NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

April 5, 2022

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

RE: Exempt Modification Application
331 Killingworth Road (Route 80) Guilford, CT 06437
Latitude: 41.353152
Longitude: -72.688247
Site#: CT13065-A_CTNH793A_SBA/T-Mobile

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing tower located at 331 Killingworth Road (Route 80) Guilford, CT 06437. T-Mobile currently maintains six (6) antennas at the 140-foot level of the existing 152-foot tower. The property is owned by Kathleen Bloomquist, and the tower is owned by SBA. T-Mobile now intends to replace (6) existing antennas with (6) new antennas and add three (3) new antennas. The new antennas would be installed at the 140-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable. Antenna mount modifications will be completed as per attached Tower Engineering Solutions mount analysis dated February 14, 2022.

T-Mobile Planned Modifications:
Remove:
(3) Alcatel Lucent PCS B25 RRH
(4) Fiber Cable 1-1/4"

Remove and Replace:
(3) RFS APXVSPP18-C-A20 Antennas (Remove) – (3)) Commscope VV-65A-R1 Antennas (Replace)
(3) RFS APXVTM14-ALU-I20 Antennas (Remove) – (3) Ericsson AIR6449 B41 Antennas (Replace)
(3) Alcatel Lucent PCS B25 1900 MHz Radio (Remove) - (3) Ericsson 4460 B25+B66A Radio (Replace)
(3) Alcatel Lucent RRH8x20 2500 MHz Radio (Remove) - (3) Ericsson 4480 B71+B85 Radio (Replace)

Install New:
(3) RFS APXVAALL24-43-U-NA20 Antennas
(3) Fiber Cables 2"

Existing to Remain:
(3) Alcatel Lucent RRH2x50 800MHz Radio*
(3) Alcatel Lucent 800 MHz Filters*
(4) RFS ACU-A20-N RET*

*Equipment listed for entitlement purposed only

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

This facility was approved by the Connecticut Siting Council, Docket No. 47 on June 6, 1985. 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 Matthew T. Hoey III, First Selectman and Jaime Stein, Town Planner for the Town of Guilford, 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: Matthew T. Hoey III, First Selectman
Town of Guilford
31 Park Street
Guilford, CT 06437

Jaime Stein, Town Planner
Town of Guilford
50 Boston Street
Guilford, CT 06437

Kathleen Bloomquist, Property Owner
331 Route 80
Guilford, CT 06437

SBA – Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 47

AN APPLICATION SUBMITTED BY COMMUNITY TV SYSTEMS, INC., D/B/A ROLLINS CABLEVISION OF CONNECTICUT, FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION OF A MICROWAVE HUB SITE, TOWER, AND ASSOCIATED EQUIPMENT IN THE TOWN OF GUILFORD, CONNECTICUT.	:	CONNECTICUT SITING COUNCIL
	:	June 6, 1985

D E C I S I O N A N D O R D E R

Pursuant to the foregoing Opinion, the Council hereby orders that a Certificate of Environmental Compatibility and Public Need as required by section 16-50k of the General Statutes of Connecticut be issued to Rollins Cablevision for the construction, operation, and maintenance of a microwave hub site, tower, and associated equipment in the Town of Guilford, Connecticut.

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

1. The tower shall be no taller than necessary to provide the proposed service, and in no event shall exceed 150 feet;
2. The certificate holder shall notify the Council if any additional equipment other than that listed in the Findings of Fact accompanying this Decision and Order is added to this facility;
3. The facility construction shall be conducted in accordance with all applicable federal, state, and municipal laws and regulations;
4. The certificate holder shall comply with the reporting requirements of section 16-50j-77 of the Council's Rules of Practice;

5. Prior to the commencement of construction, the certificate holder shall provide plans for the plantings of evergreens around the base of the tower and within the applicant's leased area;
6. The tower site parcel shall be located as shown in Exhibit 7 of the application, immediately adjacent to the Connecticut State Forest boundary;
7. Construction activities shall take place during daylight working hours; and
8. This decision and order shall be void if all construction authorized is not completed within two years of the issuance of this decision.

Pursuant to section 16-50p of the General Statutes, we hereby direct that a copy of the Opinion and Decision and Order shall be served on each person listed below. A notice of the issuance shall be published in the New Haven Journal Courier.

The parties to this proceeding are:

Rollins Cablevision (Applicant)
P.O. Box 667
44 North Branford Road
Branford, Connecticut 06405
ATTN: Thomas E. Gallagher, General Manager

Byrne, Slater, Sandler, Shulman & Rouse, P.C. (its attorney)
P.O. Box 3216
111 Pearl Street
Hartford, Connecticut 06103
ATTN: Kevin B. Sullivan, Esquire

Mr. David B. Damer
Vice-Chairman
Guilford Conservation Commission
440 Great Hill Road
Guilford, Connecticut 06437

Mr. David W. Fisher
Chairman
Town of Guilford
Guilford Planning and
Zoning Commission
Guilford, Connecticut 06437

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, this 6th day of June, 1985.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner John Downey Designee: Commissioner Peter G. Boucher	Yes
Commissioner Stanley Pac Designee: Christopher Cooper	Absent
Owen L. Clark	Yes
Fred J. Doocy	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
William H. Smith	Absent
Colin C. Tait	Yes

STATE OF CONNECTICUT)
: ss. New Britain, June 6, 1985
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

Property Card

All information is for assessment purposes only. Assessments are calculated at 70% of the estimated October 1, 2017 market value which was the date of the last revaluation as completed by eQuality Valuation Services, LLC.

Information on the Property Records for the Municipality of Guilford was last updated on 4/2/2022.

Parcel Information

Location:	331 ROUTE 80	Map and Parcel:	10701401	Census Tract:	1903
Zoning:	R-8	Developer's Map:	1489	Developer's Lot:	1
Total Acreage:	1.58	Farm, Forest, Open Space Acres:		Unique ID:	286

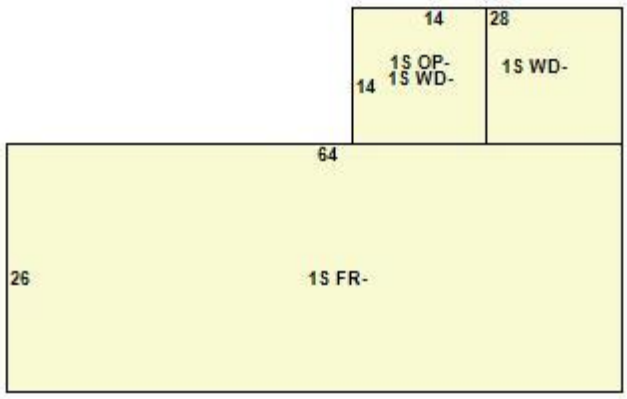
Value Information

	Appraised Value	Assessed Value
Land	281,500	197,050
Buildings	140,699	98,490
Detached Outbuildings	0	0
Total	422,199	295,540

Owner's Information

Owner's Data
BLOOMQUIST KATHLEEN 331 ROUTE 80 GUILFORD CT 06437

Building 1



Occupancy:	SINGLE FAMILY	Construction:	WOOD FRAME	Design:	1.0 RANCH
Story Height:	1.00	Living Area Above Ground:	1,664	Year Built:	1972
Year Remodeled:		Condition:	GOOD	Foundation:	POURED CONC

Exterior Siding:	ALUMINUM	Roofing:	ASPHALT	Heating:	HWBB
Fuel:	OIL	A/C Percent:	90%	Total Rooms:	5
Total Bedrooms:	3	Kitchens:	1	Full Baths:	1
Half Baths:	1	Extra Fixtures:	0	Basement Finished Area:	0

Special Features

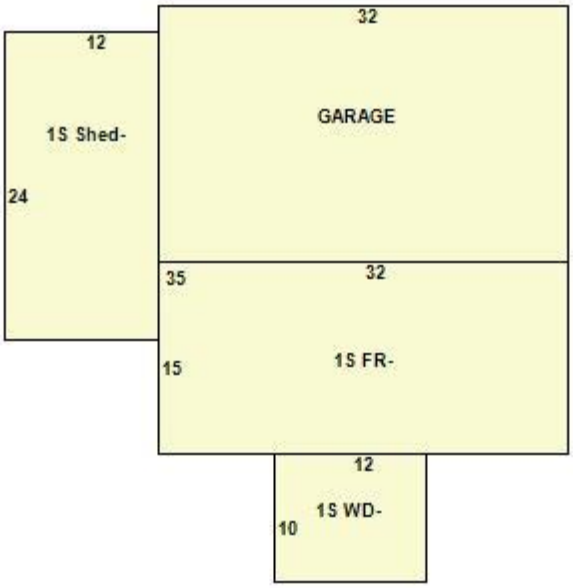
CHIMNEYS	1

Attached Components

Type:	Year Built:	Area:
WOOD DECK	1972	392
OPEN PORCH	1972	196

Building 2

Photo Not Available



Occupancy:	SINGLE FAMILY	Construction:	WOOD FRAME	Design:	1.0 RANCH
Story Height:	1.00	Living Area Above Ground:	480	Year Built:	1970
Year Remodeled:		Condition:	AVERAGE	Foundation:	POURED CONC
Exterior Siding:	VINYL	Roofing:	ASPHALT	Heating:	BASEBOARD
Fuel:	ELECTRIC	A/C Percent:	0%	Total Rooms:	2
Total Bedrooms:	1	Kitchens:	1	Full Baths:	1
Half Baths:	0	Extra Fixtures:	0	Basement Finished Area:	0

Special Features

Attached Components

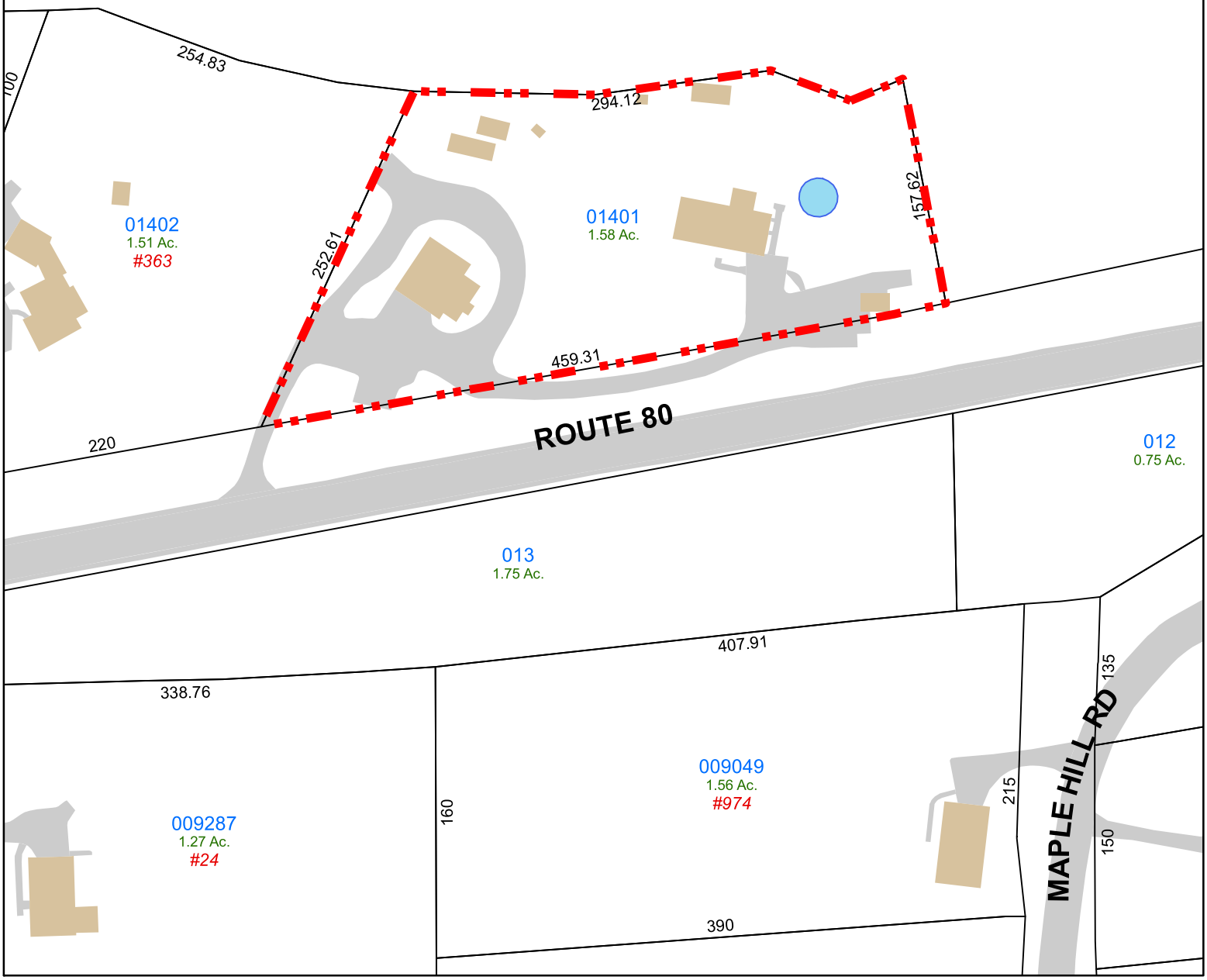
Type:	Year Built:	Area:
WOOD DECK	1970	120
ATT FRAME GARAGE	1970	1,120
AVERAGE SHED	1970	288

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
BLOOMQUIST KATHLEEN	0977	0256	06/01/2021	Name Change	$0
ACAMPORA KATHLEEN	0907	0862	12/12/2016	Quit Claim	$0
ACAMPORA DAVID & KATHLEEN L	0443	0612	11/23/1994		$197,221

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **286** Address: 331 ROUTE 80



N

Approximate Scale: 1 inch = 100 feet

0 60 120 Feet

Map Produced: August 2021

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Exhibit C

Construction Drawings

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).

CTNH793A

331 ROUTE 80
GUILDFORD, CT 06437
NEW HAVEN COUNTY

SITE NO.: CTNH793A
CARRIER SITE ID: CT03XC068

RF DESIGN GUIDELINE: 67E5A998E 6160

SCOPE OF WORK

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

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

SITE NOTES

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

GENERAL NOTES

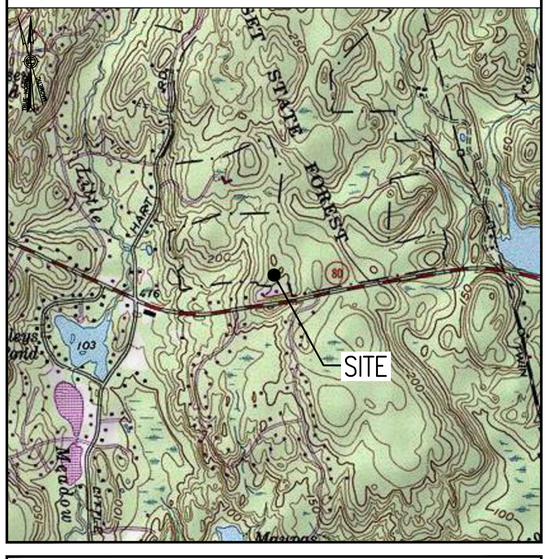
1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT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

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

811 DigSafe
MA.ME.NH.RI.VT

VICINITY MAP

SCALE: 1" = 1000'-0"



DIRECTIONS

TURN LEFT ONTO S WASHINGTON ST. TURN RIGHT ONTO MA-123 E. TURN LEFT TO MERGE ONTO I-495 NORTH TOWARD MANSFIELD/MARLBORO. MERGE ONTO I-495 NORTH. TAKE EXIT 13B TO MERGE ONTO I-95 SOUTH TOWARD PROVIDENCE RI. TAKE EXIT 62 TOWARD HAMMONASSET/STATE PARK. TURN RIGHT ONTO STATE HIGHWAY 450. TURN RIGHT ONTO CT-79 NORTH. AT THE TRAFFIC CIRCLE, TAKE THE 3RD EXIT ONTO CT-80 WEST. SITE WILL BE ON THE RIGHT.

SHEET INDEX

SHT. NO.	DESCRIPTION	VER.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLAN	2
A-2	TOWER ELEVATIONS & ANTENNA PLAN	2
A-3	SITE DETAILS	2
A-4	ANTENNA & FEEDLINE CHARTS	2
E-1	ELECTRIC & GROUNDING DETAILS	2

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:	CTNH793A
SBA SITE NUMBER:	CT13065-A
SBA SITE NAME:	GUILDFORD
SITE ADDRESS:	331 ROUTE 80 GUILFORD, CT 06437
PROPERTY OWNER:	ACAMPORA KATHLEEN 331 ROUTE 80 GUILFORD CT 06437
TOWER OWNER:	SBA TOWERS IV, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW HAVEN
ZONING DISTRICT:	R8 - RESIDENTIAL
STRUCTURE TYPE:	SELF-SUPPORT TOWER
STRUCTURE HEIGHT:	152'
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: 41.353167° N41°21'11.40" LONGITUDE: -72.688250° W72°41'17.70"

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

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

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

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

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED
PROFESSIONAL CIVIL ENGINEER
12/3/21

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	12/01/21	REVISED CONSTRUCTION	JRV
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/21/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNH793A

SITE ADDRESS:
331 KILLINGWORTH ROAD
GUILFORD, CT 06437

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.230

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SITE WORK GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

CONCRETE AND REINFORCING STEEL NOTES:

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

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

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1½ IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER
   OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....¾ IN.
   BEAMS AND COLUMNS .....1½ IN.

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

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

7. CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND T–MOBILE SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (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.

T-MOBILE
NORTHEAST LLC

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

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

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil ·Structural ·Land Surveying

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

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25937
LICENSED
PROFESSIONAL CIVIL ENGINEER

10/5/21

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	12/01/21	REVISED CONSTRUCTION	JRV
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/21/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNH793A

SITE ADDRESS:
331 KILLINGWORTH ROAD
GUILFORD, CT 06437

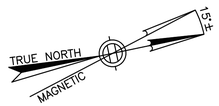
SHEET TITLE
GENERAL NOTES

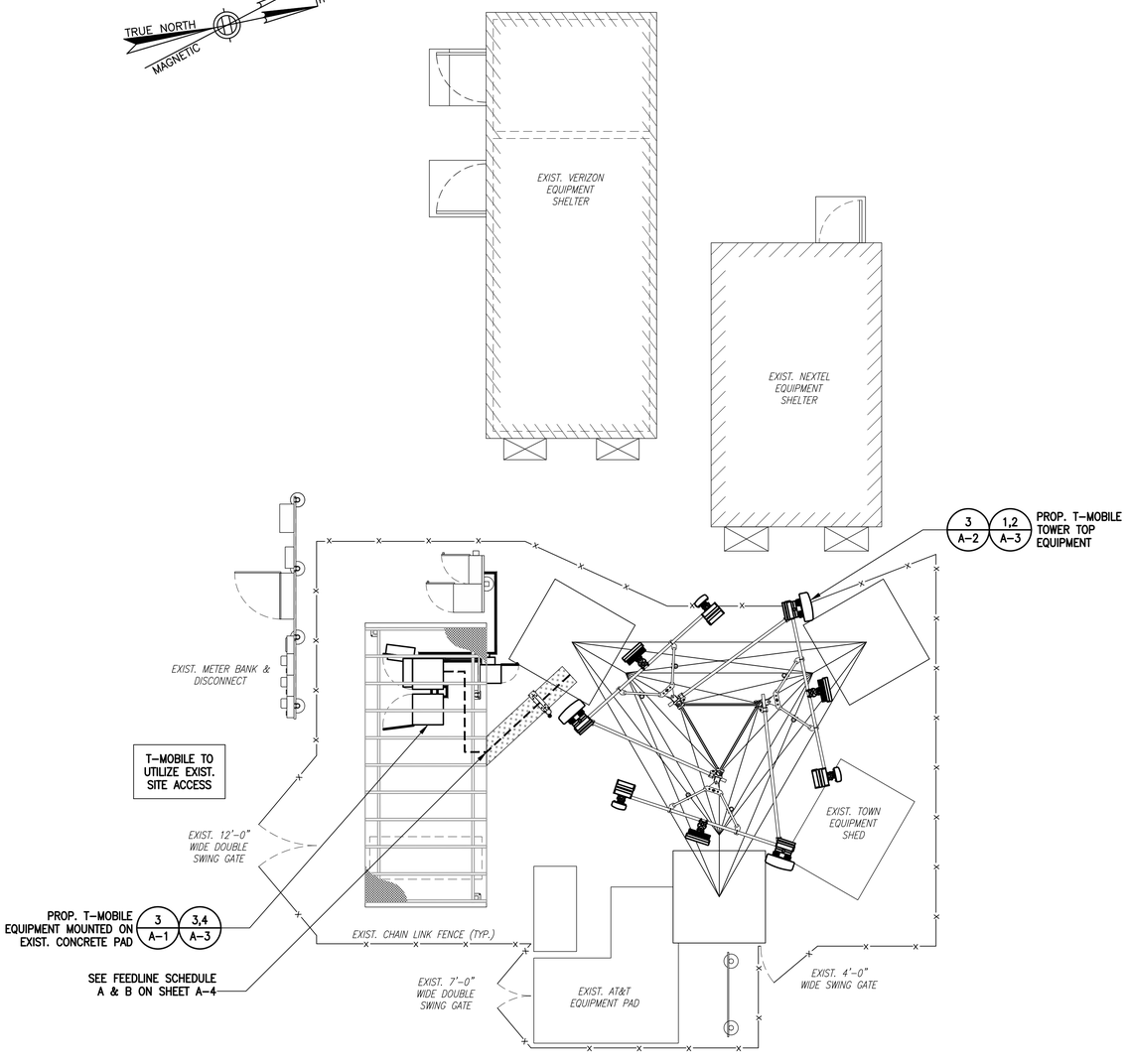
SHEET NUMBER
GN-1

1815.230

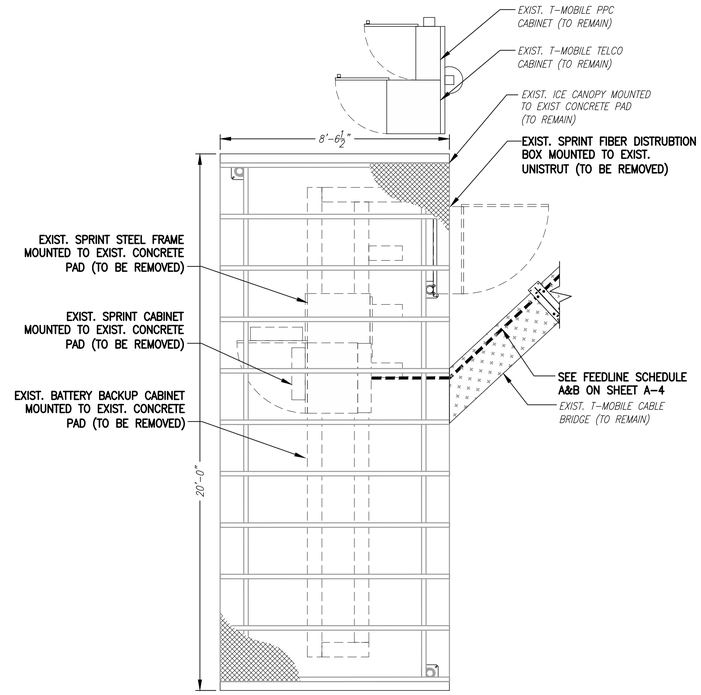
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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

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

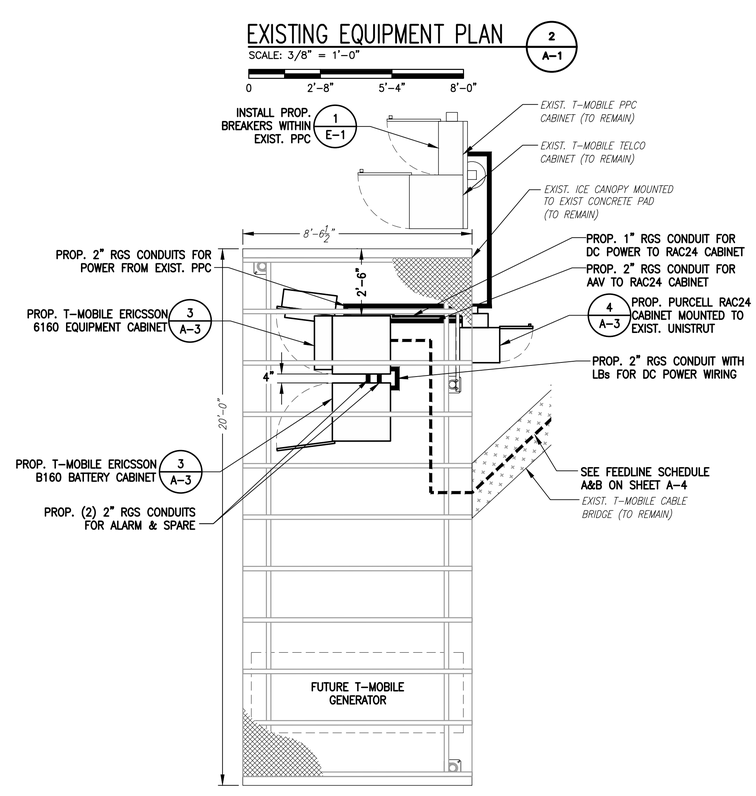




COMPOUND PLAN 1 A-1
SCALE: 1" = 5'-0"
0 5'-0" 10'-0 15'-0"



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



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

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

SBA COMMUNICATIONS CORP.
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WESTBOROUGH, MA 01581
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JAMES M. FITZGERALD
No. 25997
LICENSED PROFESSIONAL CIVIL ENGINEER
12/3/21

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
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SITE NUMBER:
CTNH793A

SITE ADDRESS:
331 KILLINGWORTH ROAD
GUILFORD, CT 06437

SHEET TITLE
COMPOUND & EQUIPMENT PLANS

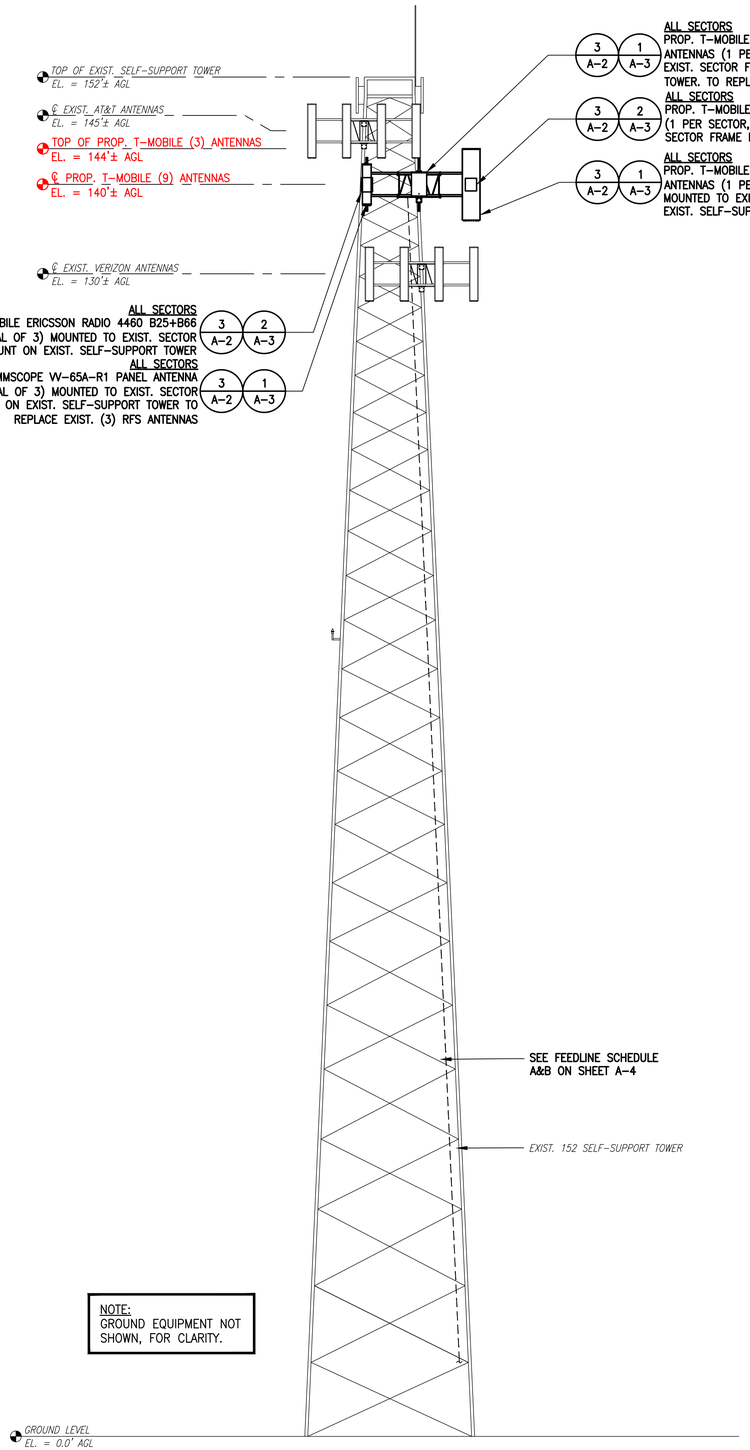
SHEET NUMBER
A-1

1815.230

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

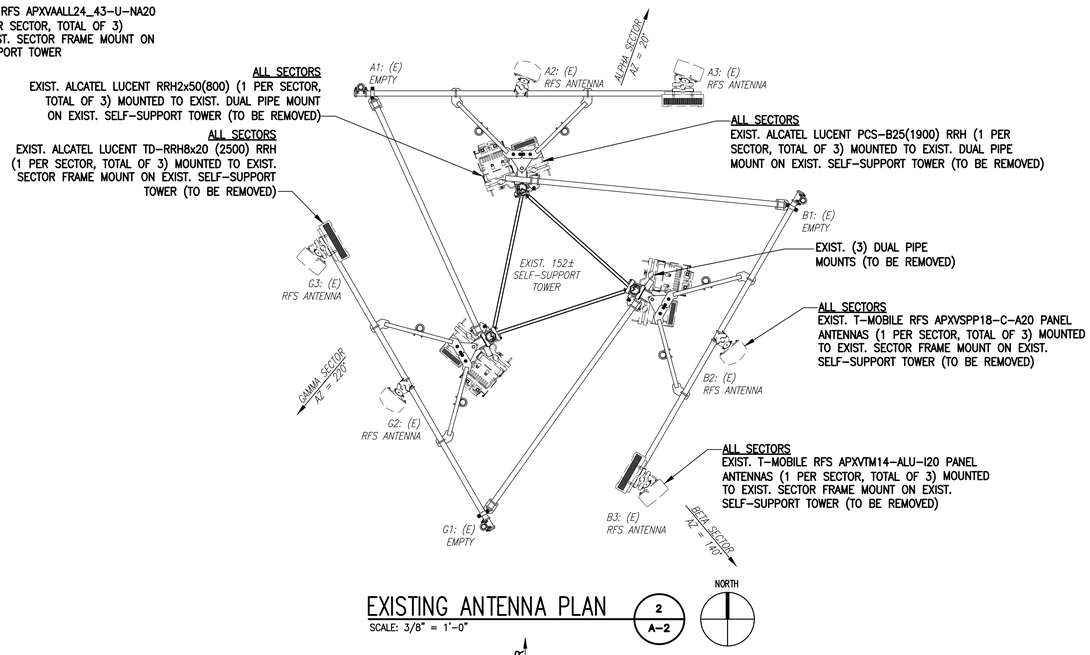
RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

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

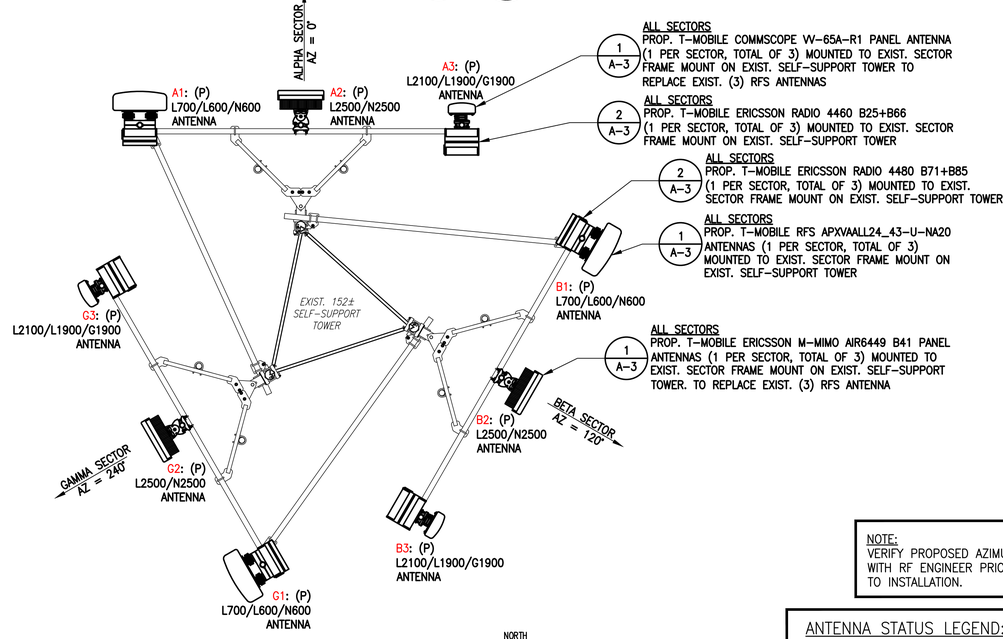


NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

TOWER ELEVATION 1 A-2
SCALE: 1/8" =1'-0"
0 8' 16' 24'



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



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

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

ANTENNA STATUS LEGEND:

EMPTY - EMPTY PIPE

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

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

SBA COMMUNICATIONS CORP.
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WESTBOROUGH, MA 01581
(508) 251-0720

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STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25937
LICENSED PROFESSIONAL CIVIL ENGINEER
12/3/21

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	12/01/21	REVISED CONSTRUCTION	JRV
1	05/04/21	ISSUED FOR CONSTRUCTION	JRV
0	04/21/21	ISSUED FOR REVIEW	JRV

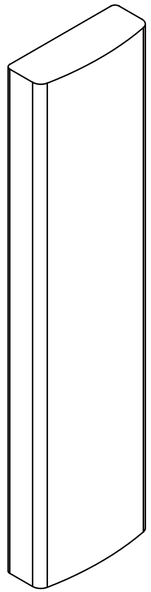
SITE NUMBER:
CTNH793A

SITE ADDRESS:
331 KILLINGWORTH ROAD
GUILFORD, CT 06437

SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLANS

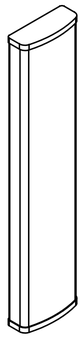
SHEET NUMBER
A-2

1815.230



RFS APXVAALL24_43-U-NA20 ANTENNA

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



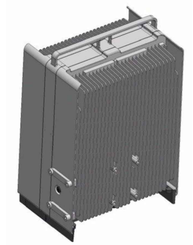
COMMSCOPE VV-65A-R1 ANTENNA

DIMENSIONS: 54.7"H x 12.1"W x 4.6"D
WEIGHT: 23.8 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ERICSSON M-MIMO AIR6449 B41 ANTENNA

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

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



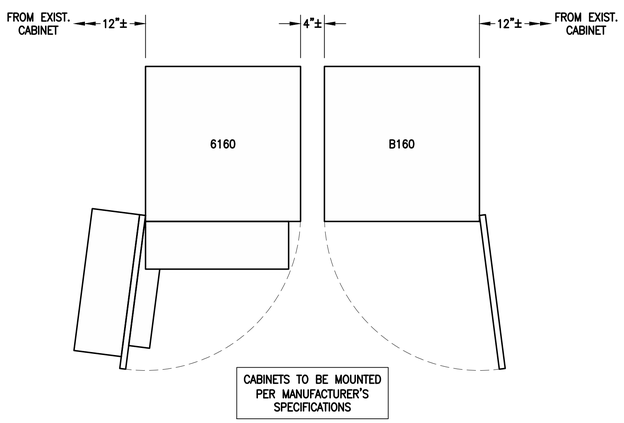
ERICSSON RADIO 4460 B25+B66

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

ERICSSON RADIO 4480 B71+B85

DIMENSIONS: 19.2"H x 15.1"W x 7.5"D
WEIGHT: 92.6 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
QUANTITY: TOTAL OF 1

ERICSSON B160 BATTERY CABINET

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

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

PURCELL SITE SUPPORT CABINET RAC24

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

SSC DETAILS (4 / A-3)
SCALE: N.T.S.

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SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

1815.230

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	SIGNAL CABLES
ALPHA	A1 RFS APXVAALL24_43-U-NA20	140'± AGL	0°	0°	2°	L700/L600/N600	RADIO 4480 B71+B85	(3) 2" (6x24) HCS FIBER CABLES
	A2 ERICSSON M-MIMO AIR6449 B41	140'± AGL	0°	0°	2°	L2500/N2500	–	
	A3 COMMSCOPE VV-65A-R1	140'± AGL	0°	0°	2°	L2100/L1900/G1900	RADIO 4460 B25+B66	
BETA	B1 RFS APXVAALL24_43-U-NA20	140'± AGL	120°	0°	2°	L700/L600/N600	RADIO 4480 B71+B85	
	B2 ERICSSON M-MIMO AIR6449 B41	140'± AGL	120°	0°	2°	L2500/N2500	–	
	B3 COMMSCOPE VV-65A-R1	140'± AGL	120°	0°	2°	L2100/L1900/G1900	RADIO 4460 B25+B66	
GAMMA	G1 RFS APXVAALL24_43-U-NA20	140'± AGL	240°	0°	2°	L700/L600/N600	RADIO 4480 B71+B85	
	G2 ERICSSON M-MIMO AIR6449 B41	140'± AGL	240°	0°	2°	L2500/N2500	–	
	G3 COMMSCOPE VV-65A-R1	140'± AGL	240°	0°	2°	L2100/L1900/G1900	RADIO 4460 B25+B66	

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

NOTE: RFDS REV1 – 10/13/21

FEEDLINE SCHEDULE

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

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

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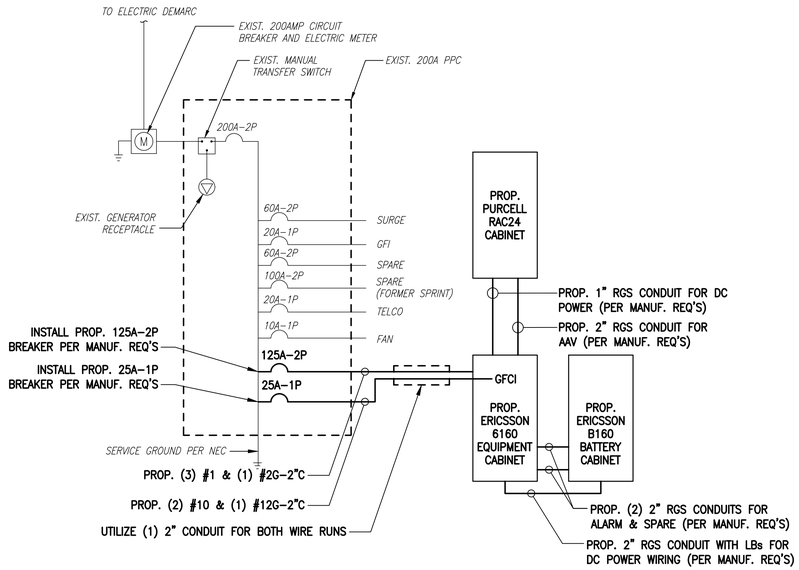
GUILFORD, CT 06437

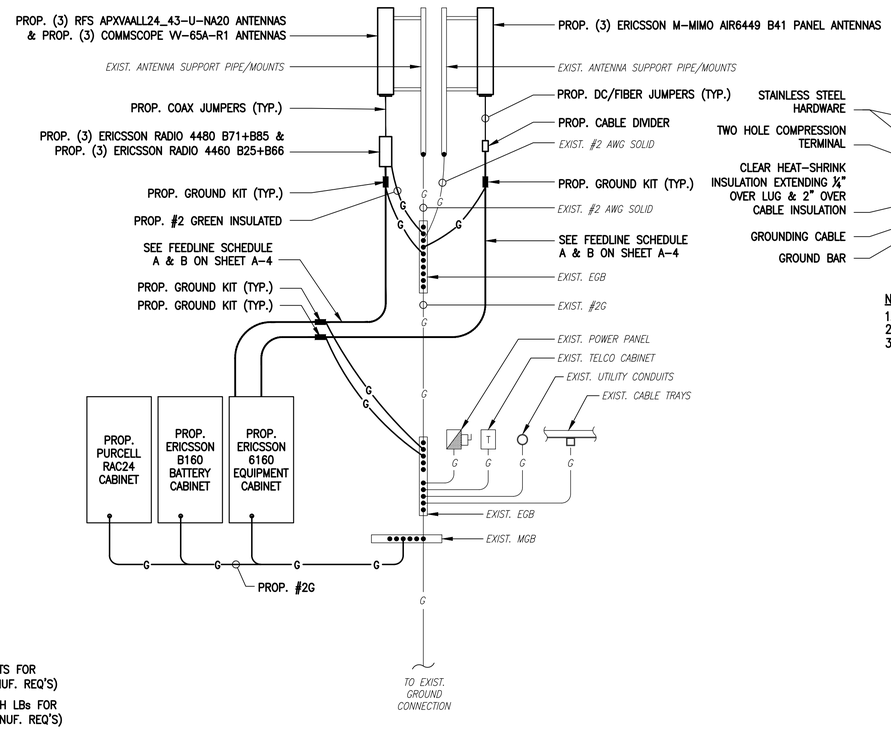
SHEET TITLE
ANTENNA & FEEDLINE CHARTS

SHEET NUMBER
A-4

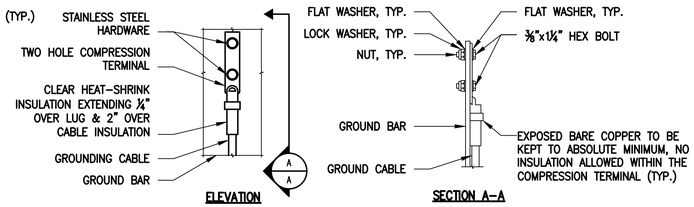
1815.230



ONE LINE DIAGRAM
SCALE: NOT TO SCALE — 1 / E-1



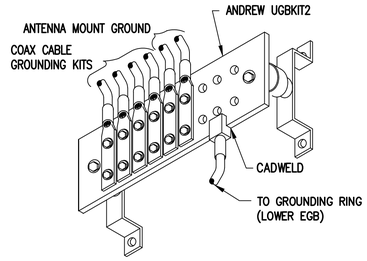
GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE — 2 / E-1



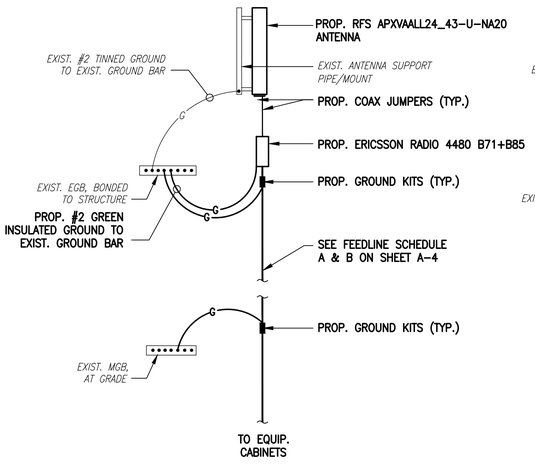
ELEVATION — SECTION A-A

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.

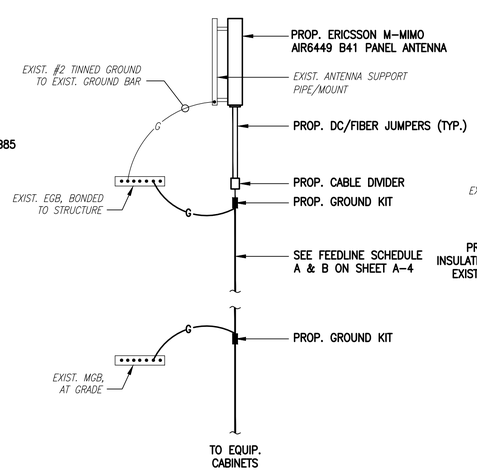
TYPICAL GROUND BAR CONNECTIONS DETAIL
SCALE: NOT TO SCALE — 3 / E-1



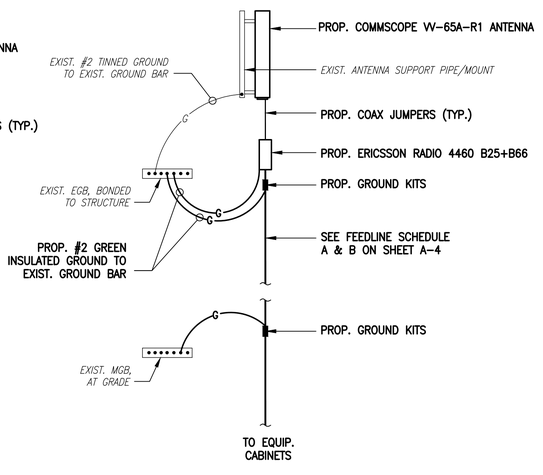
GROUND BAR (EGB)
SCALE: NOT TO SCALE — 5 / E-1



L700/L600/N600 ANTENNA



L2500/N2500 ANTENNA



L2100/L1900/G1900 ANTENNA

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

ELECTRICAL AND GROUNDING NOTES

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

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STATE OF CONNECTICUT ★ JAMES M. FITZGERALD ★ No. 25997 LICENSED PROFESSIONAL CIVIL ENGINEER

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SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.230

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 152 ft Rohn Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT13065-A

Customer Site Name: Guilford

Carrier Name: T-Mobile Sprint (App#: 154235, V#2)

Carrier Site ID / Name: CT03XC068 / _

Site Location: 331 Killingworth Road (Rt 80)

Guilford, Connecticut

New Haven County

Latitude: 41.353164

Longitude: -72.688252

Analysis Result:

Max Structural Usage: 98.3% [Pass]

Max Foundation Usage: 71.0% [PASS]

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

Report Prepared By: Ikram Hasan Efaz

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Report Prepared By: Ikram Hasan Efaz

Introduction

The purpose of this report is to summarize the analysis results on the 152 ft Rohn Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed.

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

Sources of Information

Tower Drawings	Rohn, Dwg # C851129, dated 8/6/1985
Foundation Drawing	FDH, Project # 09-03151E N1, dated 6/10/2009
Geotechnical Report	FDH, Project # 09-03151EG1, dated 5/5/2009
Mount Analysis	TES, Project #124062, dated 02/11/2022
Modification Drawings	All-Points Technology Corp., Job # CT2001D1, dated 4/28/05 FDH, Project # 09-03151E S2, dated 9/4/09 FDH, Project # 11-10199E S2, dated 4/19/12 FDH, Project # 12-04638E S3, dated 2/6/13 FDH, Project # 15BEQG1400, dated 2/27/15 FDH, Project # 14664X1400, dated 5/29/14
Pending Modification	TES Pending Job # 121728

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Basic Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	157.0	1	Phillips Dodge 201-7 Omni	Leg	(1) 7/8"	TCI Cablevision
2	149.0	3	Powerwave - 7770 - Panel	(3) Sector Frames w/ Mods	(12) 1 5/8" (1) 3" Conduit (Housing (1) 1/2" Fiber & (2) 3/4" DC) (1) 1/2" Fiber (2) 3/4" DC	AT&T
3		3	CCI - HPA-65R-BU6AA - Panel			
4		3	Kathrein - 800-10965 - Panel			
5		3	CCI - OPA65R-BU6DA - Panel			
6		6	Powerwave - LGP21401 TMA			
7		6	Powerwave - LGP21901 Diplexer			
8		6	Powerwave - 7020.00 RET			
9		3	Powerwave - 7070 RET			
10		3	Ericsson - 4449 B5/B12 RRU			
11		3	Ericsson - 4415 B30 RRU			
12		3	Ericsson - RRUS 8843 B2 B66A RRU			
13		3	Ericsson - RRUS-4478 B14 RRU			
14		2	Raycap - DC6-48-60-18-8F ("Squid") - OVP			
15		1	Raycap - DC6-48-60-18-8C-EV - OVP			
-	139.0	3	Alcatel Lucent 1900 MHz	(3) Sector Frames	(4) 1-1/4" Fiber	Sprint
-		3	Alcatel Lucent 800 MHz			
-		3	Alcatel Lucent TD-RRH8x20-25			
-		3	Alcatel Lucent 800 MHz Filters			
-		4	RFS ACU-A20-N RET			
-	138.0	3	RFS APXVSPP18-C-A20 - Panel			
-		3	RFS APXVTM14-C-I20 - Panel			
24	128.0	4	Andrew HBXX-6516DS-A2M - Panel	(3) Sector Frames	(13) 1 5/8"	Verizon
25		2	Andrew HBXX-6517DS-A2M - Panel			
26		4	Andrew LNX-6513DS-A1M - Panel			
27		2	Andrew LNX-6514DS-A1M - Panel			
28		6	RFS FD9R6004/2C-3L			
29		3	Alcatel Lucent RRH2x60-AWS			
30		3	Alcatel Lucent RRH2X60-PCS			
31		1	RFS DB-T1-6Z-8AB-0Z			
32	83.5	1	DB26 GPS	Leg	(1) 1/2"	Sprint

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
16	139.0	3	RFS - APXVAALL24_43-U-NA20 - Panel	(3) Sector Frames	(3) 1.9" Fiber	T-Mobile Sprint
17		3	Commscope- VV-65A-R1 - Panel			
18		3	Ericsson - AIR6449 B41 - Panel			
19		4	RFS- ACU-A20-N -RET			
20		3	Ericsson- 4460 B25 + B66 -RRU			
21		3	ALU- 800 MHz- RRU			
22		3	Ericsson- 4480 B71 + B85 -RRU			
23		3	ALU- 800 MHz External Notch Filter- Filter			

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

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**98.3%**	**96.5%**	**24.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	215.4	185.2	23.1

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2640 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

- Pending modification design drawing by **TES** Job # **121728**

Standard Conditions

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

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

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

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

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

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

Structure: CT13065-A-SBA

Site Name:	Guilford			**Code:**	TIA-222-G	2/18/2022
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	101.00	
Height:	152.00 (ft)	**Base Width:**	20.78	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	6.52	**Operational WS:**	60.00	Page: 1

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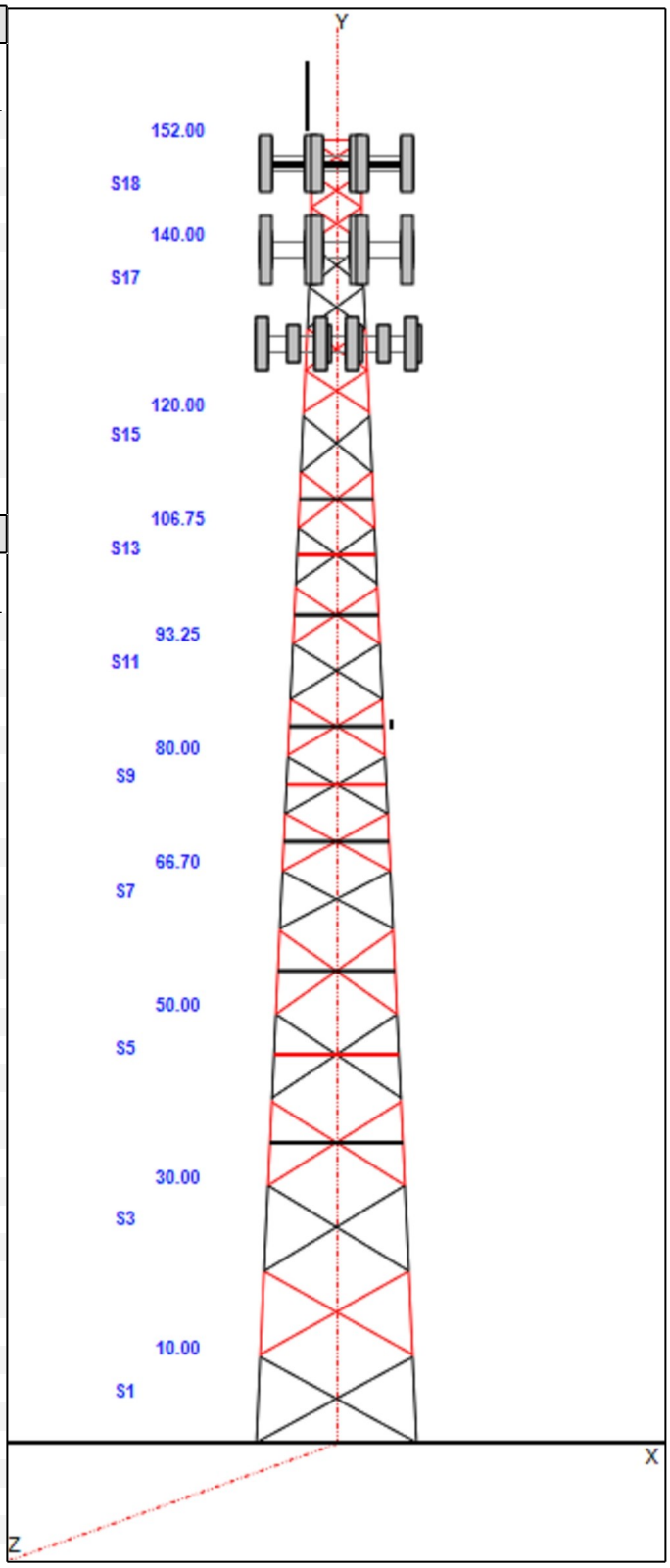
Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	MOD 5"PST+6"PX1/2P	SAE 3.5X3.5X0.25	
3	MOD 4"PX+5"PX1/2P	SAE 3X3X0.375	
4	PX 4" DIA PIPE	SAE 3X3X0.375	
5-6	PX 4" DIA PIPE	SAE 3X3X0.25	
7	MOD 3"PX+4"PX1/2P	SAE 2.5X2.5X0.25	
8	PX 3" DIA PIPE	SAE 2.5X2.5X0.25	
9	PX 3" DIA PIPE	SAE 2.5X2.5X0.1875	
10	MOD 2.5"PX+3'PX1/2P	SAE 2X2X0.375	
11	MOD 2.5"PX+3.5"PX1/2	SAE 2X2X0.375	
12	PX 2-1/2" DIA PIPE	SAE 2X2X0.375	
13-15	PX 2-1/2" DIA PIPE	MOD 2L2x2x1/8_Specia	
16	PST 2-1/2" DIA PIPE	SAE 1.75X1.75X0.25	
17	PST 2-1/2" DIA PIPE	SAE 1.75X1.75X0.125	
18	PST 2" DIA PIPE	SAE 1.5X1.5X0.125	SAE 2x2x0.125

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.00	157.00	1	Phillips Dodge 201-7 Omni
149.00	149.00	3	Sector Frames
149.00	149.00	3	7770
149.00	149.00	3	HPA-65R-BU6AA
149.00	149.00	3	800-10965
149.00	149.00	3	OPA65R-BU6DA
149.00	149.00	6	LGP21401
149.00	149.00	6	LGP21901
149.00	149.00	6	7020.00 RET
149.00	149.00	3	7070
149.00	149.00	3	4449 B5/B12
149.00	149.00	3	4415 B30
149.00	149.00	3	RRUS 8843 B2 B66A
149.00	149.00	3	RRUS-4478 B14
149.00	149.00	2	DC6-48-60-18-8F ("Squid")
149.00	149.00	1	DC6-48-60-18-8C-EV
149.00	149.00	1	(3) SFS-H (V-Braces)
149.00	149.00	1	(3) 12.5' - 2" Horizontal Pipe
139.00	139.00	1	(3) Sector Frames
139.00	139.00	3	800 MHz RRH
139.00	139.00	3	ALU 800MHz External Notch Filt
139.00	139.00	4	ACU-A20-N
139.00	139.00	3	APXVAALL24_43-U-NA20
139.00	139.00	3	AIR6449 B41
139.00	139.00	3	4460 B25 + B66
139.00	139.00	3	4480 B71 + B85
139.00	139.00	3	Commscope- VV-65A-R1
128.00	128.00	1	(3) VFA12-HD
128.00	128.00	4	Andrew HBXX-6516DS-A2M
128.00	128.00	2	Andrew HBXX-6517DS-A2M
128.00	128.00	4	Andrew LNX-6513DS-A1M
128.00	128.00	3	Alcatel Lucent RRH2x60-AWS
128.00	128.00	3	Alcatel Lucent RRH2X60-PCS
128.00	128.00	6	RFS FD9R6004/2C-3L
128.00	128.00	2	Andrew LNX-6514DS-A1M



128.00	128.00	1	RFS DB-T1-6Z-8AB-0Z
83.50	83.50	1	DB26 GPS
83.50	83.50	1	Pipe Mount

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	152.00	1	Climbing Ladder
8.00	150.00	1	7/8" Coax
0.00	149.00	1	W/G Ladder
10.00	149.00	12	1 5/8" Coax
10.00	149.00	1	1/2" Fiber
10.00	149.00	1	1/2" Fiber
10.00	149.00	1	3" Innerduct
10.00	149.00	2	3/4" DC
10.00	149.00	2	3/4" DC
0.00	140.00	1	W/G Ladder
8.00	139.00	3	1.9" Fiber
8.00	128.00	13	1 5/8" Coax
0.00	120.00	1	Empty W/G Ladder
8.00	83.50	1	1/2" Coax

Base Reactions

Leg			Overturning		
Max Uplift:	-185.18	(kips	Moment:	3646.50	(ft-kips)
Max Down:	215.44	(kips	Total Down:	38.46	(kips)
Max Shear:	23.05	(kips	Total Shear:	38.04	(kips)

Structure: CT13065-A-SBA

Site Name:	Guilford			**Code:**	TIA-222-G	2/18/2022
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	101.00	
Height:	152.00 (ft)	**Base Width:**	20.78	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	6.52	**Operational WS:**	60.00	Page: 3

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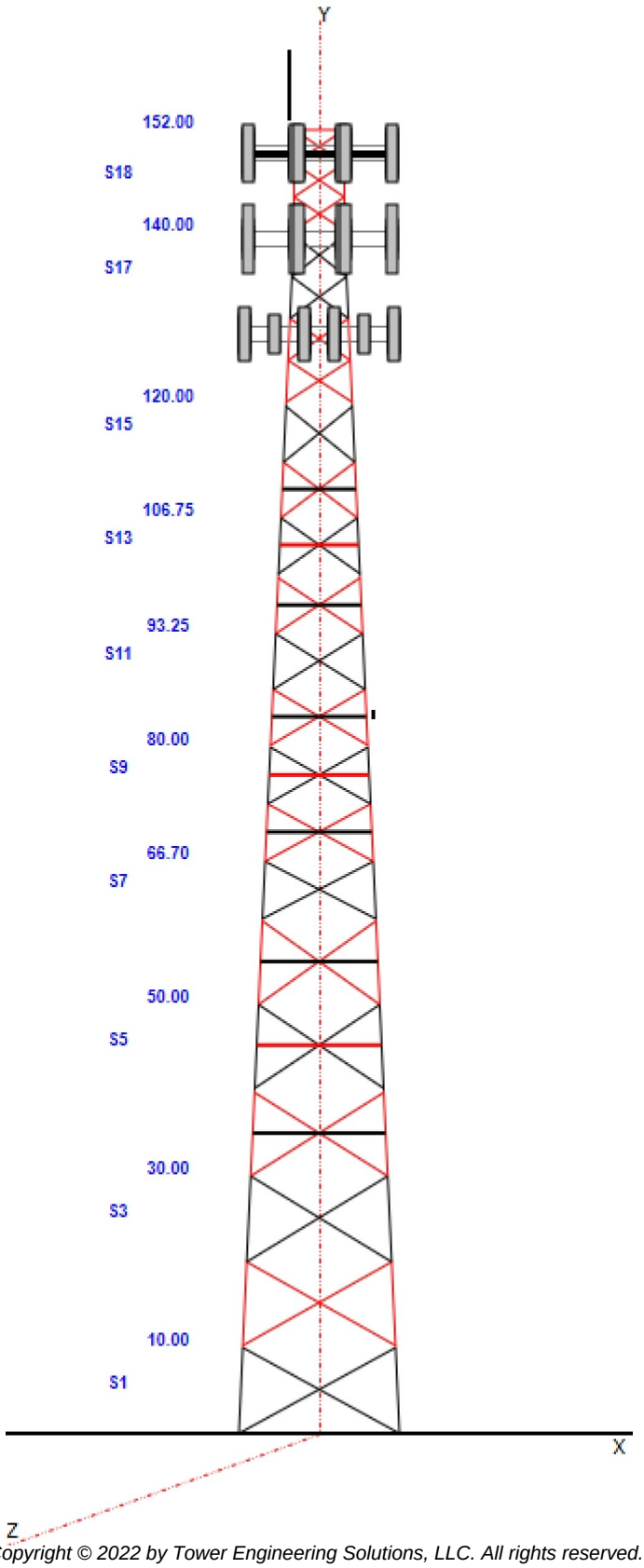
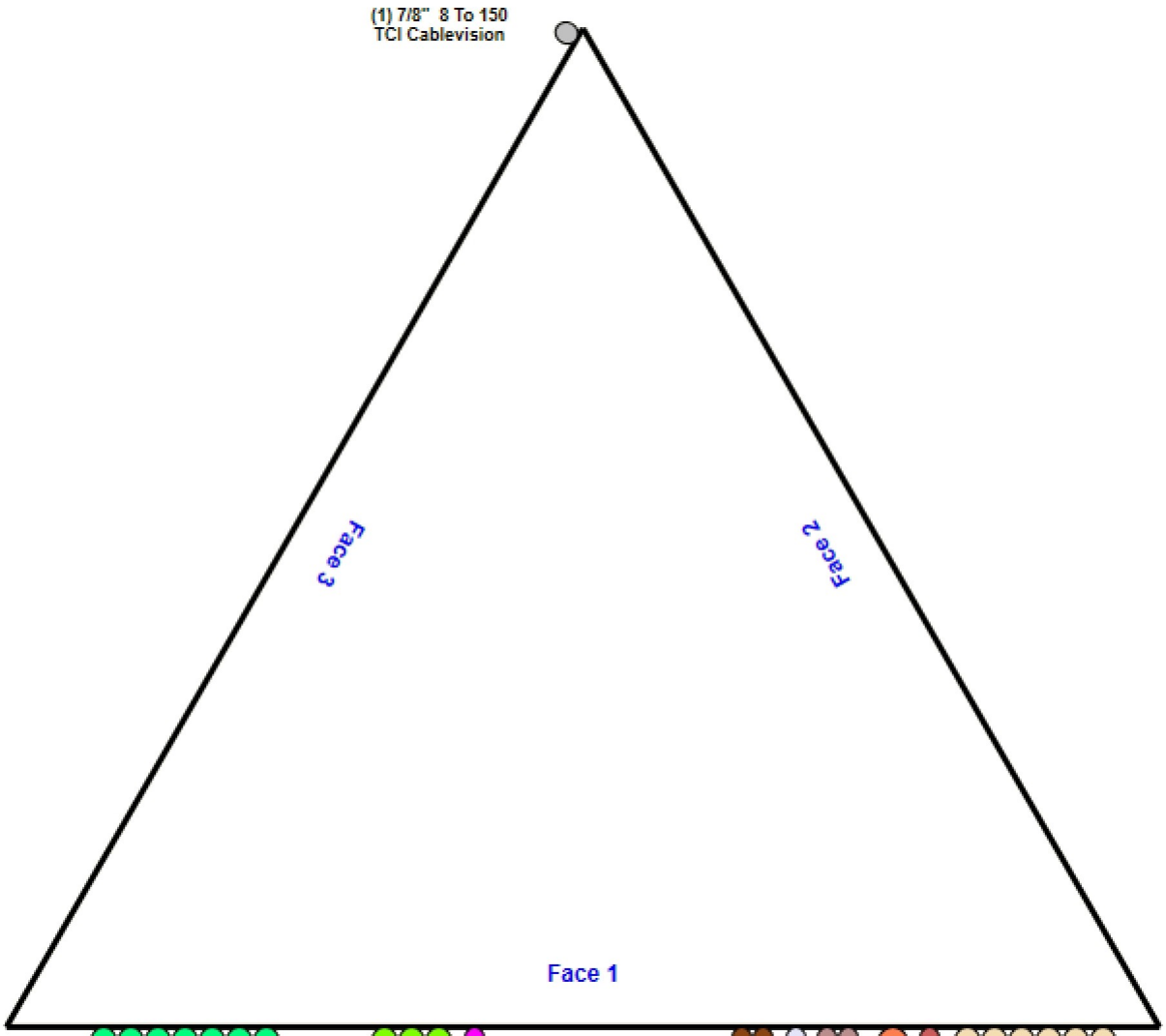


Structure: CT13065-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Guilford
Height: 152.00 (ft)

2/18/2022

Tower Engineering Solutions



Loading Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 5	

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Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
150.00	Phillips Dodge 201-7 Omni	1	4.00	1.070	74.90	3.845	99.600	1.300	1.300	1.00	1.00	7.000
149.00	Sector Frames	3	350.00	14.000	622.91	21.018	0.000	0.000	0.000	0.75	0.75	0.000
149.00	7770	3	35.00	5.500	169.73	6.562	55.000	11.000	5.000	0.80	0.73	0.000
149.00	HPA-65R-BU6AA	3	51.00	9.660	298.33	11.022	72.000	14.800	9.000	0.80	0.85	0.000
149.00	800-10965	3	108.60	13.810	405.83	15.386	78.700	20.000	6.900	0.80	0.71	0.000
149.00	OPA65R-BU6DA	3	79.40	12.710	373.15	14.170	71.200	20.700	7.700	0.80	0.72	0.000
149.00	LGP21401	6	14.10	1.290	39.03	2.123	14.400	9.200	2.600	0.80	0.67	0.000
149.00	LGP21901	6	5.50	0.230	13.17	0.597	4.000	6.000	3.000	0.80	0.67	0.000
149.00	7020.00 RET	6	2.20	0.400	12.41	0.883	4.900	8.300	2.400	0.80	0.67	0.000
149.00	7070	3	5.50	0.150	10.69	0.538	8.300	1.800	0.000	0.80	0.67	0.000
149.00	4449 B5/B12	3	71.00	1.970	124.24	2.516	17.900	13.200	9.400	0.80	0.67	0.000
149.00	4415 B30	3	44.10	1.860	91.41	2.431	13.500	16.500	4.800	0.80	0.67	0.000
149.00	RRUS 8843 B2 B66A	3	72.00	1.640	118.72	2.135	14.900	13.200	10.900	0.80	0.67	0.000
149.00	RRUS-4478 B14	3	59.90	1.840	106.77	2.365	16.500	13.400	7.700	0.80	0.67	0.000
149.00	DC6-48-60-18-8F ("Squid")	2	31.80	0.920	93.46	1.357	24.000	11.000	11.000	0.80	1.00	0.000
149.00	DC6-48-60-18-8C-EV	1	16.00	4.780	139.40	5.662	31.400	18.300	10.200	0.80	1.00	0.000
149.00	(3) SFS-H (V-Braces)	1	197.00	6.300	471.30	12.879	0.000	0.000	0.000	0.75	1.00	0.000
149.00	(3) 12.5' - 2" Horizontal Pipe	1	137.25	5.938	271.03	13.378	0.000	0.000	0.000	0.75	1.00	0.000
139.00	(3) Sector Frames	1	1470.0	52.000	3500.86	105.88	0.000	0.000	0.000	0.75	1.00	0.000
139.00	800 MHz RRH	3	53.00	2.490	126.19	3.622	19.700	13.000	10.800	0.80	0.67	0.000
139.00	ALU 800MHz External Notch Filt	3	8.80	0.780	26.26	1.420	10.000	8.000	3.000	0.80	0.67	0.000
139.00	ACU-A20-N	4	1.00	0.140	5.25	0.434	4.000	2.000	3.500	0.80	0.67	0.000
139.00	APXVAALL24_43-U-NA20	3	122.80	20.240	545.47	22.119	95.900	24.000	8.500	0.80	0.73	0.000
139.00	AIR6449 B41	3	103.00	5.650	238.68	6.591	33.100	20.500	8.300	0.80	0.71	0.000
139.00	4460 B25 + B66	3	109.00	2.850	180.15	3.517	21.800	15.700	7.500	0.80	0.67	0.000
139.00	4480 B71 + B85	3	93.00	2.850	164.18	3.517	21.800	15.700	7.500	0.80	0.67	0.000
139.00	Commscope- VV-65A-R1	3	23.81	5.920	164.98	6.987	54.720	12.080	4.640	0.80	0.82	0.000
128.00	(3) VFA12-HD	1	2322.0	50.700	4550.34	113.25	0.000	0.000	0.000	0.75	1.00	0.000
128.00	Andrew HBXX-6516DS-A2M	4	30.60	5.430	171.58	6.423	50.900	12.000	6.500	0.80	0.77	0.000
128.00	Andrew HBXX-6517DS-A2M	2	40.70	8.550	240.13	9.833	74.900	12.000	6.500	0.80	0.77	0.000
128.00	Andrew LNX-6513DS-A1M	4	30.40	5.830	184.58	6.899	54.700	11.900	7.100	0.80	0.83	0.000
128.00	Alcatel Lucent RRH2x60-AWS	3	55.00	3.500	154.06	4.295	37.000	11.000	6.000	0.80	0.67	0.000
128.00	Alcatel Lucent RRH2X60-PCS	3	55.00	2.200	137.65	2.824	22.000	12.000	9.400	0.80	0.67	0.000
128.00	RFS FD9R6004/2C-3L	6	3.10	0.360	15.89	0.576	5.800	6.500	1.500	0.80	0.67	0.000
128.00	Andrew LNX-6514DS-A1M	2	33.10	8.090	230.38	9.347	72.000	11.900	7.100	0.80	0.80	0.000
128.00	RFS DB-T1-6Z-8AB-0Z	1	18.90	4.800	159.58	5.657	24.000	24.000	10.000	0.80	1.00	0.000
83.50	DB26 GPS	1	10.00	1.000	37.65	1.671	12.000	9.000	6.000	1.00	1.00	0.000
83.50	Pipe Mount	1	45.00	2.000	80.55	3.317	0.000	0.000	0.000	1.00	1.00	0.000
	Totals:	**108**	**9,328.48**		**24,520.36**						**Number of Appurtenances :**	**38**

Loading Summary

Structure:	CT13065-A-SBA		**Code:**	TIA-222-G	2/18/2022
Site Name:	Guilford		**Exposure:**	B	
Height:	152.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 6

Tower Engineering Solutions

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	152.00	Climbing Ladder	1	2.00	6.90	100.00	2	Individual NR		N	1.00	1.00	
8.00	150.00	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	0.50	
0.00	149.00	W/G Ladder	1	0.75	6.00	100.00	1	Individual NR		N	1.00	1.00	
10.00	149.00	1 5/8" Coax	12	1.98	1.04	50.00	1	Block		N	0.50	1.00	
10.00	149.00	1/2" Fiber	1	0.50	0.16	100.00	1	Individual NR		N	1.00	1.00	0
10.00	149.00	1/2" Fiber	1	0.50	0.16	100.00	1	Individual NR		N	1.00	1.00	0
10.00	149.00	3" Innerduct	1	3.00	0.25	100.00	1	Individual NR		N	1.00	1.00	
10.00	149.00	3/4" DC	2	0.75	0.40	100.00	1	Individual IR		N	1.00	1.00	0
10.00	149.00	3/4" DC	2	0.75	0.40	100.00	1	Individual IR		N	1.00	1.00	0
0.00	140.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
8.00	139.00	1.9" Fiber	3	2.00	1.10	100.00	1	Individual IR		N	1.00	1.00	0
8.00	128.00	1 5/8" Coax	13	1.98	1.04	50.00	1	Block		N	0.50	1.00	
0.00	120.00	Empty W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	1.00	1.00	
8.00	83.50	1/2" Coax	1	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 101 mph Wind at Normal To Face

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	1.00	1.00	0.00	18.02	9.73	0.00	2,305.5	0.0	1113.32	200.80	1,314.12
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	1.00	1.00	0.00	17.43	43.96	0.00	2,606.7	0.0	1073.03	700.23	1,773.26
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	1.00	1.00	0.00	14.67	43.96	0.00	2,656.7	0.0	921.29	700.23	1,621.51
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	1.00	1.00	0.00	17.52	43.96	0.00	2,418.3	0.0	1119.51	732.37	1,851.88
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	1.00	1.00	0.00	16.81	43.96	0.00	2,047.1	0.0	1149.34	786.90	1,936.24
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	1.00	1.00	0.00	16.16	43.96	0.00	2,007.1	0.0	1163.97	833.33	1,997.30
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	1.00	1.00	0.00	9.20	29.45	0.00	1,339.9	0.0	698.53	581.34	1,279.87
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	1.00	1.00	0.00	11.26	29.45	0.00	1,290.8	0.0	853.53	598.28	1,451.81
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	1.00	1.00	0.00	10.82	29.01	0.00	1,145.1	0.0	837.02	604.82	1,441.84
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	1.00	1.00	0.00	9.10	29.50	0.00	1,407.3	0.0	737.86	629.90	1,367.76
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	1.00	1.00	0.00	6.76	28.22	0.00	1,204.7	0.0	570.49	616.17	1,186.66
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	1.00	1.00	0.00	8.25	29.31	0.00	1,258.2	0.0	694.89	652.98	1,347.88
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	1.00	1.00	0.00	8.38	29.31	0.00	1,035.5	0.0	669.56	665.70	1,335.26
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	1.00	1.00	0.00	7.57	28.22	0.00	996.0	0.0	612.99	652.53	1,265.52
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	1.00	1.00	0.00	5.82	29.31	0.00	896.9	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	1.00	1.00	0.00	8.06	38.94	0.00	1,139.6	0.0	737.38	897.22	1,634.60
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	1.00	1.00	0.00	7.59	27.20	0.00	808.6	0.0	699.79	588.16	1,287.95
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	1.00	1.00	0.00	9.31	19.52	0.00	700.2	0.0	868.78	502.04	1,370.81
														27,264.1	**0.0**			**26,646.70**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 101 mph Wind at 60° From Face

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	0.80	1.00	0.00	15.44	9.73	0.00	2,305.5	0.0	953.96	200.80	1,154.76
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	0.80	1.00	0.00	14.97	43.96	0.00	2,606.7	0.0	921.56	700.23	1,621.79
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	0.80	1.00	0.00	12.64	43.96	0.00	2,656.7	0.0	793.45	700.23	1,493.67
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	0.80	1.00	0.00	14.86	43.96	0.00	2,418.3	0.0	949.68	732.37	1,682.05
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	0.80	1.00	0.00	14.29	43.96	0.00	2,047.1	0.0	976.72	786.90	1,763.61
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	0.80	1.00	0.00	13.76	43.96	0.00	2,007.1	0.0	991.00	833.33	1,824.33
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	0.80	1.00	0.00	7.91	29.45	0.00	1,339.9	0.0	600.73	581.34	1,182.07
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	0.80	1.00	0.00	9.45	29.45	0.00	1,290.8	0.0	716.46	598.28	1,314.74
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	0.80	1.00	0.00	9.09	29.01	0.00	1,145.1	0.0	703.45	604.82	1,308.28
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	0.80	1.00	0.00	7.69	29.50	0.00	1,407.3	0.0	623.09	629.90	1,252.99
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	0.80	1.00	0.00	5.89	28.22	0.00	1,204.7	0.0	497.42	616.17	1,113.59
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	0.80	1.00	0.00	6.96	29.31	0.00	1,258.2	0.0	586.81	652.98	1,239.79
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	0.80	1.00	0.00	7.95	29.31	0.00	1,035.5	0.0	635.58	665.70	1,301.29
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	0.80	1.00	0.00	7.26	28.22	0.00	996.0	0.0	587.23	652.53	1,239.76
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	0.80	1.00	0.00	5.82	29.31	0.00	896.9	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	0.80	1.00	0.00	6.99	38.94	0.00	1,139.6	0.0	639.53	897.22	1,536.75
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	0.80	1.00	0.00	6.61	27.20	0.00	808.6	0.0	609.93	588.16	1,198.09
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	0.80	1.00	0.00	7.99	19.52	0.00	700.2	0.0	745.24	502.04	1,247.27
														27,264.1	**0.0**			**24,657.24**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 101 mph Wind at 90° From Face

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

Dead Load Factor: 1.20

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	0.85	1.00	0.00	16.09	9.73	0.00	2,305.5	0.0	993.80	200.80	1,194.60
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	0.85	1.00	0.00	15.59	43.96	0.00	2,606.7	0.0	959.43	700.23	1,659.65
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	0.85	1.00	0.00	13.15	43.96	0.00	2,656.7	0.0	825.41	700.23	1,525.63
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	0.85	1.00	0.00	15.52	43.96	0.00	2,418.3	0.0	992.14	732.37	1,724.51
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	0.85	1.00	0.00	14.92	43.96	0.00	2,047.1	0.0	1019.87	786.90	1,806.77
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	0.85	1.00	0.00	14.36	43.96	0.00	2,007.1	0.0	1034.24	833.33	1,867.57
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	0.85	1.00	0.00	8.24	29.45	0.00	1,339.9	0.0	625.18	581.34	1,206.52
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	0.85	1.00	0.00	9.90	29.45	0.00	1,290.8	0.0	750.73	598.28	1,349.01
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	0.85	1.00	0.00	9.52	29.01	0.00	1,145.1	0.0	736.85	604.82	1,341.67
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	0.85	1.00	0.00	8.04	29.50	0.00	1,407.3	0.0	651.78	629.90	1,281.68
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	0.85	1.00	0.00	6.11	28.22	0.00	1,204.7	0.0	515.69	616.17	1,131.86
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	0.85	1.00	0.00	7.28	29.31	0.00	1,258.2	0.0	613.83	652.98	1,266.81
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	0.85	1.00	0.00	8.06	29.31	0.00	1,035.5	0.0	644.08	665.70	1,309.78
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	0.85	1.00	0.00	7.34	28.22	0.00	996.0	0.0	593.67	652.53	1,246.20
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	0.85	1.00	0.00	5.82	29.31	0.00	896.9	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	0.85	1.00	0.00	7.26	38.94	0.00	1,139.6	0.0	664.00	897.22	1,561.21
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	0.85	1.00	0.00	6.86	27.20	0.00	808.6	0.0	632.39	588.16	1,220.55
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	0.85	1.00	0.00	8.32	19.52	0.00	700.2	0.0	776.12	502.04	1,278.16
														27,264.1	**0.0**			**25,154.61**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 101 mph Wind at Normal To Face

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

Dead Load Factor: 0.90

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	1.00	1.00	0.00	18.02	9.73	0.00	1,729.1	0.0	1113.32	200.80	1,314.12
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	1.00	1.00	0.00	17.43	43.96	0.00	1,955.0	0.0	1073.03	700.23	1,773.26
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	1.00	1.00	0.00	14.67	43.96	0.00	1,992.5	0.0	921.29	700.23	1,621.51
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	1.00	1.00	0.00	17.52	43.96	0.00	1,813.7	0.0	1119.51	732.37	1,851.88
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	1.00	1.00	0.00	16.81	43.96	0.00	1,535.3	0.0	1149.34	786.90	1,936.24
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	1.00	1.00	0.00	16.16	43.96	0.00	1,505.3	0.0	1163.97	833.33	1,997.30
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	1.00	1.00	0.00	9.20	29.45	0.00	1,005.0	0.0	698.53	581.34	1,279.87
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	1.00	1.00	0.00	11.26	29.45	0.00	968.1	0.0	853.53	598.28	1,451.81
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	1.00	1.00	0.00	10.82	29.01	0.00	858.8	0.0	837.02	604.82	1,441.84
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	1.00	1.00	0.00	9.10	29.50	0.00	1,055.5	0.0	737.86	629.90	1,367.76
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	1.00	1.00	0.00	6.76	28.22	0.00	903.5	0.0	570.49	616.17	1,186.66
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	1.00	1.00	0.00	8.25	29.31	0.00	943.6	0.0	694.89	652.98	1,347.88
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	1.00	1.00	0.00	8.38	29.31	0.00	776.6	0.0	669.56	665.70	1,335.26
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	1.00	1.00	0.00	7.57	28.22	0.00	747.0	0.0	612.99	652.53	1,265.52
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	1.00	1.00	0.00	5.82	29.31	0.00	672.7	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	1.00	1.00	0.00	8.06	38.94	0.00	854.7	0.0	737.38	897.22	1,634.60
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	1.00	1.00	0.00	7.59	27.20	0.00	606.5	0.0	699.79	588.16	1,287.95
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	1.00	1.00	0.00	9.31	19.52	0.00	525.1	0.0	868.78	502.04	1,370.81
														20,448.1	**0.0**			**26,646.70**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 101 mph Wind at 60° From Face

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

Dead Load Factor: 0.90

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	0.80	1.00	0.00	15.44	9.73	0.00	1,729.1	0.0	953.96	200.80	1,154.76
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	0.80	1.00	0.00	14.97	43.96	0.00	1,955.0	0.0	921.56	700.23	1,621.79
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	0.80	1.00	0.00	12.64	43.96	0.00	1,992.5	0.0	793.45	700.23	1,493.67
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	0.80	1.00	0.00	14.86	43.96	0.00	1,813.7	0.0	949.68	732.37	1,682.05
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	0.80	1.00	0.00	14.29	43.96	0.00	1,535.3	0.0	976.72	786.90	1,763.61
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	0.80	1.00	0.00	13.76	43.96	0.00	1,505.3	0.0	991.00	833.33	1,824.33
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	0.80	1.00	0.00	7.91	29.45	0.00	1,005.0	0.0	600.73	581.34	1,182.07
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	0.80	1.00	0.00	9.45	29.45	0.00	968.1	0.0	716.46	598.28	1,314.74
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	0.80	1.00	0.00	9.09	29.01	0.00	858.8	0.0	703.45	604.82	1,308.28
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	0.80	1.00	0.00	7.69	29.50	0.00	1,055.5	0.0	623.09	629.90	1,252.99
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	0.80	1.00	0.00	5.89	28.22	0.00	903.5	0.0	497.42	616.17	1,113.59
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	0.80	1.00	0.00	6.96	29.31	0.00	943.6	0.0	586.81	652.98	1,239.79
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	0.80	1.00	0.00	7.95	29.31	0.00	776.6	0.0	635.58	665.70	1,301.29
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	0.80	1.00	0.00	7.26	28.22	0.00	747.0	0.0	587.23	652.53	1,239.76
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	0.80	1.00	0.00	5.82	29.31	0.00	672.7	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	0.80	1.00	0.00	6.99	38.94	0.00	854.7	0.0	639.53	897.22	1,536.75
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	0.80	1.00	0.00	6.61	27.20	0.00	606.5	0.0	609.93	588.16	1,198.09
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	0.80	1.00	0.00	7.99	19.52	0.00	525.1	0.0	745.24	502.04	1,247.27
														20,448.1	**0.0**			**24,657.24**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 101 mph Wind at 90° From Face

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

Dead Load Factor: 0.90

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	15.54	12.899	10.01	0.00	0.11	2.92	0.85	1.00	0.00	16.09	9.73	0.00	1,729.1	0.0	993.80	200.80	1,194.60
2	15.0	15.54	12.303	10.01	0.00	0.11	2.91	0.85	1.00	0.00	15.59	43.96	0.00	1,955.0	0.0	959.43	700.23	1,659.65
3	25.0	15.54	10.180	8.14	0.00	0.10	2.97	0.85	1.00	0.00	13.15	43.96	0.00	1,992.5	0.0	825.41	700.23	1,525.63
4	35.0	16.25	13.286	7.51	0.00	0.12	2.89	0.85	1.00	0.00	15.52	43.96	0.00	1,813.7	0.0	992.14	732.37	1,724.51
5	45.0	17.46	12.625	7.51	0.00	0.12	2.88	0.85	1.00	0.00	14.92	43.96	0.00	1,535.3	0.0	1019.87	786.90	1,806.77
6	55.0	18.49	12.008	7.51	0.00	0.13	2.86	0.85	1.00	0.00	14.36	43.96	0.00	1,505.3	0.0	1034.24	833.33	1,867.57
7	63.4	19.25	6.441	5.03	0.00	0.12	2.90	0.85	1.00	0.00	8.24	29.45	0.00	1,005.0	0.0	625.18	581.34	1,206.52
8	70.0	19.81	9.039	3.92	0.00	0.14	2.81	0.85	1.00	0.00	9.90	29.45	0.00	968.1	0.0	750.73	598.28	1,349.01
9	76.7	20.34	8.631	3.86	0.00	0.14	2.80	0.85	1.00	0.00	9.52	29.01	0.00	858.8	0.0	736.85	604.82	1,341.67
10	83.4	20.83	7.081	3.58	0.00	0.13	2.86	0.85	1.00	0.00	8.04	29.50	0.00	1,055.5	0.0	651.78	629.90	1,281.68
11	90.0	21.29	4.327	4.34	0.00	0.11	2.92	0.85	1.00	0.00	6.11	28.22	0.00	903.5	0.0	515.69	616.17	1,131.86
12	96.6	21.72	6.412	3.24	0.00	0.13	2.85	0.85	1.00	0.00	7.28	29.31	0.00	943.6	0.0	613.83	652.98	1,266.81
13	103.4	22.15	2.125	10.79	0.00	0.18	2.65	0.85	1.00	0.00	8.06	29.31	0.00	776.6	0.0	644.08	665.70	1,309.78
14	110.0	22.54	1.591	10.32	0.00	0.19	2.64	0.85	1.00	0.00	7.34	28.22	0.00	747.0	0.0	593.67	652.53	1,246.20
15	116.6	22.92	0.000	10.10	0.00	0.16	2.72	0.85	1.00	0.00	5.82	29.31	0.00	672.7	0.0	493.39	689.04	1,182.43
16	125.0	23.38	5.350	4.80	0.00	0.12	2.88	0.85	1.00	0.00	7.26	38.94	0.00	854.7	0.0	664.00	897.22	1,561.21
17	135.0	23.90	4.872	4.80	0.00	0.13	2.84	0.85	1.00	0.00	6.86	27.20	0.00	606.5	0.0	632.39	588.16	1,220.55
18	146.0	24.44	6.622	4.75	0.00	0.14	2.81	0.85	1.00	0.00	8.32	19.52	0.00	525.1	0.0	776.12	502.04	1,278.16
														20,448.1	**0.0**			**25,154.61**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	3.81	12.899	23.52	13.51	0.17	2.69	1.00	1.00	1.24	26.31	19.17	0.83	3,971.7	1666.2	228.82	67.09	295.91
2	15.0	3.81	12.303	24.61	14.61	0.18	2.65	1.00	1.00	1.39	26.38	68.09	11.55	5,390.3	2783.7	226.15	182.64	408.78
3	25.0	3.81	10.180	23.13	14.99	0.18	2.68	1.00	1.00	1.46	23.38	69.18	12.16	5,369.8	2713.1	202.63	186.76	389.39
4	35.0	3.98	13.286	22.51	14.99	0.20	2.59	1.00	1.00	1.51	26.22	69.92	12.57	5,565.3	3146.9	230.23	196.91	427.14
5	45.0	4.28	12.625	22.42	14.91	0.21	2.57	1.00	1.00	1.55	25.54	70.50	12.89	5,219.2	3172.1	238.60	213.40	452.00
6	55.0	4.53	12.008	22.29	14.78	0.22	2.54	1.00	1.00	1.58	24.88	70.97	13.16	5,189.2	3182.1	243.56	227.45	471.02
7	63.4	4.72	6.441	17.07	12.03	0.23	2.49	1.00	1.00	1.60	16.36	47.78	8.94	3,352.5	2012.6	163.14	158.96	322.10
8	70.0	4.86	9.039	15.73	11.82	0.26	2.41	1.00	1.00	1.62	18.28	47.94	9.03	3,598.5	2307.8	181.67	163.25	344.92
9	76.7	4.98	8.631	15.36	11.50	0.27	2.38	1.00	1.00	1.63	17.69	47.37	8.98	3,409.7	2264.6	178.51	165.31	343.82
10	83.4	5.10	7.081	14.89	11.31	0.25	2.42	1.00	1.00	1.65	15.81	48.41	8.37	3,536.4	2129.1	166.27	170.25	336.52
11	90.0	5.22	4.327	15.28	10.94	0.25	2.45	1.00	1.00	1.66	13.26	46.56	7.19	2,985.5	1780.8	143.73	163.90	307.63
12	96.6	5.32	6.412	14.08	10.84	0.27	2.39	1.00	1.00	1.67	14.70	48.47	7.52	3,313.4	2055.2	159.10	173.61	332.70
13	103.4	5.43	2.125	21.36	10.57	0.32	2.23	1.00	1.00	1.68	15.18	48.58	7.57	3,343.8	2308.3	156.44	175.52	331.96
14	110.0	5.52	1.591	20.51	10.19	0.34	2.20	1.00	1.00	1.69	14.23	46.88	7.33	3,185.3	2189.3	147.07	172.04	319.11
15	116.6	5.62	0.000	20.20	10.09	0.32	2.25	1.00	1.00	1.70	12.30	48.79	7.66	2,896.0	1999.1	132.18	182.80	314.99
16	125.0	5.73	5.350	21.27	16.47	0.31	2.27	1.00	1.00	1.71	18.16	64.55	11.42	3,645.5	2506.0	200.72	236.19	436.90
17	135.0	5.86	4.872	20.46	15.66	0.33	2.21	1.00	1.00	1.73	17.36	50.23	11.51	3,031.3	2222.6	190.95	180.14	371.09
18	146.0	5.99	6.622	26.87	22.12	0.40	2.07	1.00	1.00	1.74	23.69	34.95	10.73	2,934.8	2234.6	249.59	147.30	396.89
														69,938.3	**42674.2**			**6,602.87**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	3.81	12.899	23.52	13.51	0.17	2.69	0.80	1.00	1.24	23.73	19.17	0.83	3,971.7	1666.2	206.38	67.09	273.47
2	15.0	3.81	12.303	24.61	14.61	0.18	2.65	0.80	1.00	1.39	23.92	68.09	11.55	5,390.3	2783.7	205.05	182.64	387.69
3	25.0	3.81	10.180	23.13	14.99	0.18	2.68	0.80	1.00	1.46	21.35	69.18	12.16	5,369.8	2713.1	184.98	186.76	371.75
4	35.0	3.98	13.286	22.51	14.99	0.20	2.59	0.80	1.00	1.51	23.56	69.92	12.57	5,565.3	3146.9	206.89	196.91	403.80
5	45.0	4.28	12.625	22.42	14.91	0.21	2.57	0.80	1.00	1.55	23.01	70.50	12.89	5,219.2	3172.1	215.01	213.40	428.41
6	55.0	4.53	12.008	22.29	14.78	0.22	2.54	0.80	1.00	1.58	22.48	70.97	13.16	5,189.2	3182.1	220.06	227.45	447.51
7	63.4	4.72	6.441	17.07	12.03	0.23	2.49	0.80	1.00	1.60	15.07	47.78	8.94	3,352.5	2012.6	150.30	158.96	309.25
8	70.0	4.86	9.039	15.73	11.82	0.26	2.41	0.80	1.00	1.62	16.47	47.94	9.03	3,598.5	2307.8	163.71	163.25	326.96
9	76.7	4.98	8.631	15.36	11.50	0.27	2.38	0.80	1.00	1.63	15.97	47.37	8.98	3,409.7	2264.6	161.09	165.31	326.40
10	83.4	5.10	7.081	14.89	11.31	0.25	2.42	0.80	1.00	1.65	14.39	48.41	8.37	3,536.4	2129.1	151.37	170.25	321.63
11	90.0	5.22	4.327	15.28	10.94	0.25	2.45	0.80	1.00	1.66	12.39	46.56	7.19	2,985.5	1780.8	134.35	163.90	298.25
12	96.6	5.32	6.412	14.08	10.84	0.27	2.39	0.80	1.00	1.67	13.42	48.47	7.52	3,313.4	2055.2	145.22	173.61	318.83
13	103.4	5.43	2.125	21.36	10.57	0.32	2.23	0.80	1.00	1.68	14.75	48.58	7.57	3,343.8	2308.3	152.06	175.52	327.58
14	110.0	5.52	1.591	20.51	10.19	0.34	2.20	0.80	1.00	1.69	13.91	46.88	7.33	3,185.3	2189.3	143.78	172.04	315.82
15	116.6	5.62	0.000	20.20	10.09	0.32	2.25	0.80	1.00	1.70	12.30	48.79	7.66	2,896.0	1999.1	132.18	182.80	314.99
16	125.0	5.73	5.350	21.27	16.47	0.31	2.27	0.80	1.00	1.71	17.09	64.55	11.42	3,645.5	2506.0	188.89	236.19	425.08
17	135.0	5.86	4.872	20.46	15.66	0.33	2.21	0.80	1.00	1.73	16.38	50.23	11.51	3,031.3	2222.6	180.22	180.14	360.37
18	146.0	5.99	6.622	26.87	22.12	0.40	2.07	0.80	1.00	1.74	22.36	34.95	10.73	2,934.8	2234.6	235.63	147.30	382.93
														69,938.3	**42674.2**			**6,340.71**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

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

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	3.81	12.899	23.52	13.51	0.17	2.69	0.85	1.00	1.24	24.38	19.17	0.83	3,971.7	1666.2	211.99	67.09	279.08
2	15.0	3.81	12.303	24.61	14.61	0.18	2.65	0.85	1.00	1.39	24.53	68.09	11.55	5,390.3	2783.7	210.32	182.64	392.96
3	25.0	3.81	10.180	23.13	14.99	0.18	2.68	0.85	1.00	1.46	21.86	69.18	12.16	5,369.8	2713.1	189.39	186.76	376.16
4	35.0	3.98	13.286	22.51	14.99	0.20	2.59	0.85	1.00	1.51	24.23	69.92	12.57	5,565.3	3146.9	212.73	196.91	409.64
5	45.0	4.28	12.625	22.42	14.91	0.21	2.57	0.85	1.00	1.55	23.65	70.50	12.89	5,219.2	3172.1	220.91	213.40	434.31
6	55.0	4.53	12.008	22.29	14.78	0.22	2.54	0.85	1.00	1.58	23.08	70.97	13.16	5,189.2	3182.1	225.93	227.45	453.38
7	63.4	4.72	6.441	17.07	12.03	0.23	2.49	0.85	1.00	1.60	15.40	47.78	8.94	3,352.5	2012.6	153.51	158.96	312.46
8	70.0	4.86	9.039	15.73	11.82	0.26	2.41	0.85	1.00	1.62	16.93	47.94	9.03	3,598.5	2307.8	168.20	163.25	331.45
9	76.7	4.98	8.631	15.36	11.50	0.27	2.38	0.85	1.00	1.63	16.40	47.37	8.98	3,409.7	2264.6	165.45	165.31	330.76
10	83.4	5.10	7.081	14.89	11.31	0.25	2.42	0.85	1.00	1.65	14.75	48.41	8.37	3,536.4	2129.1	155.10	170.25	325.35
11	90.0	5.22	4.327	15.28	10.94	0.25	2.45	0.85	1.00	1.66	12.61	46.56	7.19	2,985.5	1780.8	136.69	163.90	300.60
12	96.6	5.32	6.412	14.08	10.84	0.27	2.39	0.85	1.00	1.67	13.74	48.47	7.52	3,313.4	2055.2	148.69	173.61	322.30
13	103.4	5.43	2.125	21.36	10.57	0.32	2.23	0.85	1.00	1.68	14.86	48.58	7.57	3,343.8	2308.3	153.15	175.52	328.67
14	110.0	5.52	1.591	20.51	10.19	0.34	2.20	0.85	1.00	1.69	13.99	46.88	7.33	3,185.3	2189.3	144.60	172.04	316.64
15	116.6	5.62	0.000	20.20	10.09	0.32	2.25	0.85	1.00	1.70	12.30	48.79	7.66	2,896.0	1999.1	132.18	182.80	314.99
16	125.0	5.73	5.350	21.27	16.47	0.31	2.27	0.85	1.00	1.71	17.36	64.55	11.42	3,645.5	2506.0	191.85	236.19	428.03
17	135.0	5.86	4.872	20.46	15.66	0.33	2.21	0.85	1.00	1.73	16.62	50.23	11.51	3,031.3	2222.6	182.90	180.14	363.05
18	146.0	5.99	6.622	26.87	22.12	0.40	2.07	0.85	1.00	1.74	22.69	34.95	10.73	2,934.8	2234.6	239.12	147.30	386.42
														69,938.3	**42674.2**			**6,406.25**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

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

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.48	12.899	10.01	0.00	0.11	2.92	1.00	1.00	0.00	18.55	9.73	0.00	1,921.3	0.0	252.74	44.29	297.03
2	15.0	5.48	12.303	10.01	0.00	0.11	2.91	1.00	1.00	0.00	17.96	43.96	0.00	2,172.2	0.0	243.78	154.45	398.23
3	25.0	5.48	10.180	8.14	0.00	0.10	2.97	1.00	1.00	0.00	14.77	43.96	0.00	2,213.9	0.0	204.60	154.45	359.05
4	35.0	5.74	13.286	7.51	0.00	0.12	2.89	1.00	1.00	0.00	17.53	43.96	0.00	2,015.3	0.0	247.14	161.54	408.68
5	45.0	6.16	12.625	7.51	0.00	0.12	2.88	1.00	1.00	0.00	16.87	43.96	0.00	1,705.9	0.0	254.41	173.56	427.97
6	55.0	6.53	12.008	7.51	0.00	0.13	2.86	1.00	1.00	0.00	16.26	43.96	0.00	1,672.6	0.0	258.26	183.80	442.06
7	63.4	6.79	6.441	5.03	0.00	0.12	2.90	1.00	1.00	0.00	9.29	29.45	0.00	1,116.6	0.0	155.47	128.22	283.70
8	70.0	6.99	9.039	3.92	0.00	0.14	2.81	1.00	1.00	0.00	11.26	29.45	0.00	1,075.6	0.0	188.26	131.96	320.22
9	76.7	7.18	8.631	3.86	0.00	0.14	2.80	1.00	1.00	0.00	10.82	29.01	0.00	954.3	0.0	184.62	133.40	318.02
10	83.4	7.35	7.081	3.58	0.00	0.13	2.86	1.00	1.00	0.00	9.10	29.50	0.00	1,172.8	0.0	162.75	138.94	301.68
11	90.0	7.51	4.327	4.34	0.00	0.11	2.92	1.00	1.00	0.00	6.78	28.22	0.00	1,003.9	0.0	126.23	135.91	262.14
12	96.6	7.67	6.412	3.24	0.00	0.13	2.85	1.00	1.00	0.00	8.25	29.31	0.00	1,048.5	0.0	153.27	144.03	297.30
13	103.4	7.82	2.125	10.79	0.00	0.18	2.65	1.00	1.00	0.00	8.38	29.31	0.00	862.9	0.0	147.73	146.83	294.56
14	110.0	7.96	1.591	10.32	0.00	0.19	2.64	1.00	1.00	0.00	7.59	28.22	0.00	830.0	0.0	135.41	143.93	279.33
15	116.6	8.09	0.000	10.10	0.00	0.16	2.72	1.00	1.00	0.00	5.84	29.31	0.00	747.4	0.0	109.20	151.98	261.18
16	125.0	8.25	5.350	4.80	0.00	0.12	2.88	1.00	1.00	0.00	8.06	38.94	0.00	949.7	0.0	162.64	197.90	360.54
17	135.0	8.43	4.872	4.80	0.00	0.13	2.84	1.00	1.00	0.00	7.59	27.20	0.00	673.9	0.0	154.35	129.73	284.08
18	146.0	8.63	6.622	4.75	0.00	0.14	2.81	1.00	1.00	0.00	9.31	19.52	0.00	583.5	0.0	191.62	110.73	302.36
														22,720.1	**0.0**			**5,898.13**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.48	12.899	10.01	0.00	0.11	2.92	0.80	1.00	0.00	15.97	9.73	0.00	1,921.3	0.0	217.59	44.29	261.88
2	15.0	5.48	12.303	10.01	0.00	0.11	2.91	0.80	1.00	0.00	15.49	43.96	0.00	2,172.2	0.0	210.38	154.45	364.82
3	25.0	5.48	10.180	8.14	0.00	0.10	2.97	0.80	1.00	0.00	12.74	43.96	0.00	2,213.9	0.0	176.40	154.45	330.85
4	35.0	5.74	13.286	7.51	0.00	0.12	2.89	0.80	1.00	0.00	14.87	43.96	0.00	2,015.3	0.0	209.69	161.54	371.22
5	45.0	6.16	12.625	7.51	0.00	0.12	2.88	0.80	1.00	0.00	14.35	43.96	0.00	1,705.9	0.0	216.34	173.56	389.90
6	55.0	6.53	12.008	7.51	0.00	0.13	2.86	0.80	1.00	0.00	13.85	43.96	0.00	1,672.6	0.0	220.10	183.80	403.91
7	63.4	6.79	6.441	5.03	0.00	0.12	2.90	0.80	1.00	0.00	8.00	29.45	0.00	1,116.6	0.0	133.90	128.22	262.13
8	70.0	6.99	9.039	3.92	0.00	0.14	2.81	0.80	1.00	0.00	9.45	29.45	0.00	1,075.6	0.0	158.03	131.96	289.99
9	76.7	7.18	8.631	3.86	0.00	0.14	2.80	0.80	1.00	0.00	9.09	29.01	0.00	954.3	0.0	155.16	133.40	288.56
10	83.4	7.35	7.081	3.58	0.00	0.13	2.86	0.80	1.00	0.00	7.69	29.50	0.00	1,172.8	0.0	137.43	138.94	276.37
11	90.0	7.51	4.327	4.34	0.00	0.11	2.92	0.80	1.00	0.00	5.91	28.22	0.00	1,003.9	0.0	110.12	135.91	246.02
12	96.6	7.67	6.412	3.24	0.00	0.13	2.85	0.80	1.00	0.00	6.96	29.31	0.00	1,048.5	0.0	129.43	144.03	273.46
13	103.4	7.82	2.125	10.79	0.00	0.18	2.65	0.80	1.00	0.00	7.95	29.31	0.00	862.9	0.0	140.23	146.83	287.07
14	110.0	7.96	1.591	10.32	0.00	0.19	2.64	0.80	1.00	0.00	7.27	28.22	0.00	830.0	0.0	129.72	143.93	273.65
15	116.6	8.09	0.000	10.10	0.00	0.16	2.72	0.80	1.00	0.00	5.84	29.31	0.00	747.4	0.0	109.20	151.98	261.18
16	125.0	8.25	5.350	4.80	0.00	0.12	2.88	0.80	1.00	0.00	6.99	38.94	0.00	949.7	0.0	141.06	197.90	338.96
17	135.0	8.43	4.872	4.80	0.00	0.13	2.84	0.80	1.00	0.00	6.61	27.20	0.00	673.9	0.0	134.53	129.73	264.26
18	146.0	8.63	6.622	4.75	0.00	0.14	2.81	0.80	1.00	0.00	7.99	19.52	0.00	583.5	0.0	164.37	110.73	275.11
														22,720.1	**0.0**			**5,459.32**

Section Forces

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 18	

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

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

Dead Load Factor: 1.00

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

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	5.0	5.48	12.899	10.01	0.00	0.11	2.92	0.85	1.00	0.00	16.62	9.73	0.00	1,921.3	0.0	226.38	44.29	270.67
2	15.0	5.48	12.303	10.01	0.00	0.11	2.91	0.85	1.00	0.00	16.11	43.96	0.00	2,172.2	0.0	218.73	154.45	373.17
3	25.0	5.48	10.180	8.14	0.00	0.10	2.97	0.85	1.00	0.00	13.25	43.96	0.00	2,213.9	0.0	183.45	154.45	337.90
4	35.0	5.74	13.286	7.51	0.00	0.12	2.89	0.85	1.00	0.00	15.54	43.96	0.00	2,015.3	0.0	219.05	161.54	380.59
5	45.0	6.16	12.625	7.51	0.00	0.12	2.88	0.85	1.00	0.00	14.98	43.96	0.00	1,705.9	0.0	225.85	173.56	399.42
6	55.0	6.53	12.008	7.51	0.00	0.13	2.86	0.85	1.00	0.00	14.45	43.96	0.00	1,672.6	0.0	229.64	183.80	413.45
7	63.4	6.79	6.441	5.03	0.00	0.12	2.90	0.85	1.00	0.00	8.32	29.45	0.00	1,116.6	0.0	139.30	128.22	267.52
8	70.0	6.99	9.039	3.92	0.00	0.14	2.81	0.85	1.00	0.00	9.90	29.45	0.00	1,075.6	0.0	165.59	131.96	297.55
9	76.7	7.18	8.631	3.86	0.00	0.14	2.80	0.85	1.00	0.00	9.52	29.01	0.00	954.3	0.0	162.52	133.40	295.93
10	83.4	7.35	7.081	3.58	0.00	0.13	2.86	0.85	1.00	0.00	8.04	29.50	0.00	1,172.8	0.0	143.76	138.94	282.70
11	90.0	7.51	4.327	4.34	0.00	0.11	2.92	0.85	1.00	0.00	6.13	28.22	0.00	1,003.9	0.0	114.15	135.91	250.05
12	96.6	7.67	6.412	3.24	0.00	0.13	2.85	0.85	1.00	0.00	7.28	29.31	0.00	1,048.5	0.0	135.39	144.03	279.42
13	103.4	7.82	2.125	10.79	0.00	0.18	2.65	0.85	1.00	0.00	8.06	29.31	0.00	862.9	0.0	142.11	146.83	288.94
14	110.0	7.96	1.591	10.32	0.00	0.19	2.64	0.85	1.00	0.00	7.35	28.22	0.00	830.0	0.0	131.14	143.93	275.07
15	116.6	8.09	0.000	10.10	0.00	0.16	2.72	0.85	1.00	0.00	5.84	29.31	0.00	747.4	0.0	109.20	151.98	261.18
16	125.0	8.25	5.350	4.80	0.00	0.12	2.88	0.85	1.00	0.00	7.26	38.94	0.00	949.7	0.0	146.46	197.90	344.35
17	135.0	8.43	4.872	4.80	0.00	0.13	2.84	0.85	1.00	0.00	6.86	27.20	0.00	673.9	0.0	139.48	129.73	269.21
18	146.0	8.63	6.622	4.75	0.00	0.14	2.81	0.85	1.00	0.00	8.32	19.52	0.00	583.5	0.0	171.19	110.73	281.92
														22,720.1	**0.0**			**5,569.02**

Force/Stress Compression Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 19	

TES Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	10	MOD - 5"PST+6"PX1/2P	-209.21	1.2D + 1.6W Normal Wind	10.02	100	100	100	68.10	50.00	272.55	76.8	Member X
2	20	MOD - 5"PST+6"PX1/2P	-196.86	1.2D + 1.6W Normal Wind	9.77	100	100	100	66.40	50.00	277.15	71.0	Member X
3	30	MOD - 4"PX+5"PX1/2P	-184.74	1.2D + 1.6W Normal Wind	10.02	100	100	100	76.37	50.00	219.25	84.3	Member X
4	40	PX - 4" DIA PIPE	-170.58	1.2D + 1.6W Normal Wind	9.77	50	50	50	39.60	50.00	176.95	96.4	Member X
5	50	PX - 4" DIA PIPE	-157.29	1.2D + 1.6W Normal Wind	9.77	50	50	50	39.59	50.00	176.96	88.9	Member X
6	60	PX - 4" DIA PIPE	-143.31	1.2D + 1.6W Normal Wind	9.77	50	50	50	39.59	50.00	176.96	81.0	Member X
7	66.7	MOD - 3"PX+4"PX1/2P	-131.80	1.2D + 1.6W Normal Wind	6.71	100	100	100	71.98	50.00	160.76	82.0	Member X
8	73.4	PX - 3" DIA PIPE	-121.96	1.2D + 1.6W Normal Wind	6.71	50	50	50	35.33	50.00	124.05	98.3	Member X
9	80	PX - 3" DIA PIPE	-112.49	1.2D + 1.6W Normal Wind	6.61	50	50	50	34.80	50.00	124.38	90.4	Member X
10	86.75	MOD - 2.5"PX+3"PX1/2P	-102.59	1.2D + 1.6W Normal Wind	6.51	50	50	50	39.86	50.00	150.70	68.1	Member X
11	93.25	MOD - 2.5"PX+3.5"PX1/2P	-93.61	1.2D + 1.6W Normal Wind	6.51	100	100	100	85.72	50.00	107.59	87.0	Member X
12	100	PX - 2-1/2" DIA PIPE	-83.09	1.2D + 1.6W Normal Wind	6.51	50	50	50	42.28	50.00	88.84	93.5	Member X
13	106.7	PX - 2-1/2" DIA PIPE	-72.52	1.2D + 1.6W Normal Wind	6.51	50	50	50	42.28	50.00	88.85	81.6	Member X
14	113.2	PX - 2-1/2" DIA PIPE	-62.40	1.2D + 1.6W Normal Wind	6.51	50	50	50	42.28	50.00	88.85	70.2	Member X
15	120	PX - 2-1/2" DIA PIPE	-50.62	1.2D + 1.6W Normal Wind	6.51	100	100	100	84.56	50.00	60.03	84.3	Member X
16	130	PST - 2-1/2" DIA PIPE	-40.80	1.2D + 1.6W Normal Wind	4.88	100	100	100	61.88	50.00	57.96	70.4	Member X
17	140	PST - 2-1/2" DIA PIPE	-22.60	1.2D + 1.6W Normal Wind	4.88	100	100	100	61.88	50.00	57.96	39.0	Member X
18	152	PST - 2" DIA PIPE	-9.34	1.2D + 1.6W Normal Wind	0.25	100	100	100	3.81	50.00	48.10	19.4	Member X

Splices

		Top Splice						Bottom Splice					
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	10	1.2D + 1.6W Normal Wind	203.08	0.00	0.0			1.2D + 1.6W Normal Wind	216.01	0.00			
2	20	1.2D + 1.6W Normal Wind	190.55	0.00	0.0			1.2D + 1.6W Normal Wind	203.08	0.00			
3	30	1.2D + 1.6W Normal Wind	177.93	0.00	0.0			1.2D + 1.6W Normal Wind	190.55	0.00		1 A325	4
4	40	1.2D + 1.6W Normal Wind	164.85	0.00	0.0			1.2D + 1.6W Normal Wind	177.93	0.00			
5	50	1.2D + 1.6W Normal Wind	150.27	0.00	0.0			1.2D + 1.6W Normal Wind	164.85	0.00		1 A325	4
6	60	1.2D + 1.6W Normal Wind	137.15	0.00	0.0			1.2D + 1.6W Normal Wind	150.27	0.00			
7	66.7	1.2D + 1.6W Normal Wind	126.64	0.00	0.0			1.2D + 1.6W Normal Wind	137.15	0.00		7/8 A325	4
8	73.4	1.2D + 1.6W Normal Wind	117.17	0.00	0.0			1.2D + 1.6W Normal Wind	126.64	0.00			
9	80	1.2D + 1.6W Normal Wind	107.53	0.00	0.0			1.2D + 1.6W Normal Wind	117.17	0.00			
10	86.75	1.2D + 1.6W Normal Wind	97.91	0.00	0.0			1.2D + 1.6W Normal Wind	107.53	0.00		7/8 A325	4
11	93.25	1.2D + 1.6W Normal Wind	88.55	0.00	0.0			1.2D + 1.6W Normal Wind	97.91	0.00			
12	100	1.2D + 1.6W Normal Wind	78.39	0.00	0.0			1.2D + 1.6W Normal Wind	88.55	0.00			
13	106.7	1.2D + 1.6W Normal Wind	67.23	0.00	0.0			1.2D + 1.6W Normal Wind	78.39	0.00		3/4 A325	4
14	113.2	1.2D + 1.6W Normal Wind	56.80	0.00	0.0			1.2D + 1.6W Normal Wind	67.23	0.00			
15	120	1.2D + 1.6W Normal Wind	45.55	0.00	0.0			1.2D + 1.6W Normal Wind	56.80	0.00			
16	130	1.2D + 1.6W Normal Wind	27.00	0.00	0.0			1.2D + 1.6W Normal Wind	45.55	0.00		5/8 A325	4
17	140	1.2D + 1.6W Normal Wind	9.61	0.00	0.0			1.2D + 1.6W Normal Wind	27.00	0.00			
18	152	1.2D + 1.0Di + 1.0Wi 60° Wind	0.24	0.00	0.0			1.2D + 1.6W Normal Wind	9.61	0.00		5/8 A325	4

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	10										0.00	0	0				
2	20										0.00	0	0				
3	30										0.00	0	0				
4	40										0.00	0	0				
5	50										0.00	0	0				

Force/Stress Compression Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 20	

IES
Tower Engineering Solutions

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
6	60										0.00	0	0				
7	66.7										0.00	0	0				
8	73.4										0.00	0	0				
9	80										0.00	0	0				
10	86.7										0.00	0	0				
11	93.2										0.00	0	0				
12	100										0.00	0	0				
13	106.										0.00	0	0				
14	113.										0.00	0	0				
15	120										0.00	0	0				
16	130										0.00	0	0				
17	140										0.00	0	0				
18	152	SAE - 2x2x0.125	-0.70	0.9D + 1.6W Normal Wind	6.52	100	100	100	196.58	36.00	2.81	1	1	7.95	4.13	25	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	10	SAE - 3.5X3.5X0.25	-7.44	1.2D + 1.6W 90° Wind	22.61	49	49	49	191.59	36.00	10.40	1	1	12.43	10.4	71	Member Z
2	20	SAE - 3.5X3.5X0.25	-7.19	0.9D + 1.6W 90° Wind	21.59	49	49	49	182.93	36.00	11.41	1	1	12.43	10.4	69	Bolt Bear
3	30	SAE - 3X3X0.375	-7.00	0.9D + 1.6W 90° Wind	20.81	49	49	49	208.49	36.00	10.97	1	1	12.43	26.1	64	Member Z
4	40	SAE - 3X3X0.375	-7.40	1.2D + 1.6W 90° Wind	19.79	49	49	49	198.27	36.00	12.13	1	1	12.43	26.1	61	Member Z
5	50	SAE - 3X3X0.25	-6.88	0.9D + 1.6W 90° Wind	18.89	49	49	49	187.63	36.00	9.24	1	1	12.43	17.4	74	Member Z
6	60	SAE - 3X3X0.25	-7.10	1.2D + 1.6W 90° Wind	18.06	49	49	49	179.41	36.00	10.11	1	1	12.43	13.0	70	Member Z
7	66.7	SAE - 2.5X2.5X0.25	-6.03	1.2D + 1.6W 90° Wind	15.83	49	49	49	189.62	36.00	7.48	1	1	12.15	13.9	81	Member Z
8	73.4	SAE - 2.5X2.5X0.25	-5.88	1.2D + 1.6W 90° Wind	15.21	49	49	49	182.11	36.00	8.11	1	1	12.15	13.9	73	Member Z
9	80	SAE - 2.5X2.5X0.1875	-5.69	1.2D + 1.6W 90° Wind	14.54	49	49	49	172.67	36.00	6.83	1	1	7.95	6.20	92	Bolt Bear
10	86.7	SAE - 2X2X0.375	-5.47	1.2D + 1.6W 90° Wind	13.86	49	49	49	209.54	36.00	7.00	1	1	7.95	20.8	78	Member Z
11	93.2	SAE - 2X2X0.375	-5.26	1.2D + 1.6W 90° Wind	13.28	49	49	49	200.74	36.00	7.62	1	1	7.95	20.8	69	Member Z
12	100	SAE - 2X2X0.375	-5.78	1.2D + 1.6W 90° Wind	12.71	49	49	49	192.07	36.00	8.33	1	1	7.95	20.8	73	Bolt Shear
13	106.	MOD - 2L2x2x1/8_Speci	-5.34	1.2D + 1.6W 90° Wind	12.10	49	49	49	117.93	36.00	15.28	1	1	7.95		67	Bolt Shear
14	113.	MOD - 2L2x2x1/8_Speci	-5.19	1.2D + 1.6W 90° Wind	11.56	49	49	49	113.99	36.00	16.03	1	1	7.95		65	Bolt Shear
15	120	MOD - 2L2x2x1/8_Speci	-5.61	1.2D + 1.6W 90° Wind	11.03	49	49	49	110.13	36.00	16.78	1	1	7.95		71	Bolt Shear
16	130	SAE - 1.75X1.75X0.25	-4.89	1.2D + 1.6W 90° Wind	9.62	48	48	48	162.48	36.00	6.93	1	1	7.95	13.9	71	Member Z
17	140	SAE - 1.75X1.75X0.125	-3.99	1.2D + 1.6W 90° Wind	8.39	48	48	48	139.29	36.00	4.89	1	1	7.95	4.13	97	Bolt Bear
18	152	SAE - 1.5X1.5X0.125	-2.29	1.2D + 1.6W 90° Wind	7.63	46	46	46	142.36	36.00	4.01	1	1	7.95	4.13	57	Member Z

Force/Stress Tension Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	10	MOD - 5"PST+6"PX1/2P	180.15	0.9D + 1.6W 60° Wind	50	382.59	47.1	Member
2	20	MOD - 5"PST+6"PX1/2P	175.63	0.9D + 1.6W 60° Wind	50	382.59	45.9	Member
3	30	MOD - 4"PX+5"PX1/2P	159.17	0.9D + 1.6W 60° Wind	50	335.85	47.4	Member
4	40	PX - 4" DIA PIPE	147.67	0.9D + 1.6W 60° Wind	50	198.45	74.4	Member
5	50	PX - 4" DIA PIPE	143.00	0.9D + 1.6W 60° Wind	50	198.45	72.1	Member
6	60	PX - 4" DIA PIPE	124.33	0.9D + 1.6W 60° Wind	50	198.45	62.7	Member
7	66.7	MOD - 3"PX+4"PX1/2P	114.29	0.9D + 1.6W 60° Wind	50	234.80	48.7	Member
8	73.4	PX - 3" DIA PIPE	105.78	0.9D + 1.6W 60° Wind	50	135.90	77.8	Member
9	80	PX - 3" DIA PIPE	97.41	0.9D + 1.6W 60° Wind	50	135.90	71.7	Member
10	86.75	MOD - 2.5"PX+3'PX1/2P	93.73	0.9D + 1.6W 60° Wind	50	169.27	55.4	Member
11	93.25	MOD - 2.5"PX+3.5"PX1/2P	80.55	0.9D + 1.6W 60° Wind	50	184.12	43.8	Member
12	100	PX - 2-1/2" DIA PIPE	71.22	0.9D + 1.6W 60° Wind	50	101.25	70.3	Member
13	106.75	PX - 2-1/2" DIA PIPE	67.12	0.9D + 1.6W 60° Wind	50	101.25	66.3	Member
14	113.25	PX - 2-1/2" DIA PIPE	52.16	0.9D + 1.6W 60° Wind	50	101.25	51.5	Member
15	120	PX - 2-1/2" DIA PIPE	41.34	0.9D + 1.6W 60° Wind	50	101.25	40.8	Member
16	130	PST - 2-1/2" DIA PIPE	36.65	0.9D + 1.6W 60° Wind	50	76.68	47.8	Member
17	140	PST - 2-1/2" DIA PIPE	16.95	0.9D + 1.6W 60° Wind	50	76.68	22.1	Member
18	152	PST - 2" DIA PIPE	6.57	0.9D + 1.6W 60° Wind	50	48.15	13.7	Member

Splices

		Top Splice						Bottom Splice					
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	10	0.9D + 1.6W 60° Wind	174.26	0.00	0.0			0.9D + 1.6W 60° Wind	186.3	0.00			
2	20	0.9D + 1.6W 60° Wind	163.84	0.00	0.0			0.9D + 1.6W 60° Wind	174.2	0.00			
3	30	0.9D + 1.6W 60° Wind	152.79	0.00	0.0			0.9D + 1.6W 60° Wind	163.8	212.04	77.3	1 A325	4
4	40	0.9D + 1.6W 60° Wind	142.73	0.00	0.0			0.9D + 1.6W 60° Wind	152.7	0.00			
5	50	0.9D + 1.6W 60° Wind	130.13	0.00	0.0			0.9D + 1.6W 60° Wind	142.7	212.04	67.3	1 A325	4
6	60	0.9D + 1.6W 60° Wind	118.86	0.00	0.0			0.9D + 1.6W 60° Wind	130.1	0.00			
7	66.7	0.9D + 1.6W 60° Wind	109.35	0.00	0.0			0.9D + 1.6W 60° Wind	118.8	166.24	71.5	7/8 A325	4
8	73.4	0.9D + 1.6W 60° Wind	101.09	0.00	0.0			0.9D + 1.6W 60° Wind	109.3	0.00			
9	80	0.9D + 1.6W 60° Wind	92.55	0.00	0.0			0.9D + 1.6W 60° Wind	101.0	0.00			
10	86.75	0.9D + 1.6W 60° Wind	84.30	0.00	0.0			0.9D + 1.6W 60° Wind	92.55	166.24	55.7	7/8 A325	4
11	93.25	0.9D + 1.6W 60° Wind	75.63	0.00	0.0			0.9D + 1.6W 60° Wind	84.30	0.00			
12	100	0.9D + 1.6W 60° Wind	66.98	0.00	0.0			0.9D + 1.6W 60° Wind	75.63	0.00			
13	106.75	0.9D + 1.6W 60° Wind	56.53	0.00	0.0			0.9D + 1.6W 60° Wind	66.98	120.40	55.6	3/4 A325	4
14	113.25	0.9D + 1.6W 60° Wind	46.68	0.00	0.0			0.9D + 1.6W 60° Wind	56.53	0.00			
15	120	0.9D + 1.6W 60° Wind	36.55	0.00	0.0			0.9D + 1.6W 60° Wind	46.68	0.00			
16	130	0.9D + 1.6W 60° Wind	18.97	0.00	0.0			0.9D + 1.6W 60° Wind	36.55	82.80	44.1	5/8 A325	4
17	140	0.9D + 1.6W 60° Wind	6.67	0.00	0.0			0.9D + 1.6W 60° Wind	18.97	0.00			
18	152		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	6.67	82.80	8.1	5/8 A325	4

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	10	-			36	0.00	0	0					
2	20	-			36	0.00	0	0					
3	30	-			36	0.00	0	0					
4	40	-			36	0.00	0	0					
5	50	-			36	0.00	0	0					
6	60	-			36	0.00	0	0					

Force/Stress Tension Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

HORIZONTAL MEMBERS

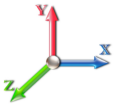
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
7	66.7	-			36	0.00	0	0					
8	73.4	-			36	0.00	0	0					
9	80	-			36	0.00	0	0					
10	86.75	-			36	0.00	0	0					
11	93.25	-			36	0.00	0	0					
12	100	-			36	0.00	0	0					
13	106.75	-			36	0.00	0	0					
14	113.25	-			36	0.00	0	0					
15	120	-			36	0.00	0	0					
16	130	-			36	0.00	0	0					
17	140	-			36	0.00	0	0					
18	152	SAE - 2x2x0.125	0.78	1.2D + 1.6W 60° Wind	36	13.11	1	1	7.95	4.13	5.17	18.8	Bolt Bear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	10	SAE - 3.5X3.5X0.25	7.18	0.9D + 1.6W 90° Wind	36	49.02	1	1	12.43	10.43	21.34	68.9	Bolt Bear
2	20	SAE - 3.5X3.5X0.25	7.10	0.9D + 1.6W 90° Wind	36	49.02	1	1	12.43	10.43	21.34	68.1	Bolt Bear
3	30	SAE - 3X3X0.375	6.97	0.9D + 1.6W 90° Wind	36	59.66	1	1	12.43	26.10	23.39	56.1	Bolt Shear
4	40	SAE - 3X3X0.375	6.97	0.9D + 1.6W 90° Wind	36	59.66	1	1	12.43	26.10	23.39	56.1	Bolt Shear
5	50	SAE - 3X3X0.25	6.86	1.2D + 1.6W 90° Wind	36	40.86	1	1	12.43	17.40	15.59	55.2	Bolt Shear
6	60	SAE - 3X3X0.25	6.74	0.9D + 1.6W 90° Wind	36	40.86	1	1	12.43	13.05	14.07	54.2	Bolt Shear
7	66.7	SAE - 2.5X2.5X0.25	6.11	1.2D + 1.6W 90° Wind	36	33.73	1	1	12.15	13.92	14.91	50.3	Bolt Shear
8	73.4	SAE - 2.5X2.5X0.25	5.62	1.2D + 1.6W 90° Wind	36	33.73	1	1	12.15	13.92	14.91	46.2	Bolt Shear
9	80	SAE - 2.5X2.5X0.1875	5.67	1.2D + 1.6W 90° Wind	36	25.60	1	1	7.95	6.20	9.79	91.5	Bolt Bear
10	86.75	SAE - 2X2X0.375	5.37	1.2D + 1.6W 90° Wind	36	36.72	1	1	7.95	20.88	18.29	67.5	Bolt Shear
11	93.25	SAE - 2X2X0.375	5.27	1.2D + 1.6W 90° Wind	36	36.72	1	1	7.95	20.88	18.29	66.3	Bolt Shear
12	100	SAE - 2X2X0.375	5.52	1.2D + 1.6W 90° Wind	36	36.72	1	1	7.95	20.88	18.29	69.4	Bolt Shear
13	106.75	MOD - 2L2x2x1/8_Special	5.33	1.2D + 1.6W 90° Wind	36	31.78	1	1	7.95			67.0	Bolt Shear
14	113.25	MOD - 2L2x2x1/8_Special	5.17	1.2D + 1.6W 90° Wind	36	31.78	1	1	7.95			65.0	Bolt Shear
15	120	MOD - 2L2x2x1/8_Special	5.41	1.2D + 1.6W 90° Wind	36	31.78	1	1	7.95			68.1	Bolt Shear
16	130	SAE - 1.75X1.75X0.25	5.02	1.2D + 1.6W 90° Wind	36	21.33	1	1	7.95	13.92	10.83	63.1	Bolt Shear
17	140	SAE - 1.75X1.75X0.125	3.85	0.9D + 1.6W 90° Wind	36	11.15	1	1	7.95	4.13	4.49	93.1	Bolt Bear
18	152	SAE - 1.5X1.5X0.125	2.24	0.9D + 1.6W 90° Wind	36	9.20	1	1	7.95	4.13	3.81	58.8	Blck Shear

Support Forces Summary

Structure:	CT13065-A-SBA		**Code:**	TIA-222-G	2/18/2022
Site Name:	Guilford		**Exposure:**	B	
Height:	152.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 23



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.02	215.44	-23.05	
	1a	7.73	-88.47	-7.50	
	1b	-7.75	-88.51	-7.48	
1.2D + 1.6W 60° Wind	1	-2.45	110.35	-11.32	
	1a	-11.04	110.36	3.51	
	1b	-17.72	-182.25	-10.22	
1.2D + 1.6W 90° Wind	1	-2.88	12.81	-0.70	
	1a	-17.47	183.40	8.40	
	1b	-16.19	-157.75	-7.70	
0.9D + 1.6W Normal Wind	1	0.02	211.95	-22.85	
	1a	7.90	-91.54	-7.60	
	1b	-7.92	-91.57	-7.58	
0.9D + 1.6W 60° Wind	1	-2.46	107.01	-11.11	
	1a	-10.86	107.02	3.41	
	1b	-17.90	-185.18	-10.32	
0.9D + 1.6W 90° Wind	1	-2.88	9.61	-0.50	
	1a	-17.30	179.95	8.30	
	1b	-16.36	-160.71	-7.80	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	80.40	-6.09	
	1a	1.42	6.45	-1.53	
	1b	-1.42	6.39	-1.52	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.59	55.25	-3.32	
	1a	-3.17	55.28	1.15	
	1b	-3.93	-17.30	-2.27	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.69	31.07	-0.70	
	1a	-4.74	73.19	2.34	
	1b	-3.52	-11.03	-1.64	
1.0D + 1.0W Normal Wind	1	0.00	55.35	-5.60	
	1a	1.26	-11.64	-1.41	
	1b	-1.27	-11.67	-1.40	
1.0D + 1.0W 60° Wind	1	-0.54	32.17	-3.01	
	1a	-2.88	32.20	1.03	
	1b	-3.48	-32.32	-2.01	
1.0D + 1.0W 90° Wind	1	-0.64	10.67	-0.67	
	1a	-4.30	48.31	2.11	
	1b	-3.14	-26.94	-1.45	

Max Reactions

Leg			Overturning		
Max Uplift:	-185.18	(kips)	Moment:	3646.50	(ft-kips)
Max Down:	215.44	(kips)	Total Down:	38.46	(kips)
Max Shear:	23.05	(kips)	Total Shear:	38.04	(kips)

Analysis Summary

Structure:	CT13065-A-SBA	**Code:**	TIA-222-G	2/18/2022	
Site Name:	Guilford	**Exposure:**	B		
Height:	152.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Max Reactions

Leg			Overturning		
Max Uplift:	-185.18	(kips)	Moment:	3646.50	(ft-kips)
Max Down:	215.44	(kips)	Total Down:	38.46	(kips)
Max Shear:	23.05	(kips)	Total Shear:	38.04	(kips)

Anchor Bolts

Bolt Size (in.):	1.00	Number Bolts:	4
Yield Strength (Ksi):	92.00	Tensile Strength (Ksi):	120.00
Detail Type:	B		

Interaction Ratio: 0.94

Max Usages

Max Leg: 98.3% (1.2D + 1.6W Normal Wind - Sect 8)
Max Diag: 96.5% (1.2D + 1.6W 90° Wind - Sect 17)
Max Horiz: 24.8% (0.9D + 1.6W Normal Wind - Sect 18)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 101 mph Wind at 60° From Face	80.25	0.3100	0.0560	0.5597
	130.00	0.9183	0.1506	0.9436
	139.75	1.0771	0.1793	1.1721
	148.08	1.2152	0.1790	0.9660
0.9D + 1.6W 101 mph Wind at 90° From Face	80.25	0.3129	0.0350	0.6011
	130.00	0.9252	-0.1746	0.9380
	139.75	1.0855	-0.2076	1.1493
	148.08	1.2239	-0.2100	0.9562
0.9D + 1.6W 101 mph Wind at Normal To Face	80.25	0.3204	0.0501	0.5752
	130.00	0.9446	0.1352	0.9676
	139.75	1.1072	0.1602	1.2036
	148.08	1.2486	0.1609	1.0292
1.0D + 1.0W 60 mph Wind at 60° From Face	80.25	0.0684	0.0075	0.1235
	130.00	0.2027	0.0184	0.2088
	139.75	0.2377	0.0230	0.2604
	148.08	0.2682	0.0217	0.2121
1.0D + 1.0W 60 mph Wind at 90° From Face	80.25	0.0692	0.0061	0.1321
	130.00	0.2044	-0.0311	0.2075
	139.75	0.2398	-0.0377	0.2553
	148.08	0.2704	-0.0376	0.2131
1.0D + 1.0W 60 mph Wind at Normal To Face	80.25	0.0707	0.0079	0.1275
	130.00	0.2085	0.0205	0.2131
	139.75	0.2445	0.0254	0.2640
	148.08	0.2757	0.0246	0.2252

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	80.25	0.0763	0.0104	0.1391
	130.00	0.2283	0.0268	0.2341
	139.75	0.2670	0.0325	0.2911
	148.08	0.3010	0.0317	0.2382
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	80.25	0.0762	0.0075	0.1483
	130.00	0.2291	-0.0417	0.2316
	139.75	0.2679	-0.0499	0.2839
	148.08	0.3018	-0.0507	0.2394
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	80.25	0.0792	0.0106	0.1419
	130.00	0.2314	0.0281	0.2338
	139.75	0.2709	0.0340	0.2869
	148.08	0.3051	0.0336	0.2642
1.2D + 1.6W 101 mph Wind at 60° From Face	80.25	0.3105	0.0564	0.5608
	130.00	0.9204	0.1518	0.9464
	139.75	1.0796	0.1807	1.1761
	148.08	1.2181	0.1804	0.9684
1.2D + 1.6W 101 mph Wind at 90° From Face	80.25	0.3134	0.0353	0.6023
	130.00	0.9273	-0.1761	0.9405
	139.75	1.0880	-0.2094	1.1524
	148.08	1.2268	-0.2118	0.9595
1.2D + 1.6W 101 mph Wind at Normal To Face	80.25	0.3209	0.0504	0.5765
	130.00	0.9467	0.1361	0.9701
	139.75	1.1097	0.1613	1.2066
	148.08	1.2515	0.1621	1.0310

Self Supporting Tower Footing Design

			Date: 2/18/2022
Customer Name:	SBA Communications Corp	**EIA/TIA Standard:**	TIA-222-G
Site Name:		**Structure Height (Ft.):**	152
Site Nmber:	CT13065-A-SBA	**Engineer Name:**	M. Baker
Engr. Number:	124629	**Engineer Login ID:**	

Foundation Info Obtained from: Mapping Operation

Structure Type: Self Supporting Tower

Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	215.4	Shear Force (Kips):	23.1
Uplift Force (Kips):	185.2	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

Foundation Geometries:

Pad Base w/ toe or in Rock-Yes/No ?	No	Mods required -Yes/No ?:	Yes
Diameter of Pier (ft.): Square	3.500	Depth of Base BG (ft.):	7.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	1.70
Length of Pad (ft.):	16	Width of Pad (ft.):	16
Add Concrete Width & Length (ft.)	6.5	Add Concrete Thick. (ft)	3.5
Final Length of pad (ft)	16.0	Final width of pad (ft):	16.0

Consider ties in concrete shear strength ?: Yes

Material Properties and Reabr Info:

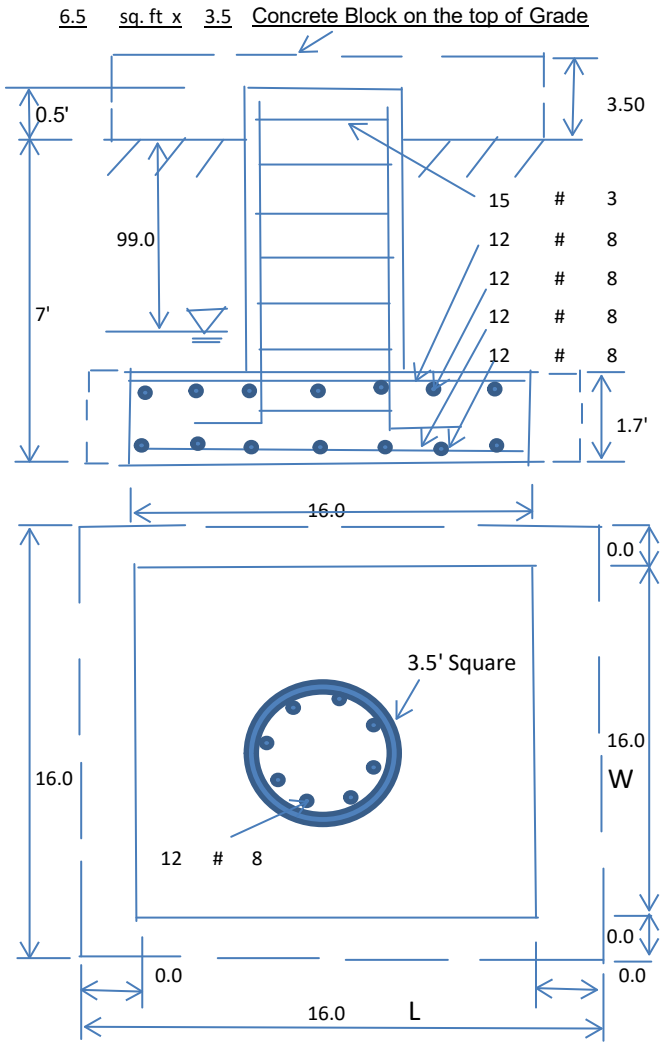
Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	3	
Qty. of Vertical Rebars:	12	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

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

Rebar at the top of the concrete pad:

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



Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	55.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25

Foundation Analysis and Design:

Uplift Strength Reduction Factor A: 0.75

Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	1860.47	Total Dry Soil Weight (Kips):	204.65
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	204.65	Weight from the Concrete Block at Top (K):	21.26
Total Dry Concrete Volume (cu. Ft.):	648.00	Total Dry Concrete Weight (Kips):	97.20
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	97.20	Total Vertical Load on Base (Kips):	517.29

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1303.04	<	Allowable Factored Soil Bearing (psf):	22500	0.06	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	5760.0	>	Design Factored Axial Load (Kips):	241	0.04	OK!
Calculated Foundation Uplift Capacity (Kips):	262.28	>	Design Factored Uplift Load (Kips):	185	0.71	OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.11		
Calculated Moment Capacity (Mn,Kips-Ft):	574.6 >	Design Factored Moment (Mu, Kips-Ft	133.7	0.23	OK!
Calculated Shear Capacity (Kips):	147.3 >	Design Factored Shear (Kips):	23.1	0.16	OK!
Calculated Tension Capacity (Tn, Kips):	511.9 >	Design Factored Tension (Tu Kips):	185.2	0.36	OK!
Calculated Compression Capacity (Pn, Kips):	2326.5 >	Design Factored Axial Load (Pu Kips):	215.4	0.09	OK!
Moment & Axial Strength Combination:	0.23 OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.005				
(2).Concrete Pad:					
One-Way Design Shear Capacity (L-Dir. Kips);	266.6 >	One-Way Factored Shear (L-Dir Kips):	74.3	0.28	OK!
One-Way Design Shear Capacity (W-Dir. Kips):	266.6 >	One-Way Factored Shear (W-Dir Kips)	74.3	0.28	OK!
Two-Way Design Shear Capacity (Kips):	560.9 >	Two-Way Factored Shear (Kips):	193.1	0.34	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0029	Lower Steel Pad Reinf. Ratio (W-Direc	0.0029		OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	696.2 >	Moment at Bottom (L-Direct. K-Ft):	292.3	0.42	OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	696.2 >	Moment at Bottom (W-Dir. Kips-Ft):	292.3	0.42	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0029	Upper Steel Reinf. Ratio (W-Direct.):	0.0029		OK!
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	696.2 >	Moment at the top (L-Dir Kips-Ft):	279.5	0.40	OK!
Upper Steel Pad Moment Capacity (W-Dir. Kips-ft):	696.2 >	Moment at the top (W-Dir Kips-Ft):	279.5	0.40	OK!

Rebar Info Assumation per ACI when Foundation info was obtained from an mapping operation:

Concrete Strength (Psi):	*3000*	*Vertical bar yield (ksi)*	*60*	*Pad Rebar Yield (Ksi):*	*60*
Vertical Rebar Size #:	*8*	*Vertical Rebar Area (sq. in./each):*	*0.8*	*Min. Qty. of Vertical Rebars:*	*12*
Pad Steel Rebar Size (#):	*8*	*Vertical Rebar Area (sq. in./each):*	*0.79*		
Min. Qty. of Rebars in L-Direction:	*12*	*Min. Qty. of Rebars in W-Direction:*	*12*		

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 Self Support Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT13065-A-SBA

Customer Site Name: Guilford

Carrier Name: T-Mobile Sprint (App#: 154235, V2)

Carrier Site ID / Name: CT03XC068 / _

Site Location: 331 Killingworth Road (Rt 80)

Guilford, Connecticut

New Haven County

Latitude: 41.353164

Longitude: -72.688252

Analysis Result:

Max Structural Usage: 81.90% [Pass]

Report Prepared By: Sarath Basamsetti

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

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Guilford, Connecticut

New Haven County

Latitude: 41.353164

Longitude: -72.688252

Analysis Result:

Max Structural Usage: 81.90% [Pass]

Report Prepared By: Sarath Basamsetti

Introduction

The purpose of this report is to summarize the analysis results on the (3) Sector Frames at 139.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Mapping by TEP dated 05/03/2021
Antenna Loading	SBA Application #: 154235, v2 dated 02/10/2022
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 130 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 101 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 0.75" radial ice concurrent
Operational Wind Speed: 60 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G
Exposure Category: B
Structure Class: II
Topographic Category: 1
Crest Height (Ft): 0

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

Mount Information

(3) Sector Frames at 139.00' elevation.

Final Antenna Configuration

3	RFS APXVAALL24_43-U-NA20
3	Commscope VV-65A-R1
3	Ericsson AIR6449 B41
4	RFS ACU-A20-N RET
3	Ericsson 4460 B25 + B66
3	ALU 800 MHz
3	Ericsson 4480 B71 + B85
3	ALU 800 MHz External Notch Filter

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

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 81.90%, which occurs in the standoff arm. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

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

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

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

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

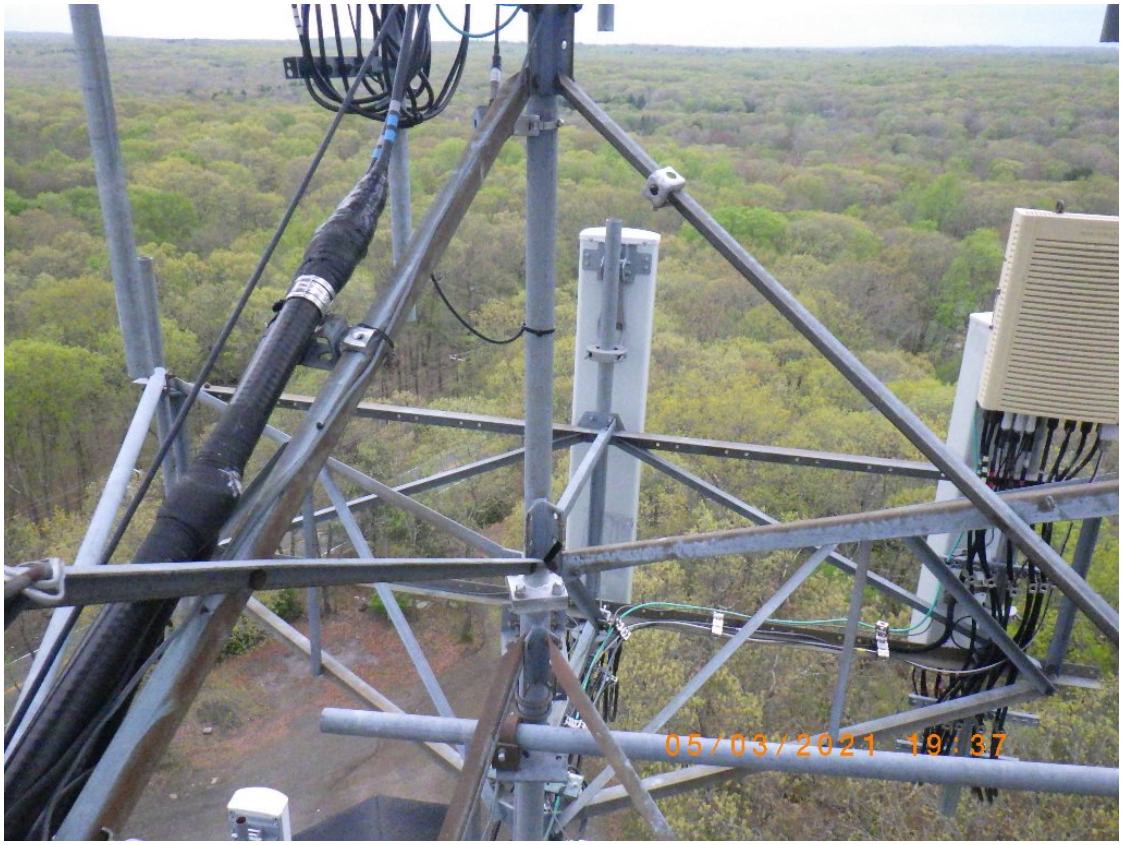
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.

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

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

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

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


05/03/2021 19:37

Structure: CT13065-A-SBA - Guilford

Sector: A

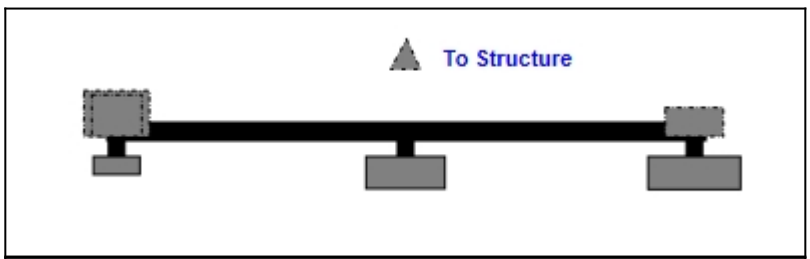
Structure Type: Self Support

Mount Elev: 139.00

2/11/2022

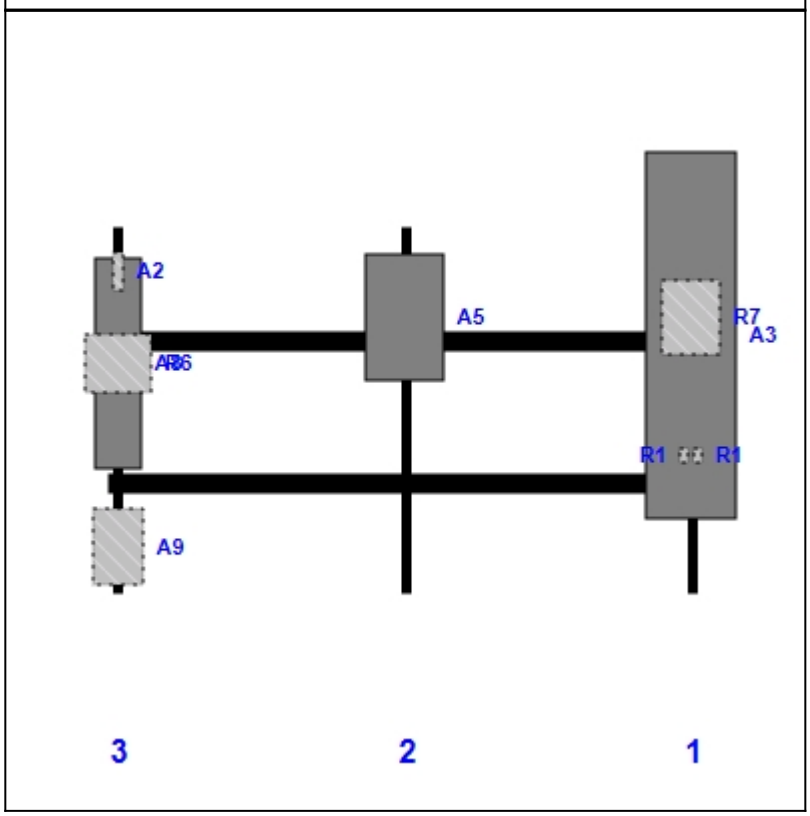
Tower Engineering Solutions

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
A3	APXVAALL24_43-U-NA20	95.90	24.00	153.00	1	a	Front	28.80			
R1	ACU-A20-N RET	4.00	2.00	153.00	1	a	Behind	60.00	-2.00		
R7	4480 B71 + B85	19.20	15.10	153.00	1	a	Behind	24.00			
R1	ACU-A20-N RET	4.00	2.00	153.00	1	b	Behind	60.00	2.00		
A5	AIR6449 B41	33.10	20.50	78.00	2	a	Front	24.00			
A8	VV-65A-R1	54.72	12.08	3.00	3	a	Front	36.00			
A2	800 MHz External Notch Filter	10.00	3.00	3.00	3	a	Behind	12.00			
R6	4460 B25 + B66	15.10	17.00	3.00	3	a	Behind	36.00			
A9	800 MHz	19.70	13.00	3.00	3	a	Behind	84.00			

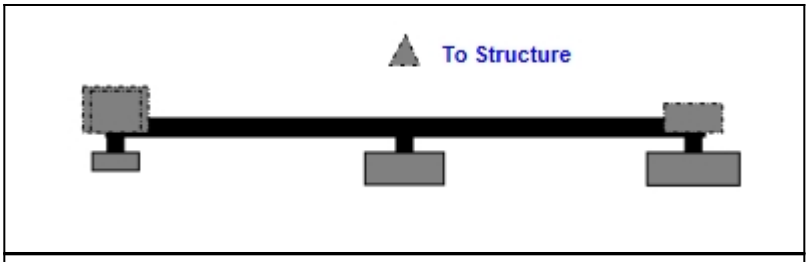
Structure: CT13065-A-SBA - Guilford

Sector: B
Structure Type: Self Support
Mount Elev: 139.00

2/11/2022

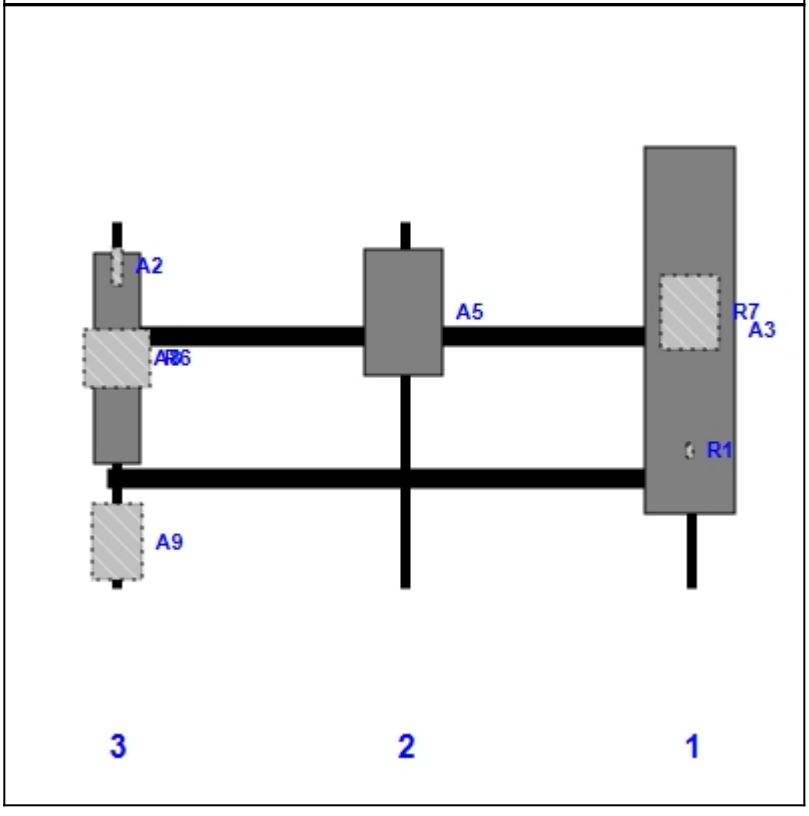
Tower Engineering Solutions

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
A3	APXVAALL24_43-U-NA20	95.90	24.00	153.00	1	a	Front	28.80			
R1	ACU-A20-N RET	4.00	2.00	153.00	1	a	Behind	60.00			
R7	4480 B71 + B85	19.20	15.10	153.00	1	a	Behind	24.00			
A5	AIR6449 B41	33.10	20.50	78.00	2	a	Front	24.00			
A8	VV-65A-R1	54.72	12.08	3.00	3	a	Front	36.00			
A2	800 MHz External Notch Filter	10.00	3.00	3.00	3	a	Behind	12.00			
R6	4460 B25 + B66	15.10	17.00	3.00	3	a	Behind	36.00			
A9	800 MHz	19.70	13.00	3.00	3	a	Behind	84.00			

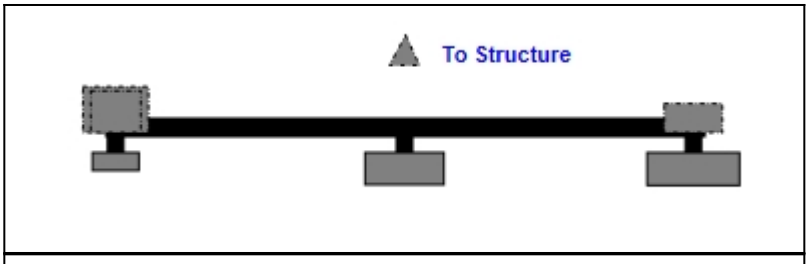
Structure: CT13065-A-SBA - Guilford

Sector: C
Structure Type: Self Support
Mount Elev: 139.00

2/11/2022

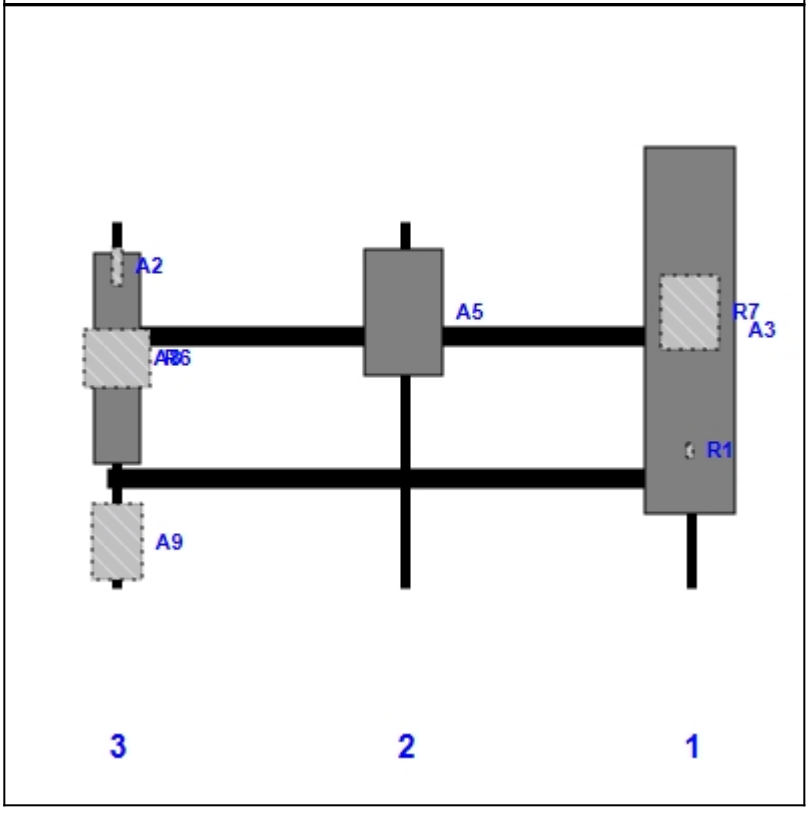
Tower Engineering Solutions

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
A3	APXVAALL24_43-U-NA20	95.90	24.00	153.00	1	a	Front	28.80			
R1	ACU-A20-N RET	4.00	2.00	153.00	1	a	Behind	60.00			
R7	4480 B71 + B85	19.20	15.10	153.00	1	a	Behind	24.00			
A5	AIR6449 B41	33.10	20.50	78.00	2	a	Front	24.00			
A8	VV-65A-R1	54.72	12.08	3.00	3	a	Front	36.00			
A2	800 MHz External Notch Filter	10.00	3.00	3.00	3	a	Behind	12.00			
R6	4460 B25 + B66	15.10	17.00	3.00	3	a	Behind	36.00			
A9	800 MHz	19.70	13.00	3.00	3	a	Behind	84.00			

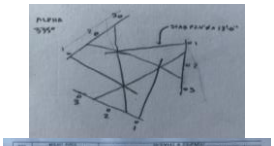
V3.0 Updated on 8-31-2020

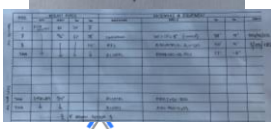
Antenna Mount Mapping Form (PATENT PENDING)

MASER CONSULTING

FCC #: N/A

Tower Owner:	SBA	**Mapping Date:**	5/5/2021
Site Name:	Guilford	**Tower Type:**	Self Support
Site Number or ID:	CT13065	**Tower Height (Ft.):**	153
Mapping Contractor:	TEP	**Mount Elevation (Ft.):**	139





Mount Pipe Configuration and Geometries [Unit = Inches]

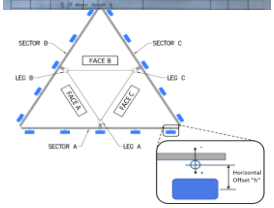
Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "c"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "c"	Horizontal Offset "C1, C2, C3, etc."
A1	2.375"@x0.154"x66"L	56.00	3.00	C1	2.375"@x0.154"x66"L	56.00	3.00
A2	2.375"@x0.154"x96"L	67.00	78.00	C2	2.375"@x0.154"x96"L	67.00	78.00
A3	2.375"@x0.154"x96"L	67.00	141.00	C3	2.375"@x0.154"x96"L	67.00	141.00
A4				C4			
A5				C5			
A6				C6			
B1	2.375"@x0.154"x66"L	56.00	3.00	D1			
B2	2.375"@x0.154"x96"L	67.00	78.00	D2			
B3	2.375"@x0.154"x96"L	67.00	141.00	D3			
B4				D4			
B5				D5			
B6				D6			

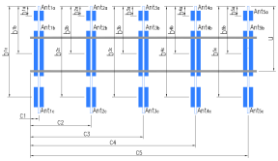
Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	18.00
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	5
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	5

Please enter additional infomation or comments below.

(3) FH 1 1/4, (1) 0.85"@ Hybrid

Tower Face Width at Mount Elev. (ft.):	6.5	Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	2.9



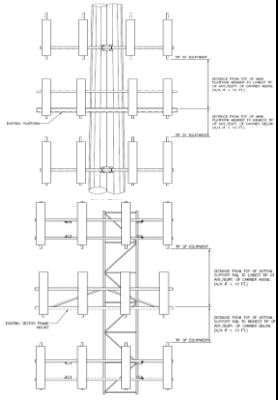


Antenna Layout (Looking Out From Tower)

Mount Azimuth (Degree) for Each Sector			Tower Leg Azimuth (Degree) for Each Sector	
Sector A:	335.00	Deg	Leg A:	330.00	Deg
Sector B:	95.00	Deg	Leg B:	90.00	Deg
Sector C:	215.00	Deg	Leg C:	210.00	Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information

Location:	330.00	Deg	On Leg A
Climbing Facility	Corrosion Type:		Good condition.
	Access:		Climbing path was unobstructed.
	Condition:		Good condition.



Ants. Items	Enter antenna model. If not labeled, enter "Unknown". Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Mounting Locations [Units are inches and degrees] Vertical Distances"b_{1st}, b_{2nd}, b_{3rd}, ..." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photos of antennas Photo Numbers
Sector A										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	Unknown	12.00	8.00	70.00		139.917	38.00	9.00	335.00	132
Ant_{2c}										
Ant_{3a}	ALU RRH8x20-25-FEU	17.52	5.71	25.39		141.667	17.00	9.00	5.00	138
Ant_{3b}	APXV9TM14-ALU-120	12.60	6.30	56.30		139.75	40.00	-6.00	5.00	136
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower	ALU RRH2x50 800	12.99	9.84	15.78		135				171
Ant on Tower	ALU RRH 4x45 1900	11.80	7.20	25.80		135				173
Sector B										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	Unknown	12.00	8.00	70.00		139.917	38.00	9.00	95.00	147
Ant_{2c}										
Ant_{3a}	ALU RRH8x20-25-FEU	17.52	5.71	25.39		141.667	17.00	9.00	125.00	138
Ant_{3b}	APXV9TM14-ALU-120	12.60	6.30	56.30		139.75	40.00	-6.00	125.00	150
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower	ALU RRH2x50 800	12.99	9.84	15.78		135				171
Ant on Tower	ALU RRH 4x45 1900	11.80	7.20	25.80		135				173
Sector C										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	Unknown	12.00	8.00	70.00		139.917	38.00	9.00	215.00	158
Ant_{2c}										
Ant_{3a}	ALU RRH8x20-25-FEU	17.52	5.71	25.39		141.667	17.00	9.00	185.00	138
Ant_{3b}	APXV9TM14-ALU-120	12.60	6.30	56.30		139.75	40.00	-6.00	185.00	161
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower	ALU RRH2x50 800	12.99	9.84	15.78		135				171
Ant on Tower	ALU RRH 4x45 1900	11.80	7.20	25.80		135				173
Sector D										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}										
Ant_{2c}										
Ant_{3a}										
Ant_{3b}										
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping

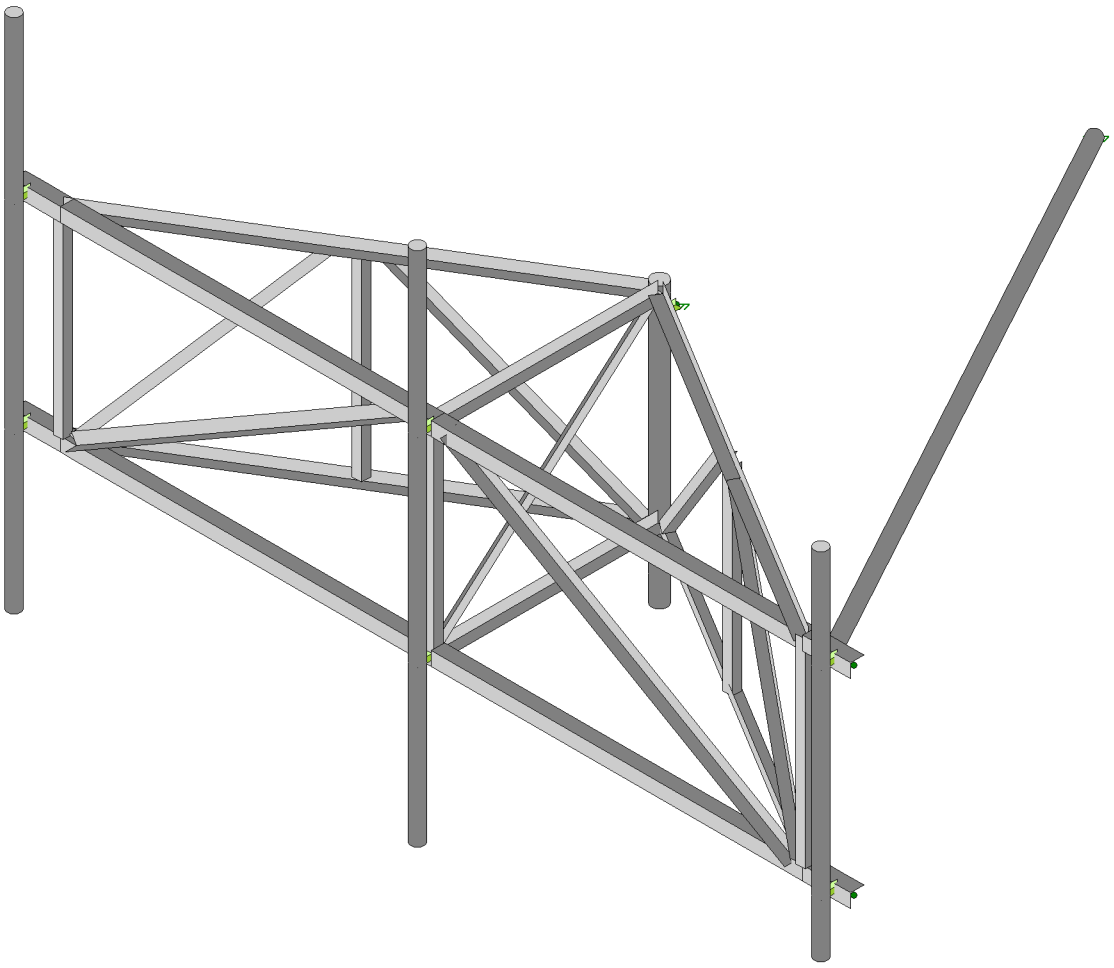
Issue #	Description of Issue	Photo #
1	Corrosion was present on stabilizer arm connection to mount face.	121
2		
3		
4		
5		
6		
7		
8		

Mapping Notes

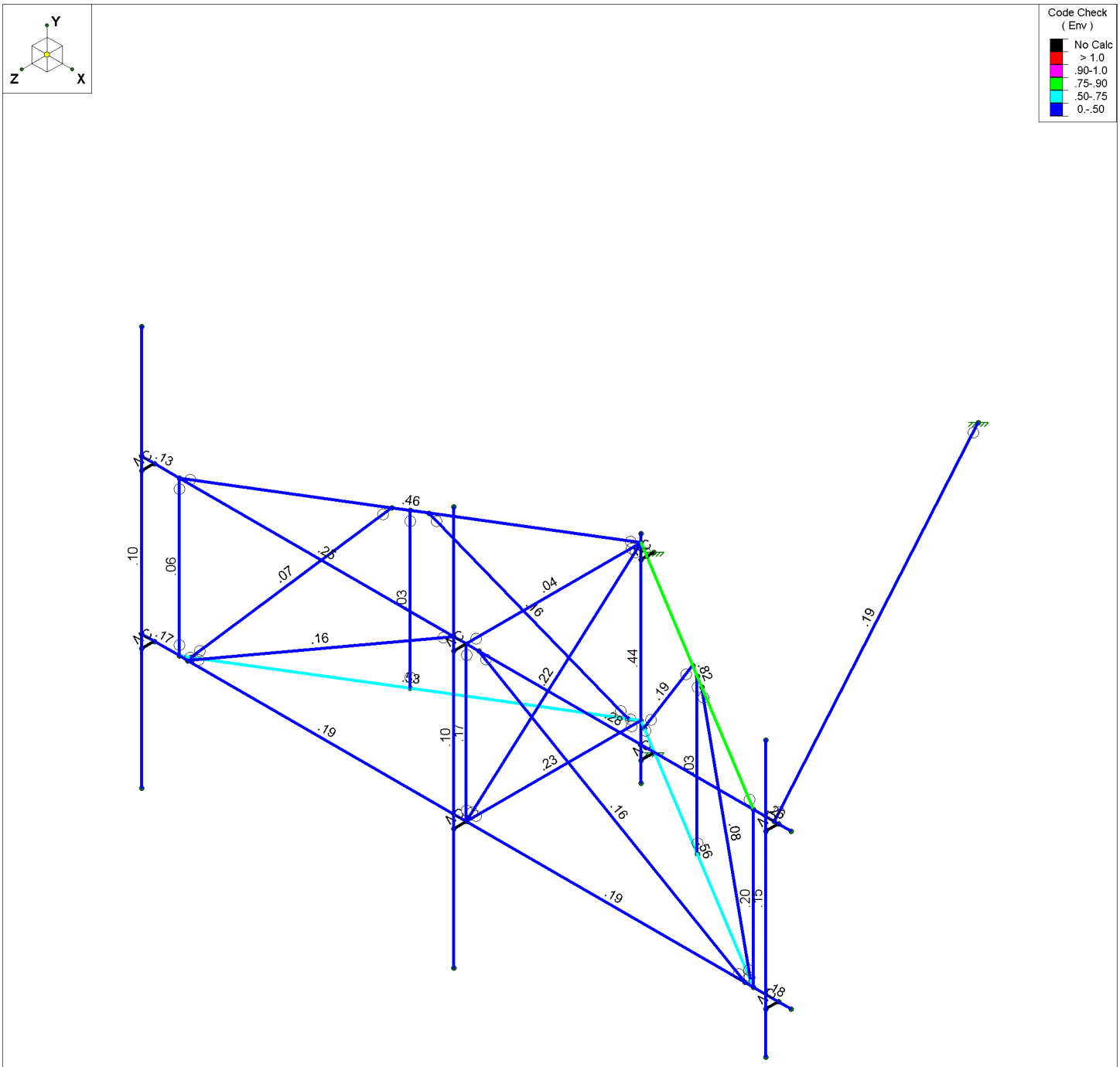
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic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

Standard Conditions

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

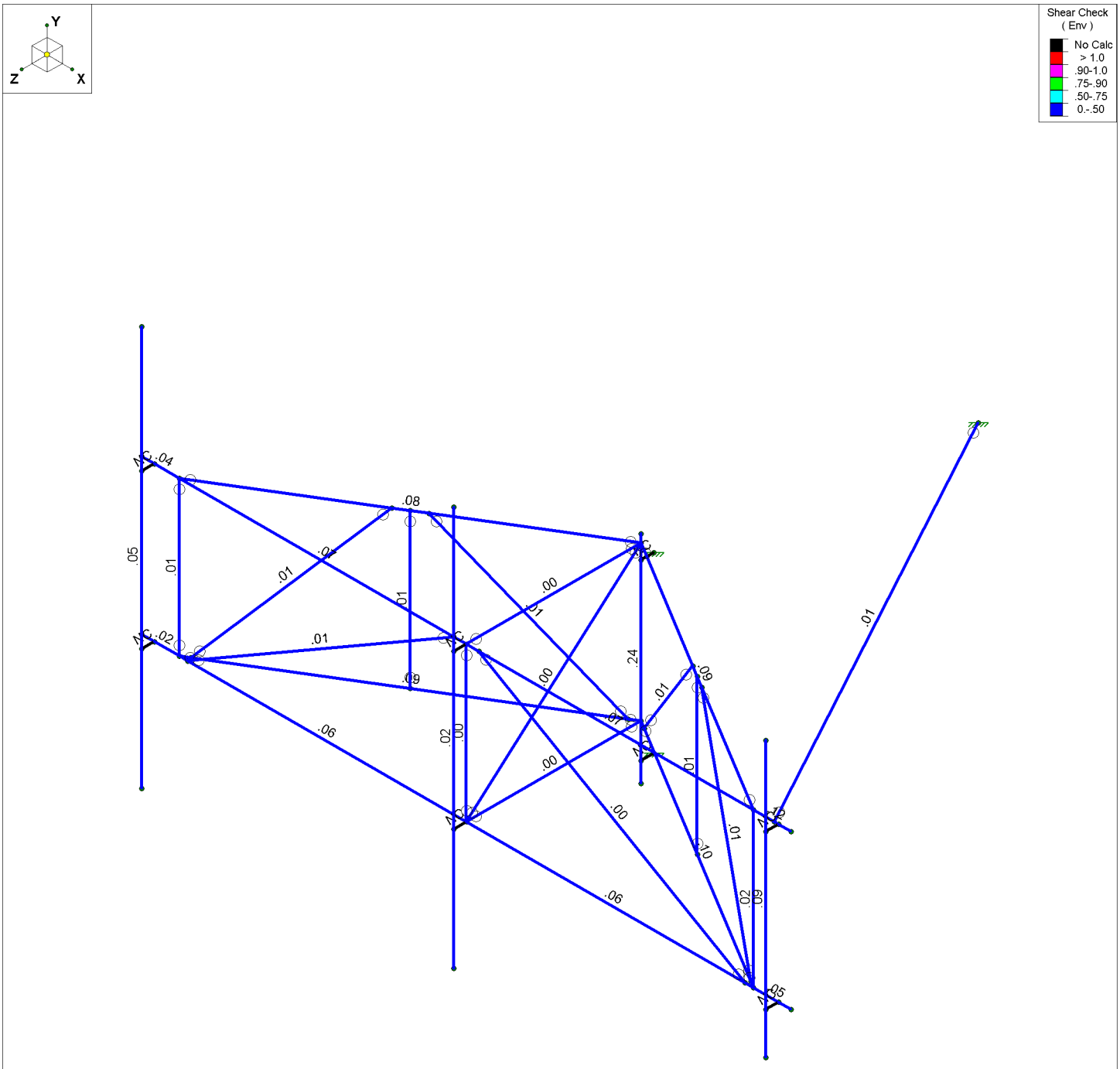


Tower Engineering Solutio...	CT13065-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 1
SAROJ DANGOL		Feb 11, 2022 at 1:47 PM
TES Project No. 124062		CT13065-A-SBA_124062_G_RISA_...



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

Tower Engineering Solutio...	CT13065-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 2
SAROJ DANGOL		Feb 11, 2022 at 1:47 PM
TES Project No. 124062		CT13065-A-SBA_124062_G_RISA_...



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

Tower Engineering Solutio...	CT13065-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 3
SAROJ DANGOL		Feb 11, 2022 at 1:48 PM
TES Project No. 124062		CT13065-A-SBA_124062_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					12			
2	Antenna Di	None					12			
3	Antenna W Front	None					12			
4	Antenna Wi Front	None					12			
5	Antenna W Side	None					12			
6	Antenna Wi Side	None					12			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						31		
11	Structure W Front	None						31		
12	Structure Wi Front	None						31		
13	Structure W Side	None						31		
14	Structure Wi Side	None						31		

Load Combinations

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D+1.6W (Fr...	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6														
2	1.2D+1.6W (Ba...	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6														
3	1.2D+1.6W (Left)	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6														
4	1.2D+1.6W (Ri...	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6														
5	1.2D+1.0Di+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1										
6	1.2D+1.0Di+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1										
7	1.2D+1.0Di+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1										
8	1.2D+1.0Di+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1										
9	1.2D+1.5L1+.16...	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16												
10	1.2D+1.5L2+.16...	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	ORIGIN	1e-14	0	3.75	0	
2	N3	6.5	0	3.75	0	
3	N3A	-6.5	0	3.75	0	
4	N4	1e-14	3.083333	3.75	0	
5	N5	6.5	3.083333	3.75	0	
6	N6	-6.5	3.083333	3.75	0	
7	N7	0	0	.25	0	
8	N8	0	3.083333	.25	0	
9	N9	5.75	3.083333	3.75	0	
10	N10	-5.75	3.083333	3.75	0	
11	N12	5.75	0	3.75	0	
12	N13	-5.75	0	3.75	0	
13	N15	2.875	3.083333	2	0	
14	N16	2.875	0	2	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N17	3.105	3.083333	2.14	0	
16	N20	2.645	3.083333	1.86	0	
17	N23	0.162118	0	0.34868	0	
18	N24	5.607634	0	3.663342	0	
19	N25	-3.105	3.083333	2.14	0	
20	N26	-2.875	3.083333	2	0	
21	N27	-2.645	3.083333	1.86	0	
22	N28	-5.607634	0	3.663342	0	
23	N29	-0.162118	0	0.34868	0	
24	N30	-2.875	0	2	0	
25	N31	0	3.25	.25	0	
26	N32	0	-1.083333	.25	0	
27	N33	6.166667	3.083333	3.75	0	
28	N35	6.25	0	3.75	0	
29	N36	6.25	3.083333	3.75	0	
30	N38	-.25	3.083333	3.75	0	
31	N41	-6.25	0	3.75	0	
32	N42	-6.25	3.083333	3.75	0	
33	N41A	6.25	0	4	0	
34	N42A	6.25	3.083333	4	0	
35	N45	-6.25	0	4	0	
36	N46	-6.25	3.083333	4	0	
37	N47	6.25	4.666667	4	0	
38	N48	6.25	-0.833333	4	0	
39	N50	-6.25	5.583333	4	0	
40	N52	-6.25	-2.416667	4	0	
41	N53	-5.583333	0	3.75	0	
42	N54	5.583333	0	3.75	0	
43	N56	.25	3.083333	3.75	0	
44	N59	1e-14	0	4	0	
45	N60	1e-14	3.083333	4	0	
46	N61	1e-14	5.583333	4	0	
47	N62	1e-14	-2.416667	4	0	
48	N55	0	2.791667	.25	0	
49	N56A	0	2.791667	0	0	
50	N56B	0	-0.6875	.25	0	
51	N57	0	-0.6875	0	0	
52	N58	0	1.791667	-6.500002	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	V Arm Horizontals	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
2	V Arm Verticals	L1.75x1.75x3	Beam	Single Angle	A36 Gr.36	Typical	.621	.179	.179	.007
3	V Arm Diagonals	L1.75x1.75x3	Beam	Single Angle	A36 Gr.36	Typical	.621	.179	.179	.007
4	FH Diagonals	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
5	Face Horizontals	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
6	Mount Pipes	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Stabilizer	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
8	New Horizontal	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
9	New V Braces	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N3A	N13		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N6	N10		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N4	ORIGIN			V Arm Verticals	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N8	N9			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N12	N7			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N13	N7			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N10	N8			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
8	M8	ORIGIN	N7			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N4	N8			V Arm Horizontals	Beam	Single Angle	A36 Gr.36	Typical
10	M13	N15	N16			V Arm Verticals	Beam	Single Angle	A36 Gr.36	Typical
11	M14	N20	N23			V Arm Diagonals	Beam	Single Angle	A36 Gr.36	Typical
12	M15	N17	N24			V Arm Diagonals	Beam	Single Angle	A36 Gr.36	Typical
13	M16	N26	N30			V Arm Verticals	Beam	Single Angle	A36 Gr.36	Typical
14	M17	N25	N28			V Arm Diagonals	Beam	Single Angle	A36 Gr.36	Typical
15	M18	N27	N29			V Arm Diagonals	Beam	Single Angle	A36 Gr.36	Typical
16	M19	N9	N12			V Arm Verticals	Beam	Single Angle	A36 Gr.36	Typical
17	M20	N10	N13			V Arm Verticals	Beam	Single Angle	A36 Gr.36	Typical
18	M21	N53	N38			FH Diagonals	Beam	Single Angle	A36 Gr.36	Typical
19	M22	N56	N54			FH Diagonals	Beam	Single Angle	A36 Gr.36	Typical
20	M23	N31	N32			PIPE_2.5	Beam	None	A36 Gr.36	Typical
21	M24	N33	N58			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
22	M25	N36	N42A			RIGID	None	None	RIGID	Typical
23	M26	N35	N41A			RIGID	None	None	RIGID	Typical
24	M29	N42	N46			RIGID	None	None	RIGID	Typical
25	M30	N41	N45			RIGID	None	None	RIGID	Typical
26	MP1A	N47	N48			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
27	MP3A	N50	N52			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
28	M34	N8	ORIGIN			V Arm Diagonals	Beam	Single Angle	A36 Gr.36	Typical
29	M34A	N4	N60			RIGID	None	None	RIGID	Typical
30	M35	ORIGIN	N59			RIGID	None	None	RIGID	Typical
31	MP2A	N61	N62			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
32	M34B	N55	N56A			RIGID	None	None	RIGID	Typical
33	M34C	N56B	N57			RIGID	None	None	RIGID	Typical
34	M34D	N13	ORIGIN		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
35	M35A	N10	N4		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
36	M36A	N4	N9		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
37	M37	ORIGIN	N12		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
38	M38	N12	N3		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical
39	M39	N9	N5		180	Face Horizontals	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3	BenPIN	BenPIN				Yes				None
4	M4	BenPIN	BenPIN				Yes				None
5	M5	BenPIN	BenPIN				Yes				None
6	M6	BenPIN	BenPIN				Yes				None
7	M7	BenPIN	BenPIN				Yes				None
8	M8	BenPIN	BenPIN				Yes				None
9	M9	BenPIN	BenPIN				Yes				None
10	M13	BenPIN	BenPIN				Yes				None
11	M14	BenPIN	BenPIN				Yes				None
12	M15	BenPIN	BenPIN				Yes				None
13	M16	BenPIN	BenPIN				Yes				None
14	M17	BenPIN	BenPIN				Yes				None
15	M18	BenPIN	BenPIN				Yes				None
16	M19						Yes				None
17	M20	BenPIN	BenPIN				Yes				None
18	M21	BenPIN	BenPIN				Yes				None
19	M22	BenPIN	BenPIN				Yes				None
20	M23						Yes				None
21	M24	BenPIN	BenPIN				Yes				None
22	M25						Yes	** NA **			None
23	M26						Yes	** NA **			None
24	M29						Yes	** NA **			None
25	M30						Yes	** NA **			None
26	MP1A						Yes				None
27	MP3A						Yes				None
28	M34	BenPIN	BenPIN				Yes				None
29	M34A						Yes	** NA **			None
30	M35						Yes	** NA **			None
31	MP2A						Yes				None
32	M34B						Yes	** NA **			None
33	M34C						Yes	** NA **			None
34	M34D						Yes				None
35	M35A						Yes				None
36	M36A						Yes				None
37	M37						Yes				None
38	M38						Yes				None
39	M39						Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Face Horizo...	.75			Lbyy						Lateral
2	M2	Face Horizo...	.75			Lbyy						Lateral
3	M3	V Arm Verti...	3.083			Lbyy						Lateral
4	M4	V Arm Horiz...	6.731			Lbyy						Lateral
5	M5	V Arm Horiz...	6.731			Lbyy						Lateral
6	M6	V Arm Horiz...	6.731			Lbyy						Lateral
7	M7	V Arm Horiz...	6.731			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
8	M8	V Arm Horiz...	3.5			Lbyy						Lateral
9	M9	V Arm Horiz...	3.5			Lbyy						Lateral
10	M13	V Arm Verti...	3.083			Lbyy						Lateral
11	M14	V Arm Diag...	4.237			Lbyy						Lateral
12	M15	V Arm Diag...	4.253			Lbyy						Lateral
13	M16	V Arm Verti...	3.083			Lbyy						Lateral
14	M17	V Arm Diag...	4.253			Lbyy						Lateral
15	M18	V Arm Diag...	4.237			Lbyy						Lateral
16	M19	V Arm Verti...	3.083			Lbyy						Lateral
17	M20	V Arm Verti...	3.083			Lbyy						Lateral
18	M21	FH Diagonals	6.16			Lbyy						Lateral
19	M22	FH Diagonals	6.16			Lbyy						Lateral
20	M23	PIPE_2.5	4.333			Lbyy						Lateral
21	M24	Stabilizer	12.032			Lbyy						Lateral
22	MP1A	Mount Pipes	5.5			Lbyy						Lateral
23	MP3A	Mount Pipes	8			Lbyy						Lateral
24	M34	V Arm Diag...	4.664			Lbyy						Lateral
25	MP2A	Mount Pipes	8			Lbyy						Lateral
26	M34D	Face Horizo...	5.75			Lbyy						Lateral
27	M35A	Face Horizo...	5.75			Lbyy						Lateral
28	M36A	Face Horizo...	5.75			Lbyy						Lateral
29	M37	Face Horizo...	5.75			Lbyy						Lateral
30	M38	Face Horizo...	.75			Lbyy						Lateral
31	M39	Face Horizo...	.75			Lbyy						Lateral

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	N56A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N57	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N58	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	N56A	max	1310.336	4	2435.721	8	300.733	1	-.396	1	.328	4	.591	10
2		min	-1485.262	3	752.227	1	-3384.459	6	-2.052	7	-.371	3	-.504	9
3	N57	max	1285.975	10	859.646	8	3273.951	5	1.392	5	.321	10	.557	9
4		min	-1137.274	9	198.158	3	357.271	2	.108	2	-.284	9	-.63	10
5	N58	max	625.708	3	164.464	3	1105.684	3	.007	4	.001	4	.011	4
6		min	-625.564	4	-113.885	4	-1107.936	4	-.005	3	-.001	3	-.009	3
7	Totals:	max	1540.466	4	3335.829	7	2672.641	1						
8		min	-1540.466	3	1137.397	4	-2672.641	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	0	11	2.611	8	2.561	1	0	11	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
4			min	0	1	.911	1	-2.561	2	0	1	0	2	0	2
5		3	max	148.023	3	282.545	8	129.374	1	0	4	-.006	9	.09	4
6			min	-73.936	4	62.608	3	-87.24	2	0	3	-.11	8	-.035	3
7		4	max	148.023	3	285.157	8	131.935	1	0	4	.018	9	.075	1
8			min	-73.936	4	63.519	3	-89.801	2	0	3	-.068	6	-.043	2
9		5	max	148.023	3	287.768	8	134.496	1	0	4	.053	1	.075	1
10			min	-73.936	4	64.43	3	-92.361	2	0	3	-.061	2	-.066	2
11	M2	1	max	0	11	0	11	0	11	0	11	0	11	0	11
12			min	0	1	0	1	0	1	0	1	0	1	0	1
13		2	max	0	11	2.611	8	2.561	1	0	11	0	1	0	1
14			min	0	1	.911	1	-2.561	2	0	1	0	2	0	2
15		3	max	133.435	3	420.737	7	340.151	1	0	10	.02	4	.085	5
16			min	-207.522	4	110.465	4	-382.328	2	0	9	-.058	7	-.004	2
17		4	max	133.435	3	423.348	7	342.712	1	0	10	.031	4	.091	1
18			min	-207.522	4	111.376	4	-384.889	2	0	9	-.033	3	-.079	2
19		5	max	133.435	3	425.96	7	345.273	1	0	10	.089	1	.119	1
20			min	-207.522	4	112.287	4	-387.449	2	0	9	-.055	2	-.154	2
21	M3	1	max	1732.812	5	14.738	3	14.738	2	0	4	0	11	0	11
22			min	400.259	2	-14.738	4	-14.738	1	0	3	0	1	0	1
23		2	max	1740.199	5	7.369	3	7.369	2	0	4	.006	3	.006	2
24			min	402.214	2	-7.369	4	-7.369	1	0	3	-.006	4	-.006	1
25		3	max	1747.587	5	0	11	0	11	0	4	.008	3	.008	2
26			min	404.169	2	0	1	0	1	0	3	-.008	4	-.008	1
27		4	max	1754.974	5	7.369	4	7.369	1	0	4	.006	3	.006	2
28			min	406.123	2	-7.369	3	-7.369	2	0	3	-.006	4	-.006	1
29		5	max	1762.362	5	14.738	4	14.738	1	0	4	0	11	0	11
30			min	408.078	2	-14.738	3	-14.738	2	0	3	0	1	0	1
31	M4	1	max	1405.938	4	12.899	9	50.423	1	0	4	0	11	0	11
32			min	-2120.587	3	-52.888	10	-46.916	2	0	1	0	1	0	1
33		2	max	1397.772	4	7.938	9	37.007	1	0	4	.02	3	.084	1
34			min	-2112.421	3	-57.849	10	-33.501	2	0	1	-.061	10	-.049	2
35		3	max	1808.465	4	640.256	10	.92	5	0	2	.029	1	.141	1
36			min	-2166.15	3	-143.695	9	-7.12	2	0	5	-.026	2	-.13	2
37		4	max	2173.549	4	21.959	1	33.865	2	0	10	.067	10	.075	1
38			min	-2258.605	3	-50.869	10	-36.988	1	0	9	-.01	9	-.104	2
39		5	max	2165.383	4	16.998	1	47.28	2	0	10	0	11	0	11
40			min	-2250.439	3	-67.138	8	-50.404	1	0	9	0	1	0	1
41	M5	1	max	751.439	1	170.728	9	48.507	2	0	2	0	11	0	11
42			min	-656.417	2	-614.67	10	-52.298	1	0	5	0	1	0	1
43		2	max	781.803	1	30.283	10	18.829	2	0	4	.01	9	.064	2
44			min	-415.788	2	-8.868	9	-21.534	1	0	9	-.041	10	-.053	1
45		3	max	797.633	1	70.561	8	2.579	5	0	4	.009	2	.084	2
46			min	-431.622	2	-13.83	9	-8.119	1	0	9	-.025	5	-.084	1
47		4	max	805.799	1	52.606	8	21.401	1	0	4	.054	8	.027	2
48			min	-439.788	2	-8.661	3	-18.94	2	0	9	-.011	1	-.062	5
49		5	max	1431.996	10	103.982	9	51.976	1	0	1	0	11	0	11
50			min	-227.089	3	-714.302	8	-47.609	2	0	6	0	1	0	1
51	M6	1	max	533.023	1	205.431	10	51.733	1	0	5	0	11	0	11
52			min	-446.063	2	-578.493	9	-47.991	2	0	3	0	1	0	1
53		2	max	687.265	9	25.168	9	21.379	1	0	10	.015	10	.062	1
54			min	-424.513	2	-14.061	4	-18.899	2	0	9	-.035	9	-.048	2
55		3	max	688.836	9	52.027	5	4.177	3	0	10	.008	1	.097	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
56			min	-440.341	2	-19.023	4	-7.663	1	0	9	-.022	6	-.078	2
57		4	max	690.903	1	43.878	9	18.798	2	0	10	.047	9	.037	1
58			min	-448.507	2	-11.905	2	-21.079	1	0	9	-.013	2	-.052	2
59		5	max	1330.321	9	138.608	10	47.754	2	0	6	0	11	0	11
60			min	-454.232	2	-651.072	9	-52.791	1	0	1	0	1	0	1
61	M7	1	max	897.308	1	52.942	9	52.461	1	0	2	0	11	0	11
62			min	-975.643	2	-13.245	10	-45.837	2	0	1	0	1	0	1
63		2	max	905.474	1	47.981	9	39.046	1	0	2	.064	9	.065	1
64			min	-983.809	2	-18.207	10	-32.421	2	0	1	-.017	2	-.076	2
65		3	max	815.323	1	180.533	10	4.214	3	0	10	.038	1	.141	1
66			min	-1049.093	2	-609.097	9	-7.429	1	0	9	-.03	2	-.119	2
67		4	max	587.253	1	54.783	9	32.382	2	0	4	.021	10	.102	1
68			min	-1169.376	9	-18.035	2	-39.012	1	0	3	-.058	9	-.071	2
69		5	max	595.419	1	49.821	9	45.798	2	0	4	0	11	0	11
70			min	-1168.56	9	-22.997	2	-52.428	1	0	3	0	1	0	1
71	M8	1	max	2524.07	5	18.672	8	19.12	4	0	10	0	11	0	11
72			min	829.533	2	5.159	1	-19.12	3	0	9	0	1	0	1
73		2	max	2524.07	5	9.336	8	9.56	4	0	10	.011	8	.006	4
74			min	829.533	2	2.58	1	-9.56	3	0	9	-.006	3	-.011	7
75		3	max	2524.07	5	0	11	0	11	0	10	.015	8	.009	4
76			min	829.533	2	0	1	0	1	0	9	-.009	3	-.015	7
77		4	max	2524.07	5	-2.58	10	9.56	3	0	10	.011	8	.006	4
78			min	829.533	2	-9.336	5	-9.56	4	0	9	-.006	3	-.011	7
79		5	max	2524.07	5	-5.159	10	19.12	3	0	10	0	11	0	11
80			min	829.533	2	-18.672	5	-19.12	4	0	9	0	1	0	1
81	M9	1	max	356.553	1	18.672	8	19.12	4	0	10	0	11	0	11
82			min	-384.329	2	5.159	1	-19.12	3	0	9	0	1	0	1
83		2	max	356.553	1	9.336	8	9.56	4	0	10	.011	8	.006	4
84			min	-384.329	2	2.58	1	-9.56	3	0	9	-.006	3	-.011	7
85		3	max	356.553	1	0	11	0	11	0	10	.015	8	.009	4
86			min	-384.329	2	0	1	0	1	0	9	-.009	3	-.015	7
87		4	max	356.553	1	-2.58	10	9.56	3	0	10	.011	8	.006	4
88			min	-384.329	2	-9.336	5	-9.56	4	0	9	-.006	3	-.011	7
89		5	max	356.553	1	-5.159	10	19.12	3	0	10	0	11	0	11
90			min	-384.329	2	-18.672	5	-19.12	4	0	9	0	1	0	1
91	M13	1	max	3.673	1	14.738	3	14.738	2	0	9	0	11	0	11
92			min	-106.794	6	-14.738	4	-14.738	1	0	10	0	1	0	1
93		2	max	5.628	1	7.369	3	7.369	2	0	9	.006	3	.006	2
94			min	-99.407	6	-7.369	4	-7.369	1	0	10	-.006	4	-.006	1
95		3	max	7.583	1	0	11	0	11	0	9	.008	3	.008	2
96			min	-92.019	6	0	1	0	1	0	10	-.008	4	-.008	1
97		4	max	9.537	1	7.369	4	7.369	1	0	9	.006	3	.006	2
98			min	-84.632	6	-7.369	3	-7.369	2	0	10	-.006	4	-.006	1
99		5	max	11.492	1	14.738	4	14.738	1	0	9	0	11	0	11
100			min	-77.244	6	-14.738	3	-14.738	2	0	10	0	1	0	1
101	M14	1	max	974.685	10	17.347	7	16.163	2	0	1	0	11	0	11
102			min	-170.513	9	-6.516	4	-16.163	1	0	8	0	1	0	1
103		2	max	981.186	8	8.673	7	8.082	2	0	1	.015	2	.008	4
104			min	-168.221	9	-3.258	4	-8.082	1	0	8	-.011	1	-.013	3
105		3	max	990.184	8	0	11	0	11	0	1	.02	2	.011	4
106			min	-165.929	9	0	1	0	1	0	8	-.015	1	-.017	3
107		4	max	999.183	8	3.258	4	8.082	1	0	1	.015	2	.008	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
108			min	-163.637	9	-8.673	7	-8.082	2	0	8	-.011	1	-.013	3
109		5	max	1008.182	8	6.516	4	16.163	1	0	1	0	11	0	11
110			min	-161.344	9	-17.347	7	-16.163	2	0	8	0	1	0	1
111	M15	1	max	230.016	9	17.45	8	16.214	1	0	9	0	11	0	11
112			min	-906.973	10	-6.465	3	-16.214	2	0	10	0	1	0	1
113		2	max	231.631	9	8.725	8	8.107	1	0	9	.015	1	.008	3
114			min	-905.359	10	-3.232	3	-8.107	2	0	10	-.011	2	-.013	4
115		3	max	233.246	9	0	11	0	11	0	9	.02	1	.011	3
116			min	-903.744	10	0	1	0	1	0	10	-.015	2	-.017	4
117		4	max	234.861	9	3.232	3	8.107	2	0	9	.015	1	.008	3
118			min	-902.129	10	-8.725	8	-8.107	1	0	10	-.011	2	-.013	4
119		5	max	236.475	9	6.465	3	16.214	2	0	9	0	11	0	11
120			min	-900.514	10	-17.45	8	-16.214	1	0	10	0	1	0	1
121	M16	1	max	8.91	2	14.738	3	14.738	2	0	9	0	11	0	11
122			min	-105.529	5	-14.738	4	-14.738	1	0	10	0	1	0	1
123		2	max	10.865	2	7.369	3	7.369	2	0	9	.006	3	.006	2
124			min	-98.141	5	-7.369	4	-7.369	1	0	10	-.006	4	-.006	1
125		3	max	12.82	2	0	11	0	11	0	9	.008	3	.008	2
126			min	-90.754	5	0	1	0	1	0	10	-.008	4	-.008	1
127		4	max	14.774	2	7.369	4	7.369	1	0	9	.006	3	.006	2
128			min	-83.366	5	-7.369	3	-7.369	2	0	10	-.006	4	-.006	1
129		5	max	16.729	2	14.738	4	14.738	1	0	9	0	11	0	11
130			min	-75.979	5	-14.738	3	-14.738	2	0	10	0	1	0	1
131	M17	1	max	284.512	10	17.45	7	16.214	2	0	1	0	11	0	11
132			min	-850.171	9	-6.465	4	-16.214	1	0	2	0	1	0	1
133		2	max	286.127	10	8.725	7	8.107	2	0	1	.013	3	.011	2
134			min	-848.556	9	-3.232	4	-8.107	1	0	2	-.008	4	-.015	1
135		3	max	287.741	10	0	11	0	11	0	1	.017	3	.015	2
136			min	-846.941	9	0	1	0	1	0	2	-.011	4	-.02	1
137		4	max	289.356	10	3.232	4	8.107	1	0	1	.013	3	.011	2
138			min	-845.326	9	-8.725	7	-8.107	2	0	2	-.008	4	-.015	1
139		5	max	290.971	10	6.465	4	16.214	1	0	1	0	11	0	11
140			min	-843.712	9	-17.45	7	-16.214	2	0	2	0	1	0	1
141	M18	1	max	926.384	9	17.347	8	16.163	1	0	2	0	11	0	11
142			min	-216.972	10	-6.516	3	-16.163	2	0	1	0	1	0	1
143		2	max	928.676	9	8.673	8	8.082	1	0	2	.013	4	.011	1
144			min	-214.68	10	-3.258	3	-8.082	2	0	1	-.008	3	-.015	2
145		3	max	930.968	9	0	11	0	11	0	2	.017	4	.015	1
146			min	-212.388	10	0	1	0	1	0	1	-.011	3	-.02	2
147		4	max	933.26	9	3.258	3	8.082	2	0	2	.013	4	.011	1
148			min	-210.096	10	-8.673	8	-8.082	1	0	1	-.008	3	-.015	2
149		5	max	935.552	9	6.516	3	16.163	2	0	2	0	11	0	11
150			min	-207.804	10	-17.347	8	-16.163	1	0	1	0	1	0	1
151	M19	1	max	674.018	6	29.433	7	16.673	2	0	3	.002	3	.032	8
152			min	169.853	1	4.23	10	-16.883	1	0	4	-.032	8	-.009	3
153		2	max	681.405	6	30.53	8	9.304	2	0	3	.006	3	.02	4
154			min	171.808	1	2.831	3	-9.514	1	0	4	-.016	8	-.012	3
155		3	max	688.793	6	32.999	8	1.935	2	0	3	.007	3	.007	4
156			min	173.763	1	-4.538	3	-2.145	1	0	4	-.005	4	-.01	3
157		4	max	696.18	6	35.468	8	5.224	1	0	3	.019	6	0	2
158			min	175.717	1	-11.907	3	-5.434	2	0	4	.002	10	-.023	5
159		5	max	703.567	6	38.725	4	12.593	1	0	3	.039	8	.004	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
160			min	177.672	1	-19.276	3	-12.803	2	0	4	-.004	3	-.041	8
161	M20	1	max	512.232	7	14.738	3	14.738	2	0	1	0	11	0	11
162			min	113.93	4	-14.738	4	-14.738	1	0	2	0	1	0	1
163		2	max	519.62	7	7.369	3	7.369	2	0	1	.006	3	.006	2
164			min	115.885	4	-7.369	4	-7.369	1	0	2	-.006	4	-.006	1
165		3	max	527.007	7	0	11	0	11	0	1	.008	3	.008	2
166			min	117.839	4	0	1	0	1	0	2	-.008	4	-.008	1
167		4	max	534.395	7	7.369	4	7.369	1	0	1	.006	3	.006	2
168			min	119.794	4	-7.369	3	-7.369	2	0	2	-.006	4	-.006	1
169		5	max	541.782	7	14.738	4	14.738	1	0	1	0	11	0	11
170			min	121.749	4	-14.738	3	-14.738	2	0	2	0	1	0	1
171	M21	1	max	-253.138	3	31.086	7	33.653	1	0	4	0	11	0	11
172			min	-1579.019	8	-.568	4	-33.653	2	0	3	0	1	0	1
173		2	max	-248.12	3	15.543	7	16.826	1	0	4	.034	1	.021	1
174			min	-1589.521	8	-.284	4	-16.826	2	0	3	-.021	2	-.034	2
175		3	max	-243.101	3	0	11	0	11	0	4	.045	1	.028	1
176			min	-1600.023	8	0	1	0	1	0	3	-.028	2	-.045	2
177		4	max	-238.083	3	.284	4	16.826	2	0	4	.034	1	.021	1
178			min	-1610.525	8	-15.543	7	-16.826	1	0	3	-.021	2	-.034	2
179		5	max	-233.065	3	.568	4	33.653	2	0	4	0	11	0	11
180			min	-1621.026	8	-31.086	7	-33.653	1	0	3	0	1	0	1
181	M22	1	max	-234.937	4	31.086	8	33.653	1	0	4	0	11	0	11
182			min	-1607.93	7	-.568	3	-33.653	2	0	3	0	1	0	1
183		2	max	-239.956	4	15.543	8	16.826	1	0	4	.034	1	.021	1
184			min	-1597.429	7	-.284	3	-16.826	2	0	3	-.021	2	-.034	2
185		3	max	-244.974	4	0	11	0	11	0	4	.045	1	.028	1
186			min	-1586.927	7	0	1	0	1	0	3	-.028	2	-.045	2
187		4	max	-249.992	4	.284	3	16.826	2	0	4	.034	1	.021	1
188			min	-1576.425	7	-15.543	8	-16.826	1	0	3	-.021	2	-.034	2
189		5	max	-255.011	4	.568	3	33.653	2	0	4	0	11	0	11
190			min	-1565.923	7	-31.086	8	-33.653	1	0	3	0	1	0	1
191	M23	1	max	0	11	0	9	0	4	0	11	0	11	0	11
192			min	0	1	0	7	0	6	0	1	0	1	0	1
193		2	max	-52.67	3	131.86	9	-33.158	2	0	11	.175	5	.061	9
194			min	-221.313	8	-149.148	10	-382.644	5	0	1	.019	2	-.069	10
195		3	max	-45.548	3	131.86	9	-43.367	2	0	11	-.022	2	.093	10
196			min	-203.63	8	-149.148	10	-379.197	5	0	1	-.237	5	-.082	9
197		4	max	841.963	8	1286.254	10	3271.83	5	0	11	-.075	2	.255	10
198			min	191.036	3	-1137.521	9	367.526	2	0	1	-.647	5	-.225	9
199		5	max	0	11	0	11	0	11	0	11	0	11	0	11
200			min	0	1	0	1	0	1	0	1	0	1	0	1
201	M24	1	max	1316.157	3	77.738	6	34.455	4	.013	4	0	11	0	11
202			min	-1323.331	4	22.655	1	-34.455	3	-.011	3	0	1	0	1
203		2	max	1307.197	3	38.869	6	17.228	4	.013	4	.078	4	-.051	1
204			min	-1311.681	4	11.328	1	-17.228	3	-.011	3	-.078	3	-.175	6
205		3	max	1298.237	3	0	11	0	11	.013	4	.104	4	-.068	1
206			min	-1300.031	4	0	1	0	1	-.011	3	-.104	3	-.234	6
207		4	max	1289.277	3	-11.328	1	17.228	3	.013	4	.078	4	-.051	1
208			min	-1288.382	4	-38.869	6	-17.228	4	-.011	3	-.078	3	-.175	6
209		5	max	1280.317	3	-22.655	1	34.455	3	.013	4	0	11	0	11
210			min	-1276.732	4	-77.738	6	-34.455	4	-.011	3	0	1	0	1
211	M25	1	max	569.105	1	512.661	7	257.614	3	.037	3	.161	4	.011	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
212			min	-615.643	2	5.807	4	-185.257	4	-.178	8	-.178	3	-.012	4
213		2	max	569.105	1	512.661	7	257.614	3	.037	3	.149	4	-.001	2
214			min	-615.643	2	5.807	4	-185.257	4	-.178	8	-.162	3	-.033	5
215		3	max	569.105	1	512.661	7	257.614	3	.037	3	.138	4	-.007	2
216			min	-615.643	2	5.807	4	-185.257	4	-.178	8	-.146	3	-.063	5
217		4	max	569.105	1	512.661	7	257.614	3	.037	3	.126	4	-.013	4
218			min	-615.643	2	5.807	4	-185.257	4	-.178	8	-.13	3	-.094	7
219		5	max	569.105	1	512.661	7	257.614	3	.037	3	.115	4	-.013	4
220			min	-615.643	2	5.807	4	-185.257	4	-.178	8	-.114	3	-.126	7
221	M26	1	max	237.397	1	424.687	8	118.576	3	.003	3	.084	3	0	3
222			min	-190.859	2	-23.808	3	-190.964	4	-.19	8	-.067	4	-.002	8
223		2	max	237.397	1	424.687	8	118.576	3	.003	3	.091	3	.002	3
224			min	-190.859	2	-23.808	3	-190.964	4	-.19	8	-.079	4	-.029	8
225		3	max	237.397	1	424.687	8	118.576	3	.003	3	.099	3	.004	3
226			min	-190.859	2	-23.808	3	-190.964	4	-.19	8	-.091	4	-.055	8
227		4	max	237.397	1	424.687	8	118.576	3	.003	3	.106	3	.005	3
228			min	-190.859	2	-23.808	3	-190.964	4	-.19	8	-.103	4	-.082	8
229		5	max	237.397	1	424.687	8	118.576	3	.003	3	.114	3	.007	3
230			min	-190.859	2	-23.808	3	-190.964	4	-.19	8	-.115	4	-.108	8
231	M29	1	max	335.175	1	415.471	7	133.398	3	.148	5	.053	4	0	10
232			min	-377.256	2	108.623	4	-207.484	4	.02	2	-.032	3	0	9
233		2	max	335.175	1	415.471	7	133.398	3	.148	5	.044	2	-.006	4
234			min	-377.256	2	108.623	4	-207.484	4	.02	2	-.028	1	-.025	7
235		3	max	335.175	1	415.471	7	133.398	3	.148	5	.042	2	-.013	4
236			min	-377.256	2	108.623	4	-207.484	4	.02	2	-.031	1	-.051	7
237		4	max	335.175	1	415.471	7	133.398	3	.148	5	.041	2	-.02	4
238			min	-377.256	2	108.623	4	-207.484	4	.02	2	-.035	1	-.077	7
239		5	max	335.175	1	415.471	7	133.398	3	.148	5	.04	2	-.027	4
240			min	-377.256	2	108.623	4	-207.484	4	.02	2	-.038	1	-.103	7
241	M30	1	max	124.187	1	277.325	8	148.06	3	.177	8	.025	1	0	4
242			min	-82.104	2	60.627	3	-73.975	4	-.006	3	-.045	2	0	3
243		2	max	124.187	1	277.325	8	148.06	3	.177	8	.028	1	-.004	3
244			min	-82.104	2	60.627	3	-73.975	4	-.006	3	-.043	2	-.017	6
245		3	max	124.187	1	277.325	8	148.06	3	.177	8	.031	1	-.008	3
246			min	-82.104	2	60.627	3	-73.975	4	-.006	3	-.042	2	-.034	8
247		4	max	124.187	1	277.325	8	148.06	3	.177	8	.035	1	-.012	3
248			min	-82.104	2	60.627	3	-73.975	4	-.006	3	-.041	2	-.052	8
249		5	max	124.187	1	277.325	8	148.06	3	.177	8	.038	1	-.016	3
250			min	-82.104	2	60.627	3	-73.975	4	-.006	3	-.04	2	-.069	8
251	MP1A	1	max	0	11	.02	9	.083	4	0	11	0	11	0	11
252			min	0	1	-.21	8	-.23	7	0	1	0	1	0	1
253		2	max	303.384	8	153.792	4	342.446	1	0	11	.198	1	.09	3
254			min	79.407	1	-153.82	3	-342.474	2	0	1	-.198	2	-.09	4
255		3	max	190.982	4	107.759	5	169.154	2	.114	3	.023	1	.035	8
256			min	-111.469	3	18.63	4	-122.568	1	-.115	4	-.047	2	0	2
257		4	max	387.917	8	172.453	4	219.832	1	.114	3	.136	2	-.025	10
258			min	-32.062	3	-100.32	3	-173.246	2	-.115	4	-.097	1	-.118	8
259		5	max	0	11	.025	8	.013	7	0	11	0	11	0	11
260			min	0	1	-.001	9	-.004	4	0	1	0	1	0	1
261	MP3A	1	max	0	11	.035	5	.018	1	0	11	0	11	0	11
262			min	0	1	-.011	10	-.144	6	0	1	0	1	0	1
263		2	max	127.505	8	73.484	4	144.725	1	0	11	.042	1	.038	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
264			min	30.319	1	-73.476	3	-144.744	2	0	1	-.042	2	-.038	4
265		3	max	67.702	4	-19.103	2	59.958	5	.038	1	.03	2	.009	2
266			min	-23.871	3	-100.169	5	6.755	2	-.04	2	-.044	1	-.005	1
267		4	max	-71.93	10	73.623	3	34.761	2	0	11	.035	1	.074	3
268			min	-175.967	5	-73.645	4	-34.735	1	0	1	-.035	2	-.074	4
269		5	max	0	11	.036	4	.122	5	0	11	0	11	0	11
270			min	0	1	-.088	7	-.022	9	0	1	0	1	0	1
271	M34	1	max	-1075.771	3	20.036	5	22.295	3	0	3	0	11	0	11
272			min	-3332.002	8	-5.305	2	-22.295	4	0	4	0	1	0	1
273		2	max	-1073.816	3	10.018	5	11.148	3	0	3	.017	3	.011	3
274			min	-3324.614	8	-2.652	2	-11.148	4	0	4	-.011	4	-.017	4
275		3	max	-1071.861	3	0	11	0	11	0	3	.022	3	.015	3
276			min	-3317.227	8	0	1	0	1	0	4	-.015	4	-.022	4
277		4	max	-1069.907	3	2.652	2	11.148	4	0	3	.017	3	.011	3
278			min	-3309.839	8	-10.018	5	-11.148	3	0	4	-.011	4	-.017	4
279		5	max	-1067.952	3	5.305	2	22.295	4	0	3	0	11	0	11
280			min	-3302.452	8	-20.036	5	-22.295	3	0	4	0	1	0	1
281	M34A	1	max	234.48	1	252.667	1	144.047	3	.022	4	.015	10	0	4
282			min	-260.02	2	-213.662	2	-143.447	4	-.022	3	-.012	9	0	7
283		2	max	234.48	1	252.667	1	144.047	3	.022	4	.015	10	.013	2
284			min	-260.02	2	-213.662	2	-143.447	4	-.022	3	-.012	9	-.016	1
285		3	max	234.48	1	252.667	1	144.047	3	.022	4	.015	10	.027	2
286			min	-260.02	2	-213.662	2	-143.447	4	-.022	3	-.013	9	-.032	1
287		4	max	234.48	1	252.667	1	144.047	3	.022	4	.017	3	.04	2
288			min	-260.02	2	-213.662	2	-143.447	4	-.022	3	-.015	4	-.048	1
289		5	max	234.48	1	252.667	1	144.047	3	.022	4	.026	3	.053	2
290			min	-260.02	2	-213.662	2	-143.447	4	-.022	3	-.024	4	-.064	1
291	M35	1	max	36.916	5	415.446	6	8.017	2	.038	4	.024	4	0	10
292			min	12.558	2	-95.819	1	-8.543	1	-.04	3	-.026	3	0	3
293		2	max	36.916	5	415.446	6	8.017	2	.038	4	.024	4	.006	1
294			min	12.558	2	-95.819	1	-8.543	1	-.04	3	-.026	3	-.026	6
295		3	max	36.916	5	415.446	6	8.017	2	.038	4	.024	4	.012	1
296			min	12.558	2	-95.819	1	-8.543	1	-.04	3	-.026	3	-.052	6
297		4	max	36.916	5	415.446	6	8.017	2	.038	4	.024	4	.018	1
298			min	12.558	2	-95.819	1	-8.543	1	-.04	3	-.026	3	-.078	6
299		5	max	36.916	5	415.446	6	8.017	2	.038	4	.024	4	.024	1
300			min	12.558	2	-95.819	1	-8.543	1	-.04	3	-.026	3	-.104	6
301	MP2A	1	max	0	11	.032	9	.047	1	0	11	0	11	0	11
302			min	0	1	-.047	7	-.053	2	0	1	0	1	0	1
303		2	max	163.276	8	55.184	4	108.209	1	0	11	.108	1	.055	3
304			min	70.13	1	-55.189	3	-108.215	2	0	1	-.108	2	-.055	4
305		3	max	363.986	6	33.8	3	43.64	2	.024	4	.042	5	.027	3
306			min	-112.484	1	-33.217	4	-18.123	1	-.026	3	.01	2	-.028	4
307		4	max	-8.33	10	15.566	3	15.571	2	0	11	.016	1	.016	3
308			min	-25.711	5	-15.565	4	-15.566	1	0	1	-.016	2	-.016	4
309		5	max	0	11	.01	8	.024	5	0	11	0	11	0	11
310			min	0	1	-.005	9	.003	3	0	1	0	1	0	1
311	M34B	1	max	300.733	1	-752.227	1	1485.262	3	.591	10	0	3	1.451	7
312			min	-3384.459	6	-2435.721	8	-1310.336	4	-.504	9	0	4	.208	1
313		2	max	300.733	1	-752.227	1	1485.262	3	.591	10	.093	3	1.602	7
314			min	-3384.459	6	-2435.721	8	-1310.336	4	-.504	9	-.082	4	.255	1
315		3	max	300.733	1	-752.227	1	1485.262	3	.591	10	.186	3	1.752	7

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
316			min	-3384.459	6	-2435.721	8	-1310.336	4	-.504	9	-.164	4	.302	1
317		4	max	300.733	1	-752.227	1	1485.262	3	.591	10	.279	3	1.902	7
318			min	-3384.459	6	-2435.721	8	-1310.336	4	-.504	9	-.246	4	.349	1
319		5	max	300.733	1	-752.227	1	1485.262	3	.591	10	.371	3	2.052	7
320			min	-3384.459	6	-2435.721	8	-1310.336	4	-.504	9	-.328	4	.396	1
321	M34C	1	max	3273.951	5	-198.158	3	1137.274	9	.557	9	0	11	-.176	2
322			min	357.271	2	-859.646	8	-1285.975	10	-.63	10	0	1	-1.603	5
323		2	max	3273.951	5	-198.158	3	1137.274	9	.557	9	.071	9	-.159	2
324			min	357.271	2	-859.646	8	-1285.975	10	-.63	10	-.08	10	-1.55	5
325		3	max	3273.951	5	-198.158	3	1137.274	9	.557	9	.142	9	-.142	2
326			min	357.271	2	-859.646	8	-1285.975	10	-.63	10	-.161	10	-1.498	5
327		4	max	3273.951	5	-198.158	3	1137.274	9	.557	9	.213	9	-.125	2
328			min	357.271	2	-859.646	8	-1285.975	10	-.63	10	-.241	10	-1.445	5
329		5	max	3273.951	5	-198.158	3	1137.274	9	.557	9	.284	9	-.108	2
330			min	357.271	2	-859.646	8	-1285.975	10	-.63	10	-.321	10	-1.392	5
331	M34D	1	max	425.845	2	719.307	8	82.524	2	0	4	.053	1	.075	1
332			min	-426.319	1	-233.872	9	-85.628	1	0	9	-.061	2	-.066	2
333		2	max	1464.374	6	-.51	9	29.353	2	0	10	.025	8	.019	1
334			min	-126.979	1	-33.227	7	-32.015	1	0	9	-.001	9	-.042	2
335		3	max	1464.374	6	6.475	9	10.186	3	0	10	.009	2	.003	3
336			min	-126.979	1	-13.349	3	-12.797	4	0	9	-.009	1	-.018	8
337		4	max	1464.374	6	13.46	9	10.186	3	0	10	.003	2	.023	3
338			min	-126.979	1	-6.364	3	-12.797	4	0	9	-.007	1	-.035	4
339		5	max	1464.374	6	31.699	8	26.88	1	0	10	.022	1	.036	3
340			min	-126.979	1	.621	3	-29.542	2	0	9	-.015	2	-.064	4
341	M35A	1	max	839.749	2	-5.986	1	62.918	2	0	10	.089	1	.119	1
342			min	-846.982	1	-45.885	6	-64.752	1	0	9	-.054	2	-.154	2
343		2	max	839.749	2	.999	1	43.287	2	0	10	.031	1	.065	1
344			min	-846.982	1	-25.863	6	-45.12	1	0	9	-.024	2	-.076	2
345		3	max	839.749	2	7.984	1	23.655	2	0	10	.008	3	.025	1
346			min	-846.982	1	-12.691	2	-25.489	1	0	9	-.015	4	-.026	2
347		4	max	839.749	2	15.287	5	19.932	3	0	10	.028	3	.033	3
348			min	-846.982	1	-5.706	2	-21.737	4	0	9	-.034	4	-.039	4
349		5	max	242.041	2	868.283	8	47.834	1	0	10	.159	7	.024	3
350			min	-1473.311	8	140.297	3	-48.919	2	0	9	.026	4	-.2	8
351	M36A	1	max	242.833	3	-177.64	4	60.859	4	0	4	.164	7	.001	3
352			min	-1520.371	8	-851.035	7	-62.311	3	0	9	.018	4	-.187	8
353		2	max	938.134	3	28.084	3	62.871	4	0	2	.016	4	.01	4
354			min	-955.162	4	-38.027	4	-61.314	3	0	9	-.022	3	-.015	3
355		3	max	938.134	3	35.069	3	62.871	4	0	2	.045	4	.109	4
356			min	-955.162	4	-31.042	4	-61.314	3	0	9	-.052	3	-.11	3
357		4	max	938.134	3	42.054	3	62.871	4	0	2	.081	4	.201	4
358			min	-955.162	4	-24.057	4	-61.314	3	0	9	-.075	3	-.211	3
359		5	max	938.134	3	55.723	7	62.871	4	0	2	.124	4	.286	4
360			min	-955.162	4	-17.072	4	-61.314	3	0	9	-.091	3	-.32	3
361	M37	1	max	1465.438	6	-2.031	2	27.749	2	0	10	.025	1	-.01	3
362			min	-135.424	1	-31.766	5	-24.011	1	0	3	-.018	2	-.049	6
363		2	max	1465.438	6	4.954	2	17.955	4	0	10	.002	9	.01	4
364			min	-135.424	1	-13.726	10	-13.974	3	0	3	-.007	5	-.023	7
365		3	max	1465.438	6	11.939	2	17.955	4	0	10	.009	4	.033	4
366			min	-135.424	1	-6.741	10	-13.974	3	0	3	-.01	3	-.04	3
367		4	max	1465.438	6	30.872	6	34.884	1	0	10	.032	8	.048	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
368			min	-135.424	1	.244	10	-31.146	2	0	3	-.013	3	-.065	3
369		5	max	622.536	2	225.267	10	88.678	1	0	4	.044	4	.108	1
370			min	-612.764	1	-710.472	7	-84.172	2	0	3	-.054	3	-.091	2
371	M38	1	max	190.968	4	20.17	3	201.13	2	.002	8	.072	4	.095	1
372			min	-118.58	3	-435.439	8	-247.694	1	0	3	-.058	3	-.101	2
373		2	max	190.968	4	21.081	3	198.569	2	.002	8	.031	4	.076	4
374			min	-118.58	3	-432.827	8	-245.133	1	0	3	-.058	3	-.053	3
375		3	max	190.968	4	21.992	3	196.008	2	.002	8	-.007	10	.11	4
376			min	-118.58	3	-430.216	8	-242.573	1	0	3	-.108	7	-.058	3
377		4	max	0	11	-.911	10	2.561	2	0	11	0	1	0	1
378			min	0	1	-2.611	5	-2.561	1	0	1	0	2	0	2
379		5	max	0	11	0	11	0	11	0	11	0	11	0	11
380			min	0	1	0	1	0	1	0	1	0	1	0	1
381	M39	1	max	891.14	4	-149.075	10	1120.373	3	.005	4	.149	4	.262	4
382			min	-963.671	3	-563.25	7	-1084.803	4	-.006	3	-.097	3	-.315	3
383		2	max	891.14	4	-148.164	10	1120.373	3	.005	4	.041	1	.141	4
384			min	-963.671	3	-560.639	7	-1084.803	4	-.006	3	-.034	2	-.14	3
385		3	max	891.14	4	-147.253	10	1120.373	3	.005	4	.147	3	.09	5
386			min	-963.671	3	-558.027	7	-1084.803	4	-.006	3	-.185	4	-.029	2
387		4	max	0	11	-.911	10	2.561	2	0	11	0	1	0	1
388			min	0	1	-2.611	5	-2.561	1	0	1	0	2	0	2
389		5	max	0	11	0	11	0	11	0	11	0	11	0	11
390			min	0	1	0	1	0	1	0	1	0	1	0	1

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

	Member	Shape	Code Check	Loc[ft]	LC	Shea...	Loc...	Dir	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M4	L2x2x3	.819	3.646	4	.090	3.1...	y	10	3782.6...	23392.8	.558	1.111	1...	H2-1
2	M5	L2x2x3	.560	6.591	10	.103	6.7...	y	8	3782.6...	23392.8	.558	1.152	2...	H2-1
3	M6	L2x2x3	.526	6.591	9	.089	6.7...	y	9	3782.6...	23392.8	.558	1.118	2...	H2-1
4	M7	L2x2x3	.463	3.085	1	.084	3.5...	y	9	3782.6...	23392.8	.558	1.04	1...	H2-1
5	M23	PIPE_2.5	.437	3.927	5	.241	.451		7	44537...	52164	3.699	3.699	2...	H1-1b
6	M36A	L2.5x2.5x4	.282	5.75	3	.072	0	y	7	13118...	38556	1.114	2.499	2...	H2-1
7	M39	L2.5x2.5x4	.260	0	4	.121	.398	z	3	37854...	38556	1.114	2.537	2...	H2-1
8	M35A	L2.5x2.5x4	.248	5.75	8	.074	5.75	y	8	13118...	38556	1.114	2.537	4...	H2-1
9	M8	L2x2x3	.232	1.75	8	.005	3.5	z	4	12663...	23392.8	.558	1.137	1...	H2-1
10	M34	L1.75x1.75x3	.224	2.332	5	.005	4.6...	z	4	5268.1...	20120.4	.413	.807	1...	H2-1
11	M19	L1.75x1.75x3	.201	3.083	8	.016	3.0...	y	4	10904...	20120.4	.413	.933	2...	H2-1
12	M24	PIPE_2.0	.194	0	3	.013	12....		8	6795.1...	32130	1.872	1.872	1...	H1-1...
13	M34D	L2.5x2.5x4	.193	.18	6	.059	.12	y	8	13118...	38556	1.114	2.537	2...	H2-1
14	M14	L1.75x1.75x3	.192	2.163	6	.012	0	y	6	6383.4...	20120.4	.413	.825	1...	H2-1
15	M37	L2.5x2.5x4	.191	5.57	6	.059	5.63	y	7	13118...	38556	1.114	2.537	2...	H2-1
16	M38	L2.5x2.5x4	.179	.5	8	.046	0	y	8	37854...	38556	1.114	2.537	1...	H2-1
17	M1	L2.5x2.5x4	.170	.25	8	.025	.75	y	8	37854...	38556	1.114	2.537	1...	H2-1
18	M3	L1.75x1.75x3	.170	1.638	5	.004	0	y	3	10904...	20120.4	.413	.879	1...	H2-1
19	M22	L2x2x3	.160	3.08	5	.005	0	y	7	4516.3...	23392.8	.558	.99	1...	H2-1
20	M21	L2x2x3	.160	3.08	5	.005	6.16	z	2	4516.3...	23392.8	.558	.99	1...	H2-1
21	M18	L1.75x1.75x3	.155	2.207	9	.006	0	z	2	6383.4...	20120.4	.413	.825	1...	H2-1
22	MP1A	PIPE_2.0	.153	1.604	2	.087	4.6...		4	22356...	32130	1.872	1.872	2...	H1-1b
23	M2	L2.5x2.5x4	.129	.25	5	.037	.75	y	7	37854...	38556	1.114	2.537	2...	H2-1
24	MP3A	PIPE_2.0	.103	2.5	8	.045	2.5		2	14916...	32130	1.872	1.872	3...	H1-1b

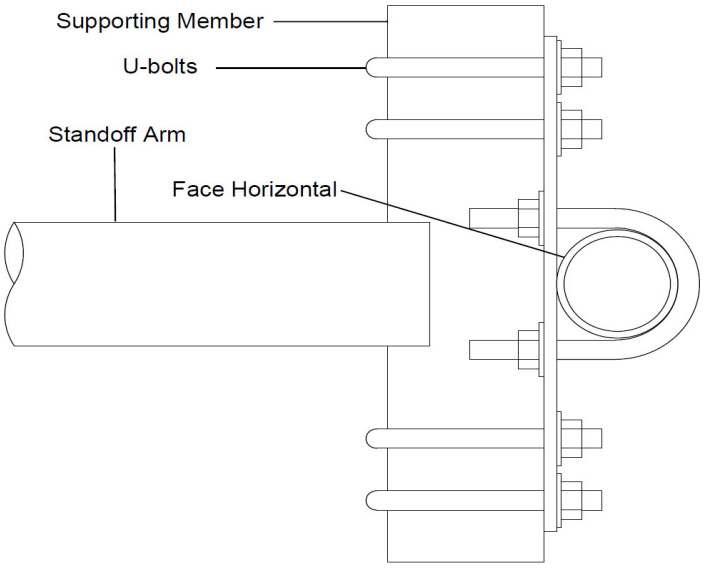
Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shea...	Loc...	Dir	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
25	MP2A	PIPE_2.0	.097	2.5	2	.025	2.5		3	14916....	32130	1.872	1.872	3...	H1-1b
26	M15	L1.75x1.75x3	.082	2.127	8	.008	4.2...	y	5	6335.8...	20120.4	.413	.824	1...	H2-1
27	M17	L1.75x1.75x3	.065	2.127	7	.006	0	z	1	6335.8...	20120.4	.413	.824	1...	H2-1
28	M20	L1.75x1.75x3	.058	1.638	7	.006	0	z	2	10904....	20120.4	.413	.879	1...	H2-1
29	M9	L2x2x3	.039	1.75	4	.003	0	y	7	12663....	23392.8	.558	1.137	1...	H2-1
30	M16	L1.75x1.75x3	.032	1.542	1	.014	0	z	9	10904....	20120.4	.413	.879	1...	H2-1
31	M13	L1.75x1.75x3	.031	1.542	2	.008	0	y	4	10904....	20120.4	.413	.879	1...	H2-1

TES Tower Engineering Solutions	U-bolt Connection Rotation and Sliding Check		Date: 2/11/2022
Customer:	SBA	TIA Standard:	ANSI/TIA-222-H
Carrier:	T-Mobile	Mount Elev. [ft]:	139
Site Name:	Guilford	Engineer Name:	Sarath Basamsetti
Site Number:	CT13065-A-03	TES Project #:	124062

NOTE: The calculations shown below are for a single representative load combination for example purposes. The results for all load combinations are presented in the Results Summary Table starting on the next page.

RISA Member Label =	M34B	
I or J End?	J	
Load Combination # =	7	
ϕ_U =	1.00	
Applied Shear (Sliding), V_{US} =	2.401	[Kips]
Total Shear , V_{UB} =	2.545	[Kips]
Applied Torsional Moment, T_{UR} =	0.211	[Kip-Ft]
Applied Tension, T_{UT} =	3.318	[Kips]
# of U-bolts =	2	
Diameter of U-bolts =	0.5	[Inches]
U-bolt Fy =	36	[KSI]
U-bolt Fu =	58	[KSI]
Diameter of Vertical Pipe =	2.9	[Inches]



Typical Connection Detail

Check Bolt Tension:

Total U-bolt Tension, T_{UT} =	3.318	[Kips]
U-bolt Tension Capacity, ϕR_{NT} =	24.033	[Kips]
Max Usage =	13.8%	PASS

Check Bolt Shear:

Total U-bolt Shear, V_{UB} =	2.545	[Kips]
U-bolt Shear Capacity, ϕR_{NV} =	17.082	[Kips]
Max Usage =	14.9%	PASS

Check Combined Bolt Shear & Tension:

$$\left(\frac{V_{ub}}{\phi R_{nv}}\right)^2 + \left(\frac{T_{ub}}{\phi R_{nt}}\right)^2 \le 1$$

Interaction Ratio =	0.041	
Max Usage =	20.3%	PASS

Check Sliding:

Applied Shear (Sliding), V_{US} =	2.401	[Kips]
Assumed Pretension Stress =	20	[KSI]
U-bolt Pretension Per Leg, T_P =	3.93	[Kips]
Nominal Sliding Strength, R_{NS} =	3.717	[Kips]
ϕ_U =	1.00	
Max Usage =	64.6%	PASS

Check Rotation:

Applied Torsional Moment, T_{UR} =	0.2110	[Kip-Ft]
Nominal Torsional Strength, R_{NR} =	0.4491	[Kip-Ft]
ϕ_U =	1.00	
Max Usage =	47%	PASS

Check Sliding/Rotation Interaction:

$$\left(\frac{V_{us}}{\phi_u R_{ns}}\right)^2 + \left(\frac{T_{ur}}{\phi_u R_{nr}}\right)^2 \le 1.0$$

ϕ_U =	1.00	
Interaction Ratio =	0.638	
Max Usage =	79.9%	PASS

	U-bolt Connection Rotation and Sliding Check		Date
			2/11/2022
Customer:	SBA	TIA Standard:	ANSI/TIA-222-H
Carrier:	T-Mobile	Mount Elev. [ft]:	139
Site Name:	Guilford	Engineer Name:	Sarath Basamsetti
Site Number:	CT13065-A-03	TES Project #:	124062

Results Summary Table

Member Label	Member End	Load Combo #	Tension T_{UT} [K]	Sliding Shear V_{US} [K]	Total Shear V_{UB} [K]	Torsion T_{UR} [Kip-Ft]	Bolt Tension Check	Bolt Shear Check	Combined Shear & Tension	Sliding Check	Rotation Check	Sliding/ Rotation Interaction
M34B	J	1	0.0000	0.7522	0.8105	0.0750	0.0%	4.7%	4.7%	16.0%	13.2%	20.7%
M34B	J	2	2.4339	0.9120	0.9209	0.0320	10.1%	5.4%	11.5%	22.9%	6.7%	23.8%
M34B	J	3	2.0293	0.7748	1.6752	0.3710	8.4%	9.8%	12.9%	18.9%	74.8%	77.2%
M34B	J	4	0.1038	0.9011	1.5903	0.3280	0.4%	9.3%	9.3%	19.2%	58.0%	61.1%
M34B	J	5	2.7393	2.4018	2.4546	0.1270	11.4%	14.4%	18.3%	61.7%	27.0%	67.4%
M34B	J	6	3.3845	2.4345	2.4718	0.1070	14.1%	14.5%	20.2%	65.9%	24.0%	70.1%
M34B	J	7	3.3180	2.4014	2.5451	0.2110	13.8%	14.9%	20.3%	64.6%	47.0%	79.9%
M34B	J	8	2.8058	2.4357	2.4374	0.0230	11.7%	14.3%	18.4%	62.9%	4.9%	63.1%
M34B	J	9	1.6927	1.4054	1.7865	0.2760	7.0%	10.5%	12.6%	33.4%	54.3%	63.8%
M34B	J	10	1.6957	1.4045	1.9277	0.3300	7.1%	11.3%	13.3%	33.4%	65.0%	73.1%
M34B	J	11	1.2448	0.9737	0.9790	0.0250	5.2%	5.7%	7.7%	22.4%	4.8%	22.9%
M34C	J	1	0.0000	0.2882	0.2912	0.0100	0.0%	1.7%	1.7%	6.1%	1.8%	6.4%
M34C	J	2	0.0000	0.2722	0.3477	0.0540	0.0%	2.0%	2.0%	5.8%	9.5%	11.1%
M34C	J	3	0.0000	0.1982	0.7092	0.1700	0.0%	4.2%	4.2%	4.2%	29.9%	30.1%
M34C	J	4	0.0000	0.3502	0.9246	0.2140	0.0%	5.4%	5.4%	7.4%	37.6%	38.3%
M34C	J	5	0.0000	0.8436	0.9531	0.1110	0.0%	5.6%	5.6%	17.9%	19.5%	26.5%
M34C	J	6	0.0000	0.8371	0.9704	0.1230	0.0%	5.7%	5.7%	17.8%	21.6%	28.0%
M34C	J	7	0.0000	0.8202	0.8569	0.0620	0.0%	5.0%	5.0%	17.4%	10.9%	20.5%
M34C	J	8	0.0000	0.8596	1.1000	0.1720	0.0%	6.4%	6.4%	18.2%	30.2%	35.3%
M34C	J	9	0.0000	0.4497	1.2230	0.2840	0.0%	7.2%	7.2%	9.5%	49.9%	50.8%
M34C	J	10	0.0000	0.4507	1.3627	0.3210	0.0%	8.0%	8.0%	9.6%	56.4%	57.2%
M34C	J	11	0.0000	0.3240	0.3397	0.0250	0.0%	2.0%	2.0%	6.9%	4.4%	8.2%

Results Summary Table (Continued)

Exhibit F

Power Density/RF Emissions Report

Radio Frequency Emissions Analysis Report

March 2, 2022

Centerline Communications on behalf of T-Mobile

Site Name: Guilford_SST_Route 80
Site Address: 331 Route 80, Guilford, CT 06437

Site Compliance Summary

Compliance Status:	Compliant
Carrier MPE% of FCC General Population Allowable Limit:	6.89935100%
Composite MPE% of FCC General Population Allowable Limit:	6.89994200%

March 2, 2022

T-Mobile
Attn: John Benedetto, RF Manager
5050 Cochituate Road Suite 550 - 13&14
Framingham, MA 01701

Emissions Analysis for Site: **Guilford_SST_Route 80**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed T-Mobile facility to be located on a tower near **331 Route 80, Guilford CT 06437** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm^2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm^2). The general population exposure limits for the 600 MHz (LTE) band is 400 µW/cm^2; 700 MHz (LTE) band is 467 µW/cm^2, 1900 MHz (PCS), 2100 (AWS), and 5 GHz (B46) bands is 1000 µW/cm^2.

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, 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 facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing focused omnidirectional 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, was focused at the base of the tower. This is a very conservative estimate since the gain reduction in actual applications is typically greater than 10 dB in the direction of ground immediately surrounding the facility. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. 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.

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

RRH #	Frequency Band	Technology	Channel Count	Transmit Power per Channel (W)
1	700	LTE	2	40
1	600	LTE	4	60
1	600	NR	2	40
2	2500	LTE	1	30
2	2500	NR	1	30
2	2500	LTE	1	90
2	2500	NR	1	90
3	1900	GSM	1	15
3	1900	LTE	2	140
3	2100	LTE	2	140

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 600 MHz (LTE) 700 MHz (LTE), 1900 MHz (PCS), 2100 MHz (AWS), and 5 GHz (Band 46) frequency bands. This is based on information from the carrier with regard to anticipated antenna selection.

Sector	Antenna Number	Make / Model	Centerline (ft)
A	1	RFS APXVAALL24 43-U-NA20	140
A	1	RFS APXVAALL24 43-U-NA20	140
A	1	RFS APXVAALL24 43-U-NA20	140
A	2	ERICSSON AIR6449	140
A	2	ERICSSON AIR6449	140
A	2	ERICSSON AIR6449	140
A	2	ERICSSON AIR6449	140
A	3	COMMSCOPE VV-65A-R1B	140
A	3	COMMSCOPE VV-65A-R1B	140
A	3	COMMSCOPE VV-65A-R1B	140
B	4	RFS APXVAALL24 43-U-NA20	140
B	4	RFS APXVAALL24 43-U-NA20	140
B	4	RFS APXVAALL24 43-U-NA20	140
B	5	ERICSSON AIR6449	140
B	5	ERICSSON AIR6449	140
B	5	ERICSSON AIR6449	140
B	5	ERICSSON AIR6449	140
B	6	COMMSCOPE VV-65A-R1B	140
B	6	COMMSCOPE VV-65A-R1B	140
B	6	COMMSCOPE VV-65A-R1B	140
C	7	RFS APXVAALL24 43-U-NA20	140
C	7	RFS APXVAALL24 43-U-NA20	140
C	7	RFS APXVAALL24 43-U-NA20	140
C	8	ERICSSON AIR6449	140
C	8	ERICSSON AIR6449	140
C	8	ERICSSON AIR6449	140
C	8	ERICSSON AIR6449	140
C	9	COMMSCOPE VV-65A-R1B	140
C	9	COMMSCOPE VV-65A-R1B	140
C	9	COMMSCOPE VV-65A-R1B	140

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.

ID	Make / Model	Frequency Band	Gain (dBd)	Centerline (ft)	Channel Count	TX Power (W)	ERP (W)	MPE %
T-Mobile 1	RFS APXVAALL24 43-U-NA20	700	13.65	140.0	2	40	1853.9157	0.000013000
T-Mobile 1	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	4	60	4733.8146	0.000042000
T-Mobile 1	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	2	40	1577.9382	0.000014000
T-Mobile 2	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 2	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 2	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.149370000
T-Mobile 2	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.149370000
T-Mobile 3	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	1	15	502.4482	0.000001000
T-Mobile 3	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	2	140	9379.0323	0.000025000
T-Mobile 3	COMMSCOPE VV-65A-R1B	2100	15.87	140.0	2	140	10818.2754	0.000025000
T-Mobile 4	RFS APXVAALL24 43-U-NA20	700	13.65	140.0	2	40	1853.9157	0.000013000
T-Mobile 4	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	4	60	4733.8146	0.000041000
T-Mobile 4	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	2	40	1577.9382	0.000014000
T-Mobile 5	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 5	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 5	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.150059000
T-Mobile 5	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.150059000
T-Mobile 6	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	1	15	502.4482	0.000001000
T-Mobile 6	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	2	140	9379.0323	0.000025000
T-Mobile 6	COMMSCOPE VV-65A-R1B	2100	15.87	140.0	2	140	10818.2754	0.000024000
T-Mobile 7	RFS APXVAALL24 43-U-NA20	700	13.65	140.0	2	40	1853.9157	0.000013000
T-Mobile 7	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	4	60	4733.8146	0.000042000
T-Mobile 7	RFS APXVAALL24 43-U-NA20	600	12.95	140.0	2	40	1577.9382	0.000014000
T-Mobile 8	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 8	ERICSSON AIR6449	2500	15.15	140.0	1	30	982.0221	0.000003000
T-Mobile 8	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.150059000
T-Mobile 8	ERICSSON AIR6449	2500	22.35	140.0	1	90	15461.1755	1.150059000

T-Mobile 9	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	1	15	502.4482	0.000001000
T-Mobile 9	COMMSCOPE VV-65A-R1B	1900	15.25	140.0	2	140	9379.0323	0.000025000
T-Mobile 9	COMMSCOPE VV-65A-R1B	2100	15.87	140.0	2	140	10818.2754	0.000024000
							T-Mobile MPE%	**6.89935100 %**

Table 3: T-Mobile Antenna Inventory & Power Level

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 4* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-Mobile sector(s).

Frequency Band	Technology	Centerline (ft.)	# of Channels	ERP W (Per Channel)	Total Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	MPE %
700	LTE	140.0	2	926.95786	0.0000620	467	0.00001300
600	LTE	140.0	4	1183.453642	0.0001700	400	0.00004200
600	NR	140.0	2	788.9690944	0.0000570	400	0.00001400
2500	LTE	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	NR	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	LTE	140.0	1	15461.17548	11.4936960	1000	1.14937000
2500	NR	140.0	1	15461.17548	11.4936960	1000	1.14937000
1900	GSM	140.0	1	502.4481587	0.0000130	1000	0.00000100
1900	LTE	140.0	2	4689.516148	0.0002520	1000	0.00002500
2100	LTE	140.0	2	5409.137679	0.0002470	1000	0.00002500
						Alpha MPE%	**2.29886600**
700	LTE	140.0	2	926.95786	0.0000620	467	0.00001300
600	LTE	140.0	4	1183.453642	0.0001640	400	0.00004100
600	NR	140.0	2	788.9690944	0.0000550	400	0.00001400
2500	LTE	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	NR	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	LTE	140.0	1	15461.17548	11.5005930	1000	1.15005900
2500	NR	140.0	1	15461.17548	11.5005930	1000	1.15005900
1900	GSM	140.0	1	502.4481587	0.0000130	1000	0.00000100
1900	LTE	140.0	2	4689.516148	0.0002460	1000	0.00002500
2100	LTE	140.0	2	5409.137679	0.0002370	1000	0.00002400
						Beta MPE%	**2.30024200**
700	LTE	140.0	2	926.95786	0.0000620	467	0.00001300
600	LTE	140.0	4	1183.453642	0.0001680	400	0.00004200
600	NR	140.0	2	788.9690944	0.0000560	400	0.00001400
2500	LTE	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	NR	140.0	1	982.0220846	0.0000270	1000	0.00000300
2500	LTE	140.0	1	15461.17548	11.5005930	1000	1.15005900
2500	NR	140.0	1	15461.17548	11.5005930	1000	1.15005900
1900	GSM	140.0	1	502.4481587	0.0000130	1000	0.00000100
1900	LTE	140.0	2	4689.516148	0.0002500	1000	0.00002500

2100	LTE	140.0	2	5409.137679	0.0002440	1000	0.00002400
						Gamma MPE%	**2.30024300**
						T-Mobile MPE%	**6.89935100 %**

Table 4: 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:

Carrier	Predicted MPE %
T-Mobile	6.89935100%
AT&T	0.00032700%
Sprint	0.00006300%
Verizon	0.00020100%
Composite	**6.89994200%**

Table 5: Total Predicted MPE(%) by Carrier

Compliance Status:

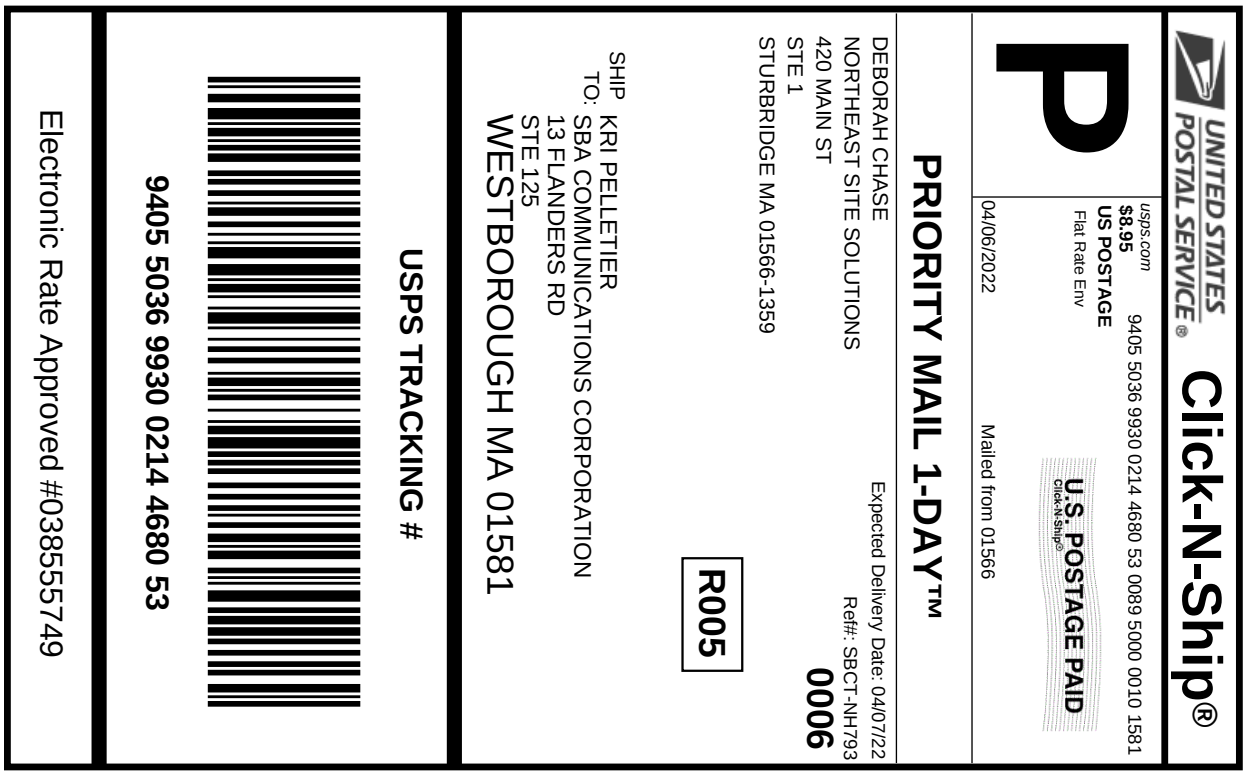
The anticipated composite MPE value for this site assuming all carriers present is **6.89994200%** of the allowable FCC established general population limit sampled at the ground level.

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.

Katrina Styx
RF Compliance Consultant
Centerline Communications, LLC
750 West Center St. Suite 301
West Bridgewater, MA 02379

Exhibit G

Recipient Mailings



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2. **Place your label so it does not wrap around the edge of the package.**
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5. **Mail your package on the "Ship Date" you selected when creating this label.**

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9405 5036 9930 0214 4680 53

Trans. #:	560623545
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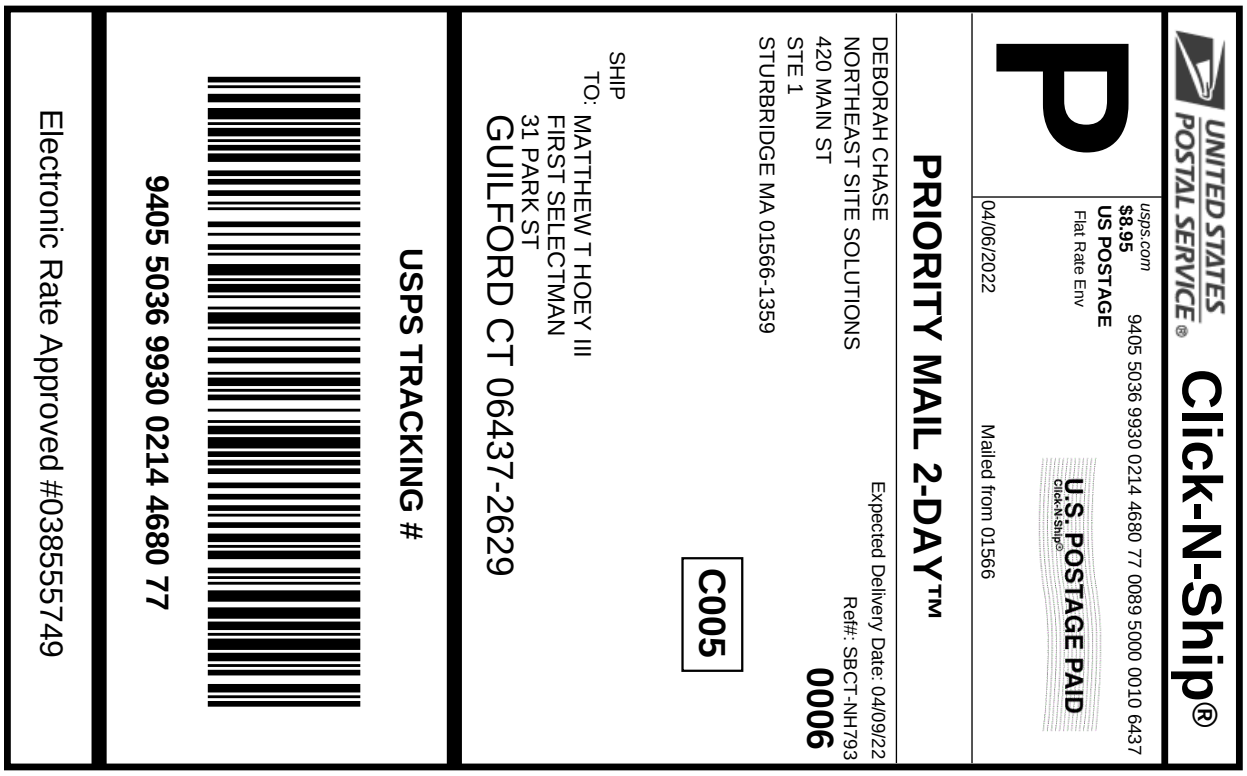
STURBRIDGE MA 01566-1359

Ref#: SBCT-NH793

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.

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.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
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 0214 4680 77

Trans. #:	560623545
Print Date:	04/06/2022
Ship Date:	04/06/2022
Expected Delivery Date:	04/09/2022

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-NH793

To: MATTHEW T HOEY III
FIRST SELECTMAN
31 PARK ST
GUILFORD CT 06437-2629

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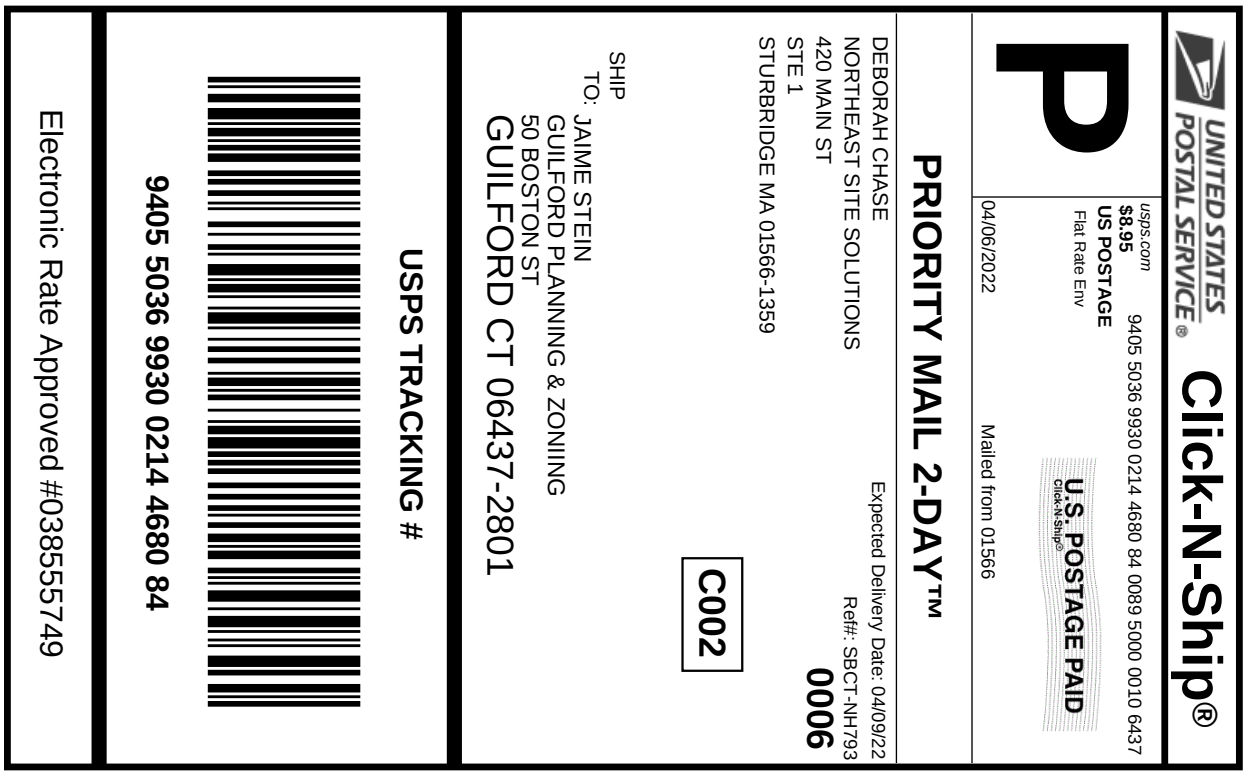

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0214 4680 84

Trans. #:	560623545
Print Date:	04/06/2022
Ship Date:	04/06/2022
Expected Delivery Date:	04/09/2022

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-NH793

To: JAIME STEIN
GUILFORD PLANNING & ZONIING
50 BOSTON ST
GUILFORD CT 06437-2801

* 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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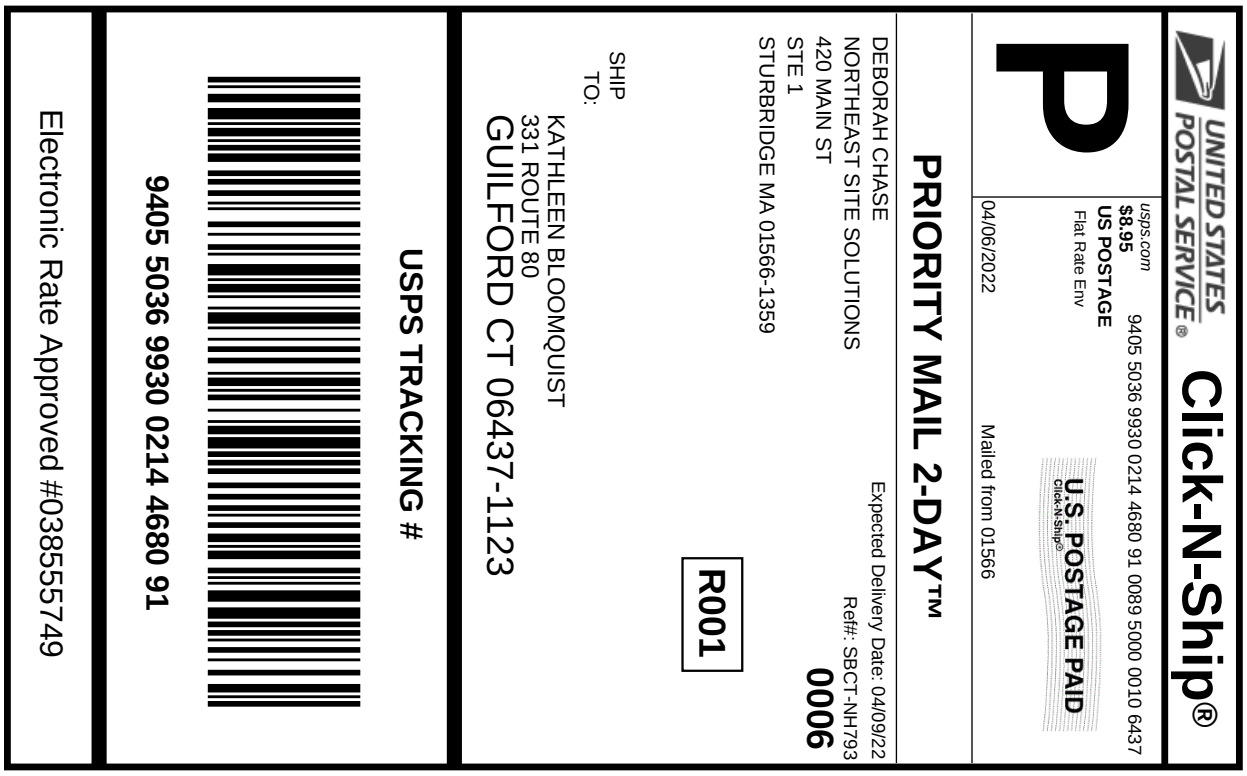

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0214 4680 91

Trans. #:	560623545
Print Date:	04/06/2022
Ship Date:	04/06/2022
Expected Delivery Date:	04/09/2022

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-NH793

To: KATHLEEN BLOOMQUIST
331 ROUTE 80
GUILFORD CT 06437-1123

* 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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GREENDALE
290 W BOYLSTON ST
WORCESTER, MA 01606-2378
(800)275-8777

04/07/2022 02:39 PM

Product	Qty	Unit Price	Price
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 13.00 oz Acceptance Date: Thu 04/07/2022 Tracking #: 9405 5036 9930 0214 4680 91	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 13.00 oz Acceptance Date: Thu 04/07/2022 Tracking #: 9405 5036 9930 0214 4680 84	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 13.00 oz Acceptance Date: Thu 04/07/2022 Tracking #: 9405 5036 9930 0214 4680 77	1		$0.00
Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.00 oz Acceptance Date: Thu 04/07/2022 Tracking #: 9405 5036 9930 0214 4680 53	1		$0.00
Grand Total:			$0.00

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Every household in the U.S. is now
eligible to receive a second set
of 4 free test kits.
Go to www.covidtests.gov