



Filed by:

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

October 21, 2020

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

RE: Notice of Exempt Modification
270 Hubbard Road, Haddam, CT 06441
Latitude: 41.464089
Longitude: -72.541994
T-Mobile Site #: CTHA523A_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 157-foot level of the existing 160-foot Monopole Tower at 270 Hubbard Rd., Higganum, CT. The 160-foot tower is owned by SBA Towers II LLC. The property is owned by Beverly and Richard Watral. T-Mobile now intends to replace three (3) antenna with three (3) new 600/700/1900/2100 MHz antennas. The new antennas would be installed at the 157-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:

- (3) 32" Standoff (Valmont UDS-NPL)

Remove and Replace:

- (3) Commscope LNX-6515DS antenna (remove) – (3) RFS APXVAARR24_43_UNA20 antenna (replace)

Install New:

- Low Profile Platform w/HRK & Reinforcement Kit (Site Pro RMQP-4096-HK)
- (3) Ericsson KRY 112 144/1 - TMAs
- (3) Ericsson Radio 4449 B71+B12 – RRUs
- (1) 1-5/8" Fiber

Existing Equipment to Remain:

- (3) Kathrein 782 11056 – Bias Ts
- (12) 7/8" Coax

Entitlements:

- N/A

GROUND

Install New:

- Equipment inside existing 6201 cabinet

This facility was approved by the Town of Haddam's Planning and Zoning Commission on October 16, 2000. Special Permit was given for a wireless telecom facility to include a 160' monopole tower and appurtenant equipment within a 70' x 70' fenced compound on a 100' x 100' leased parcel. The Tower was to be made available to Town emergency services radio and communication facilities. No further post construction stipulations were set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Haddam's First Selectman, Robert McGarry, and Zoning Enforcement Officer, Jim Puska, as well as to the property owners. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

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



Sincerely,

G. Scott Shepherd
Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3807 + T
508.366.2610 + F
508.868.6000 + C
gshepherd@sbsite.com

Attachments

cc: Robert McGarry, First Selectman / with attachments
Town of Haddam, Town Office Building, 30 Field Park Drive, Haddam, CT 06438
Jim Puska, Zoning Enforcement Officer / with attachments
Town of Haddam, Town Office Building, 30 Field Park Drive, Haddam, CT 06438
Beverly and Richard Watral / with attachments
292 Hubbard Rd., Higganum, CT 06441

Exhibit List

| | | |
|-----------|--------------------------|--|
| Exhibit 1 | Check Copy | X To be invoiced at a later date per COVID 19 guidelines |
| Exhibit 2 | Notification Receipts | x |
| Exhibit 3 | Property Card | x |
| Exhibit 4 | Property Map | x |
| Exhibit 5 | Original Zoning Approval | Town of Haddam P&Z Commission 10/16/2000 |
| Exhibit 6 | Construction Drawings | Chappell Engineering 9/17/19 |
| Exhibit 7 | Structural Analysis | TES 7/22/19 |
| Exhibit 8 | Mount Analysis | Geo Structural 8/6/19 |
| Exhibit 9 | EME Report | Transcom Eneeneering 6/10/19 |

EXHIBIT 1

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

EXHIBIT 2

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

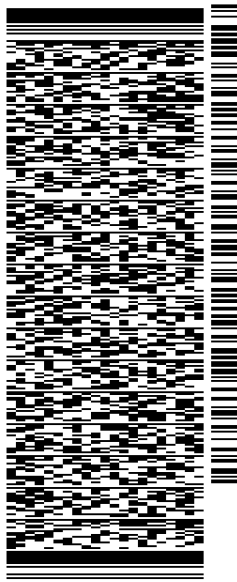
SHIP DATE: 22OCT20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280

BILL SENDER

TO **MELANIE A. BACHMAN EXEC. DIR**
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

NEW BRITAIN CT 06051

(508) 251-0720 X.3807 REF: 105692009-6089
INV.
PO. DEPT:

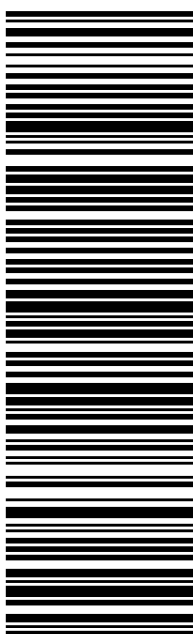


56B.I2/A27E/B766

TRK# 7718 7670 8730 FRI - 23 OCT 10:30A
0201 PRIORITY OVERNIGHT

EBBDLA

06051
CT-US BDL



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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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RICK WOODS
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134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

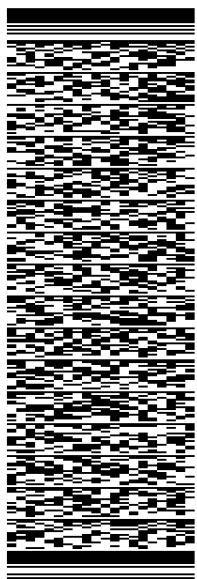
SHIP DATE: 22OCT20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280

BILL SENDER

TO
ROBERT MCGARRY, FIRST SELECTMAN
TOWN OF HADDAM
30 FIELD PARK DR.

HADDAM CT 06438

(508) 251-0720 X.3807 REF: 105692009-6089
INV# DEPT:

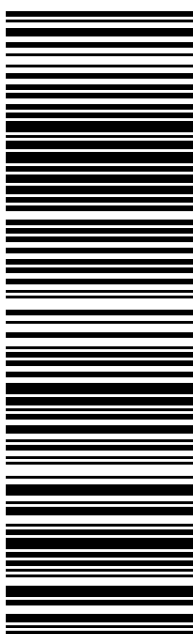


TRK# 7718 7685 5691
0201

FRI - 23 OCT 12:00P
PRIORITY OVERNIGHT

EB RSPA

06438
BDL
CT:US



56B.I2/A27E/B766

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 SBA COMMUNICATIONS CORPORATION
 134 FLANDERS RD
 SUITE 125
 WESTBOROUGH, MA 01581
 UNITED STATES US

SHIP DATE: 22OCT20
 ACTWGT: 1.00 LB
 CAD: 105843304/NET4280

BILL SENDER

TO **JIM PUSKA, ZONING ENF. OFFICER**
TOWN OF HADDAM
30 FIELD PARK DR.

HADDAM CT 06438

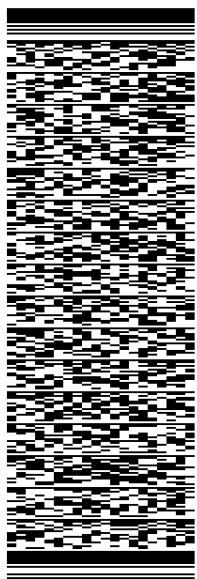
(508) 251-0720 X.3807

REF: 105692009-6089

INV#

PO:

DEPT:



56B.I2/A27E/B766

TRK#
 0201 7718 7688 0291

FRI - 23 OCT 12:00P

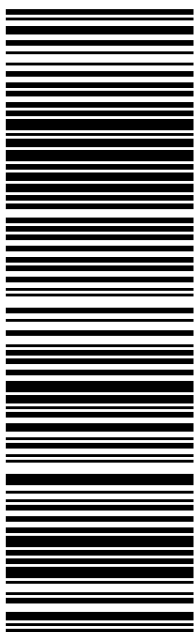
PRIORITY OVERNIGHT

EB RSPA

CT:US

06438

BDL



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 SUITE 125
 WESTBOROUGH, MA 01581
 UNITED STATES US

SHIP DATE: 22OCT20
 ACTWGT: 1.00 LB
 CAD: 105843304/NET4280

BILL SENDER

TO BEVERLY & RICHARD WATRAL

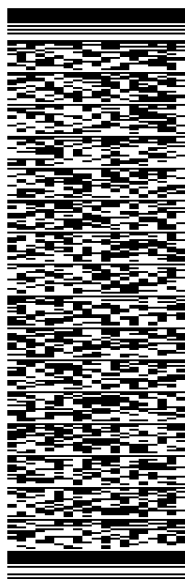
292 HUBBARD RD.

HIGGANUM CT 06441

(508) 251-0720 X 3807

REF: 105692009-6089

PO: DEPT:



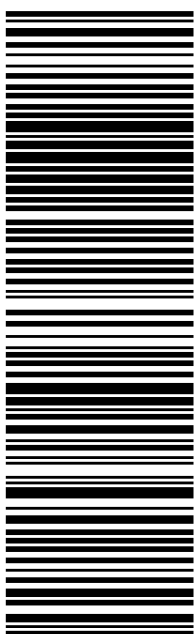
FRI - 23 OCT 10:30A

PRIORITY OVERNIGHT

TRK# 7718 7692 1700
 0201

EB RSPA

06441
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EXHIBIT 3

270 HUBBARD RD

Location 270 HUBBARD RD

Mblu 33/ 010/ //

Acct# H0246400

Owner WATRAL RICHARD J &
BEVERLY A

Assessment \$800

Appraisal \$101,000

PID 2154

Building Count 1

Current Value

| Appraisal | | | |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land | Total |
| 2016 | \$0 | \$101,000 | \$101,000 |

| Assessment | | | |
|----------------|--------------|-------|-------|
| Valuation Year | Improvements | Land | Total |
| 2016 | \$0 | \$800 | \$800 |

Owner of Record

Owner WATRAL RICHARD J & BEVERLY A
Co-Owner
Address 292 HUBBARD RD
HIGGANUM, CT 06441

Sale Price \$0
Certificate
Book & Page 216/ 533
Sale Date 03/23/1998
Instrument 29

Ownership History

| Ownership History | | | | | |
|------------------------------|------------|-------------|-------------|------------|------------|
| Owner | Sale Price | Certificate | Book & Page | Instrument | Sale Date |
| WATRAL RICHARD J & BEVERLY A | \$0 | | 216/ 533 | 29 | 03/23/1998 |

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0
Building Percent
Good:
Replacement Cost
Less Depreciation: \$0

Building Attributes

| Field | Description |
|------------------|-------------|
| Style | Vacant Land |
| Model | |
| Grade: | |
| Stories | |
| Occupancy | |
| Exterior Wall 1 | |
| Exterior Wall 2 | |
| Roof Structure | |
| Roof Cover | |
| Interior Wall 1 | |
| Interior Wall 2 | |
| Interior Flr 1 | |
| Interior Flr 2 | |
| Heat Fuel | |
| Heat Type: | |
| AC Type: | |
| Total Bedrooms: | |
| Full Bthrms: | |
| Half Baths: | |
| Extra Fixtures | |
| Total Rooms: | |
| Bath Style: | |
| Kitchen Style: | |
| Extra Kitchens | |
| Fireplace(s) | |
| Extra Opening(s) | |
| Gas Fireplace(s) | |
| Blocked FPL(s) | |
| Woodstove(s) | |
| Bsmt Garage(s) | |
| SF Fin Bsmt | |
| FBM Quality | |
| Whirlpool | |
| Sauna | |
| Foundation | |

Building Photo



(<http://images.vgsi.com/photos2/HaddamCTPhotos//default.jpg>)

Building Layout

(<http://images.vgsi.com/photos2/HaddamCTPhotos//Sketches/21>)

| Building Sub-Areas (sq ft) | Legend |
|--------------------------------|--------|
| No Data for Building Sub-Areas | |

Extra Features

| Extra Features | Legend |
|----------------|--------|
| | |

No Data for Extra Features

Land

Land Use

Use Code 715
Description 490 Pasture
Zone R-2
Neighborhood 400
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 6
Frontage
Depth
Assessed Value \$800
Appraised Value \$101,000

Outbuildings

| Outbuildings | <u>Legend</u> |
|--------------------------|---------------|
| No Data for Outbuildings | |

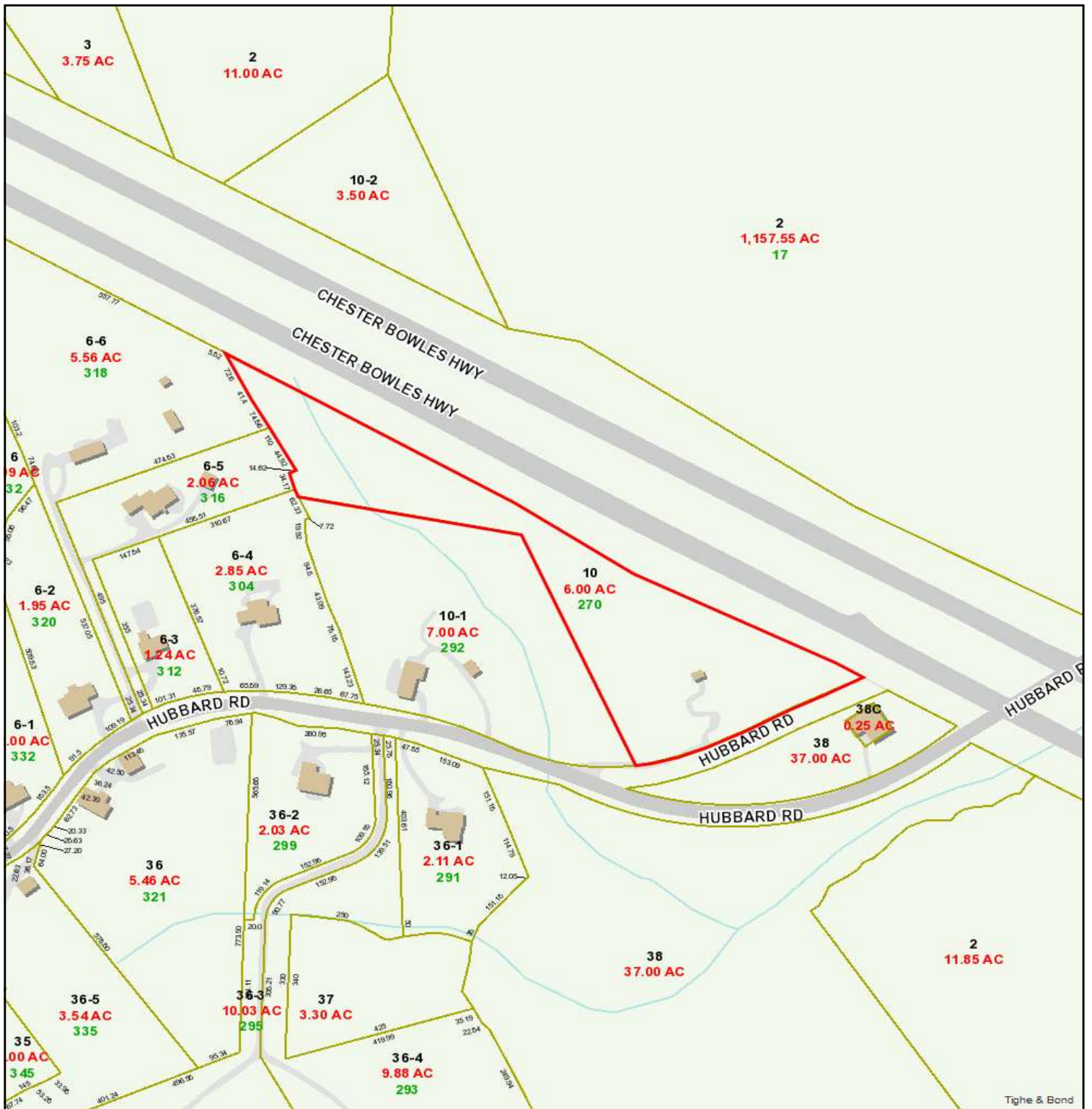
Valuation History

| Appraisal | | | |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land | Total |
| 2018 | \$0 | \$101,000 | \$101,000 |
| 2017 | \$0 | \$101,000 | \$101,000 |
| 2016 | \$0 | \$101,000 | \$101,000 |

| Assessment | | | |
|----------------|--------------|-------|-------|
| Valuation Year | Improvements | Land | Total |
| 2018 | \$0 | \$800 | \$800 |
| 2017 | \$0 | \$800 | \$800 |
| 2016 | \$0 | \$800 | \$800 |

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EXHIBIT 4



Tighe & Bond

270 HUBBARD RD

5/16/2019 10:47:24

1"=300'

Property Information

| | |
|----------------|----------------|
| Parcel_ID | 33 010 |
| Street Address | 270 HUBBARD RD |
| Sale Price | null |



The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

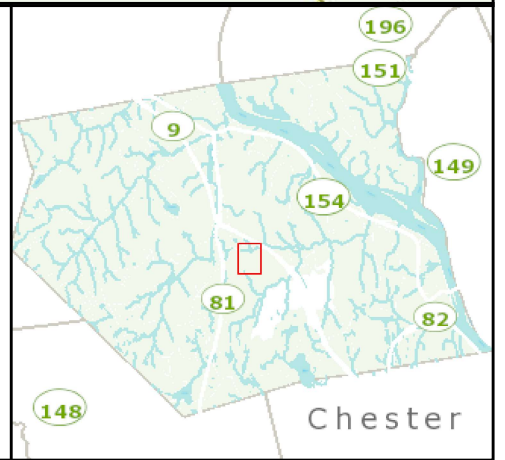


EXHIBIT 5

HADDAM PLANNING AND ZONING COMMISSION

Hurwitz & Sagarin, LLC
Attn. Julie Cashin, Esq.
147 North Broad Street
P.O. Box 112
Milford, Ct. 06460-0112

RE: Special Permit
Map 44 Lot 38

Issued: 10-16-2000
Expires: 10-16-2002

This permit is authorized and in reference to your application to conduct regulated activities in the Town of Haddam.

The Haddam Planning & Zoning Commission has considered your application with due regard for the matters enumerated in Section 8-3c of the Connecticut General Statutes and in accordance with the Haddam Planning & Zoning Regulations, in particular Section 15 of said regulations and has found that the proposed use, as specified and conditioned below, is in conformance with said regulations.

The following activities are authorized: To allow the construction of a wireless telecommunications facility consisting of a 160 ft. monopole tower, and appurtenant equipment within a 70' x 70' fenced compound on a 100' x 100' leased parcel, access and utilities routing, subject to the following conditions:

1. Standard Special Permit Conditions (see attached)
2. Revise Site plan to show suitable plantings along route 9
3. No timbering of the balance of the site
4. Tower be made available for siting town's emergency services radio and communication facilities.


Geoffery Colegrove, Town Planner

TOWN OF HADDAM
PLANNING & ZONING COMMISSION
30 FIELD PARK DRIVE
HADDAM, CT., 06438

MOTION SHEET

DATE: 10/16/2000

APPLICANT: SBA Inc

OWNER: Richard and Beverly Waitral

PROPERTY ADDRESS: 292 Hubbard Road

ASSESSOR MAP NO. 44

ASSESSOR LOT NO. 38

MOTION BY COMMISSIONER Dubeis

SECOND BY COMMISSIONER B. Dravoff

Approve the application as submitted w/ standard conditions (special permit).

Additional conditions: (1) Revise site plan to show ~~landscaping~~ ^{suitable} plantings along Route #9 boundary ^{to} screen ~~the~~ site; (2) No timbering of

FOR

AGAINST

ABSTAIN

| | | |
|------------------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

The balance of ~~the~~ the site is:
(3) Tower be made available for site tower

HURWITZ & SAGARIN

FAX NO. : 8603453730

Nov. 01 2000 12:11PM P1

4075-024

37



TOWN OF HADDAM
Planning and Zoning Commission
Haddam, Conn. 06438

STANDARD CONDITIONS

(SPECIAL PERMIT)

1. Prior to Construction, the Applicant/Developer shall schedule a pre-construction conference with the Town Planner, Zoning Enforcement Officer and Town Engineer, applicant's engineer and a representative of the developer at which all aspects of the the improvements shall be discussed and agreed upon. At this meeting the developer will be committed to a construction sequence and schedule for construction.
2. The Applicant/Developer shall provide the Land Use Department with the name, address and telephone number of an agent who shall be responsible for supervising the construction and maintaining the Erosion & Sedimentation Control measures. (Such person shall submit a weekly, or at such other interval as required by the staff, inspection report on the status of the Erosion & Sedimentation Control measures to the Zoning Enforcement Officer.)
3. Prior to the commencement of any construction activity, the Applicant/Developer shall:
 - a. Submit a list of required site improvements and estimated costs of each item to the Town Engineer for approval.
 - b. Submit to the Land Use Office a cash surety bond based on the approved estimates by the Town Engineer. Said Bond shall be for not less than five (5) years.
 - c. Submit an estimate of the cost of Erosion & Sedimentation Control measures to the Town Engineer for approval.
 - d. Post an Erosion & Sedimentation Control cash bond with the Land Use Department in an amount to be determined by the Town Engineer.
 - e. Install Erosion & Sedimentation Control measures on the site before any construction activity is begun.
 - f. Obtain verification from the Town Engineer that all required Erosion & Sedimentation Control bonds have been posted and the measures have been completed to his satisfaction and he has authorized the beginning of work.

4. If the applicant or his successor in title fails to respond immediately to orders from the Zoning Enforcement Officer to remedy problems or make repairs to the Erosion & Sedimentation Control measures, the Town Engineer shall be authorized to have the work done on an emergency basis and the applicant shall be responsible for reimbursement to the Town of Haddam for such expenses.
5. The well, if required, shall be drilled, tested and approved by the Town Engineer prior to the issuance of a building permit. On site blasting shall be allowed, if necessary, before a well is drilled.
6. Prior to the commencement of construction activity, the property owner, if different from the applicant/developer, shall:
 - a. Advise himself of the required Erosion & Sedimentation Control measures.
 - b. Discuss with the staff of the Land Use Department the requirements and obtain approvals where necessary for the Erosion & Sedimentation Control measures.
 - c. Install such Erosion and Sedimentation Control measures and maintain the same throughout the construction phase of the project. (If additional Erosion & Sedimentation Control measures are deemed necessary by the Zoning Enforcement Officer or the Town Engineer, said measures shall be immediately installed pursuant to the order for their installation.)
7. The applicant or his successor in title shall comply with all conditions in the Wetland Commission approvals or Permits, if any, and all orders issued by the Wetlands Enforcement Officer to protect the wetlands and watercourses.
8. If blasting is necessary for public or private lot improvements, a pre-blasting survey and post-blasting survey shall be conducted on appropriate nearby structures and wells. Proof of insurance and /or the ability to pay for damages due to any blasting shall be demonstrated prior to any blasting activity. A certificate of insurance shall be provided to the Land Use Office for recording in the applicant's file.

9. If the development involves easements, conservation restrictions, open spaces or other restrictions on the use of property, maintenance agreements, or any similar or related documents, copies of all of said documents shall be provided to the staff of the Land Use Department. Said documents shall be reviewed by the Town Attorney and modified in accordance with said review and approval. Final revised documents shall be submitted to the staff of the Land Use Department before recording of the Site Plan in the Town of Haddam Land Records.

EXHIBIT 6

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

SBA HIGGANUM MONOPOLE

270 HUBBARD ROAD
 HIGGANUM, CT 06441
 MIDDLESEX COUNTY

SITE NO.: CTHA523A

SITE TYPE: 160'± MONOPOLE

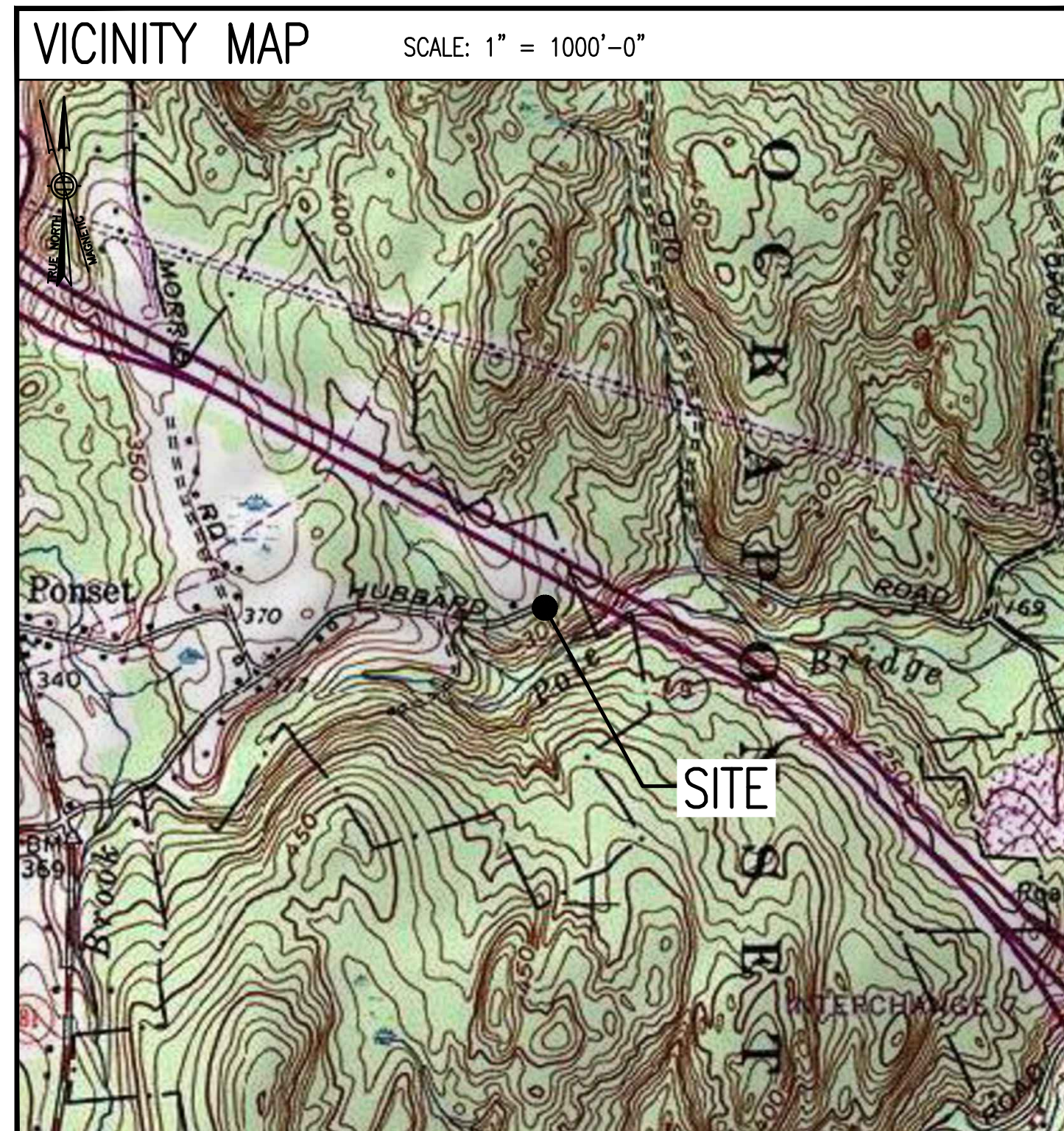
RF DESIGN GUIDELINE: CUSTOM

| 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. | 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. |
| 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. | 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. |
| 3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOTENT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE. | 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. |
| 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. | 14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. |
| 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. | 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. |
| 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. | 16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB. |
| 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. | 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. |
| 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. | |

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



DO NOT SCALE DRAWINGS

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

| SHEET INDEX | | |
|-------------|---------------------------------|----------|
| SHEET NO. | DESCRIPTION | REV. NO. |
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| GN-1 | GENERAL NOTES | 2 |
| A-1 | COMPOUND & EQUIPMENT PLAN | 2 |
| A-2 | TOWER ELEVATIONS & ANTENNA PLAN | 2 |
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SPECIAL ZONING NOTE:
 BASED ON INFORMATION PROVIDED BY T-MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW, AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, OR ADMINISTRATIVE REVIEW).

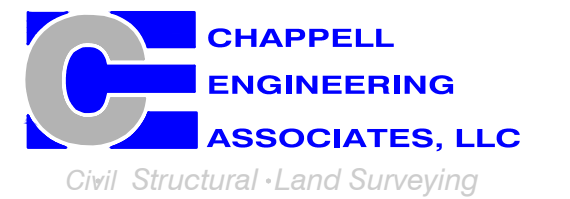
- SITE NOTES**
- THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
 - ADA COMPLIANCE NOT REQUIRED.
 - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
 - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
 - 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.
 - 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.

**T-MOBILE
 NORTHEAST LLC**

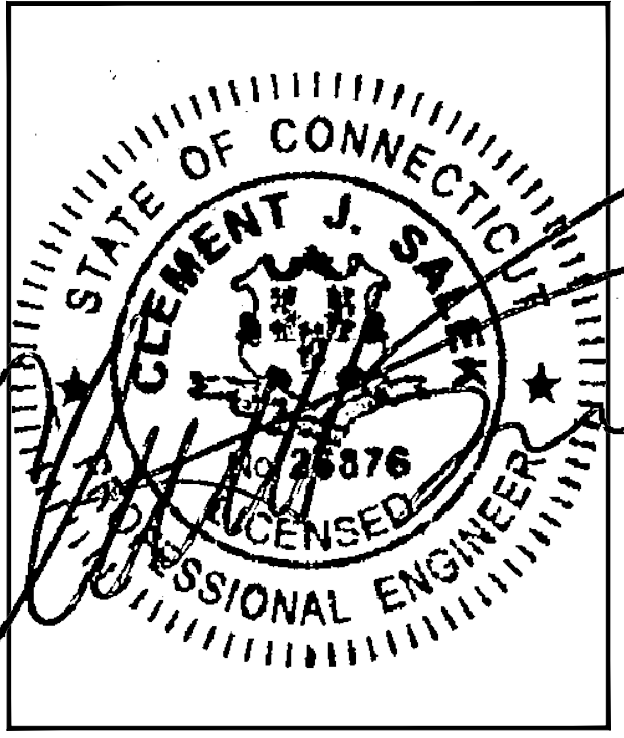
15 COMMERCE WAY, SUITE B
 NORTON, MA 02766
 (508) 286-2700



SBA COMMUNICATIONS CORP.
 134 FLANDERS ROAD, SUITE 125
 WESTBOROUGH, MA 01581
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R.K. EXECUTIVE CENTRE
 201 BOSTON POST ROAD WEST, SUITE 101
 MARLBOROUGH, MA 01752
 (508) 481-7400
 www.chappellengineering.com



CHECKED BY: JMT
 APPROVED BY: JMT

| SUBMITTALS | | | |
|------------|----------|-------------------------|-----|
| REV. | DATE | DESCRIPTION | BY |
| 2 | 09/17/19 | REVISED CONSTRUCTION | JRV |
| 1 | 05/24/19 | ISSUED FOR CONSTRUCTION | CMC |
| 0 | 05/08/19 | ISSUED FOR REVIEW | CMC |

SITE NUMBER:
CTHA523A

SITE ADDRESS:
 270 HUBBARD ROAD
 HIGGANUM, CT 06441

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR – T-MOBILE
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – T-MOBILE
OEM – ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, STATE AND FEDERAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
- SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER, T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR AND/OR LANDLORD PRIOR TO CONSTRUCTION.
- THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AND RETURN DISTURBED AREAS TO ORIGINAL CONDITIONS.
- THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS AND POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.
- CONSTRUCTION SHALL COMPLY WITH ALL T-MOBILE STANDARDS AND SPECIFICATIONS.
- SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITES ARE IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- IF THE EXISTING CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

- THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
- SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T-MOBILE SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (400PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- 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 LARGER2 IN.
#5 AND SMALLER & WWF1½ IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL¾ IN.
BEAMS AND COLUMNS½ IN.
- A CHAMFER ¼" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.
- CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIER'S PLANT.
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

- ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND T-MOBILE SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
- ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.
- BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (¾") AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ¾" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

- EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
- COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
- AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
- COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #1 SIEVE.
- AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). AND SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

- HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

- FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T-MOBILE ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.
- COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.
- CABLE LADDER RACK:
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY AND/OR ICE BRIDGE, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

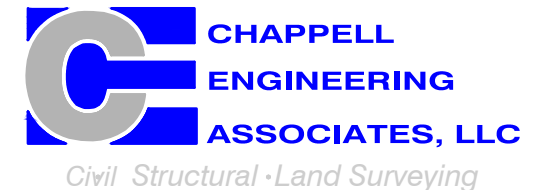
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA, AND MATCH INSTALLATION REQUIREMENTS.
- POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, ½ INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY HARGER (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.
- NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.
- CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

**T-MOBILE
NORTHEAST LLC**

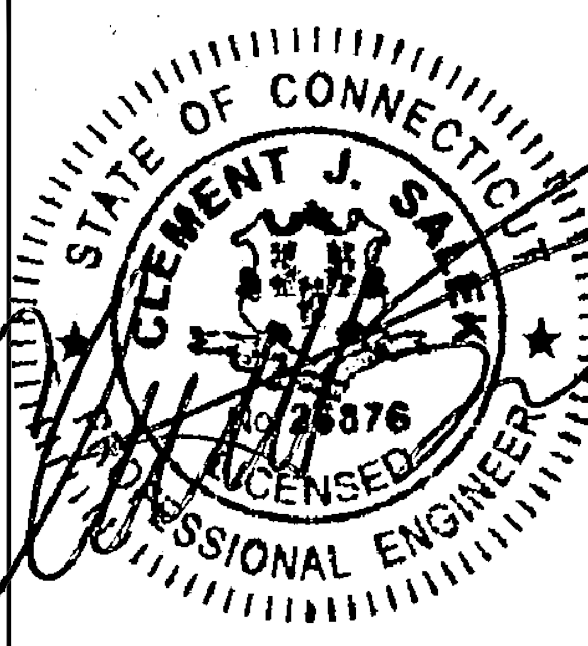
15 COMMERCE WAY, SUITE B
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(508) 286-2700



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134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
(508) 251-0720



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| SUBMITTALS | | | |
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SITE NUMBER:
CTHA523A

SITE ADDRESS:
270 HUBBARD ROAD
HIGGANUM, CT 06441

SHEET TITLE

GENERAL NOTES

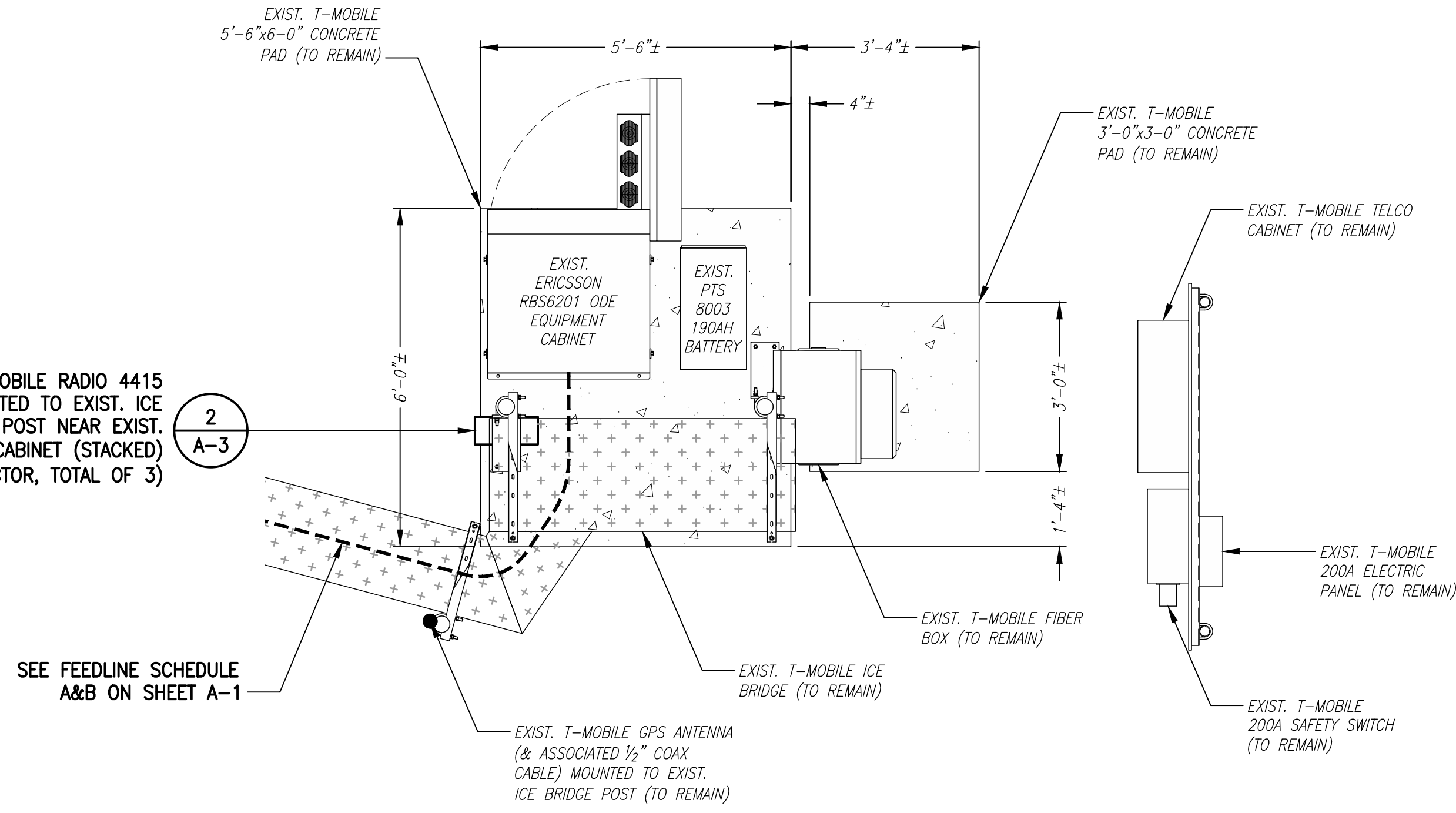
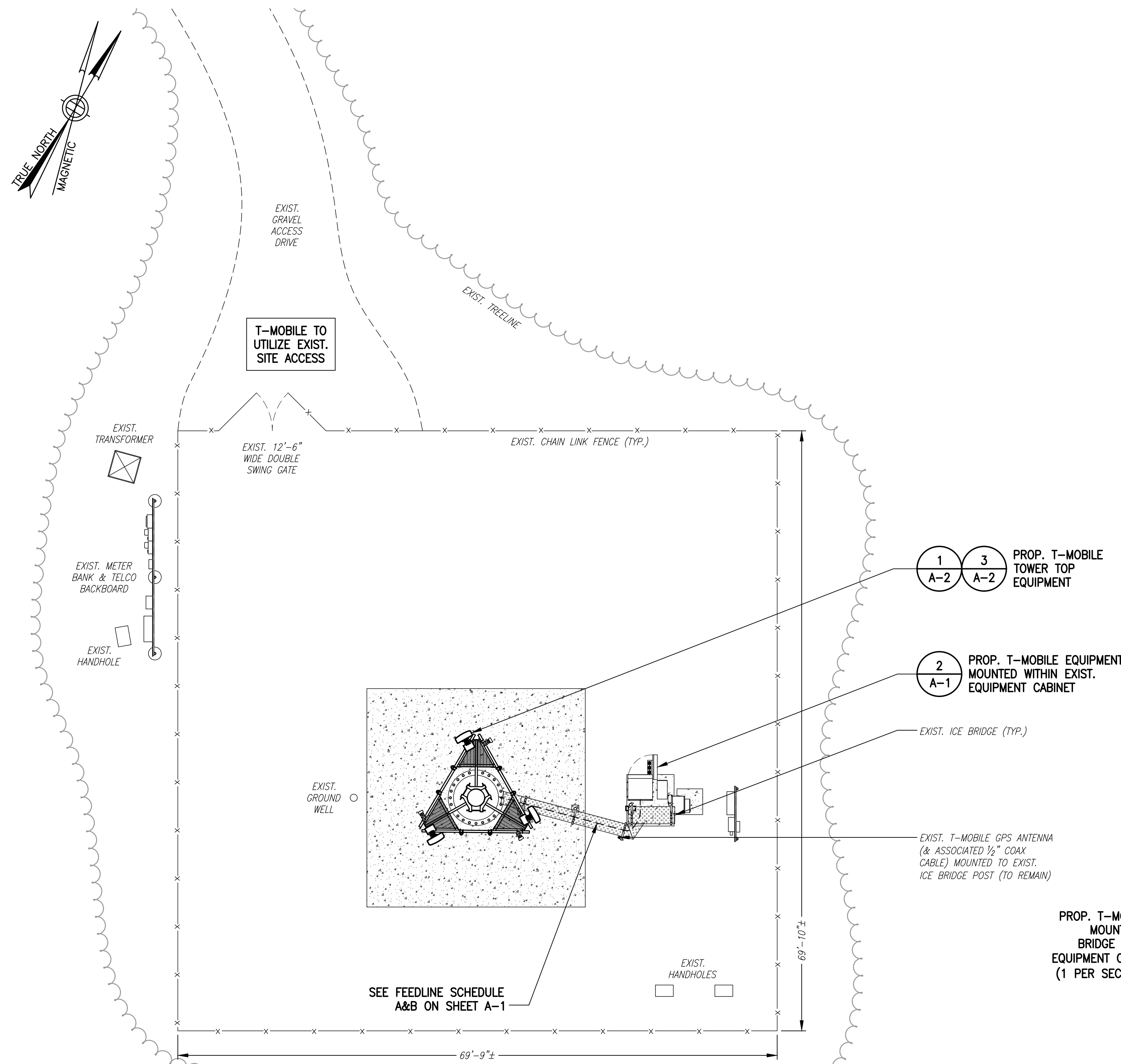
SHEET NUMBER

GN-1

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

| FEEDLINE SCHEDULE | FEEDLINES | LOCATION |
|-------------------|---|--------------------------------|
| A | EXISTING TO REMAIN: (12) 1/2" COAX CABLES | ROUTED PER STRUCTURAL ANALYSIS |
| B | PROPOSED: (1) 1-5/8" HCS FIBER CABLE | |

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



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

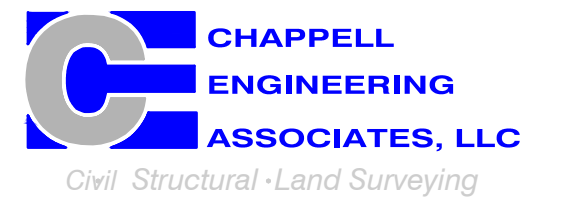
PROPOSED EQUIPMENT PLAN 3
 SCALE: 1/2" = 1'-0"
A-1

**T-MOBILE
 NORTHEAST LLC**

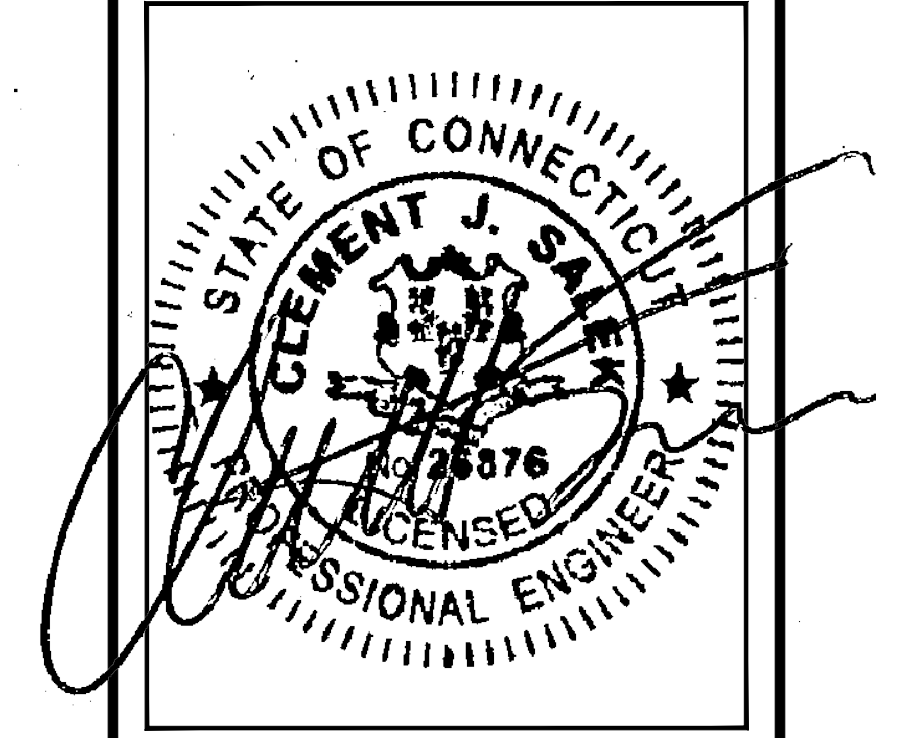
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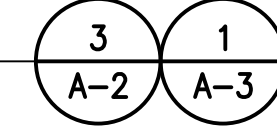
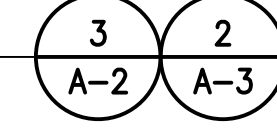
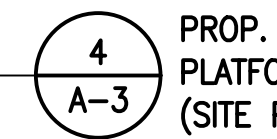
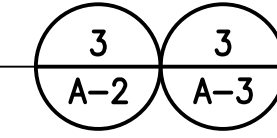
SHEET TITLE
**COMPOUND &
 EQUIPMENT PLAN**


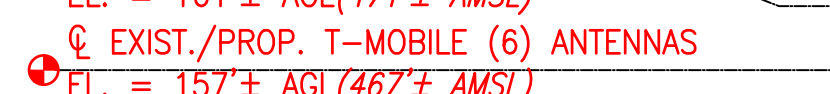
SHEET NUMBER
A-1

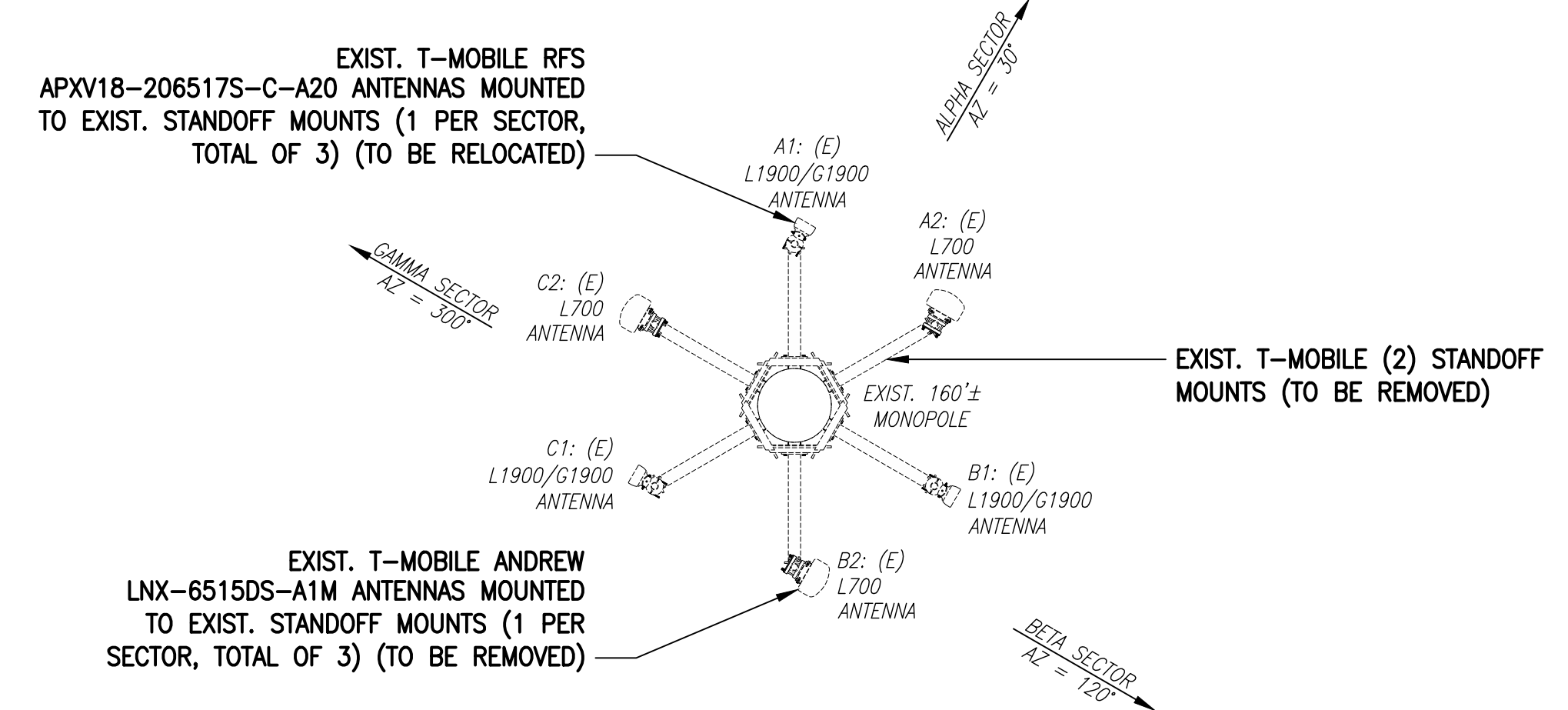
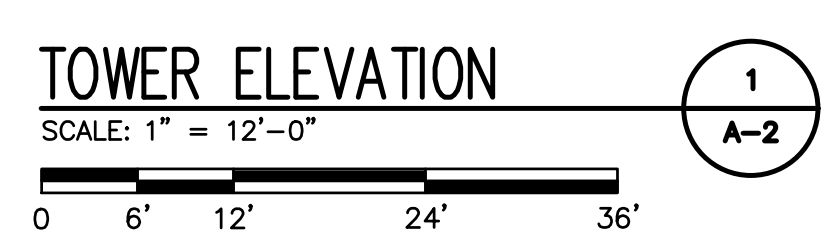
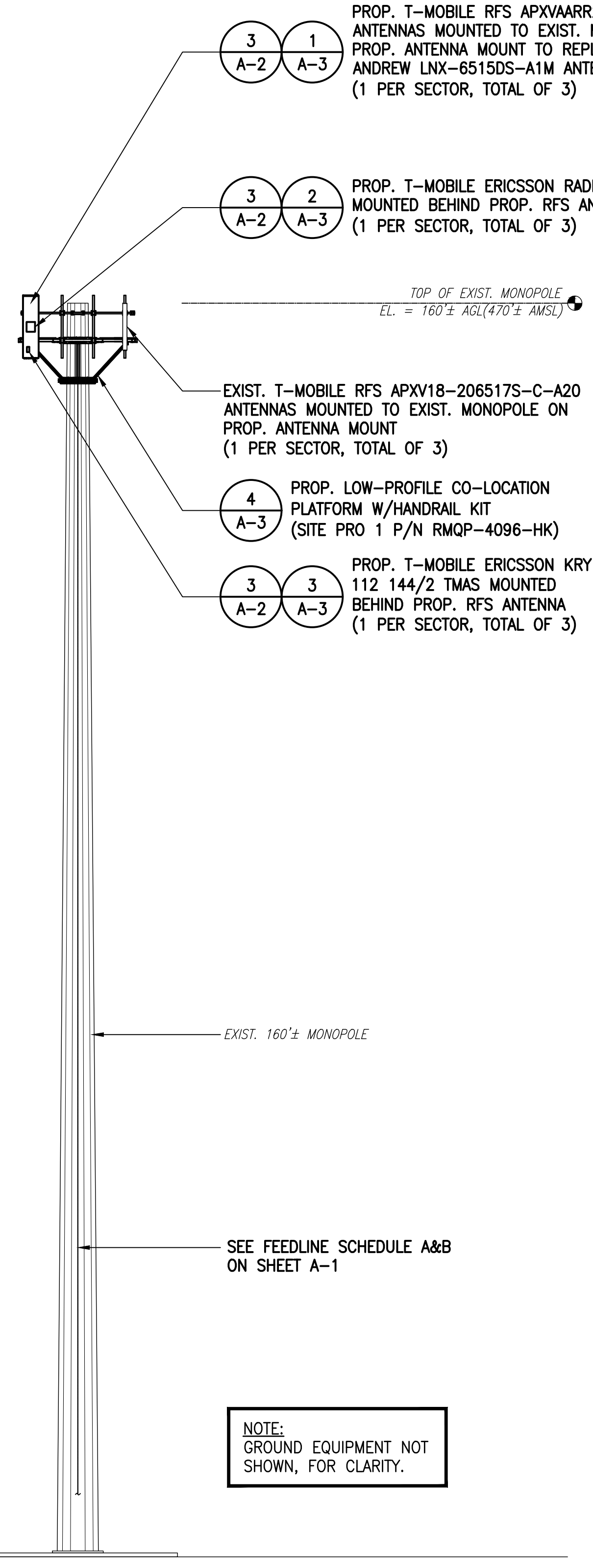
SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED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

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.

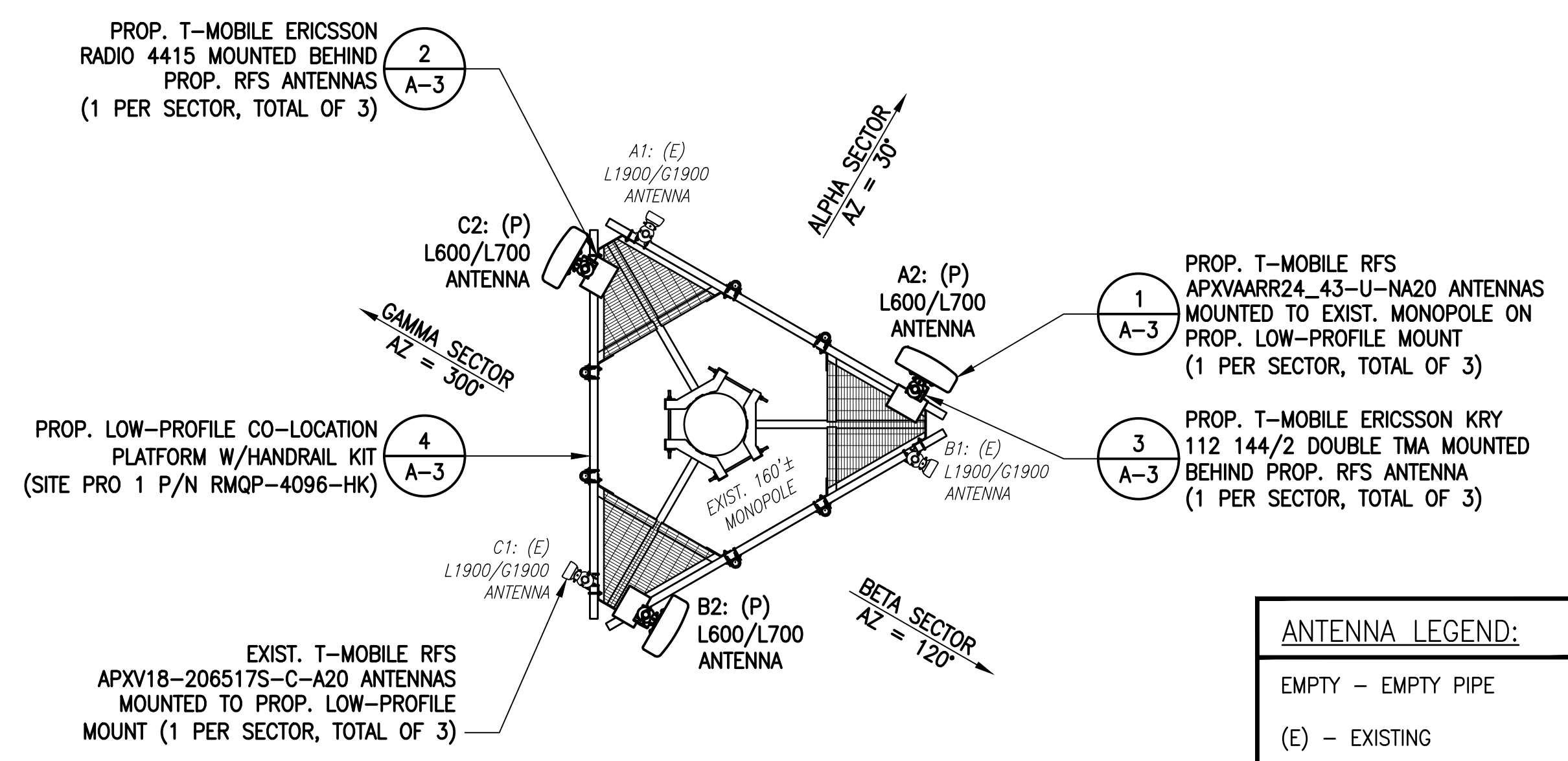
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
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- 
 PROP. T-MOBILE RFS APXVAARR24_43-U-NA20 ANTENNAS MOUNTED TO EXIST. MONOPOLE ON PROP. ANTENNA MOUNT TO REPLACE EXIST. ANDREW LNX-6515DS-A1M ANTENNAS (1 PER SECTOR, TOTAL OF 3)
- 
 PROP. T-MOBILE ERICSSON RADIO 4449 MOUNTED BEHIND PROP. RFS ANTENNA (1 PER SECTOR, TOTAL OF 3)
- 
 PROP. LOW-PROFILE CO-LOCATION PLATFORM W/HANDRAIL KIT (SITE PRO 1 P/N RMQP-4096-HK)
- 
 PROP. T-MOBILE ERICSSON KRY 112 144/2 TMA MOUNTED BEHIND PROP. RFS ANTENNA (1 PER SECTOR, TOTAL OF 3)

- 
 TOP OF PROP. T-MOBILE (3) ANTENNAS
 EL. = 161'± AGL(471'± AMSL)
- 
 EXIST./PROP. T-MOBILE (6) ANTENNAS
 EL. = 157'± AGL(467'± AMSL)



EXISTING ANTENNA PLAN
 SCALE: N.T.S.



PROPOSED ANTENNA PLAN
 SCALE: N.T.S.

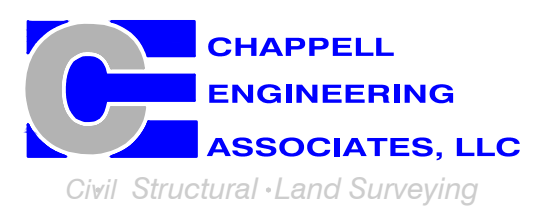
ANTENNA LEGEND:
 EMPTY - EMPTY PIPE
 (E) - EXISTING
 (P) - INSTALL

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

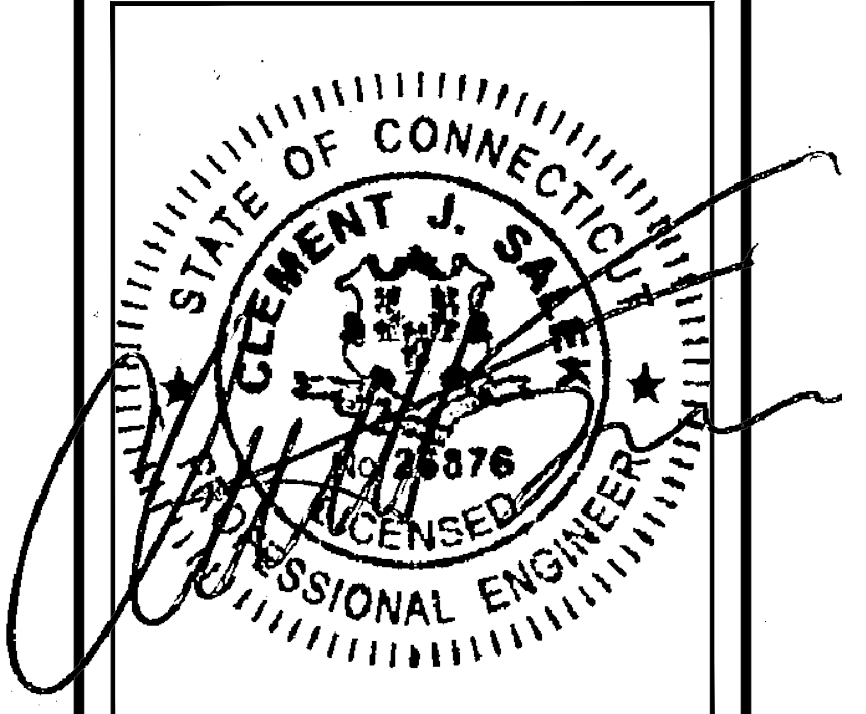
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 (508) 286-2700



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SITE ADDRESS:
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SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

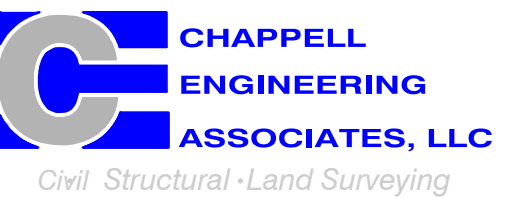
SHEET NUMBER
A-2

**T-MOBILE
NORTHEAST LLC**

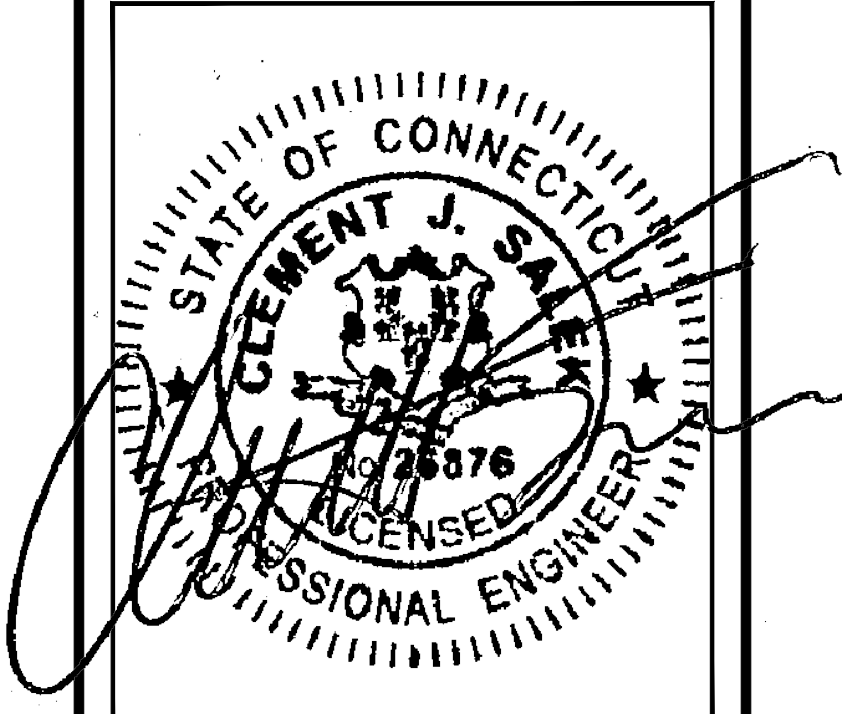
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HIGGANUM, CT 06441

SHEET TITLE

SITE DETAILS

SHEET NUMBER

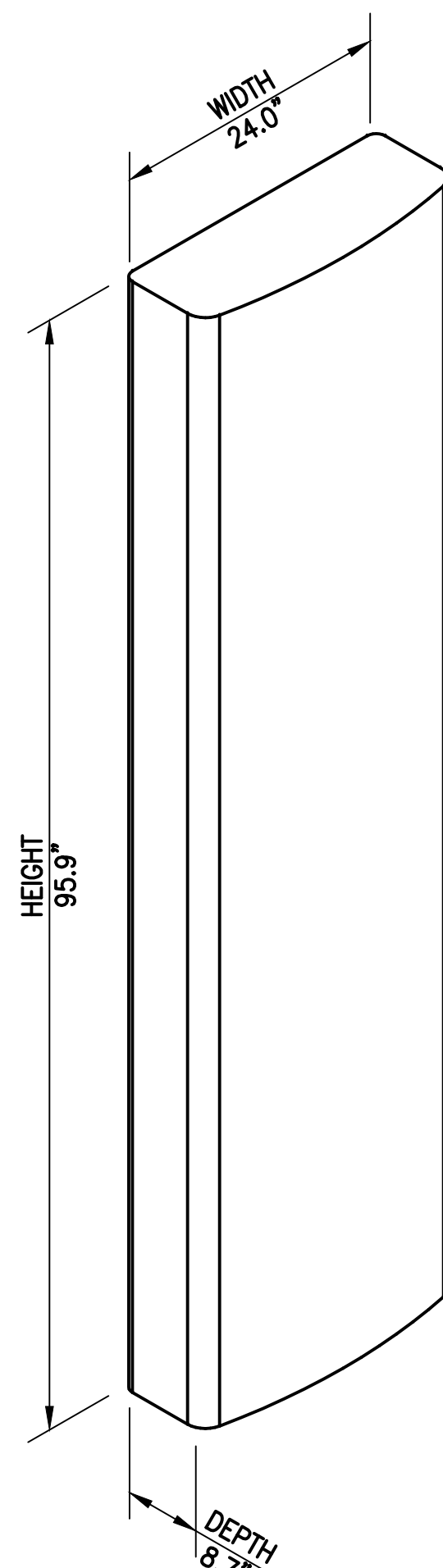
A-3

FINAL ANTENNA CONFIGURATION

| SECTOR | ANTENNA | RAD CENTER | AZIMUTH (TRUE NORTH) | MECHANICAL DOWNTILT | ELECTRICAL DOWNTILT | BAND | TMA/RADIOS | CABLES |
|--------|-----------------------------|------------|----------------------|---------------------|---------------------|-------------|---|--------------------------------------|
| ALPHA | RFS APXV18-206517S-C-A20 | 157'± AGL | 30° | 0° | 2° | L1900/G1900 | - | (2) 1/8" COAX CABLES |
| | RFS APXVAARR24_43-U-NA20 | 157'± AGL | 30° | 0° | 2° | L600/L700 | RADIO 4449 B71+B12 | (1) 6x12 (1-3/8") HCS CABLE (SHARED) |
| BETA | RFS APXV18-206517S-C-A20 | 157'± AGL | 120° | 0° | 2° | L1900/G1900 | - | (2) 1/8" COAX CABLES |
| | RFS APXVAARR24_43-U-NA20 | 157'± AGL | 120° | 0° | 2° | L600/L700 | RADIO 4449 B71+B12 | (1) 6x12 (1-3/8") HCS CABLE (SHARED) |
| GAMMA | RFS APXV18-206517S-C-A20 | 157'± AGL | 300° | 0° | 2° | L1900/G1900 | - | (2) 1/8" COAX CABLES |
| | RFS APXVAARR24_43-U-NA20 | 157'± AGL | 300° | 0° | 2° | L600/L700 | RADIO 4449 B71+B12 | (1) 6x12 (1-3/8") HCS CABLE (SHARED) |
| | | | | | | L2100 | RADIO 4415 B66A (AT CABINET) TWIN STYLE 1B AWS TMA | (2) 1/8" COAX CABLES |

CABLE NOTE: SEE FEEDLINE SCHEDULE A&B ON SHEET A-1

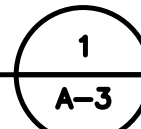
NOTE: RFDS REV1.1 - 04/24/19



RFS APXVAARR24_43-U-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS

SCALE: N.T.S.



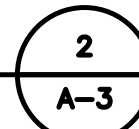
ERICSSON RADIO 4449 B12+B71
DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 LBS
1 PER SECTOR, TOTAL OF 3

RRU DETAIL

SCALE: N.T.S.



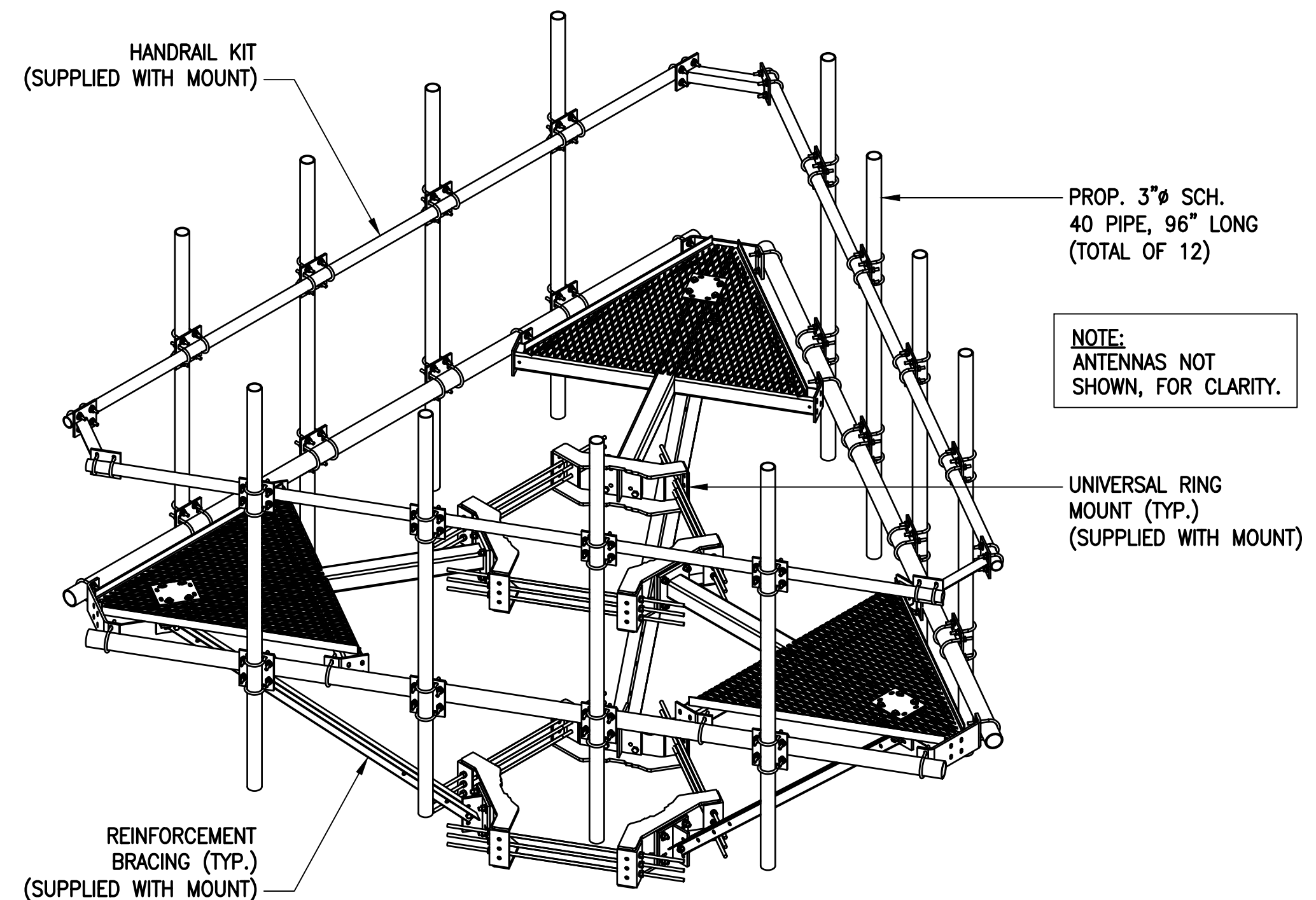
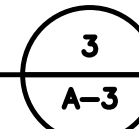
ERICSSON RRUS 4415 B66A
DIMENSIONS: 16.5"H x 13.4"W x 5.9"D
WEIGHT: 46 LBS
1 PER SECTOR, TOTAL OF 3



ERICSSON KRY 112 144/2
DIMENSIONS: 8.6"H x 6.6"W x 3.1"D
WEIGHT: 9.7 LBS
1 PER SECTOR, TOTAL OF 3

TMA DETAILS

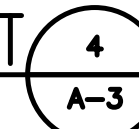
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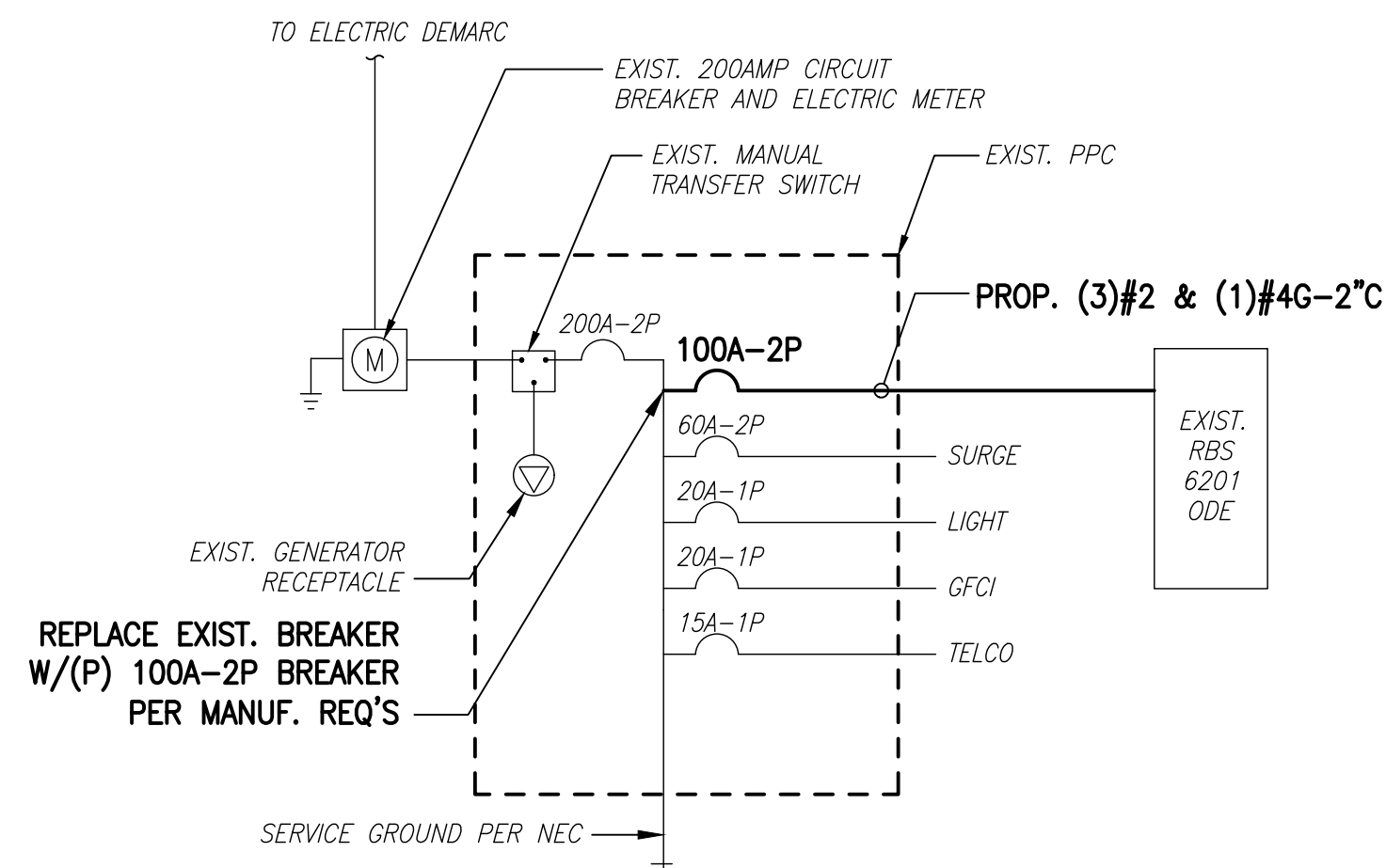


SITE-PRO 1 12'-6" LOW-PROFILE CO-LOCATION PLATFORM W/HANDRAIL KIT
PART NUMBERS: RMQP-4096-HK
(TOTAL OF 1 REQUIRED)

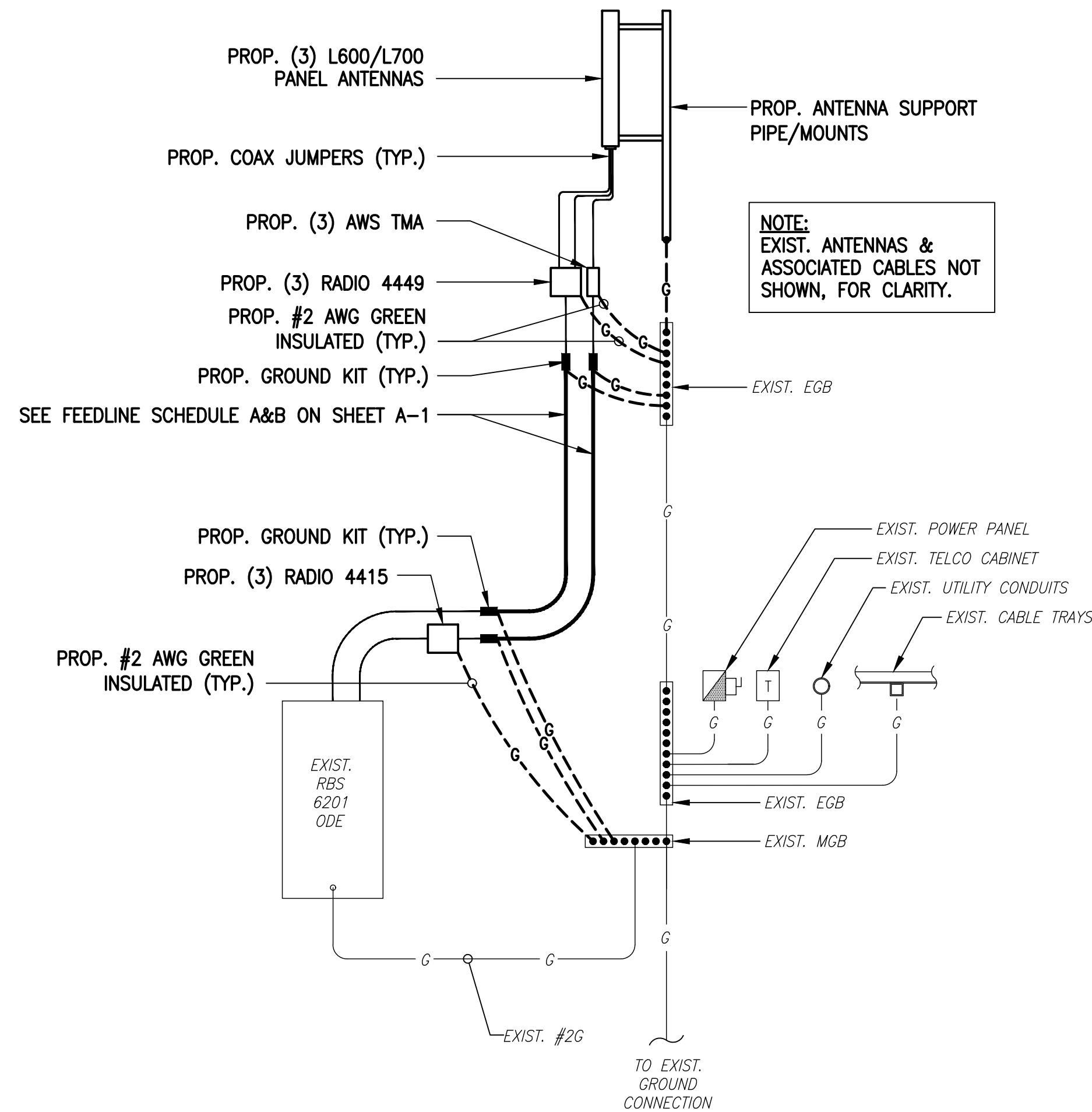
**TYPICAL SITE PRO 1
12'-6" PLATFORM MOUNT**

SCALE: N.T.S.

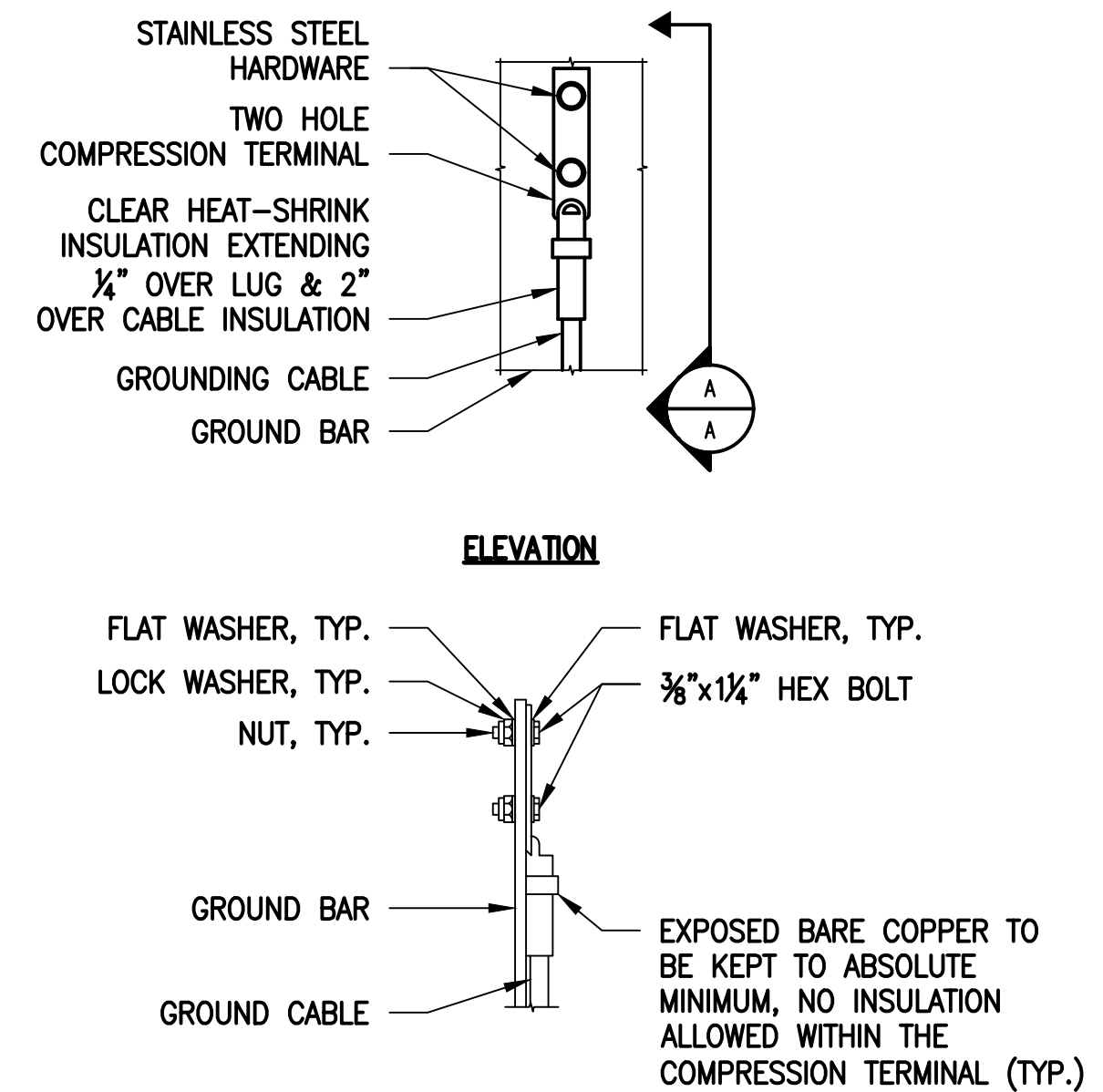




ONE LINE DIAGRAM
SCALE: NOT TO SCALE

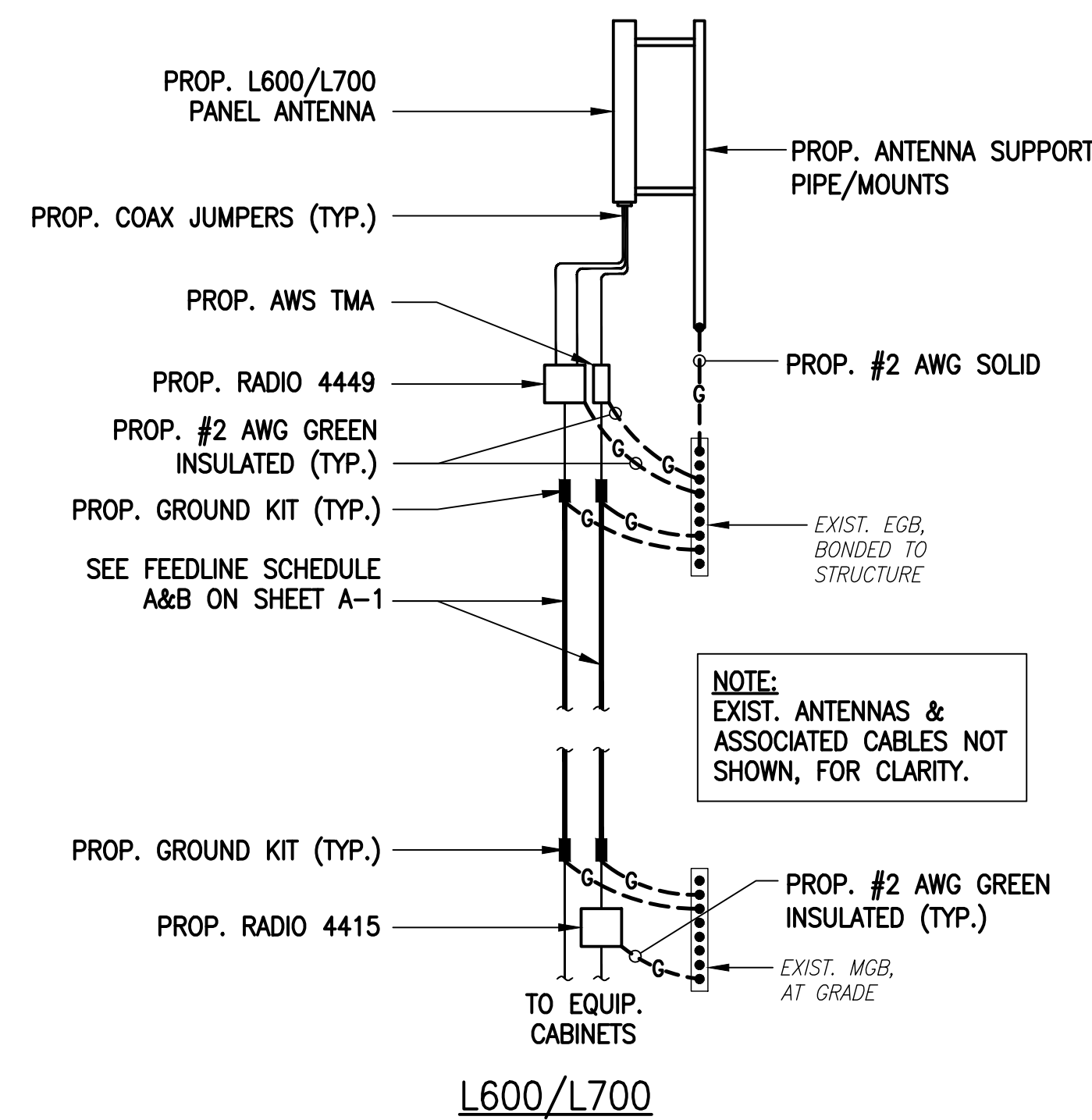


GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE

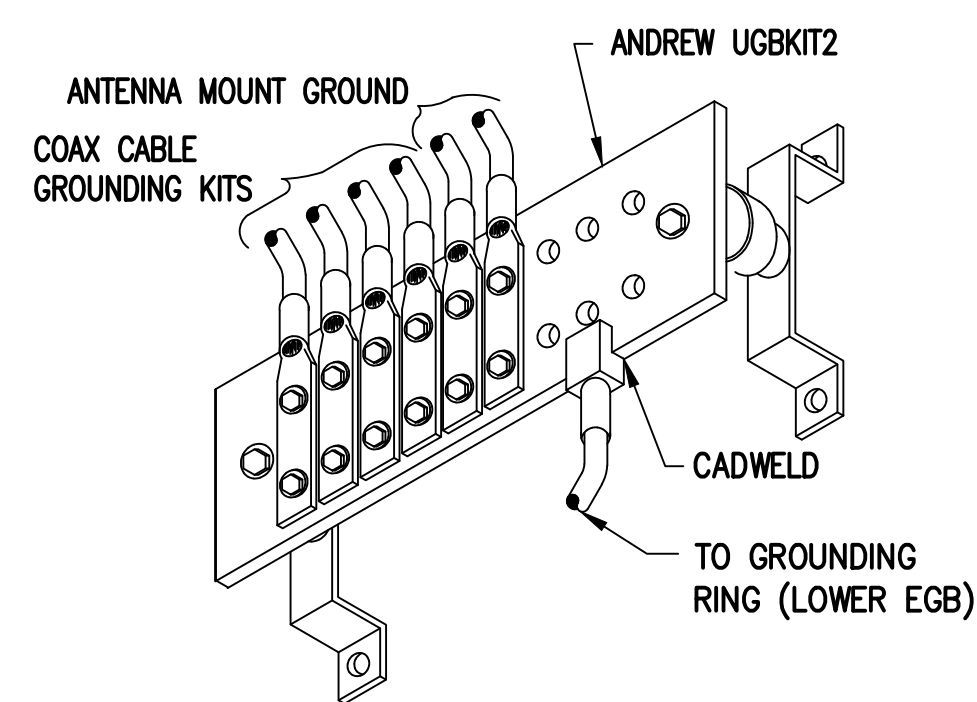


- NOTES:**
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 - CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

TYPICAL GROUND BAR CONNECTIONS DETAIL
SCALE: NOT TO SCALE



COAX CABLE CONNECTION AND GROUNDING DETAIL
SCALE: NOT TO SCALE



GROUND BAR (EGB)
SCALE: NOT TO SCALE

ELECTRICAL AND GROUNDING NOTES

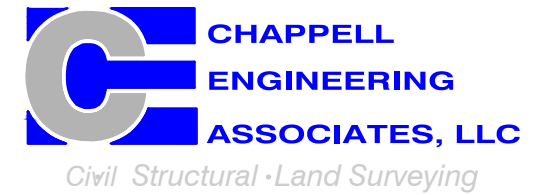
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED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

T-MOBILE NORTHEAST LLC

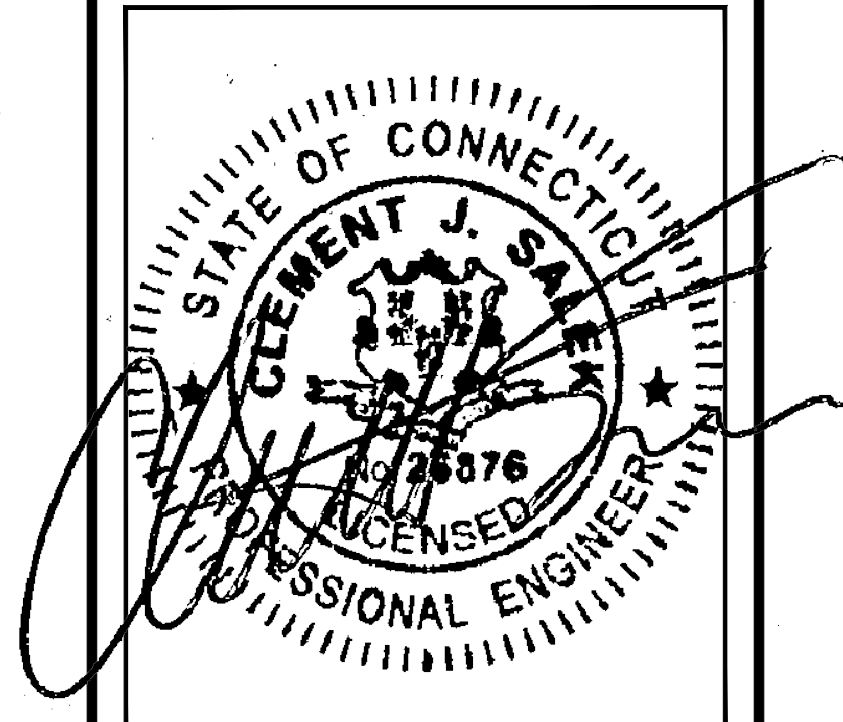
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700



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



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



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

| REV. | DATE | DESCRIPTION | BY |
|------|----------|-------------------------|-----|
| 2 | 09/17/19 | REVISED CONSTRUCTION | JRV |
| 1 | 05/24/19 | ISSUED FOR CONSTRUCTION | CMC |
| 0 | 05/08/19 | ISSUED FOR REVIEW | CMC |

**SITE NUMBER:
CTHA523A**

**SITE ADDRESS:
270 HUBBARD ROAD
HIGGANUM, CT 06441**

**SHEET TITLE
ELECTRICAL &
GROUNDING DETAILS**

SHEET NUMBER

E-1

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 160 ft Valmont Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01700-S

Customer Site Name: Haddam

Carrier Name: T-Mobile (App#: 116816, v2)

Carrier Site ID / Name: CTHA523A / Haddam

Site Location: 270 Hubbard Road

Higganum, Connecticut

Middlesex County

Latitude: 41.464089

Longitude: -72.541994

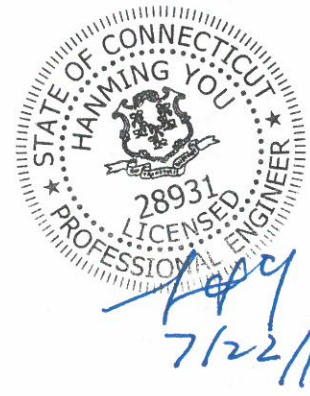
Analysis Result:

Max Structural Usage: 27.2% [Pass]

Max Foundation Usage: 21.7% [Pass]

Additional Usage Caused by New Mount: +4.1%

Report Prepared By: Walter Velez



Introduction

The purpose of this report is to summarize the analysis results on the 160 ft Valmont Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

| | |
|------------------------------|--|
| Tower Drawings | Original fabrications drawings prepared by Valmont Microflect. Dated 10-26-2000. Drawing No DD1504Z. Order No 12825-00. Site: 4275-024, Haddam, CT.. Previous structural report prepared by FDH Engineering, Inc. Dated 02-17-2003. Project No 15BFZE1400. |
| Foundation Drawing | Original foundation drawings prepared by Valmont Microflect. Dated 10-31-2000. Drawing No 3403-F. Order No 12825-00. Site: 4275-024, Haddam, CT. |
| Geotechnical Report | Geotechnical report prepared by Jaworski Geotech, Inc. Dated 10-27-2000. Project No 99564G. |
| Modification Drawings | N/A |

Analysis Criteria

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

| | |
|--|---|
| Wind Speed Used in the Analysis: (Based on IBC 2015) | Ultimate Design Wind Speed $V_{ult} = 130.0$ mph (3-Sec. Gust) |
| Wind Speed with Ice: | Nominal Design Wind Speed $V_{asd} = 101.0$ mph (3-Sec. Gust) |
| Operational Wind Speed: | 50 mph (3-Sec. Gust) with 3/4" radial ice concurrent |
| Standard/Codes: | 60 mph + 0" Radial ice |
| Exposure Category: | ANSI/TIA/EIA 222-G, 2015 IBC & 2018 Connecticut State Building Code |
| Structure Class: | B |
| Topographic Category: | II |
| Crest Height: | 1 |
| Seismic Parameters: | 0 ft |
| | $S_S = 0.176, S_1 = 0.061$ |

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

Existing Antennas, Mounts and Transmission Lines

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

| Items | Elevation (ft) | Qty. | Antenna Descriptions | Mount Type & Qty. | Transmission Lines | Owner |
|-------|----------------|------|------------------------------|---------------------------------------|--------------------|----------|
| 1 | 157.0 | 3 | RFS APXV18-206517S - Panel | (3) 32" Standoff (Valmont UDS-NPL) | (12) 7/8" Coax | T-Mobile |
| 2 | | 3 | Commscope LNX-6515DS - Panel | | | |
| 3 | | 3 | Kathrein 782 11056 Bias T's | | | |

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 |
|-------|----------------|------|-----------------------------------|--|-------------------------------------|----------|
| 4 | 157.0 | 3 | RFS APXV18-206517S-C-A20 - Panel | Low Profile Platform w/HRK & Reinforcement Kit (Sitepro RMQP-4096-HK) | (12) 7/8" Coax; (1) 1 5/8" Fiber | T-Mobile |
| 5 | | 3 | RFS APXVAARR24_43-U-NA20 - Panel | | | |
| 6 | | 3 | Ericsson KRY 112 144/1 TMA's | | | |
| 7 | | 3 | Ericsson Radio 4449 B71+B12 RRU's | | | |
| 8 | | 3 | Kathrein 782 11056 Bias T's | | | |

All transmission lines are considered running inside of the pole shafts. Please see the attached coax layout for the line placement considered in the analysis.

Analysis Results

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

| | Pole shafts | Anchor Bolts | Base Plate |
|-------------|--------------|--------------|--------------|
| Max. Usage: | 27.2% | 26.6% | 18.7% |
| Pass/Fail | Pass | Pass | Pass |

Foundations

| | Moment (Kip-Ft) | Shear (Kips) | Axial (Kips) |
|---------------------------|-----------------|--------------|--------------|
| Original Design Reactions | 6690.0 | 49.3 | 76.2 |
| Analysis Reactions | 2303.7 | 23.5 | 23.5 |
| Factored Reactions* | 9031.5 | 66.6 | 102.9 |

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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 ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.3420 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA-222-G standards, the 2015 IBC and the 2018 Connecticut State Building Code under the design basic wind speed specified in the Analysis Criteria.

Standard Conditions

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

Usage Diagram - Max Ratio 27.17% at 0.0ft

Structure: CT01700-S-SBA
Site Name: Haddam
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: B
Gh: 1.1

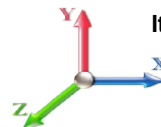
7/22/2019



Page: 1

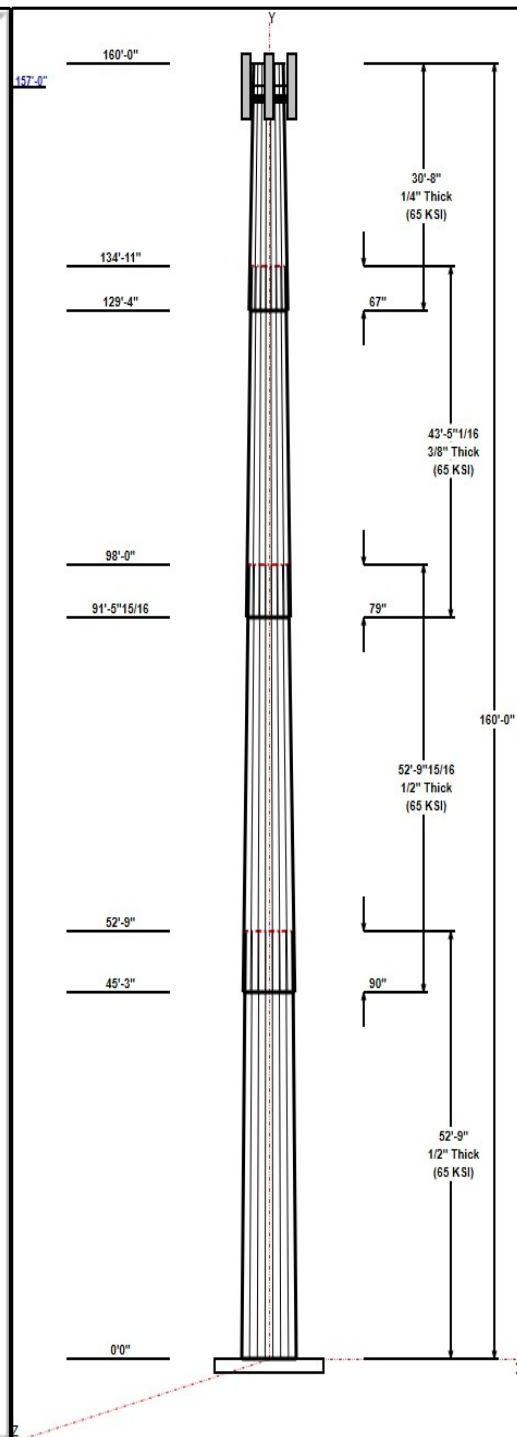
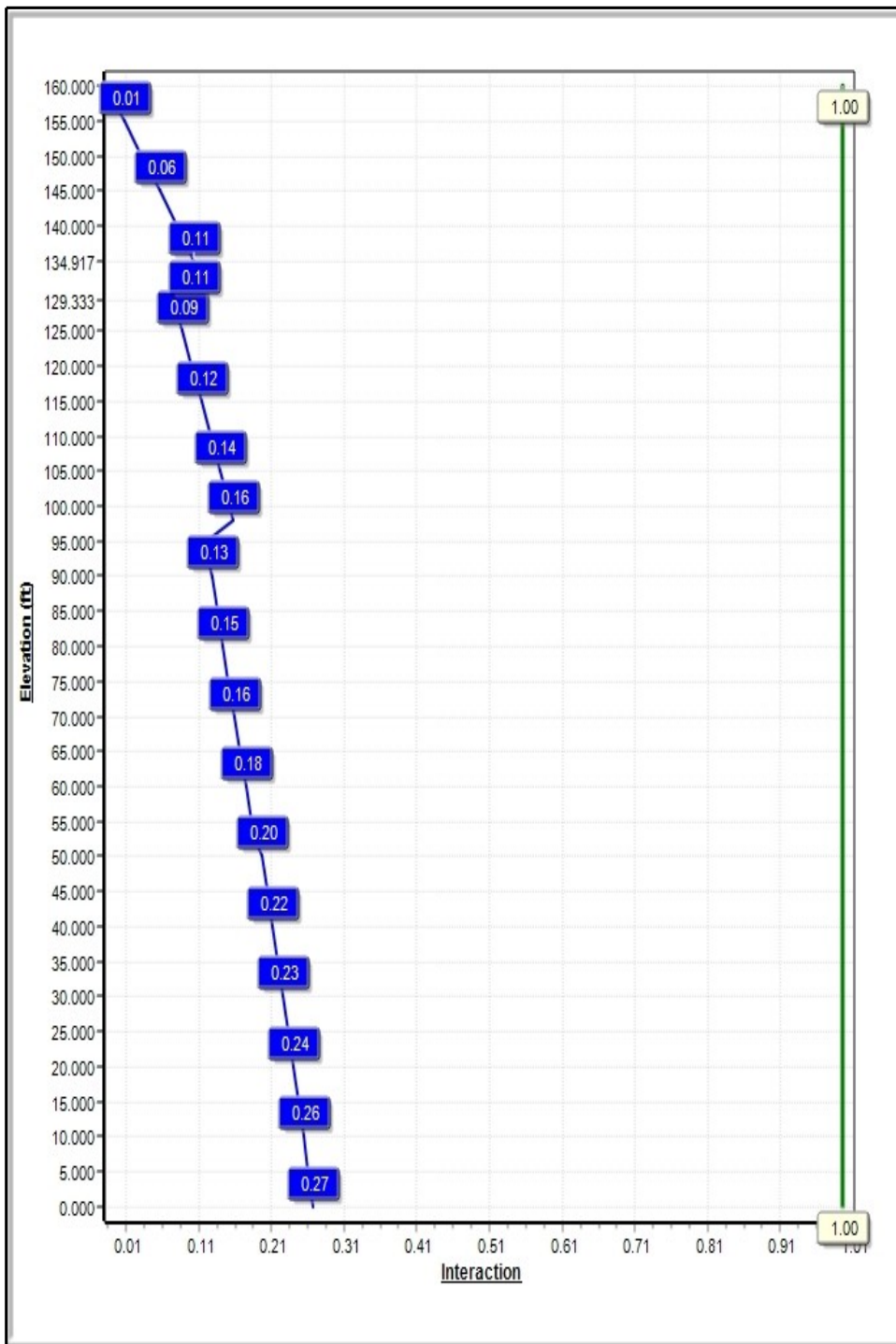
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 101 mph Wind



Iterations: 20

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Structure: CT01700-S-SBA

Type: Tapered
Site Name: Haddam
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.21000

7/22/2019

Page: 2



Shaft Properties

| Seq | Length (ft) | Top (in) | Bottom (in) | Thick (in) | Joint Type | Taper | Grade (ksi) |
|-----|-------------|----------|-------------|------------|------------|---------|-------------|
| 1 | 52.75 | 51.92 | 63.00 | 0.500 | | 0.21000 | 65 |
| 2 | 52.83 | 43.40 | 54.50 | 0.500 | Slip | 0.21000 | 65 |
| 3 | 43.42 | 36.42 | 45.54 | 0.375 | Slip | 0.21000 | 65 |
| 4 | 30.67 | 31.65 | 38.09 | 0.250 | Slip | 0.21000 | 65 |

Discrete Appurtenances

| Attach Elev (ft) | Force Elev (ft) | Qty | Description | Carrier |
|------------------|-----------------|-----|-------------------------|----------|
| 157.00 | 157.00 | 3 | RFS | T-Mobile |
| 157.00 | 157.00 | 3 | RFS | T-Mobile |
| 157.00 | 157.00 | 3 | Ericsson KRY 112 144/1 | T-Mobile |
| 157.00 | 157.00 | 3 | Ericsson Radio 4449 | T-Mobile |
| 157.00 | 157.00 | 3 | Kathrein 782 11056 Bias | T-Mobile |
| 157.00 | 157.00 | 1 | low profile platform | T-Mobile |

Linear Appurtenances

| Elev From (ft) | Elev To (ft) | Placement | Description | Carrier |
|----------------|--------------|-----------|--------------|----------|
| 3.00 | 157.00 | Inside | 1 5/8" Fiber | T-Mobile |
| 3.00 | 157.00 | Inside | 7/8" Coax | T-Mobile |

Anchor Bolts

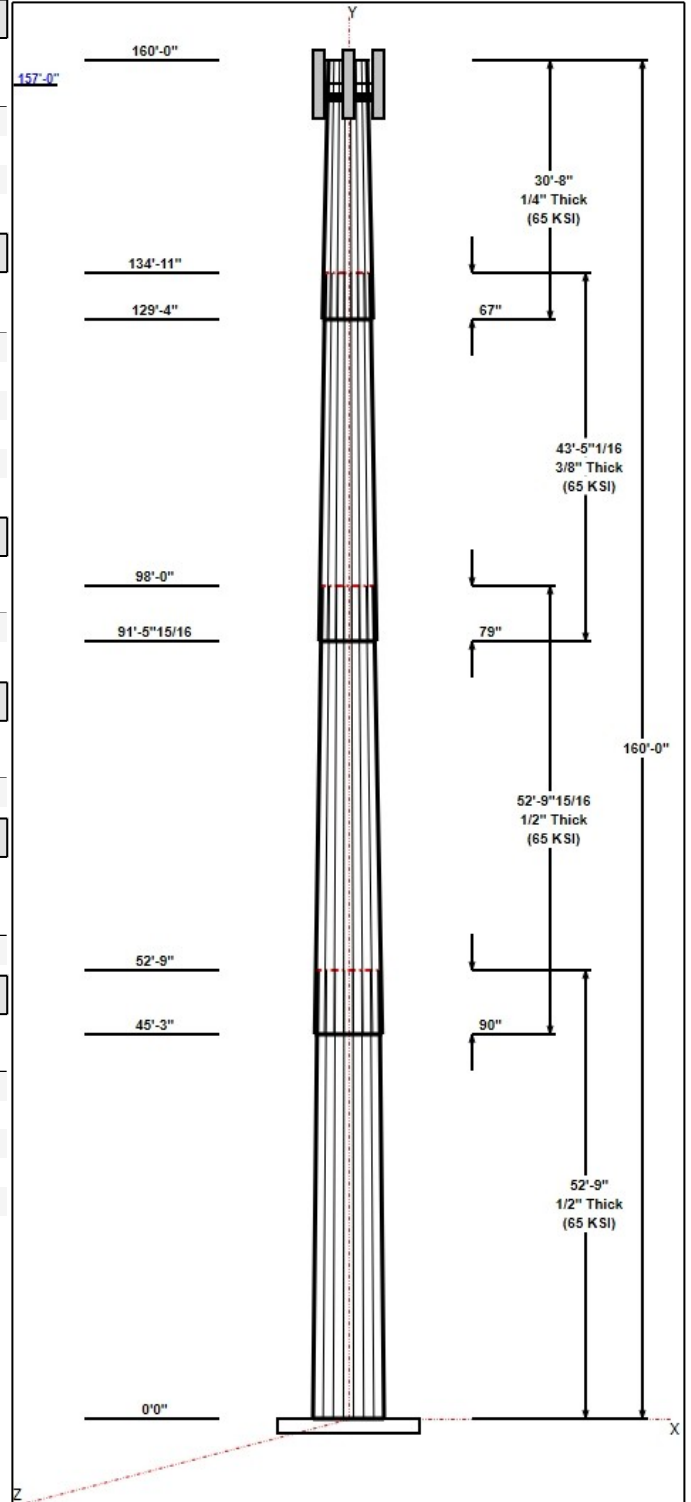
| Qty | Specifications | Grade (ksi) | Arrangement |
|-----|----------------|-------------|-------------|
| 24 | 2.25" 18J | 75.0 | Radial |

Base Plate

| Thickness (in) | Specifications (in) | Grade (ksi) | Geometry |
|----------------|---------------------|-------------|----------|
| 3.0000 | 77.7 | 60.0 | Polygon |

Reactions

| Load Case | Moment (FT-Kips) | Shear (Kips) | Axial (Kips) |
|----------------------------------|------------------|--------------|--------------|
| 1.2D + 1.6W 101 mph Wind | 2303.7 | 23.5 | 53.7 |
| 0.9D + 1.6W 101 mph Wind | 2292.7 | 23.5 | 40.3 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 587.5 | 6.0 | 73.0 |
| 1.2D + 1.0E | 156.3 | 1.4 | 53.7 |
| 0.9D + 1.0E | 155.5 | 1.4 | 40.3 |
| 1.0D + 1.0W 60 mph Wind | 506.4 | 5.2 | 44.7 |



Structure: CT01700-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Haddam
Height: 160.00 (ft)

7/22/2019



Page: 3



Shaft Properties

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| Sec. No. | Shape | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Overlap (in) | Weight (lb) |
|----------------------------|-------|-------------|------------|----------|------------|--------------|---------------|
| 1 | 16 | 52.750 | 0.5000 | 65 | | 0.00 | 16,308 |
| 2 | 16 | 52.830 | 0.5000 | 65 | Slip | 90.00 | 13,892 |
| 3 | 16 | 43.420 | 0.3750 | 65 | Slip | 79.00 | 7,176 |
| 4 | 16 | 30.667 | 0.2500 | 65 | Slip | 67.00 | 2,881 |
| Total Shaft Weight: | | | | | | | 40,257 |

Bottom

Top

| Sec. No. | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Taper |
|----------|----------|-----------|-------------|-----------|-----------|-----------|----------|-----------|-------------|-----------|-----------|-----------|----------|
| 1 | 63.00 | 0.00 | 99.69 | 49194.34 | 23.47 | 126.00 | 51.92 | 52.75 | 82.02 | 27398.9 | 19.06 | 103.8 | 0.210000 |
| 2 | 54.50 | 45.25 | 86.13 | 31724.59 | 20.09 | 109.00 | 43.40 | 98.08 | 68.43 | 15912.7 | 15.68 | 86.81 | 0.210000 |
| 3 | 45.54 | 91.50 | 54.02 | 13919.33 | 22.56 | 121.43 | 36.42 | 134.92 | 43.12 | 7075.89 | 17.73 | 97.11 | 0.210000 |
| 4 | 38.09 | 129.3 | 30.18 | 5458.82 | 28.71 | 152.36 | 31.65 | 160.00 | 25.04 | 3119.13 | 23.59 | 126.6 | 0.210000 |

Load Summary

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Discrete Appurtenances

| No. | Elev (ft) | Description | Qty | No Ice | | | Ice | | | Hor. Ecc. (ft) | Vert Ecc (ft) |
|----------------|-----------|-------------------------------|-----------|-----------------|-----------|-------------|-----------------|-----------|-------------|----------------|---------------|
| | | | | Weight (lb) | CaAa (sf) | CaAa Factor | Weight (lb) | CaAa (sf) | CaAa Factor | | |
| 1 | 157.00 | RFS APXV18-206517S-C-A20 | 3 | 26.40 | 5.17 | 0.79 | 119.67 | 7.556 | 0.79 | 0.00 | 0.00 |
| 2 | 157.00 | RFS APXVAARR24_43-U-NA20 | 3 | 128.00 | 20.24 | 0.72 | 560.71 | 22.149 | 0.72 | 0.00 | 0.00 |
| 3 | 157.00 | Ericsson KRY 112 144/1 TMA's | 3 | 11.02 | 0.35 | 0.60 | 21.87 | 0.757 | 0.60 | 0.00 | 0.00 |
| 4 | 157.00 | Ericsson Radio 4449 B71+B12 | 3 | 74.00 | 1.63 | 0.67 | 141.67 | 2.164 | 0.67 | 0.00 | 0.00 |
| 5 | 157.00 | Kathrein 782 11056 Bias T's | 3 | 1.80 | 0.15 | 0.60 | 11.16 | 0.355 | 0.60 | 0.00 | 0.00 |
| 6 | 157.00 | low profile platform (Sitepro | 1 | 2645.00 | 51.70 | 1.00 | 5427.32 | 90.131 | 1.00 | 0.00 | 0.00 |
| Totals: | | | 16 | 3,368.66 | | | 7,992.56 | | | | |

Linear Appurtenances

| Bottom Elev. (ft) | Top Elev. (ft) | Description | Exposed Width | Exposed |
|-------------------|----------------|------------------|---------------|---------|
| 3.00 | 157.00 | (1) 1 5/8" Fiber | 0.00 | Inside |
| 3.00 | 157.00 | (12) 7/8" Coax | 0.00 | Inside |

Shaft Section Properties

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 6

Increment Length: 5 (ft)

| Elev (ft) | Description | Thick (in) | Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Fpy (ksi) | S (in ³) | Weight (lb) |
|--------------|-----------------|---------------|-------------|----------------------------|--------------------------|--------------|--------------|--------------|-------------------------|----------------|
| 0.00 | | 0.5000 | 63.000 | 99.688 | 49194.3 | 23.47 | 126.00 | 76.0 | 1531. | 0.0 |
| 5.00 | | 0.5000 | 61.950 | 98.013 | 46756.4 | 23.05 | 123.90 | 76.5 | 1480. | 1681.8 |
| 10.00 | | 0.5000 | 60.900 | 96.338 | 44400.3 | 22.64 | 121.80 | 77.0 | 1430. | 1653.3 |
| 15.00 | | 0.5000 | 59.850 | 94.663 | 42124.7 | 22.22 | 119.70 | 77.4 | 1380. | 1624.8 |
| 20.00 | | 0.5000 | 58.800 | 92.988 | 39928.3 | 21.80 | 117.60 | 77.9 | 1332. | 1596.3 |
| 25.00 | | 0.5000 | 57.750 | 91.314 | 37809.6 | 21.38 | 115.50 | 78.4 | 1284. | 1567.8 |
| 30.00 | | 0.5000 | 56.700 | 89.639 | 35767.1 | 20.97 | 113.40 | 78.8 | 1237. | 1539.4 |
| 35.00 | | 0.5000 | 55.650 | 87.964 | 33799.6 | 20.55 | 111.30 | 79.3 | 1191. | 1510.9 |
| 40.00 | | 0.5000 | 54.600 | 86.290 | 31905.6 | 20.13 | 109.20 | 79.8 | 1146. | 1482.4 |
| 45.00 | | 0.5000 | 53.550 | 84.615 | 30083.7 | 19.71 | 107.10 | 80.3 | 1102. | 1453.9 |
| 45.25 | Bot - Section 2 | 0.5000 | 53.498 | 84.531 | 29994.5 | 19.69 | 107.00 | 80.3 | 1099. | 71.9 |
| 50.00 | | 0.5000 | 52.500 | 82.940 | 28332.5 | 19.29 | 105.00 | 80.7 | 1058. | 2732.6 |
| 52.75 | Top - Section 1 | 0.5000 | 52.922 | 83.614 | 29028.7 | 19.46 | 105.84 | 0.0 | 0.0 | 1558.6 |
| 55.00 | | 0.5000 | 52.450 | 82.860 | 28250.9 | 19.27 | 104.90 | 80.8 | 1056. | 637.3 |
| 60.00 | | 0.5000 | 51.400 | 81.186 | 26572.3 | 18.86 | 102.80 | 81.2 | 1014. | 1395.5 |
| 65.00 | | 0.5000 | 50.350 | 79.511 | 24961.5 | 18.44 | 100.70 | 81.7 | 972.5 | 1367.0 |
| 70.00 | | 0.5000 | 49.300 | 77.836 | 23417.2 | 18.02 | 98.60 | 82.2 | 931.7 | 1338.5 |
| 75.00 | | 0.5000 | 48.250 | 76.161 | 21937.9 | 17.60 | 96.50 | 82.5 | 891.9 | 1310.0 |
| 80.00 | | 0.5000 | 47.200 | 74.487 | 20522.3 | 17.19 | 94.40 | 82.5 | 852.9 | 1281.6 |
| 85.00 | | 0.5000 | 46.150 | 72.812 | 19168.9 | 16.77 | 92.30 | 82.5 | 814.8 | 1253.1 |
| 90.00 | | 0.5000 | 45.100 | 71.137 | 17876.4 | 16.35 | 90.20 | 82.5 | 777.5 | 1224.6 |
| 91.50 | Bot - Section 3 | 0.5000 | 44.786 | 70.636 | 17501.1 | 16.23 | 89.57 | 82.5 | 766.5 | 361.0 |
| 95.00 | | 0.5000 | 44.050 | 69.462 | 16643.3 | 15.93 | 88.10 | 82.5 | 741.1 | 1473.8 |
| 98.08 | Top - Section 2 | 0.3750 | 44.153 | 52.370 | 12679.7 | 21.83 | 117.74 | 0.0 | 0.0 | 1275.5 |
| 100.00 | | 0.3750 | 43.750 | 51.887 | 12332.6 | 21.62 | 116.67 | 78.1 | 552.9 | 340.6 |
| 105.00 | | 0.3750 | 42.700 | 50.631 | 11458.5 | 21.06 | 113.87 | 78.7 | 526.4 | 872.1 |
| 110.00 | | 0.3750 | 41.650 | 49.375 | 10626.7 | 20.50 | 111.07 | 79.4 | 500.5 | 850.7 |
| 115.00 | | 0.3750 | 40.600 | 48.119 | 9836.1 | 19.94 | 108.27 | 80.0 | 475.2 | 829.4 |
| 120.00 | | 0.3750 | 39.550 | 46.863 | 9085.8 | 19.39 | 105.47 | 80.6 | 450.6 | 808.0 |
| 125.00 | | 0.3750 | 38.500 | 45.607 | 8374.6 | 18.83 | 102.67 | 81.3 | 426.7 | 786.6 |
| 129.33 | Bot - Section 4 | 0.3750 | 37.590 | 44.518 | 7789.2 | 18.35 | 100.24 | 81.8 | 406.5 | 664.5 |
| 130.00 | | 0.3750 | 37.450 | 44.351 | 7701.6 | 18.27 | 99.87 | 81.9 | 403.4 | 169.1 |
| 134.92 | Top - Section 3 | 0.2500 | 36.917 | 29.242 | 4966.9 | 27.78 | 147.67 | 0.0 | 0.0 | 1227.8 |
| 135.00 | | 0.2500 | 36.900 | 29.228 | 4959.8 | 27.77 | 147.60 | 71.2 | 263.7 | 8.3 |
| 140.00 | | 0.2500 | 35.850 | 28.391 | 4545.6 | 26.93 | 143.40 | 72.1 | 248.7 | 490.2 |
| 145.00 | | 0.2500 | 34.800 | 27.554 | 4155.2 | 26.10 | 139.20 | 73.0 | 234.2 | 475.9 |
| 150.00 | | 0.2500 | 33.750 | 26.716 | 3787.7 | 25.26 | 135.00 | 74.0 | 220.1 | 461.7 |
| 155.00 | | 0.2500 | 32.700 | 25.879 | 3442.6 | 24.43 | 130.80 | 74.9 | 206.5 | 447.4 |
| 157.00 | | 0.2500 | 32.280 | 25.544 | 3310.7 | 24.09 | 129.12 | 75.3 | 201.2 | 175.0 |
| 160.00 | | 0.2500 | 31.650 | 25.041 | 3119.1 | 23.59 | 126.60 | 75.9 | 193.3 | 258.2 |

40257.3

Wind Loading - Shaft

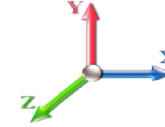
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 7

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 20

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 452.33 | 0.750 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 444.79 | 0.750 | 0.000 | 5.00 | 26.541 | 19.91 | 608.4 | 0.0 | 2018.2 |
| 10.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 437.25 | 0.750 | 0.000 | 5.00 | 26.095 | 19.57 | 598.2 | 0.0 | 1984.0 |
| 15.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 429.71 | 0.750 | 0.000 | 5.00 | 25.649 | 19.24 | 588.0 | 0.0 | 1949.8 |
| 20.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 422.18 | 0.750 | 0.000 | 5.00 | 25.203 | 18.90 | 577.7 | 0.0 | 1915.6 |
| 25.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 414.64 | 0.750 | 0.000 | 5.00 | 24.757 | 18.57 | 567.5 | 0.0 | 1881.4 |
| 30.00 | | 1.00 | 0.70 | 17.381 | 19.12 | 407.27 | 0.750 | 0.000 | 5.00 | 24.311 | 18.23 | 557.8 | 0.0 | 1847.2 |
| 35.00 | | 1.00 | 0.73 | 18.163 | 19.98 | 408.63 | 0.750 | 0.000 | 5.00 | 23.865 | 17.90 | 572.2 | 0.0 | 1813.0 |
| 40.00 | | 1.00 | 0.76 | 18.870 | 20.76 | 408.64 | 0.750 | 0.000 | 5.00 | 23.419 | 17.56 | 583.3 | 0.0 | 1778.8 |
| 45.00 | | 1.00 | 0.79 | 19.516 | 21.47 | 407.58 | 0.750 | 0.000 | 5.00 | 22.973 | 17.23 | 591.8 | 0.0 | 1744.6 |
| 45.25 | Bot - Section 2 | 1.00 | 0.79 | 19.547 | 21.50 | 407.50 | 0.750 | 0.000 | 0.25 | 1.137 | 0.85 | 29.3 | 0.0 | 86.3 |
| 50.00 | | 1.00 | 0.81 | 20.112 | 22.12 | 405.65 | 0.750 | 0.000 | 4.75 | 21.793 | 16.34 | 578.6 | 0.0 | 3279.2 |
| 52.75 | Top - Section 1 | 1.00 | 0.82 | 20.422 | 22.46 | 404.27 | 0.750 | 0.000 | 2.75 | 12.433 | 9.32 | 335.2 | 0.0 | 1870.3 |
| 55.00 | | 1.00 | 0.83 | 20.667 | 22.73 | 410.82 | 0.750 | 0.000 | 2.25 | 10.072 | 7.55 | 274.8 | 0.0 | 764.7 |
| 60.00 | | 1.00 | 0.85 | 21.187 | 23.31 | 407.63 | 0.750 | 0.000 | 5.00 | 22.059 | 16.54 | 616.9 | 0.0 | 1674.6 |
| 65.00 | | 1.00 | 0.87 | 21.678 | 23.85 | 403.89 | 0.750 | 0.000 | 5.00 | 21.613 | 16.21 | 618.5 | 0.0 | 1640.4 |
| 70.00 | | 1.00 | 0.89 | 22.142 | 24.36 | 399.68 | 0.750 | 0.000 | 5.00 | 21.167 | 15.88 | 618.6 | 0.0 | 1606.2 |
| 75.00 | | 1.00 | 0.91 | 22.582 | 24.84 | 395.04 | 0.750 | 0.000 | 5.00 | 20.721 | 15.54 | 617.7 | 0.0 | 1572.1 |
| 80.00 | | 1.00 | 0.93 | 23.003 | 25.30 | 390.03 | 0.750 | 0.000 | 5.00 | 20.275 | 15.21 | 615.6 | 0.0 | 1537.9 |
| 85.00 | | 1.00 | 0.94 | 23.404 | 25.74 | 384.67 | 0.750 | 0.000 | 5.00 | 19.829 | 14.87 | 612.6 | 0.0 | 1503.7 |
| 90.00 | | 1.00 | 0.96 | 23.790 | 26.17 | 379.00 | 0.750 | 0.000 | 5.00 | 19.383 | 14.54 | 608.7 | 0.0 | 1469.5 |
| 91.50 | Bot - Section 3 | 1.00 | 0.96 | 23.902 | 26.29 | 377.24 | 0.750 | 0.000 | 1.50 | 5.715 | 4.29 | 180.3 | 0.0 | 433.2 |
| 95.00 | | 1.00 | 0.97 | 24.160 | 26.58 | 373.04 | 0.750 | 0.000 | 3.50 | 13.445 | 10.08 | 428.8 | 0.0 | 1768.6 |
| 98.08 | Top - Section 2 | 1.00 | 0.98 | 24.381 | 26.82 | 369.24 | 0.750 | 0.000 | 3.08 | 11.639 | 8.73 | 374.6 | 0.0 | 1530.6 |
| 100.00 | | 1.00 | 0.99 | 24.517 | 26.97 | 373.23 | 0.750 | 0.000 | 1.92 | 7.170 | 5.38 | 232.0 | 0.0 | 408.7 |
| 105.00 | | 1.00 | 1.00 | 24.861 | 27.35 | 366.82 | 0.750 | 0.000 | 5.00 | 18.363 | 13.77 | 602.6 | 0.0 | 1046.5 |
| 110.00 | | 1.00 | 1.02 | 25.194 | 27.71 | 360.18 | 0.750 | 0.000 | 5.00 | 17.917 | 13.44 | 595.8 | 0.0 | 1020.9 |
| 115.00 | | 1.00 | 1.03 | 25.516 | 28.07 | 353.34 | 0.750 | 0.000 | 5.00 | 17.471 | 13.10 | 588.4 | 0.0 | 995.3 |
| 120.00 | | 1.00 | 1.04 | 25.828 | 28.41 | 346.30 | 0.750 | 0.000 | 5.00 | 17.025 | 12.77 | 580.4 | 0.0 | 969.6 |
| 125.00 | | 1.00 | 1.05 | 26.131 | 28.74 | 339.08 | 0.750 | 0.000 | 5.00 | 16.579 | 12.43 | 571.9 | 0.0 | 944.0 |
| 129.33 | Bot - Section 4 | 1.00 | 1.06 | 26.387 | 29.03 | 332.68 | 0.750 | 0.000 | 4.33 | 14.008 | 10.51 | 487.9 | 0.0 | 797.4 |
| 130.00 | | 1.00 | 1.07 | 26.425 | 29.07 | 331.68 | 0.750 | 0.000 | 0.67 | 2.154 | 1.62 | 75.1 | 0.0 | 203.0 |
| 134.92 | Top - Section 3 | 1.00 | 1.08 | 26.707 | 29.38 | 324.25 | 0.750 | 0.000 | 4.92 | 15.638 | 11.73 | 551.3 | 0.0 | 1473.4 |
| 135.00 | | 1.00 | 1.08 | 26.712 | 29.38 | 328.58 | 0.750 | 0.000 | 0.08 | 0.261 | 0.20 | 9.2 | 0.0 | 9.9 |
| 140.00 | | 1.00 | 1.09 | 26.991 | 29.69 | 320.89 | 0.750 | 0.000 | 5.00 | 15.453 | 11.59 | 550.6 | 0.0 | 588.2 |
| 145.00 | | 1.00 | 1.10 | 27.263 | 29.99 | 313.06 | 0.750 | 0.000 | 5.00 | 15.007 | 11.26 | 540.1 | 0.0 | 571.1 |
| 150.00 | | 1.00 | 1.11 | 27.528 | 30.28 | 305.09 | 0.750 | 0.000 | 5.00 | 14.561 | 10.92 | 529.1 | 0.0 | 554.0 |
| 155.00 | | 1.00 | 1.12 | 27.787 | 30.57 | 296.98 | 0.750 | 0.000 | 5.00 | 14.115 | 10.59 | 517.7 | 0.0 | 536.9 |
| 157.00 | Appurtenance(s) | 1.00 | 1.12 | 27.889 | 30.68 | 293.71 | 0.750 | 0.000 | 2.00 | 5.521 | 4.14 | 203.3 | 0.0 | 210.0 |
| 160.00 | | 1.00 | 1.13 | 28.040 | 30.84 | 288.75 | 0.750 | 0.000 | 3.00 | 8.148 | 6.11 | 301.6 | 0.0 | 309.8 |
| Totals: | | | | | | | | | 160.00 | | | 18,692.0 | | 48,308.7 |

Discrete Appurtenance Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

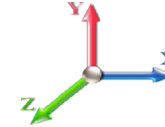


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Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|-----------------|----------------|---------------|-----------------|---------------|---------------|
| 1 | 157.00 | RFS | 3 | 27.889 | 30.678 | 0.59 | 0.75 | 9.19 | 95.04 | 0.000 | 0.000 | 451.08 | 0.00 | 0.00 |
| 2 | 157.00 | RFS | 3 | 27.889 | 30.678 | 0.54 | 0.75 | 32.79 | 460.80 | 0.000 | 0.000 | 1609.44 | 0.00 | 0.00 |
| 3 | 157.00 | Ericsson KRY 112 144/1 | 3 | 27.889 | 30.678 | 0.45 | 0.75 | 0.47 | 39.67 | 0.000 | 0.000 | 23.19 | 0.00 | 0.00 |
| 4 | 157.00 | Ericsson Radio 4449 | 3 | 27.889 | 30.678 | 0.50 | 0.75 | 2.46 | 266.40 | 0.000 | 0.000 | 120.61 | 0.00 | 0.00 |
| 5 | 157.00 | Kathrein 782 11056 Bias | 3 | 27.889 | 30.678 | 0.45 | 0.75 | 0.20 | 6.48 | 0.000 | 0.000 | 9.94 | 0.00 | 0.00 |
| 6 | 157.00 | low profile platform | 1 | 27.889 | 30.678 | 1.00 | 1.00 | 51.70 | 3174.00 | 0.000 | 0.000 | 2537.69 | 0.00 | 0.00 |
| Totals: | | | | | | | | | 4,042.39 | | | 4,751.95 | | |

Total Applied Force Summary

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

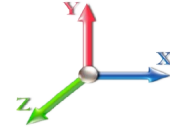


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Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|--------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 608.41 | 2035.66 | 0.00 | 0.00 |
| 10.00 | | 598.19 | 2027.68 | 0.00 | 0.00 |
| 15.00 | | 587.96 | 1993.48 | 0.00 | 0.00 |
| 20.00 | | 577.74 | 1959.29 | 0.00 | 0.00 |
| 25.00 | | 567.51 | 1925.10 | 0.00 | 0.00 |
| 30.00 | | 557.76 | 1890.91 | 0.00 | 0.00 |
| 35.00 | | 572.18 | 1856.71 | 0.00 | 0.00 |
| 40.00 | | 583.32 | 1822.52 | 0.00 | 0.00 |
| 45.00 | | 591.79 | 1788.33 | 0.00 | 0.00 |
| 45.25 | | 29.33 | 88.52 | 0.00 | 0.00 |
| 50.00 | | 578.57 | 3320.67 | 0.00 | 0.00 |
| 52.75 | | 335.16 | 1894.29 | 0.00 | 0.00 |
| 55.00 | | 274.78 | 784.40 | 0.00 | 0.00 |
| 60.00 | | 616.94 | 1718.31 | 0.00 | 0.00 |
| 65.00 | | 618.45 | 1684.12 | 0.00 | 0.00 |
| 70.00 | | 618.65 | 1649.93 | 0.00 | 0.00 |
| 75.00 | | 617.67 | 1615.74 | 0.00 | 0.00 |
| 80.00 | | 615.62 | 1581.54 | 0.00 | 0.00 |
| 85.00 | | 612.59 | 1547.35 | 0.00 | 0.00 |
| 90.00 | | 608.67 | 1513.16 | 0.00 | 0.00 |
| 91.50 | | 180.32 | 446.29 | 0.00 | 0.00 |
| 95.00 | | 428.78 | 1799.20 | 0.00 | 0.00 |
| 98.08 | | 374.59 | 1557.52 | 0.00 | 0.00 |
| 100.00 | | 232.04 | 425.46 | 0.00 | 0.00 |
| 105.00 | | 602.62 | 1090.22 | 0.00 | 0.00 |
| 110.00 | | 595.85 | 1064.58 | 0.00 | 0.00 |
| 115.00 | | 588.44 | 1038.94 | 0.00 | 0.00 |
| 120.00 | | 580.43 | 1013.29 | 0.00 | 0.00 |
| 125.00 | | 571.85 | 987.65 | 0.00 | 0.00 |
| 129.33 | | 487.89 | 835.22 | 0.00 | 0.00 |
| 130.00 | | 75.12 | 208.78 | 0.00 | 0.00 |
| 134.92 | | 551.29 | 1516.31 | 0.00 | 0.00 |
| 135.00 | | 9.21 | 10.68 | 0.00 | 0.00 |
| 140.00 | | 550.56 | 631.88 | 0.00 | 0.00 |
| 145.00 | | 540.06 | 614.78 | 0.00 | 0.00 |
| 150.00 | | 529.11 | 597.68 | 0.00 | 0.00 |
| 155.00 | | 517.72 | 580.59 | 0.00 | 0.00 |
| 157.00 | (16) attachments | 4955.21 | 4269.84 | 0.00 | 0.00 |
| 160.00 | | 301.58 | 309.84 | 0.00 | 0.00 |
| | Totals: | 23,443.95 | 53,696.44 | 0.00 | 0.00 |

Calculated Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

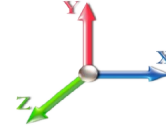


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Load Case: 1.2D + 1.6W 101 mph Wind

Iterations 20

Dead Load Factor 1.20
Wind Load Factor 1.60



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -53.68 | -23.47 | 0.00 | -2303.6 | 0.00 | 2303.68 | 6819.80 | 3409.90 | 17589.7 | 8732.29 | 0.00 | 0.000 | 0.000 | 0.272 |
| 5.00 | -51.62 | -22.92 | 0.00 | -2186.3 | 0.00 | 2186.31 | 6746.92 | 3373.46 | 17107.0 | 8492.68 | 0.04 | -0.065 | 0.000 | 0.265 |
| 10.00 | -49.57 | -22.38 | 0.00 | -2071.6 | 0.00 | 2071.69 | 6672.61 | 3336.30 | 16627.2 | 8254.47 | 0.14 | -0.130 | 0.000 | 0.258 |
| 15.00 | -47.55 | -21.84 | 0.00 | -1959.8 | 0.00 | 1959.81 | 6596.88 | 3298.44 | 16150.4 | 8017.76 | 0.31 | -0.194 | 0.000 | 0.252 |
| 20.00 | -45.57 | -21.30 | 0.00 | -1850.6 | 0.00 | 1850.62 | 6519.72 | 3259.86 | 15676.8 | 7782.62 | 0.55 | -0.259 | 0.000 | 0.245 |
| 25.00 | -43.63 | -20.77 | 0.00 | -1744.1 | 0.00 | 1744.11 | 6441.14 | 3220.57 | 15206.5 | 7549.16 | 0.85 | -0.323 | 0.000 | 0.238 |
| 30.00 | -41.72 | -20.25 | 0.00 | -1640.2 | 0.00 | 1640.24 | 6361.14 | 3180.57 | 14739.8 | 7317.48 | 1.23 | -0.386 | 0.000 | 0.231 |
| 35.00 | -39.84 | -19.71 | 0.00 | -1538.9 | 0.00 | 1538.99 | 6279.71 | 3139.85 | 14276.8 | 7087.65 | 1.66 | -0.450 | 0.000 | 0.224 |
| 40.00 | -38.00 | -19.15 | 0.00 | -1440.4 | 0.00 | 1440.45 | 6196.85 | 3098.43 | 13817.8 | 6859.78 | 2.17 | -0.512 | 0.000 | 0.216 |
| 45.00 | -36.21 | -18.56 | 0.00 | -1344.6 | 0.00 | 1344.69 | 6112.57 | 3056.29 | 13362.9 | 6633.95 | 2.74 | -0.574 | 0.000 | 0.209 |
| 45.25 | -36.11 | -18.55 | 0.00 | -1340.0 | 0.00 | 1340.05 | 6108.32 | 3054.16 | 13340.3 | 6622.72 | 2.77 | -0.577 | 0.000 | 0.208 |
| 50.00 | -32.78 | -17.97 | 0.00 | -1251.9 | 0.00 | 1251.92 | 6026.87 | 3013.43 | 12912.4 | 6410.27 | 3.37 | -0.636 | 0.000 | 0.201 |
| 52.75 | -30.88 | -17.63 | 0.00 | -1202.5 | 0.00 | 1202.52 | 6061.52 | 3030.76 | 13093.1 | 6500.01 | 3.75 | -0.670 | 0.000 | 0.190 |
| 55.00 | -30.09 | -17.36 | 0.00 | -1162.8 | 0.00 | 1162.86 | 6022.75 | 3011.37 | 12891.0 | 6399.67 | 4.07 | -0.697 | 0.000 | 0.187 |
| 60.00 | -28.36 | -16.75 | 0.00 | -1076.0 | 0.00 | 1076.05 | 5935.55 | 2967.78 | 12445.2 | 6178.32 | 4.83 | -0.754 | 0.000 | 0.179 |
| 65.00 | -26.67 | -16.14 | 0.00 | -992.29 | 0.00 | 992.29 | 5846.93 | 2923.47 | 12004.0 | 5959.31 | 5.65 | -0.809 | 0.000 | 0.171 |
| 70.00 | -25.02 | -15.52 | 0.00 | -911.61 | 0.00 | 911.61 | 5756.88 | 2878.44 | 11567.7 | 5742.72 | 6.53 | -0.863 | 0.000 | 0.163 |
| 75.00 | -23.40 | -14.90 | 0.00 | -834.02 | 0.00 | 834.02 | 5658.40 | 2829.20 | 11122.7 | 5521.79 | 7.46 | -0.916 | 0.000 | 0.155 |
| 80.00 | -21.81 | -14.27 | 0.00 | -759.55 | 0.00 | 759.55 | 5533.97 | 2766.99 | 10636.4 | 5280.39 | 8.45 | -0.968 | 0.000 | 0.148 |
| 85.00 | -20.27 | -13.65 | 0.00 | -688.18 | 0.00 | 688.18 | 5409.55 | 2704.77 | 10161.0 | 5044.38 | 9.49 | -1.018 | 0.000 | 0.140 |
| 90.00 | -18.76 | -13.03 | 0.00 | -619.92 | 0.00 | 619.92 | 5285.12 | 2642.56 | 9696.54 | 4813.77 | 10.59 | -1.067 | 0.000 | 0.132 |
| 91.50 | -18.31 | -12.84 | 0.00 | -600.43 | 0.00 | 600.43 | 5247.88 | 2623.94 | 9559.60 | 4745.79 | 10.92 | -1.081 | 0.000 | 0.130 |
| 95.00 | -16.51 | -12.39 | 0.00 | -555.43 | 0.00 | 555.43 | 5160.70 | 2580.35 | 9242.88 | 4588.55 | 11.73 | -1.114 | 0.000 | 0.124 |
| 98.08 | -14.96 | -11.99 | 0.00 | -517.26 | 0.00 | 517.26 | 3670.30 | 1835.15 | 6627.10 | 3289.97 | 12.46 | -1.142 | 0.000 | 0.161 |
| 100.00 | -14.53 | -11.76 | 0.00 | -494.24 | 0.00 | 494.24 | 3647.80 | 1823.90 | 6525.29 | 3239.43 | 12.92 | -1.160 | 0.000 | 0.157 |
| 105.00 | -13.44 | -11.15 | 0.00 | -435.44 | 0.00 | 435.44 | 3588.21 | 1794.10 | 6261.99 | 3108.71 | 14.16 | -1.213 | 0.000 | 0.144 |
| 110.00 | -12.38 | -10.54 | 0.00 | -379.71 | 0.00 | 379.71 | 3527.20 | 1763.60 | 6001.46 | 2979.38 | 15.46 | -1.264 | 0.000 | 0.131 |
| 115.00 | -11.35 | -9.94 | 0.00 | -327.01 | 0.00 | 327.01 | 3464.76 | 1732.38 | 5743.91 | 2851.52 | 16.81 | -1.311 | 0.000 | 0.118 |
| 120.00 | -10.34 | -9.34 | 0.00 | -277.33 | 0.00 | 277.33 | 3400.89 | 1700.45 | 5489.50 | 2725.22 | 18.21 | -1.355 | 0.000 | 0.105 |
| 125.00 | -9.36 | -8.75 | 0.00 | -230.63 | 0.00 | 230.63 | 3335.61 | 1667.80 | 5238.44 | 2600.58 | 19.65 | -1.395 | 0.000 | 0.092 |
| 129.33 | -8.54 | -8.24 | 0.00 | -192.72 | 0.00 | 192.72 | 3277.87 | 1638.94 | 5023.71 | 2493.98 | 20.93 | -1.426 | 0.000 | 0.080 |
| 130.00 | -8.33 | -8.17 | 0.00 | -187.22 | 0.00 | 187.22 | 3268.89 | 1634.45 | 4990.91 | 2477.70 | 21.13 | -1.431 | 0.000 | 0.078 |
| 134.92 | -6.82 | -7.58 | 0.00 | -147.07 | 0.00 | 147.07 | 1872.17 | 936.08 | 2836.24 | 1408.03 | 22.62 | -1.461 | 0.000 | 0.108 |
| 135.00 | -6.81 | -7.57 | 0.00 | -146.43 | 0.00 | 146.43 | 1871.69 | 935.84 | 2834.15 | 1406.99 | 22.65 | -1.461 | 0.000 | 0.108 |
| 140.00 | -6.19 | -7.01 | 0.00 | -108.57 | 0.00 | 108.57 | 1842.22 | 921.11 | 2709.07 | 1344.90 | 24.20 | -1.498 | 0.000 | 0.084 |
| 145.00 | -5.59 | -6.46 | 0.00 | -73.53 | 0.00 | 73.53 | 1811.32 | 905.66 | 2584.53 | 1283.07 | 25.78 | -1.527 | 0.000 | 0.060 |
| 150.00 | -5.00 | -5.91 | 0.00 | -41.25 | 0.00 | 41.25 | 1779.00 | 889.50 | 2460.71 | 1221.60 | 27.40 | -1.546 | 0.000 | 0.037 |
| 155.00 | -4.44 | -5.38 | 0.00 | -11.69 | 0.00 | 11.69 | 1745.26 | 872.63 | 2337.81 | 1160.59 | 29.02 | -1.556 | 0.000 | 0.013 |
| 157.00 | -0.30 | -0.31 | 0.00 | -0.93 | 0.00 | 0.93 | 1731.36 | 865.68 | 2288.95 | 1136.33 | 29.67 | -1.557 | 0.000 | 0.001 |
| 160.00 | 0.00 | -0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 1710.09 | 855.04 | 2216.02 | 1100.12 | 30.65 | -1.557 | 0.000 | 0.000 |

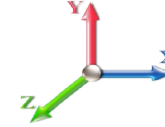
Wind Loading - Shaft

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 20

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 452.33 | 0.750 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 444.79 | 0.750 | 0.000 | 5.00 | 26.541 | 19.91 | 608.4 | 0.0 | 1513.6 |
| 10.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 437.25 | 0.750 | 0.000 | 5.00 | 26.095 | 19.57 | 598.2 | 0.0 | 1488.0 |
| 15.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 429.71 | 0.750 | 0.000 | 5.00 | 25.649 | 19.24 | 588.0 | 0.0 | 1462.4 |
| 20.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 422.18 | 0.750 | 0.000 | 5.00 | 25.203 | 18.90 | 577.7 | 0.0 | 1436.7 |
| 25.00 | | 1.00 | 0.70 | 17.366 | 19.10 | 414.64 | 0.750 | 0.000 | 5.00 | 24.757 | 18.57 | 567.5 | 0.0 | 1411.1 |
| 30.00 | | 1.00 | 0.70 | 17.381 | 19.12 | 407.27 | 0.750 | 0.000 | 5.00 | 24.311 | 18.23 | 557.8 | 0.0 | 1385.4 |
| 35.00 | | 1.00 | 0.73 | 18.163 | 19.98 | 408.63 | 0.750 | 0.000 | 5.00 | 23.865 | 17.90 | 572.2 | 0.0 | 1359.8 |
| 40.00 | | 1.00 | 0.76 | 18.870 | 20.76 | 408.64 | 0.750 | 0.000 | 5.00 | 23.419 | 17.56 | 583.3 | 0.0 | 1334.1 |
| 45.00 | | 1.00 | 0.79 | 19.516 | 21.47 | 407.58 | 0.750 | 0.000 | 5.00 | 22.973 | 17.23 | 591.8 | 0.0 | 1308.5 |
| 45.25 | Bot - Section 2 | 1.00 | 0.79 | 19.547 | 21.50 | 407.50 | 0.750 | 0.000 | 0.25 | 1.137 | 0.85 | 29.3 | 0.0 | 64.8 |
| 50.00 | | 1.00 | 0.81 | 20.112 | 22.12 | 405.65 | 0.750 | 0.000 | 4.75 | 21.793 | 16.34 | 578.6 | 0.0 | 2459.4 |
| 52.75 | Top - Section 1 | 1.00 | 0.82 | 20.422 | 22.46 | 404.27 | 0.750 | 0.000 | 2.75 | 12.433 | 9.32 | 335.2 | 0.0 | 1402.7 |
| 55.00 | | 1.00 | 0.83 | 20.667 | 22.73 | 410.82 | 0.750 | 0.000 | 2.25 | 10.072 | 7.55 | 274.8 | 0.0 | 573.6 |
| 60.00 | | 1.00 | 0.85 | 21.187 | 23.31 | 407.63 | 0.750 | 0.000 | 5.00 | 22.059 | 16.54 | 616.9 | 0.0 | 1256.0 |
| 65.00 | | 1.00 | 0.87 | 21.678 | 23.85 | 403.89 | 0.750 | 0.000 | 5.00 | 21.613 | 16.21 | 618.5 | 0.0 | 1230.3 |
| 70.00 | | 1.00 | 0.89 | 22.142 | 24.36 | 399.68 | 0.750 | 0.000 | 5.00 | 21.167 | 15.88 | 618.6 | 0.0 | 1204.7 |
| 75.00 | | 1.00 | 0.91 | 22.582 | 24.84 | 395.04 | 0.750 | 0.000 | 5.00 | 20.721 | 15.54 | 617.7 | 0.0 | 1179.0 |
| 80.00 | | 1.00 | 0.93 | 23.003 | 25.30 | 390.03 | 0.750 | 0.000 | 5.00 | 20.275 | 15.21 | 615.6 | 0.0 | 1153.4 |
| 85.00 | | 1.00 | 0.94 | 23.404 | 25.74 | 384.67 | 0.750 | 0.000 | 5.00 | 19.829 | 14.87 | 612.6 | 0.0 | 1127.8 |
| 90.00 | | 1.00 | 0.96 | 23.790 | 26.17 | 379.00 | 0.750 | 0.000 | 5.00 | 19.383 | 14.54 | 608.7 | 0.0 | 1102.1 |
| 91.50 | Bot - Section 3 | 1.00 | 0.96 | 23.902 | 26.29 | 377.24 | 0.750 | 0.000 | 1.50 | 5.715 | 4.29 | 180.3 | 0.0 | 324.9 |
| 95.00 | | 1.00 | 0.97 | 24.160 | 26.58 | 373.04 | 0.750 | 0.000 | 3.50 | 13.445 | 10.08 | 428.8 | 0.0 | 1326.4 |
| 98.08 | Top - Section 2 | 1.00 | 0.98 | 24.381 | 26.82 | 369.24 | 0.750 | 0.000 | 3.08 | 11.639 | 8.73 | 374.6 | 0.0 | 1148.0 |
| 100.00 | | 1.00 | 0.99 | 24.517 | 26.97 | 373.23 | 0.750 | 0.000 | 1.92 | 7.170 | 5.38 | 232.0 | 0.0 | 306.5 |
| 105.00 | | 1.00 | 1.00 | 24.861 | 27.35 | 366.82 | 0.750 | 0.000 | 5.00 | 18.363 | 13.77 | 602.6 | 0.0 | 784.9 |
| 110.00 | | 1.00 | 1.02 | 25.194 | 27.71 | 360.18 | 0.750 | 0.000 | 5.00 | 17.917 | 13.44 | 595.8 | 0.0 | 765.7 |
| 115.00 | | 1.00 | 1.03 | 25.516 | 28.07 | 353.34 | 0.750 | 0.000 | 5.00 | 17.471 | 13.10 | 588.4 | 0.0 | 746.4 |
| 120.00 | | 1.00 | 1.04 | 25.828 | 28.41 | 346.30 | 0.750 | 0.000 | 5.00 | 17.025 | 12.77 | 580.4 | 0.0 | 727.2 |
| 125.00 | | 1.00 | 1.05 | 26.131 | 28.74 | 339.08 | 0.750 | 0.000 | 5.00 | 16.579 | 12.43 | 571.9 | 0.0 | 708.0 |
| 129.33 | Bot - Section 4 | 1.00 | 1.06 | 26.387 | 29.03 | 332.68 | 0.750 | 0.000 | 4.33 | 14.008 | 10.51 | 487.9 | 0.0 | 598.0 |
| 130.00 | | 1.00 | 1.07 | 26.425 | 29.07 | 331.68 | 0.750 | 0.000 | 0.67 | 2.154 | 1.62 | 75.1 | 0.0 | 152.2 |
| 134.92 | Top - Section 3 | 1.00 | 1.08 | 26.707 | 29.38 | 324.25 | 0.750 | 0.000 | 4.92 | 15.638 | 11.73 | 551.3 | 0.0 | 1105.0 |
| 135.00 | | 1.00 | 1.08 | 26.712 | 29.38 | 328.58 | 0.750 | 0.000 | 0.08 | 0.261 | 0.20 | 9.2 | 0.0 | 7.5 |
| 140.00 | | 1.00 | 1.09 | 26.991 | 29.69 | 320.89 | 0.750 | 0.000 | 5.00 | 15.453 | 11.59 | 550.6 | 0.0 | 441.1 |
| 145.00 | | 1.00 | 1.10 | 27.263 | 29.99 | 313.06 | 0.750 | 0.000 | 5.00 | 15.007 | 11.26 | 540.1 | 0.0 | 428.3 |
| 150.00 | | 1.00 | 1.11 | 27.528 | 30.28 | 305.09 | 0.750 | 0.000 | 5.00 | 14.561 | 10.92 | 529.1 | 0.0 | 415.5 |
| 155.00 | | 1.00 | 1.12 | 27.787 | 30.57 | 296.98 | 0.750 | 0.000 | 5.00 | 14.115 | 10.59 | 517.7 | 0.0 | 402.7 |
| 157.00 | Appurtenance(s) | 1.00 | 1.12 | 27.889 | 30.68 | 293.71 | 0.750 | 0.000 | 2.00 | 5.521 | 4.14 | 203.3 | 0.0 | 157.5 |
| 160.00 | | 1.00 | 1.13 | 28.040 | 30.84 | 288.75 | 0.750 | 0.000 | 3.00 | 8.148 | 6.11 | 301.6 | 0.0 | 232.4 |
| Totals: | | | | | | | | | 160.00 | | | 18,692.0 | | 36,231.5 |

Discrete Appurtenance Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

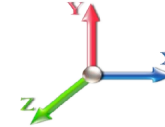


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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|-----------------|----------------|---------------|-----------------|---------------|---------------|
| 1 | 157.00 | RFS | 3 | 27.889 | 30.678 | 0.59 | 0.75 | 9.19 | 71.28 | 0.000 | 0.000 | 451.08 | 0.00 | 0.00 |
| 2 | 157.00 | RFS | 3 | 27.889 | 30.678 | 0.54 | 0.75 | 32.79 | 345.60 | 0.000 | 0.000 | 1609.44 | 0.00 | 0.00 |
| 3 | 157.00 | Ericsson KRY 112 144/1 | 3 | 27.889 | 30.678 | 0.45 | 0.75 | 0.47 | 29.75 | 0.000 | 0.000 | 23.19 | 0.00 | 0.00 |
| 4 | 157.00 | Ericsson Radio 4449 | 3 | 27.889 | 30.678 | 0.50 | 0.75 | 2.46 | 199.80 | 0.000 | 0.000 | 120.61 | 0.00 | 0.00 |
| 5 | 157.00 | Kathrein 782 11056 Bias | 3 | 27.889 | 30.678 | 0.45 | 0.75 | 0.20 | 4.86 | 0.000 | 0.000 | 9.94 | 0.00 | 0.00 |
| 6 | 157.00 | low profile platform | 1 | 27.889 | 30.678 | 1.00 | 1.00 | 51.70 | 2380.50 | 0.000 | 0.000 | 2537.69 | 0.00 | 0.00 |
| Totals: | | | | | | | | | 3,031.79 | | | 4,751.95 | | |

Total Applied Force Summary

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

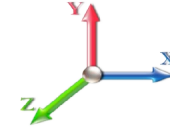


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Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|--------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 608.41 | 1526.75 | 0.00 | 0.00 |
| 10.00 | | 598.19 | 1520.76 | 0.00 | 0.00 |
| 15.00 | | 587.96 | 1495.11 | 0.00 | 0.00 |
| 20.00 | | 577.74 | 1469.47 | 0.00 | 0.00 |
| 25.00 | | 567.51 | 1443.82 | 0.00 | 0.00 |
| 30.00 | | 557.76 | 1418.18 | 0.00 | 0.00 |
| 35.00 | | 572.18 | 1392.53 | 0.00 | 0.00 |
| 40.00 | | 583.32 | 1366.89 | 0.00 | 0.00 |
| 45.00 | | 591.79 | 1341.25 | 0.00 | 0.00 |
| 45.25 | | 29.33 | 66.39 | 0.00 | 0.00 |
| 50.00 | | 578.57 | 2490.50 | 0.00 | 0.00 |
| 52.75 | | 335.16 | 1420.71 | 0.00 | 0.00 |
| 55.00 | | 274.78 | 588.30 | 0.00 | 0.00 |
| 60.00 | | 616.94 | 1288.74 | 0.00 | 0.00 |
| 65.00 | | 618.45 | 1263.09 | 0.00 | 0.00 |
| 70.00 | | 618.65 | 1237.45 | 0.00 | 0.00 |
| 75.00 | | 617.67 | 1211.80 | 0.00 | 0.00 |
| 80.00 | | 615.62 | 1186.16 | 0.00 | 0.00 |
| 85.00 | | 612.59 | 1160.51 | 0.00 | 0.00 |
| 90.00 | | 608.67 | 1134.87 | 0.00 | 0.00 |
| 91.50 | | 180.32 | 334.72 | 0.00 | 0.00 |
| 95.00 | | 428.78 | 1349.40 | 0.00 | 0.00 |
| 98.08 | | 374.59 | 1168.14 | 0.00 | 0.00 |
| 100.00 | | 232.04 | 319.10 | 0.00 | 0.00 |
| 105.00 | | 602.62 | 817.67 | 0.00 | 0.00 |
| 110.00 | | 595.85 | 798.43 | 0.00 | 0.00 |
| 115.00 | | 588.44 | 779.20 | 0.00 | 0.00 |
| 120.00 | | 580.43 | 759.97 | 0.00 | 0.00 |
| 125.00 | | 571.85 | 740.73 | 0.00 | 0.00 |
| 129.33 | | 487.89 | 626.41 | 0.00 | 0.00 |
| 130.00 | | 75.12 | 156.59 | 0.00 | 0.00 |
| 134.92 | | 551.29 | 1137.23 | 0.00 | 0.00 |
| 135.00 | | 9.21 | 8.01 | 0.00 | 0.00 |
| 140.00 | | 550.56 | 473.91 | 0.00 | 0.00 |
| 145.00 | | 540.06 | 461.09 | 0.00 | 0.00 |
| 150.00 | | 529.11 | 448.26 | 0.00 | 0.00 |
| 155.00 | | 517.72 | 435.44 | 0.00 | 0.00 |
| 157.00 | (16) attachments | 4955.21 | 3202.38 | 0.00 | 0.00 |
| 160.00 | | 301.58 | 232.38 | 0.00 | 0.00 |
| | Totals: | 23,443.95 | 40,272.33 | 0.00 | 0.00 |

Calculated Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

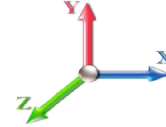


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Load Case: 0.9D + 1.6W 101 mph Wind

Iterations 20

Dead Load Factor 0.90
Wind Load Factor 1.60



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -40.26 | -23.47 | 0.00 | -2292.6 | 0.00 | 2292.68 | 6819.80 | 3409.90 | 17589.7 | 8732.29 | 0.00 | 0.000 | 0.000 | 0.269 |
| 5.00 | -38.71 | -22.90 | 0.00 | -2175.3 | 0.00 | 2175.35 | 6746.92 | 3373.46 | 17107.0 | 8492.68 | 0.04 | -0.065 | 0.000 | 0.262 |
| 10.00 | -37.16 | -22.34 | 0.00 | -2060.8 | 0.00 | 2060.84 | 6672.61 | 3336.30 | 16627.2 | 8254.47 | 0.14 | -0.129 | 0.000 | 0.255 |
| 15.00 | -35.64 | -21.79 | 0.00 | -1949.1 | 0.00 | 1949.14 | 6596.88 | 3298.44 | 16150.4 | 8017.76 | 0.31 | -0.193 | 0.000 | 0.249 |
| 20.00 | -34.15 | -21.24 | 0.00 | -1840.1 | 0.00 | 1840.19 | 6519.72 | 3259.86 | 15676.8 | 7782.62 | 0.54 | -0.257 | 0.000 | 0.242 |
| 25.00 | -32.69 | -20.71 | 0.00 | -1733.9 | 0.00 | 1733.98 | 6441.14 | 3220.57 | 15206.5 | 7549.16 | 0.85 | -0.321 | 0.000 | 0.235 |
| 30.00 | -31.25 | -20.17 | 0.00 | -1630.4 | 0.00 | 1630.45 | 6361.14 | 3180.57 | 14739.8 | 7317.48 | 1.22 | -0.384 | 0.000 | 0.228 |
| 35.00 | -29.84 | -19.62 | 0.00 | -1529.5 | 0.00 | 1529.59 | 6279.71 | 3139.85 | 14276.8 | 7087.65 | 1.66 | -0.447 | 0.000 | 0.221 |
| 40.00 | -28.46 | -19.06 | 0.00 | -1431.4 | 0.00 | 1431.47 | 6196.85 | 3098.43 | 13817.8 | 6859.78 | 2.16 | -0.509 | 0.000 | 0.213 |
| 45.00 | -27.11 | -18.47 | 0.00 | -1336.1 | 0.00 | 1336.17 | 6112.57 | 3056.29 | 13362.9 | 6633.95 | 2.73 | -0.571 | 0.000 | 0.206 |
| 45.25 | -27.04 | -18.45 | 0.00 | -1331.5 | 0.00 | 1331.56 | 6108.32 | 3054.16 | 13340.3 | 6622.72 | 2.76 | -0.574 | 0.000 | 0.206 |
| 50.00 | -24.54 | -17.87 | 0.00 | -1243.9 | 0.00 | 1243.90 | 6026.87 | 3013.43 | 12912.4 | 6410.27 | 3.36 | -0.632 | 0.000 | 0.198 |
| 52.75 | -23.11 | -17.53 | 0.00 | -1194.7 | 0.00 | 1194.76 | 6061.52 | 3030.76 | 13093.1 | 6500.01 | 3.73 | -0.666 | 0.000 | 0.188 |
| 55.00 | -22.52 | -17.27 | 0.00 | -1155.3 | 0.00 | 1155.31 | 6022.75 | 3011.37 | 12891.0 | 6399.67 | 4.05 | -0.693 | 0.000 | 0.184 |
| 60.00 | -21.22 | -16.65 | 0.00 | -1068.9 | 0.00 | 1068.99 | 5935.55 | 2967.78 | 12445.2 | 6178.32 | 4.81 | -0.749 | 0.000 | 0.177 |
| 65.00 | -19.95 | -16.04 | 0.00 | -985.72 | 0.00 | 985.72 | 5846.93 | 2923.47 | 12004.0 | 5959.31 | 5.62 | -0.804 | 0.000 | 0.169 |
| 70.00 | -18.71 | -15.42 | 0.00 | -905.54 | 0.00 | 905.54 | 5756.88 | 2878.44 | 11567.7 | 5742.72 | 6.49 | -0.858 | 0.000 | 0.161 |
| 75.00 | -17.49 | -14.80 | 0.00 | -828.46 | 0.00 | 828.46 | 5658.40 | 2829.20 | 11122.7 | 5521.79 | 7.42 | -0.911 | 0.000 | 0.153 |
| 80.00 | -16.30 | -14.18 | 0.00 | -754.47 | 0.00 | 754.47 | 5533.97 | 2766.99 | 10636.4 | 5280.39 | 8.40 | -0.962 | 0.000 | 0.146 |
| 85.00 | -15.14 | -13.56 | 0.00 | -683.59 | 0.00 | 683.59 | 5409.55 | 2704.77 | 10161.0 | 5044.38 | 9.44 | -1.012 | 0.000 | 0.138 |
| 90.00 | -14.01 | -12.94 | 0.00 | -615.81 | 0.00 | 615.81 | 5285.12 | 2642.56 | 9696.54 | 4813.77 | 10.53 | -1.060 | 0.000 | 0.131 |
| 91.50 | -13.67 | -12.75 | 0.00 | -596.45 | 0.00 | 596.45 | 5247.88 | 2623.94 | 9559.60 | 4745.79 | 10.86 | -1.075 | 0.000 | 0.128 |
| 95.00 | -12.33 | -12.31 | 0.00 | -551.77 | 0.00 | 551.77 | 5160.70 | 2580.35 | 9242.88 | 4588.55 | 11.66 | -1.107 | 0.000 | 0.123 |
| 98.08 | -11.16 | -11.91 | 0.00 | -513.86 | 0.00 | 513.86 | 3670.30 | 1835.15 | 6627.10 | 3289.97 | 12.39 | -1.135 | 0.000 | 0.159 |
| 100.00 | -10.84 | -11.68 | 0.00 | -490.99 | 0.00 | 490.99 | 3647.80 | 1823.90 | 6525.29 | 3239.43 | 12.85 | -1.153 | 0.000 | 0.155 |
| 105.00 | -10.02 | -11.07 | 0.00 | -432.58 | 0.00 | 432.58 | 3588.21 | 1794.10 | 6261.99 | 3108.71 | 14.08 | -1.206 | 0.000 | 0.142 |
| 110.00 | -9.23 | -10.47 | 0.00 | -377.22 | 0.00 | 377.22 | 3527.20 | 1763.60 | 6001.46 | 2979.38 | 15.37 | -1.256 | 0.000 | 0.129 |
| 115.00 | -8.46 | -9.87 | 0.00 | -324.89 | 0.00 | 324.89 | 3464.76 | 1732.38 | 5743.91 | 2851.52 | 16.71 | -1.303 | 0.000 | 0.116 |
| 120.00 | -7.70 | -9.28 | 0.00 | -275.55 | 0.00 | 275.55 | 3400.89 | 1700.45 | 5489.50 | 2725.22 | 18.10 | -1.347 | 0.000 | 0.103 |
| 125.00 | -6.97 | -8.69 | 0.00 | -229.18 | 0.00 | 229.18 | 3335.61 | 1667.80 | 5238.44 | 2600.58 | 19.54 | -1.386 | 0.000 | 0.090 |
| 129.33 | -6.35 | -8.19 | 0.00 | -191.52 | 0.00 | 191.52 | 3277.87 | 1638.94 | 5023.71 | 2493.98 | 20.81 | -1.417 | 0.000 | 0.079 |
| 130.00 | -6.20 | -8.11 | 0.00 | -186.06 | 0.00 | 186.06 | 3268.89 | 1634.45 | 4990.91 | 2477.70 | 21.01 | -1.422 | 0.000 | 0.077 |
| 134.92 | -5.07 | -7.53 | 0.00 | -146.17 | 0.00 | 146.17 | 1872.17 | 936.08 | 2836.24 | 1408.03 | 22.49 | -1.452 | 0.000 | 0.107 |
| 135.00 | -5.06 | -7.53 | 0.00 | -145.54 | 0.00 | 145.54 | 1871.69 | 935.84 | 2834.15 | 1406.99 | 22.51 | -1.452 | 0.000 | 0.106 |
| 140.00 | -4.60 | -6.97 | 0.00 | -107.91 | 0.00 | 107.91 | 1842.22 | 921.11 | 2709.07 | 1344.90 | 24.05 | -1.489 | 0.000 | 0.083 |
| 145.00 | -4.15 | -6.42 | 0.00 | -73.08 | 0.00 | 73.08 | 1811.32 | 905.66 | 2584.53 | 1283.07 | 25.63 | -1.517 | 0.000 | 0.059 |
| 150.00 | -3.71 | -5.88 | 0.00 | -41.00 | 0.00 | 41.00 | 1779.00 | 889.50 | 2460.71 | 1221.60 | 27.23 | -1.537 | 0.000 | 0.036 |
| 155.00 | -3.29 | -5.35 | 0.00 | -11.62 | 0.00 | 11.62 | 1745.26 | 872.63 | 2337.81 | 1160.59 | 28.85 | -1.546 | 0.000 | 0.012 |
| 157.00 | -0.22 | -0.31 | 0.00 | -0.92 | 0.00 | 0.92 | 1731.36 | 865.68 | 2288.95 | 1136.33 | 29.49 | -1.548 | 0.000 | 0.001 |
| 160.00 | 0.00 | -0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 1710.09 | 855.04 | 2216.02 | 1100.12 | 30.47 | -1.548 | 0.000 | 0.000 |

Wind Loading - Shaft

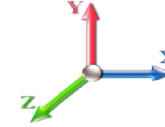
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 19

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 1.242 | 5.00 | 27.576 | 33.09 | 154.9 | 496.2 | 2514.4 |
| 10.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 1.331 | 5.00 | 27.204 | 32.65 | 152.8 | 523.7 | 2507.7 |
| 15.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 1.386 | 5.00 | 26.804 | 32.17 | 150.6 | 536.6 | 2486.4 |
| 20.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 1.427 | 5.00 | 26.392 | 31.67 | 148.3 | 543.2 | 2458.8 |
| 25.00 | | 1.00 | 0.70 | 4.256 | 4.68 | 0.00 | 1.200 | 1.459 | 5.00 | 25.973 | 31.17 | 145.9 | 546.0 | 2427.5 |
| 30.00 | | 1.00 | 0.70 | 4.260 | 4.69 | 0.00 | 1.200 | 1.486 | 5.00 | 25.549 | 30.66 | 143.7 | 546.5 | 2393.7 |
| 35.00 | | 1.00 | 0.73 | 4.451 | 4.90 | 0.00 | 1.200 | 1.509 | 5.00 | 25.122 | 30.15 | 147.6 | 545.2 | 2358.2 |
| 40.00 | | 1.00 | 0.76 | 4.625 | 5.09 | 0.00 | 1.200 | 1.529 | 5.00 | 24.693 | 29.63 | 150.7 | 542.5 | 2321.4 |
| 45.00 | | 1.00 | 0.79 | 4.783 | 5.26 | 0.00 | 1.200 | 1.547 | 5.00 | 24.262 | 29.11 | 153.2 | 538.9 | 2283.5 |
| 45.25 | Bot - Section 2 | 1.00 | 0.79 | 4.790 | 5.27 | 0.00 | 1.200 | 1.548 | 0.25 | 1.201 | 1.44 | 7.6 | 26.9 | 113.3 |
| 50.00 | | 1.00 | 0.81 | 4.929 | 5.42 | 0.00 | 1.200 | 1.564 | 4.75 | 23.031 | 27.64 | 149.8 | 517.0 | 3796.2 |
| 52.75 | Top - Section 1 | 1.00 | 0.82 | 5.005 | 5.51 | 0.00 | 1.200 | 1.572 | 2.75 | 13.154 | 15.78 | 86.9 | 297.8 | 2168.1 |
| 55.00 | | 1.00 | 0.83 | 5.065 | 5.57 | 0.00 | 1.200 | 1.579 | 2.25 | 10.664 | 12.80 | 71.3 | 242.6 | 1007.3 |
| 60.00 | | 1.00 | 0.85 | 5.193 | 5.71 | 0.00 | 1.200 | 1.592 | 5.00 | 23.386 | 28.06 | 160.3 | 533.4 | 2208.0 |
| 65.00 | | 1.00 | 0.87 | 5.313 | 5.84 | 0.00 | 1.200 | 1.605 | 5.00 | 22.951 | 27.54 | 160.9 | 527.1 | 2167.6 |
| 70.00 | | 1.00 | 0.89 | 5.426 | 5.97 | 0.00 | 1.200 | 1.617 | 5.00 | 22.515 | 27.02 | 161.3 | 520.4 | 2126.7 |
| 75.00 | | 1.00 | 0.91 | 5.534 | 6.09 | 0.00 | 1.200 | 1.628 | 5.00 | 22.078 | 26.49 | 161.3 | 513.3 | 2085.4 |
| 80.00 | | 1.00 | 0.93 | 5.637 | 6.20 | 0.00 | 1.200 | 1.639 | 5.00 | 21.641 | 25.97 | 161.0 | 505.9 | 2043.7 |
| 85.00 | | 1.00 | 0.94 | 5.736 | 6.31 | 0.00 | 1.200 | 1.649 | 5.00 | 21.203 | 25.44 | 160.5 | 498.1 | 2001.8 |
| 90.00 | | 1.00 | 0.96 | 5.830 | 6.41 | 0.00 | 1.200 | 1.658 | 5.00 | 20.765 | 24.92 | 159.8 | 490.0 | 1959.5 |
| 91.50 | Bot - Section 3 | 1.00 | 0.96 | 5.858 | 6.44 | 0.00 | 1.200 | 1.661 | 1.50 | 6.130 | 7.36 | 47.4 | 146.0 | 579.2 |
| 95.00 | | 1.00 | 0.97 | 5.921 | 6.51 | 0.00 | 1.200 | 1.667 | 3.50 | 14.418 | 17.30 | 112.7 | 343.1 | 2111.7 |
| 98.08 | Top - Section 2 | 1.00 | 0.98 | 5.975 | 6.57 | 0.00 | 1.200 | 1.673 | 3.08 | 12.498 | 15.00 | 98.6 | 298.4 | 1829.0 |
| 100.00 | | 1.00 | 0.99 | 6.008 | 6.61 | 0.00 | 1.200 | 1.676 | 1.92 | 7.706 | 9.25 | 61.1 | 184.7 | 593.4 |
| 105.00 | | 1.00 | 1.00 | 6.093 | 6.70 | 0.00 | 1.200 | 1.684 | 5.00 | 19.767 | 23.72 | 159.0 | 472.4 | 1518.9 |
| 110.00 | | 1.00 | 1.02 | 6.174 | 6.79 | 0.00 | 1.200 | 1.692 | 5.00 | 19.327 | 23.19 | 157.5 | 463.4 | 1484.3 |
| 115.00 | | 1.00 | 1.03 | 6.253 | 6.88 | 0.00 | 1.200 | 1.699 | 5.00 | 18.887 | 22.66 | 155.9 | 454.3 | 1449.5 |
| 120.00 | | 1.00 | 1.04 | 6.330 | 6.96 | 0.00 | 1.200 | 1.707 | 5.00 | 18.447 | 22.14 | 154.1 | 445.0 | 1414.6 |
| 125.00 | | 1.00 | 1.05 | 6.404 | 7.04 | 0.00 | 1.200 | 1.714 | 5.00 | 18.007 | 21.61 | 152.2 | 435.5 | 1379.4 |
| 129.33 | Bot - Section 4 | 1.00 | 1.06 | 6.467 | 7.11 | 0.00 | 1.200 | 1.720 | 4.33 | 15.250 | 18.30 | 130.2 | 370.2 | 1167.5 |
| 130.00 | | 1.00 | 1.07 | 6.476 | 7.12 | 0.00 | 1.200 | 1.720 | 0.67 | 2.345 | 2.81 | 20.0 | 57.5 | 260.5 |
| 134.92 | Top - Section 3 | 1.00 | 1.08 | 6.545 | 7.20 | 0.00 | 1.200 | 1.727 | 4.92 | 17.053 | 20.46 | 147.3 | 414.6 | 1888.0 |
| 135.00 | | 1.00 | 1.08 | 6.546 | 7.20 | 0.00 | 1.200 | 1.727 | 0.08 | 0.285 | 0.34 | 2.5 | 7.0 | 17.0 |
| 140.00 | | 1.00 | 1.09 | 6.615 | 7.28 | 0.00 | 1.200 | 1.733 | 5.00 | 16.898 | 20.28 | 147.5 | 411.6 | 999.8 |
| 145.00 | | 1.00 | 1.10 | 6.681 | 7.35 | 0.00 | 1.200 | 1.739 | 5.00 | 16.457 | 19.75 | 145.1 | 401.6 | 972.7 |
| 150.00 | | 1.00 | 1.11 | 6.746 | 7.42 | 0.00 | 1.200 | 1.745 | 5.00 | 16.015 | 19.22 | 142.6 | 391.4 | 945.4 |
| 155.00 | | 1.00 | 1.12 | 6.810 | 7.49 | 0.00 | 1.200 | 1.751 | 5.00 | 15.574 | 18.69 | 140.0 | 381.1 | 918.0 |
| 157.00 | Appurtenance(s) | 1.00 | 1.12 | 6.835 | 7.52 | 0.00 | 1.200 | 1.753 | 2.00 | 6.105 | 7.33 | 55.1 | 150.8 | 360.8 |
| 160.00 | | 1.00 | 1.13 | 6.872 | 7.56 | 0.00 | 1.200 | 1.757 | 3.00 | 9.026 | 10.83 | 81.9 | 222.4 | 532.3 |
| Totals: | | | | | | | | 160.00 | | | | 4,899.3 | 63,851.0 | |

Discrete Appurtenance Forces

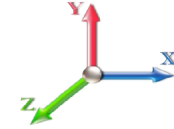
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 19

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|-----------------|----------------|---------------|-----------------|---------------|---------------|
| 1 | 157.00 | RFS | 3 | 6.835 | 7.518 | 0.59 | 0.75 | 13.43 | 295.06 | 0.000 | 0.000 | 100.97 | 0.00 | 0.00 |
| 2 | 157.00 | RFS | 3 | 6.835 | 7.518 | 0.54 | 0.75 | 35.88 | 1758.92 | 0.000 | 0.000 | 269.77 | 0.00 | 0.00 |
| 3 | 157.00 | Ericsson KRY 112 144/1 | 3 | 6.835 | 7.518 | 0.45 | 0.75 | 1.02 | 62.98 | 0.000 | 0.000 | 7.69 | 0.00 | 0.00 |
| 4 | 157.00 | Ericsson Radio 4449 | 3 | 6.835 | 7.518 | 0.50 | 0.75 | 3.26 | 469.41 | 0.000 | 0.000 | 24.52 | 0.00 | 0.00 |
| 5 | 157.00 | Kathrein 782 11056 Bias | 3 | 6.835 | 7.518 | 0.45 | 0.75 | 0.48 | 34.56 | 0.000 | 0.000 | 3.60 | 0.00 | 0.00 |
| 6 | 157.00 | low profile platform | 1 | 6.835 | 7.518 | 1.00 | 1.00 | 90.13 | 5201.32 | 0.000 | 0.000 | 677.65 | 0.00 | 0.00 |
| Totals: | | | | | | | | | 7,822.25 | | | 1,084.20 | | |

Total Applied Force Summary

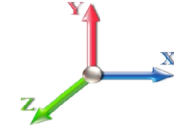
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 19

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|--------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 154.92 | 2531.85 | 0.00 | 0.00 |
| 10.00 | | 152.83 | 2551.38 | 0.00 | 0.00 |
| 15.00 | | 150.58 | 2530.12 | 0.00 | 0.00 |
| 20.00 | | 148.27 | 2502.48 | 0.00 | 0.00 |
| 25.00 | | 145.91 | 2471.14 | 0.00 | 0.00 |
| 30.00 | | 143.65 | 2437.38 | 0.00 | 0.00 |
| 35.00 | | 147.61 | 2401.87 | 0.00 | 0.00 |
| 40.00 | | 150.73 | 2365.04 | 0.00 | 0.00 |
| 45.00 | | 153.17 | 2327.18 | 0.00 | 0.00 |
| 45.25 | | 7.60 | 115.45 | 0.00 | 0.00 |
| 50.00 | | 149.85 | 3837.68 | 0.00 | 0.00 |
| 52.75 | | 86.90 | 2192.10 | 0.00 | 0.00 |
| 55.00 | | 71.30 | 1026.99 | 0.00 | 0.00 |
| 60.00 | | 160.29 | 2251.69 | 0.00 | 0.00 |
| 65.00 | | 160.95 | 2211.25 | 0.00 | 0.00 |
| 70.00 | | 161.27 | 2170.36 | 0.00 | 0.00 |
| 75.00 | | 161.29 | 2129.07 | 0.00 | 0.00 |
| 80.00 | | 161.03 | 2087.42 | 0.00 | 0.00 |
| 85.00 | | 160.53 | 2045.46 | 0.00 | 0.00 |
| 90.00 | | 159.80 | 2003.21 | 0.00 | 0.00 |
| 91.50 | | 47.40 | 592.24 | 0.00 | 0.00 |
| 95.00 | | 112.69 | 2142.27 | 0.00 | 0.00 |
| 98.08 | | 98.58 | 1855.92 | 0.00 | 0.00 |
| 100.00 | | 61.12 | 610.21 | 0.00 | 0.00 |
| 105.00 | | 158.97 | 1562.59 | 0.00 | 0.00 |
| 110.00 | | 157.52 | 1528.00 | 0.00 | 0.00 |
| 115.00 | | 155.90 | 1493.21 | 0.00 | 0.00 |
| 120.00 | | 154.13 | 1458.25 | 0.00 | 0.00 |
| 125.00 | | 152.22 | 1423.12 | 0.00 | 0.00 |
| 129.33 | | 130.17 | 1205.39 | 0.00 | 0.00 |
| 130.00 | | 20.04 | 266.29 | 0.00 | 0.00 |
| 134.92 | | 147.33 | 1930.95 | 0.00 | 0.00 |
| 135.00 | | 2.47 | 17.70 | 0.00 | 0.00 |
| 140.00 | | 147.54 | 1043.48 | 0.00 | 0.00 |
| 145.00 | | 145.14 | 1016.34 | 0.00 | 0.00 |
| 150.00 | | 142.62 | 989.08 | 0.00 | 0.00 |
| 155.00 | | 140.00 | 961.71 | 0.00 | 0.00 |
| 157.00 | (16) attachments | 1139.29 | 8200.49 | 0.00 | 0.00 |
| 160.00 | | 81.88 | 532.27 | 0.00 | 0.00 |
| | Totals: | 5,983.49 | 73,018.63 | 0.00 | 0.00 |

Calculated Forces

Structure: CT01700-S-SBA
Site Name: Haddam
Height: 160.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

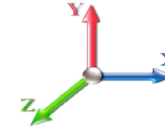
Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: C - Very Dense Soil
Struct Class: II

7/22/2019
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 19

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -73.02 | -5.99 | 0.00 | -587.54 | 0.00 | 587.54 | 6819.80 | 3409.90 | 17589.7 | 8732.29 | 0.00 | 0.000 | 0.000 | 0.078 |
| 5.00 | -70.48 | -5.86 | 0.00 | -557.57 | 0.00 | 557.57 | 6746.92 | 3373.46 | 17107.0 | 8492.68 | 0.01 | -0.017 | 0.000 | 0.076 |
| 10.00 | -67.93 | -5.72 | 0.00 | -528.28 | 0.00 | 528.28 | 6672.61 | 3336.30 | 16627.2 | 8254.47 | 0.04 | -0.033 | 0.000 | 0.074 |
| 15.00 | -65.40 | -5.59 | 0.00 | -499.66 | 0.00 | 499.66 | 6596.88 | 3298.44 | 16150.4 | 8017.76 | 0.08 | -0.050 | 0.000 | 0.072 |
| 20.00 | -62.90 | -5.46 | 0.00 | -471.71 | 0.00 | 471.71 | 6519.72 | 3259.86 | 15676.8 | 7782.62 | 0.14 | -0.066 | 0.000 | 0.070 |
| 25.00 | -60.42 | -5.33 | 0.00 | -444.43 | 0.00 | 444.43 | 6441.14 | 3220.57 | 15206.5 | 7549.16 | 0.22 | -0.082 | 0.000 | 0.068 |
| 30.00 | -57.98 | -5.19 | 0.00 | -417.80 | 0.00 | 417.80 | 6361.14 | 3180.57 | 14739.8 | 7317.48 | 0.31 | -0.098 | 0.000 | 0.066 |
| 35.00 | -55.58 | -5.06 | 0.00 | -391.83 | 0.00 | 391.83 | 6279.71 | 3139.85 | 14276.8 | 7087.65 | 0.42 | -0.115 | 0.000 | 0.064 |
| 40.00 | -53.22 | -4.92 | 0.00 | -366.55 | 0.00 | 366.55 | 6196.85 | 3098.43 | 13817.8 | 6859.78 | 0.55 | -0.131 | 0.000 | 0.062 |
| 45.00 | -50.89 | -4.77 | 0.00 | -341.96 | 0.00 | 341.96 | 6112.57 | 3056.29 | 13362.9 | 6633.95 | 0.70 | -0.146 | 0.000 | 0.060 |
| 45.25 | -50.77 | -4.76 | 0.00 | -340.77 | 0.00 | 340.77 | 6108.32 | 3054.16 | 13340.3 | 6622.72 | 0.71 | -0.147 | 0.000 | 0.060 |
| 50.00 | -46.93 | -4.61 | 0.00 | -318.14 | 0.00 | 318.14 | 6026.87 | 3013.43 | 12912.4 | 6410.27 | 0.86 | -0.162 | 0.000 | 0.057 |
| 52.75 | -44.74 | -4.53 | 0.00 | -305.46 | 0.00 | 305.46 | 6061.52 | 3030.76 | 13093.1 | 6500.01 | 0.96 | -0.171 | 0.000 | 0.054 |
| 55.00 | -43.71 | -4.46 | 0.00 | -295.27 | 0.00 | 295.27 | 6022.75 | 3011.37 | 12891.0 | 6399.67 | 1.04 | -0.178 | 0.000 | 0.053 |
| 60.00 | -41.46 | -4.30 | 0.00 | -272.97 | 0.00 | 272.97 | 5935.55 | 2967.78 | 12445.2 | 6178.32 | 1.23 | -0.192 | 0.000 | 0.051 |
| 65.00 | -39.25 | -4.14 | 0.00 | -251.46 | 0.00 | 251.46 | 5846.93 | 2923.47 | 12004.0 | 5959.31 | 1.44 | -0.206 | 0.000 | 0.049 |
| 70.00 | -37.08 | -3.98 | 0.00 | -230.74 | 0.00 | 230.74 | 5756.88 | 2878.44 | 11567.7 | 5742.72 | 1.66 | -0.220 | 0.000 | 0.047 |
| 75.00 | -34.95 | -3.82 | 0.00 | -210.82 | 0.00 | 210.82 | 5658.40 | 2829.20 | 11122.7 | 5521.79 | 1.90 | -0.233 | 0.000 | 0.044 |
| 80.00 | -32.86 | -3.66 | 0.00 | -191.72 | 0.00 | 191.72 | 5533.97 | 2766.99 | 10636.4 | 5280.39 | 2.15 | -0.246 | 0.000 | 0.042 |
| 85.00 | -30.82 | -3.50 | 0.00 | -173.42 | 0.00 | 173.42 | 5409.55 | 2704.77 | 10161.0 | 5044.38 | 2.42 | -0.259 | 0.000 | 0.040 |
| 90.00 | -28.81 | -3.33 | 0.00 | -155.94 | 0.00 | 155.94 | 5285.12 | 2642.56 | 9696.54 | 4813.77 | 2.70 | -0.271 | 0.000 | 0.038 |
| 91.50 | -28.22 | -3.28 | 0.00 | -150.95 | 0.00 | 150.95 | 5247.88 | 2623.94 | 9559.60 | 4745.79 | 2.78 | -0.275 | 0.000 | 0.037 |
| 95.00 | -26.08 | -3.16 | 0.00 | -139.45 | 0.00 | 139.45 | 5160.70 | 2580.35 | 9242.88 | 4588.55 | 2.99 | -0.283 | 0.000 | 0.035 |
| 98.08 | -24.22 | -3.06 | 0.00 | -129.70 | 0.00 | 129.70 | 3670.30 | 1835.15 | 6627.10 | 3289.97 | 3.17 | -0.290 | 0.000 | 0.046 |
| 100.00 | -23.61 | -3.00 | 0.00 | -123.83 | 0.00 | 123.83 | 3647.80 | 1823.90 | 6525.29 | 3239.43 | 3.29 | -0.294 | 0.000 | 0.045 |
| 105.00 | -22.05 | -2.84 | 0.00 | -108.84 | 0.00 | 108.84 | 3588.21 | 1794.10 | 6261.99 | 3108.71 | 3.60 | -0.308 | 0.000 | 0.041 |
| 110.00 | -20.52 | -2.67 | 0.00 | -94.65 | 0.00 | 94.65 | 3527.20 | 1763.60 | 6001.46 | 2979.38 | 3.93 | -0.320 | 0.000 | 0.038 |
| 115.00 | -19.03 | -2.51 | 0.00 | -81.28 | 0.00 | 81.28 | 3464.76 | 1732.38 | 5743.91 | 2851.52 | 4.28 | -0.332 | 0.000 | 0.034 |
| 120.00 | -17.57 | -2.35 | 0.00 | -68.71 | 0.00 | 68.71 | 3400.89 | 1700.45 | 5489.50 | 2725.22 | 4.63 | -0.343 | 0.000 | 0.030 |
| 125.00 | -16.15 | -2.20 | 0.00 | -56.94 | 0.00 | 56.94 | 3335.61 | 1667.80 | 5238.44 | 2600.58 | 4.99 | -0.353 | 0.000 | 0.027 |
| 129.33 | -14.95 | -2.06 | 0.00 | -47.42 | 0.00 | 47.42 | 3277.87 | 1638.94 | 5023.71 | 2493.98 | 5.32 | -0.361 | 0.000 | 0.024 |
| 130.00 | -14.68 | -2.04 | 0.00 | -46.04 | 0.00 | 46.04 | 3268.89 | 1634.45 | 4990.91 | 2477.70 | 5.37 | -0.362 | 0.000 | 0.023 |
| 134.92 | -12.75 | -1.88 | 0.00 | -36.02 | 0.00 | 36.02 | 1872.17 | 936.08 | 2836.24 | 1408.03 | 5.74 | -0.369 | 0.000 | 0.032 |
| 135.00 | -12.73 | -1.88 | 0.00 | -35.86 | 0.00 | 35.86 | 1871.69 | 935.84 | 2834.15 | 1406.99 | 5.75 | -0.369 | 0.000 | 0.032 |
| 140.00 | -11.69 | -1.73 | 0.00 | -26.46 | 0.00 | 26.46 | 1842.22 | 921.11 | 2709.07 | 1344.90 | 6.14 | -0.378 | 0.000 | 0.026 |
| 145.00 | -10.67 | -1.58 | 0.00 | -17.83 | 0.00 | 17.83 | 1811.32 | 905.66 | 2584.53 | 1283.07 | 6.54 | -0.385 | 0.000 | 0.020 |
| 150.00 | -9.68 | -1.43 | 0.00 | -9.95 | 0.00 | 9.95 | 1779.00 | 889.50 | 2460.71 | 1221.60 | 6.95 | -0.390 | 0.000 | 0.014 |
| 155.00 | -8.72 | -1.28 | 0.00 | -2.82 | 0.00 | 2.82 | 1745.26 | 872.63 | 2337.81 | 1160.59 | 7.36 | -0.392 | 0.000 | 0.007 |
| 157.00 | -0.53 | -0.09 | 0.00 | -0.26 | 0.00 | 0.26 | 1731.36 | 865.68 | 2288.95 | 1136.33 | 7.52 | -0.393 | 0.000 | 0.001 |
| 160.00 | 0.00 | -0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1710.09 | 855.04 | 2216.02 | 1100.12 | 7.77 | -0.393 | 0.000 | 0.000 |

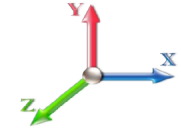
Seismic Segment Forces (Factored)

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | |
|-------------------------------|------|---------------------------------|------|---------------------------------------|
| Load Case: 1.2D + 1.0E | | | | Iterations 18 |
| Gust Response Factor | 1.10 | Sds | 0.14 | Ss 0.18 |
| Dead Load Factor | 1.20 | Seismic Load Factor | 1.00 | S1 0.06 |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.49 | SA 0.03 |
| | | | | Seismic Importance Factor 1.00 |



| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|----------------|-----------------|-----------------|------|-------|------|-----------------|-----------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 1681.8 | 0.00 | 0.03 | 0.02 | 17.83 | |
| 10.00 | | 1653.3 | 0.01 | 0.05 | 0.03 | 26.68 | |
| 15.00 | | 1624.8 | 0.02 | 0.06 | 0.04 | 31.09 | |
| 20.00 | | 1596.3 | 0.03 | 0.07 | 0.04 | 33.20 | |
| 25.00 | | 1567.8 | 0.05 | 0.07 | 0.04 | 34.16 | |
| 30.00 | | 1539.3 | 0.07 | 0.07 | 0.04 | 34.62 | |
| 35.00 | | 1510.8 | 0.09 | 0.07 | 0.04 | 34.89 | |
| 40.00 | | 1482.3 | 0.12 | 0.07 | 0.03 | 35.08 | |
| 45.00 | | 1453.8 | 0.15 | 0.07 | 0.03 | 35.13 | |
| 45.25 | Bot - Section 2 | 71.95 | 0.15 | 0.07 | 0.03 | 1.74 | |
| 50.00 | | 2732.6 | 0.18 | 0.06 | 0.03 | 66.80 | |
| 52.75 | Top - Section 1 | 1558.5 | 0.21 | 0.06 | 0.02 | 38.09 | |
| 55.00 | | 637.28 | 0.22 | 0.06 | 0.02 | 15.49 | |
| 60.00 | | 1395.5 | 0.27 | 0.05 | 0.02 | 32.73 | |
| 65.00 | | 1367.0 | 0.31 | 0.04 | 0.01 | 29.52 | |
| 70.00 | | 1338.5 | 0.36 | 0.03 | 0.01 | 24.69 | |
| 75.00 | | 1310.0 | 0.42 | 0.01 | 0.01 | 18.15 | |
| 80.00 | | 1281.5 | 0.47 | -0.01 | 0.01 | 10.12 | |
| 85.00 | | 1253.0 | 0.53 | -0.03 | 0.01 | 1.29 | |
| 90.00 | | 1224.5 | 0.60 | -0.05 | 0.01 | -7.32 | |
| 91.50 | Bot - Section 3 | 361.01 | 0.62 | -0.06 | 0.02 | -2.87 | |
| 95.00 | | 1473.8 | 0.67 | -0.08 | 0.02 | -17.88 | |
| 98.08 | Top - Section 2 | 1275.5 | 0.71 | -0.09 | 0.03 | -19.24 | |
| 100.00 | | 340.57 | 0.74 | -0.10 | 0.04 | -5.62 | |
| 105.00 | | 872.12 | 0.81 | -0.11 | 0.06 | -15.99 | |
| 110.00 | | 850.75 | 0.89 | -0.12 | 0.08 | -14.63 | |
| 115.00 | | 829.38 | 0.98 | -0.12 | 0.12 | -10.65 | |
| 120.00 | | 808.01 | 1.06 | -0.09 | 0.17 | -4.18 | |
| 125.00 | | 786.64 | 1.15 | -0.03 | 0.22 | 4.59 | |
| 129.33 | Bot - Section 4 | 664.47 | 1.23 | 0.04 | 0.28 | 12.03 | |
| 130.00 | | 169.13 | 1.25 | 0.05 | 0.29 | 3.42 | |
| 134.92 | Top - Section 3 | 1227.8 | 1.34 | 0.19 | 0.38 | 46.25 | |
| 135.00 | | 8.29 | 1.35 | 0.19 | 0.38 | 0.31 | |
| 140.00 | | 490.16 | 1.45 | 0.38 | 0.48 | 29.02 | |
| 145.00 | | 475.92 | 1.55 | 0.64 | 0.61 | 39.91 | |
| 150.00 | | 461.67 | 1.66 | 0.98 | 0.76 | 51.74 | |
| 155.00 | | 447.42 | 1.77 | 1.42 | 0.93 | 64.36 | |
| 157.00 | Appurtenance(s) | 3543.6 | 1.82 | 1.63 | 1.01 | 558.35 | |
| 160.00 | | 258.20 | 1.89 | 1.98 | 1.14 | 46.28 | |
| Totals: | | 43,625.9 | | | | 1,279.2 | Total Wind: 23,444.0 |

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

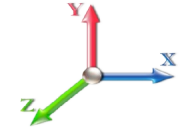
Calculated Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | |
|----------------------------------|--------------------------------------|---------------------------------------|
| Load Case: 1.2D + 1.0E | | Iterations 18 |
| Gust Response Factor 1.10 | Sds 0.14 | Ss 0.18 |
| Dead Load Factor 1.20 | Seismic Load Factor 1.00 | S1 0.06 |
| Wind Load Factor 0.00 | Structure Frequency (f1) 0.49 | SA 0.03 |
| | | Seismic Importance Factor 1.00 |



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -53.70 | -1.38 | 0.00 | -156.31 | 0.00 | 156.31 | 6819.80 | 3409.90 | 17589.7 | 8732.29 | 0.00 | 0.00 | 0.00 | 0.026 |
| 5.00 | -51.66 | -1.36 | 0.00 | -149.42 | 0.00 | 149.42 | 6746.92 | 3373.46 | 17107.0 | 8492.68 | 0.00 | 0.00 | 0.00 | 0.025 |
| 10.00 | -49.63 | -1.34 | 0.00 | -142.59 | 0.00 | 142.59 | 6672.61 | 3336.30 | 16627.2 | 8254.47 | 0.01 | -0.01 | -0.01 | 0.025 |
| 15.00 | -47.64 | -1.31 | 0.00 | -135.89 | 0.00 | 135.89 | 6596.88 | 3298.44 | 16150.4 | 8017.76 | 0.02 | -0.01 | -0.01 | 0.024 |
| 20.00 | -45.68 | -1.28 | 0.00 | -129.32 | 0.00 | 129.32 | 6519.72 | 3259.86 | 15676.8 | 7782.62 | 0.04 | -0.02 | -0.02 | 0.024 |
| 25.00 | -43.75 | -1.25 | 0.00 | -122.90 | 0.00 | 122.90 | 6441.14 | 3220.57 | 15206.5 | 7549.16 | 0.06 | -0.02 | -0.02 | 0.023 |
| 30.00 | -41.86 | -1.22 | 0.00 | -116.64 | 0.00 | 116.64 | 6361.14 | 3180.57 | 14739.8 | 7317.48 | 0.08 | -0.03 | -0.03 | 0.023 |
| 35.00 | -40.01 | -1.19 | 0.00 | -110.54 | 0.00 | 110.54 | 6279.71 | 3139.85 | 14276.8 | 7087.65 | 0.11 | -0.03 | -0.03 | 0.022 |
| 40.00 | -38.18 | -1.15 | 0.00 | -104.61 | 0.00 | 104.61 | 6196.85 | 3098.43 | 13817.8 | 6859.78 | 0.15 | -0.04 | -0.04 | 0.021 |
| 45.00 | -36.40 | -1.12 | 0.00 | -98.84 | 0.00 | 98.84 | 6112.57 | 3056.29 | 13362.9 | 6633.95 | 0.19 | -0.04 | -0.04 | 0.021 |
| 45.25 | -36.31 | -1.12 | 0.00 | -98.56 | 0.00 | 98.56 | 6108.32 | 3054.16 | 13340.3 | 6622.72 | 0.19 | -0.04 | -0.04 | 0.021 |
| 50.00 | -32.99 | -1.05 | 0.00 | -93.24 | 0.00 | 93.24 | 6026.87 | 3013.43 | 12912.4 | 6410.27 | 0.23 | -0.04 | -0.04 | 0.020 |
| 52.75 | -31.09 | -1.01 | 0.00 | -90.35 | 0.00 | 90.35 | 6061.52 | 3030.76 | 13093.1 | 6500.01 | 0.26 | -0.05 | -0.05 | 0.019 |
| 55.00 | -30.31 | -1.00 | 0.00 | -88.07 | 0.00 | 88.07 | 6022.75 | 3011.37 | 12891.0 | 6399.67 | 0.28 | -0.05 | -0.05 | 0.019 |
| 60.00 | -28.59 | -0.97 | 0.00 | -83.07 | 0.00 | 83.07 | 5935.55 | 2967.78 | 12445.2 | 6178.32 | 0.34 | -0.05 | -0.05 | 0.018 |
| 65.00 | -26.91 | -0.94 | 0.00 | -78.24 | 0.00 | 78.24 | 5846.93 | 2923.47 | 12004.0 | 5959.31 | 0.40 | -0.06 | -0.06 | 0.018 |
| 70.00 | -25.26 | -0.91 | 0.00 | -73.55 | 0.00 | 73.55 | 5756.88 | 2878.44 | 11567.7 | 5742.72 | 0.46 | -0.06 | -0.06 | 0.017 |
| 75.00 | -23.64 | -0.89 | 0.00 | -68.99 | 0.00 | 68.99 | 5658.40 | 2829.20 | 11122.7 | 5521.79 | 0.53 | -0.07 | -0.07 | 0.017 |
| 80.00 | -22.06 | -0.88 | 0.00 | -64.51 | 0.00 | 64.51 | 5533.97 | 2766.99 | 10636.4 | 5280.39 | 0.60 | -0.07 | -0.07 | 0.016 |
| 85.00 | -20.51 | -0.88 | 0.00 | -60.09 | 0.00 | 60.09 | 5409.55 | 2704.77 | 10161.0 | 5044.38 | 0.68 | -0.08 | -0.08 | 0.016 |
| 90.00 | -19.00 | -0.88 | 0.00 | -55.67 | 0.00 | 55.67 | 5285.12 | 2642.56 | 9696.54 | 4813.77 | 0.76 | -0.08 | -0.08 | 0.015 |
| 91.50 | -18.55 | -0.88 | 0.00 | -54.36 | 0.00 | 54.36 | 5247.88 | 2623.94 | 9559.60 | 4745.79 | 0.78 | -0.08 | -0.08 | 0.015 |
| 95.00 | -16.75 | -0.88 | 0.00 | -51.27 | 0.00 | 51.27 | 5160.70 | 2580.35 | 9242.88 | 4588.55 | 0.84 | -0.08 | -0.08 | 0.014 |
| 98.08 | -15.19 | -0.88 | 0.00 | -48.55 | 0.00 | 48.55 | 3670.30 | 1835.15 | 6627.10 | 3289.97 | 0.90 | -0.09 | -0.09 | 0.019 |
| 100.00 | -14.77 | -0.88 | 0.00 | -46.87 | 0.00 | 46.87 | 3647.80 | 1823.90 | 6525.29 | 3239.43 | 0.94 | -0.09 | -0.09 | 0.019 |
| 105.00 | -13.68 | -0.88 | 0.00 | -42.47 | 0.00 | 42.47 | 3588.21 | 1794.10 | 6261.99 | 3108.71 | 1.03 | -0.09 | -0.09 | 0.017 |
| 110.00 | -12.61 | -0.88 | 0.00 | -38.08 | 0.00 | 38.08 | 3527.20 | 1763.60 | 6001.46 | 2979.38 | 1.13 | -0.10 | -0.10 | 0.016 |
| 115.00 | -11.57 | -0.88 | 0.00 | -33.69 | 0.00 | 33.69 | 3464.76 | 1732.38 | 5743.91 | 2851.52 | 1.24 | -0.10 | -0.10 | 0.015 |
| 120.00 | -10.56 | -0.88 | 0.00 | -29.31 | 0.00 | 29.31 | 3400.89 | 1700.45 | 5489.50 | 2725.22 | 1.35 | -0.11 | -0.11 | 0.014 |
| 125.00 | -9.57 | -0.87 | 0.00 | -24.93 | 0.00 | 24.93 | 3335.61 | 1667.80 | 5238.44 | 2600.58 | 1.46 | -0.11 | -0.11 | 0.012 |
| 129.33 | -8.74 | -0.86 | 0.00 | -21.16 | 0.00 | 21.16 | 3277.87 | 1638.94 | 5023.71 | 2493.98 | 1.57 | -0.12 | -0.12 | 0.011 |
| 130.00 | -8.53 | -0.85 | 0.00 | -20.59 | 0.00 | 20.59 | 3268.89 | 1634.45 | 4990.91 | 2477.70 | 1.58 | -0.12 | -0.12 | 0.011 |
| 134.92 | -7.01 | -0.80 | 0.00 | -16.40 | 0.00 | 16.40 | 1872.17 | 936.08 | 2836.24 | 1408.03 | 1.70 | -0.12 | -0.12 | 0.015 |
| 135.00 | -7.00 | -0.80 | 0.00 | -16.33 | 0.00 | 16.33 | 1871.69 | 935.84 | 2834.15 | 1406.99 | 1.71 | -0.12 | -0.12 | 0.015 |
| 140.00 | -6.37 | -0.77 | 0.00 | -12.31 | 0.00 | 12.31 | 1842.22 | 921.11 | 2709.07 | 1344.90 | 1.83 | -0.12 | -0.12 | 0.013 |
| 145.00 | -5.76 | -0.73 | 0.00 | -8.44 | 0.00 | 8.44 | 1811.32 | 905.66 | 2584.53 | 1283.07 | 1.96 | -0.13 | -0.13 | 0.010 |
| 150.00 | -5.16 | -0.68 | 0.00 | -4.77 | 0.00 | 4.77 | 1779.00 | 889.50 | 2460.71 | 1221.60 | 2.10 | -0.13 | -0.13 | 0.007 |
| 155.00 | -4.58 | -0.61 | 0.00 | -1.37 | 0.00 | 1.37 | 1745.26 | 872.63 | 2337.81 | 1160.59 | 2.23 | -0.13 | -0.13 | 0.004 |
| 157.00 | -0.31 | -0.05 | 0.00 | -0.14 | 0.00 | 0.14 | 1731.36 | 865.68 | 2288.95 | 1136.33 | 2.29 | -0.13 | -0.13 | 0.000 |
| 160.00 | 0.00 | -0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 1710.09 | 855.04 | 2216.02 | 1100.12 | 2.37 | -0.13 | -0.13 | 0.000 |

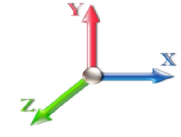
Seismic Segment Forces (Factored)

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | |
|-------------------------------|------|---------------------------------|------|---------------------------------------|
| Load Case: 0.9D + 1.0E | | | | Iterations 18 |
| Gust Response Factor | 1.10 | Sds | 0.14 | Ss 0.18 |
| Dead Load Factor | 0.90 | Seismic Load Factor | 1.00 | S1 0.06 |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.49 | SA 0.03 |
| | | | | Seismic Importance Factor 1.00 |



| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|----------------|-----------------|-----------------|------|-------|------|-----------------|-----------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 1681.8 | 0.00 | 0.03 | 0.02 | 17.83 | |
| 10.00 | | 1653.3 | 0.01 | 0.05 | 0.03 | 26.68 | |
| 15.00 | | 1624.8 | 0.02 | 0.06 | 0.04 | 31.09 | |
| 20.00 | | 1596.3 | 0.03 | 0.07 | 0.04 | 33.20 | |
| 25.00 | | 1567.8 | 0.05 | 0.07 | 0.04 | 34.16 | |
| 30.00 | | 1539.3 | 0.07 | 0.07 | 0.04 | 34.62 | |
| 35.00 | | 1510.8 | 0.09 | 0.07 | 0.04 | 34.89 | |
| 40.00 | | 1482.3 | 0.12 | 0.07 | 0.03 | 35.08 | |
| 45.00 | | 1453.8 | 0.15 | 0.07 | 0.03 | 35.13 | |
| 45.25 | Bot - Section 2 | 71.95 | 0.15 | 0.07 | 0.03 | 1.74 | |
| 50.00 | | 2732.6 | 0.18 | 0.06 | 0.03 | 66.80 | |
| 52.75 | Top - Section 1 | 1558.5 | 0.21 | 0.06 | 0.02 | 38.09 | |
| 55.00 | | 637.28 | 0.22 | 0.06 | 0.02 | 15.49 | |
| 60.00 | | 1395.5 | 0.27 | 0.05 | 0.02 | 32.73 | |
| 65.00 | | 1367.0 | 0.31 | 0.04 | 0.01 | 29.52 | |
| 70.00 | | 1338.5 | 0.36 | 0.03 | 0.01 | 24.69 | |
| 75.00 | | 1310.0 | 0.42 | 0.01 | 0.01 | 18.15 | |
| 80.00 | | 1281.5 | 0.47 | -0.01 | 0.01 | 10.12 | |
| 85.00 | | 1253.0 | 0.53 | -0.03 | 0.01 | 1.29 | |
| 90.00 | | 1224.5 | 0.60 | -0.05 | 0.01 | -7.32 | |
| 91.50 | Bot - Section 3 | 361.01 | 0.62 | -0.06 | 0.02 | -2.87 | |
| 95.00 | | 1473.8 | 0.67 | -0.08 | 0.02 | -17.88 | |
| 98.08 | Top - Section 2 | 1275.5 | 0.71 | -0.09 | 0.03 | -19.24 | |
| 100.00 | | 340.57 | 0.74 | -0.10 | 0.04 | -5.62 | |
| 105.00 | | 872.12 | 0.81 | -0.11 | 0.06 | -15.99 | |
| 110.00 | | 850.75 | 0.89 | -0.12 | 0.08 | -14.63 | |
| 115.00 | | 829.38 | 0.98 | -0.12 | 0.12 | -10.65 | |
| 120.00 | | 808.01 | 1.06 | -0.09 | 0.17 | -4.18 | |
| 125.00 | | 786.64 | 1.15 | -0.03 | 0.22 | 4.59 | |
| 129.33 | Bot - Section 4 | 664.47 | 1.23 | 0.04 | 0.28 | 12.03 | |
| 130.00 | | 169.13 | 1.25 | 0.05 | 0.29 | 3.42 | |
| 134.92 | Top - Section 3 | 1227.8 | 1.34 | 0.19 | 0.38 | 46.25 | |
| 135.00 | | 8.29 | 1.35 | 0.19 | 0.38 | 0.31 | |
| 140.00 | | 490.16 | 1.45 | 0.38 | 0.48 | 29.02 | |
| 145.00 | | 475.92 | 1.55 | 0.64 | 0.61 | 39.91 | |
| 150.00 | | 461.67 | 1.66 | 0.98 | 0.76 | 51.74 | |
| 155.00 | | 447.42 | 1.77 | 1.42 | 0.93 | 64.36 | |
| 157.00 | Appurtenance(s) | 3543.6 | 1.82 | 1.63 | 1.01 | 558.35 | |
| 160.00 | | 258.20 | 1.89 | 1.98 | 1.14 | 46.28 | |
| Totals: | | 43,625.9 | | | | 1,279.2 | Total Wind: 23,444.0 |

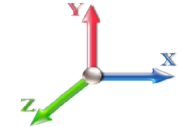
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



| | | |
|----------------------------------|---------------------------------------|----------------------|
| Load Case: 0.9D + 1.0E | | Iterations 18 |
| Gust Response Factor 1.10 | Sds 0.14 | Ss 0.18 |
| Dead Load Factor 0.90 | Seismic Load Factor 1.00 | S1 0.06 |
| Wind Load Factor 0.00 | Structure Frequency (f1) 0.49 | SA 0.03 |
| | Seismic Importance Factor 1.00 | |



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -40.27 | -1.38 | 0.00 | -155.50 | 0.00 | 155.50 | 6819.80 | 3409.90 | 17589.7 | 8732.29 | 0.00 | 0.00 | 0.00 | 0.024 |
| 5.00 | -38.75 | -1.36 | 0.00 | -148.61 | 0.00 | 148.61 | 6746.92 | 3373.46 | 17107.0 | 8492.68 | 0.00 | 0.00 | 0.00 | 0.023 |
| 10.00 | -37.22 | -1.34 | 0.00 | -141.79 | 0.00 | 141.79 | 6672.61 | 3336.30 | 16627.2 | 8254.47 | 0.01 | -0.01 | -0.01 | 0.023 |
| 15.00 | -35.73 | -1.31 | 0.00 | -135.10 | 0.00 | 135.10 | 6596.88 | 3298.44 | 16150.4 | 8017.76 | 0.02 | -0.01 | -0.01 | 0.022 |
| 20.00 | -34.26 | -1.28 | 0.00 | -128.55 | 0.00 | 128.55 | 6519.72 | 3259.86 | 15676.8 | 7782.62 | 0.04 | -0.02 | -0.02 | 0.022 |
| 25.00 | -32.82 | -1.25 | 0.00 | -122.15 | 0.00 | 122.15 | 6441.14 | 3220.57 | 15206.5 | 7549.16 | 0.06 | -0.02 | -0.02 | 0.021 |
| 30.00 | -31.40 | -1.21 | 0.00 | -115.91 | 0.00 | 115.91 | 6361.14 | 3180.57 | 14739.8 | 7317.48 | 0.08 | -0.03 | -0.03 | 0.021 |
| 35.00 | -30.01 | -1.18 | 0.00 | -109.84 | 0.00 | 109.84 | 6279.71 | 3139.85 | 14276.8 | 7087.65 | 0.11 | -0.03 | -0.03 | 0.020 |
| 40.00 | -28.64 | -1.15 | 0.00 | -103.93 | 0.00 | 103.93 | 6196.85 | 3098.43 | 13817.8 | 6859.78 | 0.15 | -0.04 | -0.04 | 0.020 |
| 45.00 | -27.30 | -1.11 | 0.00 | -98.19 | 0.00 | 98.19 | 6112.57 | 3056.29 | 13362.9 | 6633.95 | 0.19 | -0.04 | -0.04 | 0.019 |
| 45.25 | -27.23 | -1.11 | 0.00 | -97.92 | 0.00 | 97.92 | 6108.32 | 3054.16 | 13340.3 | 6622.72 | 0.19 | -0.04 | -0.04 | 0.019 |
| 50.00 | -24.74 | -1.04 | 0.00 | -92.63 | 0.00 | 92.63 | 6026.87 | 3013.43 | 12912.4 | 6410.27 | 0.23 | -0.04 | -0.04 | 0.019 |
| 52.75 | -23.32 | -1.01 | 0.00 | -89.76 | 0.00 | 89.76 | 6061.52 | 3030.76 | 13093.1 | 6500.01 | 0.26 | -0.05 | -0.05 | 0.018 |
| 55.00 | -22.73 | -0.99 | 0.00 | -87.50 | 0.00 | 87.50 | 6022.75 | 3011.37 | 12891.0 | 6399.67 | 0.28 | -0.05 | -0.05 | 0.017 |
| 60.00 | -21.44 | -0.96 | 0.00 | -82.54 | 0.00 | 82.54 | 5935.55 | 2967.78 | 12445.2 | 6178.32 | 0.34 | -0.05 | -0.05 | 0.017 |
| 65.00 | -20.18 | -0.93 | 0.00 | -77.74 | 0.00 | 77.74 | 5846.93 | 2923.47 | 12004.0 | 5959.31 | 0.39 | -0.06 | -0.06 | 0.016 |
| 70.00 | -18.94 | -0.91 | 0.00 | -73.09 | 0.00 | 73.09 | 5756.88 | 2878.44 | 11567.7 | 5742.72 | 0.46 | -0.06 | -0.06 | 0.016 |
| 75.00 | -17.73 | -0.89 | 0.00 | -68.56 | 0.00 | 68.56 | 5658.40 | 2829.20 | 11122.7 | 5521.79 | 0.53 | -0.07 | -0.07 | 0.016 |
| 80.00 | -16.54 | -0.88 | 0.00 | -64.12 | 0.00 | 64.12 | 5533.97 | 2766.99 | 10636.4 | 5280.39 | 0.60 | -0.07 | -0.07 | 0.015 |
| 85.00 | -15.38 | -0.88 | 0.00 | -59.73 | 0.00 | 59.73 | 5409.55 | 2704.77 | 10161.0 | 5044.38 | 0.67 | -0.08 | -0.08 | 0.015 |
| 90.00 | -14.25 | -0.88 | 0.00 | -55.35 | 0.00 | 55.35 | 5285.12 | 2642.56 | 9696.54 | 4813.77 | 0.75 | -0.08 | -0.08 | 0.014 |
| 91.50 | -13.91 | -0.88 | 0.00 | -54.04 | 0.00 | 54.04 | 5247.88 | 2623.94 | 9559.60 | 4745.79 | 0.78 | -0.08 | -0.08 | 0.014 |
| 95.00 | -12.56 | -0.87 | 0.00 | -50.98 | 0.00 | 50.98 | 5160.70 | 2580.35 | 9242.88 | 4588.55 | 0.84 | -0.08 | -0.08 | 0.014 |
| 98.08 | -11.40 | -0.87 | 0.00 | -48.28 | 0.00 | 48.28 | 3670.30 | 1835.15 | 6627.10 | 3289.97 | 0.89 | -0.09 | -0.09 | 0.018 |
| 100.00 | -11.08 | -0.87 | 0.00 | -46.61 | 0.00 | 46.61 | 3647.80 | 1823.90 | 6525.29 | 3239.43 | 0.93 | -0.09 | -0.09 | 0.017 |
| 105.00 | -10.26 | -0.87 | 0.00 | -42.24 | 0.00 | 42.24 | 3588.21 | 1794.10 | 6261.99 | 3108.71 | 1.02 | -0.09 | -0.09 | 0.016 |
| 110.00 | -9.46 | -0.87 | 0.00 | -37.88 | 0.00 | 37.88 | 3527.20 | 1763.60 | 6001.46 | 2979.38 | 1.12 | -0.10 | -0.10 | 0.015 |
| 115.00 | -8.68 | -0.87 | 0.00 | -33.52 | 0.00 | 33.52 | 3464.76 | 1732.38 | 5743.91 | 2851.52 | 1.23 | -0.10 | -0.10 | 0.014 |
| 120.00 | -7.92 | -0.87 | 0.00 | -29.17 | 0.00 | 29.17 | 3400.89 | 1700.45 | 5489.50 | 2725.22 | 1.34 | -0.11 | -0.11 | 0.013 |
| 125.00 | -7.18 | -0.87 | 0.00 | -24.81 | 0.00 | 24.81 | 3335.61 | 1667.80 | 5238.44 | 2600.58 | 1.45 | -0.11 | -0.11 | 0.012 |
| 129.33 | -6.55 | -0.85 | 0.00 | -21.06 | 0.00 | 21.06 | 3277.87 | 1638.94 | 5023.71 | 2493.98 | 1.56 | -0.11 | -0.11 | 0.010 |
| 130.00 | -6.40 | -0.85 | 0.00 | -20.50 | 0.00 | 20.50 | 3268.89 | 1634.45 | 4990.91 | 2477.70 | 1.57 | -0.12 | -0.12 | 0.010 |
| 134.92 | -5.26 | -0.80 | 0.00 | -16.32 | 0.00 | 16.32 | 1872.17 | 936.08 | 2836.24 | 1408.03 | 1.69 | -0.12 | -0.12 | 0.014 |
| 135.00 | -5.25 | -0.80 | 0.00 | -16.26 | 0.00 | 16.26 | 1871.69 | 935.84 | 2834.15 | 1406.99 | 1.70 | -0.12 | -0.12 | 0.014 |
| 140.00 | -4.78 | -0.77 | 0.00 | -12.25 | 0.00 | 12.25 | 1842.22 | 921.11 | 2709.07 | 1344.90 | 1.82 | -0.12 | -0.12 | 0.012 |
| 145.00 | -4.32 | -0.73 | 0.00 | -8.40 | 0.00 | 8.40 | 1811.32 | 905.66 | 2584.53 | 1283.07 | 1.95 | -0.13 | -0.13 | 0.009 |
| 150.00 | -3.87 | -0.68 | 0.00 | -4.75 | 0.00 | 4.75 | 1779.00 | 889.50 | 2460.71 | 1221.60 | 2.09 | -0.13 | -0.13 | 0.006 |
| 155.00 | -3.43 | -0.61 | 0.00 | -1.36 | 0.00 | 1.36 | 1745.26 | 872.63 | 2337.81 | 1160.59 | 2.22 | -0.13 | -0.13 | 0.003 |
| 157.00 | -0.23 | -0.05 | 0.00 | -0.14 | 0.00 | 0.14 | 1731.36 | 865.68 | 2288.95 | 1136.33 | 2.28 | -0.13 | -0.13 | 0.000 |
| 160.00 | 0.00 | -0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 1710.09 | 855.04 | 2216.02 | 1100.12 | 2.36 | -0.13 | -0.13 | 0.000 |

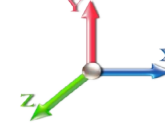
Wind Loading - Shaft

Structure: CT01700-S-SBA **Code:** EIA/TIA-222-G 7/22/2019
Site Name: Haddam **Exposure:** B
Height: 160.00 (ft) **Crest Height:** 0.00
Base Elev: 0.000 (ft) **Site Class:** C - Very Dense Soil
Gh: 1.1 **Topography:** 1 **Struct Class:** II **Page:** 23



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 19

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 268.71 | 0.750 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 264.23 | 0.750 | 0.000 | 5.00 | 26.541 | 19.91 | 134.2 | 0.0 | 1681.8 |
| 10.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 259.75 | 0.750 | 0.000 | 5.00 | 26.095 | 19.57 | 131.9 | 0.0 | 1653.3 |
| 15.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 255.28 | 0.750 | 0.000 | 5.00 | 25.649 | 19.24 | 129.7 | 0.0 | 1624.8 |
| 20.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 250.80 | 0.750 | 0.000 | 5.00 | 25.203 | 18.90 | 127.4 | 0.0 | 1596.3 |
| 25.00 | | 1.00 | 0.70 | 6.129 | 6.74 | 246.32 | 0.750 | 0.000 | 5.00 | 24.757 | 18.57 | 125.2 | 0.0 | 1567.8 |
| 30.00 | | 1.00 | 0.70 | 6.134 | 6.75 | 241.94 | 0.750 | 0.000 | 5.00 | 24.311 | 18.23 | 123.0 | 0.0 | 1539.4 |
| 35.00 | | 1.00 | 0.73 | 6.410 | 7.05 | 242.75 | 0.750 | 0.000 | 5.00 | 23.865 | 17.90 | 126.2 | 0.0 | 1510.9 |
| 40.00 | | 1.00 | 0.76 | 6.659 | 7.33 | 242.76 | 0.750 | 0.000 | 5.00 | 23.419 | 17.56 | 128.7 | 0.0 | 1482.4 |
| 45.00 | | 1.00 | 0.79 | 6.887 | 7.58 | 242.13 | 0.750 | 0.000 | 5.00 | 22.973 | 17.23 | 130.5 | 0.0 | 1453.9 |
| 45.25 | Bot - Section 2 | 1.00 | 0.79 | 6.898 | 7.59 | 242.08 | 0.750 | 0.000 | 0.25 | 1.137 | 0.85 | 6.5 | 0.0 | 71.9 |
| 50.00 | | 1.00 | 0.81 | 7.098 | 7.81 | 240.98 | 0.750 | 0.000 | 4.75 | 21.793 | 16.34 | 127.6 | 0.0 | 2732.6 |
| 52.75 | Top - Section 1 | 1.00 | 0.82 | 7.207 | 7.93 | 240.16 | 0.750 | 0.000 | 2.75 | 12.433 | 9.32 | 73.9 | 0.0 | 1558.6 |
| 55.00 | | 1.00 | 0.83 | 7.294 | 8.02 | 244.05 | 0.750 | 0.000 | 2.25 | 10.072 | 7.55 | 60.6 | 0.0 | 637.3 |
| 60.00 | | 1.00 | 0.85 | 7.477 | 8.22 | 242.16 | 0.750 | 0.000 | 5.00 | 22.059 | 16.54 | 136.1 | 0.0 | 1395.5 |
| 65.00 | | 1.00 | 0.87 | 7.650 | 8.42 | 239.94 | 0.750 | 0.000 | 5.00 | 21.613 | 16.21 | 136.4 | 0.0 | 1367.0 |
| 70.00 | | 1.00 | 0.89 | 7.814 | 8.60 | 237.43 | 0.750 | 0.000 | 5.00 | 21.167 | 15.88 | 136.5 | 0.0 | 1338.5 |
| 75.00 | | 1.00 | 0.91 | 7.969 | 8.77 | 234.68 | 0.750 | 0.000 | 5.00 | 20.721 | 15.54 | 136.2 | 0.0 | 1310.0 |
| 80.00 | | 1.00 | 0.93 | 8.118 | 8.93 | 231.70 | 0.750 | 0.000 | 5.00 | 20.275 | 15.21 | 135.8 | 0.0 | 1281.6 |
| 85.00 | | 1.00 | 0.94 | 8.260 | 9.09 | 228.51 | 0.750 | 0.000 | 5.00 | 19.829 | 14.87 | 135.1 | 0.0 | 1253.1 |
| 90.00 | | 1.00 | 0.96 | 8.396 | 9.24 | 225.15 | 0.750 | 0.000 | 5.00 | 19.383 | 14.54 | 134.3 | 0.0 | 1224.6 |
| 91.50 | Bot - Section 3 | 1.00 | 0.96 | 8.435 | 9.28 | 224.10 | 0.750 | 0.000 | 1.50 | 5.715 | 4.29 | 39.8 | 0.0 | 361.0 |
| 95.00 | | 1.00 | 0.97 | 8.526 | 9.38 | 221.61 | 0.750 | 0.000 | 3.50 | 13.445 | 10.08 | 94.6 | 0.0 | 1473.8 |
| 98.08 | Top - Section 2 | 1.00 | 0.98 | 8.604 | 9.46 | 219.35 | 0.750 | 0.000 | 3.08 | 11.639 | 8.73 | 82.6 | 0.0 | 1275.5 |
| 100.00 | | 1.00 | 0.99 | 8.652 | 9.52 | 221.72 | 0.750 | 0.000 | 1.92 | 7.170 | 5.38 | 51.2 | 0.0 | 340.6 |
| 105.00 | | 1.00 | 1.00 | 8.774 | 9.65 | 217.91 | 0.750 | 0.000 | 5.00 | 18.363 | 13.77 | 132.9 | 0.0 | 872.1 |
| 110.00 | | 1.00 | 1.02 | 8.891 | 9.78 | 213.97 | 0.750 | 0.000 | 5.00 | 17.917 | 13.44 | 131.4 | 0.0 | 850.7 |
| 115.00 | | 1.00 | 1.03 | 9.005 | 9.91 | 209.90 | 0.750 | 0.000 | 5.00 | 17.471 | 13.10 | 129.8 | 0.0 | 829.4 |
| 120.00 | | 1.00 | 1.04 | 9.115 | 10.03 | 205.72 | 0.750 | 0.000 | 5.00 | 17.025 | 12.77 | 128.0 | 0.0 | 808.0 |
| 125.00 | | 1.00 | 1.05 | 9.222 | 10.14 | 201.43 | 0.750 | 0.000 | 5.00 | 16.579 | 12.43 | 126.1 | 0.0 | 786.6 |
| 129.33 | Bot - Section 4 | 1.00 | 1.06 | 9.312 | 10.24 | 197.63 | 0.750 | 0.000 | 4.33 | 14.008 | 10.51 | 107.6 | 0.0 | 664.5 |
| 130.00 | | 1.00 | 1.07 | 9.326 | 10.26 | 197.04 | 0.750 | 0.000 | 0.67 | 2.154 | 1.62 | 16.6 | 0.0 | 169.1 |
| 134.92 | Top - Section 3 | 1.00 | 1.08 | 9.425 | 10.37 | 192.63 | 0.750 | 0.000 | 4.92 | 15.638 | 11.73 | 121.6 | 0.0 | 1227.8 |
| 135.00 | | 1.00 | 1.08 | 9.427 | 10.37 | 195.20 | 0.750 | 0.000 | 0.08 | 0.261 | 0.20 | 2.0 | 0.0 | 8.3 |
| 140.00 | | 1.00 | 1.09 | 9.525 | 10.48 | 190.63 | 0.750 | 0.000 | 5.00 | 15.453 | 11.59 | 121.4 | 0.0 | 490.2 |
| 145.00 | | 1.00 | 1.10 | 9.621 | 10.58 | 185.98 | 0.750 | 0.000 | 5.00 | 15.007 | 11.26 | 119.1 | 0.0 | 475.9 |
| 150.00 | | 1.00 | 1.11 | 9.715 | 10.69 | 181.24 | 0.750 | 0.000 | 5.00 | 14.561 | 10.92 | 116.7 | 0.0 | 461.7 |
| 155.00 | | 1.00 | 1.12 | 9.806 | 10.79 | 176.43 | 0.750 | 0.000 | 5.00 | 14.115 | 10.59 | 114.2 | 0.0 | 447.4 |
| 157.00 | Appurtenance(s) | 1.00 | 1.12 | 9.842 | 10.83 | 174.48 | 0.750 | 0.000 | 2.00 | 5.521 | 4.14 | 44.8 | 0.0 | 175.0 |
| 160.00 | | 1.00 | 1.13 | 9.896 | 10.89 | 171.54 | 0.750 | 0.000 | 3.00 | 8.148 | 6.11 | 66.5 | 0.0 | 258.2 |
| Totals: | | | | | | | | 160.00 | | | | 4,122.8 | | 40,257.3 |

Discrete Appurtenance Forces

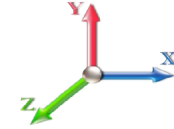
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 19

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|----------------|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|-----------------|----------------|---------------|-----------------|---------------|---------------|
| 1 | 157.00 | RFS | 3 | 9.842 | 10.827 | 0.59 | 0.75 | 9.19 | 79.20 | 0.000 | 0.000 | 99.49 | 0.00 | 0.00 |
| 2 | 157.00 | RFS | 3 | 9.842 | 10.827 | 0.54 | 0.75 | 32.79 | 384.00 | 0.000 | 0.000 | 354.99 | 0.00 | 0.00 |
| 3 | 157.00 | Ericsson KRY 112 144/1 | 3 | 9.842 | 10.827 | 0.45 | 0.75 | 0.47 | 33.06 | 0.000 | 0.000 | 5.12 | 0.00 | 0.00 |
| 4 | 157.00 | Ericsson Radio 4449 | 3 | 9.842 | 10.827 | 0.50 | 0.75 | 2.46 | 222.00 | 0.000 | 0.000 | 26.60 | 0.00 | 0.00 |
| 5 | 157.00 | Kathrein 782 11056 Bias | 3 | 9.842 | 10.827 | 0.45 | 0.75 | 0.20 | 5.40 | 0.000 | 0.000 | 2.19 | 0.00 | 0.00 |
| 6 | 157.00 | low profile platform | 1 | 9.842 | 10.827 | 1.00 | 1.00 | 51.70 | 2645.00 | 0.000 | 0.000 | 559.73 | 0.00 | 0.00 |
| Totals: | | | | | | | | | 3,368.66 | | | 1,048.12 | | |

Total Applied Force Summary

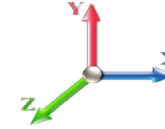
| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 19

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|--------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 134.20 | 1696.39 | 0.00 | 0.00 |
| 10.00 | | 131.94 | 1689.73 | 0.00 | 0.00 |
| 15.00 | | 129.69 | 1661.24 | 0.00 | 0.00 |
| 20.00 | | 127.43 | 1632.74 | 0.00 | 0.00 |
| 25.00 | | 125.17 | 1604.25 | 0.00 | 0.00 |
| 30.00 | | 123.02 | 1575.75 | 0.00 | 0.00 |
| 35.00 | | 126.20 | 1547.26 | 0.00 | 0.00 |
| 40.00 | | 128.66 | 1518.77 | 0.00 | 0.00 |
| 45.00 | | 130.53 | 1490.27 | 0.00 | 0.00 |
| 45.25 | | 6.47 | 73.77 | 0.00 | 0.00 |
| 50.00 | | 127.61 | 2767.23 | 0.00 | 0.00 |
| 52.75 | | 73.93 | 1578.57 | 0.00 | 0.00 |
| 55.00 | | 60.61 | 653.66 | 0.00 | 0.00 |
| 60.00 | | 136.08 | 1431.93 | 0.00 | 0.00 |
| 65.00 | | 136.41 | 1403.43 | 0.00 | 0.00 |
| 70.00 | | 136.45 | 1374.94 | 0.00 | 0.00 |
| 75.00 | | 136.24 | 1346.45 | 0.00 | 0.00 |
| 80.00 | | 135.78 | 1317.95 | 0.00 | 0.00 |
| 85.00 | | 135.12 | 1289.46 | 0.00 | 0.00 |
| 90.00 | | 134.25 | 1260.96 | 0.00 | 0.00 |
| 91.50 | | 39.77 | 371.91 | 0.00 | 0.00 |
| 95.00 | | 94.57 | 1499.33 | 0.00 | 0.00 |
| 98.08 | | 82.62 | 1297.94 | 0.00 | 0.00 |
| 100.00 | | 51.18 | 354.55 | 0.00 | 0.00 |
| 105.00 | | 132.92 | 908.52 | 0.00 | 0.00 |
| 110.00 | | 131.42 | 887.15 | 0.00 | 0.00 |
| 115.00 | | 129.79 | 865.78 | 0.00 | 0.00 |
| 120.00 | | 128.02 | 844.41 | 0.00 | 0.00 |
| 125.00 | | 126.13 | 823.04 | 0.00 | 0.00 |
| 129.33 | | 107.61 | 696.01 | 0.00 | 0.00 |
| 130.00 | | 16.57 | 173.99 | 0.00 | 0.00 |
| 134.92 | | 121.60 | 1263.59 | 0.00 | 0.00 |
| 135.00 | | 2.03 | 8.90 | 0.00 | 0.00 |
| 140.00 | | 121.44 | 526.56 | 0.00 | 0.00 |
| 145.00 | | 119.12 | 512.32 | 0.00 | 0.00 |
| 150.00 | | 116.70 | 498.07 | 0.00 | 0.00 |
| 155.00 | | 114.19 | 483.82 | 0.00 | 0.00 |
| 157.00 | (16) attachments | 1092.95 | 3558.20 | 0.00 | 0.00 |
| 160.00 | | 66.52 | 258.20 | 0.00 | 0.00 |
| | Totals: | 5,170.95 | 44,747.04 | 0.00 | 0.00 |

Final Analysis Summary

| | | |
|---------------------------------|--|-------------------------|
| Structure: CT01700-S-SBA | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Reactions

| Load Case | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) |
|----------------------------------|-----------------|-----------------|-----------------|---------------------|---------------------|---------------------|
| 1.2D + 1.6W 101 mph Wind | 23.5 | 0.00 | 53.68 | 0.00 | 0.00 | 2303.68 |
| 0.9D + 1.6W 101 mph Wind | 23.5 | 0.00 | 40.26 | 0.00 | 0.00 | 2292.68 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 6.0 | 0.00 | 73.02 | 0.00 | 0.00 | 587.54 |
| 1.2D + 1.0E | 1.4 | 0.00 | 53.70 | 0.00 | 0.00 | 156.31 |
| 0.9D + 1.0E | 1.4 | 0.00 | 40.27 | 0.00 | 0.00 | 155.50 |
| 1.0D + 1.0W 60 mph Wind | 5.2 | 0.00 | 44.75 | 0.00 | 0.00 | 506.45 |

Max Stresses

| Load Case | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Elev (ft) | Stress Ratio |
|----------------------------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|-----------|--------------|
| 1.2D + 1.6W 101 mph Wind | -53.68 | -23.47 | 0.00 | -2303.6 | 0.00 | -2303.6 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.272 |
| 0.9D + 1.6W 101 mph Wind | -40.26 | -23.47 | 0.00 | -2292.6 | 0.00 | -2292.6 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.269 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | -73.02 | -5.99 | 0.00 | -587.54 | 0.00 | -587.54 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.078 |
| 1.2D + 1.0E | -53.70 | -1.38 | 0.00 | -156.31 | 0.00 | -156.31 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.026 |
| 0.9D + 1.0E | -40.27 | -1.38 | 0.00 | -155.50 | 0.00 | -155.50 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.024 |
| 1.0D + 1.0W 60 mph Wind | -44.75 | -5.18 | 0.00 | -506.45 | 0.00 | -506.45 | 6819.80 | 3409.9 | 17589.7 | 8732.29 | 0.00 | 0.065 |

Base Plate Summary

| | | |
|--------------------------------|--|-------------------------|
| Structure: CT01700-S-SB | Code: EIA/TIA-222-G | 7/22/2019 |
| Site Name: Haddam | Exposure: B | |
| Height: 160.00 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: C - Very Dense Soil | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |
| | | Page: 28 |



| Reactions | Base Plate | Anchor Bolts |
|---------------------------------|-----------------------------------|---------------------------------|
| Original Design | Yield (ksi): 60.00 | Bolt Circle: 71.72 |
| Moment (kip-ft): 6690.00 | Width (in): 77.72 | Number Bolts: 24.00 |
| Axial (kip): 76.20 | Style: Polygon | Bolt Type: 2.25" 18J |
| Shear (kip): 49.30 | Polygon Sides: 16.00 | Bolt Diameter (in): 2.25 |
| Analysis | Clip Length (in): 0.00 | Yield (ksi): 75.00 |
| Moment (kip-ft): 2303.68 | Effective Len (in): 12.91 | Ultimate (ksi): 100.00 |
| Axial (kip): 73.02 | Moment (kip-in): 293.35 | Arrangement: Radial |
| Shear (kip): 23.47 | Allow Stress (ksi): 81.00 | Cluster Dist (in): 0.00 |
| | Applied Stress (ksi): 0.00 | Start Angle (deg): 0.00 |
| Moment Design %: 34.43 | Stress Ratio: 0.19 | Compression |
| | | Force (kip): 67.28 |
| | | Allowable (kip): 260.00 |
| | | Ratio: 0.27 |
| | | Tension |
| | | Force (kip): 61.20 |
| | | Allowable (kip): 260.00 |
| | | Ratio: 0.24 |



Monopole Mat Foundation Design

| | |
|-------------------------|-------------------------|
| Date | 10/31/2017 |
| Customer Name: | SBA Communications Corp |
| EIA/TIA Standard: | EIA-222-G |
| Site Name: | Haddam |
| Structure Height (Ft.): | 53 |
| Site Number: | CT01700-S-SBA |
| Engineer Name: | W. Velez |
| Engr. Number: | 78644 |
| Engineer Login ID: | |

Foundation Info Obtained from:

| |
|-----------------------|
| Drawings/Calculations |
| Monopole |
| Analysis |

Structure Type:

Analysis or Design?

Base Reactions (Factored):

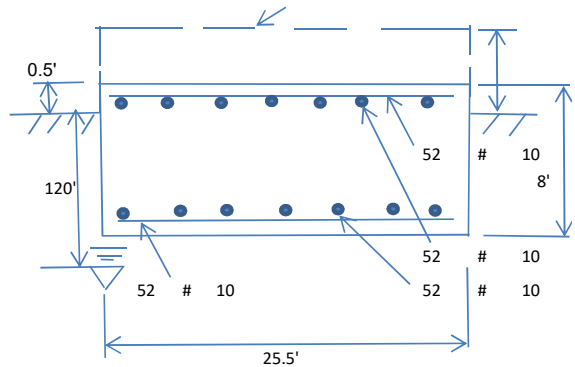
| | | | |
|----------------------|------|---------------------|--------|
| Axial Load (Kips): | 53.7 | Shear Force (Kips): | 23.5 |
| Uplift Force (Kips): | 0.0 | Moment (Kips-ft): | 2303.7 |

Allowable overstress %: 5.0%

Foundation Geometries:

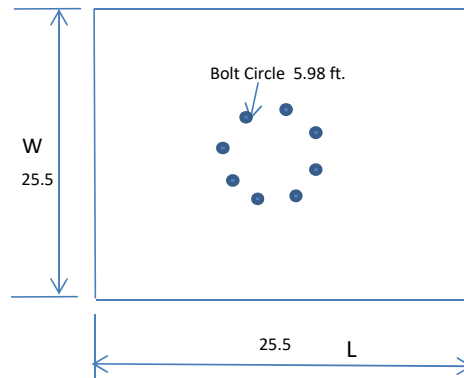
| | | | | | |
|---------------------------|------|-------------------------|------|--------------------------|------|
| Anchor Bolt Circle (ft.): | 5.98 | Depth of Base BG (ft.): | 7.50 | Mods required -Yes/No ?: | No |
| Thickness of Pad (ft.): | 8.00 | Length of Pad (ft.): | 25.5 | Width of Pad (ft.): | 25.5 |

| | | | |
|--------------------------|------|--------------------------|------|
| Final Length of pad (ft) | 25.5 | Final width of pad (ft): | 25.5 |
|--------------------------|------|--------------------------|------|



Material Properties and Reabr Info:

| | | | | | |
|--|------|---------------------------|-------|---------------------------|----|
| Concrete Strength (psi): | 3000 | Steel Elastic Modulus: | 29000 | ksi | |
| Pad Rebar Yield (Ksi): | 60 | Tie Spacing (in): | 12.0 | | |
| Pad Steel Rebar Size (#): | 10 | Unit Weight of Concrete: | 150.0 | pcf | |
| Concrete Cover (in.): | 3 | Qty. of Rebar in Pad (L): | 52 | Qty. of Rebar in Pad (W): | 52 |
| Rebar at the bottom of the concrete pad: | | Qty. of Rebar in Pad (L): | 52 | Qty. of Rebar in Pad (W): | 52 |



Apply 1.35 factor for e/w Per G: 1.00

Soil Design Parameters:

| | | | | | | |
|--------------------------------------|-------|--|------|-----|--------------------------|----|
| Water Table B.G.S. (ft): | 120.0 | Unit Weight of Water: | 57.6 | pcf | Angle from Top of Pad: | 30 |
| Ultimate Bearing Pressure (psf): | 12000 | Ultimate Skin Friction: | 0 | Psf | Angle from Bottm of Pad: | 25 |
| Consider Friction for O.T.M. (Y/N): | No | Consider Friction for bearing (Y/N): | No | | Angle from Bottm of Pad: | 25 |
| Consider soil hor. resist. for OTM.: | Yes | Reduction factor on the maximum soil bearing pressure: | 1.00 | | | |

Foundation Analysis and Design:

| | | | |
|--|---------|--|--------|
| Uplift Strength Reduction Factor: | 0.75 | Compression Strength Reduction Factor: | 0.75 |
| Total Dry Soil Volume (cu. Ft.): | 0.00 | Total Dry Soil Weight (Kips): | 0.00 |
| Total Buoyant Soil Volume (cu. Ft.): | 0.00 | Total Buoyant Soil Weight (Kips): | 0.00 |
| Total Effective Soil Weight (Kips): | 0.00 | Weight from the Concrete Block at Top (K): | 0.00 |
| Total Dry Concrete Volume (cu. Ft.): | 5202.00 | Total Dry Concrete Weight (Kips): | 780.30 |
| Total Buoyant Concrete Volume (cu. Ft.): | 0.00 | Total Buoyant Concrete Weight (Kips): | 0.00 |
| Total Effective Concrete Weight (Kips): | 780.30 | Total Vertical Load on Base (Kips): | 833.98 |

Check Soil Capacities:

| | | | | | | |
|--|--------|---|--|------|------|-----|
| Calculated Maxium Net Soil Pressure under the base (psf): | 1883 | < | Allowable Factored Soil Bearing (psf): | 9000 | 0.21 | OK! |
| Allowable Foundation Overturning Resistance (kips-ft.): | 9638.4 | > | Design Factored Momont (kips-ft): | 2090 | 0.22 | OK! |
| Factor of Safety Against Overturning (O. R. Moment/Design Moment): | 4.61 | | | | | OK! |

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

| | | | |
|--|------|--------------------------------------|------|
| Strength reduction factor (Flexure and axial tension): | 0.90 | Strength reduction factor (Shear): | 0.75 |
| Strength reduction factor (Axial compression): | 0.65 | Wind Load Factor on Concrete Design: | 1.00 |

Concrete Pad:

| | | | | | | |
|---|---------|-----|--|--------|------|-----|
| One-Way Design Shear Capacity (L-Direction, Kips): | 2322.4 | > | One-Way Factored Shear (L-D. Kips): | 71.3 | 0.03 | OK! |
| One-Way Design Shear Capacity (W-Direction, Kips): | 2322.4 | > | One-Way Factored Shear (W-D., Kips): | 71.3 | 0.03 | OK! |
| One-Way Design Shear Capacity (Corner-Corner, Kips): | 2694.1 | > | One-Way Factored Shear (C-C, Kips): | 388.3 | 0.14 | OK! |
| Lower Steel Pad Reinforcement Ratio (L-Direct.): | 0.0023 | OK! | Lower Steel Pad Reinf. Ratio (W-Direct.): | 0.0023 | | |
| Lower Steel Pad Moment Capacity (L-Direction, Kips-ft): | 26697.5 | > | Moment at Bottom (L-Direct. K-Ft): | 64.6 | 0.00 | OK! |
| Lower Steel Pad Moment Capacity (W-Direction, Kips-ft): | 26697.5 | > | Moment at Bottom (W-Direct. K-Ft): | 64.6 | 0.00 | OK! |
| Lower Steel Pad Moment Capacity (Corner-Corner,K-ft): | 37522.2 | > | Moment at Bottom (C-C Dir. K-Ft): | 91.3 | 0.00 | OK! |
| Upper Steel Pad Reinforcement Ratio (L-Direct.): | 0.0023 | OK! | Upper Steel Reinf. Ratio (W-Direct.): | 0.0023 | | |
| Upper Steel Pad Moment Capacity (L-Direction, Kips-ft): | 26697.5 | > | Moment at the top (L-Dir Kips-Ft): | 289.5 | 0.01 | OK! |
| Upper Steel Pad Moment Capacity (W-Direction, Kips-ft): | 26697.5 | > | Moment at the top (W-Dir Kips-Ft): | 289.5 | 0.01 | OK! |
| Upper Steel Pad Moment Capacity (Corner-Corner, K-ft): | 37522.2 | > | Moment at the top (C-C Direc. K-Ft): | 280.8 | 0.01 | OK! |

EXHIBIT 8

Antenna Mount Structural Analysis



Source: Sitepro1 Date: 08.01.2019

SBA Site: CT01700-S Haddam
T-Mobile Site Number: CTHA523A
Project: L600 Project

Prepared For: T-Mobile

Mount Description: (1) Platform w/ Handrail and Kicker
Sitepro1 RMQP-4096-HK

Site Location: 270 Hubbard Rd, Higganum, CT
Middlesex County
41.4641°, -72.542°

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

Analysis Load Case: T-Mobile Final Configuration

Analysis Result: **Adequate @ 63% - Once Replaced**
See Conclusion



Revision 0
August 6, 2019

CTHA523A_A and E_Structural_L600 08.06.19 - Pass with Replacement

1.0 Introduction

An antenna mount structural analysis has been performed on T-Mobile's **replacement** mount assembly located at the CT01700-S Haddam communications site in Middlesex County, CT considering the final equipment loading configuration listed in Section 3.0.

2.0 Analysis Criteria

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

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

| |
|---|
| Wind w/o ice = 130 mph (3-sec gust Ultimate Wind Speed) |
| Wind w/o ice = 101 mph (3-sec gust Basic Wind Speed) |
| Wind w/ ice = 50 mph (3-sec gust Basic) with 3/4" Design Ice, Escalated with Height |
| Topographic Category 1; Exposure Category C; Structure Class (Risk Category) II |
| Gust Effect Factor = 1.0; Directionality Factor = 0.95 |
| Site Class D "Stiff Soil"; $F_a = 1.6$; $F_v = 2.4$; $S_{DS} = 0.187$ |
| Maintenance Loads**: |
| $L_m = 500$ lb @ Worst Case Mount Pipe (Concurrent with 30 mph Wind Speed) |
| $L_v = 250$ lb @ Worst Case Member Location (Center Span or Cantilever) |
| ** The mount face horizontal boom rails of T-Arm mount assemblies are not rated for rigging, hoisting or maintenance loading. |

The following documents were provided:

- | |
|--|
| <ul style="list-style-type: none"> • <u>Colo Application</u> SBA 600 MHz, App # 116816 v1. • <u>RFDS</u> T-Mobile L600 Project, V1.1, CTHA523A, 4/25/19. |
|--|

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

3.0 Appurtenance Information

Table 3.1 – T-Mobile Final Configuration^{1,2,3}

| COR | (Quantity) Appurtenance Make/Model | Mount Description |
|---------|------------------------------------|---|
| 157.0'± | (3) RFS APXV18-206517S-C-A20 | (1) Platform w/ Handrail and Kicker • Sitepro1 RMQP-4096-HK |
| | (3) RFS APXVAARR24_43-U-NA20 | |
| | (3) ERICSSON 4449 B71+B12 RRH | |
| | (3) ERICSSON KRY 112 144/1 TMA | |

1. Refer to antenna installation Construction Drawings (by others, when applicable) for additional information regarding final antenna and equipment orientations.
2. Panel antennas to be installed as follows:
 - 2.1. APXV18 panels to be installed on mount pipes in Position 1.
 - 2.2. AARR panels to be installed on mount pipe in Position 2.
3. RRH/TMA units to be installed as follows:
 - 3.1. 4449 RRHs to be installed on mount pipe behind panels in Position 2.
 - 3.2. TMAs to be installed on mount pipe behind panels in Position 2.

4.0 Analysis Results

Table 4.1 – Replacement Mount Capacity

| Load Case | Governing Mount Component ¹ | % Capacity ² | Result |
|------------------------------|--|-------------------------|---|
| Final T-Mobile Configuration | Standoff | 28% | Adequate Once Replaced³ |
| | Bottom Rail | 13% | |
| | Bracing | 33% | |
| | Pipe2.5STD Mount Pipe | 35% | |
| | PRK Double Angles | 36% | |
| | Handrail | 63% | |
| | Connection Plates | 40% | |

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

Table 4.2 – Structural Component Material Strengths

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

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

5.0 Conclusion & Recommendations

Based on T-Mobile's final equipment loading configuration, the **replacement** mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

- Install **Replacement Platform Assembly**; attach to monopole shaft per manufacturer's specifications.
 - Sitepro1 RMQP-4096-HK, (1) total.
 - Sitepro1 RMQP + PRK1245 + HRK12.
 - 12'-6" Low Pro-Platform with Twelve 2-7/8" Antenna Mounting Pipes and Handrail.
 - Replacement mount to be installed in accordance with manufacturer's specifications and applicable Construction Drawings.

Installation Requirements:

- Antennas and equipment shall be installed centered vertically between the mount front face rails (limit vertical installation eccentricity) with a maximum vertical eccentricity of 12" for panels and 20" for RRHs. If this assumption is incorrect, the results of this analysis will be inaccurate and not valid. This analysis accounts for vertical eccentricities necessary to install all panel antennas at the same relative top tip elevation.
- Panel antennas to be installed as follows:
 - APXV18 panels to be installed on mount pipes in Position 1.
 - AARR panels to be installed on mount pipe in Position 2.
- RRH/TMA units to be installed as follows:
 - 4449 RRHs to be installed on mount pipe behind panels in Position 2.
 - TMAs to be installed on mount pipe behind panels in Position 2.

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

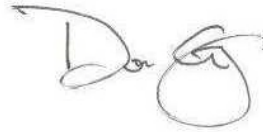
This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented,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

Prepared by:



Jesse Drennen, PE, MLE
208.761.7986
jesse.drennen@geostructural.com

Reviewed and Approved by:



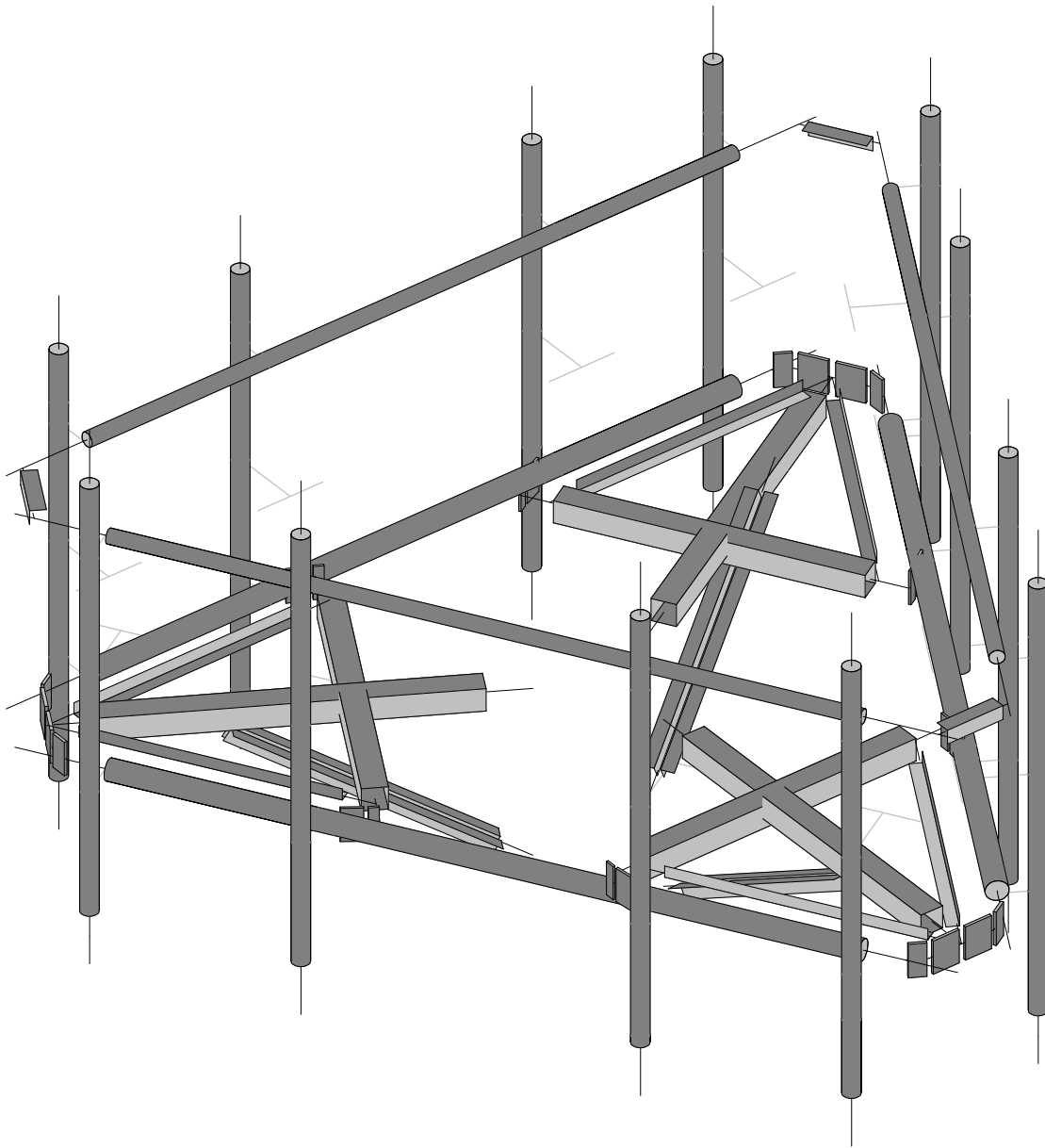
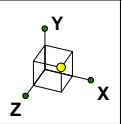
Don George, PE, SE, MLSE
208.602.6569
don.george@geostructural.com

6.0 Standard Conditions

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

7.0 Calculations & Software Output

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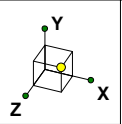
Jesse Drennen, PE

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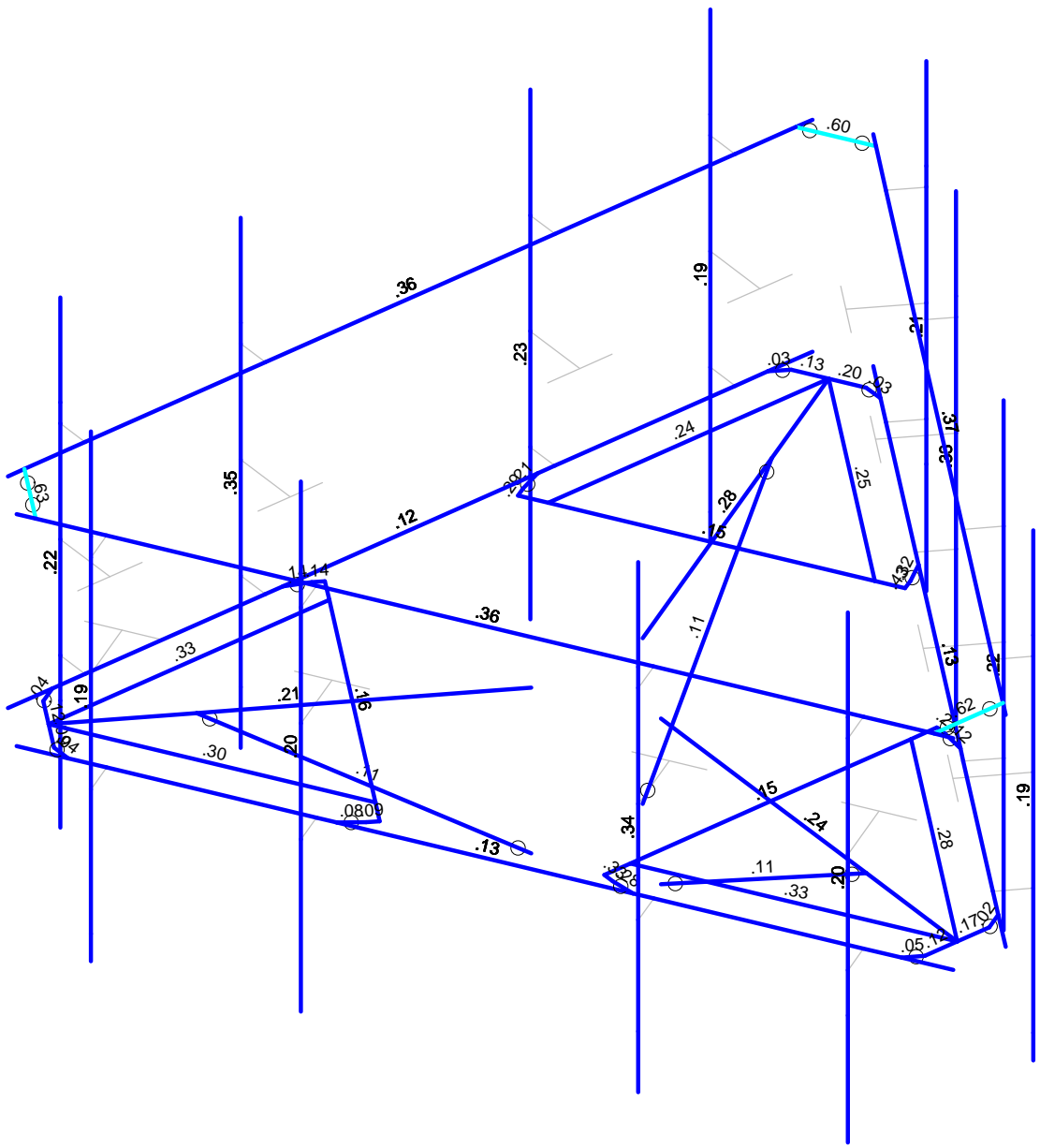
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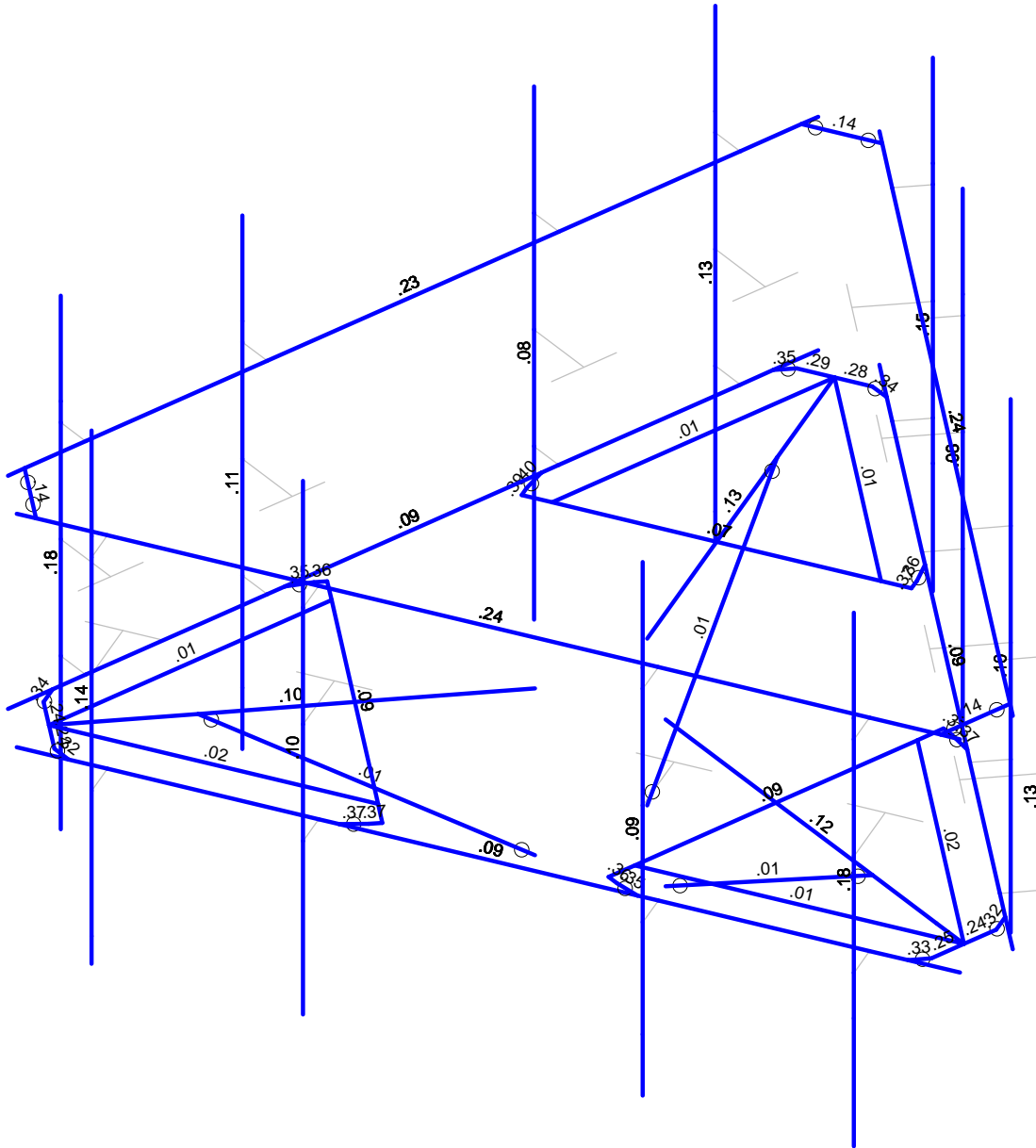
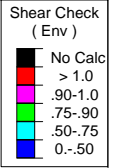
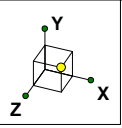


| Code Check (Env) | |
|--------------------|---------|
| Black | No Calc |
| Red | > 1.0 |
| Magenta | .90-1.0 |
| Green | .75-.90 |
| Cyan | .50-.75 |
| Blue | 0-.50 |



Member Code Checks Displayed (Enveloped)
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|--------------------|----------|----------------------------------|
| GeoStructural, LLC | CTHA523A | SK - 2 |
| Jesse Drennen, PE | | Aug 6, 2019 at 2:19 PM |
| | | CTHA523A_Mount Analysis_R0 19... |



Member Shear Checks Displayed (Enveloped)
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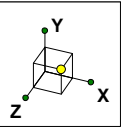
Jesse Drennen, PE

CTHA523A

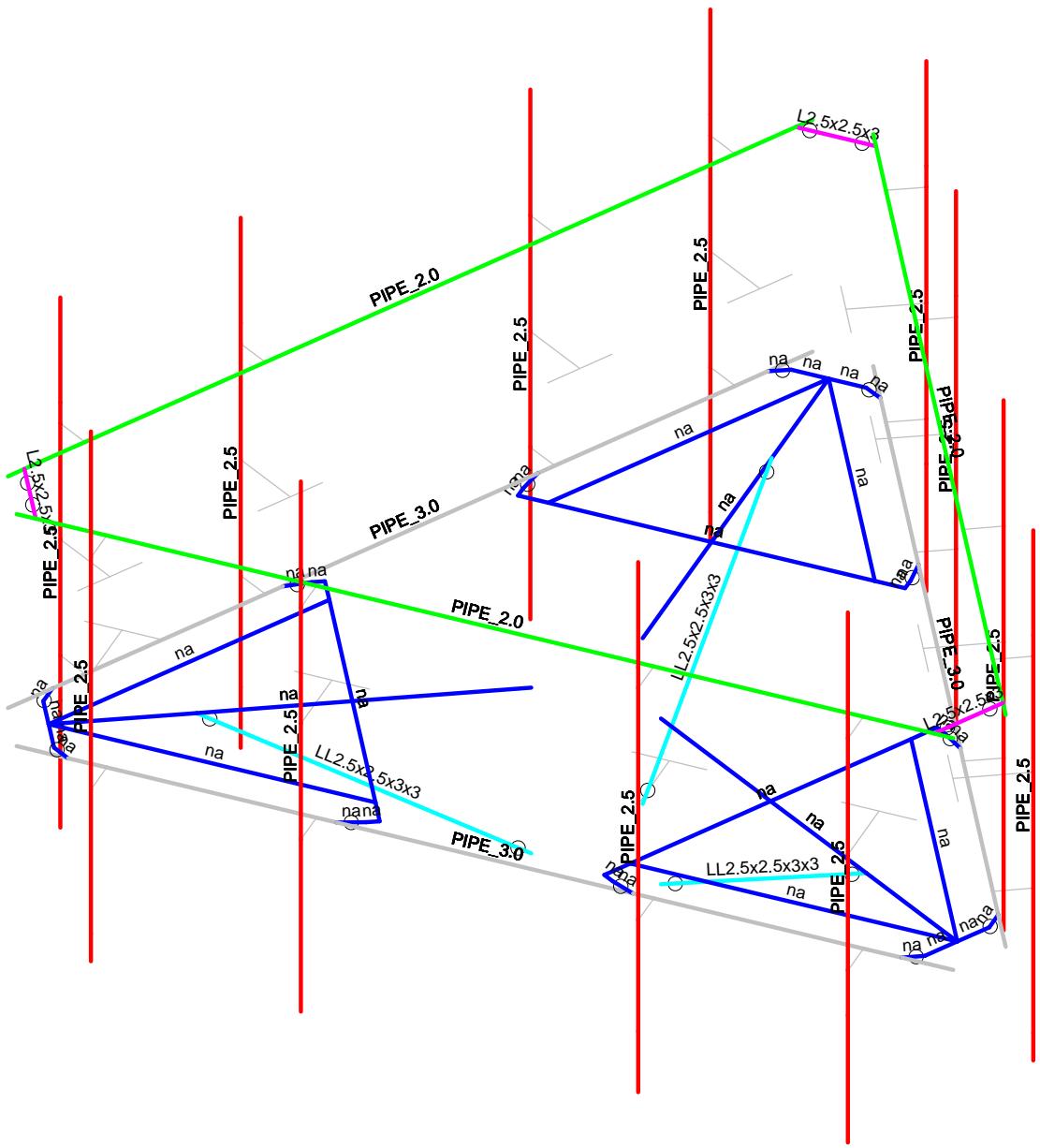
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| Section Sets | |
|---------------|---------------|
| na | na |
| PIPE_2.0 | PIPE_2.0 |
| PIPE_2.5 | PIPE_2.5 |
| PIPE_3.0 | PIPE_3.0 |
| L2.5x2.5x3 | L2.5x2.5x3 |
| LL2.5x2.5x3x3 | LL2.5x2.5x3x3 |
| RIGID | RIGID |

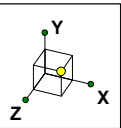


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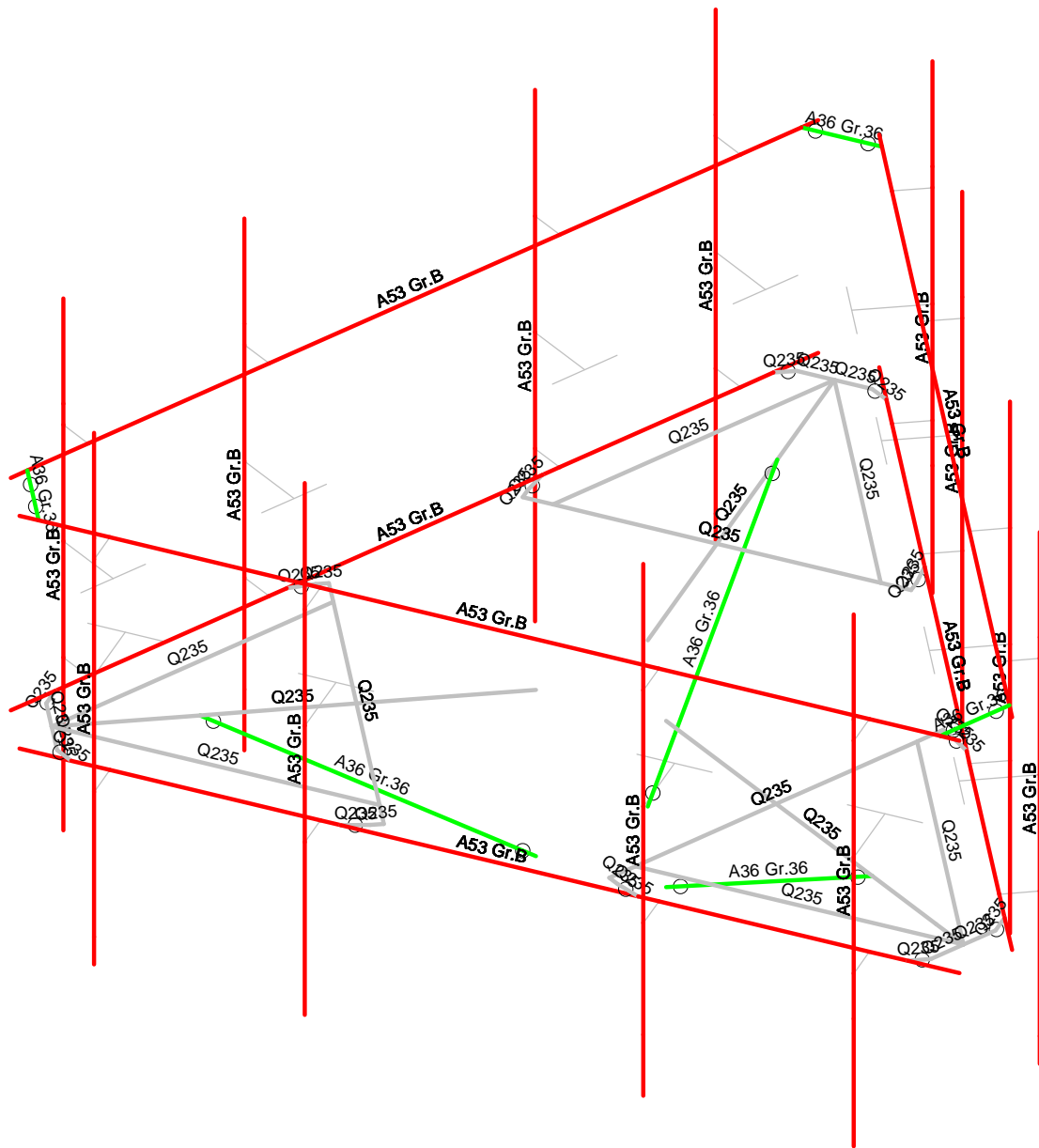
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| Material Sets | |
|--------------------------------------|-----------|
| ■ | RIGID |
| ■ | A36 Gr.36 |
| ■ | A53 Gr.B |
| ■ | Q235 |



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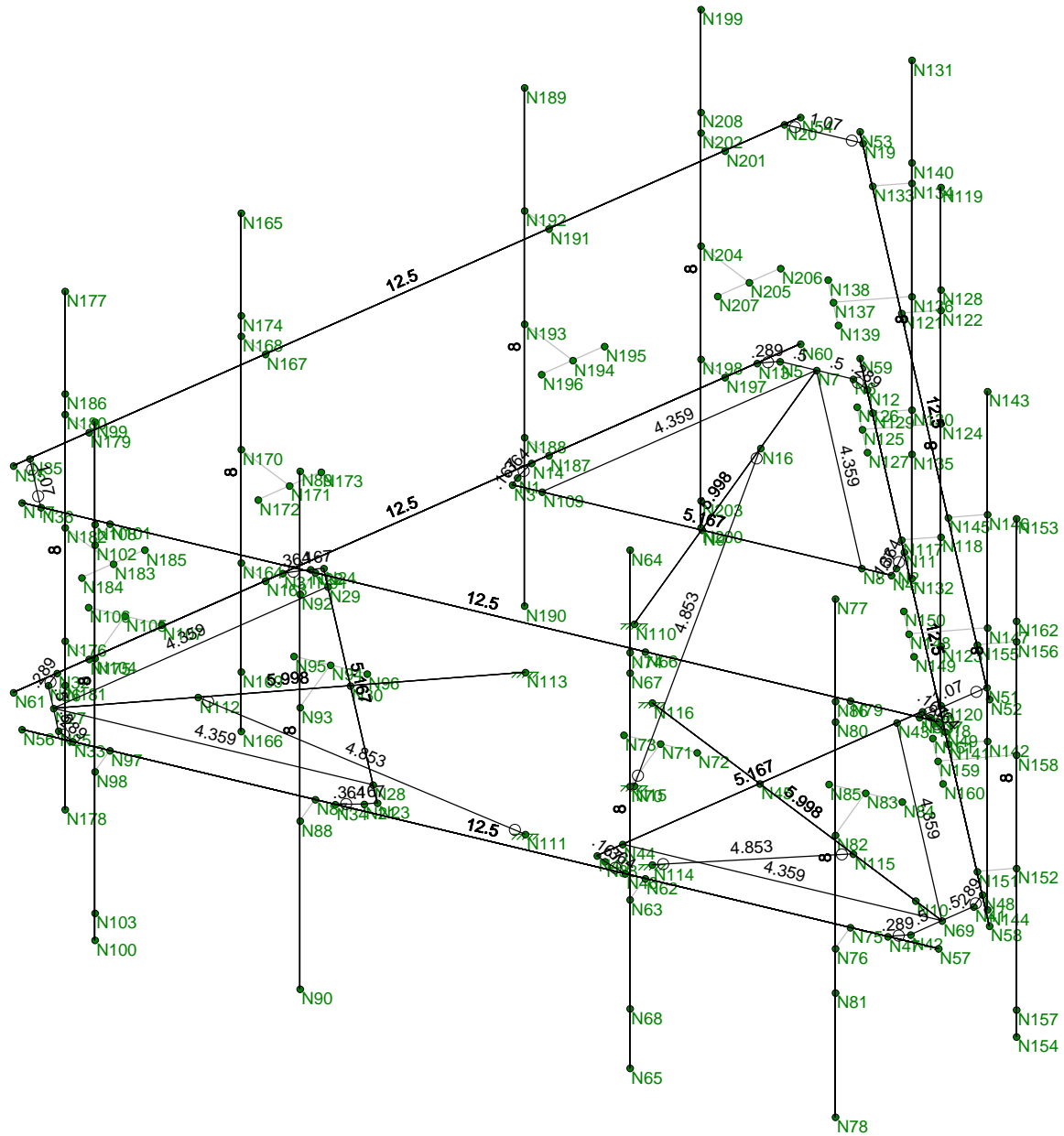
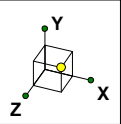
Jesse Drennen, PE

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Member Length (ft) Displayed
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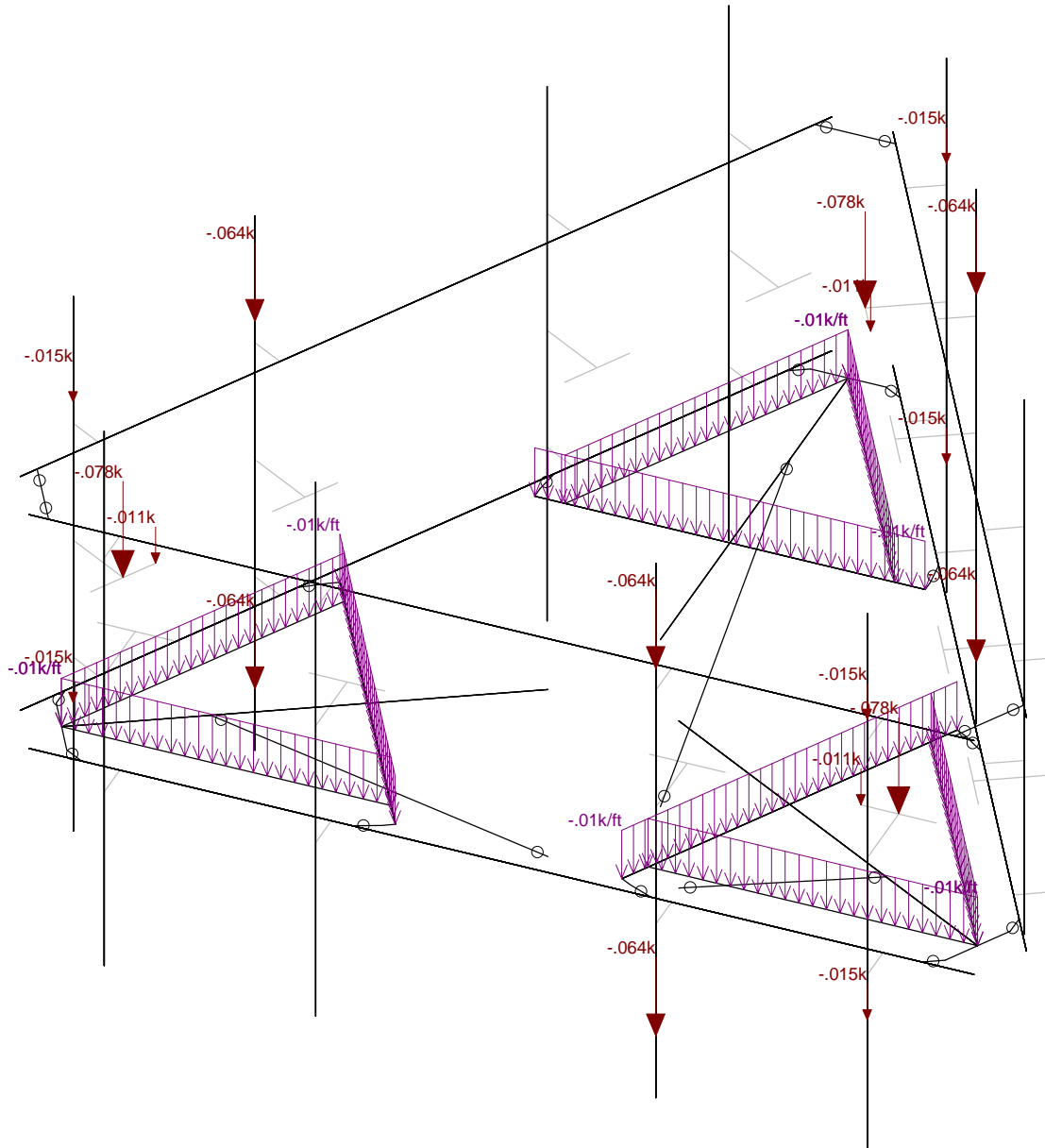
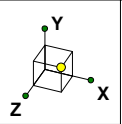
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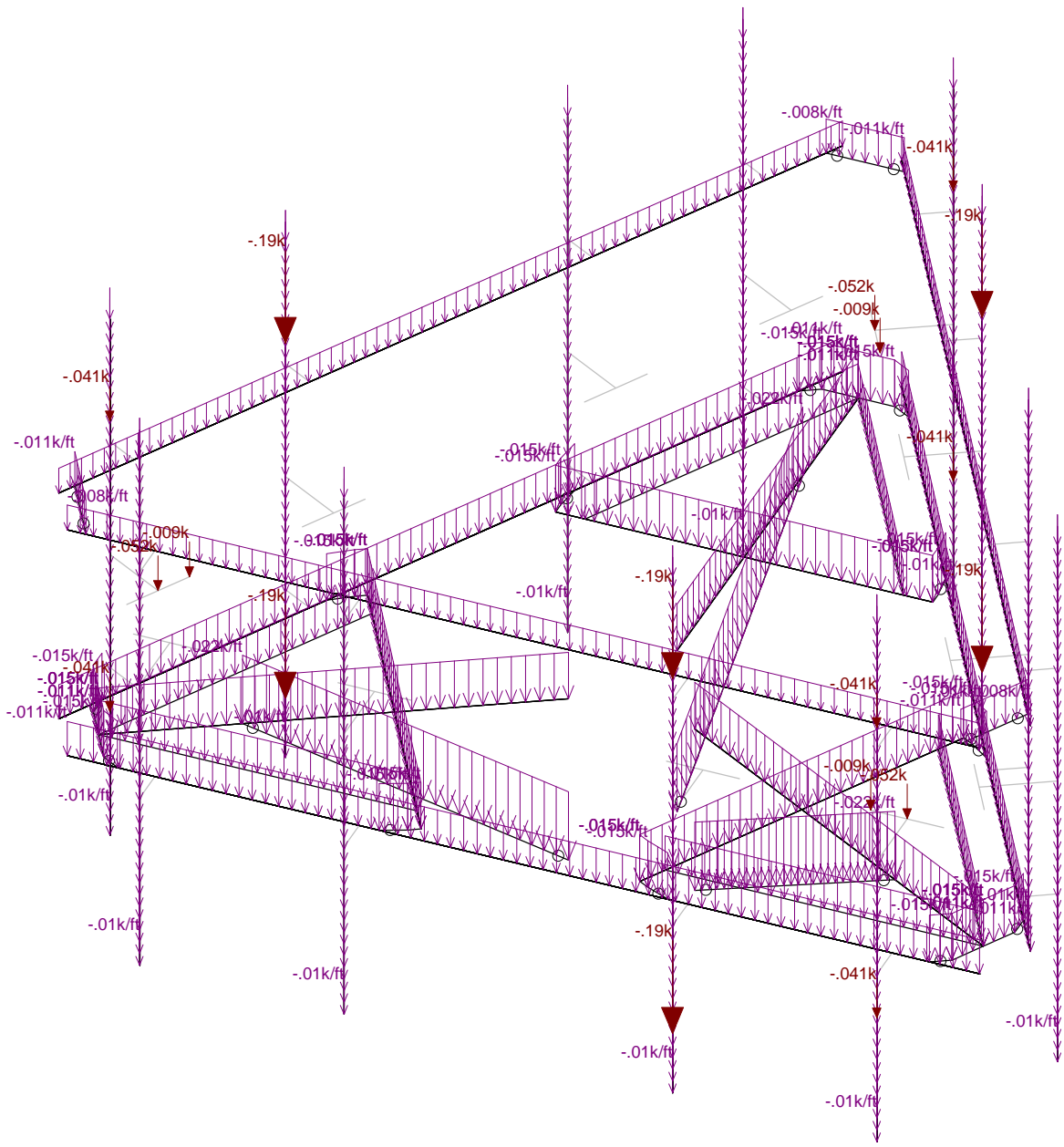
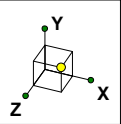
Jesse Drennen, PE

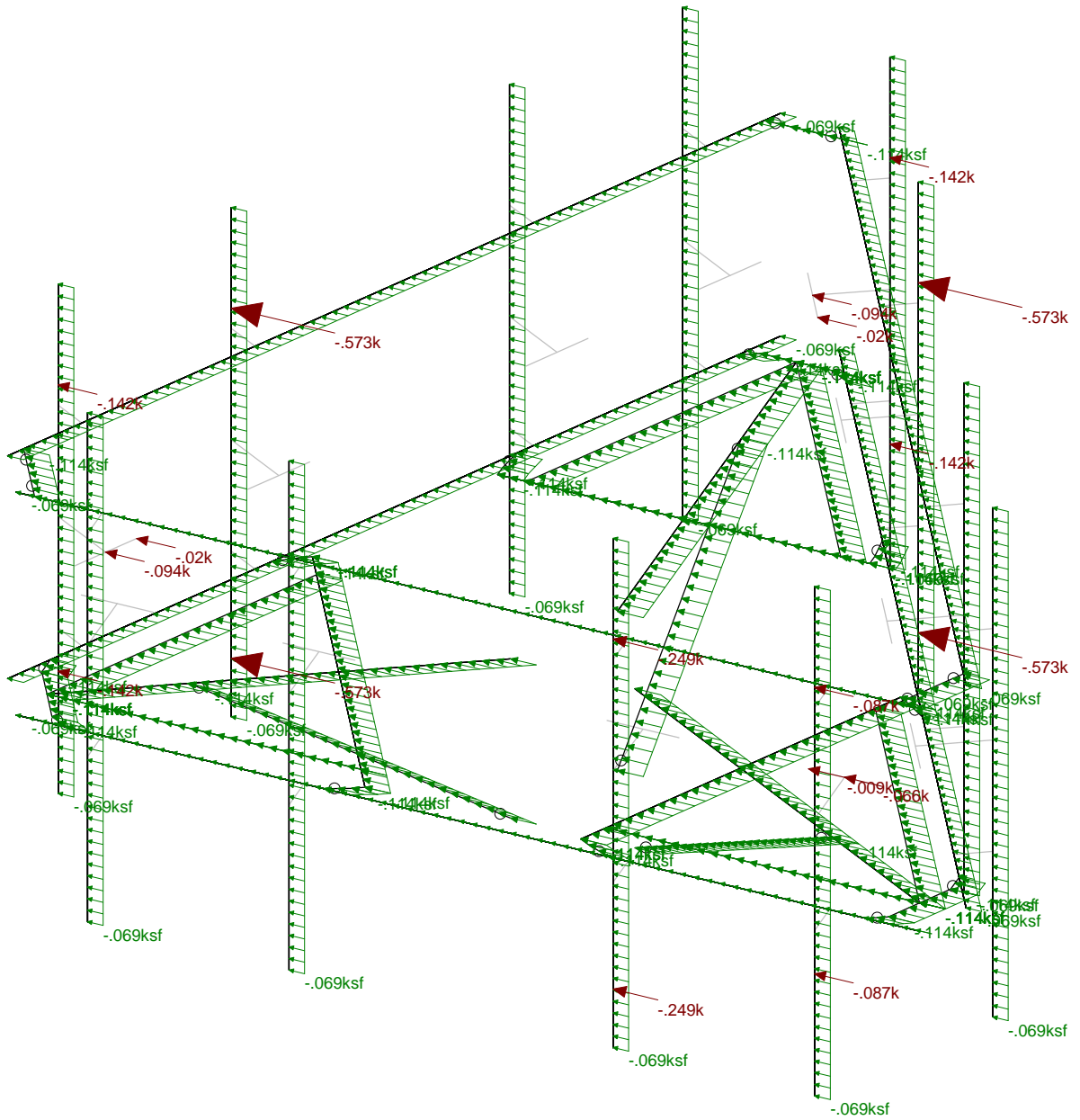
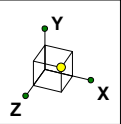
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Loads: BLC 6, Wox
Envelope Only Solution

GeoStructural, LLC

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Basic Load Cases

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Joint | Point | Distribut... | Area(Me... | Surface(... |
|----|-----------------|----------|-----------|-----------|-----------|-------|-------|--------------|------------|-------------|
| 1 | D | DL | | -1 | | 19 | | 9 | | |
| 2 | Di | SL | | | | 19 | | 63 | | |
| 3 | Lm [500] | LL | | | | 1 | | | | |
| 4 | Lv [250] | LL | | | | 2 | | | | |
| 5 | Woz | WL | | | | 19 | | 60 | | |
| 6 | Wox | WL | | | | 19 | | 60 | | |
| 7 | Wiz | WL | | | | 19 | | 60 | | |
| 8 | Wix | WL | | | | 19 | | 60 | | |
| 9 | Ez | EL | | | | 19 | | | | |
| 10 | Ex | EL | | | | 19 | | | | |

Load Combination Design

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



Load Combination Design (Continued)

| | Description | ASIF | CD | Service | Hot Rol... | Cold Form... | Wood | Concrete | Masonry | Aluminum | Stainless | Connection |
|----|------------------|------|----|---------|------------|--------------|------|----------|---------|----------|-----------|------------|
| 42 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 43 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 44 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 45 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 46 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 47 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 48 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 49 | 5) 1.2D+1.5L... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 50 | 6) 1.2D+1.5Lv | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 51 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 52 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 53 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 54 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 55 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 56 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 57 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 58 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 59 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 61 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 62 | 7) (1.2+0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 63 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 64 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 65 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 66 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 67 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 68 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 69 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 70 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 71 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 72 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 73 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 74 | 8) (0.9-0.2Sd... | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 75 | Dead Only | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Hot Rolled Steel Properties

| | Label | E [ksi] | G [ksi] | Nu | Therm (/1... | Density[k/ft^3] | Yield[ksi] | Ry | Fu[ksi] | Rt |
|----|------------------|---------|---------|----|--------------|-----------------|------------|-----|---------|-----|
| 1 | A36 Gr.36 | 29000 | 11154 | .3 | .65 | .49 | 36 | 1.5 | 58 | 1.2 |
| 2 | A572 Gr.50 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.1 | 65 | 1.1 |
| 3 | A992 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.1 | 65 | 1.1 |
| 4 | A500 Gr.B RND | 29000 | 11154 | .3 | .65 | .49 | 42 | 1.4 | 58 | 1.3 |
| 5 | A500 Gr.B Rect | 29000 | 11154 | .3 | .65 | .49 | 46 | 1.4 | 58 | 1.3 |
| 6 | A53 Gr.B | 29000 | 11154 | .3 | .65 | .49 | 35 | 1.6 | 60 | 1.2 |
| 7 | A500 Gr.B RND_1 | 29000 | 11154 | .3 | .65 | .527 | 42 | 1.4 | 58 | 1.3 |
| 8 | A500 Gr.B Rect 1 | 29000 | 11154 | .3 | .65 | .527 | 46 | 1.4 | 58 | 1.3 |
| 9 | A1085 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.4 | 65 | 1.3 |
| 10 | A500 Gr.42 | 29000 | 11154 | .3 | .65 | .49 | 42 | 1.3 | 58 | 1.1 |
| 11 | A500 Gr.46 | 29000 | 11154 | .3 | .65 | .49 | 46 | 1.2 | 58 | 1.1 |
| 12 | Q235 | 29000 | 11154 | .3 | .65 | .49 | 34 | 1.5 | 58 | 1.2 |

Hot Rolled Steel Section Sets

| | Label | Shape | Type | Design List | Material | Design R... | A [in ²] | Iyy [in ⁴] | Izz [in ⁴] | J [in ⁴] |
|----|---------------|---------------|------|-------------|----------------|-------------|----------------------|------------------------|------------------------|----------------------|
| 1 | PIPE 1.5 | PIPE 1.5 | Beam | None | A53 Gr.B | Typical | .749 | .293 | .293 | .586 |
| 2 | PIPE 2.0 | PIPE 2.0 | Beam | None | A53 Gr.B | Typical | 1.02 | .627 | .627 | 1.25 |
| 3 | PIPE 2.5 | PIPE 2.5 | Beam | None | A53 Gr.B | Typical | 1.61 | 1.45 | 1.45 | 2.89 |
| 4 | PIPE 3.0 | PIPE 3.0 | Beam | None | A53 Gr.B | Typical | 2.07 | 2.85 | 2.85 | 5.69 |
| 5 | PIPE 3.5 | PIPE 3.5 | Beam | None | A53 Gr.B | Typical | 2.5 | 4.52 | 4.52 | 9.04 |
| 6 | PIPE 4.0 | PIPE 4.0 | Beam | None | A53 Gr.B | Typical | 2.96 | 6.82 | 6.82 | 13.6 |
| 7 | PIPE 2.0X | PIPE 2.0X | Beam | None | A53 Gr.B | Typical | 1.4 | .827 | .827 | 1.65 |
| 8 | HSS2x2x3 | HSS2x2x3 | Beam | None | A500 Gr.B Rect | Typical | 1.19 | .641 | .641 | 1.09 |
| 9 | HSS3x3x3 | HSS3x3x3 | Beam | None | A500 Gr.B Rect | Typical | 1.89 | 2.46 | 2.46 | 4.03 |
| 10 | HSS4x4x3 | HSS4x4x3 | Beam | None | A500 Gr.B Rect | Typical | 2.58 | 6.21 | 6.21 | 10 |
| 11 | HSS4x4x4 | HSS4x4x4 | Beam | None | A500 Gr.B Rect | Typical | 3.37 | 7.8 | 7.8 | 12.8 |
| 12 | HSS5x5x4 | HSS5x5x4 | Beam | None | A500 Gr.B Rect | Typical | 4.3 | 16 | 16 | 25.8 |
| 13 | C3x3.5 | C3x3.5 | Beam | None | A36 Gr.36 | Typical | 1.09 | .169 | 1.57 | .023 |
| 14 | C4x4.5 | C4X4.5 HRA | Beam | None | A36 Gr.36 | Typical | 1.38 | .289 | 3.65 | .032 |
| 15 | C5x6.7 | C5x6.7 | Beam | None | A36 Gr.36 | Typical | 1.97 | .47 | 7.48 | .055 |
| 16 | L2.5x2.5x3 | L2.5x2.5x3 | Beam | None | A36 Gr.36 | Typical | .901 | .535 | .535 | .011 |
| 17 | L2.5x2.5x4 | L2.5x2.5x4 | Beam | None | A36 Gr.36 | Typical | 1.19 | .692 | .692 | .026 |
| 18 | L3x3x3 | L3x3x3 | Beam | None | A36 Gr.36 | Typical | 1.09 | .948 | .948 | .014 |
| 19 | L3x3x4 | L3x3x4 | Beam | None | A36 Gr.36 | Typical | 1.44 | 1.23 | 1.23 | .031 |
| 20 | L3x3x6 | L3x3x6 | Beam | None | A36 Gr.36 | Typical | 2.11 | 1.75 | 1.75 | .101 |
| 21 | L3.5x3.5x4 | L3.5x3.5x4 | Beam | None | A36 Gr.36 | Typical | 1.7 | 2 | 2 | .039 |
| 22 | L4x4x4 | L4x4x4 | Beam | None | A36 Gr.36 | Typical | 1.93 | 3 | 3 | .044 |
| 23 | LL2.5x2.5x3x3 | LL2.5x2.5x3x3 | Beam | None | A36 Gr.36 | Typical | 1.8 | 2.46 | 1.07 | .023 |

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 | N15 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 2 | N16 | | | | | | |
| 3 | N110 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 4 | N111 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 5 | N112 | | | | | | |
| 6 | N113 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 7 | N114 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 8 | N115 | | | | | | |
| 9 | N116 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |

Member Primary Data

| | Label | I Joint | J Joint | K Joint | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rules |
|----|-------|---------|---------|---------|-------------|---------------|------|-------------|-----------|--------------|
| 1 | M1 | N3 | N1 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 2 | M2 | N1 | N14 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 3 | M3 | N4 | N2 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 4 | M4 | N2 | N11 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 5 | M5 | N4 | N3 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 6 | M6 | N16 | N15 | | | LL2.5x2.5x3x3 | Beam | None | A36 Gr.36 | Typical |
| 7 | M7 | N17 | N18 | | | PIPE 2.0 | Beam | None | A53 Gr.B | Typical |
| 8 | M8 | N27 | N25 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 9 | M9 | N27 | N26 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 10 | M10 | N23 | N21 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 11 | M11 | N21 | N34 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 12 | M12 | N24 | N22 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 13 | M13 | N22 | N31 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 14 | M14 | N27 | N29 | | | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 15 | M15 | N27 | N28 | | 270 | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 16 | M16 | N25 | N33 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |



Member Primary Data (Continued)

| | Label | I Joint | J Joint | K Joint | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rules |
|----|-------|---------|---------|---------|-------------|---------------|------|-------------|-----------|--------------|
| 17 | M17 | N26 | N32 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 18 | M18 | N24 | N23 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 19 | M19 | N39 | N37 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 20 | M20 | N37 | N49 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 21 | M21 | N40 | N38 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 22 | M22 | N38 | N46 | | 90 | 3/8x6 HRA | Beam | None | Q235 | Typical_APP |
| 23 | M23 | N40 | N39 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 24 | M24 | N50 | N51 | | 180 | L2.5x2.5x3 | Beam | None | A36 Gr.36 | Typical |
| 25 | M25 | N52 | N53 | | | PIPE 2.0 | Beam | None | A53 Gr.B | Typical |
| 26 | M26 | N54 | N55 | | | PIPE 2.0 | Beam | None | A53 Gr.B | Typical |
| 27 | M27 | N56 | N57 | | | PIPE 3.0 | Beam | None | A53 Gr.B | Typical |
| 28 | M28 | N58 | N59 | | | PIPE 3.0 | Beam | None | A53 Gr.B | Typical |
| 29 | M29 | N60 | N61 | | | PIPE 3.0 | Beam | None | A53 Gr.B | Typical |
| 30 | M30 | N62 | N63 | | | RIGID | None | None | RIGID | Typical |
| 31 | M31 | N65 | N64 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 32 | M32 | N66 | N67 | | | RIGID | None | None | RIGID | Typical |
| 33 | M33 | N69 | N41 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 34 | M34 | N69 | N42 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 35 | M35 | N41 | N48 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 36 | M36 | N42 | N47 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 37 | M37 | N7 | N5 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 38 | M38 | N7 | N6 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 39 | M39 | N5 | N13 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 40 | M40 | N6 | N12 | | 90 | 1/2 x 6 | Beam | None | Q235 | Typical_APP |
| 41 | M41 | N69 | N44 | | | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 42 | M42 | N69 | N43 | | 270 | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 43 | M43 | N7 | N8 | | | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 44 | M44 | N7 | N110 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 45 | M45 | N19 | N20 | | 180 | L2.5x2.5x3 | Beam | None | A36 Gr.36 | Typical |
| 46 | M46 | N35 | N36 | | 180 | L2.5x2.5x3 | Beam | None | A36 Gr.36 | Typical |
| 47 | M47 | N70 | N71 | | | RIGID | None | None | RIGID | Typical |
| 48 | M48 | N73 | N72 | | | RIGID | None | None | RIGID | Typical |
| 49 | M49 | N75 | N76 | | | RIGID | None | None | RIGID | Typical |
| 50 | M50 | N78 | N77 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 51 | M51 | N79 | N80 | | | RIGID | None | None | RIGID | Typical |
| 52 | M52 | N82 | N83 | | | RIGID | None | None | RIGID | Typical |
| 53 | M53 | N85 | N84 | | | RIGID | None | None | RIGID | Typical |
| 54 | M54 | N87 | N88 | | | RIGID | None | None | RIGID | Typical |
| 55 | M55 | N90 | N89 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 56 | M56 | N91 | N92 | | | RIGID | None | None | RIGID | Typical |
| 57 | M57 | N93 | N94 | | | RIGID | None | None | RIGID | Typical |
| 58 | M58 | N96 | N95 | | | RIGID | None | None | RIGID | Typical |
| 59 | M59 | N97 | N98 | | | RIGID | None | None | RIGID | Typical |
| 60 | M60 | N100 | N99 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 61 | M61 | N101 | N102 | | | RIGID | None | None | RIGID | Typical |
| 62 | M62 | N104 | N105 | | | RIGID | None | None | RIGID | Typical |
| 63 | M63 | N107 | N106 | | | RIGID | None | None | RIGID | Typical |
| 64 | M64 | N7 | N109 | | 270 | L2x2x4 | Beam | None | Q235 | Typical_APP |
| 65 | M65 | N112 | N111 | | | LL2.5x2.5x3x3 | Beam | None | A36 Gr.36 | Typical |
| 66 | M66 | N27 | N113 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 67 | M67 | N115 | N114 | | | LL2.5x2.5x3x3 | Beam | None | A36 Gr.36 | Typical |
| 68 | M68 | N69 | N116 | | | HSS4x4x4 | Beam | None | Q235 | Typical_APP |
| 69 | M69 | N117 | N118 | | | RIGID | None | None | RIGID | Typical |
| 70 | M70 | N120 | N119 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 71 | M71 | N121 | N122 | | | RIGID | None | None | RIGID | Typical |
| 72 | M72 | N124 | N125 | | | RIGID | None | None | RIGID | Typical |
| 73 | M73 | N127 | N126 | | | RIGID | None | None | RIGID | Typical |



Member Primary Data (Continued)

| | Label | I Joint | J Joint | K Joint | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rules |
|-----|-------|---------|---------|---------|-------------|---------------|------|-------------|----------|--------------|
| 74 | M74 | N129 | N130 | | | RIGID | None | None | RIGID | Typical |
| 75 | M75 | N132 | N131 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 76 | M76 | N133 | N134 | | | RIGID | None | None | RIGID | Typical |
| 77 | M77 | N136 | N137 | | | RIGID | None | None | RIGID | Typical |
| 78 | M78 | N139 | N138 | | | RIGID | None | None | RIGID | Typical |
| 79 | M79 | N141 | N142 | | | RIGID | None | None | RIGID | Typical |
| 80 | M80 | N144 | N143 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 81 | M81 | N145 | N146 | | | RIGID | None | None | RIGID | Typical |
| 82 | M82 | N147 | N148 | | | RIGID | None | None | RIGID | Typical |
| 83 | M83 | N150 | N149 | | | RIGID | None | None | RIGID | Typical |
| 84 | M84 | N151 | N152 | | | RIGID | None | None | RIGID | Typical |
| 85 | M85 | N154 | N153 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 86 | M86 | N155 | N156 | | | RIGID | None | None | RIGID | Typical |
| 87 | M87 | N158 | N159 | | | RIGID | None | None | RIGID | Typical |
| 88 | M88 | N161 | N160 | | | RIGID | None | None | RIGID | Typical |
| 89 | M89 | N163 | N164 | | | RIGID | None | None | RIGID | Typical |
| 90 | M90 | N166 | N165 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 91 | M91 | N167 | N168 | | | RIGID | None | None | RIGID | Typical |
| 92 | M92 | N170 | N171 | | | RIGID | None | None | RIGID | Typical |
| 93 | M93 | N173 | N172 | | | RIGID | None | None | RIGID | Typical |
| 94 | M94 | N175 | N176 | | | RIGID | None | None | RIGID | Typical |
| 95 | M95 | N178 | N177 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 96 | M96 | N179 | N180 | | | RIGID | None | None | RIGID | Typical |
| 97 | M97 | N182 | N183 | | | RIGID | None | None | RIGID | Typical |
| 98 | M98 | N185 | N184 | | | RIGID | None | None | RIGID | Typical |
| 99 | M99 | N187 | N188 | | | RIGID | None | None | RIGID | Typical |
| 100 | M100 | N190 | N189 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 101 | M101 | N191 | N192 | | | RIGID | None | None | RIGID | Typical |
| 102 | M102 | N193 | N194 | | | RIGID | None | None | RIGID | Typical |
| 103 | M103 | N196 | N195 | | | RIGID | None | None | RIGID | Typical |
| 104 | M104 | N197 | N198 | | | RIGID | None | None | RIGID | Typical |
| 105 | M105 | N200 | N199 | | | PIPE 2.5 | Beam | None | A53 Gr.B | Typical |
| 106 | M106 | N201 | N202 | | | RIGID | None | None | RIGID | Typical |
| 107 | M107 | N204 | N205 | | | RIGID | None | None | RIGID | Typical |
| 108 | M108 | N207 | N206 | | | RIGID | None | None | RIGID | 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 | | BenPIN | | | | Yes | | | | None |
| 3 | M3 | | | | | | Yes | | | | None |
| 4 | M4 | | BenPIN | | | | Yes | | | | None |
| 5 | M5 | | | | | | Yes | | | | None |
| 6 | M6 | BenPIN | BenPIN | | | | Yes | | | | None |
| 7 | M7 | | | | | | Yes | | | | None |
| 8 | M8 | | | | | | Yes | | | | None |
| 9 | M9 | | | | | | Yes | | | | None |
| 10 | M10 | | | | | | Yes | | | | None |
| 11 | M11 | | BenPIN | | | | Yes | | | | None |
| 12 | M12 | | | | | | Yes | | | | None |
| 13 | M13 | | BenPIN | | | | Yes | | | | None |
| 14 | M14 | | | | | | Yes | | | | None |
| 15 | M15 | | | | | | Yes | | | | None |
| 16 | M16 | | BenPIN | | | | Yes | | | | None |
| 17 | M17 | | BenPIN | | | | Yes | | | | None |

Member Advanced Data (Continued)

| | Label | I Release | J Release | I Offset[in] | J Offset[in] | T/C Only | Physical | Defl Rat... | Analysis ... | Inactive | Seismic... |
|----|-------|-----------|-----------|--------------|--------------|----------|----------|-------------|--------------|----------|------------|
| 18 | M18 | | | | | | Yes | | | | None |
| 19 | M19 | | | | | | Yes | | | | None |
| 20 | M20 | | BenPIN | | | | Yes | | | | None |
| 21 | M21 | | | | | | Yes | | | | None |
| 22 | M22 | | BenPIN | | | | Yes | | | | None |
| 23 | M23 | | | | | | Yes | | | | None |
| 24 | M24 | BenPIN | OOOOXX | | | | Yes | Default | | | None |
| 25 | M25 | | | | | | Yes | | | | None |
| 26 | M26 | | | | | | Yes | | | | None |
| 27 | M27 | | | | | | Yes | | | | None |
| 28 | M28 | | | | | | Yes | | | | None |
| 29 | M29 | | | | | | Yes | | | | None |
| 30 | M30 | | | | | | Yes | ** NA ** | | | None |
| 31 | M31 | | | | | | Yes | | | | None |
| 32 | M32 | | | | | | Yes | ** NA ** | | | None |
| 33 | M33 | | | | | | Yes | | | | None |
| 34 | M34 | | | | | | Yes | | | | None |
| 35 | M35 | | BenPIN | | | | Yes | | | | None |
| 36 | M36 | | BenPIN | | | | Yes | | | | None |
| 37 | M37 | | | | | | Yes | | | | None |
| 38 | M38 | | | | | | Yes | | | | None |
| 39 | M39 | | BenPIN | | | | Yes | | | | None |
| 40 | M40 | | BenPIN | | | | Yes | | | | None |
| 41 | M41 | | | | | | Yes | | | | None |
| 42 | M42 | | | | | | Yes | | | | None |
| 43 | M43 | | | | | | Yes | | | | None |
| 44 | M44 | | | | | | Yes | | | | None |
| 45 | M45 | BenPIN | OOOOXX | | | | Yes | | | | None |
| 46 | M46 | BenPIN | OOOOXX | | | | Yes | | | | None |
| 47 | M47 | | | | | | Yes | ** NA ** | | | None |
| 48 | M48 | | | | | | Yes | ** NA ** | | | None |
| 49 | M49 | | | | | | Yes | ** NA ** | | | None |
| 50 | M50 | | | | | | Yes | | | | None |
| 51 | M51 | | | | | | Yes | ** NA ** | | | None |
| 52 | M52 | | | | | | Yes | ** NA ** | | | None |
| 53 | M53 | | | | | | Yes | ** NA ** | | | None |
| 54 | M54 | | | | | | Yes | ** NA ** | | | None |
| 55 | M55 | | | | | | Yes | | | | None |
| 56 | M56 | | | | | | Yes | ** NA ** | | | None |
| 57 | M57 | | | | | | Yes | ** NA ** | | | None |
| 58 | M58 | | | | | | Yes | ** NA ** | | | None |
| 59 | M59 | | | | | | Yes | ** NA ** | | | None |
| 60 | M60 | | | | | | Yes | | | | None |
| 61 | M61 | | | | | | Yes | ** NA ** | | | None |
| 62 | M62 | | | | | | Yes | ** NA ** | | | None |
| 63 | M63 | | | | | | Yes | ** NA ** | | | None |
| 64 | M64 | | | | | | Yes | | | | None |
| 65 | M65 | BenPIN | BenPIN | | | | Yes | | | | None |
| 66 | M66 | | | | | | Yes | | | | None |
| 67 | M67 | BenPIN | BenPIN | | | | Yes | | | | None |
| 68 | M68 | | | | | | Yes | | | | None |
| 69 | M69 | | | | | | Yes | ** NA ** | | | None |
| 70 | M70 | | | | | | Yes | | | | None |
| 71 | M71 | | | | | | Yes | ** NA ** | | | None |
| 72 | M72 | | | | | | Yes | ** NA ** | | | None |
| 73 | M73 | | | | | | Yes | ** NA ** | | | None |
| 74 | M74 | | | | | | Yes | ** NA ** | | | None |



Member Advanced Data (Continued)

| | Label | I Release | J Release | I Offset[in] | J Offset[in] | T/C Only | Physical | Defl Rat... | Analysis ... | Inactive | Seismic... |
|-----|-------|-----------|-----------|--------------|--------------|----------|----------|-------------|--------------|----------|------------|
| 75 | M75 | | | | | | Yes | | | | None |
| 76 | M76 | | | | | | Yes | ** NA ** | | | None |
| 77 | M77 | | | | | | Yes | ** NA ** | | | None |
| 78 | M78 | | | | | | Yes | ** NA ** | | | None |
| 79 | M79 | | | | | | Yes | ** NA ** | | | None |
| 80 | M80 | | | | | | Yes | | | | None |
| 81 | M81 | | | | | | Yes | ** NA ** | | | None |
| 82 | M82 | | | | | | Yes | ** NA ** | | | None |
| 83 | M83 | | | | | | Yes | ** NA ** | | | None |
| 84 | M84 | | | | | | Yes | ** NA ** | | | None |
| 85 | M85 | | | | | | Yes | | | | None |
| 86 | M86 | | | | | | Yes | ** NA ** | | | None |
| 87 | M87 | | | | | | Yes | ** NA ** | | | None |
| 88 | M88 | | | | | | Yes | ** NA ** | | | None |
| 89 | M89 | | | | | | Yes | ** NA ** | | | None |
| 90 | M90 | | | | | | Yes | | | | None |
| 91 | M91 | | | | | | Yes | ** NA ** | | | None |
| 92 | M92 | | | | | | Yes | ** NA ** | | | None |
| 93 | M93 | | | | | | Yes | ** NA ** | | | None |
| 94 | M94 | | | | | | Yes | ** NA ** | | | None |
| 95 | M95 | | | | | | Yes | | | | None |
| 96 | M96 | | | | | | Yes | ** NA ** | | | None |
| 97 | M97 | | | | | | Yes | ** NA ** | | | None |
| 98 | M98 | | | | | | Yes | ** NA ** | | | None |
| 99 | M99 | | | | | | Yes | ** NA ** | | | None |
| 100 | M100 | | | | | | Yes | | | | None |
| 101 | M101 | | | | | | Yes | ** NA ** | | | None |
| 102 | M102 | | | | | | Yes | ** NA ** | | | None |
| 103 | M103 | | | | | | Yes | ** NA ** | | | None |
| 104 | M104 | | | | | | Yes | ** NA ** | | | None |
| 105 | M105 | | | | | | Yes | | | | None |
| 106 | M106 | | | | | | Yes | ** NA ** | | | None |
| 107 | M107 | | | | | | Yes | ** NA ** | | | None |
| 108 | M108 | | | | | | Yes | ** NA ** | | | None |

Hot Rolled Steel Design Parameters

| | Label | Shape | Length[ft] | Lbyy[ft] | Lbzz[ft] | Lcomp top[ft] | Lcomp bot[ft] | L-torqu... | Kyy | Kzz | Cb | Function |
|----|-------|----------------|------------|----------|----------|---------------|---------------|------------|-----|-----|----|----------|
| 1 | M1 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 2 | M2 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 3 | M3 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 4 | M4 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 5 | M5 | HSS4x4x4 | 5.167 | | | Lbyy | | | | | | Lateral |
| 6 | M6 | LL2.5x2.5x3... | 4.853 | | | Lbyy | | | | | | Lateral |
| 7 | M7 | PIPE 2.0 | 12.5 | | | Lbyy | | | | | | Lateral |
| 8 | M8 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 9 | M9 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 10 | M10 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 11 | M11 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 12 | M12 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 13 | M13 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 14 | M14 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 15 | M15 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 16 | M16 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 17 | M17 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 18 | M18 | HSS4x4x4 | 5.167 | | | 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 |
|----|-------|----------------|------------|----------|----------|---------------|---------------|------------|-----|-----|----|----------|
| 19 | M19 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 20 | M20 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 21 | M21 | 3/8x6_HRA | .167 | | | Lbyy | | | | | | Lateral |
| 22 | M22 | 3/8x6_HRA | .364 | | | Lbyy | | | | | | Lateral |
| 23 | M23 | HSS4x4x4 | 5.167 | | | Lbyy | | | | | | Lateral |
| 24 | M24 | L2.5x2.5x3 | 1.07 | | | Lbyy | | | | | | Lateral |
| 25 | M25 | PIPE 2.0 | 12.5 | | | Lbyy | | | | | | Lateral |
| 26 | M26 | PIPE 2.0 | 12.5 | | | Lbyy | | | | | | Lateral |
| 27 | M27 | PIPE 3.0 | 12.5 | 4 | 4 | Lbyy | | | | | | Lateral |
| 28 | M28 | PIPE 3.0 | 12.5 | 4 | 4 | Lbyy | | | | | | Lateral |
| 29 | M29 | PIPE 3.0 | 12.5 | 4 | 4 | Lbyy | | | | | | Lateral |
| 30 | M31 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 31 | M33 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 32 | M34 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 33 | M35 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 34 | M36 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 35 | M37 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 36 | M38 | 1/2 x 6 | .5 | | | Lbyy | | | | | | Lateral |
| 37 | M39 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 38 | M40 | 1/2 x 6 | .289 | | | Lbyy | | | | | | Lateral |
| 39 | M41 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 40 | M42 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 41 | M43 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 42 | M44 | HSS4x4x4 | 5.998 | | | Lbyy | | | | | | Lateral |
| 43 | M45 | L2.5x2.5x3 | 1.07 | | | Lbyy | | | | | | Lateral |
| 44 | M46 | L2.5x2.5x3 | 1.07 | | | Lbyy | | | | | | Lateral |
| 45 | M50 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 46 | M55 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 47 | M60 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 48 | M64 | L2x2x4 | 4.359 | | | Lbyy | | | | | | Lateral |
| 49 | M65 | LL2.5x2.5x3... | 4.853 | | | Lbyy | | | | | | Lateral |
| 50 | M66 | HSS4x4x4 | 5.998 | | | Lbyy | | | | | | Lateral |
| 51 | M67 | LL2.5x2.5x3... | 4.853 | | | Lbyy | | | | | | Lateral |
| 52 | M68 | HSS4x4x4 | 5.998 | | | Lbyy | | | | | | Lateral |
| 53 | M70 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 54 | M75 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 55 | M80 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 56 | M85 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 57 | M90 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 58 | M95 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 59 | M100 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |
| 60 | M105 | PIPE 2.5 | 8 | | | Lbyy | | | | | | Lateral |

Envelope Joint Reactions

| | Joint | | X [k] | LC | Y [k] | LC | Z [k] | LC | MX [k-ft] | LC | MY [k-ft] | LC | MZ [k-ft] | LC |
|----|-------|-----|--------|----|-------|----|--------|----|-----------|----|-----------|----|-----------|----|
| 1 | N15 | max | .056 | 17 | 2.423 | 26 | .36 | 20 | 0 | 74 | 0 | 19 | 0 | 13 |
| 2 | | min | -.055 | 23 | -.239 | 20 | -3.908 | 26 | 0 | 1 | 0 | 13 | 0 | 19 |
| 3 | N110 | max | 1.747 | 5 | .405 | 8 | 5.908 | 2 | .61 | 31 | 2.998 | 23 | .652 | 12 |
| 4 | | min | -1.76 | 11 | -.128 | 14 | -3.359 | 20 | -.033 | 25 | -2.985 | 17 | -.465 | 18 |
| 5 | N111 | max | .408 | 24 | 2.434 | 30 | 1.962 | 30 | 0 | 4 | 0 | 22 | 0 | 22 |
| 6 | | min | -3.397 | 30 | -.318 | 24 | -.235 | 24 | 0 | 22 | 0 | 4 | 0 | 4 |
| 7 | N113 | max | 6.256 | 6 | .433 | 12 | 2.202 | 25 | .541 | 16 | .716 | 25 | .028 | 20 |
| 8 | | min | -4.052 | 24 | -.157 | 18 | -3.475 | 7 | -.603 | 10 | -.71 | 7 | -.693 | 26 |
| 9 | N114 | max | 3.399 | 34 | 2.436 | 34 | 1.964 | 34 | 0 | 25 | 0 | 25 | 0 | 25 |
| 10 | | min | -.427 | 16 | -.331 | 16 | -.246 | 16 | 0 | 6 | 0 | 6 | 0 | 6 |



Envelope Joint Reactions (Continued)

| Joint | X [k] | LC | Y [k] | LC | Z [k] | LC | MX [k-ft] | LC | MY [k-ft] | LC | MZ [k-ft] | LC | | |
|-------|---------|-----|--------|----|-------|----|-----------|----|-----------|----|-----------|----|-------|----|
| 11 | N116 | max | 3.56 | 16 | .447 | 4 | 3.08 | 15 | .269 | 25 | 2.185 | 21 | .563 | 3 |
| 12 | | min | -5.746 | 10 | -.17 | 22 | -4.375 | 9 | -.644 | 7 | -2.177 | 15 | -.278 | 21 |
| 13 | Totals: | max | 8.004 | 17 | 7.772 | 32 | 7.359 | 2 | | | | | | |
| 14 | | min | -8.004 | 11 | 2.347 | 63 | -7.359 | 20 | | | | | | |

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

| Member | Shape | Code ... | Loc[ft] | LC | Shear ... | Loc[ft] | Dir | LC | phi*Pnc [k] | phi*Pnt [k] | phi*Mn y... | phi*Mn z... | Cb | Eqn | |
|--------|-------|------------|---------|-------|-----------|---------|-------|----|-------------|-------------|-------------|-------------|-------|------|-------|
| 1 | M46 | L2.5x2.5x3 | .634 | 1.07 | 10 | .142 | 1.07 | z | 10 | 27.66 | 29.192 | .873 | 1.972 | 1... | H2-1 |
| 2 | M24 | L2.5x2.5x3 | .620 | 1.07 | 13 | .143 | 0 | z | 13 | 27.66 | 29.192 | .873 | 1.972 | 1... | H2-1 |
| 3 | M45 | L2.5x2.5x3 | .598 | 1.07 | 5 | .145 | 1.07 | y | 5 | 27.66 | 29.192 | .873 | 1.972 | 1... | H2-1 |
| 4 | M3 | 3/8x6 HRA | .425 | 0 | 11 | .369 | 0 | y | 6 | 67.691 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 5 | M25 | PIPE 2.0 | .365 | 1.172 | 13 | .237 | 1.172 | | 13 | 6.295 | 32.13 | 1.872 | 1.872 | 4... | H1-1b |
| 6 | M7 | PIPE 2.0 | .361 | 1.172 | 9 | .242 | 1.172 | | 10 | 6.295 | 32.13 | 1.872 | 1.872 | 3... | H1-1b |
| 7 | M26 | PIPE 2.0 | .358 | 1.172 | 5 | .229 | 1.172 | | 5 | 6.295 | 32.13 | 1.872 | 1.872 | 3... | H1-1b |
| 8 | M90 | PIPE 2.5 | .349 | 2.667 | 11 | .106 | 2.667 | | 5 | 30.04 | 50.715 | 3.596 | 3.596 | 1... | H1-1b |
| 9 | M31 | PIPE 2.5 | .340 | 2.667 | 2 | .094 | 2.667 | | 9 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 10 | M21 | 3/8x6 HRA | .334 | 0 | 9 | .362 | 0 | y | 2 | 67.691 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 11 | M41 | L2x2x4 | .334 | 4.359 | 9 | .012 | 4.359 | z | 8 | 11.646 | 28.886 | .653 | 1.489 | 1... | H2-1 |
| 12 | M70 | PIPE 2.5 | .331 | 2.667 | 5 | .079 | 2.667 | | 2 | 30.04 | 50.715 | 3.596 | 3.596 | 1... | H1-1b |
| 13 | M14 | L2x2x4 | .327 | 4.359 | 5 | .011 | 4.359 | z | 5 | 11.646 | 28.886 | .653 | 1.489 | 2... | H2-1 |
| 14 | M4 | 3/8x6 HRA | .317 | 0 | 5 | .358 | 0 | y | 6 | 63.5 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 15 | M15 | L2x2x4 | .297 | 0 | 6 | .015 | 0 | z | 28 | 11.646 | 28.886 | .653 | 1.489 | 2... | H2-1 |
| 16 | M1 | 3/8x6 HRA | .286 | 0 | 5 | .389 | 0 | y | 11 | 67.691 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 17 | M44 | HSS4x4x4 | .281 | 5.998 | 5 | .126 | 5.998 | z | 11 | 92.262 | 103.122 | 11.96 | 11.96 | 2... | H1-1b |
| 18 | M42 | L2x2x4 | .280 | 0 | 10 | .015 | 0 | z | 31 | 11.646 | 28.886 | .653 | 1.489 | 2... | H2-1 |
| 19 | M22 | 3/8x6 HRA | .278 | 0 | 9 | .352 | 0 | y | 2 | 63.5 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 20 | M43 | L2x2x4 | .253 | 4.359 | 13 | .009 | 4.359 | z | 12 | 11.646 | 28.886 | .653 | 1.489 | 2... | H2-1 |
| 21 | M64 | L2x2x4 | .243 | 0 | 2 | .015 | 0 | z | 36 | 11.646 | 28.886 | .653 | 1.489 | 2... | H2-1 |
| 22 | M68 | HSS4x4x4 | .242 | 5.998 | 3 | .116 | 5.998 | z | 8 | 92.262 | 103.122 | 11.96 | 11.96 | 1... | H1-1b |
| 23 | M100 | PIPE 2.5 | .226 | 2.667 | 12 | .084 | 2.667 | | 4 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 24 | M95 | PIPE 2.5 | .225 | 2.667 | 6 | .185 | 6.083 | | 5 | 30.04 | 50.715 | 3.596 | 3.596 | 1... | H1-1b |
| 25 | M80 | PIPE 2.5 | .222 | 2.667 | 9 | .103 | 2.667 | | 11 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 26 | M75 | PIPE 2.5 | .212 | 2.667 | 3 | .149 | 2.667 | | 12 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 27 | M2 | 3/8x6 HRA | .208 | 0 | 5 | .400 | 0 | y | 4 | 63.5 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 28 | M66 | HSS4x4x4 | .207 | 3.811 | 4 | .103 | 5.998 | z | 4 | 92.262 | 103.122 | 11.96 | 11.96 | 1... | H1-1b |
| 29 | M19 | 3/8x6 HRA | .206 | 0 | 4 | .370 | .167 | y | 6 | 67.691 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 30 | M55 | PIPE 2.5 | .201 | 2.667 | 5 | .102 | 2.667 | | 7 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 31 | M38 | 1/2 x 6 | .199 | 0 | 10 | .278 | 0 | y | 5 | 84.3 | 91.8 | 11.475 | .956 | 1... | H1-1b |
| 32 | M50 | PIPE 2.5 | .197 | 2.667 | 11 | .180 | 6.083 | | 9 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 33 | M85 | PIPE 2.5 | .193 | 6.083 | 2 | .133 | 6.083 | | 11 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 34 | M60 | PIPE 2.5 | .191 | 6.083 | 10 | .141 | 6.083 | | 8 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 35 | M105 | PIPE 2.5 | .187 | 6.083 | 6 | .130 | 2.667 | | 4 | 30.04 | 50.715 | 3.596 | 3.596 | 2... | H1-1b |
| 36 | M33 | 1/2 x 6 | .173 | 0 | 4 | .240 | .5 | y | 7 | 84.3 | 91.8 | 11.475 | .956 | 1... | H1-1b |
| 37 | M18 | HSS4x4x4 | .161 | 2.583 | 5 | .089 | .377 | z | 5 | 94.949 | 103.122 | 11.96 | 11.96 | 1... | H1-1b |
| 38 | M23 | HSS4x4x4 | .152 | 2.583 | 32 | .089 | .377 | z | 9 | 94.949 | 103.122 | 11.96 | 11.96 | 1... | H1-1b |
| 39 | M5 | HSS4x4x4 | .152 | 2.583 | 37 | .071 | .377 | z | 13 | 94.949 | 103.122 | 11.96 | 11.96 | 1... | H1-1b |
| 40 | M12 | 3/8x6 HRA | .144 | 0 | 4 | .363 | .167 | y | 10 | 67.691 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 41 | M13 | 3/8x6 HRA | .141 | 0 | 4 | .349 | 0 | y | 10 | 63.5 | 68.85 | 8.606 | .538 | 1... | H1-1b |
| 42 | M37 | 1/2 x 6 | .131 | 0 | 6 | .289 | 0 | y | 11 | 84.3 | 91.8 | 11.475 | .956 | 1... | H1-1b |
| 43 | M27 | PIPE 3.0 | .131 | 4.297 | 6 | .087 | 8.333 | | 7 | 59.853 | 65.205 | 5.749 | 5.749 | 2... | H1-1b |
| 44 | M28 | PIPE 3.0 | .130 | 4.297 | 10 | .095 | 8.333 | | 11 | 59.853 | 65.205 | 5.749 | 5.749 | 2... | H1-1b |
| 45 | M34 | 1/2 x 6 | .123 | 0 | 7 | .253 | .5 | y | 2 | 84.3 | 91.8 | 11.475 | .956 | 1... | H1-1b |
| 46 | M29 | PIPE 3.0 | .123 | 4.036 | 13 | .088 | 4.167 | | 11 | 59.853 | 65.205 | 5.749 | 5.749 | 2... | H1-1b |
| 47 | M9 | 1/2 x 6 | .123 | 0 | 6 | .241 | .5 | y | 10 | 84.3 | 91.8 | 11.475 | .956 | 1... | H1-1b |
| 48 | M20 | 3/8x6 HRA | .122 | 0 | 3 | .373 | 0 | y | 12 | 63.5 | 68.85 | 8.606 | .538 | 1... | H1-1b |



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

| Member | Shape | Code ... | Loc[ft] | LC | Shear ... | Loc[ft] | Dir | LC | phi*Pnc [k] | phi*Pnt [k] | phi*Mn y... | phi*Mn z... | Cb | Eqn |
|--------|-------|---------------|---------|-------|-----------|---------|-------|----|-------------|-------------|-------------|-------------|------|------------|
| 49 | M67 | LL2.5x2.5x3x3 | .108 | 4.853 | 34 | .009 | 4.853 | z | 7 | 42.67 | 58.32 | 3.954 | 2.55 | 1...H1-1b* |
| 50 | M65 | LL2.5x2.5x3x3 | .108 | 4.853 | 30 | .011 | 0 | z | 4 | 42.67 | 58.32 | 3.954 | 2.55 | 1...H1-1b* |
| 51 | M6 | LL2.5x2.5x3x3 | .108 | 4.853 | 26 | .006 | 4.853 | y | 37 | 42.67 | 58.32 | 3.954 | 2.55 | 1 H1-1b* |
| 52 | M8 | 1/2 x 6 | .088 | 0 | 13 | .243 | 0 | y | 3 | 84.3 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 53 | M10 | 3/8x6 HRA | .086 | .167 | 7 | .367 | .167 | y | 2 | 67.691 | 68.85 | 8.606 | .538 | 1...H1-1b |
| 54 | M11 | 3/8x6 HRA | .085 | 0 | 7 | .373 | 0 | y | 8 | 63.5 | 68.85 | 8.606 | .538 | 1...H1-1b |
| 55 | M36 | 1/2 x 6 | .054 | 0 | 11 | .333 | 0 | y | 8 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 56 | M16 | 1/2 x 6 | .041 | 0 | 5 | .322 | 0 | y | 9 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 57 | M17 | 1/2 x 6 | .040 | 0 | 3 | .339 | 0 | y | 4 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 58 | M39 | 1/2 x 6 | .030 | 0 | 3 | .354 | .289 | y | 5 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 59 | M40 | 1/2 x 6 | .028 | 0 | 28 | .338 | 0 | y | 12 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |
| 60 | M35 | 1/2 x 6 | .020 | 0 | 9 | .325 | 0 | y | 13 | 89.215 | 91.8 | 11.475 | .956 | 1...H1-1b |

Envelope Plate/Shell Principal Stresses

| Plate | Surf...Sigma1 [ksi] | LC | Sigma2 [ksi] | LC | Tau Max [ksi] | LC | Angle [rad] | LC | Von Mises [ksi] | LC |
|----------------------|---------------------|----|--------------|----|---------------|----|-------------|----|-----------------|----|
| No Data to Print ... | | | | | | | | | | |

EXHIBIT 9

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTHA523A

SBA Higganum Monopole
270 Hubbard Rd
Higganum, CT 06441

June 10, 2019

Transcom Engineering Project Number: 737001-0080

| Site Compliance Summary | |
|--|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general population allowable limit: | 1.49 % |

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 10, 2019

T-MOBILE

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

Emissions Analysis for Site: **CTHA523A – SBA Higganum Monopole**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **270 Hubbard Rd, Higganum, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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

Additional details can be found in FCC OET 65.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **270 Hubbard Rd, Higganum, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

Table 1: Channel Data Table

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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

| Sector | Antenna Number | Antenna Make / Model | Antenna Centerline (ft) |
|--------|----------------|--------------------------|-------------------------|
| A | 1 | RFS APXV18-206517S-C-A20 | 157 |
| A | 2 | RFS APXVAARR24_43-U-NA20 | 157 |
| B | 1 | RFS APXV18-206517S-C-A20 | 157 |
| B | 2 | RFS APXVAARR24_43-U-NA20 | 157 |
| C | 1 | RFS APXV18-206517S-C-A20 | 157 |
| C | 2 | RFS APXVAARR24_43-U-NA20 | 157 |

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS) & 2100 MHz (AWS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **4.20 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **4.33 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **250 feet of 7/8" coax**.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

RESULTS

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

| Antenna ID | Antenna Make / Model | Frequency Bands | Antenna Gain (dBd) | Channel Count | Total TX Power (W) | ERP (W) | MPE % |
|-------------------------|-----------------------------|---------------------------------------|--------------------------|---------------|--------------------|----------|-------------|
| Antenna A1 | RFS APXV18-206517S-C-A20 | 1900 MHz (PCS) | 16.65 | 5 | 175 | 3,076.37 | 0.48 |
| Antenna A2 | RFS APXVAARR24_43-U-NA20 | 600 MHz / 700 MHz / 2100 MHz (AWS) | 12.95 / 13.35 / 16.35 | 5 | 160 | 3,079.91 | 1.01 |
| Sector A Composite MPE% | | | | | | | 1.49 |
| Antenna B1 | RFS APXV18-206517S-C-A20 | 1900 MHz (PCS) | 16.65 | 5 | 175 | 3,076.37 | 0.48 |
| Antenna B2 | RFS APXVAARR24_43-U-NA20 | 600 MHz / 700 MHz / 2100 MHz (AWS) | 12.95 / 13.35 / 16.35 | 5 | 160 | 3,079.91 | 1.01 |
| Sector B Composite MPE% | | | | | | | 1.49 |
| Antenna C1 | RFS APXV18-206517S-C-A20 | 1900 MHz (PCS) | 16.65 | 5 | 175 | 3,076.37 | 0.48 |
| Antenna C2 | RFS APXVAARR24_43-U-NA20 | 600 MHz / 700 MHz / 2100 MHz (AWS) | 12.95 / 13.35 / 16.35 | 5 | 160 | 3,079.91 | 1.01 |
| Sector C Composite MPE% | | | | | | | 1.49 |

Table 3: T-MOBILE Emissions Levels

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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

| Site Composite MPE% | |
|---|---------------|
| Carrier | MPE% |
| T-MOBILE – Max Per Sector Value | 1.49 % |
| No Additional Carriers at this Location | N/A |
| Site Total MPE %: | 1.49 % |

Table 4: All Carrier MPE Contributions

| | |
|--------------------------|--------|
| T-MOBILE Sector A Total: | 1.49 % |
| T-MOBILE Sector B Total: | 1.49 % |
| T-MOBILE Sector C Total: | 1.49 % |
| | |
| Site Total: | 1.49 % |

Table 5: Site MPE Summary

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Wireless Network Design and Deployment

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

| T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector) | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ($\mu\text{W}/\text{cm}^2$) | Frequency (MHz) | Allowable MPE ($\mu\text{W}/\text{cm}^2$) | Calculated % MPE |
|--|------------|-------------------------|---------------|---|-----------------|---|------------------|
| T-Mobile 1900 MHz (PCS) LTE | 4 | 703.17 | 157 | 4.43 | 1900 MHz (PCS) | 1000 | 0.44% |
| T-Mobile 1900 MHz (PCS) GSM | 1 | 263.69 | 157 | 0.42 | 1900 MHz (PCS) | 1000 | 0.04% |
| T-Mobile 600 MHz LTE / 5G NR | 2 | 788.97 | 157 | 2.49 | 600 MHz | 400 | 0.62% |
| T-Mobile 700 MHz LTE | 2 | 432.54 | 157 | 1.36 | 700 MHz | 467 | 0.29% |
| T-Mobile 2100 MHz (AWS) UMTS | 1 | 636.88 | 157 | 1.00 | 2100 MHz (AWS) | 1000 | 0.10% |
| | | | | | | Total: | 1.49% |

Table 6: T-MOBILE Maximum Sector MPE Power Values

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Summary

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

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

| T-MOBILE Sector | Power Density Value (%) |
|--------------------------------------|-------------------------|
| Sector A: | 1.49 % |
| Sector B: | 1.49 % |
| Sector C: | 1.49 % |
| T-MOBILE Maximum Total (per sector): | 1.49 % |
| | |
| Site Total: | 1.49 % |
| | |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **1.49 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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EXHIBIT 10

EXHIBIT 11

EXHIBIT 12

