AIR6449 B41	3	23.651	26.016	0.57	0.80	9.63	278.10	0.000	2.000	400.75	0.00	801.51
5	115.00	Air32	3	23.651	26.016	0.70	0.80	13.59	356.94	0.000	2.000	565.81	0.00	1131.62
6	115.00	Ericsson 4460 B25 + B66	3	23.535	25.888	0.54	0.80	4.58	294.30	0.000	0.000	189.82	0.00	0.00
7	115.00	KRY 112 144/1	3	23.651	26.016	0.54	0.80	0.66	29.70	0.000	2.000	27.44	0.00	54.89
8	115.00	Low Profile Platform	1	23.535	25.888	1.00	1.00	22.00	1350.00	0.000	0.000	911.26	0.00	0.00
9	113.00	3 ft Standoff	1	23.417	25.759	1.00	1.00	4.50	108.00	0.000	0.000	185.46	0.00	0.00
10	110.00	AAHC	3	23.238	25.561	0.60	0.80	7.56	280.80	0.000	0.000	309.19	0.00	0.00
11	110.00	VHLP2-18	2	23.238	25.561	1.00	1.00	9.36	48.60	2.291	0.000	382.81	548.16	0.00
12	110.00	dual sector mounts	3	23.238	25.561	1.00	1.00	12.00	945.00	0.000	0.000	490.78	0.00	0.00
13	107.00	Ring Mount	1	23.055	25.360	1.00	1.00	5.00	315.00	0.000	0.000	202.88	0.00	0.00
14	100.00	Platform w/ Hand Rail	1	22.613	24.875	1.00	1.00	43.80	1687.50	0.000	0.000	1743.22	0.00	0.00
15	100.00	DC6-48-60-18-8F	4	22.613	24.875	0.75	0.75	4.41	118.08	0.000	0.000	175.52	0.00	0.00
16	100.00	RRU-32	3	22.613	24.875	0.64	0.75	7.38	207.90	0.000	0.000	293.88	0.00	0.00
17	100.00	RRU-12	6	22.613	24.875	0.53	0.75	8.89	313.20	0.000	0.000	353.80	0.00	0.00
18	100.00	RRU-11	12	22.613	24.875	0.53	0.75	15.99	583.20	0.000	0.000	636.37	0.00	0.00
19	100.00	HPA-65R-BUU-H8	12	22.613	24.875	0.58	0.75	91.00	656.64	0.000	0.000	3621.87	0.00	0.00
20	100.00	IBC700-1	3	22.613	24.875	0.68	0.75	2.68	170.91	0.000	0.000	106.63	0.00	0.00
21	100.00	RRUS-A2	6	22.613	24.875	0.46	0.75	5.12	118.80	0.000	0.000	203.87	0.00	0.00
22	90.00	Andrew LNX-6514DS-A1M	3	21.943	24.137	0.62	0.75	15.26	104.76	0.000	0.000	589.23	0.00	0.00
23	90.00	Samsung VZS01	3	21.943	24.137	0.52	0.75	6.68	235.17	0.000	0.000	257.81	0.00	0.00
24	90.00	Commscope	6	21.943	24.137	0.62	0.75	30.18	235.98	0.000	0.000	1165.48	0.00	0.00
25	90.00	RFS DB-C1-12C-24AB-0Z	1	21.943	24.137	0.66	0.75	2.68	27.00	0.000	0.000	103.48	0.00	0.00
26	90.00	Mod	1	21.943	24.137	1.00	1.00	12.25	462.60	0.000	0.000	473.09	0.00	0.00
27	90.00	Samsung B2-B66A	3	21.943	24.137	0.62	0.75	3.51	227.88	0.000	0.000	135.59	0.00	0.00
28	90.00	Samsung B5-B13	3	21.943	24.137	0.58	0.75	3.30	189.81	0.000	0.000	127.42	0.00	0.00
29	90.00	RFS DB-T1-6Z-8AB-0Z	1	21.943	24.137	0.50	0.75	2.81	18.00	0.000	0.000	108.67	0.00	0.00
30	90.00	Modified Low Profile	1	21.943	24.137	1.00	1.00	25.00	1350.00	0.000	0.000	965.48	0.00	0.00
							Totals:		**11,262.96**			**16,283.20**		

Total Applied Force Summary

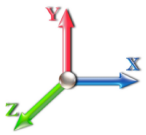
Structure:	CT13555-S-SBA		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		450.83	1323.14	0.00	0.00
10.00		440.60	1295.07	0.00	0.00
15.00		430.36	1267.00	0.00	0.00
20.00		420.13	1238.93	0.00	0.00
25.00		409.89	1210.86	0.00	0.00
30.00		400.00	1182.79	0.00	0.00
35.00		407.30	1154.72	0.00	0.00
40.00		412.02	1126.65	0.00	0.00
45.00		414.62	1098.58	0.00	0.00
47.00		164.66	431.57	0.00	0.00
50.00		251.88	1146.10	0.00	0.00
53.00		251.77	1127.33	0.00	0.00
55.00		167.20	365.93	0.00	0.00
60.00		419.77	897.99	0.00	0.00
65.00		416.70	873.93	0.00	0.00
70.00		412.57	849.87	0.00	0.00
75.00		407.48	825.81	0.00	0.00
80.00		401.50	801.75	0.00	0.00
81.00		78.95	157.46	0.00	0.00
85.00		314.68	530.42	0.00	0.00
90.00	(22) attachments	4313.47	3496.18	0.00	0.00
95.00		378.99	615.03	0.00	0.00
100.00	(47) attachments	7505.29	4451.21	0.00	0.00
105.00		360.68	558.28	0.00	0.00
107.00	(1) attachments	343.81	532.70	0.00	0.00
110.00	(8) attachments	1391.39	1594.93	548.16	0.00
113.00	(1) attachments	390.30	412.35	0.00	0.00
115.00	(19) attachments	3768.99	3051.17	0.00	1988.02
119.00	(1) attachments	279.71	372.19	0.00	0.00
	Totals:	**25,805.55**	**33,989.94**	**548.16**	**1,988.02**

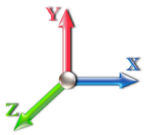
Calculated Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 18

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-33.97	-25.83	-0.55	-2259.3	0.00	2259.39	5484.43	2742.22	13159.3	6589.47	0.00	0.000	0.000	0.349
5.00	-32.61	-25.43	-0.55	-2130.2	0.00	2130.22	5405.01	2702.51	12673.3	6346.09	0.05	-0.089	0.000	0.342
10.00	-31.27	-25.04	-0.55	-2003.0	0.00	2003.07	5323.53	2661.77	12191.2	6104.68	0.19	-0.180	0.000	0.334
15.00	-29.97	-24.65	-0.55	-1877.8	0.00	1877.88	5239.98	2619.99	11713.4	5865.43	0.43	-0.271	0.000	0.326
20.00	-28.69	-24.27	-0.55	-1754.6	0.00	1754.63	5154.37	2577.18	11240.2	5628.50	0.76	-0.362	0.000	0.317
25.00	-27.45	-23.89	-0.55	-1633.2	0.00	1633.28	5066.69	2533.35	10772.0	5394.05	1.19	-0.454	0.000	0.308
30.00	-26.23	-23.53	-0.55	-1513.8	0.00	1513.81	4976.95	2488.47	10309.2	5162.27	1.72	-0.546	0.000	0.299
35.00	-25.04	-23.15	-0.55	-1396.1	0.00	1396.18	4885.14	2442.57	9851.98	4933.31	2.34	-0.638	0.000	0.288
40.00	-23.88	-22.76	-0.55	-1280.4	0.00	1280.45	4791.27	2395.63	9400.73	4707.35	3.06	-0.729	0.000	0.277
45.00	-22.77	-22.36	-0.55	-1166.6	0.00	1166.65	4695.33	2347.66	8955.81	4484.56	3.87	-0.820	0.000	0.265
47.00	-22.32	-22.20	-0.55	-1121.9	0.00	1121.94	4656.37	2328.19	8779.69	4396.37	4.22	-0.857	0.000	0.260
50.00	-21.16	-21.95	-0.55	-1055.3	0.00	1055.33	4597.32	2298.66	8517.56	4265.11	4.78	-0.911	0.000	0.252
53.00	-20.02	-21.70	-0.55	-989.47	0.00	989.47	3769.04	1884.52	6995.75	3503.08	5.37	-0.965	0.000	0.288
55.00	-19.63	-21.55	-0.55	-946.08	0.00	946.08	3738.97	1869.49	6858.18	3434.19	5.78	-1.001	0.000	0.281
60.00	-18.70	-21.14	-0.55	-838.34	-0.01	838.34	3662.35	1831.18	6517.42	3263.55	6.88	-1.096	0.000	0.262
65.00	-17.81	-20.74	-0.55	-732.63	-0.01	732.63	3583.67	1791.83	6181.48	3095.34	8.08	-1.187	0.000	0.242
70.00	-16.94	-20.33	-0.55	-628.95	-0.01	628.95	3502.92	1751.46	5850.70	2929.70	9.37	-1.274	-0.001	0.220
75.00	-16.09	-19.93	-0.55	-527.31	-0.01	527.31	3420.10	1710.05	5525.41	2766.81	10.75	-1.355	-0.001	0.195
80.00	-15.29	-19.52	-0.55	-427.68	-0.01	427.68	3335.22	1667.61	5205.95	2606.84	12.21	-1.429	-0.001	0.169
81.00	-15.12	-19.44	-0.55	-408.17	-0.01	408.17	3318.00	1659.00	5142.79	2575.22	12.51	-1.443	-0.001	0.163
81.00	-15.12	-19.44	-0.55	-408.17	-0.01	408.17	2626.87	1313.44	4085.05	2045.56	12.51	-1.443	-0.001	0.206
85.00	-14.58	-19.13	-0.55	-330.40	-0.01	330.40	2576.62	1288.31	3894.21	1950.00	13.75	-1.495	-0.001	0.175
90.00	-11.18	-14.73	-0.55	-234.76	-0.01	234.76	2511.95	1255.98	3659.15	1832.29	15.35	-1.560	-0.001	0.133
95.00	-10.57	-14.35	-0.55	-161.08	-0.01	161.08	2445.22	1222.61	3428.26	1716.68	17.01	-1.610	-0.001	0.098
100.00	-6.33	-6.72	-0.55	-89.35	-0.01	89.35	2376.41	1188.21	3201.88	1603.32	18.72	-1.645	-0.001	0.058
105.00	-5.78	-6.35	-0.55	-55.75	-0.01	55.75	2305.55	1152.77	2980.36	1492.40	20.46	-1.669	-0.001	0.040
107.00	-5.26	-5.99	-0.55	-43.06	-0.02	43.06	2276.62	1138.31	2893.19	1448.75	21.16	-1.676	-0.001	0.032
110.00	-3.70	-4.55	0.00	-25.10	0.00	25.10	2225.68	1112.84	2755.45	1379.77	22.21	-1.684	-0.002	0.020
113.00	-3.30	-4.15	0.00	-11.45	0.00	11.45	2167.31	1083.66	2612.10	1307.99	23.27	-1.688	-0.002	0.010
115.00	-0.36	-0.29	0.00	-1.16	0.00	1.16	2128.40	1064.20	2518.66	1261.20	23.98	-1.689	-0.002	0.001
119.00	0.00	-0.28	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18	25.39	-1.690	-0.002	0.000

Wind Loading - Shaft

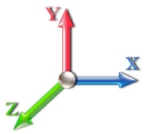
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.656	5.00	25.983	31.18	146.0	613.6	2249.7
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.775	5.00	25.523	30.63	143.4	644.2	2242.9
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	5.00	25.026	30.03	140.6	656.4	2217.7
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.902	5.00	24.512	29.41	137.7	660.5	2184.3
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.945	5.00	23.990	28.79	134.8	659.8	2146.2
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	5.00	23.461	28.15	131.9	656.0	2105.0
35.00		1.00	0.73	4.451	4.90	0.00	1.200	2.012	5.00	22.928	27.51	134.7	649.9	2061.5
40.00		1.00	0.76	4.625	5.09	0.00	1.200	2.039	5.00	22.392	26.87	136.7	642.1	2016.3
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	5.00	21.854	26.22	138.0	633.0	1969.7
47.00	Bot - Section 2	1.00	0.80	4.843	5.33	0.00	1.200	2.072	2.00	8.588	10.31	54.9	251.6	775.8
50.00		1.00	0.81	4.929	5.42	0.00	1.200	2.085	3.00	12.911	15.49	84.0	379.5	1830.8
53.00	Top - Section 1	1.00	0.82	5.012	5.51	0.00	1.200	2.097	3.00	12.716	15.26	84.1	375.6	1801.9
55.00		1.00	0.83	5.065	5.57	0.00	1.200	2.105	2.00	8.368	10.04	55.9	248.6	685.3
60.00		1.00	0.85	5.193	5.71	0.00	1.200	2.123	5.00	20.545	24.65	140.8	609.5	1678.8
65.00		1.00	0.87	5.313	5.84	0.00	1.200	2.140	5.00	20.001	24.00	140.3	596.9	1634.1
70.00		1.00	0.89	5.426	5.97	0.00	1.200	2.156	5.00	19.456	23.35	139.4	583.7	1588.9
75.00		1.00	0.91	5.534	6.09	0.00	1.200	2.171	5.00	18.910	22.69	138.1	570.0	1543.1
80.00		1.00	0.93	5.637	6.20	0.00	1.200	2.185	5.00	18.363	22.04	136.6	555.8	1496.8
81.00	Top - Section 2	1.00	0.93	5.657	6.22	0.00	1.200	2.188	1.00	3.606	4.33	26.9	110.6	294.9
85.00		1.00	0.94	5.736	6.31	0.00	1.200	2.198	4.00	14.208	17.05	107.6	433.0	1037.7
90.00	Appurtenance(s)	1.00	0.96	5.830	6.41	0.00	1.200	2.211	5.00	17.267	20.72	132.9	526.2	1258.1
95.00		1.00	0.97	5.921	6.51	0.00	1.200	2.223	5.00	16.719	20.06	130.7	510.8	1216.0
100.00	Appurtenance(s)	1.00	0.99	6.008	6.61	0.00	1.200	2.234	5.00	16.170	19.40	128.2	495.1	1173.6
105.00		1.00	1.00	6.093	6.70	0.00	1.200	2.245	5.00	15.620	18.74	125.6	479.1	1130.8
107.00	Appurtenance(s)	1.00	1.01	6.126	6.74	0.00	1.200	2.250	2.00	6.093	7.31	49.3	189.0	442.3
110.00	Appurtenance(s)	1.00	1.02	6.174	6.79	0.00	1.200	2.256	3.00	8.975	10.77	73.1	277.7	649.5
113.00	Appurtenance(s)	1.00	1.02	6.222	6.84	0.00	1.200	2.262	3.00	8.777	10.53	72.1	271.7	633.9
115.00	Appurtenance(s)	1.00	1.03	6.253	6.88	0.00	1.200	2.266	2.00	5.741	6.89	47.4	178.5	414.6
119.00	Appurtenance(s)	1.00	1.04	6.315	6.95	0.00	1.200	2.274	4.00	11.219	13.46	93.5	346.3	805.6
								Totals:	**119.00**			**3,205.3**		**41,285.7**

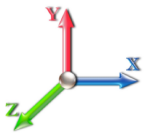
Discrete Appurtenance Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 17

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	119.00	6' Lightning rod	1	6.315	6.946	1.00	1.00	1.80	49.79	0.000	0.000	12.48	0.00	0.00
2	115.00	Ericsson 4449 B71 + B85	3	6.253	6.879	0.54	0.80	4.36	313.24	0.000	0.000	29.97	0.00	0.00
3	115.00	RFS	3	6.253	6.879	0.56	0.80	38.19	2150.97	0.000	0.000	262.72	0.00	0.00
4	115.00	Ericsson AIR6449 B41	3	6.284	6.913	0.06	0.80	1.17	809.79	0.000	2.000	8.11	0.00	16.22
5	115.00	Air32	3	6.284	6.913	0.70	0.80	16.82	1233.83	0.000	2.000	116.25	0.00	232.51
6	115.00	Ericsson 4460 B25 + B66	3	6.253	6.879	0.54	0.80	5.99	621.48	0.000	0.000	41.21	0.00	0.00
7	115.00	KRY 112 144/1	3	6.284	6.913	0.54	0.80	1.65	72.29	0.000	2.000	11.41	0.00	22.83
8	115.00	Low Profile Platform	1	6.253	6.879	1.00	1.00	44.93	3199.45	0.000	0.000	309.06	0.00	0.00
9	113.00	3 ft Standoff	1	6.222	6.844	1.00	1.00	8.57	372.57	0.000	0.000	58.66	0.00	0.00
10	110.00	AAHC	3	6.174	6.792	0.60	0.80	9.53	903.96	0.000	0.000	64.73	0.00	0.00
11	110.00	VHLP2-18	2	6.174	6.792	1.00	1.00	12.65	261.79	2.291	0.000	85.94	196.91	0.00
12	110.00	dual sector mounts	3	6.174	6.792	1.00	1.00	22.83	2096.97	0.000	0.000	155.04	0.00	0.00
13	107.00	Ring Mount	1	6.126	6.738	1.00	1.00	9.50	420.00	0.000	0.000	64.01	0.00	0.00
14	100.00	Platform w/ Hand Rail	1	6.008	6.609	1.00	1.00	92.74	5075.63	0.000	0.000	612.91	0.00	0.00
15	100.00	DC6-48-60-18-8F	4	6.008	6.609	0.75	0.75	7.10	391.71	0.000	0.000	46.91	0.00	0.00
16	100.00	RRU-32	3	6.008	6.609	0.64	0.75	8.36	739.30	0.000	0.000	55.24	0.00	0.00
17	100.00	RRU-12	6	6.008	6.609	0.53	0.75	11.86	1131.21	0.000	0.000	78.36	0.00	0.00
18	100.00	RRU-11	12	6.008	6.609	0.54	0.75	21.72	2236.37	0.000	0.000	143.53	0.00	0.00
19	100.00	HPA-65R-BUU-H8	12	6.008	6.609	0.59	0.75	106.16	5555.64	0.000	0.000	701.61	0.00	0.00
20	100.00	IBC700-1	3	6.008	6.609	0.68	0.75	5.05	364.11	0.000	0.000	33.38	0.00	0.00
21	100.00	RRUS-A2	6	6.008	6.609	0.47	0.75	8.75	384.41	0.000	0.000	57.84	0.00	0.00
22	90.00	Andrew LNX-6514DS-A1M	3	5.830	6.413	0.62	0.75	21.94	658.27	0.000	0.000	140.69	0.00	0.00
23	90.00	Samsung VZS01	3	5.830	6.413	0.52	0.75	8.44	760.23	0.000	0.000	54.14	0.00	0.00
24	90.00	Commscope	6	5.830	6.413	0.62	0.75	36.41	1926.42	0.000	0.000	233.48	0.00	0.00
25	90.00	RFS DB-C1-12C-24AB-0Z	1	5.830	6.413	0.66	0.75	3.39	228.76	0.000	0.000	21.76	0.00	0.00
26	90.00	Mod	1	5.830	6.413	1.00	1.00	27.42	1903.61	0.000	0.000	175.84	0.00	0.00
27	90.00	Samsung B2-B66A	3	5.830	6.413	0.62	0.75	4.82	393.07	0.000	0.000	30.88	0.00	0.00
28	90.00	Samsung B5-B13	3	5.830	6.413	0.58	0.75	4.52	403.13	0.000	0.000	29.02	0.00	0.00
29	90.00	RFS DB-T1-6Z-8AB-0Z	1	5.830	6.413	0.50	0.75	3.87	136.75	0.000	0.000	24.83	0.00	0.00
30	90.00	Modified Low Profile	1	5.830	6.413	1.00	1.00	50.43	3158.30	0.000	0.000	323.41	0.00	0.00
							Totals:		**37,953.06**			**3,983.45**		

Total Applied Force Summary

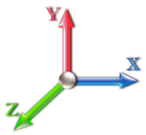
Structure:	CT13555-S-SBA		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 17

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		145.97	2377.74	0.00	0.00
10.00		143.39	2370.97	0.00	0.00
15.00		140.59	2345.75	0.00	0.00
20.00		137.71	2312.37	0.00	0.00
25.00		134.77	2274.27	0.00	0.00
30.00		131.91	2233.03	0.00	0.00
35.00		134.72	2189.54	0.00	0.00
40.00		136.69	2144.32	0.00	0.00
45.00		137.97	2097.74	0.00	0.00
47.00		54.90	827.02	0.00	0.00
50.00		84.00	1907.63	0.00	0.00
53.00		84.12	1878.67	0.00	0.00
55.00		55.95	736.47	0.00	0.00
60.00		140.82	1806.83	0.00	0.00
65.00		140.26	1762.16	0.00	0.00
70.00		139.36	1716.90	0.00	0.00
75.00		138.14	1671.09	0.00	0.00
80.00		136.64	1624.82	0.00	0.00
81.00		26.93	320.54	0.00	0.00
85.00		107.57	1140.18	0.00	0.00
90.00	(22) attachments	1166.94	10954.68	0.00	0.00
95.00		130.67	1330.84	0.00	0.00
100.00	(47) attachments	1858.04	17166.78	0.00	0.00
105.00		125.63	1223.46	0.00	0.00
107.00	(1) attachments	113.28	899.31	0.00	0.00
110.00	(8) attachments	378.87	3967.78	196.91	0.00
113.00	(1) attachments	130.75	1050.12	0.00	0.00
115.00	(19) attachments	826.12	8844.76	0.00	271.55
119.00	(1) attachments	106.00	884.53	0.00	0.00
	Totals:	**7,188.71**	**82,060.28**	**196.91**	**271.55**

Calculated Forces

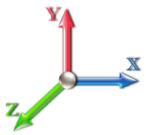
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 17

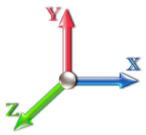
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-82.06	-7.21	-0.20	-621.94	0.00	621.94	5484.43	2742.22	13159.3	6589.47	0.00	0.000	0.000	0.109
5.00	-79.68	-7.09	-0.20	-585.90	0.00	585.90	5405.01	2702.51	12673.3	6346.09	0.01	-0.025	0.000	0.107
10.00	-77.30	-6.98	-0.20	-550.43	0.00	550.43	5323.53	2661.77	12191.2	6104.68	0.05	-0.049	0.000	0.105
15.00	-74.96	-6.87	-0.20	-515.52	0.00	515.52	5239.98	2619.99	11713.4	5865.43	0.12	-0.074	0.000	0.102
20.00	-72.64	-6.76	-0.20	-481.16	0.00	481.16	5154.37	2577.18	11240.2	5628.50	0.21	-0.099	0.000	0.100
25.00	-70.36	-6.65	-0.20	-447.34	0.00	447.34	5066.69	2533.35	10772.0	5394.05	0.33	-0.125	0.000	0.097
30.00	-68.13	-6.55	-0.20	-414.07	0.00	414.07	4976.95	2488.47	10309.2	5162.27	0.47	-0.150	0.000	0.094
35.00	-65.94	-6.44	-0.20	-381.33	0.00	381.33	4885.14	2442.57	9851.98	4933.31	0.64	-0.175	0.000	0.091
40.00	-63.79	-6.32	-0.20	-349.16	0.00	349.16	4791.27	2395.63	9400.73	4707.35	0.84	-0.200	0.000	0.087
45.00	-61.69	-6.19	-0.20	-317.56	0.00	317.56	4695.33	2347.66	8955.81	4484.56	1.06	-0.225	0.000	0.084
47.00	-60.86	-6.15	-0.20	-305.18	0.00	305.18	4656.37	2328.19	8779.69	4396.37	1.16	-0.235	0.000	0.082
50.00	-58.95	-6.07	-0.20	-286.74	0.00	286.74	4597.32	2298.66	8517.56	4265.11	1.31	-0.249	0.000	0.080
53.00	-57.07	-5.99	-0.20	-268.53	0.00	268.53	3769.04	1884.52	6995.75	3503.08	1.47	-0.264	0.000	0.092
55.00	-56.34	-5.95	-0.20	-256.55	0.00	256.55	3738.97	1869.49	6858.18	3434.19	1.59	-0.274	0.000	0.090
60.00	-54.53	-5.82	-0.20	-226.81	0.00	226.81	3662.35	1831.18	6517.42	3263.55	1.89	-0.300	0.000	0.084
65.00	-52.76	-5.69	-0.20	-197.70	0.00	197.70	3583.67	1791.83	6181.48	3095.34	2.21	-0.324	0.000	0.079
70.00	-51.04	-5.57	-0.20	-169.22	0.00	169.22	3502.92	1751.46	5850.70	2929.70	2.57	-0.348	0.000	0.072
75.00	-49.37	-5.43	-0.20	-141.40	0.00	141.40	3420.10	1710.05	5525.41	2766.81	2.94	-0.369	0.000	0.066
80.00	-47.75	-5.30	-0.20	-114.23	0.00	114.23	3335.22	1667.61	5205.95	2606.84	3.34	-0.389	0.000	0.058
81.00	-47.43	-5.28	-0.20	-108.93	0.00	108.93	3318.00	1659.00	5142.79	2575.22	3.42	-0.393	0.000	0.057
81.00	-47.43	-5.28	-0.20	-108.93	0.00	108.93	2626.87	1313.44	4085.05	2045.56	3.42	-0.393	0.000	0.071
85.00	-46.29	-5.17	-0.20	-87.83	0.00	87.83	2576.62	1288.31	3894.21	1950.00	3.76	-0.407	0.000	0.063
90.00	-35.34	-3.94	-0.20	-61.97	0.00	61.97	2511.95	1255.98	3659.15	1832.29	4.19	-0.424	0.000	0.048
95.00	-34.01	-3.80	-0.20	-42.29	0.00	42.29	2445.22	1222.61	3428.26	1716.68	4.65	-0.437	0.000	0.039
100.00	-16.86	-1.81	-0.20	-23.29	0.00	23.29	2376.41	1188.21	3201.88	1603.32	5.11	-0.446	0.000	0.022
105.00	-15.63	-1.68	-0.20	-14.22	0.00	14.22	2305.55	1152.77	2980.36	1492.40	5.58	-0.452	-0.001	0.016
107.00	-14.74	-1.56	-0.20	-10.87	0.00	10.87	2276.62	1138.31	2893.19	1448.75	5.77	-0.454	-0.001	0.014
110.00	-10.77	-1.15	0.00	-6.19	0.00	6.19	2225.68	1112.84	2755.45	1379.77	6.06	-0.456	-0.001	0.009
113.00	-9.72	-1.01	0.00	-2.74	0.00	2.74	2167.31	1083.66	2612.10	1307.99	6.34	-0.457	-0.001	0.007
115.00	-0.88	-0.11	0.00	-0.45	0.00	0.45	2128.40	1064.20	2518.66	1261.20	6.54	-0.458	-0.001	0.001
119.00	0.00	-0.11	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18	6.92	-0.458	-0.001	0.000

Seismic Segment Forces (Factored)

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	16
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.55	**SA**	0.06	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1363.4	0.00	0.04	0.02	20.96	
10.00		1332.2	0.01	0.06	0.03	29.76	
15.00		1301.0	0.03	0.07	0.04	33.34	
20.00		1269.8	0.05	0.07	0.04	34.76	
25.00		1238.7	0.08	0.07	0.04	35.46	
30.00		1207.5	0.12	0.07	0.03	35.96	
35.00		1176.3	0.16	0.07	0.03	36.17	
40.00		1145.1	0.21	0.06	0.02	35.63	
45.00		1113.9	0.27	0.05	0.01	33.65	
47.00	Bot - Section 2	436.85	0.29	0.05	0.01	12.80	
50.00		1209.4	0.33	0.04	0.01	32.96	
53.00	Top - Section 1	1188.5	0.37	0.03	0.01	28.79	
55.00		363.91	0.40	0.02	0.01	7.87	
60.00		891.06	0.48	-0.01	0.01	11.86	
65.00		864.33	0.56	-0.04	0.01	2.76	
70.00		837.60	0.65	-0.07	0.02	-5.62	
75.00		810.86	0.75	-0.10	0.04	-11.16	
80.00		784.13	0.85	-0.12	0.07	-12.19	
81.00	Top - Section 2	153.62	0.88	-0.12	0.08	-2.32	
85.00		503.99	0.96	-0.12	0.11	-5.21	
90.00	Appurtenance(s)	3777.9	1.08	-0.08	0.18	10.33	
95.00		587.66	1.20	0.01	0.26	14.17	
100.00	Appurtenance(s)	4850.0	1.33	0.17	0.37	261.94	
105.00		543.11	1.47	0.43	0.51	50.25	
107.00	Appurtenance(s)	561.01	1.53	0.57	0.58	61.92	
110.00	Appurtenance(s)	1725.8	1.61	0.83	0.69	241.25	
113.00	Appurtenance(s)	421.80	1.70	1.14	0.82	72.73	
115.00	Appurtenance(s)	3365.9	1.77	1.38	0.92	659.63	
119.00	Appurtenance(s)	389.30	1.89	1.98	1.14	96.33	
	Totals:	**35,415.4**				**1,824.8**	**Total Wind:** **25,805.5**

Calculated Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	16
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.55	**SA**	0.06	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.32	-1.86	0.00	-178.81	0.00	178.81	5484.43	2742.22	13159.3	6589.47		0.00	0.00	0.035
5.00	-43.56	-1.85	0.00	-169.49	0.00	169.49	5405.01	2702.51	12673.3	6346.09		0.00	-0.01	0.035
10.00	-41.83	-1.82	0.00	-160.25	0.00	160.25	5323.53	2661.77	12191.2	6104.68		0.02	-0.01	0.034
15.00	-40.14	-1.79	0.00	-151.14	0.00	151.14	5239.98	2619.99	11713.4	5865.43		0.03	-0.02	0.033
20.00	-38.49	-1.76	0.00	-142.17	0.00	142.17	5154.37	2577.18	11240.2	5628.50		0.06	-0.03	0.033
25.00	-36.87	-1.73	0.00	-133.35	0.00	133.35	5066.69	2533.35	10772.0	5394.05		0.10	-0.04	0.032
30.00	-35.29	-1.70	0.00	-124.69	0.00	124.69	4976.95	2488.47	10309.2	5162.27		0.14	-0.04	0.031
35.00	-33.75	-1.67	0.00	-116.19	0.00	116.19	4885.14	2442.57	9851.98	4933.31		0.19	-0.05	0.030
40.00	-32.25	-1.63	0.00	-107.85	0.00	107.85	4791.27	2395.63	9400.73	4707.35		0.25	-0.06	0.030
45.00	-30.79	-1.60	0.00	-99.68	0.00	99.68	4695.33	2347.66	8955.81	4484.56		0.31	-0.07	0.029
47.00	-30.21	-1.59	0.00	-96.48	0.00	96.48	4656.37	2328.19	8779.69	4396.37		0.34	-0.07	0.028
50.00	-28.68	-1.56	0.00	-91.71	0.00	91.71	4597.32	2298.66	8517.56	4265.11		0.39	-0.07	0.028
53.00	-27.18	-1.53	0.00	-87.04	0.00	87.04	3769.04	1884.52	6995.75	3503.08		0.43	-0.08	0.032
55.00	-26.69	-1.52	0.00	-83.98	0.00	83.98	3738.97	1869.49	6858.18	3434.19		0.47	-0.08	0.032
60.00	-25.50	-1.51	0.00	-76.36	0.00	76.36	3662.35	1831.18	6517.42	3263.55		0.56	-0.09	0.030
65.00	-24.33	-1.51	0.00	-68.80	0.00	68.80	3583.67	1791.83	6181.48	3095.34		0.66	-0.10	0.029
70.00	-23.20	-1.51	0.00	-61.24	0.00	61.24	3502.92	1751.46	5850.70	2929.70		0.77	-0.11	0.028
75.00	-22.10	-1.51	0.00	-53.67	0.00	53.67	3420.10	1710.05	5525.41	2766.81		0.89	-0.12	0.026
80.00	-21.03	-1.51	0.00	-46.10	0.00	46.10	3335.22	1667.61	5205.95	2606.84		1.01	-0.12	0.024
81.00	-20.82	-1.51	0.00	-44.58	0.00	44.58	3318.00	1659.00	5142.79	2575.22		1.04	-0.13	0.024
81.00	-20.82	-1.51	0.00	-44.58	0.00	44.58	2626.87	1313.44	4085.05	2045.56		1.04	-0.13	0.030
85.00	-20.11	-1.52	0.00	-38.52	0.00	38.52	2576.62	1288.31	3894.21	1950.00		1.15	-0.13	0.028
90.00	-15.45	-1.50	0.00	-30.95	0.00	30.95	2511.95	1255.98	3659.15	1832.29		1.29	-0.14	0.023
95.00	-14.63	-1.48	0.00	-23.47	0.00	23.47	2445.22	1222.61	3428.26	1716.68		1.44	-0.15	0.020
100.00	-8.69	-1.21	0.00	-16.06	0.00	16.06	2376.41	1188.21	3201.88	1603.32		1.59	-0.15	0.014
105.00	-7.95	-1.15	0.00	-10.03	0.00	10.03	2305.55	1152.77	2980.36	1492.40		1.75	-0.16	0.010
107.00	-7.24	-1.09	0.00	-7.72	0.00	7.72	2276.62	1138.31	2893.19	1448.75		1.82	-0.16	0.009
110.00	-5.11	-0.84	0.00	-4.46	0.00	4.46	2225.68	1112.84	2755.45	1379.77		1.92	-0.16	0.006
113.00	-4.56	-0.77	0.00	-1.93	0.00	1.93	2167.31	1083.66	2612.10	1307.99		2.02	-0.16	0.004
115.00	-0.50	-0.10	0.00	-0.39	0.00	0.39	2128.40	1064.20	2518.66	1261.20		2.09	-0.16	0.001
119.00	0.00	-0.10	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18		2.22	-0.16	0.000

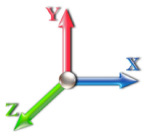
Seismic Segment Forces (Factored)

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	16
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.55	**SA**	0.06	**S1**	0.06
						Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1363.4	0.00	0.04	0.02	20.96	
10.00		1332.2	0.01	0.06	0.03	29.76	
15.00		1301.0	0.03	0.07	0.04	33.34	
20.00		1269.8	0.05	0.07	0.04	34.76	
25.00		1238.7	0.08	0.07	0.04	35.46	
30.00		1207.5	0.12	0.07	0.03	35.96	
35.00		1176.3	0.16	0.07	0.03	36.17	
40.00		1145.1	0.21	0.06	0.02	35.63	
45.00		1113.9	0.27	0.05	0.01	33.65	
47.00	Bot - Section 2	436.85	0.29	0.05	0.01	12.80	
50.00		1209.4	0.33	0.04	0.01	32.96	
53.00	Top - Section 1	1188.5	0.37	0.03	0.01	28.79	
55.00		363.91	0.40	0.02	0.01	7.87	
60.00		891.06	0.48	-0.01	0.01	11.86	
65.00		864.33	0.56	-0.04	0.01	2.76	
70.00		837.60	0.65	-0.07	0.02	-5.62	
75.00		810.86	0.75	-0.10	0.04	-11.16	
80.00		784.13	0.85	-0.12	0.07	-12.19	
81.00	Top - Section 2	153.62	0.88	-0.12	0.08	-2.32	
85.00		503.99	0.96	-0.12	0.11	-5.21	
90.00	Appurtenance(s)	3777.9	1.08	-0.08	0.18	10.33	
95.00		587.66	1.20	0.01	0.26	14.17	
100.00	Appurtenance(s)	4850.0	1.33	0.17	0.37	261.94	
105.00		543.11	1.47	0.43	0.51	50.25	
107.00	Appurtenance(s)	561.01	1.53	0.57	0.58	61.92	
110.00	Appurtenance(s)	1725.8	1.61	0.83	0.69	241.25	
113.00	Appurtenance(s)	421.80	1.70	1.14	0.82	72.73	
115.00	Appurtenance(s)	3365.9	1.77	1.38	0.92	659.63	
119.00	Appurtenance(s)	389.30	1.89	1.98	1.14	96.33	
	Totals:	**35,415.4**				**1,824.8**	**Total Wind:** **25,805.5**

Calculated Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	16
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.55	**SA**	0.06			**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-33.99	-1.86	0.00	-177.91	0.00	177.91	5484.43	2742.22	13159.3	6589.47		0.00	0.00	0.033
5.00	-32.67	-1.85	0.00	-168.59	0.00	168.59	5405.01	2702.51	12673.3	6346.09		0.00	-0.01	0.033
10.00	-31.37	-1.82	0.00	-159.36	0.00	159.36	5323.53	2661.77	12191.2	6104.68		0.02	-0.01	0.032
15.00	-30.10	-1.79	0.00	-150.27	0.00	150.27	5239.98	2619.99	11713.4	5865.43		0.03	-0.02	0.031
20.00	-28.86	-1.76	0.00	-141.32	0.00	141.32	5154.37	2577.18	11240.2	5628.50		0.06	-0.03	0.031
25.00	-27.65	-1.73	0.00	-132.53	0.00	132.53	5066.69	2533.35	10772.0	5394.05		0.09	-0.04	0.030
30.00	-26.47	-1.69	0.00	-123.90	0.00	123.90	4976.95	2488.47	10309.2	5162.27		0.14	-0.04	0.029
35.00	-25.32	-1.66	0.00	-115.44	0.00	115.44	4885.14	2442.57	9851.98	4933.31		0.19	-0.05	0.029
40.00	-24.19	-1.63	0.00	-107.14	0.00	107.14	4791.27	2395.63	9400.73	4707.35		0.24	-0.06	0.028
45.00	-23.09	-1.59	0.00	-99.02	0.00	99.02	4695.33	2347.66	8955.81	4484.56		0.31	-0.07	0.027
47.00	-22.66	-1.58	0.00	-95.83	0.00	95.83	4656.37	2328.19	8779.69	4396.37		0.34	-0.07	0.027
50.00	-21.51	-1.55	0.00	-91.09	0.00	91.09	4597.32	2298.66	8517.56	4265.11		0.38	-0.07	0.026
53.00	-20.39	-1.52	0.00	-86.45	0.00	86.45	3769.04	1884.52	6995.75	3503.08		0.43	-0.08	0.030
55.00	-20.02	-1.51	0.00	-83.41	0.00	83.41	3738.97	1869.49	6858.18	3434.19		0.47	-0.08	0.030
60.00	-19.12	-1.50	0.00	-75.84	0.00	75.84	3662.35	1831.18	6517.42	3263.55		0.56	-0.09	0.028
65.00	-18.25	-1.50	0.00	-68.33	0.00	68.33	3583.67	1791.83	6181.48	3095.34		0.66	-0.10	0.027
70.00	-17.40	-1.50	0.00	-60.83	0.00	60.83	3502.92	1751.46	5850.70	2929.70		0.76	-0.11	0.026
75.00	-16.57	-1.50	0.00	-53.32	0.00	53.32	3420.10	1710.05	5525.41	2766.81		0.88	-0.12	0.024
80.00	-15.77	-1.50	0.00	-45.81	0.00	45.81	3335.22	1667.61	5205.95	2606.84		1.01	-0.12	0.022
81.00	-15.61	-1.50	0.00	-44.30	0.00	44.30	3318.00	1659.00	5142.79	2575.22		1.03	-0.12	0.022
81.00	-15.61	-1.50	0.00	-44.30	0.00	44.30	2626.87	1313.44	4085.05	2045.56		1.03	-0.12	0.028
85.00	-15.08	-1.50	0.00	-38.29	0.00	38.29	2576.62	1288.31	3894.21	1950.00		1.14	-0.13	0.025
90.00	-11.58	-1.49	0.00	-30.77	0.00	30.77	2511.95	1255.98	3659.15	1832.29		1.28	-0.14	0.021
95.00	-10.97	-1.47	0.00	-23.34	0.00	23.34	2445.22	1222.61	3428.26	1716.68		1.43	-0.15	0.018
100.00	-6.52	-1.20	0.00	-15.98	0.00	15.98	2376.41	1188.21	3201.88	1603.32		1.58	-0.15	0.013
105.00	-5.96	-1.15	0.00	-9.99	0.00	9.99	2305.55	1152.77	2980.36	1492.40		1.74	-0.15	0.009
107.00	-5.43	-1.08	0.00	-7.69	0.00	7.69	2276.62	1138.31	2893.19	1448.75		1.81	-0.16	0.008
110.00	-3.83	-0.84	0.00	-4.44	0.00	4.44	2225.68	1112.84	2755.45	1379.77		1.91	-0.16	0.005
113.00	-3.42	-0.77	0.00	-1.92	0.00	1.92	2167.31	1083.66	2612.10	1307.99		2.01	-0.16	0.003
115.00	-0.37	-0.10	0.00	-0.39	0.00	0.39	2128.40	1064.20	2518.66	1261.20		2.07	-0.16	0.000
119.00	0.00	-0.10	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18		2.21	-0.16	0.000

Wind Loading - Shaft

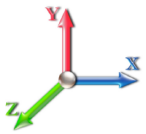
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	249.82	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	244.21	0.650	0.000	5.00	24.603	15.99	107.8	0.0	1363.5
10.00		1.00	0.70	6.129	6.74	238.60	0.650	0.000	5.00	24.044	15.63	105.4	0.0	1332.3
15.00		1.00	0.70	6.129	6.74	232.99	0.650	0.000	5.00	23.486	15.27	102.9	0.0	1301.1
20.00		1.00	0.70	6.129	6.74	227.38	0.650	0.000	5.00	22.927	14.90	100.5	0.0	1269.9
25.00		1.00	0.70	6.129	6.74	221.78	0.650	0.000	5.00	22.369	14.54	98.0	0.0	1238.7
30.00		1.00	0.70	6.134	6.75	216.26	0.650	0.000	5.00	21.810	14.18	95.7	0.0	1207.5
35.00		1.00	0.73	6.410	7.05	215.34	0.650	0.000	5.00	21.252	13.81	97.4	0.0	1176.3
40.00		1.00	0.76	6.659	7.33	213.64	0.650	0.000	5.00	20.693	13.45	98.5	0.0	1145.1
45.00		1.00	0.79	6.887	7.58	211.32	0.650	0.000	5.00	20.134	13.09	99.1	0.0	1113.9
47.00	Bot - Section 2	1.00	0.80	6.973	7.67	210.25	0.650	0.000	2.00	7.897	5.13	39.4	0.0	436.8
50.00		1.00	0.81	7.098	7.81	208.49	0.650	0.000	3.00	11.869	7.71	60.2	0.0	1209.4
53.00	Top - Section 1	1.00	0.82	7.217	7.94	206.58	0.650	0.000	3.00	11.668	7.58	60.2	0.0	1188.6
55.00		1.00	0.83	7.294	8.02	208.71	0.650	0.000	2.00	7.667	4.98	40.0	0.0	363.9
60.00		1.00	0.85	7.477	8.22	205.12	0.650	0.000	5.00	18.776	12.20	100.4	0.0	891.1
65.00		1.00	0.87	7.650	8.42	201.22	0.650	0.000	5.00	18.218	11.84	99.6	0.0	864.3
70.00		1.00	0.89	7.814	8.60	197.03	0.650	0.000	5.00	17.659	11.48	98.7	0.0	837.6
75.00		1.00	0.91	7.969	8.77	192.58	0.650	0.000	5.00	17.100	11.12	97.4	0.0	810.9
80.00		1.00	0.93	8.118	8.93	187.91	0.650	0.000	5.00	16.542	10.75	96.0	0.0	784.1
81.00	Top - Section 2	1.00	0.93	8.147	8.96	186.95	0.650	0.000	1.00	3.241	2.11	18.9	0.0	153.6
85.00		1.00	0.94	8.260	9.09	183.04	0.650	0.000	4.00	12.742	8.28	75.2	0.0	504.0
90.00	Appurtenance(s)	1.00	0.96	8.396	9.24	177.97	0.650	0.000	5.00	15.425	10.03	92.6	0.0	609.9
95.00		1.00	0.97	8.526	9.38	172.74	0.650	0.000	5.00	14.866	9.66	90.6	0.0	587.7
100.00	Appurtenance(s)	1.00	0.99	8.652	9.52	167.35	0.650	0.000	5.00	14.308	9.30	88.5	0.0	565.4
105.00		1.00	1.00	8.774	9.65	161.81	0.650	0.000	5.00	13.749	8.94	86.3	0.0	543.1
107.00	Appurtenance(s)	1.00	1.01	8.821	9.70	159.55	0.650	0.000	2.00	5.343	3.47	33.7	0.0	211.0
110.00	Appurtenance(s)	1.00	1.02	8.891	9.78	156.13	0.650	0.000	3.00	7.847	5.10	49.9	0.0	309.8
113.00	Appurtenance(s)	1.00	1.02	8.960	9.86	152.67	0.650	0.000	3.00	7.646	4.97	49.0	0.0	301.8
115.00	Appurtenance(s)	1.00	1.03	9.005	9.91	150.33	0.650	0.000	2.00	4.986	3.24	32.1	0.0	196.7
119.00	Appurtenance(s)	1.00	1.04	9.093	10.00	145.60	0.650	0.000	4.00	9.703	6.31	63.1	0.0	382.8
								Totals:	**119.00**			**2,277.1**		**22,901.0**

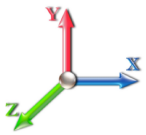
Discrete Appurtenance Forces

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 17

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	119.00	6' Lightning rod	1	9.093	10.002	1.00	1.00	0.38	6.50	0.000	0.000	3.80	0.00	0.00
2	115.00	Ericsson 4449 B71 + B85	3	9.005	9.905	0.54	0.80	3.17	219.60	0.000	0.000	31.38	0.00	0.00
3	115.00	RFS	3	9.005	9.905	0.56	0.80	34.00	384.00	0.000	0.000	336.81	0.00	0.00
4	115.00	Ericsson AIR6449 B41	3	9.049	9.954	0.57	0.80	9.63	309.00	0.000	2.000	95.83	0.00	191.67
5	115.00	Air32	3	9.049	9.954	0.70	0.80	13.59	396.60	0.000	2.000	135.30	0.00	270.61
6	115.00	Ericsson 4460 B25 + B66	3	9.005	9.905	0.54	0.80	4.58	327.00	0.000	0.000	45.39	0.00	0.00
7	115.00	KRY 112 144/1	3	9.049	9.954	0.54	0.80	0.66	33.00	0.000	2.000	6.56	0.00	13.12
8	115.00	Low Profile Platform	1	9.005	9.905	1.00	1.00	22.00	1500.00	0.000	0.000	217.91	0.00	0.00
9	113.00	3 ft Standoff	1	8.960	9.856	1.00	1.00	4.50	120.00	0.000	0.000	44.35	0.00	0.00
10	110.00	AAHC	3	8.891	9.780	0.60	0.80	7.56	312.00	0.000	0.000	73.94	0.00	0.00
11	110.00	VHLP2-18	2	8.891	9.780	1.00	1.00	9.36	54.00	2.291	0.000	91.54	209.73	0.00
12	110.00	dual sector mounts	3	8.891	9.780	1.00	1.00	12.00	1050.00	0.000	0.000	117.36	0.00	0.00
13	107.00	Ring Mount	1	8.821	9.703	1.00	1.00	5.00	350.00	0.000	0.000	48.52	0.00	0.00
14	100.00	Platform w/ Hand Rail	1	8.652	9.517	1.00	1.00	43.80	1875.00	0.000	0.000	416.86	0.00	0.00
15	100.00	DC6-48-60-18-8F	4	8.652	9.517	0.75	0.75	4.41	131.20	0.000	0.000	41.97	0.00	0.00
16	100.00	RRU-32	3	8.652	9.517	0.64	0.75	7.38	231.00	0.000	0.000	70.28	0.00	0.00
17	100.00	RRU-12	6	8.652	9.517	0.53	0.75	8.89	348.00	0.000	0.000	84.60	0.00	0.00
18	100.00	RRU-11	12	8.652	9.517	0.53	0.75	15.99	648.00	0.000	0.000	152.18	0.00	0.00
19	100.00	HPA-65R-BUU-H8	12	8.652	9.517	0.58	0.75	91.00	729.60	0.000	0.000	866.11	0.00	0.00
20	100.00	IBC700-1	3	8.652	9.517	0.68	0.75	2.68	189.90	0.000	0.000	25.50	0.00	0.00
21	100.00	RRUS-A2	6	8.652	9.517	0.46	0.75	5.12	132.00	0.000	0.000	48.75	0.00	0.00
22	90.00	Andrew LNX-6514DS-A1M	3	8.396	9.235	0.62	0.75	15.26	116.40	0.000	0.000	140.91	0.00	0.00
23	90.00	Samsung VZS01	3	8.396	9.235	0.52	0.75	6.68	261.30	0.000	0.000	61.65	0.00	0.00
24	90.00	Commscope	6	8.396	9.235	0.62	0.75	30.18	262.20	0.000	0.000	278.71	0.00	0.00
25	90.00	RFS DB-C1-12C-24AB-0Z	1	8.396	9.235	0.66	0.75	2.68	30.00	0.000	0.000	24.75	0.00	0.00
26	90.00	Mod	1	8.396	9.235	1.00	1.00	12.25	514.00	0.000	0.000	113.13	0.00	0.00
27	90.00	Samsung B2-B66A	3	8.396	9.235	0.62	0.75	3.51	253.20	0.000	0.000	32.42	0.00	0.00
28	90.00	Samsung B5-B13	3	8.396	9.235	0.58	0.75	3.30	210.90	0.000	0.000	30.47	0.00	0.00
29	90.00	RFS DB-T1-6Z-8AB-0Z	1	8.396	9.235	0.50	0.75	2.81	20.00	0.000	0.000	25.99	0.00	0.00
30	90.00	Modified Low Profile	1	8.396	9.235	1.00	1.00	25.00	1500.00	0.000	0.000	230.88	0.00	0.00
							Totals:		**12,514.40**			**3,893.85**		

Total Applied Force Summary

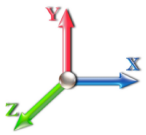
Structure:	CT13555-S-SBA		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 17

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		107.81	1470.16	0.00	0.00
10.00		105.36	1438.97	0.00	0.00
15.00		102.91	1407.78	0.00	0.00
20.00		100.47	1376.59	0.00	0.00
25.00		98.02	1345.40	0.00	0.00
30.00		95.65	1314.21	0.00	0.00
35.00		97.40	1283.03	0.00	0.00
40.00		98.53	1251.84	0.00	0.00
45.00		99.15	1220.65	0.00	0.00
47.00		39.38	479.53	0.00	0.00
50.00		60.23	1273.44	0.00	0.00
53.00		60.21	1252.59	0.00	0.00
55.00		39.98	406.59	0.00	0.00
60.00		100.38	997.76	0.00	0.00
65.00		99.65	971.03	0.00	0.00
70.00		98.66	944.30	0.00	0.00
75.00		97.44	917.56	0.00	0.00
80.00		96.01	890.83	0.00	0.00
81.00		18.88	174.96	0.00	0.00
85.00		75.25	589.35	0.00	0.00
90.00	(22) attachments	1031.49	3884.64	0.00	0.00
95.00		90.63	683.36	0.00	0.00
100.00	(47) attachments	1794.76	4945.79	0.00	0.00
105.00		86.25	620.31	0.00	0.00
107.00	(1) attachments	82.22	591.89	0.00	0.00
110.00	(8) attachments	332.73	1772.14	209.73	0.00
113.00	(1) attachments	93.33	458.16	0.00	0.00
115.00	(19) attachments	901.29	3390.19	0.00	475.40
119.00	(1) attachments	66.89	413.54	0.00	0.00
	Totals:	**6,170.95**	**37,766.60**	**209.73**	**475.40**

Calculated Forces

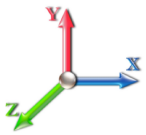
Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 17

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-37.77	-6.18	-0.21	-541.19	0.00	541.19	5484.43	2742.22	13159.3	6589.47	0.00	0.000	0.000	0.089
5.00	-36.29	-6.08	-0.21	-510.31	0.00	510.31	5405.01	2702.51	12673.3	6346.09	0.01	-0.021	0.000	0.087
10.00	-34.85	-5.99	-0.21	-479.89	0.00	479.89	5323.53	2661.77	12191.2	6104.68	0.05	-0.043	0.000	0.085
15.00	-33.44	-5.90	-0.21	-449.94	0.00	449.94	5239.98	2619.99	11713.4	5865.43	0.10	-0.065	0.000	0.083
20.00	-32.06	-5.81	-0.21	-420.44	0.00	420.44	5154.37	2577.18	11240.2	5628.50	0.18	-0.087	0.000	0.081
25.00	-30.72	-5.72	-0.21	-391.40	0.00	391.40	5066.69	2533.35	10772.0	5394.05	0.29	-0.109	0.000	0.079
30.00	-29.40	-5.63	-0.21	-362.80	0.00	362.80	4976.95	2488.47	10309.2	5162.27	0.41	-0.131	0.000	0.076
35.00	-28.11	-5.54	-0.21	-334.63	0.00	334.63	4885.14	2442.57	9851.98	4933.31	0.56	-0.153	0.000	0.074
40.00	-26.86	-5.45	-0.21	-306.91	0.00	306.91	4791.27	2395.63	9400.73	4707.35	0.73	-0.175	0.000	0.071
45.00	-25.64	-5.36	-0.21	-279.65	0.00	279.65	4695.33	2347.66	8955.81	4484.56	0.93	-0.196	0.000	0.068
47.00	-25.16	-5.32	-0.21	-268.94	0.00	268.94	4656.37	2328.19	8779.69	4396.37	1.01	-0.205	0.000	0.067
50.00	-23.88	-5.26	-0.21	-252.99	0.00	252.99	4597.32	2298.66	8517.56	4265.11	1.14	-0.218	0.000	0.065
53.00	-22.63	-5.20	-0.21	-237.21	0.00	237.21	3769.04	1884.52	6995.75	3503.08	1.29	-0.231	0.000	0.074
55.00	-22.22	-5.16	-0.21	-226.81	0.00	226.81	3738.97	1869.49	6858.18	3434.19	1.39	-0.240	0.000	0.072
60.00	-21.22	-5.07	-0.21	-201.00	0.00	201.00	3662.35	1831.18	6517.42	3263.55	1.65	-0.263	0.000	0.067
65.00	-20.25	-4.97	-0.21	-175.66	0.00	175.66	3583.67	1791.83	6181.48	3095.34	1.94	-0.285	0.000	0.062
70.00	-19.31	-4.87	-0.21	-150.81	0.00	150.81	3502.92	1751.46	5850.70	2929.70	2.25	-0.305	0.000	0.057
75.00	-18.39	-4.78	-0.21	-126.45	0.00	126.45	3420.10	1710.05	5525.41	2766.81	2.58	-0.325	0.000	0.051
80.00	-17.50	-4.68	-0.21	-102.56	0.00	102.56	3335.22	1667.61	5205.95	2606.84	2.93	-0.343	0.000	0.045
81.00	-17.32	-4.66	-0.21	-97.88	0.00	97.88	3318.00	1659.00	5142.79	2575.22	3.00	-0.346	0.000	0.043
81.00	-17.32	-4.66	-0.21	-97.88	0.00	97.88	2626.87	1313.44	4085.05	2045.56	3.00	-0.346	0.000	0.054
85.00	-16.73	-4.59	-0.21	-79.24	0.00	79.24	2576.62	1288.31	3894.21	1950.00	3.29	-0.358	0.000	0.047
90.00	-12.85	-3.53	-0.21	-56.31	0.00	56.31	2511.95	1255.98	3659.15	1832.29	3.68	-0.374	0.000	0.036
95.00	-12.17	-3.44	-0.21	-38.64	0.00	38.64	2445.22	1222.61	3428.26	1716.68	4.08	-0.386	0.000	0.027
100.00	-7.24	-1.61	-0.21	-21.44	0.00	21.44	2376.41	1188.21	3201.88	1603.32	4.49	-0.394	0.000	0.016
105.00	-6.62	-1.52	-0.21	-13.37	0.00	13.37	2305.55	1152.77	2980.36	1492.40	4.90	-0.400	-0.001	0.012
107.00	-6.02	-1.44	-0.21	-10.33	0.00	10.33	2276.62	1138.31	2893.19	1448.75	5.07	-0.402	-0.001	0.010
110.00	-4.25	-1.09	0.00	-6.02	0.00	6.02	2225.68	1112.84	2755.45	1379.77	5.32	-0.404	-0.001	0.006
113.00	-3.80	-0.99	0.00	-2.74	0.00	2.74	2167.31	1083.66	2612.10	1307.99	5.58	-0.405	-0.001	0.004
115.00	-0.41	-0.07	0.00	-0.28	0.00	0.28	2128.40	1064.20	2518.66	1261.20	5.75	-0.405	-0.001	0.000
119.00	0.00	-0.07	0.00	0.00	0.00	0.00	2050.57	1025.29	2336.89	1170.18	6.09	-0.405	-0.001	0.000

Final Analysis Summary

Structure:	CT13555-S-SBA	**Code:**	TIA-222-G	4/6/2022	
Site Name:	Montano	**Exposure:**	B		
Height:	119.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	25.8	0.00	45.30	0.00	0.55	2270.13
0.9D + 1.6W 97 mph Wind	25.8	0.00	33.97	0.00	0.55	2259.39
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.2	0.00	82.06	0.00	0.20	621.94
1.2D + 1.0E	1.9	0.00	45.32	0.00	0.00	178.81
0.9D + 1.0E	1.9	0.00	33.99	0.00	0.00	177.91
1.0D + 1.0W 60 mph Wind	6.2	0.00	37.77	0.00	0.21	541.19

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-45.30	-25.84	-0.55	-2270.1	0.00	-2270.1	5484.43	2742.2	13159.3	6589.47	0.00	0.353
0.9D + 1.6W 97 mph Wind	-33.97	-25.83	-0.55	-2259.3	0.00	-2259.3	5484.43	2742.2	13159.3	6589.47	0.00	0.349
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-82.06	-7.21	-0.20	-621.94	0.00	-621.94	5484.43	2742.2	13159.3	6589.47	0.00	0.109
1.2D + 1.0E	-45.32	-1.86	0.00	-178.81	0.00	-178.81	5484.43	2742.2	13159.3	6589.47	0.00	0.035
0.9D + 1.0E	-33.99	-1.86	0.00	-177.91	0.00	-177.91	5484.43	2742.2	13159.3	6589.47	0.00	0.033
1.0D + 1.0W 60 mph Wind	-37.77	-6.18	-0.21	-541.19	0.00	-541.19	5484.43	2742.2	13159.3	6589.47	0.00	0.089

Base Plate Summary

Structure:	CT13555-S-SB		**Code:**	TIA-222-G	4/6/2022
Site Name:	Montano		**Exposure:**	B	
Height:	119.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

Reactions

Original Design

Moment (kip-ft):	5405.00
Axial (kip):	60.80
Shear (kip):	52.80

Analysis (1.2D + 1.6W)

Moment (kip-ft):	2270.13
Axial (kip):	45.30
Shear (kip):	25.84

Base Plate

Yield (ksi):	50.00
Width (in):	66.00
Style:	Clipped
Polygon Sides:	0.00
Clip Length (in):	15.00
Effective Len (in):	9.14
Moment (kip-in):	291.96
Allow Stress (ksi):	67.50
Applied Stress (ksi):	18.23
Stress Ratio:	0.27

Anchor Bolts

Bolt Circle:	65.50
Number Bolts:	20.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00

Compression

Force (kip):	87.28
Allowable (kip):	260.00
Ratio:	0.35

Tension

Force (kip):	79.08
Allowable (kip):	260.00
Ratio:	0.31

Monopole Mat Foundation Design

			Date: 4/6/2022
Customer Name:	T-Mobile	**TIA Standard:**	TIA-222-G
Site Name:		**Structure Height (Ft.):**	119
Site Number:	CT13555-S-SBA	**Engineer Name:**	H. You
Engr. Number:	127113	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

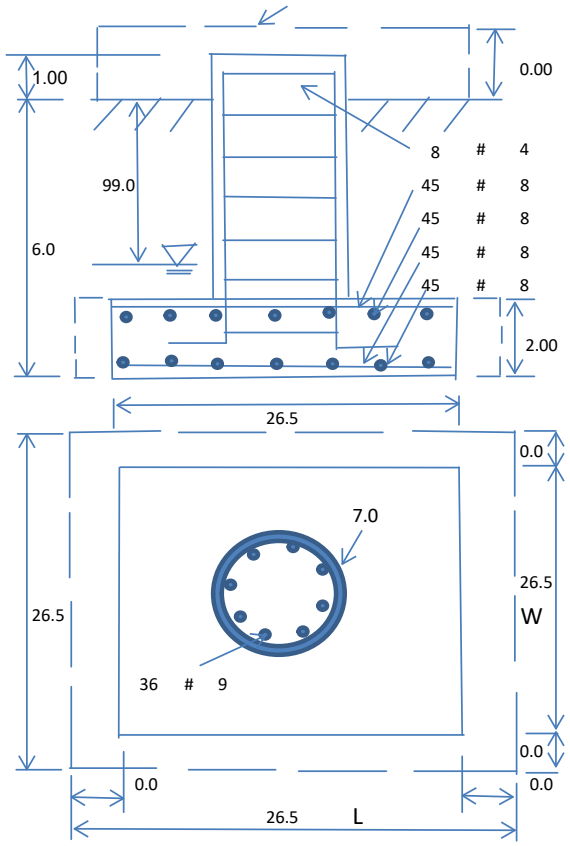
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	45.3	Shear Force (Kips):	25.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2270.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	26.5	Width of Pad (ft.):	26.5
Final Length of pad (ft)	26.5	Final width of pad (ft):	26.5



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	45	Qty. of Rebar in Pad (W):	45

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	45	Qty. of Rebar in Pad (W):	45
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	37.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	9000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	2655.06	Total Dry Soil Weight (Kips):	292.06
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	292.06	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1596.92	Total Dry Concrete Weight (Kips):	239.54
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	239.54	Total Vertical Load on Base (Kips):	576.90

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1516	<	Allowable Factored Soil Bearing (psf):	6750	0.22	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6939.5	>	Design Factored Momont (kips-ft):	2345	0.34	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.96	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	6026.1	>	Design Factored Moment (Mu, Kips-F	2399.1	0.40	OK!
Calculated Shear Capacity (Kips):	660.1	>	Design Factored Shear (Kips):	25.8	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1944.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9734.2	>	Design Factored Axial Load (Pu Kips):	45.3	0.00	OK!
Moment & Axial Strength Combination:	0.40	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.006		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	618.4	>	One-Way Factored Shear (L-D. Kips):	185.0	0.30	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	618.4	>	One-Way Factored Shear (W-D., Kips)	185.0	0.30	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	631.5	>	One-Way Factored Shear (C-C, Kips):	181.7	0.29	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0055	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0055		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3121.7	>	Moment at Bottom (L-Dir. K-Ft):	1009.5	0.32	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3121.7	>	Moment at Bottom (W-Dir. K-Ft):	1009.5	0.32	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4363.5	>	Moment at Bottom (C-C Dir. K-Ft):	1427.7	0.33	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0055	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0055		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3121.7	>	Moment at the top (L-Dir K-Ft):	377.9	0.12	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3121.7	>	Moment at the top (W-Dir K-Ft):	377.9	0.12	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4363.5	>	Moment at the top (C-C Dir. K-Ft):	353.9	0.08	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	908.0	k-ft.	Max. factored shear stress v_{u_CD}:		0.6	Psi
Max. factored shear stress v_{u_AB}:	11.8	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	11.8	Psi	Check Usage of Punching Shear Capacity:		0.06	OK!

Pier Foundation Design For Monopole

				Date
				4/5/2022
Customer Name:	**T-Mobile**	**EIA/TIA Standard:**	TIA-222-G
Site Name:		**Structure Height (Ft.):**	119
Site Number:	CT13555-S-SBA	**Engineer Name:**	H. You
Engr. Number:	127113	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

Acceptable overstress (5.0%

Base Reactions (Factored):

Axial Load (Kips):	45.3	Shear Force (Kips):	25.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2270.1

Foundation Geometries:

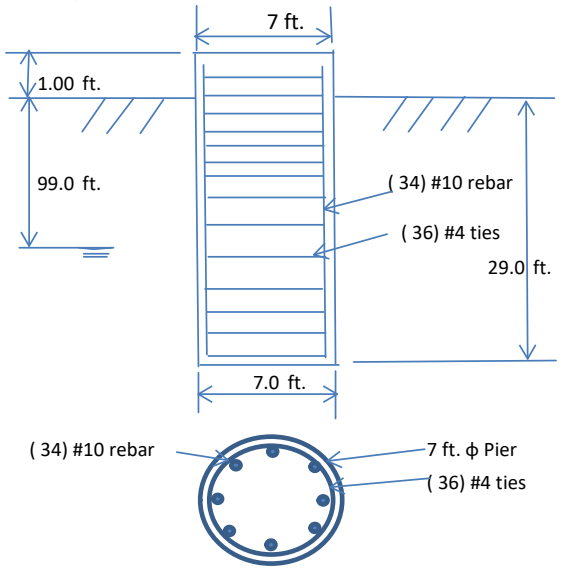
Diameter of Pier (ft.):	7.0	Depth of Base B. G. S. :	29.0	ft.
Pier Height A. G. (ft.):	1.00			

Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	60	ksi
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	34	Tie Spacing:	12.0	in.
Concrete Cover (in.):	3	Concrete unit weight:	150.0	pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)
Skin Frictions are to be obtained from:		Soil Report		



Monopole Pier Foundation

Sand

5000

Depth of Layers (ft) Top	Depth of Layers (ft) Bottom	γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types
0.0	3.0	100	0	0	0	0	Sand
3.0	25.0	110	33	0	1000	0	Sand
25.0	30.0	105	30	0	1600	12000	Sand
30.0	35.0						

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75	
Total Dry Soil Volume from Conical Failure (cu. Ft.):	13814	Dry Soil Weight from Conical Failure:	1281	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	0	Buoyant Soil Weight from Conical Failure (Ki	0	Kips
Total Dry Concrete Volume (cu. Ft.):	1155	Total Dry Concrete Weight:	173.2	Kips
Total Buoyant Concrete Volume (cu. Ft.):	0.0	Total Buoyant Concrete Weight:	0.00	Kips
Total Effective Concrete Weight (Kips):	173.2	Total Effective Soil Weight:	1280.7	Kips
Total Effective Vertical Load on Base (Kips):	115.0			

Check Soil Capacities:

					Usage	
Allowable Foundation Overturning Resistance (kips-ft.):	10741.2	>	Design Factored Moment (kips-ft):	2798	0.26	OK!
Factor of Safety of Passive Soil Resistance against Moment:	3.84	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	

Reinforcing Concrete Pier:

					Usage	
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	7102.8	>	Design Factored Moment (Mu, K-Ft):	2381.7	0.34	OK!
Calculated Shear Capacity (Kips):	1120.9	>	Design Factored Shear (Kips):	217.3	0.19	OK!
Calculated Tension Capacity (Tn, Kips):	2331.7	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9722	>	Design Factored Axial Load (Pu Kips):	45.3	0.00	OK!
Moment & Axial Strength Combination:	0.34	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI				

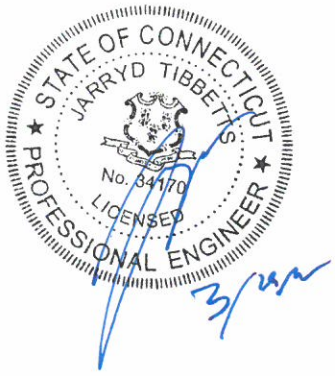
Exhibit E

Mount Analysis

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

Antenna Mount Analysis Report

Existing Monopole Tower
Customer Name: SBA Communications Corp
Customer Site Number: CT13555-S-SBA
Customer Site Name: Montano
Carrier Name: T-Mobile (App#: 182170, v1)
Carrier Site ID / Name: CTHA083C / Montano
Site Location: 58a Montano Road
Glastonbury, Connecticut
Hartford County
Latitude: 41.699444
Longitude: -72.564000



Analysis Result:

Max Structural Usage: 88.8% [Pass]

Report Prepared By : Andrew Weissenberger

Introduction

The purpose of this report is to summarize the analysis results on the (1) Low Profile Platform at 115.0' 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 mapping	by Full Metal Tower Services, dated 4/26/19.
Antenna Loading	SBA Application # 182170, v1, dated 03/29/2022
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 125 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 97 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed: 30 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G / 2015 IBC
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

(1) Low Profile Platform at 115.0' elevation

Final Antenna Configuration

3 Ericsson AIR6449 B41 @117'
3 Ericsson Air32 KRD901146-1_B66A_B2A @117'
3 RFS APXVAARR24_43-U-NA20 @115'
3 Ericsson KRY 112 144/1 @117'
3 Ericsson 4449 B71 + B85 @115'
3 Ericsson 4460 B25 + B66 @115'

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

Analysis Results

Our calculations have determined that under design wind load the existing mount will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 88.8%, which occurs in the mount pipe. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

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

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

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

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

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

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

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

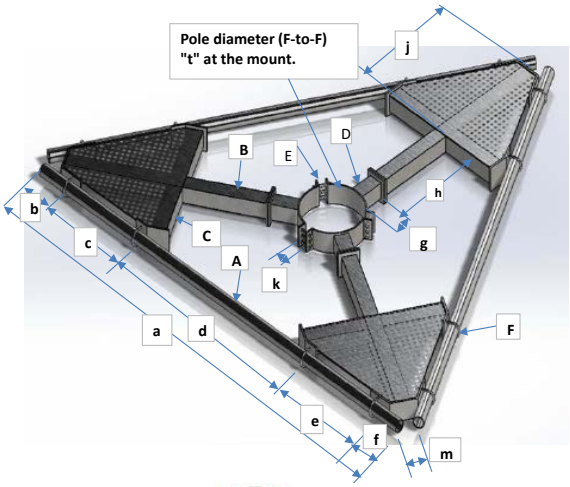
8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.

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

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

FCC # 1263073

Tower Owner:	SBA Communications	**Mapping Date:**	4/26/19
Site Name:	Montano	**Structure Type:**	Monopole
Site Number or ID:	CT13555-S-SBA	**Structure Height (Ft.):**	120
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	114.9

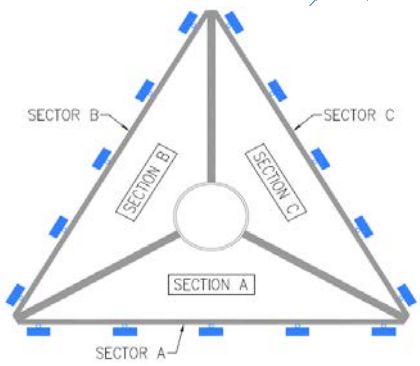


Geometries (Unit: inches)									
a	150	**e**	44	**j**	46	**o**	N/A	**s**	N/A
b	10	**f**	14	**k**	36	**p**	N/A	**t**	28.5
c	44	**g**	4	**m**	12	**q**	N/A	**u ***	43
d	38	**h**	18	**n**	N/A	**r**	N/A	**v ***	78

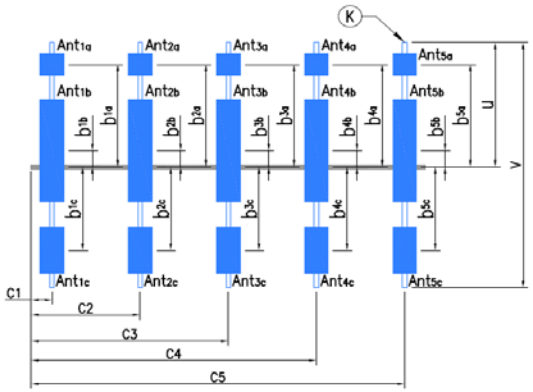
Members/Bolts (Unit: inches) * - See Ant. Layout for "u", "v" and member "K" (pipe)

Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	**F**	1/2" U-Bolt			
B	Tubing 4x4x1/4	4	4	0.25	**G**				
C	Tubing 4x4x1/4	4	4	0.25	**H**				
D	1/2" Thick. Plate	0	0	0.5	**J**				
E	5/8" Bolt	36			**K* (pipe)**	.375 OD x 0.154 Pip	2.375	2.067	0.154
Distance from top of main platform member to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)									N/A
Distance from top of main platform member to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)									N/A

Please enter the infomation below if members can't be found from the drop down lists



Climbing facility is Located at Section C, at 295° Degree Azimuth



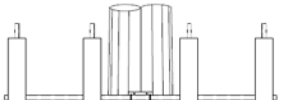
Antenna Layout

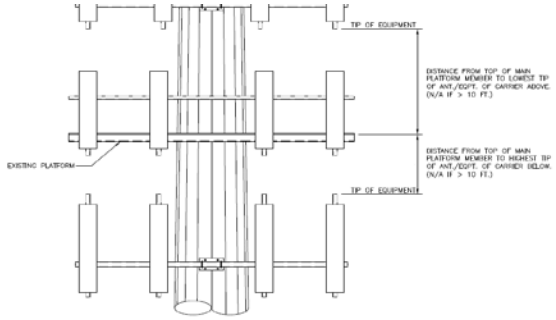
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector. Antenna Models if Known	Mounting Locations (Unit: inches) Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C_1, C_2, C_3, C_4, C_5" (in.)	Photos of antennas Photo Numbers
Sector A									
Ant_{1a}									
Ant_{1b}	Antenna A	12	8	56	1/2" (1)	+16"	7	14	
Ant_{1c}									
Ant_{2a}									
Ant_{2b}	Antenna B	12	7.5	96.5	1/2" (2)	+6"	7	69	
Ant_{2c}	RRH A	17	7	20	1/2" (2)	+24"	N/A	69	
Ant_{3a}									
Ant_{3b}	Antenna C	13	9	57	1/2" (2)	+17"	8	140	
Ant_{3c}	TMA A	6	3	8	1/2" (2)	+17"	N/A	140	
Ant_{4a}									
Ant_{4b}									
Ant_{4c}									
Ant_{5a}									
Ant_{5b}									
Ant_{5c}									
Are Ant same as sector A?	Yes	**Antennas on Sector B are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	60°	Deg	
Sector B:	210°	Deg	
Sector C:	320°	Deg	
Climbing	295°	Deg	Located at Section C
Climbing Facility	Corrosion Type:		No corrosion observed
	Access:		Climbing path was unobstructed.
	Condition:		N/A

Are Ant same as sector A/B? Same As A **Antennas on Sector C are the same as Sector A**




TIP OF EQUIPMENT
DISTANCE FROM TOP OF MAIN PLATFORM MEMBER TO LOWEST TIP OF ANT./EQPT. OF CARRIER ABOVE (N/A IF > 10 FT.)
DISTANCE FROM TOP OF MAIN PLATFORM MEMBER TO HIGHEST TIP OF ANT./EQPT. OF CARRIER BELOW. (N/A IF > 10 FT.)
EXISTING PLATFORM
TIP OF EQUIPMENT

Structure: CT13555-S-SBA - Montano

Sector: A

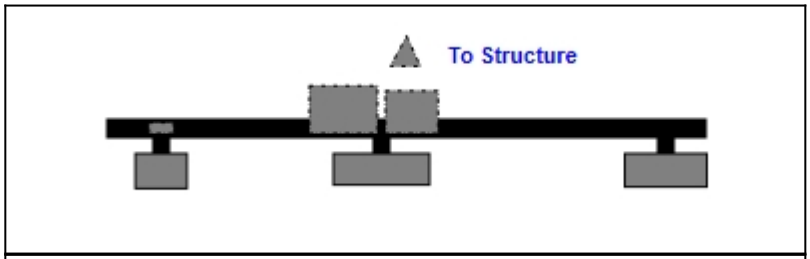
Structure Type: Monopole

Mount Elev: 114.90

3/29/2022

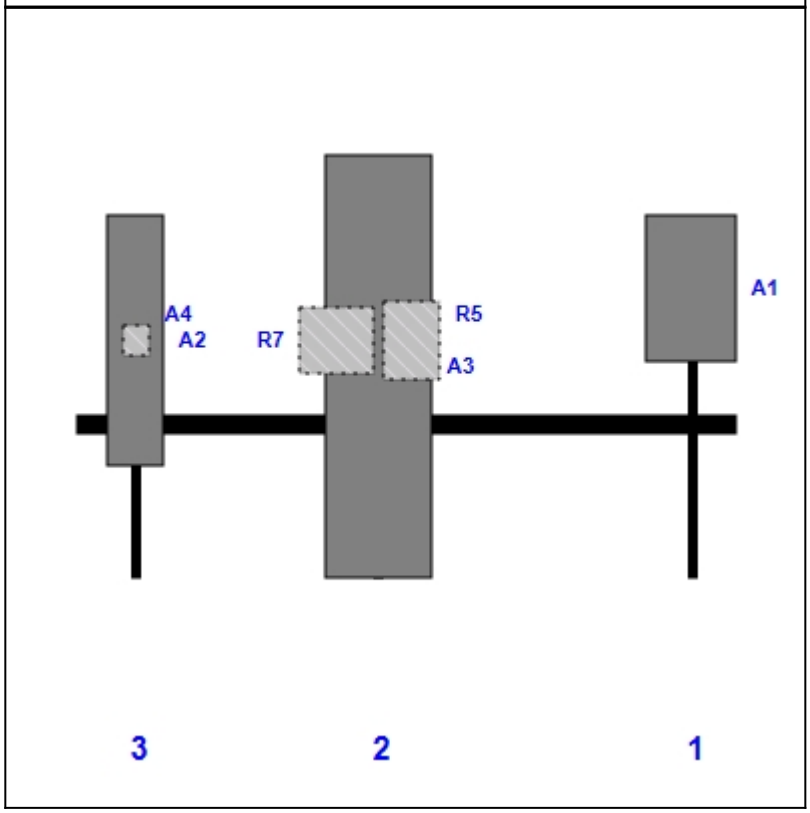
Tower Engineering Solutions

Plan View



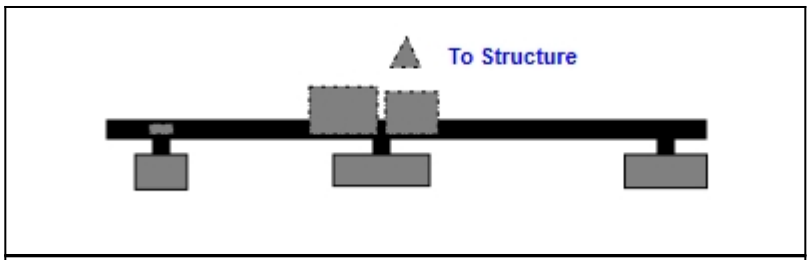
Front View

Looking Toward Structure



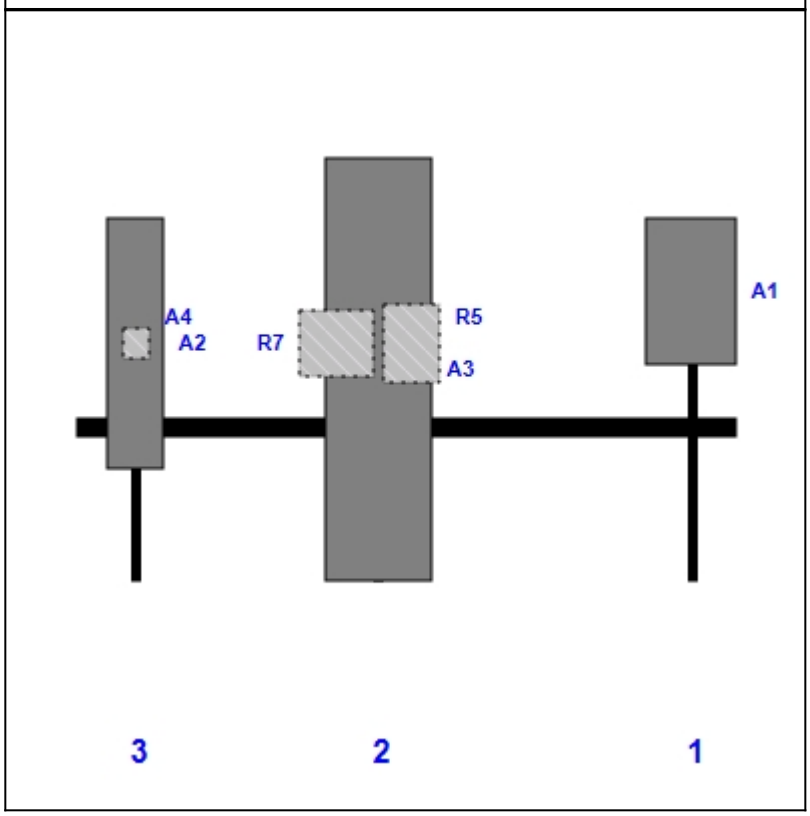
Ref	Model	Height (in)	Width (in)	H Dist Left	Pipe	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR6449 B41	33.10	20.50	140.00	1	a	Front	12.00		Added	
A3	APXVAARR24_43-U-NA20	95.90	24.00	69.00	2	a	Front	30.00		Retained	
R5	4449 B71 + B85	17.90	13.10	69.00	2	a	Behind	24.00	7.55	Added	
R7	4460 B25 + B66	15.10	17.00	69.00	2	a	Behind	24.00	-9.50	Added	
A2	Air32 KRD901146-1_B66A_B2A	56.60	12.90	14.00	3	a	Front	24.00		Retained	
A4	KRY 112 144/1	6.90	6.10	14.00	3	a	Behind	24.00		Retained	

Plan View



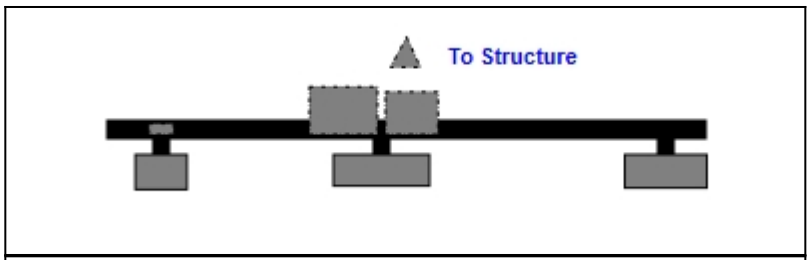
Front View

Looking Toward Structure



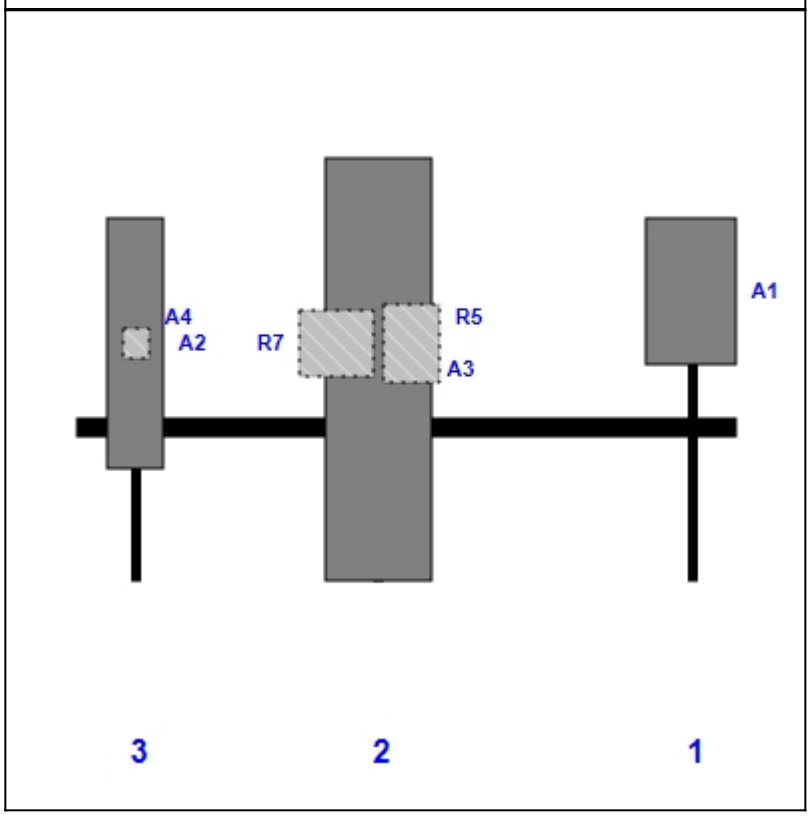
Ref	Model	Height (in)	Width (in)	H Dist Left	Pipe	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR6449 B41	33.10	20.50	140.00	1	a	Front	12.00		Added	
A3	APXVAARR24_43-U-NA20	95.90	24.00	69.00	2	a	Front	30.00		Retained	
R5	4449 B71 + B85	17.90	13.10	69.00	2	a	Behind	24.00	7.55	Added	
R7	4460 B25 + B66	15.10	17.00	69.00	2	a	Behind	24.00	-9.50	Added	
A2	Air32 KRD901146-1_B66A_B2A	56.60	12.90	14.00	3	a	Front	24.00		Retained	
A4	KRY 112 144/1	6.90	6.10	14.00	3	a	Behind	24.00		Retained	

Plan View

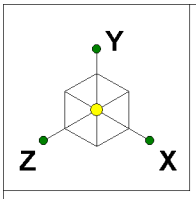


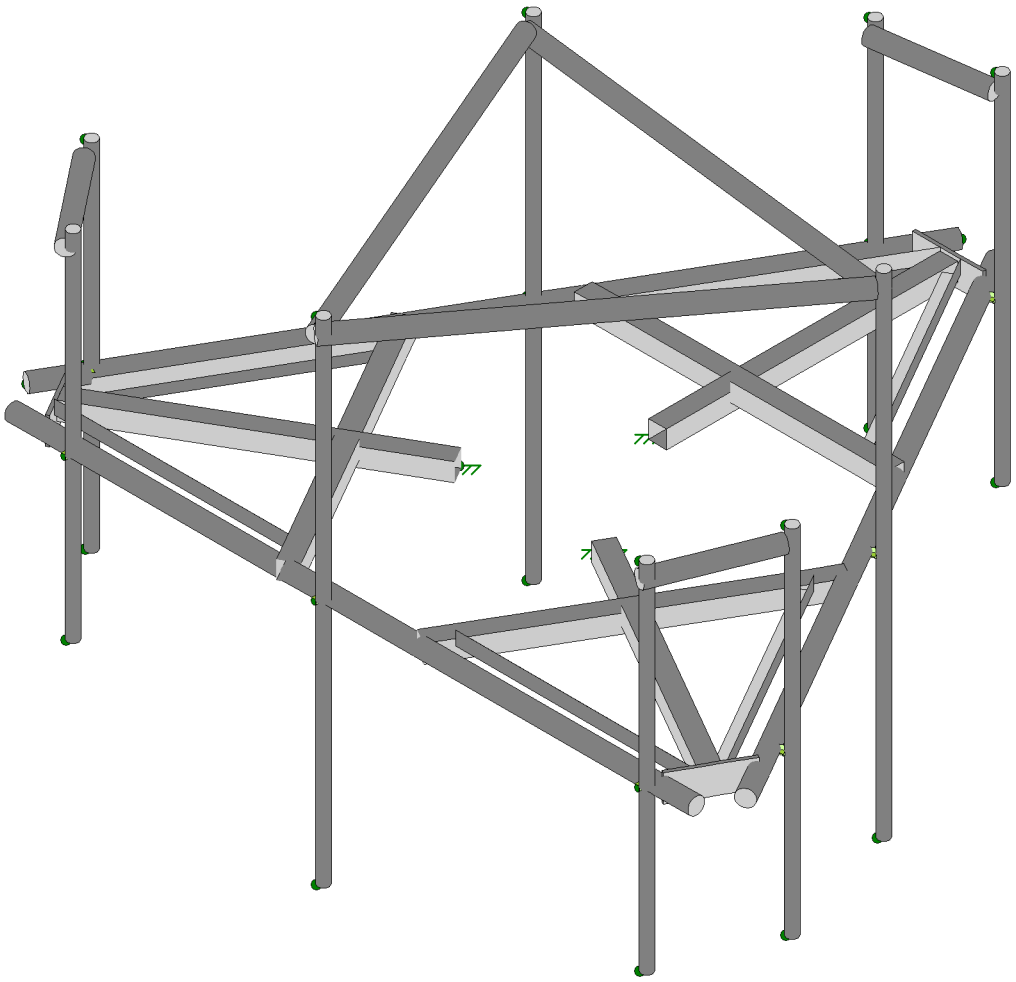
Front View

Looking Toward Structure

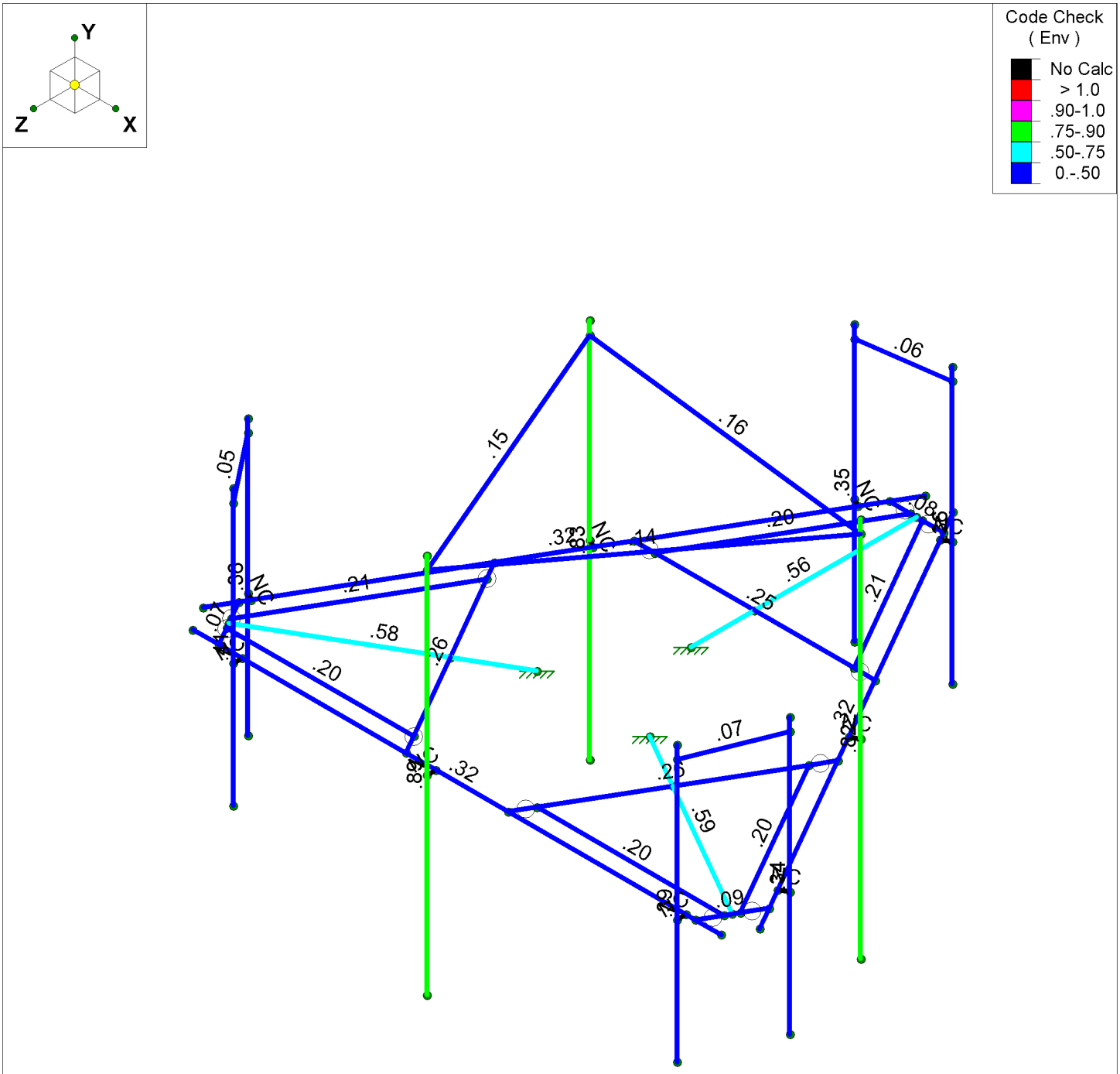


Ref	Model	Height (in)	Width (in)	H Dist Left	Pipe	Pipe Pos V	Pos	From Top	H Offset	Status	Validation
A1	AIR6449 B41	33.10	20.50	140.00	1	a	Front	12.00		Added	
A3	APXVAARR24_43-U-NA20	95.90	24.00	69.00	2	a	Front	30.00		Retained	
R5	4449 B71 + B85	17.90	13.10	69.00	2	a	Behind	24.00	7.55	Added	
R7	4460 B25 + B66	15.10	17.00	69.00	2	a	Behind	24.00	-9.50	Added	
A2	Air32 KRD901146-1_B66A_B2A	56.60	12.90	14.00	3	a	Front	24.00		Retained	
A4	KRY 112 144/1	6.90	6.10	14.00	3	a	Behind	24.00		Retained	



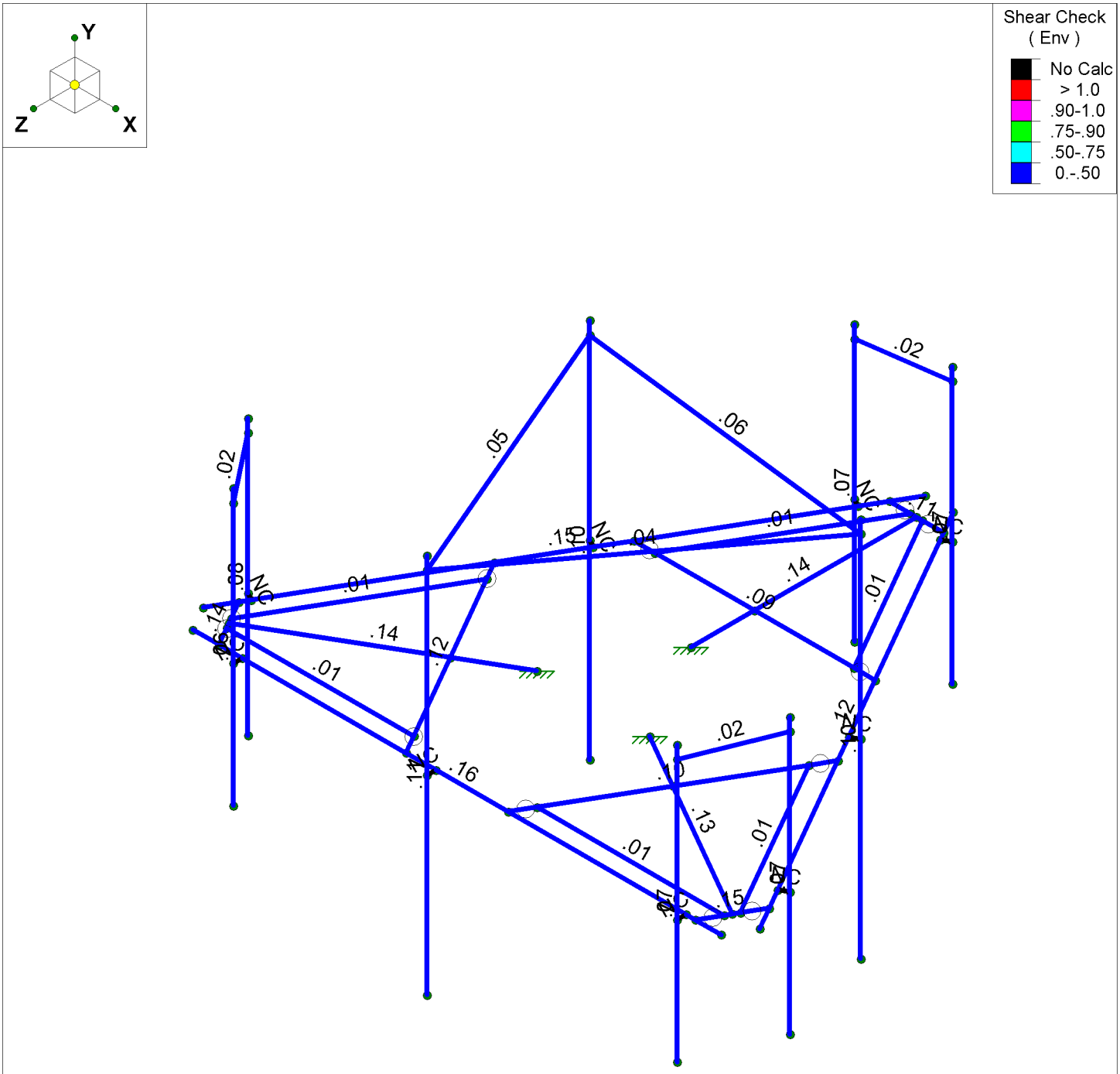


Tower Engineering Solutio...	CT13555-S-SBA_MT_LO_Loads Only_G	SK - 1
		Mar 29, 2022 at 4:07 PM
TES Project No. 126848		CT13555-S-SBA_126848_G_RISA_...



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

Tower Engineering Solutio...	CT13555-S-SBA_MT_LO_Loads Only_G	SK - 2
		Mar 29, 2022 at 4:08 PM
TES Project No. 126848		CT13555-S-SBA_126848_G_RISA_...



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

Tower Engineering Solutio...	CT13555-S-SBA_MT_LO_Loads Only_G	SK - 3
		Mar 29, 2022 at 4:08 PM
TES Project No. 126848		CT13555-S-SBA_126848_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					3	
10	Structure Di	None						33	3	
11	Structure W Front	None						33		
12	Structure Wi Front	None						33		
13	Structure W Side	None						33		
14	Structure Wi Side	None						33		
15	BLC 9 Transient Area...	None						105		
16	BLC 10 Transient Are...	None						105		

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...
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 Diap...
1	N1	-1.335122	0	0.770833	0	
2	N2	1.335122	0	0.770833	0	
3	N3	0	0	-1.541667	0	
4	N4	-6.25	0	3.993339	0	
5	N5	6.25	0	3.993339	0	
6	N6	6.583333	0	3.415989	0	
7	N7	0.333333	0	-7.409328	0	
8	N8	-0.333333	0	-7.409328	0	
9	N9	-6.583333	0	3.415989	0	
10	N10	-5.953925	0	3.4375	0	
11	N11	5.953925	0	3.4375	0	
12	N12	0	0	-6.875	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
13	N13	-5.633011	0	3.993339	0	
14	N14	-1.206659	0	3.993339	0	
15	N15	1.206659	0	3.993339	0	
16	N16	5.633011	0	3.993339	0	
17	N17	6.274839	0	2.881661	0	
18	N18	4.061663	0	-0.951673	0	
19	N19	2.855004	0	-3.041667	0	
20	N20	0.641828	0	-6.875	0	
21	N21	-0.641828	0	-6.875	0	
22	N22	-2.855004	0	-3.041667	0	
23	N23	-4.061663	0	-0.951673	0	
24	N24	-6.274839	0	2.881661	0	
25	NP1	5.416667	3.583333	4.201673	0	
26	NP2	5.416667	-2.916667	4.201673	0	
27	NP3	-.5	4.5	4.201672	0	
28	NP4	-.5	-4.5	4.201672	0	
29	NP5	-5.083333	3.583333	4.201673	0	
30	NP6	-5.083333	-2.916667	4.201673	0	
31	N43	-0.141828	0	-6.875	0	
32	N44	-2.355004	0	-3.041667	0	
33	N45	0.141828	0	-6.875	0	
34	N46	2.355004	0	-3.041667	0	
35	N47	-5.883011	0	3.560327	0	
36	N48	-1.456659	0	3.560327	0	
37	N49	-6.024839	0	3.314673	0	
38	N50	-3.811663	0	-0.51866	0	
39	N51	6.024839	0	3.314673	0	
40	N52	3.811663	0	-0.51866	0	
41	N53	5.883011	0	3.560327	0	
42	N54	1.456659	0	3.560327	0	
43	N55	5.416667	0	4.201673	0	
44	N56	-.5	0	4.201673	0	
45	N57	-5.083333	0	4.201673	0	
46	N64	-2.634161	0	1.520833	0	
47	N65	2.634161	0	1.520833	0	
48	N66	0	0	-3.041667	0	
49	N67	-.5	4.2	4.201672	0	
50	N70	-5.083333	3.283333	4.201673	0	
51	N76	5.416667	0	3.993339	0	
52	N77	-.5	0	3.993339	0	
53	N78	-5.083333	0	3.993339	0	
54	N61	0.930422	3.583333	-6.791807	0	
55	N62	0.930422	-2.916667	-6.791807	0	
56	N63	3.888755	4.5	-1.667823	0	
57	N64A	3.888755	-4.5	-1.667823	0	
58	N65A	6.180422	3.583333	2.301459	0	
59	N66A	6.180422	-2.916667	2.301459	0	
60	N67A	0.930422	0	-6.791807	0	
61	N68A	3.888755	0	-1.667824	0	
62	N69A	6.180422	0	2.301459	0	
63	N70A	0.75	0	-6.687641	0	
64	N71A	3.708333	0	-1.563657	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
65	N72A	6	0	2.405626	0	
66	N73A	-6.347089	3.583333	2.590135	0	
67	N74A	-6.347089	-2.916667	2.590135	0	
68	N75A	-3.388755	4.5	-2.533849	0	
69	N76A	-3.388755	-4.5	-2.533849	0	
70	N77A	-1.097089	3.583333	-6.503132	0	
71	N78A	-1.097089	-2.916667	-6.503132	0	
72	N79	-6.347089	0	2.590135	0	
73	N80	-3.388755	0	-2.533849	0	
74	N81	-1.097089	0	-6.503132	0	
75	N82	-6.166667	0	2.694301	0	
76	N83	-3.208333	0	-2.429682	0	
77	N84	-0.916667	0	-6.398965	0	
78	N80A	-6.347089	3.283333	2.590135	0	
79	N81A	6.180422	3.283333	2.301459	0	
80	N82A	5.416667	3.283333	4.201673	0	
81	N83A	-1.097089	3.283333	-6.503132	0	
82	N84A	0.930422	3.283333	-6.791807	0	
83	N83B	3.888755	4.2	-1.667823	0	
84	N84B	-3.388755	4.2	-2.533849	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design Li...	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	xxxxx	HSS16x0.438	Beam	None	A572 Gr...	Typical	19.9	606	606	1210

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE_3.0	12.5			Lbyy						Gravity
2	M2	PIPE_3.0	12.5			Lbyy						Gravity
3	M3	PIPE_3.0	12.5			Lbyy						Gravity
4	M4	HSS4X4X4	5.333			Lbyy						Gravity
5	M5	HSS4X4X4	5.333			Lbyy						Gravity
6	M6	HSS4X4X4	5.333			Lbyy						Gravity
7	M7	HSS4X4X4	5.71			Lbyy						Gravity
8	M8	HSS4X4X4	5.71			Lbyy						Gravity
9	M9	HSS4X4X4	5.71			Lbyy						Gravity
10	M10	PL3/4x6	1.284			Lbyy						Lateral
11	M11	PL3/4x6	1.284			Lbyy						Gravity
12	M12	PL3/4x6	1.284			Lbyy						Gravity
13	MP1A	PIPE_2.0	6.5			Lbyy						Gravity
14	MP2A	PIPE_2.0	9			Lbyy						Gravity
15	MP3A	PIPE_2.0	6.5			Lbyy						Gravity
16	M22	L3X3X4	4.426			Lbyy						Lateral
17	M23	L3X3X4	4.426			Lbyy						Lateral
18	M24	L3X3X4	4.426			Lbyy						Lateral
19	M25	L3X3X4	4.426			Lbyy						Lateral
20	M26	L3X3X4	4.426			Lbyy						Lateral
21	M27	L3X3X4	4.426			Lbyy						Lateral
22	MP1C	PIPE_2.0	6.5			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
23	MP2C	PIPE_2.0	9			Lbyy						Lateral
24	MP3C	PIPE_2.0	6.5			Lbyy						Lateral
25	MP1B	PIPE_2.0	6.5			Lbyy						Lateral
26	MP2B	PIPE_2.0	9			Lbyy						Lateral
27	MP3B	PIPE_2.0	6.5			Lbyy						Lateral
28	M40A	PIPE_3.0	2.048			Lbyy						Lateral
29	M41A	PIPE_3.0	2.048			Lbyy						Lateral
30	M42A	PIPE_3.0	2.048			Lbyy						Lateral
31	M40B	PIPE_3.0	7.329			Lbyy						Lateral
32	M41B	PIPE_3.0	7.329			Lbyy						Lateral
33	M42B	PIPE_3.0	7.329			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N4	N5			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N6	N7			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
3	M3	N8	N9			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
4	M4	N1	N10			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
5	M5	N2	N11			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
6	M6	N3	N12			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
7	M7	N23	N14			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
8	M8	N15	N18			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
9	M9	N19	N22			HSS4X4X4	Beam	None	A500 Gr.B...	DR1
10	M10	N24	N13			PL3/4x6	Beam	None	A992	DR1
11	M11	N16	N17			PL3/4x6	Beam	None	A992	DR1_1
12	M12	N20	N21			PL3/4x6	Beam	None	A992	DR1_1
13	MP1A	NP1	NP2			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
14	MP2A	NP3	NP4			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
15	MP3A	NP5	NP6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
16	M22	N44	N43			L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
17	M23	N46	N45		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
18	M24	N49	N50			L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
19	M25	N47	N48		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
20	M26	N54	N53		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
21	M27	N51	N52		270	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
22	M34	N78	N57			RIGID	Beam	None	RIGID	DR1
23	M35	N77	N56			RIGID	Beam	None	RIGID	DR1
24	M36	N76	N55			RIGID	Beam	None	RIGID	DR1
25	MP1C	N61	N62			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
26	MP2C	N63	N64A			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
27	MP3C	N65A	N66A			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
28	M34A	N72A	N69A			RIGID	Beam	None	RIGID	DR1
29	M35A	N71A	N68A			RIGID	Beam	None	RIGID	DR1
30	M36A	N70A	N67A			RIGID	Beam	None	RIGID	DR1
31	MP1B	N73A	N74A			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
32	MP2B	N75A	N76A			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
33	MP3B	N77A	N78A			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
34	M40	N84	N81			RIGID	Beam	None	RIGID	DR1
35	M41	N83	N80			RIGID	Beam	None	RIGID	DR1
36	M42	N82	N79			RIGID	Beam	None	RIGID	DR1

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
37	M40A	N70	N80A			PIPE_3.0	Beam	Wide Flange	A992	Typical
38	M41A	N81A	N82A			PIPE_3.0	Beam	Wide Flange	A992	Typical
39	M42A	N83A	N84A			PIPE_3.0	Beam	Wide Flange	A992	Typical
40	M40B	N67	N84B			PIPE_3.0	Beam	Wide Flange	A992	Typical
41	M41B	N84B	N83B			PIPE_3.0	Beam	Wide Flange	A992	Typical
42	M42B	N83B	N67			PIPE_3.0	Beam	Wide Flange	A992	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4						Yes				None
5	M5						Yes				None
6	M6						Yes				None
7	M7	BenPIN	BenPIN				Yes				None
8	M8	BenPIN	BenPIN				Yes				None
9	M9	BenPIN	BenPIN				Yes				None
10	M10	BenPIN	BenPIN				Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12	BenPIN	BenPIN				Yes				None
13	MP1A						Yes		-z		None
14	MP2A						Yes		-z		None
15	MP3A						Yes		-z		None
16	M22						Yes				None
17	M23						Yes				None
18	M24						Yes				None
19	M25						Yes				None
20	M26						Yes				None
21	M27						Yes				None
22	M34						Yes				None
23	M35						Yes				None
24	M36						Yes				None
25	MP1C						Yes		-z		None
26	MP2C						Yes		-z		None
27	MP3C						Yes		-z		None
28	M34A						Yes				None
29	M35A						Yes				None
30	M36A						Yes				None
31	MP1B						Yes		-z		None
32	MP2B						Yes		-z		None
33	MP3B						Yes		-z		None
34	M40						Yes				None
35	M41						Yes				None
36	M42						Yes				None
37	M40A						Yes				None
38	M41A						Yes				None
39	M42A						Yes				None
40	M40B						Yes				None
41	M41B						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
42	M42B						Yes				None

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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N3	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	N1	max	2204.83	4	4132.792	8	2416.198	1	.325	1	1.518	1	.47	3
2		min	-2290.281	3	-4.461	3	-2345.85	2	-4.891	6	-1.525	2	-8.036	8
3	N2	max	2862.558	4	4135.472	7	1865.613	1	.316	1	1.316	2	8.249	7
4		min	-2765.225	3	-16.95	4	-1820.816	2	-4.564	6	-1.346	1	-.426	4
5	N3	max	2073.97	4	4024.133	5	2877.281	1	8.933	5	2.159	3	1.022	3
6		min	-2085.853	3	-188.814	2	-2992.425	2	-.589	2	-2.179	4	-1.153	4
7	Totals:	max	7141.358	4	11356.215	7	7159.092	1						
8		min	-7141.358	3	3789.338	4	-7159.092	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	11	0	11	0	11	0	11	0	11	0	11
2			min	0	1	0	1	0	1	0	1	0	1	0	1
3		2	max	220.295	3	110.425	4	114.71	2	.022	3	.072	4	.531	8
4			min	-207.902	4	-358.401	7	-117.854	1	-.031	10	-.065	3	-.057	3
5		3	max	818.074	2	422.286	4	343.27	2	.375	2	.24	1	1.034	5
6			min	-831.087	1	-867.477	3	-392.757	1	-.437	1	-.212	2	-.172	2
7		4	max	115.463	2	402.598	6	86.621	1	.116	5	.049	3	.803	7
8			min	-67.491	1	-82.566	1	-78.921	2	-.04	10	-.064	4	-.397	10
9		5	max	0	11	0	11	0	11	0	11	0	11	0	11
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	0	11	.012	2	.002	4	0	11	0	11	0	11
12			min	0	1	-.005	8	0	6	0	1	0	1	0	1
13		2	max	291.961	1	179.152	2	61.769	3	.031	1	.099	4	.498	7
14			min	-292.507	2	-354.667	1	-65.56	4	-.042	2	-.09	3	-.042	4
15		3	max	1007.904	1	465.421	2	415.94	3	.309	3	.213	4	1.144	6
16			min	-1040.628	2	-880.512	1	-457.049	4	-.403	4	-.194	3	-.262	1
17		4	max	201.773	3	403.592	7	107.808	4	.117	8	.104	3	.779	5
18			min	-169.249	4	-149.678	4	-98.197	3	-.038	3	-.117	4	-.134	2
19		5	max	0	11	.006	7	0	6	0	11	0	11	0	11
20			min	0	1	-.013	1	-.001	4	0	1	0	1	0	1
21	M3	1	max	0	11	.011	1	0	4	0	11	0	11	0	11
22			min	0	1	-.005	8	0	5	0	1	0	1	0	1
23		2	max	277.061	4	182.142	3	135.992	4	.017	10	.075	4	.495	5
24			min	-271.249	3	-391.652	4	-140.847	3	-.022	6	-.067	3	-.092	2
25		3	max	1114.785	4	329.968	3	181.304	1	.249	1	.172	2	1.019	7
26			min	-1135.616	3	-887.153	8	-227.8	2	-.341	2	-.148	1	-.364	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
27		4	max	187.9	1	358.099	5	35.941	2	.134	6	.058	3	.798	8
28			min	-160.649	2	-116.342	2	-26.438	1	-.025	1	-.073	4	-.11	3
29		5	max	0	11	.006	7	0	5	0	11	0	11	0	11
30			min	0	1	-.014	2	-.001	4	0	1	0	1	0	1
31	M4	1	max	2473.568	3	4130.875	8	1709.193	2	1.111	2	1.518	1	9.32	8
32			min	-2368.358	4	-4.704	3	-1733.911	1	-.995	1	-1.525	2	-.21	3
33		2	max	2453.368	3	4081.697	8	1674.204	2	1.111	2	.731	2	3.845	8
34			min	-2348.157	4	-24.437	3	-1698.922	1	-.995	1	-.77	1	-.191	3
35		3	max	2497.902	3	916.447	8	14.749	3	.311	2	.167	2	2.026	8
36			min	-2498.051	4	78.556	3	-11.843	4	-.252	1	-.176	1	.055	3
37		4	max	2477.701	3	827.816	8	35.058	1	.311	2	.147	2	.865	8
38			min	-2477.85	4	47.362	3	-32.011	2	-.252	1	-.152	1	-.028	3
39		5	max	2457.5	3	763.384	8	70.047	1	.311	2	.081	2	-.035	2
40			min	-2457.649	4	23.197	3	-67	2	-.252	1	-.082	1	-.201	5
41	M5	1	max	2818.093	4	4133.219	7	1404.953	1	1.051	1	1.316	2	9.343	7
42			min	-2713.724	3	-17.156	4	-1407.867	2	-.935	2	-1.346	1	-.162	4
43		2	max	2797.892	4	4084.041	7	1369.964	1	1.051	1	.623	3	3.865	7
44			min	-2693.523	3	-36.89	4	-1372.878	2	-.935	2	-.662	4	-.126	4
45		3	max	2860.193	4	924.026	7	26.196	1	.351	1	.123	1	2.031	7
46			min	-2860.425	3	94.725	4	-18.967	2	-.287	2	-.129	4	.124	4
47		4	max	2839.993	4	835.672	7	24.128	4	.351	1	.134	1	.86	7
48			min	-2840.225	3	63.611	4	-16.793	3	-.287	2	-.13	2	.019	4
49		5	max	2819.792	4	770.487	7	51.011	2	.351	1	.099	1	-.024	2
50			min	-2820.024	3	39.227	4	-43.782	1	-.287	2	-.086	2	-.213	5
51	M6	1	max	2992.425	2	4021.812	5	2073.81	4	1.153	4	2.159	3	8.933	5
52			min	-2877.281	1	-189.55	2	-2086.076	3	-1.022	3	-2.179	4	-.589	2
53		2	max	2992.425	2	3972.634	5	2027.159	4	1.153	4	.555	4	3.603	5
54			min	-2877.281	1	-209.283	2	-2039.424	3	-1.022	3	-.591	3	-.323	2
55		3	max	3065.861	2	881.245	5	23.473	4	.334	4	.152	4	1.926	5
56			min	-3054.636	1	74.818	2	-18.639	3	-.276	3	-.159	3	.039	2
57		4	max	3065.861	2	792.891	5	28.013	3	.334	4	.152	4	.811	5
58			min	-3054.636	1	43.704	2	-23.179	4	-.276	3	-.153	3	-.04	2
59		5	max	3065.861	2	727.706	5	74.665	3	.334	4	.09	4	-.046	10
60			min	-3054.636	1	19.321	2	-69.831	4	-.276	3	-.084	3	-.209	6
61	M7	1	max	445.169	4	266.677	3	1096.672	4	.546	1	0	11	0	11
62			min	-424.731	3	-1295.354	8	-1168.925	3	-.882	2	0	1	0	1
63		2	max	451.094	3	132.18	3	188.638	1	.492	1	.365	4	1.819	8
64			min	-392.821	4	-1471.481	8	-241.821	2	-.606	2	-.32	3	-.388	3
65		3	max	1449.926	1	1548.526	8	176.151	1	.832	1	.508	2	4.002	8
66			min	-1362.5	2	-1361.593	5	-81.888	2	-.918	2	-.566	1	-.558	3
67		4	max	1428.299	1	1478.034	8	173.63	4	.832	1	.4	2	1.863	6
68			min	-1340.873	2	-49.923	3	-121.711	3	-.918	2	-.383	1	-.214	1
69		5	max	572.076	1	1302.573	6	1223.634	1	1.182	1	0	11	0	11
70			min	-522.766	2	-119.472	1	-1143.342	2	-1.085	2	0	1	0	1
71	M8	1	max	296.909	3	114.266	4	848.15	2	.824	2	0	11	0	11
72			min	-282.521	4	-1263.382	7	-929.834	1	-1.074	1	0	1	0	1
73		2	max	759.609	1	61.408	4	196.479	4	.722	2	.298	2	1.781	6
74			min	-697.448	2	-1445.505	7	-242.305	3	-.77	1	-.263	1	-.164	1
75		3	max	1020.1	4	1569.579	7	159.019	4	.722	2	.442	3	4.075	7
76			min	-943.15	3	-821.749	2	-108.905	1	-.77	1	-.498	4	-.648	4
77		4	max	998.473	4	1498.956	7	180.812	2	.601	4	.444	3	1.885	7
78			min	-921.523	3	-149.446	4	-121.391	1	-.619	3	-.415	4	-.453	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
79		5	max	528.671	2	1328.32	7	1347.169	4	.871	4	0	11	0	11
80			min	-483.925	1	-306.148	4	-1277.971	3	-.684	3	0	1	0	1
81	M9	1	max	475.194	1	280.501	2	918.247	1	.694	3	0	11	0	11
82			min	-469.392	2	-1236.73	5	-996.18	2	-1.012	4	0	1	0	1
83		2	max	722.531	4	179.574	2	127.613	3	.611	3	.275	1	1.735	5
84			min	-666.709	3	-1417.035	5	-177.447	4	-.716	4	-.236	2	-.381	2
85		3	max	1307.324	3	1529.548	5	127.613	3	.729	3	.203	1	3.954	5
86			min	-1234.526	4	-514.422	3	-105.77	4	-.748	4	-.447	3	-.667	2
87		4	max	1307.324	3	1458.925	5	161.817	3	.729	3	.323	1	1.821	5
88			min	-1234.526	4	-183.655	2	-105.77	4	-.748	4	-.299	2	-.424	2
89		5	max	863.292	3	1284.204	5	1071.498	2	1.051	3	0	11	0	11
90			min	-824.828	4	-305.13	2	-997.04	1	-.875	4	0	1	0	1
91	M10	1	max	247.311	2	78.453	3	241.361	4	.256	4	0	11	0	11
92			min	-178.116	1	-285.863	8	-216.028	3	-.248	3	0	1	0	1
93		2	max	254.604	2	72.36	3	253.993	4	.256	4	.079	4	.094	8
94			min	-185.409	1	-298.815	8	-228.66	3	-.248	3	-.071	3	-.024	3
95		3	max	708.249	4	489.977	6	1559.373	4	.16	1	.188	4	.364	6
96			min	-676.186	3	-345.646	8	-1552.524	3	-.136	2	-.2	3	-.127	3
97		4	max	271.992	4	416.29	6	211.637	1	.31	1	.073	2	.132	6
98			min	-207.294	3	-.773	1	-229.715	2	-.316	2	-.067	1	-.001	1
99		5	max	264.699	4	403.339	6	207.427	1	.31	1	0	11	0	11
100			min	-200.001	3	-6.866	1	-225.504	2	-.316	2	0	1	0	1
101	M11	1	max	264.913	3	121.274	1	208.174	3	.342	2	0	11	0	11
102			min	-191.503	4	-350.775	10	-177.42	4	-.307	1	0	1	0	1
103		2	max	272.206	3	115.181	1	220.806	3	.342	2	.069	3	.114	10
104			min	-198.796	4	-356.867	10	-190.052	4	-.307	1	-.059	4	-.038	1
105		3	max	779.324	3	499.282	7	1768.126	4	.174	2	.239	3	.366	7
106			min	-754.581	4	-383.795	2	-1773.739	3	-.197	1	-.245	4	-.082	4
107		4	max	288.147	2	450.143	5	323.559	4	.226	4	.107	3	.142	5
108			min	-229.618	1	15.651	2	-338.216	3	-.194	3	-.102	4	.004	2
109		5	max	280.854	2	437.191	5	310.928	4	.226	4	0	11	0	11
110			min	-222.325	1	9.558	2	-325.584	3	-.194	3	0	1	0	1
111	M12	1	max	225.092	4	75.8	4	281.008	1	.217	3	0	11	0	11
112			min	-163.503	3	-258.308	7	-256.329	2	-.204	4	0	1	0	1
113		2	max	225.092	4	69.707	4	297.85	1	.217	3	.093	1	.085	7
114			min	-163.503	3	-271.26	7	-273.171	2	-.204	4	-.085	2	-.023	4
115		3	max	866.08	1	463.836	8	1551.641	2	.178	3	.213	1	.332	8
116			min	-856.688	2	-73.347	3	-1545.885	1	-.163	4	-.226	2	-.056	2
117		4	max	250.06	3	410.73	8	301.493	2	.257	3	.098	1	.13	8
118			min	-197.779	4	4.734	3	-315.112	1	-.233	4	-.094	2	0	3
119		5	max	250.06	3	397.778	8	284.651	2	.257	3	0	11	0	11
120			min	-197.779	4	-1.359	3	-298.269	1	-.233	4	0	1	0	1
121	MP1A	1	max	166.394	6	63.97	4	148.556	1	0	7	0	1	0	11
122			min	61.8	1	-64.298	3	-148.714	2	0	4	0	2	0	1
123		2	max	482.278	2	181.876	4	102.652	5	.063	3	.225	2	.231	3
124			min	-314.788	1	-200.008	3	-43.982	4	-.065	4	-.186	1	-.219	4
125		3	max	550.846	2	265.52	4	251.169	1	.063	3	.225	5	.652	3
126			min	-246.22	1	-283.653	3	-196.659	2	-.065	4	-.022	2	-.611	4
127		4	max	-6.768	1	20.29	3	20.322	2	0	4	.017	1	.017	3
128			min	-27.643	6	-20.261	4	-20.297	1	0	7	-.017	2	-.016	4
129		5	max	0	4	.191	7	.196	6	0	4	0	11	0	11
130			min	0	6	-.006	4	-.042	1	0	7	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
131	MP2A	1	max	358.466	6	215.634	4	531.542	1	0	7	0	1	0	3
132			min	76.8	1	-215.64	3	-531.466	2	0	8	0	2	0	4
133		2	max	1168.529	6	662.002	4	705.052	1	.061	3	.39	2	.071	3
134			min	-207.663	1	-675.707	3	-592.405	2	-.055	4	-.247	1	-.039	4
135		3	max	1206.804	6	690.048	4	733.098	1	.061	3	1.371	1	1.623	3
136			min	-198.292	1	-703.753	3	-620.451	2	-.055	4	-.974	2	-1.56	4
137		4	max	-9.371	2	28.056	3	28.555	2	0	7	.032	1	.032	3
138			min	-38.275	5	-28.106	4	-28.347	1	0	10	-.033	2	-.032	4
139		5	max	0	2	.036	10	1.797	6	0	7	0	11	0	11
140			min	0	1	-.358	7	-.301	1	0	10	0	1	0	1
141	MP3A	1	max	204.857	6	124.677	4	171.406	1	0	3	0	1	0	11
142			min	79.32	1	-124.292	3	-171.684	2	0	8	0	2	0	1
143		2	max	418.239	2	289.905	4	135.114	1	.067	2	.21	3	.182	1
144			min	-227.086	1	-257.269	3	-87.62	2	-.06	1	-.186	4	-.195	2
145		3	max	438.207	2	318.325	4	171.508	1	.067	2	.203	5	.611	3
146			min	-207.118	1	-285.689	3	-124.014	2	-.06	1	-.1	2	-.679	4
147		4	max	-6.768	1	20.29	3	20.77	2	0	8	.017	1	.017	3
148			min	-27.643	6	-20.481	4	-20.564	1	0	3	-.017	2	-.017	4
149		5	max	0	3	.035	3	1.104	6	0	8	0	11	0	11
150			min	0	6	-.841	8	-.308	1	0	3	0	1	0	1
151	M22	1	max	1372.333	1	150.386	7	99.139	4	0	2	-.01	2	.46	3
152			min	-1407.903	2	-44.368	4	-121.422	3	0	1	-.132	5	-.22	4
153		2	max	1384.907	1	116.529	3	77.36	4	0	2	.018	4	.285	7
154			min	-1420.478	2	-54.404	4	-99.643	3	0	1	-.066	7	-.113	4
155		3	max	1397.481	1	103.981	3	55.581	4	0	2	.022	4	.171	5
156			min	-1433.052	2	-66.952	4	-77.864	3	0	1	-.041	3	-.013	4
157		4	max	1410.055	1	92.72	3	43.679	1	0	2	.002	2	.184	1
158			min	-1445.626	2	-78.213	4	-66.005	2	0	1	-.028	7	-.113	2
159		5	max	1422.629	1	83.32	3	36.419	1	0	2	.017	3	.258	1
160			min	-1458.2	2	-87.612	4	-58.746	2	0	1	-.06	8	-.208	2
161	M23	1	max	1342.129	1	84.208	3	147.313	8	0	5	.002	2	.155	3
162			min	-1388.909	2	-106.316	4	-28.598	3	0	2	-.145	5	-.46	8
163		2	max	1354.703	1	62.429	3	112.521	8	0	5	.013	3	.072	3
164			min	-1401.483	2	-84.537	4	-38.639	3	0	2	-.075	8	-.313	8
165		3	max	1367.277	1	40.65	3	87.296	4	0	5	.018	3	.013	2
166			min	-1414.057	2	-62.758	4	-51.183	3	0	2	-.043	4	-.209	5
167		4	max	1379.851	1	30.11	1	76.035	4	0	5	-.002	2	.095	2
168			min	-1426.631	2	-52.326	2	-62.444	3	0	2	-.038	8	-.19	1
169		5	max	1392.425	1	22.851	1	66.636	4	0	5	.012	4	.164	2
170			min	-1439.205	2	-45.067	2	-71.843	3	0	2	-.069	7	-.239	1
171	M24	1	max	1502.144	4	70.768	4	40.693	3	0	8	.007	3	.27	4
172			min	-1538.001	3	-68.175	3	-16.88	4	0	3	-.068	8	-.194	3
173		2	max	1489.57	4	61.285	4	62.472	3	0	8	0	1	.196	4
174			min	-1525.427	3	-77.659	3	-38.659	4	0	3	-.039	6	-.097	3
175		3	max	1476.996	4	50.039	4	84.251	3	0	8	.017	1	.225	6
176			min	-1512.853	3	-88.904	3	-60.438	4	0	3	-.046	6	-.034	1
177		4	max	1464.422	4	37.655	4	106.03	3	0	8	.02	1	.327	6
178			min	-1500.279	3	-116.407	7	-82.217	4	0	3	-.082	6	-.06	1
179		5	max	1451.847	4	27.597	4	127.809	3	0	8	.007	1	.465	7
180			min	-1487.704	3	-151.258	7	-103.996	4	0	3	-.15	8	-.082	1
181	M25	1	max	1339.233	2	49.875	1	120.774	2	0	3	.025	1	.22	1
182			min	-1381.662	1	-30.358	2	-109.206	1	0	8	-.075	6	-.287	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
183		2	max	1339.233	2	78.913	1	111.289	2	0	3	.005	3	.081	1
184			min	-1381.662	1	-59.396	2	-118.69	1	0	8	-.035	8	-.161	2
185		3	max	1339.233	2	107.952	1	100.049	2	0	3	.017	2	.039	3
186			min	-1381.662	1	-88.435	2	-129.931	1	0	8	-.037	1	-.179	8
187		4	max	1339.233	2	136.991	1	87.67	2	0	3	.016	3	.134	2
188			min	-1381.662	1	-117.474	2	-142.31	1	0	8	-.062	8	-.292	1
189		5	max	1339.233	2	166.03	1	77.619	2	0	3	.007	3	.301	2
190			min	-1381.662	1	-146.513	2	-152.36	1	0	8	-.124	8	-.526	1
191	M26	1	max	1005.455	2	126.232	2	143.392	5	0	7	.016	4	.206	2
192			min	-1056.622	1	-145.798	1	-54.863	2	0	4	-.139	7	-.455	1
193		2	max	1005.455	2	97.193	2	119.866	1	0	7	.019	4	.072	2
194			min	-1056.622	1	-116.759	1	-64.904	2	0	4	-.075	7	-.307	5
195		3	max	1005.455	2	68.154	2	107.323	1	0	7	.014	4	.037	4
196			min	-1056.622	1	-87.721	1	-77.448	2	0	4	-.043	5	-.219	7
197		4	max	1005.455	2	39.116	2	96.061	1	0	7	-.002	4	.054	4
198			min	-1056.622	1	-58.682	1	-88.709	2	0	4	-.043	7	-.181	6
199		5	max	1005.455	2	10.077	2	86.663	1	0	7	.021	1	.157	1
200			min	-1056.622	1	-31.656	8	-98.108	2	0	4	-.083	6	-.248	2
201	M27	1	max	1662.741	3	58.677	4	91.284	3	0	4	.011	4	.245	4
202			min	-1687.87	4	-34.97	3	-90.001	4	0	3	-.056	7	-.294	3
203		2	max	1650.167	3	80.456	4	81.884	3	0	4	.008	1	.116	4
204			min	-1675.296	4	-56.749	3	-99.4	4	0	3	-.029	6	-.19	3
205		3	max	1637.592	3	102.235	4	70.623	3	0	4	.022	1	.047	1
206			min	-1662.722	4	-78.528	3	-110.662	4	0	3	-.042	2	-.189	6
207		4	max	1625.018	3	124.014	4	58.075	3	0	4	.021	1	.078	1
208			min	-1650.148	4	-100.307	3	-123.209	4	0	3	-.072	6	-.291	6
209		5	max	1612.444	3	145.793	4	48.039	3	0	4	.005	1	.171	3
210			min	-1637.574	4	-122.086	3	-156.694	8	0	3	-.139	7	-.448	8
211	M34	1	max	384.661	1	664.653	6	447.711	3	.603	3	.1	4	.179	2
212			min	-330.286	2	-117.02	1	-483.891	4	-.68	4	-.087	3	-.171	1
213		2	max	384.661	1	664.653	6	447.711	3	.603	3	.075	4	.152	2
214			min	-330.286	2	-117.02	1	-483.891	4	-.68	4	-.063	3	-.165	1
215		3	max	384.661	1	664.653	6	447.711	3	.603	3	.068	2	.124	2
216			min	-330.286	2	-117.02	1	-483.891	4	-.68	4	-.055	1	-.159	1
217		4	max	384.661	1	664.653	6	447.711	3	.603	3	.068	2	.097	2
218			min	-330.286	2	-117.02	1	-483.891	4	-.68	4	-.056	1	-.153	1
219		5	max	384.661	1	664.653	6	447.711	3	.603	3	.068	2	.069	2
220			min	-330.286	2	-117.02	1	-483.891	4	-.68	4	-.057	1	-.154	5
221	M35	1	max	1324.836	1	1640.699	6	972.379	3	1.389	3	.239	4	.896	2
222			min	-1195.5	2	-113.289	1	-956.731	4	-1.326	4	-.238	3	-1.012	1
223		2	max	1324.836	1	1640.699	6	972.379	3	1.389	3	.189	4	.843	2
224			min	-1195.5	2	-113.289	1	-956.731	4	-1.326	4	-.187	3	-1.006	1
225		3	max	1324.836	1	1640.699	6	972.379	3	1.389	3	.139	4	.789	2
226			min	-1195.5	2	-113.289	1	-956.731	4	-1.326	4	-.136	3	-1	1
227		4	max	1324.836	1	1640.699	6	972.379	3	1.389	3	.09	4	.736	2
228			min	-1195.5	2	-113.289	1	-956.731	4	-1.326	4	-.086	3	-.994	1
229		5	max	1324.836	1	1640.699	6	972.379	3	1.389	3	.04	4	.683	2
230			min	-1195.5	2	-113.289	1	-956.731	4	-1.326	4	-.035	3	-.988	1
231	M36	1	max	293.688	1	583.026	6	324.49	3	.694	3	.052	1	.208	2
232			min	-232.034	2	-234.806	1	-304.249	4	-.647	4	-.063	2	-.254	1
233		2	max	293.688	1	583.026	6	324.49	3	.694	3	.053	1	.179	2
234			min	-232.034	2	-234.806	1	-304.249	4	-.647	4	-.063	2	-.241	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
235		3	max	293.688	1	583.026	6	324.49	3	.694	3	.054	1	.15	2
236			min	-232.034	2	-234.806	1	-304.249	4	-.647	4	-.064	2	-.229	1
237		4	max	293.688	1	583.026	6	324.49	3	.694	3	.056	1	.121	2
238			min	-232.034	2	-234.806	1	-304.249	4	-.647	4	-.064	2	-.217	1
239		5	max	293.688	1	583.026	6	324.49	3	.694	3	.057	1	.091	2
240			min	-232.034	2	-234.806	1	-304.249	4	-.647	4	-.064	2	-.208	5
241	MP1C	1	max	166.394	5	127.335	4	85.639	1	0	3	0	1	0	11
242			min	61.8	2	-127.294	3	-85.3	2	0	8	0	2	0	1
243		2	max	496.584	3	163.294	4	116.731	1	.067	4	.205	1	.168	4
244			min	-336.052	4	-115.651	3	-123.037	2	-.067	3	-.207	2	-.193	3
245		3	max	565.153	3	310.596	4	221.594	1	.067	4	.517	1	.192	2
246			min	-267.484	4	-262.952	3	-227.901	2	-.067	3	-.529	2	-.296	1
247		4	max	-6.768	1	20.297	3	20.264	2	0	4	.017	1	.017	3
248			min	-27.643	6	-20.293	4	-20.298	1	0	7	-.016	2	-.017	4
249		5	max	0	5	.06	7	.009	2	0	4	0	11	0	11
250			min	0	2	-.038	4	-.225	5	0	7	0	1	0	1
251	MP2C	1	max	358.467	7	452.527	4	294.605	1	0	3	0	1	0	3
252			min	76.8	4	-452.45	3	-294.659	2	0	8	0	2	0	4
253		2	max	1152.948	7	729.59	4	588.963	1	.045	3	.1	4	.18	4
254			min	-167.463	4	-643.227	3	-633.946	2	-.04	4	-.127	3	-.282	3
255		3	max	1191.223	7	757.635	4	617.009	1	.045	3	1.321	1	1.197	3
256			min	-158.092	4	-671.273	3	-661.992	2	-.04	4	-1.449	2	-1.493	4
257		4	max	-9.371	4	28.389	3	28.119	2	0	4	.032	1	.032	3
258			min	-38.275	7	-28.209	4	-28.152	1	0	7	-.032	2	-.032	4
259		5	max	0	4	1.406	7	.121	4	0	4	0	11	0	11
260			min	0	7	-.163	4	-.373	7	0	7	0	1	0	1
261	MP3C	1	max	204.857	7	159.795	4	135.854	1	0	7	0	1	0	3
262			min	79.32	4	-160.206	3	-136.076	2	0	4	0	2	0	4
263		2	max	486.755	1	117.356	4	256.901	1	.06	1	.133	4	.18	2
264			min	-310.31	2	-100.65	3	-312.386	2	-.065	2	-.143	3	-.178	1
265		3	max	506.723	1	155.791	4	285.784	1	.06	1	.402	1	.309	3
266			min	-290.342	2	-139.085	3	-341.268	2	-.065	2	-.503	2	-.336	4
267		4	max	-6.768	3	20.671	3	20.476	2	0	4	.017	1	.017	3
268			min	-27.643	8	-20.429	4	-20.392	1	0	7	-.017	2	-.017	4
269		5	max	0	7	1.166	7	.433	6	0	4	0	11	0	11
270			min	0	4	-.174	4	-.136	1	0	7	0	1	0	1
271	M34A	1	max	286.2	4	655.698	5	410.107	1	.399	1	.072	3	.092	1
272			min	-240.611	3	-198.105	2	-454.243	2	-.519	2	-.065	4	-.118	2
273		2	max	286.2	4	655.698	5	410.107	1	.399	1	.059	3	.071	3
274			min	-240.611	3	-198.105	2	-454.243	2	-.519	2	-.054	4	-.118	4
275		3	max	286.2	4	655.698	5	410.107	1	.399	1	.046	3	.053	3
276			min	-240.611	3	-198.105	2	-454.243	2	-.519	2	-.043	4	-.133	8
277		4	max	286.2	4	655.698	5	410.107	1	.399	1	.041	1	.035	3
278			min	-240.611	3	-198.105	2	-454.243	2	-.519	2	-.042	2	-.16	8
279		5	max	286.2	4	655.698	5	410.107	1	.399	1	.062	1	.017	3
280			min	-240.611	3	-198.105	2	-454.243	2	-.519	2	-.066	2	-.188	8
281	M35A	1	max	1050.123	4	1625.594	7	871.843	1	1.022	1	.177	2	.659	3
282			min	-939.151	3	-68.773	4	-872.91	2	-1.064	2	-.163	1	-.837	4
283		2	max	1050.123	4	1625.594	7	871.843	1	1.022	1	.132	2	.608	3
284			min	-939.151	3	-68.773	4	-872.91	2	-1.064	2	-.117	1	-.833	4
285		3	max	1050.123	4	1625.594	7	871.843	1	1.022	1	.086	2	.556	3
286			min	-939.151	3	-68.773	4	-872.91	2	-1.064	2	-.072	1	-.829	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
287		4	max	1050.123	4	1625.594	7	871.843	1	1.022	1	.048	4	.505	3
288			min	-939.151	3	-68.773	4	-872.91	2	-1.064	2	-.035	3	-.826	4
289		5	max	1050.123	4	1625.594	7	871.843	1	1.022	1	.086	4	.453	3
290			min	-939.151	3	-68.773	4	-872.91	2	-1.064	2	-.072	3	-.822	4
291	M36A	1	max	274.885	4	576.732	3	288.591	1	.618	1	.054	4	.146	3
292			min	-224.779	3	-255.413	4	-271.244	2	-.599	2	-.053	3	-.205	4
293		2	max	274.885	4	576.732	3	288.591	1	.618	1	.066	4	.116	3
294			min	-224.779	3	-255.413	4	-271.244	2	-.599	2	-.064	3	-.191	4
295		3	max	274.885	4	576.732	3	288.591	1	.618	1	.078	4	.086	3
296			min	-224.779	3	-255.413	4	-271.244	2	-.599	2	-.075	3	-.178	4
297		4	max	274.885	4	576.732	3	288.591	1	.618	1	.09	4	.056	3
298			min	-224.779	3	-255.413	4	-271.244	2	-.599	2	-.086	3	-.189	8
299		5	max	274.885	4	576.732	3	288.591	1	.618	1	.102	4	.026	3
300			min	-224.779	3	-255.413	4	-271.244	2	-.599	2	-.097	3	-.209	8
301	MP1B	1	max	166.394	8	127.814	4	85.06	1	0	3	0	1	0	11
302			min	61.8	3	-127.524	3	-85.289	2	0	8	0	2	0	1
303		2	max	399.053	1	33.543	4	185.466	1	.074	2	.168	3	.224	1
304			min	-246.271	2	-66.629	7	-234.258	2	-.067	1	-.187	4	-.216	2
305		3	max	488.037	5	180.844	4	290.33	1	.074	2	.442	1	.3	3
306			min	-177.703	2	-212.114	3	-339.121	2	-.067	1	-.541	2	-.24	4
307		4	max	-6.768	4	20.28	3	20.29	2	0	8	.016	1	.016	3
308			min	-27.643	7	-20.312	4	-20.274	1	0	3	-.017	2	-.017	4
309		5	max	0	8	.025	3	.113	6	0	8	0	11	0	11
310			min	0	3	-.229	8	-.019	1	0	3	0	1	0	1
311	MP2B	1	max	358.467	8	452.535	4	294.53	1	0	7	0	1	0	3
312			min	76.8	3	-452.603	3	-294.598	2	0	4	0	2	0	4
313		2	max	1138.258	8	634.742	4	610.882	1	.047	3	.086	3	.251	4
314			min	-95.796	3	-707.266	3	-678.777	2	-.04	4	-.161	4	-.176	3
315		3	max	1176.533	8	662.788	4	638.927	1	.047	3	1.32	1	1.447	3
316			min	-95.542	2	-735.312	3	-706.823	2	-.04	4	-1.547	2	-1.209	4
317		4	max	-9.371	3	28.253	3	28.074	2	0	8	.032	1	.032	3
318			min	-38.275	8	-28.382	4	-28.199	1	0	3	-.032	2	-.032	4
319		5	max	0	11	.207	3	.074	3	0	8	0	11	0	11
320			min	0	8	-1.085	8	-.982	8	0	3	0	1	0	1
321	MP3B	1	max	204.857	5	159.413	4	136.786	1	0	3	0	1	0	3
322			min	79.32	2	-159.378	3	-136.35	2	0	4	0	2	0	4
323		2	max	508.019	4	170.314	4	183.949	1	.063	4	.229	1	.163	4
324			min	-324.617	3	-217.719	3	-176.506	2	-.062	3	-.224	2	-.151	3
325		3	max	527.987	4	208.75	4	212.832	1	.063	4	.555	1	.242	3
326			min	-304.649	3	-256.154	3	-205.388	2	-.062	3	-.538	2	-.153	4
327		4	max	-6.768	1	20.525	3	20.317	2	0	8	.017	1	.017	3
328			min	-27.643	6	-20.585	4	-20.556	1	0	3	-.017	2	-.017	4
329		5	max	0	5	.269	3	.062	2	0	8	0	11	0	11
330			min	0	2	-.431	8	-1.076	5	0	3	0	1	0	1
331	M40	1	max	361.954	3	670.009	8	368.607	2	.526	2	.078	1	.133	4
332			min	-318.911	4	-213.823	3	-399.329	1	-.56	1	-.077	2	-.149	3
333		2	max	361.954	3	670.009	8	368.607	2	.526	2	.064	4	.101	4
334			min	-318.911	4	-213.823	3	-399.329	1	-.56	1	-.062	3	-.138	3
335		3	max	361.954	3	670.009	8	368.607	2	.526	2	.077	4	.069	4
336			min	-318.911	4	-213.823	3	-399.329	1	-.56	1	-.077	3	-.127	3
337		4	max	361.954	3	670.009	8	368.607	2	.526	2	.09	4	.038	1
338			min	-318.911	4	-213.823	3	-399.329	1	-.56	1	-.092	3	-.148	6

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
339		5	max	361.954	3	670.009	8	368.607	2	.526	2	.104	4	.03	1
340			min	-318.911	4	-213.823	3	-399.329	1	-.56	1	-.107	3	-.178	6
341	M41	1	max	1049.648	3	1610.894	8	909.483	2	1.151	2	.173	1	.659	4
342			min	-940.32	4	2.576	3	-878.272	1	-.994	1	-.18	2	-.837	3
343		2	max	1049.648	3	1610.894	8	909.483	2	1.151	2	.127	1	.612	4
344			min	-940.32	4	2.576	3	-878.272	1	-.994	1	-.133	2	-.837	3
345		3	max	1049.648	3	1610.894	8	909.483	2	1.151	2	.081	1	.564	4
346			min	-940.32	4	2.576	3	-878.272	1	-.994	1	-.085	2	-.837	3
347		4	max	1049.648	3	1610.894	8	909.483	2	1.151	2	.039	4	.516	4
348			min	-940.32	4	2.576	3	-878.272	1	-.994	1	-.041	3	-.838	3
349		5	max	1049.648	3	1610.894	8	909.483	2	1.151	2	.075	4	.468	4
350			min	-940.32	4	2.576	3	-878.272	1	-.994	1	-.076	3	-.838	3
351	M42	1	max	196.359	2	543.54	5	327.728	2	.608	2	.055	3	.084	4
352			min	-140.216	1	-164.654	2	-297.346	1	-.518	1	-.06	4	-.155	3
353		2	max	196.359	2	543.54	5	327.728	2	.608	2	.046	3	.064	4
354			min	-140.216	1	-164.654	2	-297.346	1	-.518	1	-.05	4	-.162	7
355		3	max	196.359	2	543.54	5	327.728	2	.608	2	.039	2	.043	4
356			min	-140.216	1	-164.654	2	-297.346	1	-.518	1	-.04	4	-.184	7
357		4	max	196.359	2	543.54	5	327.728	2	.608	2	.057	2	.023	4
358			min	-140.216	1	-164.654	2	-297.346	1	-.518	1	-.054	1	-.205	7
359		5	max	196.359	2	543.54	5	327.728	2	.608	2	.074	2	.003	4
360			min	-140.216	1	-164.654	2	-297.346	1	-.518	1	-.07	1	-.226	7
361	M40A	1	max	107.925	3	332.5	2	54.942	1	.02	2	.068	2	.323	3
362			min	-169.414	4	-313.046	1	-61.857	2	-.022	1	-.057	1	-.376	4
363		2	max	103.359	3	328.173	2	58.524	1	.02	2	.035	2	.2	3
364			min	-164.847	4	-317.373	1	-65.439	2	-.022	1	-.028	1	-.261	4
365		3	max	98.792	3	323.845	2	62.105	1	.02	2	.015	4	.079	3
366			min	-160.281	4	-321.701	1	-69.02	2	-.022	1	-.012	3	-.143	4
367		4	max	94.225	3	319.517	2	65.686	1	.02	2	.036	4	.165	1
368			min	-155.714	4	-326.028	1	-72.601	2	-.022	1	-.035	2	-.228	2
369		5	max	89.658	3	315.19	2	69.267	1	.02	2	.07	1	.333	1
370			min	-151.147	4	-330.356	1	-76.182	2	-.022	1	-.074	2	-.39	2
371	M41A	1	max	81.06	1	400.38	1	66.271	2	.048	4	.062	1	.474	1
372			min	-145.193	2	-397.001	2	-60.968	1	-.051	3	-.066	2	-.542	2
373		2	max	77.805	1	396.052	1	64.963	2	.048	4	.039	3	.27	1
374			min	-141.938	2	-401.329	2	-59.66	1	-.051	3	-.039	4	-.337	2
375		3	max	74.551	1	391.725	1	63.655	2	.048	4	.013	3	.068	1
376			min	-138.684	2	-405.656	2	-58.352	1	-.051	3	-.011	4	-.131	2
377		4	max	73.333	4	387.397	1	65.234	4	.048	4	.033	2	.118	4
378			min	-135.429	2	-409.984	2	-62.659	3	-.051	3	-.028	1	-.172	3
379		5	max	76.587	4	383.069	1	73.33	4	.048	4	.064	2	.289	2
380			min	-136.137	3	-414.312	2	-70.756	3	-.051	3	-.057	1	-.328	1
381	M42A	1	max	80.602	2	421.954	4	62.923	3	.02	2	.062	4	.429	4
382			min	-129.312	1	-410.883	3	-63.584	4	-.019	1	-.066	3	-.48	3
383		2	max	79.29	2	417.626	4	63.11	3	.02	2	.03	4	.214	4
384			min	-127.999	1	-415.21	3	-63.771	4	-.019	1	-.034	3	-.269	3
385		3	max	77.977	2	413.299	4	63.297	3	.02	2	.001	2	.074	2
386			min	-126.687	1	-419.538	3	-63.957	4	-.019	1	-.007	8	-.129	1
387		4	max	76.665	2	408.971	4	63.484	3	.02	2	.031	3	.161	3
388			min	-125.374	1	-423.866	3	-64.144	4	-.019	1	-.036	4	-.21	4
389		5	max	75.353	2	404.644	4	63.671	3	.02	2	.064	3	.379	3
390			min	-124.062	1	-428.193	3	-64.331	4	-.019	1	-.069	4	-.418	4

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
391	M40B	1	max	113.357	3	338.248	2	55.193	4	.246	2	.051	1	1.007	2
392			min	-178.929	4	-277.676	1	-54.943	3	-.246	1	-.051	2	-1.063	1
393		2	max	101.165	3	322.761	2	26.765	4	.246	2	.047	4	.409	3
394			min	-166.737	4	-293.163	1	-26.516	3	-.246	1	-.046	3	-.548	4
395		3	max	88.973	3	307.274	2	13.635	2	.246	2	.07	4	.191	3
396			min	-156.137	2	-308.65	1	-13.393	1	-.246	1	-.069	3	-.357	4
397		4	max	89.859	1	291.788	2	30.339	3	.246	2	.041	4	.591	1
398			min	-168.329	2	-324.137	1	-30.089	4	-.246	1	-.039	3	-.725	2
399		5	max	102.051	1	276.301	2	58.766	3	.246	2	.049	2	1.199	1
400			min	-180.521	2	-339.624	1	-58.517	4	-.246	1	-.047	1	-1.245	2
401	M41B	1	max	52.237	2	377.265	4	67.979	1	.331	4	.087	3	1.272	4
402			min	-94.473	1	-316.578	3	-68.974	2	-.333	3	-.085	4	-1.319	3
403		2	max	56.186	2	361.779	4	34.793	1	.331	4	.045	3	.595	4
404			min	-98.422	1	-332.065	3	-35.787	2	-.333	3	-.046	4	-.725	3
405		3	max	60.135	2	346.292	4	22.327	4	.331	4	.07	1	.224	2
406			min	-102.371	1	-347.552	3	-23.323	3	-.333	3	-.073	2	-.381	1
407		4	max	64.085	2	330.805	4	30.585	2	.331	4	.043	1	.549	3
408			min	-106.321	1	-363.039	3	-31.58	1	-.333	3	-.047	2	-.674	4
409		5	max	68.034	2	315.318	4	63.772	2	.331	4	.078	4	1.228	3
410			min	-110.27	1	-378.525	3	-64.766	1	-.333	3	-.084	3	-1.266	4
411	M42B	1	max	105.507	4	292.678	1	47.145	3	.212	1	.043	4	1.068	1
412			min	-172.647	3	-233.292	2	-48.879	4	-.22	2	-.035	3	-1.127	2
413		2	max	121.648	4	277.191	1	25.558	3	.212	1	.046	2	.546	1
414			min	-188.788	3	-248.779	2	-27.291	4	-.22	2	-.041	1	-.685	2
415		3	max	137.789	4	261.705	1	10.276	1	.212	1	.058	3	.179	4
416			min	-204.929	3	-264.266	2	-12.004	2	-.22	2	-.057	4	-.342	3
417		4	max	153.93	4	246.218	1	22.345	1	.212	1	.046	3	.53	4
418			min	-221.07	3	-279.753	2	-24.074	2	-.22	2	-.047	4	-.659	3
419		5	max	170.072	4	230.731	1	37.47	4	.212	1	.049	1	.91	4
420			min	-237.211	3	-295.24	2	-39.203	3	-.22	2	-.053	2	-.949	3

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	L...	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn...	...	Eqn
1	MP2A	PIPE_2.0	.888	4.5	3	.110	4.5		3	12143...	32130	1.872	1.872	1...	H1-1b
2	MP2B	PIPE_2.0	.829	4.5	2	.105	4.5		3	12143...	32130	1.872	1.872	1...	H1-1b
3	MP2C	PIPE_2.0	.818	4.5	4	.103	4.5		4	12143...	32130	1.872	1.872	1...	H1-1b
4	M5	HSS4X4X4	.591	0	7	.131	0	y	7	12385...	139518	16.181	16.181	2...	H1-1b
5	M4	HSS4X4X4	.585	0	6	.137	0	y	6	12385...	139518	16.181	16.181	2...	H1-1b
6	M6	HSS4X4X4	.560	0	5	.139	0	z	4	12385...	139518	16.181	16.181	2...	H1-1b
7	MP3A	PIPE_2.0	.411	3.521	4	.064	3.521		4	19360...	32130	1.872	1.872	1...	H1-1b
8	MP1A	PIPE_2.0	.392	3.521	3	.069	3.521		3	19360...	32130	1.872	1.872	1...	H1-1b
9	MP1C	PIPE_2.0	.360	3.521	1	.073	3.521		4	19360...	32130	1.872	1.872	1...	H1-1b
10	MP1B	PIPE_2.0	.358	3.521	2	.080	3.521		2	19360...	32130	1.872	1.872	1...	H1-1b
11	MP3B	PIPE_2.0	.355	3.521	1	.065	3.521		3	19360...	32130	1.872	1.872	2...	H1-1b
12	MP3C	PIPE_2.0	.339	3.521	2	.075	3.521		2	19360...	32130	1.872	1.872	1...	H1-1b
13	M2	PIPE_3.0	.324	7.422	5	.123	5.078		3	28250...	65205	5.749	5.749	1...	H1-1b
14	M3	PIPE_3.0	.323	7.422	6	.149	5.078		3	28250...	65205	5.749	5.749	2...	H1-1b
15	M1	PIPE_3.0	.320	7.422	7	.161	5.078		1	28250...	65205	5.749	5.749	1...	H1-1b
16	M8	HSS4X4X4	.258	2.855	7	.103	.476	z	1	12172...	139518	16.181	16.181	1...	H1-1b
17	M7	HSS4X4X4	.255	2.855	6	.118	5.234	z	1	12172...	139518	16.181	16.181	1...	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	L..	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....		Eqn
18	M9	HSS4X4X4	.246	2.855	5	.095	5.234	z	3	12172...	139518	16.181	16.181	1...	H1-1b
19	M24	L3X3X4	.214	4.426	6	.013	4.426	y	6	30228...	46656	1.688	3.697	1...	H2-1
20	M23	L3X3X4	.207	0	8	.013	0	z	8	30228...	46656	1.688	3.729	1...	H2-1
21	M26	L3X3X4	.201	0	5	.012	0	z	5	30228...	46656	1.688	3.735	1...	H2-1
22	M27	L3X3X4	.200	4.426	8	.012	4.426	z	6	30228...	46656	1.688	3.756	1...	H2-1
23	M25	L3X3X4	.196	4.426	1	.012	4.426	y	1	30228...	46656	1.688	3.756	2...	H2-1
24	M22	L3X3X4	.196	0	7	.012	0	y	7	30228...	46656	1.688	3.756	1...	H2-1
25	M41B	PIPE_3.0	.161	0	3	.059	7.329		3	61772...	93150	8.213	8.213	2...	H1-1b
26	M40B	PIPE_3.0	.153	7.329	2	.046	7.329		1	61772...	93150	8.213	8.213	2...	H1-1b
27	M42B	PIPE_3.0	.138	0	2	.041	7.329		2	61772...	93150	8.213	8.213	2...	H1-1b
28	M11	PL3/4x6	.090	.642	3	.150	.495	y	2	13985...	202500	3.164	25.313	1...	H1-1b
29	M12	PL3/4x6	.079	.642	1	.110	.789	y	3	13985...	202500	3.164	25.313	1...	H1-1b
30	M10	PL3/4x6	.073	.642	4	.139	.789	y	2	13985...	202500	3.164	25.313	1...	H1-1b
31	M41A	PIPE_3.0	.067	0	2	.020	2.048		2	90209...	93150	8.213	8.213	2...	H1-1b
32	M42A	PIPE_3.0	.059	0	3	.017	2.048		3	90209...	93150	8.213	8.213	2...	H1-1b
33	M40A	PIPE_3.0	.049	2.048	2	.015	2.048		1	90209...	93150	8.213	8.213	2...	H1-1b

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTHA083C

Opta - Montano Rd_FT
58A Montano Road
Glastonbury, CT 06033

April 22, 2022

Fox Hill Telecom Project Number: 220942

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**23.77 %**

Fox Hill Telecom

April 22, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CTHA083C – Opta - Montano Rd_FT**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **58A Montano Road, Glastonbury, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). 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 population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) 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.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **58A Montano Road, Glastonbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	2500 MHz (BRS)	8	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24_43-U-NA20	115
A	2	Ericsson AIR6449 B41	117
B	1	RFS APXVAARR24_43-U-NA20	115
B	2	Ericsson AIR6449 B41	117
C	1	RFS APXVAARR24_43-U-NA20	115
C	2	Ericsson AIR6449 B41	117

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	14	495	17,500.85	6.31
Antenna A2	Ericsson AIR6449 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	6.59
						Sector A Composite MPE%	**12.90**
Antenna B1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	14	495	17,500.85	6.31
Antenna B2	Ericsson AIR6449 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	6.59
						Sector B Composite MPE%	**12.90**
Antenna C1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	14	495	17,500.85	6.31
Antenna C2	Ericsson AIR6449 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	6.59
						Sector C Composite MPE%	**12.90**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**12.90 %**
Sprint	3.31 %
AT&T	3.62 %
Verizon Wireless	3.94 %
Site Total MPE %:	**23.77 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	12.90 %
T-MOBILE Sector B Total:	12.90 %
T-MOBILE Sector C Total:	12.90 %
Site Total:	23.77 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	788.97	115	4.77	600 MHz	400	1.19%
T-Mobile 700 MHz LTE	2	432.54	115	2.62	700 MHz	467	0.56%
T-Mobile 1900 MHz (PCS) LTE	4	1,469.13	115	17.78	1900 MHz (PCS)	1000	1.78%
T-Mobile 1900 MHz (PCS) GSM	1	550.92	115	1.67	1900 MHz (PCS)	1000	0.17%
T-Mobile 2100 MHz (AWS) LTE	4	1,726.08	115	20.89	2100 MHz (AWS)	1000	2.09%
T-Mobile 2100 MHz (AWS) UMTS	1	1,726.08	115	5.22	2100 MHz (AWS)	1000	0.52%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	117	65.94	2500 MHz (BRS)	1000	6.59%
						Total:	**12.90%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	12.90 %
Sector B:	12.90 %
Sector C:	12.90 %
T-MOBILE Maximum Total (per sector):	12.90 %
Site Total:	23.77 %
Site Compliance Status:	**COMPLIANT**

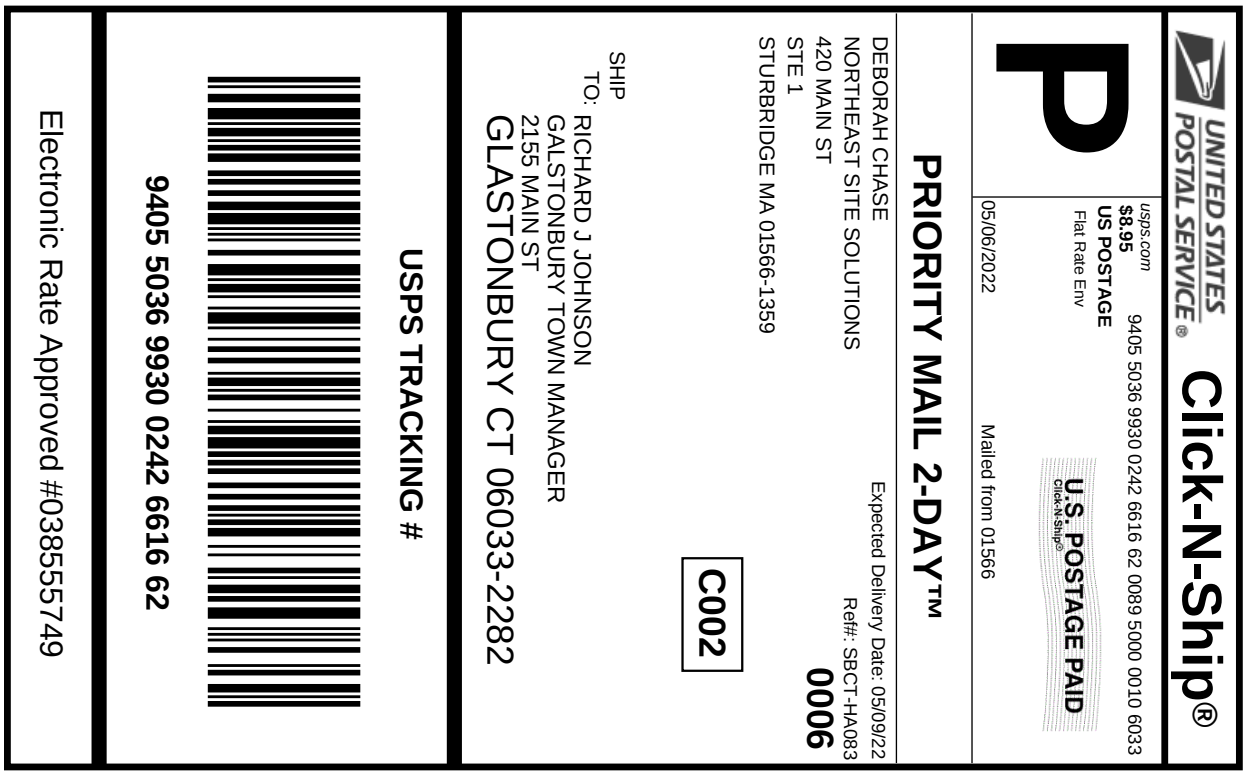
The anticipated composite MPE value for this site assuming all carriers present is **23.77 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Recipient Mailings



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Trans. #:	562968471
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Expected Delivery Date:	05/09/2022

Priority Mail® Postage:	**$8.95**
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STE 1
STURBRIDGE MA 01566-1359

Ref#: SBCT-HA083

To: RICHARD J JOHNSON
GALSTONBURY TOWN MANAGER
2155 MAIN ST
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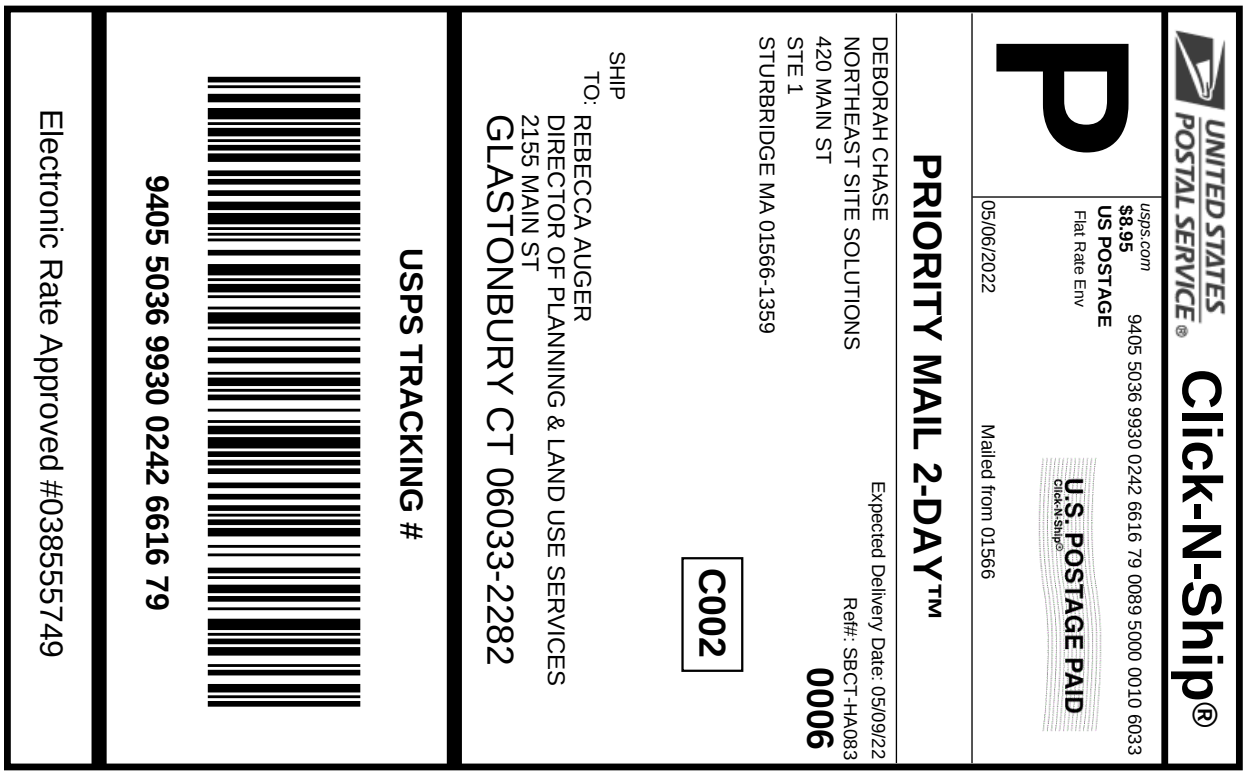

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3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0242 6616 79

Trans. #:	562968471
Print Date:	05/06/2022
Ship Date:	05/06/2022
Expected Delivery Date:	05/09/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

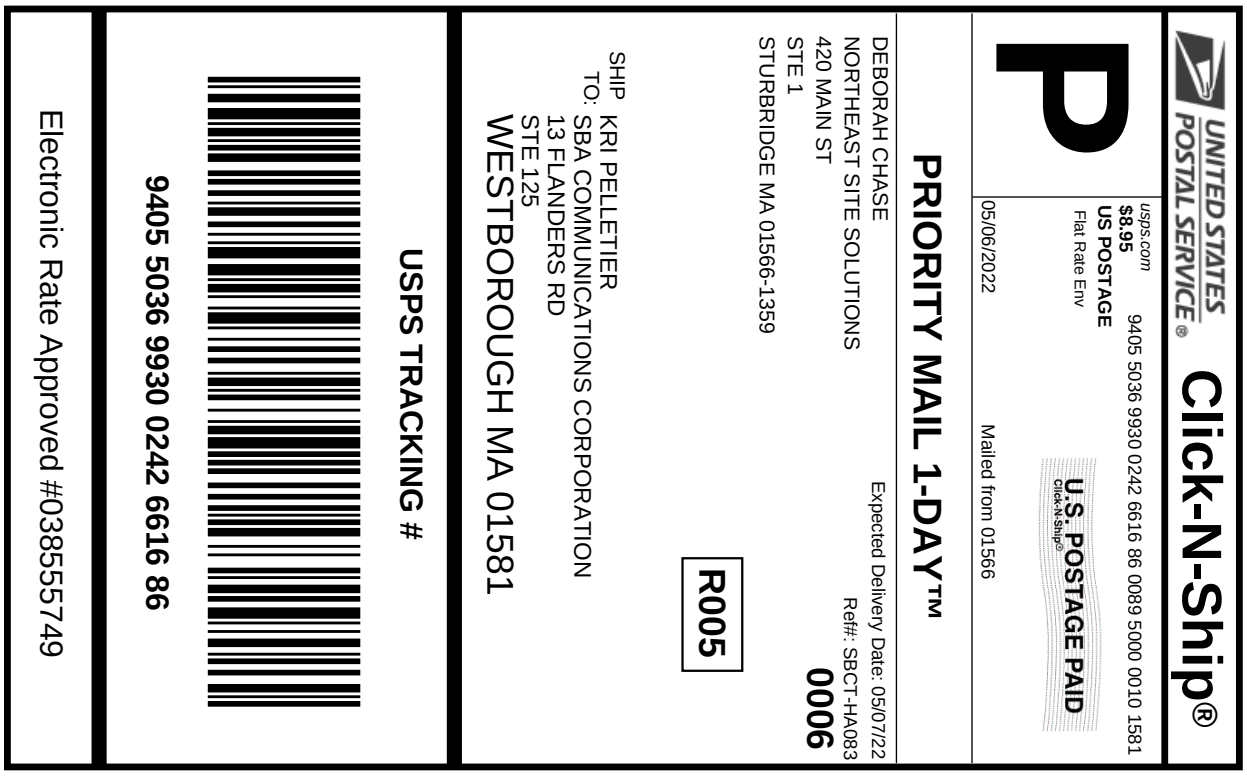
Ref#: SBCT-HA083

To: REBECCA AUGER
DIRECTOR OF PLANNING & LAND USE SERVICES
2155 MAIN ST
GLASTONBURY CT 06033-2282

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0242 6616 86

Trans. #:	562968471
Print Date:	05/06/2022
Ship Date:	05/06/2022
Expected Delivery Date:	05/07/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: SBCT-HA083

To: KRI PELLETIER
SBA COMMUNICATIONS CORPORATION
13 FLANDERS RD
STE 125
WESTBOROUGH MA 01581

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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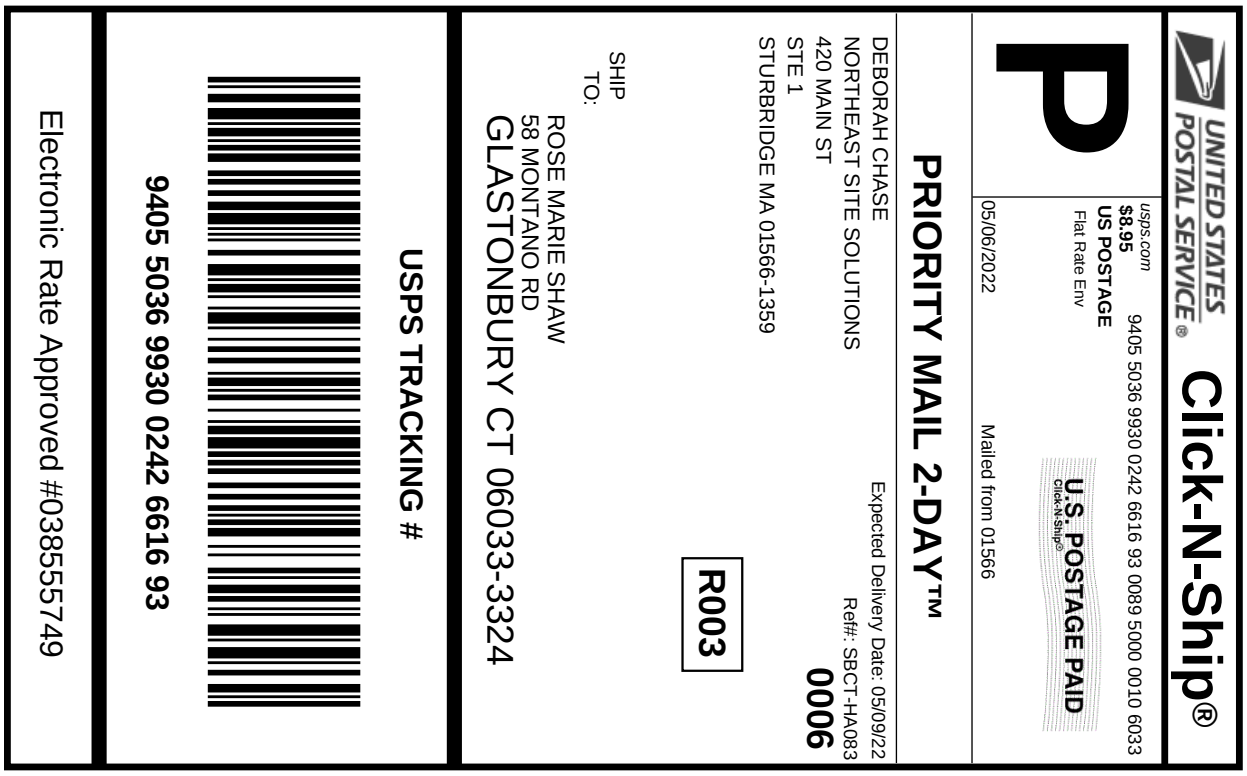

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0242 6616 93

Trans. #:	562968471
Print Date:	05/06/2022
Ship Date:	05/06/2022
Expected Delivery Date:	05/09/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: SBCT-HA083

To: ROSE MARIE SHAW
58 MONTANO RD
GLASTONBURY CT 06033-3324

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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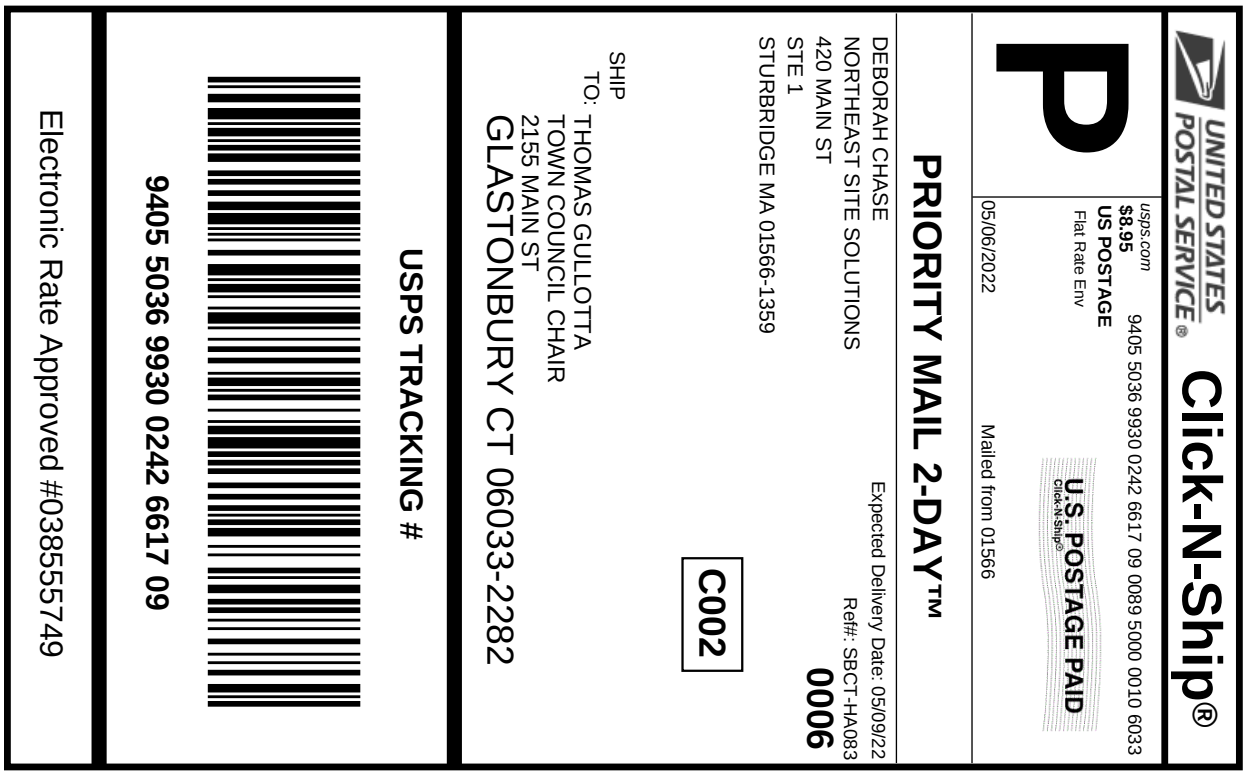

Cut on dotted line.

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0242 6617 09

Trans. #:	562968471
Print Date:	05/06/2022
Ship Date:	05/06/2022
Expected Delivery Date:	05/09/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: SBCT-HA083

To: THOMAS GULLOTTA
TOWN COUNCIL CHAIR
2155 MAIN ST
GLASTONBURY CT 06033-2282

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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CTHA083C SBA-TMO

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

05/09/2022 10:00 AM

Product	Qty	Unit Price	Price
Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.00 oz Acceptance Date: Mon 05/09/2022 Tracking #: 9405 5036 9930 0242 6616 86	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 10.00 oz Acceptance Date: Mon 05/09/2022 Tracking #: 9405 5036 9930 0242 6616 62	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 10.00 oz Acceptance Date: Mon 05/09/2022 Tracking #: 9405 5036 9930 0242 6616 79	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 10.00 oz Acceptance Date: Mon 05/09/2022 Tracking #: 9405 5036 9930 0242 6616 93	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 10.00 oz Acceptance Date: Mon 05/09/2022 Tracking #: 9405 5036 9930 0242 6617 09	1		$0.00
Grand Total:			$0.00

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