



10 INDUSTRIAL AVENUE,
SUITE 3
MAHWAH, NJ 07430
PHONE: 201.684.0055
FAX: 201.684.0066

July 31, 2019

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

Notice of Exempt Modification
104 Bunker Hill Road, Andover, CT
Latitude: 41.73777778
Longitude: -72.34972222
T-Mobile site: CT11502A /L600

Dear Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 148 foot level of the existing 180 -foot monopole located at 104 Bunker Hill Road in Andover CT. The monopole is owned by American Tower and the underlying property is owned by Leon and Benjamin Price. T-Mobile now intends to replace (3) of its existing antennas with (3) 600/700 MHz antennas. The new antennas would be installed at the 148 foot level of the tower. with proposed mount modifications as per the attached mount analysis.

Planned Modifications:

Remove and Replace:

Antennas:

- (3) LNX-6515DS-A1M (REMOVE) – Add (3) APXVAARR24_43-U-NA20 (REPLACE) - 600 MHz / 700 MHz
- (3) Ericsson RRUS 11 B12 (REMOVE) – (3) Ericsson Radio 4449 B12, B71 (REPLACE)

Existing to Remain:

Antennas/TMAs/RRUs/coax:

- (3) RR90-17-02DP – not transmitting frequencies
- (3) KRY 112 144/1 TMAs
- (12) 1-5/8" coax

Install New:

Antennas/TMAs/RRUs/coax:

- (3) KRY 112 489/2 TMAs
- (3) Ericsson Radio 4449 B12 B71
- (1) 1-5/8" hybrid

This facility has no record of approvals, however subsequent Exempt Modifications have been filed with the Citing Council with no known conditions that would restrict exempt modifications.

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 Honorable Jeffrey J. Maguire, First Selectman, and John Valente, Zoning Agent.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

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

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

Sincerely,

Elizabeth Jamieson

Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

cc:

The Honorable Jeffrey J. Maguire, First Selectman
John Valente, Zoning Agent
American Tower, Tower Owner
Leon and Benjamin Price, Property Owner

Exhibit A

Original Facility Approval

No Original Facility Approval

On Record

Exhibit B

Property card

104 BUNKER HILL RD**Location** 104 BUNKER HILL RD**Mblu** 33/ 36/ 3/ /**Acct#** 1023**Owner** PRICE LEON & BENJAMIN**Assessment** \$327,900**Appraisal** \$468,400**PID** 1023**Building Count** 1**Current Value**

| Appraisal | | | |
|-----------------------|---------------------|-------------|--------------|
| Valuation Year | Improvements | Land | Total |
| 2016 | \$192,100 | \$276,300 | \$468,400 |
| Assessment | | | |
| Valuation Year | Improvements | Land | Total |
| 2016 | \$134,500 | \$193,400 | \$327,900 |

Owner of Record

Owner PRICE LEON & BENJAMIN
Co-Owner
Address 104 BUNKER HILL RD
 ANDOVER, CT 06232

Sale Price \$0
Certificate
Book & Page 113/1034
Sale Date 10/18/2010
Instrument 26

Ownership History

| Ownership History | | | | | |
|------------------------------|-------------------|--------------------|------------------------|-------------------|------------------|
| Owner | Sale Price | Certificate | Book & Page | Instrument | Sale Date |
| PRICE LEON & BENJAMIN | \$0 | | 113/1034 | 26 | 10/18/2010 |
| PRICE LEON | \$0 | | 0094/0229 | | 08/23/2004 |
| GREEN DEBORAH R & PRICE LEON | \$0 | | 0075/0459 | | 07/06/2000 |
| GREEN DEBORAH R & PRICE LEON | \$184,000 | | 0068/0950 | 00 | 12/10/1997 |
| ARNER DAVID C & MARSHA A | \$69,000 | | 0028/0674 | 00 | 04/15/1976 |

Building Information**Building 1 : Section 1**

Year Built: 1969
Living Area: 2,017
Replacement Cost: \$208,772

Building Percent 71

Good:

Replacement Cost

Less Depreciation: \$148,200

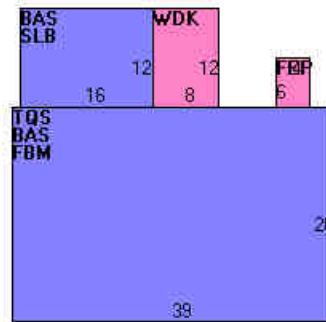
| Building Attributes | |
|---------------------|----------------|
| Field | Description |
| Style | Colonial |
| Model | Residential |
| Grade: | C+ |
| Stories: | 1 3/4 Stories |
| Occupancy | 1 |
| Exterior Wall 1 | Clapboard |
| Exterior Wall 2 | |
| Roof Structure: | Gambrel |
| Roof Cover | Asph/F Gls/Cmp |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Flr 1 | Carpet |
| Interior Flr 2 | |
| Heat Fuel | Oil |
| Heat Type: | Hot Water |
| AC Type: | None |
| Total Bedrooms: | 3 Bedrooms |
| Total Bthrms: | 3 |
| Total Half Baths: | 0 |
| Total Xtra Fixtrs: | |
| Total Rooms: | 7 Rooms |
| Bath Style: | Average |
| Kitchen Style: | Average |

Building Photo



(http://images.vgsi.com/photos2/AndoverCTPhotos//\00\00\23\1

Building Layout



(http://images.vgsi.com/photos2/AndoverCTPhotos//Sketches/1C

| Building Sub-Areas (sq ft) | | Legend | |
|----------------------------|---------------------------|------------|-------------|
| Code | Description | Gross Area | Living Area |
| BAS | First Floor | 1,206 | 1,206 |
| TQS | Three Quarter Story | 1,014 | 811 |
| FBM | Basement, Finished | 1,014 | 0 |
| FEP | Porch, Enclosed, Finished | 24 | 0 |
| SLB | Slab | 192 | 0 |
| WDK | Deck, Wood | 96 | 0 |
| | | 3,546 | 2,017 |

Extra Features

| Extra Features | Legend |
|----------------------------|--------|
| No Data for Extra Features | |

Land

Land Use

Use Code 1010
Description Single Fam MDL-01
Zone R-80
Neighborhood 12
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 13.9
Frontage 0
Depth 0
Assessed Value \$193,400
Appraised Value \$276,300

Outbuildings

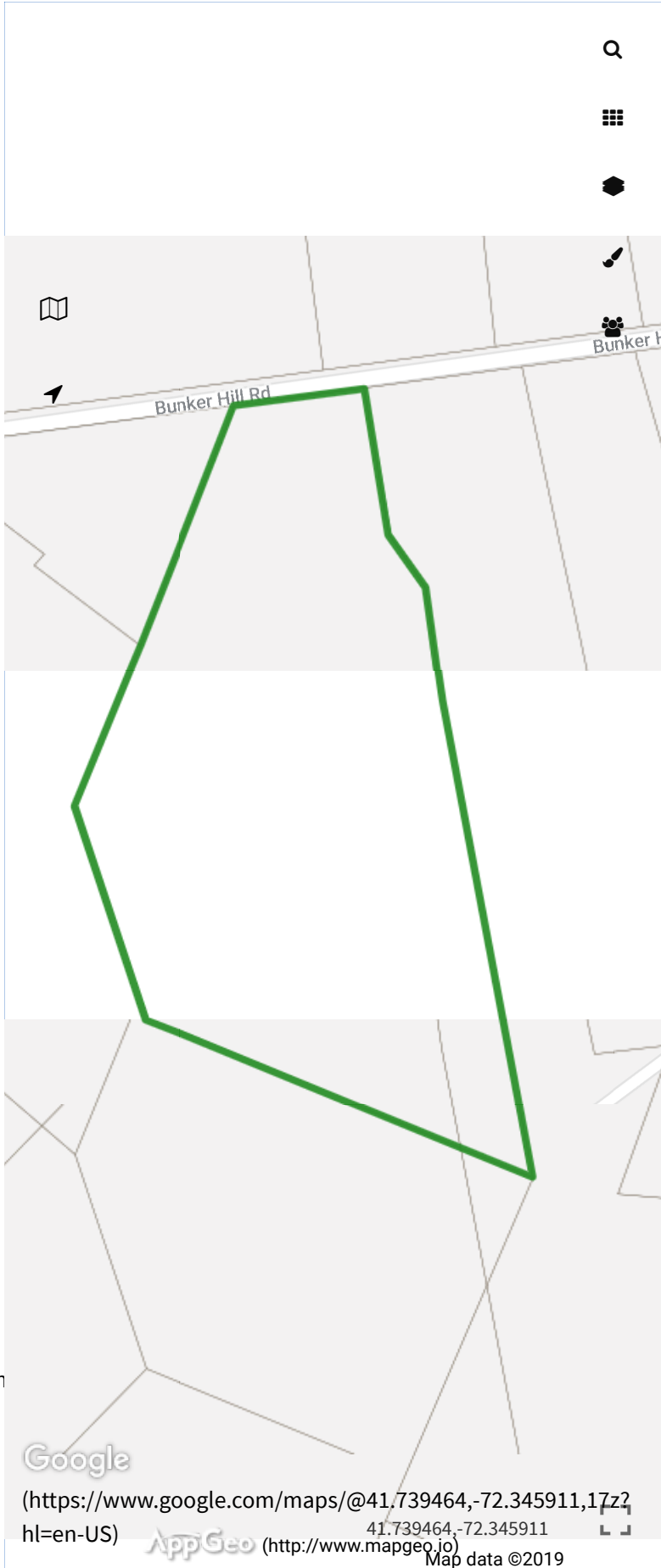
| Outbuildings | | | | | | <u>Legend</u> |
|--------------|----------------|----------|-----------------|-----------|----------|---------------|
| Code | Description | Sub Code | Sub Description | Size | Value | Bldg # |
| FN3 | Fence-6' Chain | | | 200 L.F. | \$1,600 | 1 |
| SHD5 | Shed | | | 220 S.F. | \$5,500 | 1 |
| SHD5 | Shed | | | 200 S.F. | \$5,000 | 1 |
| SHD5 | Shed | | | 360 S.F. | \$9,100 | 1 |
| FGR1 | Garage Av | | | 880 S.F. | \$6,300 | 1 |
| SHP3 | Work Shop Pr | | | 3640 S.F. | \$16,400 | 1 |

Valuation History

| Appraisal | | | |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land | Total |
| 2015 | \$210,100 | \$251,700 | \$461,800 |
| 2011 | \$210,100 | \$251,700 | \$461,800 |
| 2010 | \$246,900 | \$101,900 | \$348,800 |

| Assessment | | | |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land | Total |
| 2015 | \$147,000 | \$176,200 | \$323,200 |
| 2011 | \$147,000 | \$176,200 | \$323,200 |
| 2010 | \$172,800 | \$71,400 | \$244,200 |

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104 BUNKER HILL RD
PRICE LEON & BENJAMIN
09013001-33/036/000003



Google

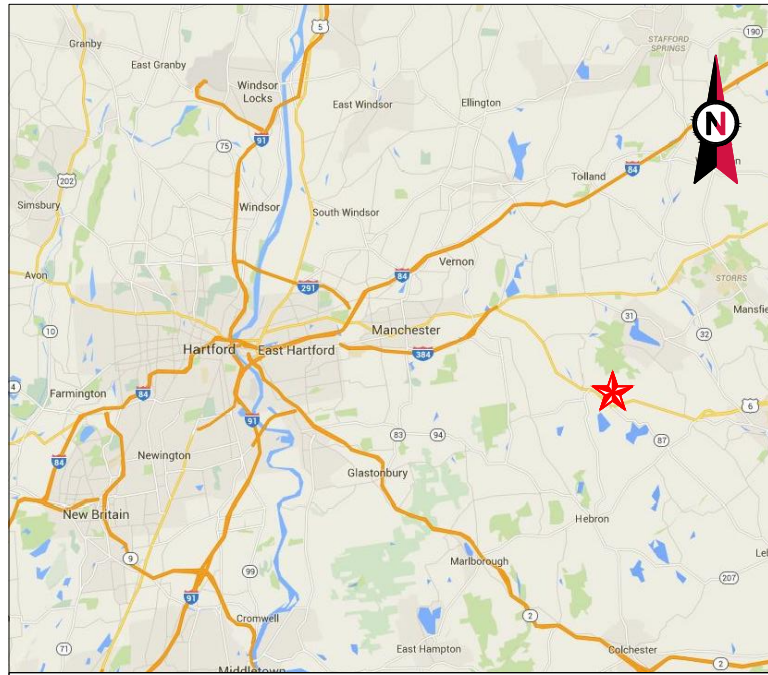
([https://www.google.com/maps/@41.739464,-72.345911,17z?](https://www.google.com/maps/@41.739464,-72.345911,17z?hl=en-US)

41.739464,-72.345911

AppGeo (<http://www.mapgeo.io>)

Exhibit C

Construction Drawings



VICINITY MAP



AMERICAN TOWER®

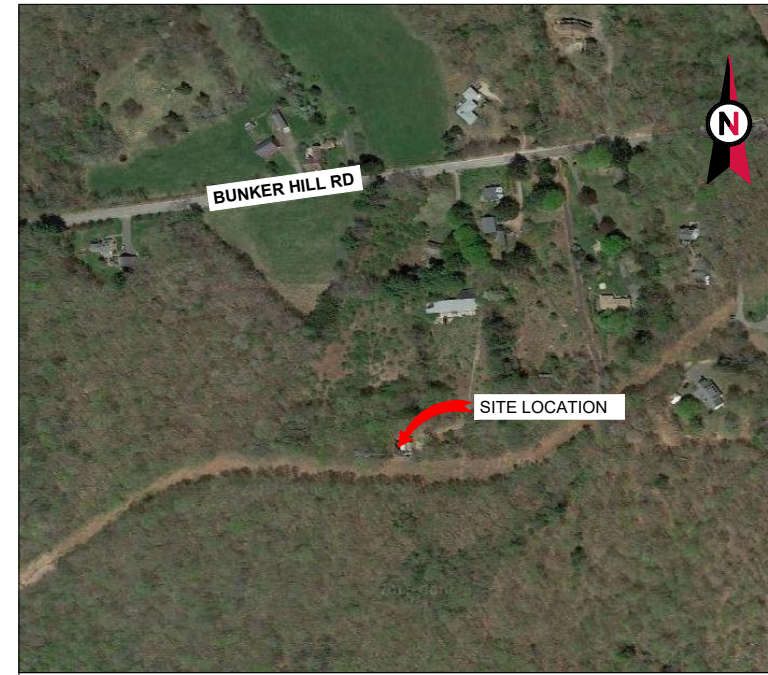
ATC SITE NAME: ANDOVER-BUNKER HILL ROAD

ATC SITE NUMBER: 302472

T-MOBILE SITE ID: CT11502A

SITE ADDRESS: 104 BUNKER HILL RD
ANDOVER, CT 06232

T-MOBILE L600 ANTENNA AMENDMENT
67D94E V2 OUTDOOR CONFIGURATION



LOCATION MAP

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

| REV. | DESCRIPTION | BY | DATE |
|------|------------------|----|----------|
| 0 | FOR CONSTRUCTION | KC | 07/22/19 |
| | | | |
| | | | |
| | | | |
| | | | |

ATC SITE NUMBER:
302472

ATC SITE NAME:
ANDOVER-BUNKER HILL ROAD

SITE ADDRESS:
104 BUNKER HILL RD
ANDOVER, CT 06232



Authorized by "EOR"
Jul 24 2019 11:15 AM
T-Mobile design

| | |
|--------------|----------|
| DRAWN BY: | KC |
| APPROVED BY: | PB |
| DATE DRAWN: | 07/22/19 |
| ATC JOB NO: | 12951815 |

TITLE SHEET

| | |
|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| G-001 | 0 |

| COMPLIANCE CODE | PROJECT SUMMARY | PROJECT DESCRIPTION | SHEET INDEX | | | | |
|---|--|---|--|--|--|---|---|
| <p>ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.</p> <p>1. INTERNATIONAL BUILDING CODE (IBC)</p> <p>2. NATIONAL ELECTRIC CODE (NEC)</p> <p>3. LOCAL BUILDING CODE</p> <p>4. CITY/COUNTY ORDINANCES</p> | <p><u>SITE ADDRESS:</u></p> <p>104 BUNKER HILL RD ANDOVER, CT 06232 COUNTY: TOLLAND</p> <p><u>1A CERTIFICATE SUMMARY:</u></p> <p>LATITUDE: 41° 44' 16.032" N LONGITUDE: 72° 20' 59.420" W GROUND ELEVATION: 547.1' AMSL TOWER HEIGHT: 178.6' AGL HIGHEST APPURTENANCE: 188.6' AGL</p> | <p>THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:</p> <p>REMOVE (3) PANELS</p> <p>INSTALL (3) NEW PANELS, (3) TTAs, (3) RRUs, AND (1) 1-5/8" HYBRID CABLES</p> <p>EXISTING (3) PANELS, (3) TTAs, AND (12) 1-5/8" COAX CABLES TO REMAIN</p> | SHEET NO: | DESCRIPTION: | REV: | DATE: | BY: |
| | <p><u>PROJECT TEAM</u></p> <p><u>TOWER OWNER:</u></p> <p>AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801</p> <p><u>ENGINEER:</u></p> <p>ATC TOWER SERVICES, LLC 3500 REGENCY PKWY STE 100 CARY, NC 27518</p> <p><u>PROPERTY OWNER:</u></p> <p>LEON PRICE 104 BUNKER HILL RD ANDOVER, CT 06232</p> | <p><u>PROJECT NOTES</u></p> <p>1. THE FACILITY IS UNMANNED.</p> <p>2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.</p> <p>3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.</p> <p>4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.</p> <p>5. HANDICAP ACCESS IS NOT REQUIRED.</p> | <p>G-001</p> <p>G-002</p> <p>C-101</p> <p>C-501</p> <p>E-501</p> <p>R-601</p> <p>R-602</p> <p>R-603</p> <p>R-604</p> | <p>TITLE SHEET</p> <p>GENERAL NOTES</p> <p>DETAILED SITE PLAN & TOWER ELEVATION</p> <p>ANTENNA INFORMATION & SCHEDULE</p> <p>GROUNDING DETAILS</p> <p>SUPPLEMENTAL</p> <p>SUPPLEMENTAL</p> <p>SUPPLEMENTAL</p> <p>SUPPLEMENTAL</p> | <p>0</p> <p>0</p> <p>0</p> <p>0</p> <p>0</p> <p> </p> <p> </p> <p> </p> <p> </p> | <p>07/22/19</p> <p>07/22/19</p> <p>07/22/19</p> <p>07/22/19</p> <p>07/22/19</p> <p> </p> <p> </p> <p> </p> <p> </p> | <p>KC</p> <p>KC</p> <p>KC</p> <p>KC</p> <p>KC</p> <p> </p> <p> </p> <p> </p> <p> </p> |
| <p><u>UTILITY COMPANIES</u></p> <p>POWER COMPANY: EVERSOURCE PHONE: (877) 659-6326</p> <p>TELEPHONE COMPANY: FRONTIER COMMUNICATIONS PHONE: (800) 376-6843</p> | <p><u>PROJECT LOCATION DIRECTIONS</u></p> <p>FROM NEWARK, NJ:</p> <p>I-287 EAST TO I-684 NORTH TO I-284 EAST INTO CONNECTICUT. FOLLOW I-84 THROUGH HARTFORD TO I-384 SOUTH/EAST. FOLLOW I-384 TO END THEN EAST ON ROUTE 6. FOLLOW ROUTE 6 THROUGH COLUMBIA AND INTO THE TOWN OF ANDOVER. TURN LEFT (NORTH) ONTO BUNKER HILL ROAD. THE SITE WILL BE ON YOUR RIGHT (#104).</p> | | | | | | |



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GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

27. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
28. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
 - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
 - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
 - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
 - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
 - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
 - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
 - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
 - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
 - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
 - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
 - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.



THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

| REV. | DESCRIPTION | BY | DATE |
|------|------------------|----|----------|
| 0 | FOR CONSTRUCTION | KC | 07/22/19 |
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| | | | |

ATC SITE NUMBER:
302472

ATC SITE NAME:
ANDOVER-BUNKER HILL ROAD

SITE ADDRESS:
 104 BUNKER HILL RD
 ANDOVER, CT 06232



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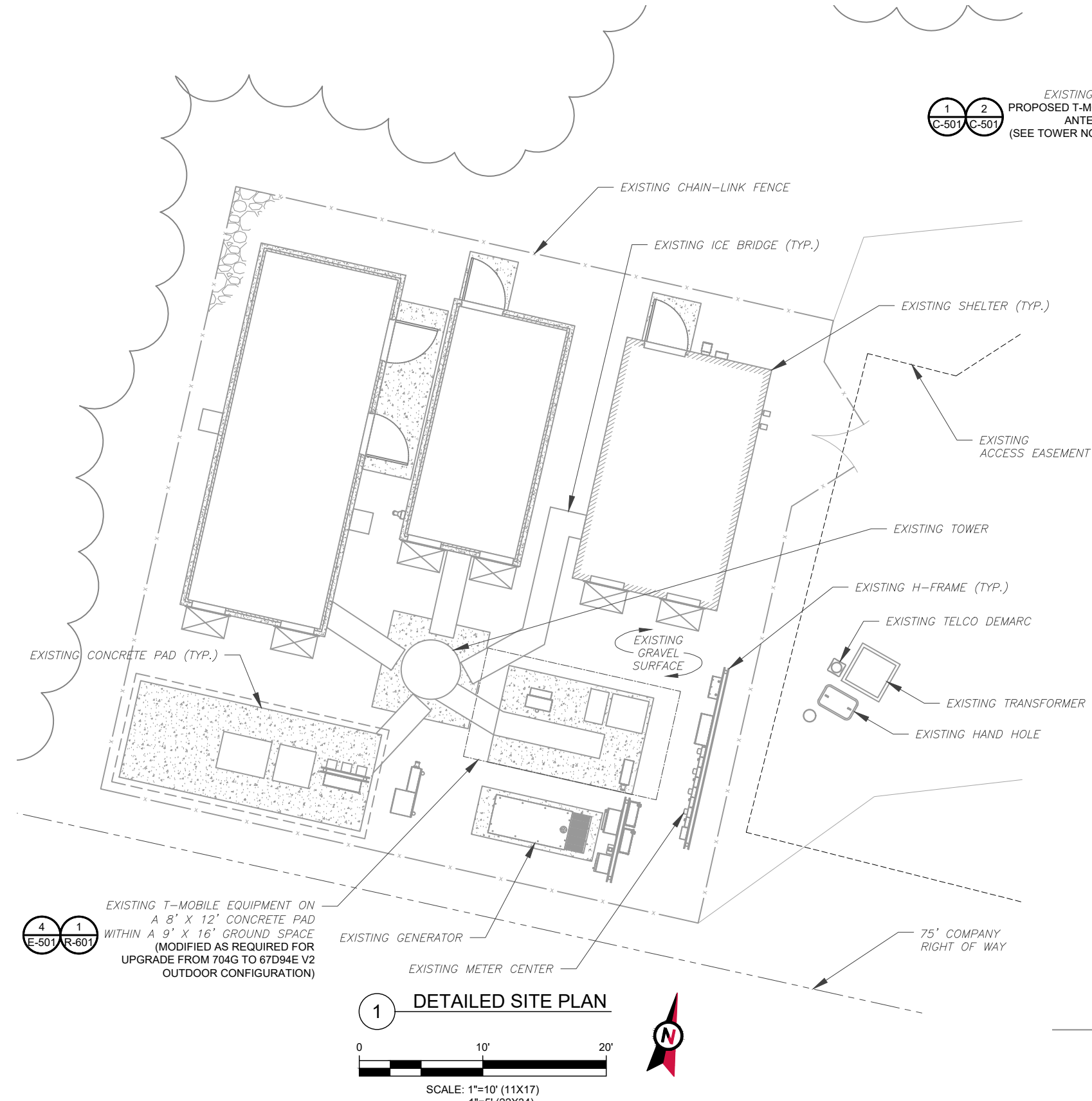
| | |
|--------------|----------|
| DRAWN BY: | KC |
| APPROVED BY: | PB |
| DATE DRAWN: | 07/22/19 |
| ATC JOB NO: | 12951815 |

GENERAL NOTES

| | |
|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| G-002 | 0 |

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.



1 DETAILED SITE PLAN

SCALE: 1"=10' (11X17)
1"=5' (22X34)

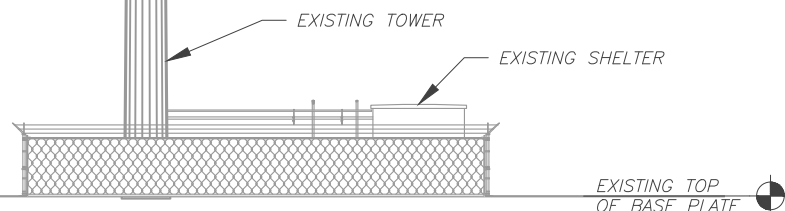
TOP OF EXISTING HIGHEST APPURTENANCE ELEV. 183'
TOP OF EXISTING TOWER ELEV. 178'

EXISTING AND PROPOSED T-MOBILE ANTENNAS (SEE TOWER NOTE 3)

EXISTING CARRIER ANTENNAS RAD CENTER @ 180'
EXISTING CARRIER ANTENNAS RAD CENTER @ 171'
EXISTING CARRIER ANTENNAS RAD CENTER @ 160'
PROPOSED ANTENNA RAD CENTER @ 148'
EXISTING CARRIER ANTENNAS RAD CENTER @ 137'

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES. USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
3. ESTIMATED LENGTH OF PROPOSED CABLE IS 188'. ESTIMATED LENGTH OF CABLE IS CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES).
4. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATION.
5. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)



2 TOWER ELEVATION
SCALE: NOT TO SCALE

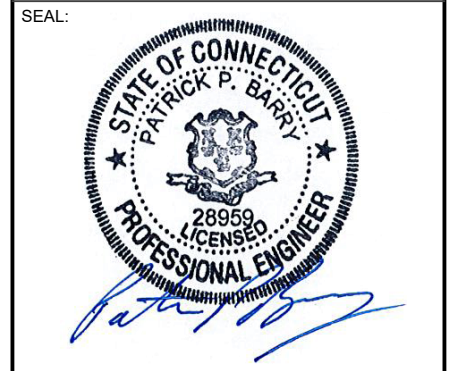


A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

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| REV. | DESCRIPTION | BY | DATE |
|------|------------------|----|----------|
| 0 | FOR CONSTRUCTION | KC | 07/22/19 |
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| | | | |
| | | | |
| | | | |

ATC SITE NUMBER:
302472
ATC SITE NAME:
ANDOVER-BUNKER HILL ROAD
SITE ADDRESS:
104 BUNKER HILL RD
ANDOVER, CT 06232



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T-Mobile design

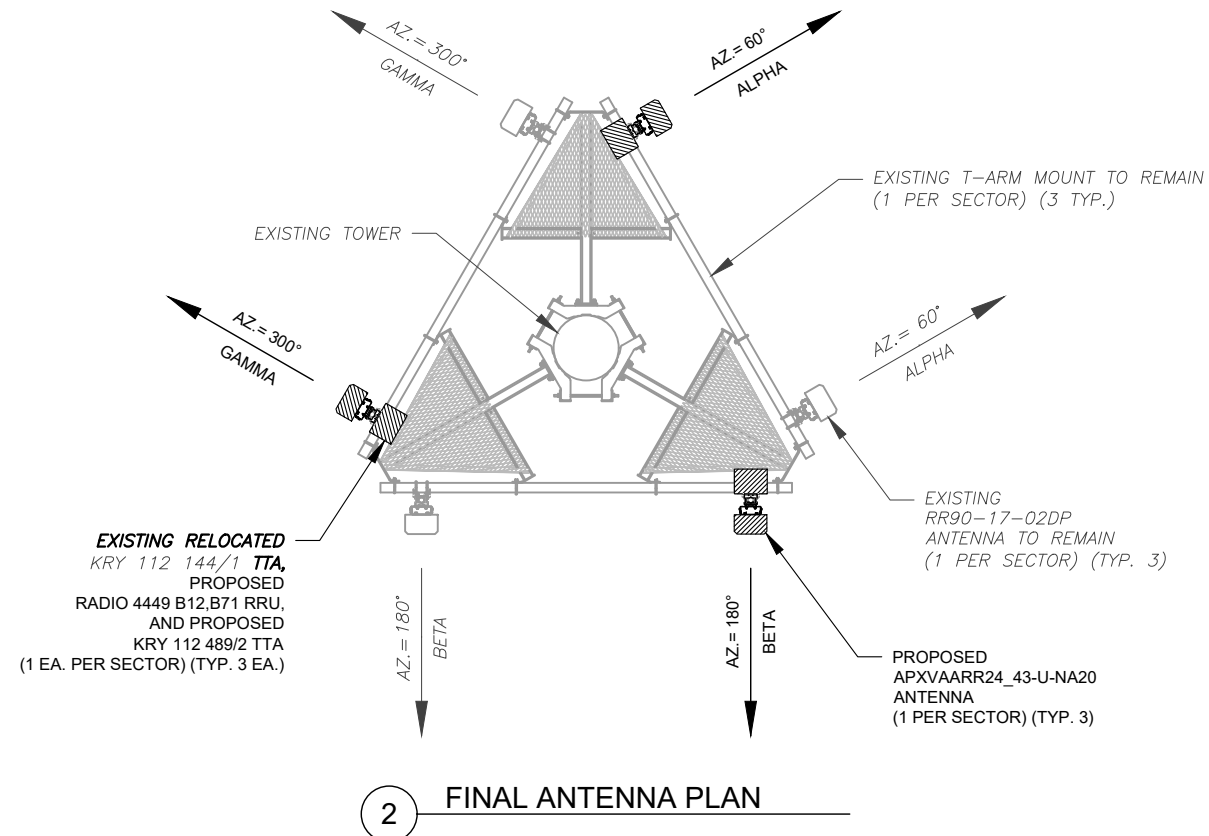
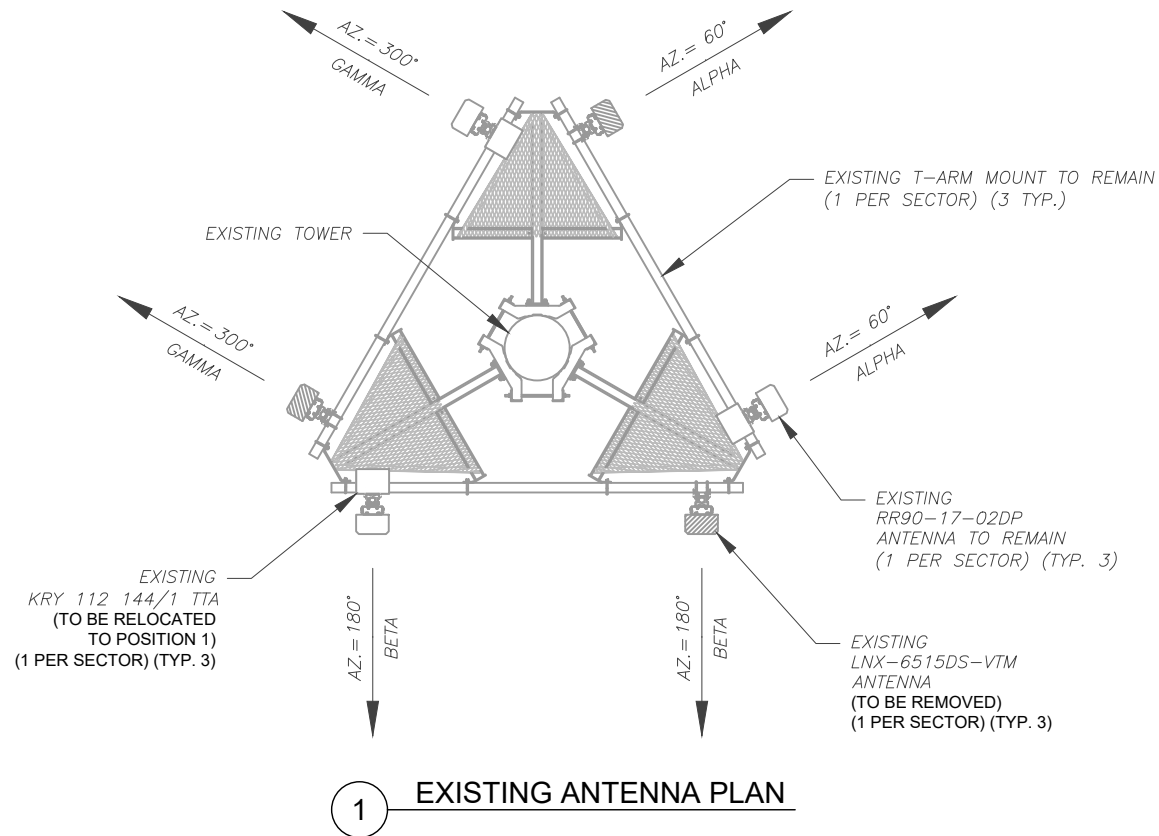
| | |
|--------------|----------|
| DRAWN BY: | KC |
| APPROVED BY: | PB |
| DATE DRAWN: | 07/22/19 |
| ATC JOB NO: | 12951815 |

DETAILED SITE PLAN & TOWER ELEVATION

| | |
|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| C-101 | 0 |

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PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, PLLC, DATED 07/05/19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT

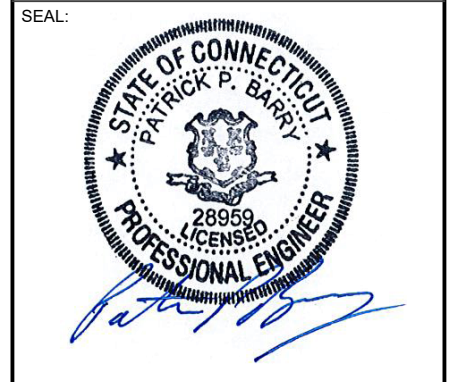


AMERICAN TOWER®
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 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
 COA: PEC.0001553

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| REV. | DESCRIPTION | BY | DATE |
|------|------------------|----|----------|
| 0 | FOR CONSTRUCTION | KC | 07/22/19 |
| | | | |
| | | | |
| | | | |

ATC SITE NUMBER:
302472
 ATC SITE NAME:
ANDOVER-BUNKER HILL ROAD
 SITE ADDRESS:
 104 BUNKER HILL RD
 ANDOVER, CT 06232



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 Jul 24 2019 11:15 AM
T-Mobile design

| SECTOR | ANT. | MANUFACTURER (MODEL #) | RAD CENTER | AZIMUTH (TN) | MECH. D-TILT | ELEC. D-TILT | ADDITIONAL TOWER MOUNTED EQUIPMENT |
|--------|------|------------------------|------------|--------------|--------------|--------------|------------------------------------|
| ALPHA | A1 | LNX-6515DS-VTM | 148'-0" | 60° | 0° | 2° | - |
| ALPHA | A2 | RR90-17-02DP | 148'-0" | 60° | 0° | 2° | KRY 112 144/1 |
| BETA | B1 | LNX-6515DS-VTM | 148'-0" | 180° | 0° | 2° | - |
| BETA | B2 | RR90-17-02DP | 148'-0" | 180° | 0° | 2° | KRY 112 144/1 |
| GAMMA | C1 | LNX-6515DS-VTM | 148'-0" | 300° | 0° | 2° | - |
| GAMMA | C2 | RR90-17-02DP | 148'-0" | 300° | 0° | 2° | KRY 112 144/1 |

- NOTES**
- BASED ON APPROVED ATC APPLICATION 12927164, DATED 04/02/2019. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
 - ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
 - ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
 - CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
 - POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

| SECTOR | ANT. | MANUFACTURER (MODEL #) | RAD CENTER | AZIMUTH (TN) | MECH. D-TILT | ELEC. D-TILT | ADDITIONAL TOWER MOUNTED EQUIPMENT |
|--------|------|------------------------|------------|--------------|--------------|--------------|--|
| ALPHA | A1 | APXVAARR24_43-U-NA20 | 148'-0" | 60° | 0° | 2° | KRY 112 144/1 RADIO 4449 B12,B71 KRY 112 489/2 |
| ALPHA | A2 | RR90-17-02DP | 148'-0" | 60° | 0° | - | - |
| BETA | B1 | APXVAARR24_43-U-NA20 | 148'-0" | 180° | 0° | 2° | KRY 112 144/1 RADIO 4449 B12,B71 KRY 112 489/2 |
| BETA | B2 | RR90-17-02DP | 148'-0" | 180° | 0° | - | - |
| GAMMA | C1 | APXVAARR24_43-U-NA20 | 148'-0" | 300° | 0° | 2° | KRY 112 144/1 RADIO 4449 B12,B71 KRY 112 489/2 |
| GAMMA | C2 | RR90-17-02DP | 148'-0" | 300° | 0° | - | - |

| CURRENT FIBER DISTRIBUTION/OVP BOX | | CURRENT CABLING SUMMARY | | | STATUS ABBREVIATIONS | | |
|------------------------------------|--------|-------------------------|--------|--------|----------------------|-----------------|-----------------------------|
| MODEL NUMBER | STATUS | COAX | HYBRID | STATUS | RMV: | REL: | DSC: |
| - | - | (12) 1-5/8" | - | RMN | TO BE REMOVED | TO BE RELOCATED | TO BE DISCONNECTED & REMAIN |
| - | - | - | - | - | ADD: | TO BE ADDED | - |

3 ANTENNA SCHEDULE

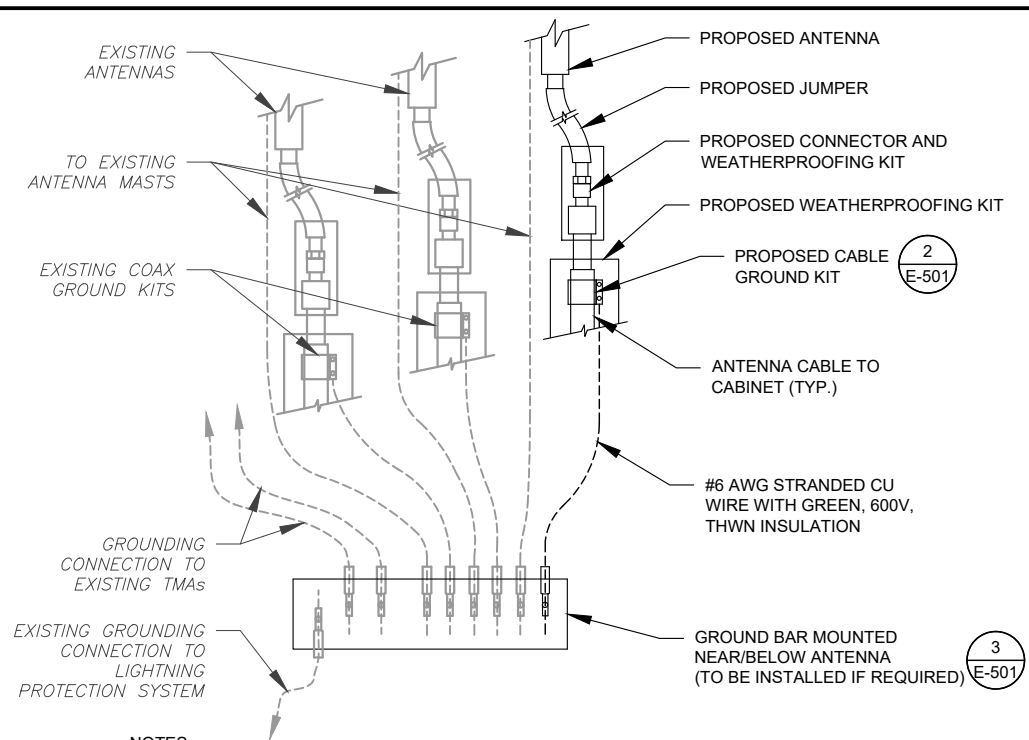
CABLE LENGTHS FOR JUMPERS
 FIBER DISTRIBUTION/OVP TO RRU: 15'
 RRU TO COMBINER: 10'
 COMBINER TO ANTENNA: 10'

| PROPOSED FIBER DISTRIBUTION/OVP BOX | | PROPOSED CABLING SUMMARY | | |
|-------------------------------------|--------|--------------------------|------------|--------|
| MODEL NUMBER | STATUS | COAX | HYBRID | STATUS |
| - | - | (12) 1-5/8" | - | RMN |
| - | - | - | (1) 1-5/8" | ADD |

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:
C-501

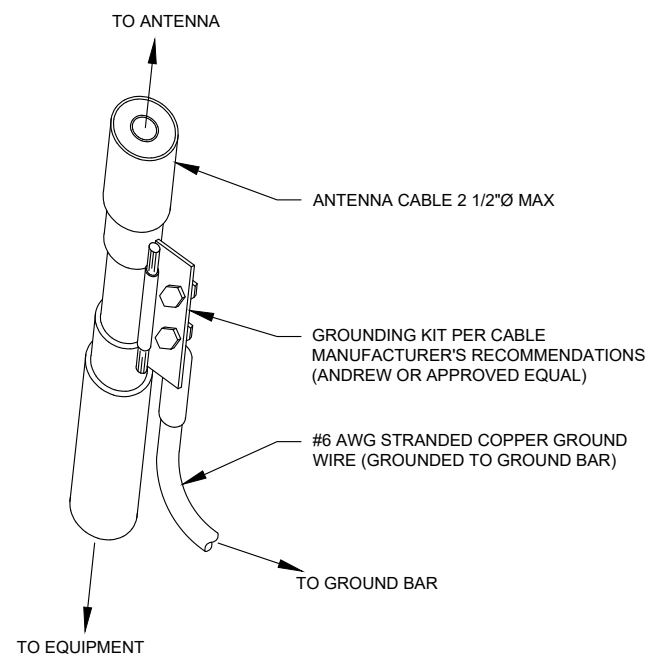
REVISION:
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NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

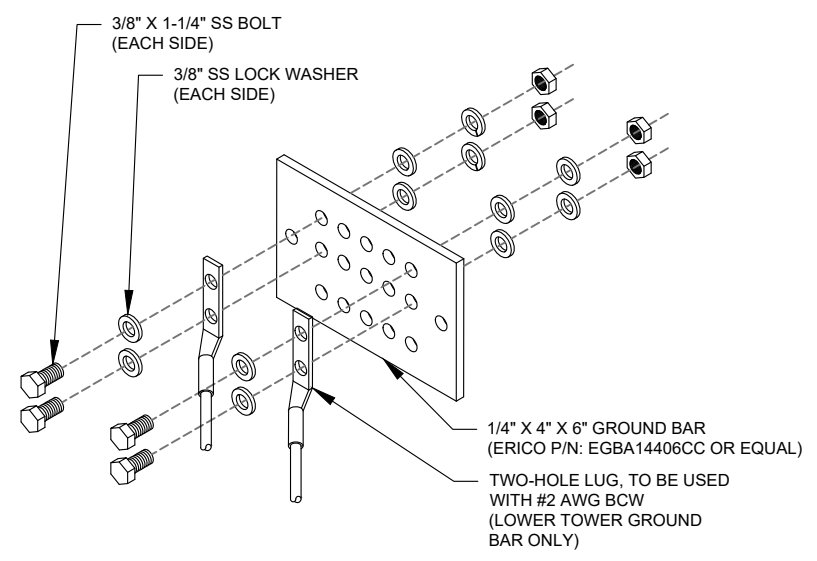
1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: NOT TO SCALE



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: NOT TO SCALE

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A.T. ENGINEERING SERVICE, PLLC
 3500 REGENCY PARKWAY
 SUITE 100
 CARY, NC 27518
 PHONE: (919) 468-0112
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| REV. | DESCRIPTION | BY | DATE |
|------|------------------|----|----------|
| 0 | FOR CONSTRUCTION | KC | 07/22/19 |
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ATC SITE NUMBER:
302472

ATC SITE NAME:
ANDOVER-BUNKER HILL ROAD

SITE ADDRESS:
104 BUNKER HILL RD
ANDOVER, CT 06232

SEAL:

Professional Engineer
PATRICK P. BARRY
28959
LICENSED

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 T-Mobile design

| | |
|--------------|----------|
| DRAWN BY: | KC |
| APPROVED BY: | PB |
| DATE DRAWN: | 07/22/19 |
| ATC JOB NO: | 12951815 |

GROUNDING DETAILS

| | |
|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| E-501 | 0 |

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| Existing RAN Equipment | | | |
|---------------------------------|--|---------------------------------|------------------------|
| Template: 704G | | | |
| Enclosure | 1 | | |
| Enclosure Type | RBS 6201 ODE | | |
| Baseband | <table border="1"> <tr> <td>DUG20 G1900</td> <td>DUS41 L1900 L700</td> </tr> </table> | DUG20 G1900 | DUS41 L1900 L700 |
| DUG20 G1900 | DUS41 L1900 L700 | | |
| Radio | <table border="1"> <tr> <td>RUS01 B2 (x6) L1900 G1900</td> <td>RUS01 B12 (x6) L700</td> </tr> </table> | RUS01 B2 (x6) L1900 G1900 | RUS01 B12 (x6) L700 |
| RUS01 B2 (x6) L1900 G1900 | RUS01 B12 (x6) L700 | | |

| Proposed RAN Equipment | | | | |
|---------------------------------|---|---------------------------------|---|------------------------|
| Template: 67D94E | | | | |
| Enclosure | 1 | | | |
| Enclosure Type | RBS 6201 ODE | | | |
| Baseband | <table border="1"> <tr> <td>DUG20 G1900</td> <td>BB 6630 L2100 L1900 L700 L600</td> <td>BB 6630 N600 (DARK)</td> </tr> </table> | DUG20 G1900 | BB 6630 L2100 L1900 L700 L600 | BB 6630 N600 (DARK) |
| DUG20 G1900 | BB 6630 L2100 L1900 L700 L600 | BB 6630 N600 (DARK) | | |
| Hybrid Cable System | Ericsson 6x12 HCS *Select Length & AWG* | | | |
| Radio | <table border="1"> <tr> <td>RUS01 B2 (x6) L1900 G1900</td> </tr> </table> | RUS01 B2 (x6) L1900 G1900 | | |
| RUS01 B2 (x6) L1900 G1900 | | | | |

RAN Scope of Work:

Replace DUS41 with (1) BB6630 for L2100, L1900, L700, and L600.
 Add (1) BB6630 for future 5G N600.
 Remove (6) RUS01 B12 Radios from Cabinet.
 Add (3) 4415 B66A for L2100 on ground..
 Add (1) 6X12 HCS.
 Existing: (12) 1-5/8" Coaxial Lines. (2) 1/2" Coaxial Lines.

① **CABINET CONFIGURATION**
 SCALE: NOT TO SCALE

SUPPLEMENTAL

| | |
|-------------------------------|-----------------------|
| SHEET NUMBER: R-601 | REVISION: 0 |
|-------------------------------|-----------------------|

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.



**Mount Analysis of Existing Low Profile Platform for
 American Tower on behalf of T-Mobile
 302472 - Andover-bunker Hill Road
 Project #: 12927164
 T-Mobile Site ID: CT11502A
 Program: L600**

CLS Engineering PLLC Project #41124-12927164-01-MA-R1
 July 5, 2019

| | |
|-------------------|---|
| MOUNT DESCRIPTION | Existing Low Profile Platform at 147 ft AGL |
| ANTENNA ELEVATION | Nominal Rad. Elevation of 148 ft AGL (Eccentricity of ~1 ft) |
| SITE DESCRIPTION | 178 ft Monopole |
| SITE ADDRESS | 104 Bunker Hill Road, Andover, CT 06232-1301, Tolland County |
| GPS COORDINATES | 41.73778611, -72.34983889 |
| ANALYSIS STANDARD | 2015 IBC / 2018 Connecticut Building Code / TIA-222-G |
| LOADING CRITERIA | 125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice |

■ ANALYSIS RESULT: **Pass (Conditional)**

| | | |
|--------------|-----|------|
| MEMBER USAGE | 73% | Pass |
|--------------|-----|------|

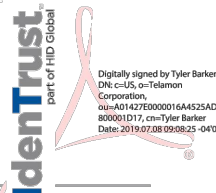
Modifications are proposed to bring mounts into compliance; see conclusion for details.

Prepared by:
Sean Rock, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.



Tyler M. Barker
 CLS Engineering, PLLC
 Director of Engineering
 PE # 32402 Exp. 1/31/2020
 COA # PEC.081833 Exp. 8/14/2019



Mount Analysis for American Tower on behalf of T-Mobile
 302472 - Andover-bunker Hill Road
 July 5, 2019
 CLS Engineering PLLC Project #41124-12927164-01-MA-R1

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **CONDITIONALLY PASS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

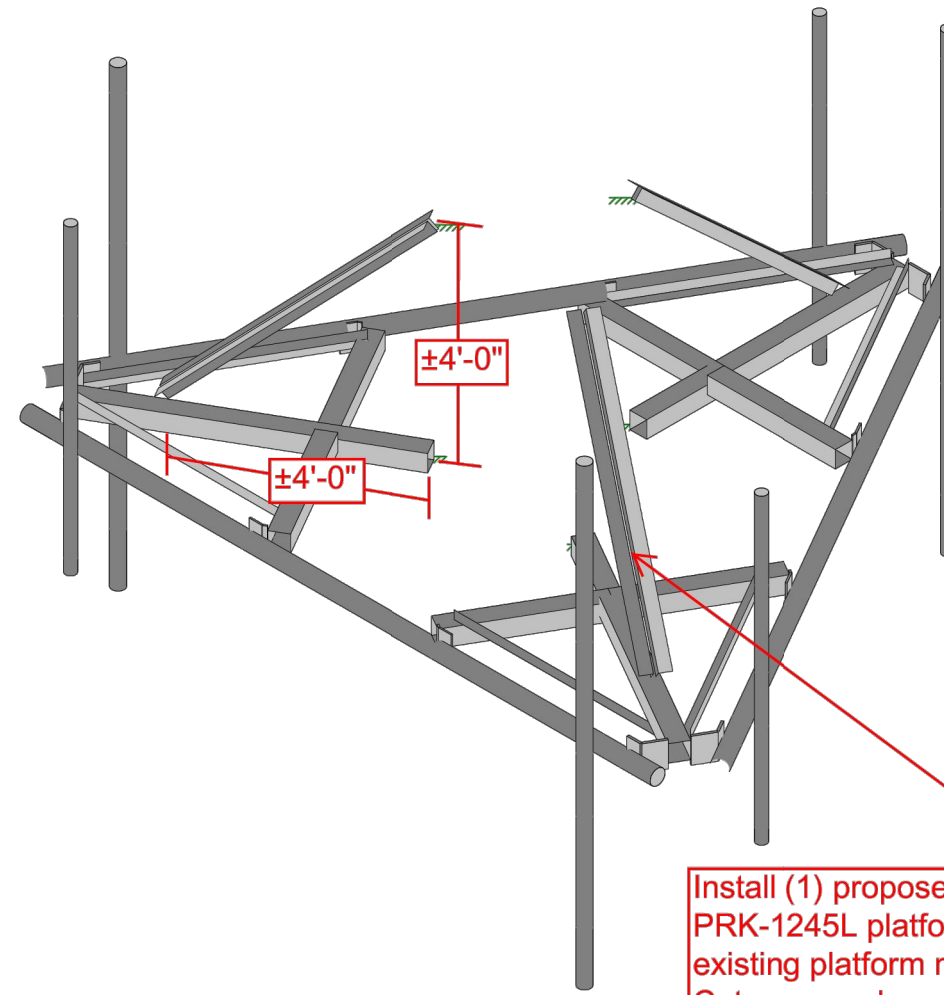
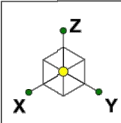
- Install (1) proposed Site Pro 1 PRK-1245L platform reinforcement kit on existing platform mount as shown in the following sketches. Field-Cut proposed members as required. Maintain minimum bolt edge distance. **DO NOT PINCH SAFETY CLIMB.**

See following sketches and Site Pro 1 assembly drawings for additional details.

SUPPLEMENTAL

| | |
|-------------------------------|-----------------------|
| SHEET NUMBER: R-602 | REVISION: 0 |
|-------------------------------|-----------------------|

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.



Install (1) proposed Site Pro 1 PRK-1245L platform reinforcement kit on existing platform mount as shown. Field-Cut proposed members as required. Maintain minimum bolt edge distance. DO NOT PINCH SAFETY CLIMB.

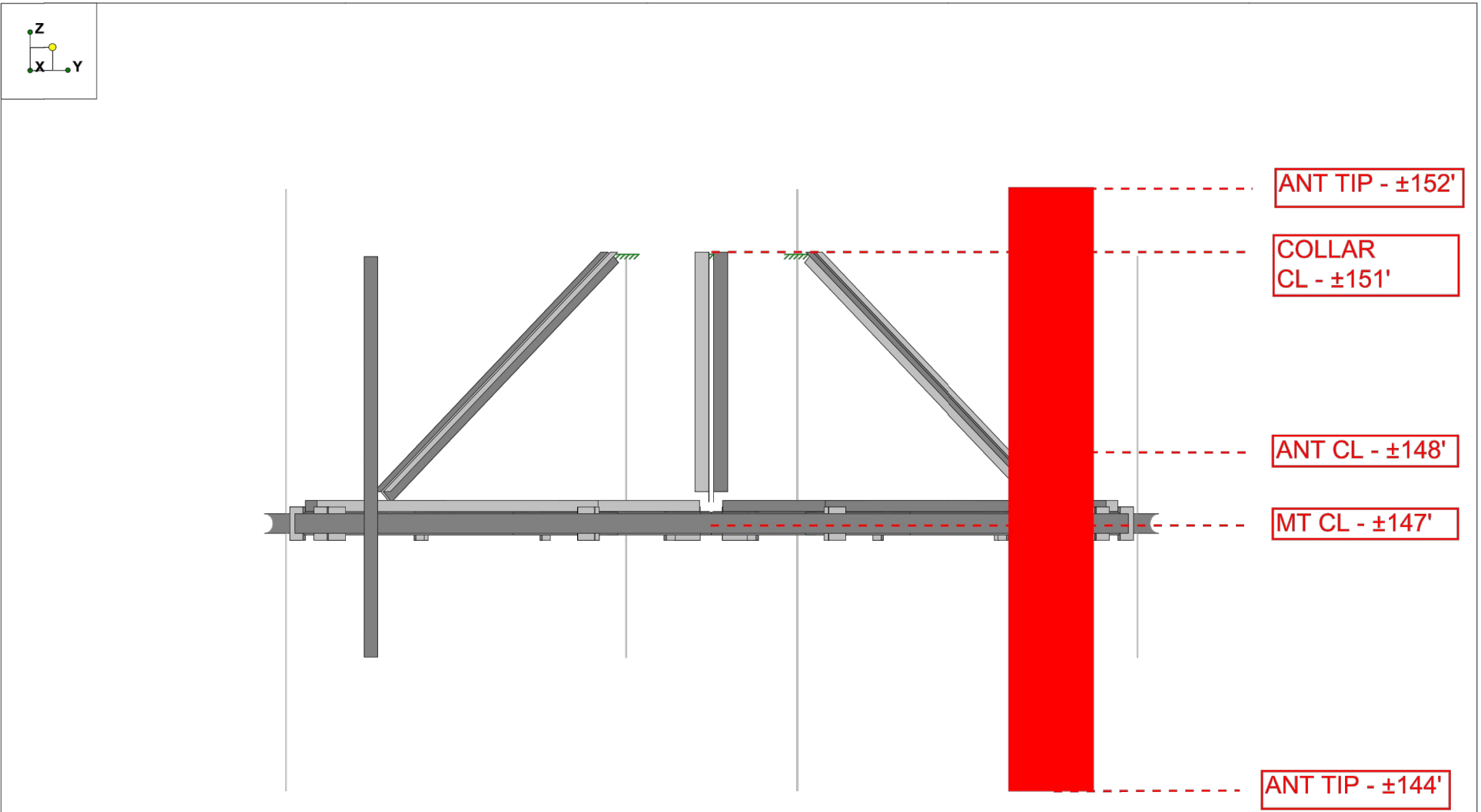
Envelope Only Solution

| | | |
|-------------------------|---|-----------------------------|
| CLS | 41124-12927164-Andover-bunker Hill Road Installation Sketch - Isometric View | SK - 0 |
| SMR | | July 5, 2019 at 9:53 AM |
| 41124-12927164-01-MA-R1 | | 41124-12927164-01-MA-R1.r3d |

SUPPLEMENTAL

| | |
|-------------------------------|-----------------------|
| SHEET NUMBER: R-603 | REVISION: 0 |
|-------------------------------|-----------------------|

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.



Envelope Only Solution

| | | |
|-------------------------|---|-----------------------------|
| CLS | 41124-12927164-Andover-bunker Hill Road Installation Sketch - Elevation View | SK - 0 |
| SMR | | July 5, 2019 at 9:57 AM |
| 41124-12927164-01-MA-R1 | | 41124-12927164-01-MA-R1.r3d |

SUPPLEMENTAL

| | |
|-------------------------------|-----------------------|
| SHEET NUMBER: R-604 | REVISION: 0 |
|-------------------------------|-----------------------|

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Exhibit D

Structural Analysis Report



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 178 ft Monopole
ATC Site Name : Andover-bunker Hill Road, CT
ATC Site Number : 302472
Engineering Number : 12927164_C3_02
Proposed Carrier : T-MOBILE
Carrier Site Name : SpectraSite Andover
Carrier Site Number : CT11502A
Site Location : 104 Bunker Hill Road
Andover, CT 06232-1301
41.737800,-72.349800
County : Tolland
Date : July 18, 2019
Max Usage : 78%
Result : Pass

Prepared By:
Cole Melody Koffi
Structural Engineer I

Reviewed By:



Authorized by "EOR"
Jul 22 2019 4:57 PM

cosign

COA: PEC.0001553



Table of Contents

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| Existing and Reserved Equipment..... | 2 |
| Equipment to be Removed..... | 2 |
| Proposed Equipment | 2 |
| Structure Usages | 3 |
| Foundations | 3 |
| Deflection and Sway | 3 |
| Standard Conditions | 4 |
| Calculations | Attached |



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

| | |
|----------------------------|---|
| Tower Drawings | PJF Job #29200-028, dated January 14, 2000 |
| Foundation Drawing | PJF Job #29200-012, dated January 14, 2000 |
| Geotechnical Report | Tectonic Project #1170.C966, dated November 30, 1999 |
| Mount Analysis | CLS Engineering PLLC Project #41124-12927164-01-MA-R1, dated July 5, 2019 |

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

| | |
|---------------------------------|---|
| Basic Wind Speed: | 101 mph (3-Second Gust, V_{ASD})/130 mph (3-Second Gust, V_{ULT}) |
| Basic Wind Speed w/ Ice: | 50 mph (3-Second Gust) w/ 1" radial ice concurrent |
| Code: | ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code |
| Structure Class: | II |
| Exposure Category: | B |
| Topographic Category: | 3 |
| Crest Height: | 143 ft |
| Spectral Response: | $S_s = 0.18$, $S_1 = 0.06$ |
| Site Class: | B - Competent Soil |

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

| Elev. ¹ (ft) | Qty | Antenna | Mount Type | Lines | Carrier |
|-------------------------|-----|--|-------------------------|--|------------------|
| 180.0 | 12 | Powerwave Allgon 7120.16.05.00 / A-800-110-131-0-N | Low Profile Platform | (2) 1 1/4" Coax | SPRINT NEXTEL |
| 168.0 | 3 | RFS APXVTM14-ALU-I20 | Platform with Handrails | (4) 1 1/4" Hybriflex Cable (6) 1 5/8" Coax | |
| | 3 | Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield | | | |
| | 3 | Alcatel-Lucent 1900 MHz 4X45 RRH | | | |
| | 6 | Alcatel-Lucent RRH2x50-08 | | | |
| 158.0 | 3 | Commscope NNVV-65B-R4 | Platform with Handrails | (12) 1 5/8" Coax (2) 1.58" Hybrid | VERIZON WIRELESS |
| | 6 | Andrew SBNHH-1D65B | | | |
| | 6 | Antel LPA-80080/4CF | | | |
| | 2 | RFS DB-T1-6Z-8AB-0Z | | | |
| | 3 | Alcatel-Lucent B66a RRH4x45 (AWS-3) | | | |
| | 3 | Alcatel-Lucent RRH2x60 700 | | | |
| 148.0 | 6 | RFS FD9R6004/2C-3L | Low Profile Platform | (12) 1 5/8" Coax | T-MOBILE |
| | 3 | EMS RR90-17-02DP | | | |
| 137.0 | 3 | Ericsson KRY 112 144/1 | Low Profile Platform | (1) 0.39" Cable (2) 0.78" 8 AWG 6 (12) 1 1/4" Coax (1) 3" conduit | AT&T MOBILITY |
| | 6 | Powerwave Allgon LGP21401 | | | |
| | 1 | Raycap DC6-48-60-18-8F ("Squid") | | | |
| | 3 | Ericsson RRUS 11 (Band 12) (55 lb) | | | |
| | 6 | Powerwave Allgon 7770.00 | | | |
| | 3 | KMW AM-X-CD-16-65-00T-RET | | | |
| 108.0 | 6 | LGP Allgon LGP21903 | Stand-Off | (1) 1/2" Coax | VERIZON WIRELESS |
| 97.0 | 1 | GPS | | | |
| 88.0 | 2 | GPS | | | |
| 12.0 | 1 | PCTEL GPS-TMG-HR-26N | | | |
| 97.0 | 2 | GPS | Stand-Off | (2) 1/2" Coax | SPRINT NEXTEL |
| 88.0 | 1 | GPS | Stand-Off | (2) 1/2" Coax | |
| 12.0 | 1 | PCTEL GPS-TMG-HR-26N | Stand-Off | (1) 1/2" Coax | AT&T MOBILITY |

Equipment to be Removed

| Elev. ¹ (ft) | Qty | Antenna | Mount Type | Lines | Carrier |
|-------------------------|-----|-------------------------------|------------|-------|----------|
| 148.0 | 3 | Andrew LNX-6515DS-VTM | - | - | T-MOBILE |
| | 3 | Kathrein Scala Smart Bias Tee | | | |

Proposed Equipment

| Elev. ¹ (ft) | Qty | Antenna | Mount Type | Lines | Carrier |
|-------------------------|-----|-----------------------------|---|------------------|----------|
| 148.0 | 3 | Ericsson KRY 112 489/2 | Low Profile Platform with Site Pro 1 PRK-1245L Platform Reinforcement Kit | (1) 1 5/8" Fiber | T-MOBILE |
| | 3 | Ericsson Radio 4449 B12,B71 | | | |
| | 3 | RFS APXVAARR24_43-U-NA20 | | | |

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.



Structure Usages

| Structural Component | Controlling Usage | Pass/Fail |
|----------------------|-------------------|-----------|
| Anchor Bolts | 76% | Pass |
| Shaft | 78% | Pass |
| Base Plate | 62% | Pass |

Foundations

| Reaction Component | Analysis Reactions | % of Design |
|--------------------|--------------------|-------------|
| Moment (Kips-Ft) | 5,125.4 | 58% |
| Axial (kips) | 63.5 | 64% |
| Shear (Kips) | 41.9 | 27% |

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

| Antenna Elevation (ft) | Antenna | Carrier | Deflection (ft) | Sway (Rotation) (°) |
|------------------------|-----------------------------|----------|-----------------|---------------------|
| 148.0 | Ericsson KRY 112 489/2 | T-MOBILE | 1.776 | 1.448 |
| | Ericsson Radio 4449 B12,B71 | | | |
| | RFS APXVAARR24_43-U-NA20 | | | |

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

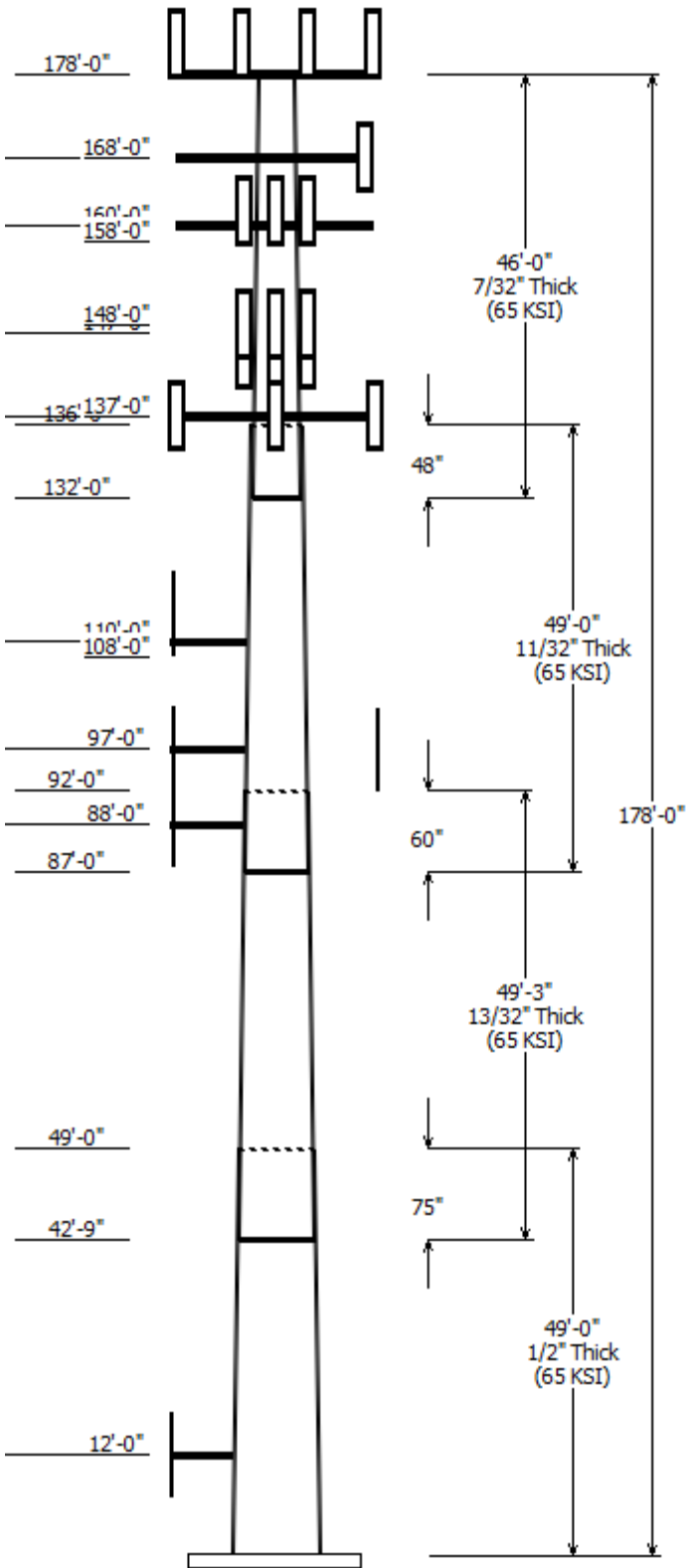
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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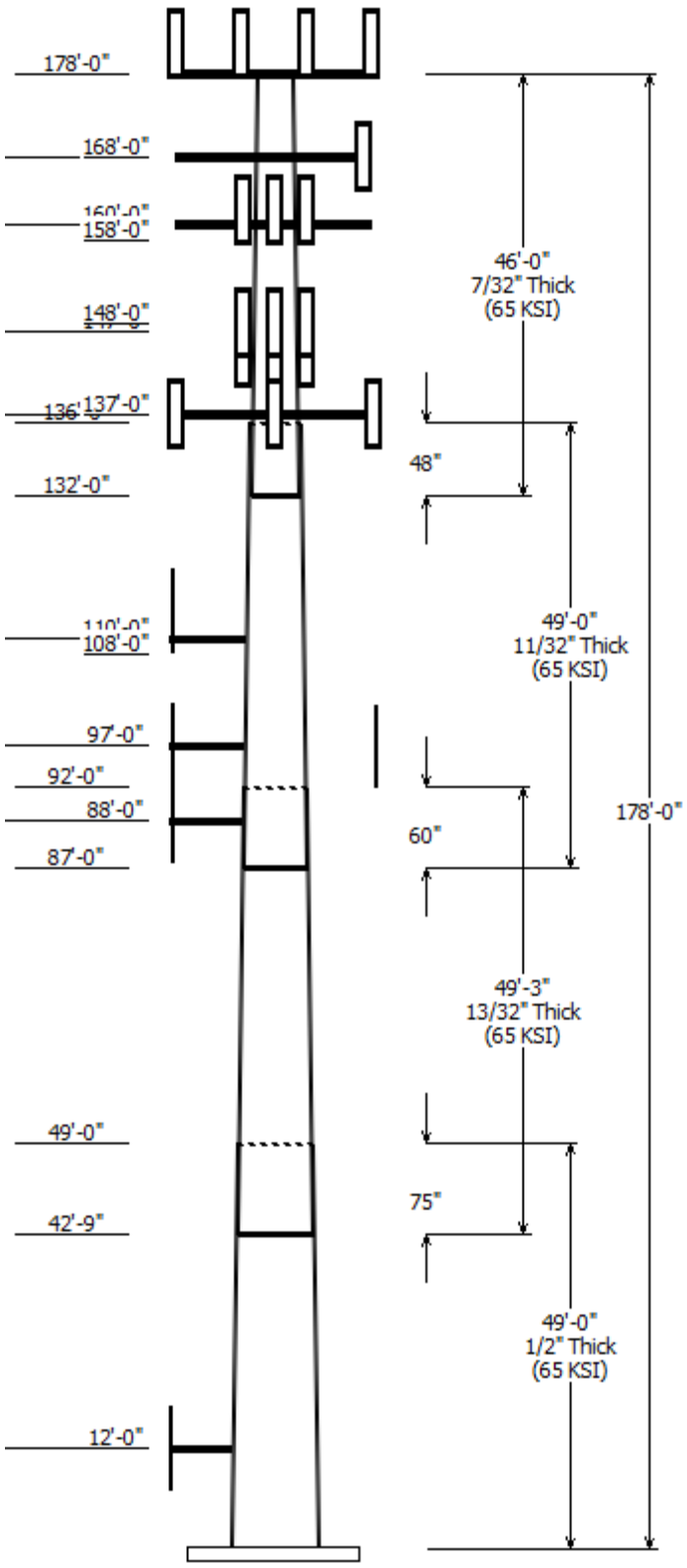


| Job Information | |
|---|----------------------|
| Client : T-MOBILE | Code: ANSI/TIA-222-G |
| Pole : 302472 | |
| Location : Andover-bunker Hill Road, CT | |
| Description : | Struct Class : II |
| Shape : 18 Sides | Exposure : B |
| Height : 178.00 (ft) | Topo : 3 |
| Base Elev (ft): 0.00 | |
| Taper: 0.20700in/ft) | |

| Sections Properties | | | | | | | |
|---------------------|-------------|---------------|--------------|------------|------------|---------------------|-------------------|
| Shaft Section | Length (ft) | Diameter (in) | | Thick (in) | Joint Type | Overlap Length (in) | Steel Grade (ksi) |
| | | Across Top | Flats Bottom | | | | |
| 1 | 49.000 | 46.76 | 56.91 | 0.500 | | 0.000 | 18 Sides 65 |
| 2 | 49.250 | 38.67 | 48.87 | 0.406 | Slip Joint | 75.000 | 18 Sides 65 |
| 3 | 49.000 | 30.25 | 40.40 | 0.344 | Slip Joint | 60.000 | 18 Sides 65 |
| 4 | 46.000 | 22.00 | 31.52 | 0.219 | Slip Joint | 48.000 | 18 Sides 65 |

| Discrete Appurtenance | | | |
|-----------------------|-----------------|-----|--------------------------------|
| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
| 178.000 | 180.000 | 12 | Powerwave Allgon |
| 178.000 | 178.000 | 1 | Flat Low Profile Platform |
| 168.000 | 168.000 | 3 | Commscope NNVV-65B-R4 |
| 168.000 | 168.000 | 3 | RFS APXVTM14-ALU-I20 |
| 168.000 | 168.000 | 3 | Alcatel-Lucent TD-RRH8x20-25 |
| 168.000 | 168.000 | 3 | Alcatel-Lucent 1900 MHz 4X45 |
| 168.000 | 168.000 | 6 | Alcatel-Lucent RRH2x50-08 |
| 168.000 | 168.000 | 1 | Flat Platform w/ Handrails |
| 160.000 | 160.000 | 1 | Flat Platform w/ Handrails |
| 158.000 | 160.000 | 6 | Andrew SBNHH-1D65B |
| 158.000 | 160.000 | 6 | Antel LPA-80080/4CF |
| 158.000 | 160.000 | 2 | RFS DB-T1-6Z-8AB-0Z |
| 158.000 | 160.000 | 3 | Alcatel-Lucent B66a RRH4x45 |
| 158.000 | 160.000 | 3 | Alcatel-Lucent RRH2x60 700 |
| 158.000 | 158.000 | 6 | RFS FD9R6004/2C-3L |
| 148.000 | 148.000 | 3 | RFS APXVAARR24_43-U-NA20 |
| 148.000 | 147.000 | 3 | EMS RR90-17-02DP |
| 148.000 | 148.000 | 3 | Ericsson Radio 4449 B12,B71 |
| 148.000 | 148.000 | 3 | Ericsson KRY 112 489/2 |
| 148.000 | 148.000 | 3 | Ericsson KRY 112 144/1 |
| 147.000 | 147.000 | 1 | Low Profile Platform with Sit |
| 137.000 | 137.000 | 3 | KMW AM-X-CD-16-65-00T-RET |
| 137.000 | 137.000 | 6 | Powerwave Allgon 7770.00 |
| 137.000 | 137.000 | 3 | Ericsson RRUS 11 (Band 12) (55 |
| 137.000 | 137.000 | 1 | Raycap DC6-48-60-18-8F |
| 137.000 | 137.000 | 6 | Powerwave Allgon LGP21401 |
| 137.000 | 137.000 | 6 | LGP Allgon LGP21903 |
| 137.000 | 137.000 | 1 | Flat Low Profile Platform |
| 110.000 | 110.000 | 1 | Stand-Off |
| 108.000 | 110.000 | 1 | Generic GPS |
| 97.000 | 97.000 | 1 | Generic GPS |
| 97.000 | 97.000 | 1 | Generic GPS |
| 97.000 | 97.000 | 1 | Stand-Off |
| 88.000 | 88.000 | 1 | Stand-Off |
| 88.000 | 88.000 | 1 | Generic GPS |
| 12.000 | 12.000 | 1 | Stand-Off |
| 12.000 | 12.000 | 1 | PCTEL GPS-TMG-HR-26N |

| Linear Appurtenance | | | |
|---------------------|--------------|-------------|-----------------|
| From Elev (ft) | To Elev (ft) | Description | Exposed To Wind |
| 0.000 | 12.000 | 1/2" Coax | No |



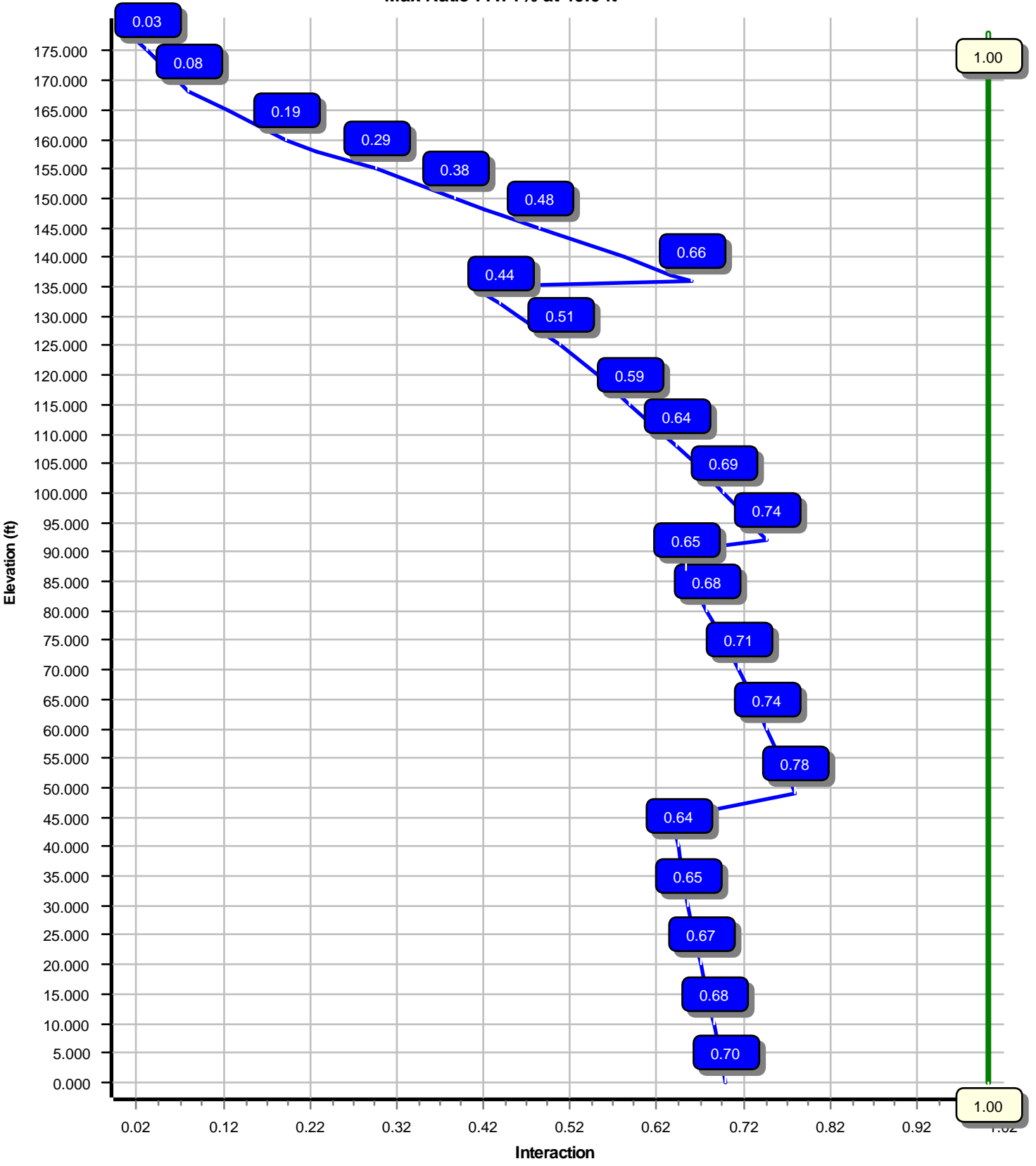
| | | | |
|-------|--------|------------------|----|
| 0.000 | 88.000 | 1/2" Coax | No |
| 0.000 | 97.000 | 1/2" Coax | No |
| 0.000 | 97.000 | 1/2" Coax | No |
| 0.000 | 108.0 | 1/2" Coax | No |
| 0.000 | 137.0 | 0.39" (10 mm) | No |
| 0.000 | 137.0 | 0.78" (19.7mm) 8 | No |
| 0.000 | 137.0 | 1 1/4" Coax | No |
| 0.000 | 137.0 | 3" conduit | No |
| 0.000 | 148.0 | 1 5/8" (1.63"- | No |
| 0.000 | 148.0 | 1 5/8" Coax | No |
| 0.000 | 158.0 | 1 5/8" Coax | No |
| 0.000 | 158.0 | 1.58" (40.1mm) | No |
| 0.000 | 168.0 | 1 1/4" Hybriflex | No |
| 0.000 | 168.0 | 1 5/8" Coax | No |
| 0.000 | 178.0 | 1 1/4" Coax | No |

| Load Cases | |
|-------------------------|--|
| 1.2D + 1.6W | 101 mph with No Ice |
| 0.9D + 1.6W | 101 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 1.00 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Lateral Forces Method |
| (1.2 + 0.2Sds) * DL + E | Seismic Equivalent Modal Analysis Method |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Lateral |
| (0.9 - 0.2Sds) * DL + E | Seismic (Reduced DL) Equivalent Modal |
| 1.0D + 1.0W | Serviceability 60 mph |

| Reactions | | | |
|------------------------------|-----------------|-------------|-------------|
| Load Case | Moment (kip-ft) | Shear (kip) | Axial (kip) |
| 1.2D + 1.6W | 5125.39 | 41.89 | 63.51 |
| 0.9D + 1.6W | 5049.87 | 41.86 | 47.61 |
| 1.2D + 1.0Di + 1.0Wi | 1437.43 | 11.61 | 104.38 |
| (1.2 + 0.2Sds) * DL + E ELFM | 233.33 | 1.59 | 62.66 |
| (1.2 + 0.2Sds) * DL + E EMAM | 160.95 | 1.26 | 62.66 |
| (0.9 - 0.2Sds) * DL + E ELFM | 229.35 | 1.59 | 44.89 |
| (0.9 - 0.2Sds) * DL + E EMAM | 158.04 | 1.26 | 44.89 |
| 1.0D + 1.0W | 1003.85 | 8.26 | 52.98 |

| Dish Deflections | | | |
|------------------|------------------|-----------------|----------------|
| Load Case | Attach Elev (ft) | Deflection (in) | Rotation (deg) |
| | 0.00 | 0.000 | 0.000 |

Load Case : 1.2D + 1.6W
Max Ratio 77.71% at 49.0 ft



Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:30 PM

Customer: T-MOBILE

Analysis Parameters

| | | | |
|---------------------|--------------------|----------------------|-------|
| Location : | Tolland County, CT | Height (ft) : | 178 |
| Code : | ANSI/TIA-222-G | Base Diameter (in) : | 56.91 |
| Shape : | 18 Sides | Top Diameter (in) : | 22.00 |
| Pole Type : | Taper | Taper (in/ft) : | 0.207 |
| Pole Manufacturer : | PJF | Rotation (deg) : | 0.00 |

Ice & Wind Parameters

| | | | |
|-----------------------|--------|--------------------------------|---------|
| Structure Class: | II | Design Wind Speed Without Ice: | 101 mph |
| Exposure Category: | B | Design Wind Speed With Ice: | 50 mph |
| Topographic Category: | 3 | Operational Wind Speed: | 60 mph |
| Crest Height: | 143 ft | Design Ice Thickness: | 1.00 in |

Seismic Parameters

| | | | |
|--|--|---------------------|-------|
| Analysis Method: | Equivalent Modal Analysis & Equivalent Lateral Force Methods | | |
| Site Class: | B - Competent Soil | | |
| Period Based on Rayleigh Method (sec): | 2.85 | | |
| T _L (sec): | 6 | p: | 1 |
| S _s : | 0.176 | S ₁ : | 0.063 |
| F _a : | 1.000 | F _v : | 1.000 |
| S _{ds} : | 0.117 | S _{d1} : | 0.042 |
| | | C _s : | 0.030 |
| | | C _s Max: | 0.030 |
| | | C _s Min: | 0.030 |

Load Cases

| | |
|------------------------------|---|
| 1.2D + 1.6W | 101 mph with No Ice |
| 0.9D + 1.6W | 101 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 50 mph with 1.00 in Radial Ice |
| (1.2 + 0.2Sds) * DL + E ELFM | Seismic Equivalent Lateral Forces Method |
| (1.2 + 0.2Sds) * DL + E EMAM | Seismic Equivalent Modal Analysis Method |
| (0.9 - 0.2Sds) * DL + E ELFM | Seismic (Reduced DL) Equivalent Lateral Forces Method |
| (0.9 - 0.2Sds) * DL + E EMAM | Seismic (Reduced DL) Equivalent Modal Analysis Method |
| 1.0D + 1.0W | Serviceability 60 mph |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:30 PM

Customer: T-MOBILE

Shaft Section Properties

| Sect Info | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Joint Len (in) | Weight (lb) | Bottom | | | | | | Top | | | | | | |
|--------------|-------------|------------|----------|------------|----------------|-------------|----------|-----------|-------------------------|-----------------------|-----------|-----------|----------|-----------|-------------------------|-----------------------|-----------|-----------|---------------|
| | | | | | | | Dia (in) | Elev (ft) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Taper (in/ft) |
| 1-18 | 49.000 | 0.5000 | 65 | | 0.00 | 13,584 | 56.91 | 0.00 | 89.52 | 35990.1 | 18.31 | 113.82 | 46.76 | 49.00 | 73.42 | 19857.1 | 14.73 | 93.53 | 0.207008 |
| 2-18 | 49.250 | 0.4063 | 65 | Slip | 75.00 | 9,371 | 48.87 | 42.75 | 62.49 | 18546.7 | 19.45 | 120.30 | 38.67 | 92.00 | 49.35 | 9131.9 | 15.02 | 95.21 | 0.207008 |
| 3-18 | 49.000 | 0.3438 | 65 | Slip | 60.00 | 6,364 | 40.40 | 87.00 | 43.70 | 8859.4 | 18.96 | 117.53 | 30.25 | 136.00 | 32.64 | 3689.5 | 13.76 | 88.02 | 0.207008 |
| 4-18 | 46.000 | 0.2188 | 65 | Slip | 48.00 | 2,885 | 31.52 | 132.00 | 21.73 | 2690.8 | 23.65 | 144.10 | 22.00 | 178.00 | 15.12 | 906.4 | 15.97 | 100.57 | 0.207008 |
| Shaft Weight | | | | | | 32,204 | | | | | | | | | | | | | |

Discrete Appurtenance Properties

| Attach Elev (ft) | Description | Qty | Ka | Vert Ecc (ft) | Weight (lb) | No Ice EPAa (sf) | Orientation Factor | Weight (lb) | Ice EPAa (sf) | Orientation Factor |
|------------------|--------------------------------|-----|------|---------------|-------------|------------------|--------------------|-------------|---------------|--------------------|
| 178.00 | Powerwave Allgon | 12 | 0.80 | 2.000 | 15.40 | 5.320 | 0.70 | 246.14 | 5.297 | 0.70 |
| 178.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1,500.00 | 26.100 | 1.00 | 2,404.57 | 52.756 | 1.00 |
| 168.00 | Alcatel-Lucent RRH2x50-08 | 6 | 0.75 | 0.000 | 52.90 | 1.700 | 0.50 | 135.49 | 2.902 | 0.50 |
| 168.00 | Alcatel-Lucent 1900 MHz 4X45 | 3 | 0.75 | 0.000 | 60.00 | 2.320 | 0.67 | 172.32 | 3.825 | 0.67 |
| 168.00 | Alcatel-Lucent TD-RRH8x20-25 | 3 | 0.75 | 0.000 | 70.00 | 4.050 | 0.61 | 201.72 | 5.902 | 0.61 |
| 168.00 | RFS APXVTM14-ALU-I20 | 3 | 0.75 | 0.000 | 56.20 | 6.340 | 0.66 | 248.11 | 9.375 | 0.66 |
| 168.00 | Commscope NNVV-65B-R4 | 3 | 0.75 | 0.000 | 77.40 | 12.270 | 0.64 | 427.60 | 16.178 | 0.64 |
| 168.00 | Flat Platform w/ Handrails | 1 | 1.00 | 0.000 | 2,000.00 | 42.400 | 1.00 | 3,980.72 | 71.629 | 1.00 |
| 160.00 | Flat Platform w/ Handrails | 1 | 1.00 | 0.000 | 2,000.00 | 42.400 | 1.00 | 3,978.38 | 71.595 | 1.00 |
| 158.00 | RFS FD9R6004/2C-3L | 6 | 0.75 | 0.000 | 2.60 | 0.310 | 0.50 | 13.75 | 0.840 | 0.50 |
| 158.00 | Alcatel-Lucent RRH2x60 700 | 3 | 0.75 | 2.000 | 56.70 | 2.150 | 0.67 | 151.41 | 3.544 | 0.67 |
| 158.00 | Alcatel-Lucent B66a RRH4x45 | 3 | 0.75 | 2.000 | 67.00 | 2.660 | 0.67 | 165.66 | 4.259 | 0.67 |
| 158.00 | RFS DB-T1-6Z-8AB-OZ | 2 | 0.75 | 2.000 | 44.00 | 4.800 | 0.72 | 219.14 | 6.778 | 0.72 |
| 158.00 | Antel LPA-80080/4CF | 6 | 0.75 | 2.000 | 12.00 | 5.400 | 0.62 | 215.92 | 3.831 | 0.62 |
| 158.00 | Andrew SBNHH-1D65B | 6 | 0.75 | 2.000 | 50.70 | 8.170 | 0.69 | 294.88 | 12.106 | 0.69 |
| 148.00 | Ericsson KRY 112 144/1 | 3 | 0.80 | 0.000 | 11.00 | 0.350 | 0.50 | 25.95 | 0.913 | 0.50 |
| 148.00 | Ericsson KRY 112 489/2 | 3 | 0.80 | 0.000 | 15.40 | 0.560 | 0.50 | 39.95 | 1.290 | 0.50 |
| 148.00 | Ericsson Radio 4449 B12,B71 | 3 | 0.80 | 0.000 | 74.00 | 1.640 | 0.50 | 151.82 | 2.814 | 0.50 |
| 148.00 | EMS RR90-17-02DP | 3 | 0.80 | -1.000 | 13.50 | 4.360 | 0.64 | 166.33 | 5.778 | 0.64 |
| 148.00 | RFS APXVAARR24_43-U-NA20 | 3 | 0.80 | 0.000 | 127.90 | 20.240 | 0.63 | 673.57 | 25.394 | 0.63 |
| 147.00 | Low Profile Platform with Site | 1 | 1.00 | 0.000 | 2,000.00 | 22.000 | 1.00 | 3,936.27 | 43.299 | 1.00 |
| 137.00 | LGP Allgon LGP21903 | 6 | 0.80 | 0.000 | 5.50 | 0.230 | 0.50 | 17.18 | 0.699 | 0.50 |
| 137.00 | Powerwave Allgon LGP21401 | 6 | 0.80 | 0.000 | 14.10 | 1.100 | 0.50 | 48.74 | 2.087 | 0.50 |
| 137.00 | Raycap DC6-48-60-18-8F | 1 | 0.80 | 0.000 | 31.80 | 1.470 | 1.00 | 117.46 | 2.440 | 1.00 |
| 137.00 | Ericsson RRUS 11 (Band 12) (55 | 3 | 0.80 | 0.000 | 55.00 | 2.520 | 0.67 | 148.41 | 3.963 | 0.67 |
| 137.00 | Powerwave Allgon 7770.00 | 6 | 0.80 | 0.000 | 35.00 | 5.510 | 0.65 | 239.01 | 7.013 | 0.65 |
| 137.00 | KMW AM-X-CD-16-65-00T-RET | 3 | 0.80 | 0.000 | 48.50 | 8.020 | 0.67 | 273.34 | 11.891 | 0.67 |
| 137.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1,500.00 | 26.100 | 1.00 | 2,399.51 | 52.607 | 1.00 |
| 110.00 | Stand-Off | 1 | 1.00 | 0.000 | 100.00 | 3.000 | 1.00 | 167.63 | 5.174 | 1.00 |
| 108.00 | Generic GPS | 1 | 1.00 | 2.000 | 10.00 | 0.900 | 1.00 | 50.58 | 1.787 | 1.00 |
| 97.00 | Generic GPS | 1 | 1.00 | 0.000 | 10.00 | 0.900 | 1.00 | 50.59 | 1.787 | 1.00 |
| 97.00 | Generic GPS | 1 | 1.00 | 0.000 | 10.00 | 0.900 | 1.00 | 50.59 | 1.787 | 1.00 |
| 97.00 | Stand-Off | 1 | 1.00 | 0.000 | 100.00 | 3.000 | 1.00 | 167.65 | 5.174 | 1.00 |
| 88.00 | Generic GPS | 1 | 1.00 | 0.000 | 10.00 | 0.900 | 1.00 | 50.61 | 1.788 | 1.00 |
| 88.00 | Stand-Off | 1 | 1.00 | 0.000 | 100.00 | 3.000 | 1.00 | 167.68 | 5.175 | 1.00 |
| 12.00 | PCTEL GPS-TMG-HR-26N | 1 | 1.00 | 0.000 | 0.60 | 0.090 | 1.00 | 6.94 | 0.326 | 1.00 |
| 12.00 | Stand-Off | 1 | 1.00 | 0.000 | 100.00 | 3.000 | 1.00 | 163.78 | 5.050 | 1.00 |
| Totals | Num Loadings:37 | 110 | | | 12,979.80 | | | 35,413.35 | | |

Linear Appurtenance Properties

Load Case Azimuth (deg) :

| Elev From (ft) | Elev To (ft) | Qty | Coax Dia (in) | Coax Wt (lb/ft) | Max Coax / Flat Row | Dist Between Rows (in) | Dist Between Cols (in) | Dist Azimuth (deg) | Dist Exposed From Face (in) | Dist Exposed To Wind Carrier | | | | |
|----------------|--------------|-----|---------------|-----------------|---------------------|------------------------|------------------------|--------------------|-----------------------------|------------------------------|---|------|---|---------------|
| 0.00 | 178.00 | 2 | 1 1/4" | Coax | 1.55 | 0.63 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:30 PM

Customer: T-MOBILE

| | | | | | | | | | | | | | |
|------|--------|----|------------------------|------|------|---|---|------|------|---|------|---|------------------|
| 0.00 | 168.00 | 4 | 1 1/4" Hybriflex Cable | 1.54 | 1.00 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |
| 0.00 | 168.00 | 6 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |
| 0.00 | 158.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | VERIZON WIRELESS |
| 0.00 | 158.00 | 2 | 1.58" (40.1mm) Hybrid | 1.58 | 1.61 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | VERIZON WIRELESS |
| 0.00 | 148.00 | 1 | 1 5/8" (1.63"-41.3mm) | 1.63 | 1.61 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | T-MOBILE |
| 0.00 | 148.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | T-MOBILE |
| 0.00 | 137.00 | 1 | 0.39" (10 mm) Cable | 0.39 | 0.07 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY |
| 0.00 | 137.00 | 2 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY |
| 0.00 | 137.00 | 12 | 1 1/4" Coax | 1.55 | 0.63 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY |
| 0.00 | 137.00 | 1 | 3" conduit | 3.50 | 7.58 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY |
| 0.00 | 108.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | VERIZON WIRELESS |
| 0.00 | 97.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |
| 0.00 | 97.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |
| 0.00 | 88.00 | 2 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | SPRINT NEXTEL |
| 0.00 | 12.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY |

Segment Properties (Max Len : 5. ft)

| Seg Top Elev (ft) | Description | Thick (in) | Flat Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | F'y (ksi) | S (in ³) | Z (in ³) | Weight (lb) |
|-------------------|-----------------|------------|---------------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|----------------------|-------------|
| 0.00 | | 0.5000 | 56.910 | 89.519 | 35,990.1 | 18.31 | 113.82 | 79.9 | 1245. | 0.0 | 0.0 |
| 5.00 | | 0.5000 | 55.875 | 87.877 | 34,045.1 | 17.94 | 111.75 | 80.3 | 1200. | 0.0 | 1,509.1 |
| 10.00 | | 0.5000 | 54.840 | 86.234 | 32,171.5 | 17.58 | 109.68 | 80.7 | 1155. | 0.0 | 1,481.2 |
| 12.00 | | 0.5000 | 54.426 | 85.577 | 31,441.7 | 17.43 | 108.85 | 80.9 | 1137. | 0.0 | 584.6 |
| 15.00 | | 0.5000 | 53.805 | 84.592 | 30,367.9 | 17.21 | 107.61 | 81.2 | 1111. | 0.0 | 868.6 |
| 20.00 | | 0.5000 | 52.770 | 82.949 | 28,633.1 | 16.85 | 105.54 | 81.6 | 1068. | 0.0 | 1,425.3 |
| 25.00 | | 0.5000 | 51.735 | 81.307 | 26,965.5 | 16.48 | 103.47 | 82.0 | 1026. | 0.0 | 1,397.3 |
| 30.00 | | 0.5000 | 50.700 | 79.664 | 25,364.1 | 16.12 | 101.40 | 82.4 | 985.4 | 0.0 | 1,369.4 |
| 35.00 | | 0.5000 | 49.665 | 78.022 | 23,827.3 | 15.75 | 99.33 | 82.6 | 944.9 | 0.0 | 1,341.4 |
| 40.00 | | 0.5000 | 48.630 | 76.379 | 22,353.9 | 15.39 | 97.26 | 82.6 | 905.4 | 0.0 | 1,313.5 |
| 42.75 | Bot - Section 2 | 0.5000 | 48.060 | 75.476 | 21,570.0 | 15.19 | 96.12 | 82.6 | 884.0 | 0.0 | 710.5 |
| 45.00 | | 0.5000 | 47.595 | 74.736 | 20,942.5 | 15.02 | 95.19 | 82.6 | 866.7 | 0.0 | 1,051.2 |
| 49.00 | Top - Section 1 | 0.4063 | 47.579 | 60.824 | 17,100.7 | 18.89 | 117.12 | 79.2 | 707.9 | 0.0 | 1,843.5 |
| 50.00 | | 0.4063 | 47.372 | 60.557 | 16,876.6 | 18.80 | 116.61 | 79.3 | 701.7 | 0.0 | 206.5 |
| 55.00 | | 0.4063 | 46.337 | 59.223 | 15,785.2 | 18.35 | 114.06 | 79.8 | 671.0 | 0.0 | 1,019.0 |
| 60.00 | | 0.4063 | 45.302 | 57.888 | 14,741.9 | 17.90 | 111.51 | 80.3 | 640.9 | 0.0 | 996.3 |
| 65.00 | | 0.4063 | 44.267 | 56.554 | 13,745.6 | 17.45 | 108.96 | 80.9 | 611.6 | 0.0 | 973.5 |
| 70.00 | | 0.4063 | 43.232 | 55.219 | 12,795.3 | 17.00 | 106.42 | 81.4 | 582.9 | 0.0 | 950.8 |
| 75.00 | | 0.4063 | 42.197 | 53.884 | 11,889.8 | 16.55 | 103.87 | 81.9 | 555.0 | 0.0 | 928.1 |
| 80.00 | | 0.4063 | 41.162 | 52.550 | 11,028.1 | 16.10 | 101.32 | 82.5 | 527.7 | 0.0 | 905.4 |
| 85.00 | | 0.4063 | 40.127 | 51.215 | 10,209.0 | 15.65 | 98.77 | 82.6 | 501.1 | 0.0 | 882.7 |
| 87.00 | Bot - Section 3 | 0.4063 | 39.713 | 50.681 | 9,893.1 | 15.47 | 97.75 | 82.6 | 490.7 | 0.0 | 346.7 |
| 88.00 | | 0.4063 | 39.506 | 50.415 | 9,737.6 | 15.38 | 97.24 | 82.6 | 485.5 | 0.0 | 320.3 |
| 90.00 | | 0.4063 | 39.092 | 49.881 | 9,431.5 | 15.20 | 96.23 | 82.6 | 475.2 | 0.0 | 635.6 |
| 92.00 | Top - Section 2 | 0.3438 | 39.365 | 42.573 | 8,190.3 | 18.43 | 114.52 | 79.7 | 409.8 | 0.0 | 628.9 |
| 95.00 | | 0.3438 | 38.744 | 41.896 | 7,805.4 | 18.11 | 112.71 | 80.1 | 396.8 | 0.0 | 431.1 |
| 97.00 | | 0.3438 | 38.330 | 41.444 | 7,555.7 | 17.90 | 111.51 | 80.3 | 388.3 | 0.0 | 283.6 |
| 100.0 | | 0.3438 | 37.709 | 40.767 | 7,191.1 | 17.58 | 109.70 | 80.7 | 375.6 | 0.0 | 419.6 |
| 105.0 | | 0.3438 | 36.674 | 39.637 | 6,609.9 | 17.05 | 106.69 | 81.3 | 355.0 | 0.0 | 684.0 |
| 108.0 | | 0.3438 | 36.053 | 38.960 | 6,276.7 | 16.73 | 104.88 | 81.7 | 342.9 | 0.0 | 401.2 |
| 110.0 | | 0.3438 | 35.639 | 38.508 | 6,060.9 | 16.52 | 103.68 | 82.0 | 335.0 | 0.0 | 263.6 |
| 115.0 | | 0.3438 | 34.604 | 37.379 | 5,543.2 | 15.99 | 100.67 | 82.6 | 315.5 | 0.0 | 645.6 |
| 120.0 | | 0.3438 | 33.569 | 36.250 | 5,055.8 | 15.46 | 97.66 | 82.6 | 296.6 | 0.0 | 626.4 |
| 125.0 | | 0.3438 | 32.534 | 35.120 | 4,597.9 | 14.93 | 94.64 | 82.6 | 278.4 | 0.0 | 607.1 |
| 130.0 | | 0.3438 | 31.499 | 33.991 | 4,168.5 | 14.39 | 91.63 | 82.6 | 260.7 | 0.0 | 587.9 |
| 132.0 | Bot - Section 4 | 0.3438 | 31.085 | 33.539 | 4,004.5 | 14.18 | 90.43 | 82.6 | 253.7 | 0.0 | 229.8 |
| 135.0 | | 0.3438 | 30.464 | 32.862 | 3,766.7 | 13.86 | 88.62 | 82.6 | 243.5 | 0.0 | 558.6 |
| 136.0 | Top - Section 3 | 0.2188 | 30.694 | 21.159 | 2,482.8 | 22.98 | 140.32 | 74.4 | 159.3 | 0.0 | 183.7 |
| 137.0 | | 0.2188 | 30.487 | 21.015 | 2,432.6 | 22.81 | 139.37 | 74.6 | 157.2 | 0.0 | 71.8 |
| 140.0 | | 0.2188 | 29.866 | 20.584 | 2,285.9 | 22.31 | 136.53 | 75.2 | 150.8 | 0.0 | 212.3 |
| 145.0 | | 0.2188 | 28.831 | 19.865 | 2,054.8 | 21.48 | 131.80 | 76.1 | 140.4 | 0.0 | 344.1 |
| 147.0 | | 0.2188 | 28.417 | 19.578 | 1,966.8 | 21.14 | 129.91 | 76.5 | 136.3 | 0.0 | 134.2 |
| 148.0 | | 0.2188 | 28.210 | 19.434 | 1,923.8 | 20.98 | 128.96 | 76.7 | 134.3 | 0.0 | 66.4 |
| 150.0 | | 0.2188 | 27.796 | 19.147 | 1,839.7 | 20.64 | 127.07 | 77.1 | 130.4 | 0.0 | 131.3 |
| 155.0 | | 0.2188 | 26.761 | 18.428 | 1,640.3 | 19.81 | 122.34 | 78.1 | 120.7 | 0.0 | 319.6 |
| 158.0 | | 0.2188 | 26.140 | 17.997 | 1,527.8 | 19.31 | 119.50 | 78.7 | 115.1 | 0.0 | 185.9 |
| 160.0 | | 0.2188 | 25.726 | 17.709 | 1,455.8 | 18.97 | 117.61 | 79.1 | 111.5 | 0.0 | 121.5 |
| 165.0 | | 0.2188 | 24.691 | 16.991 | 1,285.6 | 18.14 | 112.87 | 80.1 | 102.6 | 0.0 | 295.2 |
| 168.0 | | 0.2188 | 24.070 | 16.560 | 1,190.2 | 17.64 | 110.03 | 80.7 | 97.4 | 0.0 | 171.2 |
| 170.0 | | 0.2188 | 23.656 | 16.272 | 1,129.3 | 17.31 | 108.14 | 81.0 | 94.0 | 0.0 | 111.7 |
| 175.0 | | 0.2188 | 22.621 | 15.554 | 986.2 | 16.47 | 103.41 | 82.0 | 85.9 | 0.0 | 270.7 |
| 178.0 | | 0.2188 | 22.000 | 15.122 | 906.4 | 15.97 | 100.57 | 82.6 | 81.2 | 0.0 | 156.6 |
| | | | | | | | | | | | 32,204.2 |

| | | |
|-------------------------------|----------------------------|------------------------------|
| Load Case: 1.2D + 1.6W | 101 mph with No Ice | 27 Iterations |
| Gust Response Factor :1.10 | | Wind Importance Factor :1.00 |
| Dead Load Factor :1.20 | | |
| Wind Load Factor :1.60 | | |

Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces | | Discrete Forces | | | Linear Forces | | Sum of Forces | | | | |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
| | | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 505.6 | 0.0 | | | | | 0.0 | 0.0 | 505.6 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 981.1 | 1,810.9 | | | | | 0.0 | 311.9 | 981.1 | 2,122.8 | 0.0 | 0.0 |
| 10.00 | | 657.8 | 1,777.4 | | | | | 0.0 | 311.9 | 657.8 | 2,089.3 | 0.0 | 0.0 |
| 12.00 | Appurtenance(s) | 447.9 | 701.6 | 186.0 | 0.0 | 0.0 | 120.7 | 0.0 | 124.8 | 633.9 | 947.0 | 0.0 | 0.0 |
| 15.00 | | 688.0 | 1,042.3 | | | | | 0.0 | 186.6 | 688.0 | 1,228.9 | 0.0 | 0.0 |
| 20.00 | | 821.6 | 1,710.3 | | | | | 0.0 | 311.0 | 821.6 | 2,021.3 | 0.0 | 0.0 |
| 25.00 | | 776.9 | 1,676.8 | | | | | 0.0 | 311.0 | 776.9 | 1,987.8 | 0.0 | 0.0 |
| 30.00 | | 744.3 | 1,643.2 | | | | | 0.0 | 311.0 | 744.3 | 1,954.2 | 0.0 | 0.0 |
| 35.00 | | 728.9 | 1,609.7 | | | | | 0.0 | 311.0 | 728.9 | 1,920.7 | 0.0 | 0.0 |
| 40.00 | | 559.3 | 1,576.2 | | | | | 0.0 | 311.0 | 559.3 | 1,887.2 | 0.0 | 0.0 |
| 42.75 | Bot - Section 2 | 359.4 | 852.6 | | | | | 0.0 | 171.0 | 359.4 | 1,023.6 | 0.0 | 0.0 |
| 45.00 | | 448.1 | 1,261.4 | | | | | 0.0 | 139.9 | 448.1 | 1,401.4 | 0.0 | 0.0 |
| 49.00 | Top - Section 1 | 356.3 | 2,212.1 | | | | | 0.0 | 248.8 | 356.3 | 2,460.9 | 0.0 | 0.0 |
| 50.00 | | 420.0 | 247.8 | | | | | 0.0 | 62.2 | 420.0 | 310.0 | 0.0 | 0.0 |
| 55.00 | | 691.0 | 1,222.8 | | | | | 0.0 | 311.0 | 691.0 | 1,533.7 | 0.0 | 0.0 |
| 60.00 | | 675.8 | 1,195.5 | | | | | 0.0 | 311.0 | 675.8 | 1,506.5 | 0.0 | 0.0 |
| 65.00 | | 660.1 | 1,168.3 | | | | | 0.0 | 311.0 | 660.1 | 1,479.2 | 0.0 | 0.0 |
| 70.00 | | 644.2 | 1,141.0 | | | | | 0.0 | 311.0 | 644.2 | 1,452.0 | 0.0 | 0.0 |
| 75.00 | | 628.3 | 1,113.8 | | | | | 0.0 | 311.0 | 628.3 | 1,424.7 | 0.0 | 0.0 |
| 80.00 | | 612.2 | 1,086.5 | | | | | 0.0 | 311.0 | 612.2 | 1,397.5 | 0.0 | 0.0 |
| 85.00 | | 420.7 | 1,059.3 | | | | | 0.0 | 311.0 | 420.7 | 1,370.2 | 0.0 | 0.0 |
| 87.00 | Bot - Section 3 | 178.5 | 416.1 | | | | | 0.0 | 124.4 | 178.5 | 540.5 | 0.0 | 0.0 |
| 88.00 | Appurtenance(s) | 178.6 | 384.4 | 210.6 | 0.0 | 0.0 | 132.0 | 0.0 | 62.2 | 389.2 | 578.6 | 0.0 | 0.0 |
| 90.00 | | 236.2 | 762.8 | | | | | 0.0 | 123.7 | 236.2 | 886.4 | 0.0 | 0.0 |
| 92.00 | Top - Section 2 | 291.3 | 754.7 | | | | | 0.0 | 123.7 | 291.3 | 878.4 | 0.0 | 0.0 |
| 95.00 | | 288.2 | 517.4 | | | | | 0.0 | 185.5 | 288.2 | 702.9 | 0.0 | 0.0 |
| 97.00 | Appurtenance(s) | 283.5 | 340.3 | 258.9 | 0.0 | 0.0 | 144.0 | 0.0 | 123.7 | 542.3 | 608.0 | 0.0 | 0.0 |
| 100.00 | | 444.8 | 503.5 | | | | | 0.0 | 184.4 | 444.8 | 688.0 | 0.0 | 0.0 |
| 105.00 | | 437.4 | 820.8 | | | | | 0.0 | 307.4 | 437.4 | 1,128.2 | 0.0 | 0.0 |
| 108.00 | Appurtenance(s) | 267.9 | 481.4 | 48.5 | 0.0 | 97.0 | 12.0 | 0.0 | 184.4 | 316.4 | 677.8 | 0.0 | 0.0 |
| 110.00 | Appurtenance(s) | 366.5 | 316.3 | 161.7 | 0.0 | 0.0 | 120.0 | 0.0 | 122.6 | 528.2 | 558.9 | 0.0 | 0.0 |
| 115.00 | | 512.9 | 774.7 | | | | | 0.0 | 306.5 | 512.9 | 1,081.2 | 0.0 | 0.0 |
| 120.00 | | 497.7 | 751.6 | | | | | 0.0 | 306.5 | 497.7 | 1,058.1 | 0.0 | 0.0 |
| 125.00 | | 482.7 | 728.6 | | | | | 0.0 | 306.5 | 482.7 | 1,035.0 | 0.0 | 0.0 |
| 130.00 | | 330.5 | 705.5 | | | | | 0.0 | 306.5 | 330.5 | 1,012.0 | 0.0 | 0.0 |
| 132.00 | Bot - Section 4 | 232.1 | 275.7 | | | | | 0.0 | 122.6 | 232.1 | 398.3 | 0.0 | 0.0 |
| 135.00 | | 184.9 | 670.3 | | | | | 0.0 | 183.9 | 184.9 | 854.2 | 0.0 | 0.0 |
| 136.00 | Top - Section 3 | 91.3 | 220.4 | | | | | 0.0 | 61.3 | 91.3 | 281.7 | 0.0 | 0.0 |
| 137.00 | Appurtenance(s) | 180.2 | 86.1 | 3,493.6 | 0.0 | 0.0 | 2,603.9 | 0.0 | 61.3 | 3,673.7 | 2,751.3 | 0.0 | 0.0 |
| 140.00 | | 353.2 | 254.8 | | | | | 0.0 | 124.9 | 353.2 | 379.7 | 0.0 | 0.0 |
| 145.00 | | 303.9 | 412.9 | | | | | 0.0 | 208.1 | 303.9 | 621.1 | 0.0 | 0.0 |
| 147.00 | Appurtenance(s) | 127.6 | 161.1 | 1,193.1 | 0.0 | 0.0 | 2,400.0 | 0.0 | 83.3 | 1,320.7 | 2,644.3 | 0.0 | 0.0 |
| 148.00 | Appurtenance(s) | 125.8 | 79.6 | 2,189.4 | 0.0 | -363.2 | 870.5 | 0.0 | 41.6 | 2,315.3 | 991.8 | 0.0 | 0.0 |
| 150.00 | | 287.4 | 157.5 | | | | | 0.0 | 55.8 | 287.4 | 213.3 | 0.0 | 0.0 |
| 155.00 | | 322.6 | 383.6 | | | | | 0.0 | 139.4 | 322.6 | 523.0 | 0.0 | 0.0 |
| 158.00 | Appurtenance(s) | 196.5 | 223.1 | 2,919.5 | 0.0 | 5,763.1 | 1,021.1 | 0.0 | 83.7 | 3,116.0 | 1,327.8 | 0.0 | 0.0 |
| 160.00 | Appurtenance(s) | 266.8 | 145.8 | 2,311.0 | 0.0 | 0.0 | 2,400.0 | 0.0 | 24.4 | 2,577.8 | 2,570.2 | 0.0 | 0.0 |
| 165.00 | | 299.1 | 354.2 | | | | | 0.0 | 61.1 | 299.1 | 415.3 | 0.0 | 0.0 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:35 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.6W

101 mph with No Ice

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

| | | | | | | | | | | | | | |
|---------|-----------------|-------|-------|---------|-----|---------|---------|-----|------|----------|----------|------|------|
| 168.00 | Appurtenance(s) | 181.8 | 205.5 | 4,505.6 | 0.0 | 0.0 | 3,729.8 | 0.0 | 36.6 | 4,687.4 | 3,972.0 | 0.0 | 0.0 |
| 170.00 | | 246.3 | 134.1 | | | | | 0.0 | 3.0 | 246.3 | 137.1 | 0.0 | 0.0 |
| 175.00 | | 275.6 | 324.9 | | | | | 0.0 | 7.6 | 275.6 | 332.4 | 0.0 | 0.0 |
| 178.00 | Appurtenance(s) | 101.1 | 187.9 | 3,403.0 | 0.0 | 3,935.7 | 2,021.8 | 0.0 | 4.5 | 3,504.1 | 2,214.2 | 0.0 | 0.0 |
| Totals: | | | | | | | | | | 42,281.3 | 63,580.6 | 0.00 | 0.00 |

Load Case: 1.2D + 1.6W

101 mph with No Ice

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -63.51 | -41.89 | 0.00 | -5,125.39 | 0.00 | 5,125.39 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.697 |
| 5.00 | -61.24 | -41.12 | 0.00 | -4,915.96 | 0.00 | 4,915.96 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.11 | -0.20 | 0.690 |
| 10.00 | -59.06 | -40.59 | 0.00 | -4,710.38 | 0.00 | 4,710.38 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.42 | -0.40 | 0.683 |
| 12.00 | -58.04 | -40.06 | 0.00 | -4,629.19 | 0.00 | 4,629.19 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.61 | -0.48 | 0.680 |
| 15.00 | -56.71 | -39.52 | 0.00 | -4,509.02 | 0.00 | 4,509.02 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.95 | -0.61 | 0.676 |
| 20.00 | -54.55 | -38.87 | 0.00 | -4,311.41 | 0.00 | 4,311.41 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 1.70 | -0.81 | 0.668 |
| 25.00 | -52.44 | -38.26 | 0.00 | -4,117.05 | 0.00 | 4,117.05 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 2.66 | -1.02 | 0.661 |
| 30.00 | -50.36 | -37.66 | 0.00 | -3,925.76 | 0.00 | 3,925.76 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 3.84 | -1.23 | 0.653 |
| 35.00 | -48.32 | -37.07 | 0.00 | -3,737.45 | 0.00 | 3,737.45 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 5.25 | -1.45 | 0.647 |
| 40.00 | -46.34 | -36.60 | 0.00 | -3,552.09 | 0.00 | 3,552.09 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 6.89 | -1.67 | 0.642 |
| 42.75 | -45.25 | -36.30 | 0.00 | -3,451.45 | 0.00 | 3,451.45 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 7.88 | -1.79 | 0.639 |
| 45.00 | -43.78 | -35.91 | 0.00 | -3,369.78 | 0.00 | 3,369.78 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 8.75 | -1.89 | 0.636 |
| 49.00 | -41.26 | -35.55 | 0.00 | -3,226.14 | 0.00 | 3,226.14 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 10.41 | -2.07 | 0.777 |
| 50.00 | -40.87 | -35.23 | 0.00 | -3,190.58 | 0.00 | 3,190.58 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 10.85 | -2.12 | 0.774 |
| 55.00 | -39.21 | -34.66 | 0.00 | -3,014.43 | 0.00 | 3,014.43 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 13.21 | -2.38 | 0.760 |
| 60.00 | -37.58 | -34.09 | 0.00 | -2,841.13 | 0.00 | 2,841.13 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 15.84 | -2.64 | 0.745 |
| 65.00 | -35.98 | -33.53 | 0.00 | -2,670.67 | 0.00 | 2,670.67 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 18.74 | -2.91 | 0.729 |
| 70.00 | -34.41 | -32.97 | 0.00 | -2,503.02 | 0.00 | 2,503.02 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 21.93 | -3.17 | 0.712 |
| 75.00 | -32.87 | -32.42 | 0.00 | -2,338.16 | 0.00 | 2,338.16 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 25.40 | -3.44 | 0.694 |
| 80.00 | -31.36 | -31.87 | 0.00 | -2,176.08 | 0.00 | 2,176.08 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 29.15 | -3.71 | 0.675 |
| 85.00 | -29.92 | -31.45 | 0.00 | -2,016.74 | 0.00 | 2,016.74 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 33.18 | -3.98 | 0.658 |
| 87.00 | -29.35 | -31.28 | 0.00 | -1,953.83 | 0.00 | 1,953.83 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 34.87 | -4.09 | 0.651 |
| 88.00 | -28.75 | -30.89 | 0.00 | -1,922.55 | 0.00 | 1,922.55 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 35.73 | -4.15 | 0.648 |
| 90.00 | -27.83 | -30.65 | 0.00 | -1,860.77 | 0.00 | 1,860.77 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 37.50 | -4.26 | 0.640 |
| 92.00 | -26.90 | -30.35 | 0.00 | -1,799.48 | 0.00 | 1,799.48 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 39.30 | -4.37 | 0.744 |
| 95.00 | -26.15 | -30.08 | 0.00 | -1,708.42 | 0.00 | 1,708.42 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 42.10 | -4.54 | 0.726 |
| 97.00 | -25.51 | -29.56 | 0.00 | -1,648.26 | 0.00 | 1,648.26 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 44.02 | -4.66 | 0.713 |
| 100.00 | -24.74 | -29.16 | 0.00 | -1,559.60 | 0.00 | 1,559.60 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 47.01 | -4.84 | 0.695 |
| 105.00 | -23.53 | -28.72 | 0.00 | -1,413.80 | 0.00 | 1,413.80 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 52.23 | -5.13 | 0.661 |
| 108.00 | -22.81 | -28.40 | 0.00 | -1,327.54 | 0.00 | 1,327.54 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 55.51 | -5.31 | 0.640 |
| 110.00 | -22.21 | -27.90 | 0.00 | -1,270.74 | 0.00 | 1,270.74 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 57.75 | -5.43 | 0.625 |
| 115.00 | -21.05 | -27.39 | 0.00 | -1,131.22 | 0.00 | 1,131.22 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 63.58 | -5.71 | 0.587 |
| 120.00 | -19.92 | -26.88 | 0.00 | -994.27 | 0.00 | 994.27 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 69.70 | -5.98 | 0.549 |
| 125.00 | -18.83 | -26.37 | 0.00 | -859.87 | 0.00 | 859.87 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 76.09 | -6.24 | 0.507 |
| 130.00 | -17.78 | -25.99 | 0.00 | -728.00 | 0.00 | 728.00 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 82.75 | -6.49 | 0.459 |
| 132.00 | -17.36 | -25.75 | 0.00 | -676.03 | 0.00 | 676.03 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 85.49 | -6.58 | 0.438 |
| 135.00 | -16.50 | -25.49 | 0.00 | -598.79 | 0.00 | 598.79 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 89.66 | -6.72 | 0.404 |
| 136.00 | -16.21 | -25.38 | 0.00 | -573.31 | 0.00 | 573.31 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 91.07 | -6.76 | 0.658 |
| 137.00 | -13.87 | -21.43 | 0.00 | -547.93 | 0.00 | 547.93 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 92.49 | -6.81 | 0.634 |
| 140.00 | -13.45 | -21.09 | 0.00 | -483.64 | 0.00 | 483.64 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 96.82 | -6.99 | 0.580 |
| 145.00 | -12.80 | -20.75 | 0.00 | -378.20 | 0.00 | 378.20 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 104.27 | -7.26 | 0.482 |
| 147.00 | -10.33 | -19.12 | 0.00 | -336.70 | 0.00 | 336.70 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 107.32 | -7.36 | 0.439 |
| 148.00 | -9.62 | -16.70 | 0.00 | -317.58 | 0.00 | 317.58 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 108.86 | -7.40 | 0.419 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:36 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.6W

101 mph with No Ice

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

| | | | | | | | | | | | | | |
|--------|-------|--------|------|---------|------|--------|----------|--------|----------|--------|--------|-------|-------|
| 150.00 | -9.40 | -16.42 | 0.00 | -284.17 | 0.00 | 284.17 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 111.98 | -7.49 | 0.385 |
| 155.00 | -8.89 | -16.05 | 0.00 | -202.09 | 0.00 | 202.09 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 119.91 | -7.68 | 0.293 |
| 158.00 | -7.98 | -12.79 | 0.00 | -148.19 | 0.00 | 148.19 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 124.75 | -7.77 | 0.225 |
| 160.00 | -5.77 | -9.90 | 0.00 | -122.60 | 0.00 | 122.60 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 128.01 | -7.82 | 0.190 |
| 165.00 | -5.39 | -9.55 | 0.00 | -73.12 | 0.00 | 73.12 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 136.23 | -7.92 | 0.123 |
| 168.00 | -2.10 | -4.36 | 0.00 | -44.47 | 0.00 | 44.47 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 141.21 | -7.96 | 0.077 |
| 170.00 | -2.00 | -4.10 | 0.00 | -35.76 | 0.00 | 35.76 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 144.53 | -7.98 | 0.064 |
| 175.00 | -1.70 | -3.78 | 0.00 | -15.27 | 0.00 | 15.27 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 152.88 | -8.01 | 0.030 |
| 178.00 | 0.00 | -3.50 | 0.00 | -3.94 | 0.00 | 3.94 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 157.90 | -8.02 | 0.008 |

| | | |
|-------------------------------|----------------------------------|------------------------------|
| Load Case: 0.9D + 1.6W | 101 mph with No Ice (Reduced DL) | 27 Iterations |
| Gust Response Factor :1.10 | | Wind Importance Factor :1.00 |
| Dead Load Factor :0.90 | | |
| Wind Load Factor :1.60 | | |

Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces | | Discrete Forces | | | Linear Forces | | Sum of Forces | | | | |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
| | | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 505.6 | 0.0 | | | | | 0.0 | 0.0 | 505.6 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 981.1 | 1,358.2 | | | | | 0.0 | 233.9 | 981.1 | 1,592.1 | 0.0 | 0.0 |
| 10.00 | | 657.8 | 1,333.0 | | | | | 0.0 | 233.9 | 657.8 | 1,566.9 | 0.0 | 0.0 |
| 12.00 | Appurtenance(s) | 447.9 | 526.2 | 186.0 | 0.0 | 0.0 | 90.5 | 0.0 | 93.6 | 633.9 | 710.3 | 0.0 | 0.0 |
| 15.00 | | 688.0 | 781.7 | | | | | 0.0 | 139.9 | 688.0 | 921.7 | 0.0 | 0.0 |
| 20.00 | | 821.6 | 1,282.7 | | | | | 0.0 | 233.2 | 821.6 | 1,516.0 | 0.0 | 0.0 |
| 25.00 | | 776.9 | 1,257.6 | | | | | 0.0 | 233.2 | 776.9 | 1,490.8 | 0.0 | 0.0 |
| 30.00 | | 744.3 | 1,232.4 | | | | | 0.0 | 233.2 | 744.3 | 1,465.7 | 0.0 | 0.0 |
| 35.00 | | 728.9 | 1,207.3 | | | | | 0.0 | 233.2 | 728.9 | 1,440.5 | 0.0 | 0.0 |
| 40.00 | | 559.3 | 1,182.1 | | | | | 0.0 | 233.2 | 559.3 | 1,415.4 | 0.0 | 0.0 |
| 42.75 | Bot - Section 2 | 359.4 | 639.5 | | | | | 0.0 | 128.3 | 359.4 | 767.7 | 0.0 | 0.0 |
| 45.00 | | 448.1 | 946.1 | | | | | 0.0 | 105.0 | 448.1 | 1,051.0 | 0.0 | 0.0 |
| 49.00 | Top - Section 1 | 356.3 | 1,659.1 | | | | | 0.0 | 186.6 | 356.3 | 1,845.7 | 0.0 | 0.0 |
| 50.00 | | 420.0 | 185.9 | | | | | 0.0 | 46.6 | 420.0 | 232.5 | 0.0 | 0.0 |
| 55.00 | | 691.0 | 917.1 | | | | | 0.0 | 233.2 | 691.0 | 1,150.3 | 0.0 | 0.0 |
| 60.00 | | 675.8 | 896.6 | | | | | 0.0 | 233.2 | 675.8 | 1,129.9 | 0.0 | 0.0 |
| 65.00 | | 660.1 | 876.2 | | | | | 0.0 | 233.2 | 660.1 | 1,109.4 | 0.0 | 0.0 |
| 70.00 | | 644.2 | 855.8 | | | | | 0.0 | 233.2 | 644.2 | 1,089.0 | 0.0 | 0.0 |
| 75.00 | | 628.3 | 835.3 | | | | | 0.0 | 233.2 | 628.3 | 1,068.6 | 0.0 | 0.0 |
| 80.00 | | 612.2 | 814.9 | | | | | 0.0 | 233.2 | 612.2 | 1,048.1 | 0.0 | 0.0 |
| 85.00 | | 420.7 | 794.5 | | | | | 0.0 | 233.2 | 420.7 | 1,027.7 | 0.0 | 0.0 |
| 87.00 | Bot - Section 3 | 178.5 | 312.1 | | | | | 0.0 | 93.3 | 178.5 | 405.4 | 0.0 | 0.0 |
| 88.00 | Appurtenance(s) | 178.6 | 288.3 | 210.6 | 0.0 | 0.0 | 99.0 | 0.0 | 46.6 | 389.2 | 433.9 | 0.0 | 0.0 |
| 90.00 | | 236.2 | 572.1 | | | | | 0.0 | 92.8 | 236.2 | 664.8 | 0.0 | 0.0 |
| 92.00 | Top - Section 2 | 291.3 | 566.0 | | | | | 0.0 | 92.8 | 291.3 | 658.8 | 0.0 | 0.0 |
| 95.00 | | 288.2 | 388.0 | | | | | 0.0 | 139.1 | 288.2 | 527.2 | 0.0 | 0.0 |
| 97.00 | Appurtenance(s) | 283.5 | 255.2 | 258.9 | 0.0 | 0.0 | 108.0 | 0.0 | 92.8 | 542.3 | 456.0 | 0.0 | 0.0 |
| 100.00 | | 444.8 | 377.7 | | | | | 0.0 | 138.3 | 444.8 | 516.0 | 0.0 | 0.0 |
| 105.00 | | 437.4 | 615.6 | | | | | 0.0 | 230.5 | 437.4 | 846.1 | 0.0 | 0.0 |
| 108.00 | Appurtenance(s) | 267.9 | 361.1 | 48.5 | 0.0 | 97.0 | 9.0 | 0.0 | 138.3 | 316.4 | 508.4 | 0.0 | 0.0 |
| 110.00 | Appurtenance(s) | 366.5 | 237.2 | 161.7 | 0.0 | 0.0 | 90.0 | 0.0 | 91.9 | 528.2 | 419.2 | 0.0 | 0.0 |
| 115.00 | | 512.9 | 581.0 | | | | | 0.0 | 229.9 | 512.9 | 810.9 | 0.0 | 0.0 |
| 120.00 | | 497.7 | 563.7 | | | | | 0.0 | 229.9 | 497.7 | 793.6 | 0.0 | 0.0 |
| 125.00 | | 482.7 | 546.4 | | | | | 0.0 | 229.9 | 482.7 | 776.3 | 0.0 | 0.0 |
| 130.00 | | 330.5 | 529.1 | | | | | 0.0 | 229.9 | 330.5 | 759.0 | 0.0 | 0.0 |
| 132.00 | Bot - Section 4 | 232.1 | 206.8 | | | | | 0.0 | 91.9 | 232.1 | 298.8 | 0.0 | 0.0 |
| 135.00 | | 184.9 | 502.7 | | | | | 0.0 | 137.9 | 184.9 | 640.6 | 0.0 | 0.0 |
| 136.00 | Top - Section 3 | 91.3 | 165.3 | | | | | 0.0 | 46.0 | 91.3 | 211.3 | 0.0 | 0.0 |
| 137.00 | Appurtenance(s) | 180.2 | 64.6 | 3,493.6 | 0.0 | 0.0 | 1,952.9 | 0.0 | 46.0 | 3,673.7 | 2,063.5 | 0.0 | 0.0 |
| 140.00 | | 353.2 | 191.1 | | | | | 0.0 | 93.7 | 353.2 | 284.8 | 0.0 | 0.0 |
| 145.00 | | 303.9 | 309.7 | | | | | 0.0 | 156.1 | 303.9 | 465.8 | 0.0 | 0.0 |
| 147.00 | Appurtenance(s) | 127.6 | 120.8 | 1,193.1 | 0.0 | 0.0 | 1,800.0 | 0.0 | 62.4 | 1,320.7 | 1,983.2 | 0.0 | 0.0 |
| 148.00 | Appurtenance(s) | 125.8 | 59.7 | 2,189.4 | 0.0 | -363.2 | 652.9 | 0.0 | 31.2 | 2,315.3 | 743.8 | 0.0 | 0.0 |
| 150.00 | | 287.4 | 118.2 | | | | | 0.0 | 41.8 | 287.4 | 160.0 | 0.0 | 0.0 |
| 155.00 | | 322.6 | 287.7 | | | | | 0.0 | 104.6 | 322.6 | 392.3 | 0.0 | 0.0 |
| 158.00 | Appurtenance(s) | 196.5 | 167.3 | 2,919.5 | 0.0 | 5,763.1 | 765.8 | 0.0 | 62.7 | 3,116.0 | 995.9 | 0.0 | 0.0 |
| 160.00 | Appurtenance(s) | 266.8 | 109.4 | 2,311.0 | 0.0 | 0.0 | 1,800.0 | 0.0 | 18.3 | 2,577.8 | 1,927.7 | 0.0 | 0.0 |
| 165.00 | | 299.1 | 265.7 | | | | | 0.0 | 45.8 | 299.1 | 311.5 | 0.0 | 0.0 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:41 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

| | | | | | | | | | | | | | |
|---------|-----------------|-------|-------|---------|-----|---------|---------|-----|------|----------|----------|------|------|
| 168.00 | Appurtenance(s) | 181.8 | 154.1 | 4,505.6 | 0.0 | 0.0 | 2,797.4 | 0.0 | 27.5 | 4,687.4 | 2,979.0 | 0.0 | 0.0 |
| 170.00 | | 246.3 | 100.5 | | | | | 0.0 | 2.3 | 246.3 | 102.8 | 0.0 | 0.0 |
| 175.00 | | 275.6 | 243.7 | | | | | 0.0 | 5.7 | 275.6 | 249.3 | 0.0 | 0.0 |
| 178.00 | Appurtenance(s) | 101.1 | 140.9 | 3,403.0 | 0.0 | 3,935.7 | 1,516.3 | 0.0 | 3.4 | 3,504.1 | 1,660.6 | 0.0 | 0.0 |
| Totals: | | | | | | | | | | 42,281.3 | 47,685.5 | 0.00 | 0.00 |

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -47.61 | -41.86 | 0.00 | -5,049.87 | 0.00 | 5,049.87 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.684 |
| 5.00 | -45.88 | -41.03 | 0.00 | -4,840.58 | 0.00 | 4,840.58 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.10 | -0.20 | 0.677 |
| 10.00 | -44.22 | -40.47 | 0.00 | -4,635.42 | 0.00 | 4,635.42 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.42 | -0.39 | 0.670 |
| 12.00 | -43.44 | -39.91 | 0.00 | -4,554.47 | 0.00 | 4,554.47 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.60 | -0.47 | 0.667 |
| 15.00 | -42.42 | -39.34 | 0.00 | -4,434.74 | 0.00 | 4,434.74 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.94 | -0.60 | 0.662 |
| 20.00 | -40.77 | -38.64 | 0.00 | -4,238.06 | 0.00 | 4,238.06 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 1.67 | -0.80 | 0.655 |
| 25.00 | -39.16 | -37.98 | 0.00 | -4,044.85 | 0.00 | 4,044.85 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 2.62 | -1.01 | 0.647 |
| 30.00 | -37.57 | -37.35 | 0.00 | -3,854.94 | 0.00 | 3,854.94 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 3.78 | -1.21 | 0.639 |
| 35.00 | -36.01 | -36.72 | 0.00 | -3,668.20 | 0.00 | 3,668.20 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 5.17 | -1.42 | 0.633 |
| 40.00 | -34.51 | -36.22 | 0.00 | -3,484.60 | 0.00 | 3,484.60 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 6.77 | -1.64 | 0.628 |
| 42.75 | -33.68 | -35.91 | 0.00 | -3,384.99 | 0.00 | 3,384.99 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 7.75 | -1.76 | 0.625 |
| 45.00 | -32.56 | -35.50 | 0.00 | -3,304.20 | 0.00 | 3,304.20 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 8.61 | -1.86 | 0.622 |
| 49.00 | -30.66 | -35.14 | 0.00 | -3,162.19 | 0.00 | 3,162.19 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 10.24 | -2.03 | 0.759 |
| 50.00 | -30.35 | -34.80 | 0.00 | -3,127.05 | 0.00 | 3,127.05 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 10.67 | -2.08 | 0.757 |
| 55.00 | -29.07 | -34.19 | 0.00 | -2,953.07 | 0.00 | 2,953.07 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 12.98 | -2.33 | 0.742 |
| 60.00 | -27.82 | -33.59 | 0.00 | -2,782.12 | 0.00 | 2,782.12 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 15.57 | -2.59 | 0.727 |
| 65.00 | -26.60 | -33.00 | 0.00 | -2,614.14 | 0.00 | 2,614.14 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 18.42 | -2.85 | 0.711 |
| 70.00 | -25.39 | -32.42 | 0.00 | -2,449.13 | 0.00 | 2,449.13 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 21.55 | -3.12 | 0.695 |
| 75.00 | -24.22 | -31.84 | 0.00 | -2,287.03 | 0.00 | 2,287.03 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 24.95 | -3.38 | 0.677 |
| 80.00 | -23.06 | -31.28 | 0.00 | -2,127.80 | 0.00 | 2,127.80 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 28.63 | -3.64 | 0.658 |
| 85.00 | -21.97 | -30.86 | 0.00 | -1,971.43 | 0.00 | 1,971.43 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 32.59 | -3.91 | 0.641 |
| 87.00 | -21.53 | -30.68 | 0.00 | -1,909.71 | 0.00 | 1,909.71 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 34.24 | -4.02 | 0.635 |
| 88.00 | -21.08 | -30.30 | 0.00 | -1,879.02 | 0.00 | 1,879.02 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 35.09 | -4.07 | 0.631 |
| 90.00 | -20.38 | -30.05 | 0.00 | -1,818.44 | 0.00 | 1,818.44 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 36.82 | -4.18 | 0.624 |
| 92.00 | -19.67 | -29.76 | 0.00 | -1,758.34 | 0.00 | 1,758.34 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 38.59 | -4.29 | 0.724 |
| 95.00 | -19.10 | -29.48 | 0.00 | -1,669.07 | 0.00 | 1,669.07 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 41.33 | -4.45 | 0.707 |
| 97.00 | -18.61 | -28.95 | 0.00 | -1,610.11 | 0.00 | 1,610.11 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 43.22 | -4.57 | 0.695 |
| 100.00 | -18.02 | -28.54 | 0.00 | -1,523.27 | 0.00 | 1,523.27 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 46.14 | -4.74 | 0.676 |
| 105.00 | -17.10 | -28.10 | 0.00 | -1,380.59 | 0.00 | 1,380.59 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 51.26 | -5.03 | 0.644 |
| 108.00 | -16.55 | -27.78 | 0.00 | -1,296.20 | 0.00 | 1,296.20 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 54.47 | -5.20 | 0.623 |
| 110.00 | -16.09 | -27.27 | 0.00 | -1,240.64 | 0.00 | 1,240.64 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 56.67 | -5.32 | 0.608 |
| 115.00 | -15.20 | -26.75 | 0.00 | -1,104.30 | 0.00 | 1,104.30 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 62.38 | -5.59 | 0.571 |
| 120.00 | -14.34 | -26.25 | 0.00 | -970.53 | 0.00 | 970.53 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 68.38 | -5.86 | 0.534 |
| 125.00 | -13.51 | -25.74 | 0.00 | -839.31 | 0.00 | 839.31 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 74.64 | -6.11 | 0.493 |
| 130.00 | -12.72 | -25.37 | 0.00 | -710.59 | 0.00 | 710.59 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 81.16 | -6.35 | 0.446 |
| 132.00 | -12.40 | -25.13 | 0.00 | -659.86 | 0.00 | 659.86 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 83.84 | -6.45 | 0.425 |
| 135.00 | -11.75 | -24.89 | 0.00 | -584.47 | 0.00 | 584.47 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 87.92 | -6.58 | 0.393 |
| 136.00 | -11.53 | -24.78 | 0.00 | -559.58 | 0.00 | 559.58 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 89.30 | -6.62 | 0.639 |
| 137.00 | -9.86 | -20.92 | 0.00 | -534.80 | 0.00 | 534.80 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 90.69 | -6.67 | 0.616 |
| 140.00 | -9.54 | -20.57 | 0.00 | -472.06 | 0.00 | 472.06 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 94.93 | -6.84 | 0.563 |
| 145.00 | -9.06 | -20.24 | 0.00 | -369.22 | 0.00 | 369.22 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 102.22 | -7.10 | 0.468 |
| 147.00 | -7.23 | -18.69 | 0.00 | -328.74 | 0.00 | 328.74 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 105.21 | -7.20 | 0.426 |
| 148.00 | -6.76 | -16.31 | 0.00 | -310.05 | 0.00 | 310.05 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 106.72 | -7.25 | 0.407 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:41 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

| | | | | | | | | | | | | | |
|--------|-------|--------|------|---------|------|--------|----------|--------|----------|--------|--------|-------|-------|
| 150.00 | -6.60 | -16.02 | 0.00 | -277.44 | 0.00 | 277.44 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 109.77 | -7.33 | 0.373 |
| 155.00 | -6.22 | -15.66 | 0.00 | -197.35 | 0.00 | 197.35 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 117.53 | -7.52 | 0.284 |
| 158.00 | -5.63 | -12.45 | 0.00 | -144.61 | 0.00 | 144.61 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 122.27 | -7.61 | 0.218 |
| 160.00 | -4.05 | -9.64 | 0.00 | -119.71 | 0.00 | 119.71 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 125.46 | -7.66 | 0.185 |
| 165.00 | -3.77 | -9.31 | 0.00 | -71.50 | 0.00 | 71.50 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 133.51 | -7.75 | 0.119 |
| 168.00 | -1.45 | -4.26 | 0.00 | -43.58 | 0.00 | 43.58 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 138.38 | -7.79 | 0.075 |
| 170.00 | -1.38 | -4.00 | 0.00 | -35.05 | 0.00 | 35.05 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 141.63 | -7.81 | 0.063 |
| 175.00 | -1.17 | -3.70 | 0.00 | -15.03 | 0.00 | 15.03 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 149.80 | -7.84 | 0.030 |
| 178.00 | 0.00 | -3.50 | 0.00 | -3.94 | 0.00 | 3.94 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 154.72 | -7.85 | 0.008 |

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces | | Discrete Forces | | | Linear Forces | | Sum of Forces | | | | |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
| | | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 153.0 | 0.0 | | | | | 0.0 | 0.0 | 153.0 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 298.1 | 2,541.3 | | | | | 0.0 | 311.9 | 298.1 | 2,853.2 | 0.0 | 0.0 |
| 10.00 | | 200.8 | 2,568.8 | | | | | 0.0 | 311.9 | 200.8 | 2,880.6 | 0.0 | 0.0 |
| 12.00 | Appurtenance(s) | 137.2 | 1,025.2 | 49.6 | 0.0 | 0.0 | 169.1 | 0.0 | 124.8 | 186.8 | 1,319.0 | 0.0 | 0.0 |
| 15.00 | | 211.2 | 1,529.1 | | | | | 0.0 | 186.6 | 211.2 | 1,715.7 | 0.0 | 0.0 |
| 20.00 | | 252.8 | 2,519.3 | | | | | 0.0 | 311.0 | 252.8 | 2,830.3 | 0.0 | 0.0 |
| 25.00 | | 239.6 | 2,480.7 | | | | | 0.0 | 311.0 | 239.6 | 2,791.7 | 0.0 | 0.0 |
| 30.00 | | 230.1 | 2,438.2 | | | | | 0.0 | 311.0 | 230.1 | 2,749.2 | 0.0 | 0.0 |
| 35.00 | | 225.8 | 2,393.3 | | | | | 0.0 | 311.0 | 225.8 | 2,704.3 | 0.0 | 0.0 |
| 40.00 | | 173.5 | 2,346.8 | | | | | 0.0 | 311.0 | 173.5 | 2,657.7 | 0.0 | 0.0 |
| 42.75 | Bot - Section 2 | 111.6 | 1,272.4 | | | | | 0.0 | 171.0 | 111.6 | 1,443.5 | 0.0 | 0.0 |
| 45.00 | | 139.2 | 1,607.6 | | | | | 0.0 | 139.9 | 139.2 | 1,747.5 | 0.0 | 0.0 |
| 49.00 | Top - Section 1 | 110.8 | 2,817.9 | | | | | 0.0 | 248.8 | 110.8 | 3,066.7 | 0.0 | 0.0 |
| 50.00 | | 130.8 | 398.7 | | | | | 0.0 | 62.2 | 130.8 | 460.9 | 0.0 | 0.0 |
| 55.00 | | 215.5 | 1,961.7 | | | | | 0.0 | 311.0 | 215.5 | 2,272.7 | 0.0 | 0.0 |
| 60.00 | | 211.2 | 1,918.9 | | | | | 0.0 | 311.0 | 211.2 | 2,229.9 | 0.0 | 0.0 |
| 65.00 | | 206.8 | 1,876.0 | | | | | 0.0 | 311.0 | 206.8 | 2,186.9 | 0.0 | 0.0 |
| 70.00 | | 202.3 | 1,832.9 | | | | | 0.0 | 311.0 | 202.3 | 2,143.8 | 0.0 | 0.0 |
| 75.00 | | 197.7 | 1,789.7 | | | | | 0.0 | 311.0 | 197.7 | 2,100.7 | 0.0 | 0.0 |
| 80.00 | | 193.2 | 1,746.5 | | | | | 0.0 | 311.0 | 193.2 | 2,057.5 | 0.0 | 0.0 |
| 85.00 | | 133.0 | 1,703.4 | | | | | 0.0 | 311.0 | 133.0 | 2,014.3 | 0.0 | 0.0 |
| 87.00 | Bot - Section 3 | 56.5 | 671.1 | | | | | 0.0 | 124.4 | 56.5 | 795.5 | 0.0 | 0.0 |
| 88.00 | Appurtenance(s) | 56.5 | 513.4 | 57.6 | 0.0 | 0.0 | 211.8 | 0.0 | 62.2 | 114.1 | 787.4 | 0.0 | 0.0 |
| 90.00 | | 74.8 | 1,018.2 | | | | | 0.0 | 123.7 | 74.8 | 1,141.8 | 0.0 | 0.0 |
| 92.00 | Top - Section 2 | 92.4 | 1,007.6 | | | | | 0.0 | 123.7 | 92.4 | 1,131.3 | 0.0 | 0.0 |
| 95.00 | | 91.5 | 891.0 | | | | | 0.0 | 185.5 | 91.5 | 1,076.5 | 0.0 | 0.0 |
| 97.00 | Appurtenance(s) | 90.1 | 586.8 | 72.3 | 0.0 | 0.0 | 255.8 | 0.0 | 123.7 | 162.4 | 966.4 | 0.0 | 0.0 |
| 100.00 | | 141.7 | 867.7 | | | | | 0.0 | 184.4 | 141.7 | 1,052.1 | 0.0 | 0.0 |
| 105.00 | | 139.6 | 1,411.9 | | | | | 0.0 | 307.4 | 139.6 | 1,719.3 | 0.0 | 0.0 |
| 108.00 | Appurtenance(s) | 85.7 | 830.4 | 14.7 | 0.0 | 29.5 | 44.1 | 0.0 | 184.4 | 100.5 | 1,058.9 | 0.0 | 0.0 |
| 110.00 | Appurtenance(s) | 117.6 | 546.5 | 42.7 | 0.0 | 0.0 | 167.6 | 0.0 | 122.6 | 160.3 | 836.7 | 0.0 | 0.0 |
| 115.00 | | 165.0 | 1,334.4 | | | | | 0.0 | 306.5 | 165.0 | 1,640.9 | 0.0 | 0.0 |
| 120.00 | | 160.7 | 1,295.8 | | | | | 0.0 | 306.5 | 160.7 | 1,602.2 | 0.0 | 0.0 |
| 125.00 | | 156.5 | 1,257.1 | | | | | 0.0 | 306.5 | 156.5 | 1,563.6 | 0.0 | 0.0 |
| 130.00 | | 107.5 | 1,218.5 | | | | | 0.0 | 306.5 | 107.5 | 1,525.0 | 0.0 | 0.0 |
| 132.00 | Bot - Section 4 | 75.6 | 478.5 | | | | | 0.0 | 122.6 | 75.6 | 601.1 | 0.0 | 0.0 |
| 135.00 | | 60.3 | 972.8 | | | | | 0.0 | 183.9 | 60.3 | 1,156.7 | 0.0 | 0.0 |
| 136.00 | Top - Section 3 | 29.8 | 320.6 | | | | | 0.0 | 61.3 | 29.8 | 381.9 | 0.0 | 0.0 |
| 137.00 | Appurtenance(s) | 59.0 | 185.7 | 899.7 | 0.0 | 0.0 | 5,468.3 | 0.0 | 61.3 | 958.6 | 5,715.3 | 0.0 | 0.0 |
| 140.00 | | 115.9 | 548.0 | | | | | 0.0 | 124.9 | 115.9 | 672.9 | 0.0 | 0.0 |
| 145.00 | | 100.0 | 886.2 | | | | | 0.0 | 208.1 | 100.0 | 1,094.3 | 0.0 | 0.0 |
| 147.00 | Appurtenance(s) | 42.1 | 347.9 | 359.7 | 0.0 | 0.0 | 3,936.3 | 0.0 | 83.3 | 401.8 | 4,367.5 | 0.0 | 0.0 |
| 148.00 | Appurtenance(s) | 41.6 | 172.5 | 442.8 | 0.0 | -73.7 | 2,907.6 | 0.0 | 41.6 | 484.4 | 3,121.7 | 0.0 | 0.0 |
| 150.00 | | 95.4 | 340.7 | | | | | 0.0 | 55.8 | 95.4 | 396.5 | 0.0 | 0.0 |
| 155.00 | | 107.4 | 826.0 | | | | | 0.0 | 139.4 | 107.4 | 965.5 | 0.0 | 0.0 |
| 158.00 | Appurtenance(s) | 65.7 | 483.1 | 578.1 | 0.0 | 1,124.7 | 4,198.2 | 0.0 | 83.7 | 643.8 | 4,764.9 | 0.0 | 0.0 |
| 160.00 | Appurtenance(s) | 89.6 | 316.7 | 597.7 | 0.0 | 0.0 | 3,978.4 | 0.0 | 24.4 | 687.3 | 4,319.5 | 0.0 | 0.0 |
| 165.00 | | 100.8 | 765.9 | | | | | 0.0 | 61.1 | 100.8 | 827.0 | 0.0 | 0.0 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:46 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

| | | | | | | | | | | | | | |
|---------|-----------------|------|-------|---------|-----|-------|---------|-----|------|----------|----------|------|------|
| 168.00 | Appurtenance(s) | 61.6 | 447.0 | 1,082.9 | 0.0 | 0.0 | 7,576.7 | 0.0 | 36.6 | 1,144.5 | 8,060.3 | 0.0 | 0.0 |
| 170.00 | | 83.9 | 292.6 | | | | | 0.0 | 3.0 | 83.9 | 295.6 | 0.0 | 0.0 |
| 175.00 | | 94.3 | 705.8 | | | | | 0.0 | 7.6 | 94.3 | 713.3 | 0.0 | 0.0 |
| 178.00 | Appurtenance(s) | 34.7 | 410.9 | 744.4 | 0.0 | 600.3 | 5,395.2 | 0.0 | 4.5 | 779.2 | 5,810.7 | 0.0 | 0.0 |
| Totals: | | | | | | | | | | 11,710.1 | 104,388. | 0.00 | 0.00 |

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -104.38 | -11.61 | 0.00 | -1,437.43 | 0.00 | 1,437.43 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.209 |
| 5.00 | -101.52 | -11.41 | 0.00 | -1,379.39 | 0.00 | 1,379.39 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.03 | -0.06 | 0.207 |
| 10.00 | -98.63 | -11.27 | 0.00 | -1,322.35 | 0.00 | 1,322.35 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.12 | -0.11 | 0.205 |
| 12.00 | -97.31 | -11.13 | 0.00 | -1,299.81 | 0.00 | 1,299.81 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.17 | -0.14 | 0.204 |
| 15.00 | -95.58 | -10.99 | 0.00 | -1,266.41 | 0.00 | 1,266.41 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.27 | -0.17 | 0.203 |
| 20.00 | -92.74 | -10.83 | 0.00 | -1,211.45 | 0.00 | 1,211.45 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 0.48 | -0.23 | 0.200 |
| 25.00 | -89.94 | -10.67 | 0.00 | -1,157.32 | 0.00 | 1,157.32 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 0.75 | -0.29 | 0.198 |
| 30.00 | -87.18 | -10.51 | 0.00 | -1,104.00 | 0.00 | 1,104.00 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 1.08 | -0.35 | 0.196 |
| 35.00 | -84.47 | -10.36 | 0.00 | -1,051.44 | 0.00 | 1,051.44 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 1.47 | -0.41 | 0.194 |
| 40.00 | -81.80 | -10.23 | 0.00 | -999.65 | 0.00 | 999.65 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 1.93 | -0.47 | 0.193 |
| 42.75 | -80.35 | -10.15 | 0.00 | -971.51 | 0.00 | 971.51 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 2.21 | -0.50 | 0.192 |
| 45.00 | -78.60 | -10.05 | 0.00 | -948.66 | 0.00 | 948.66 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 2.46 | -0.53 | 0.191 |
| 49.00 | -75.53 | -9.95 | 0.00 | -908.46 | 0.00 | 908.46 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 2.92 | -0.58 | 0.234 |
| 50.00 | -75.06 | -9.87 | 0.00 | -898.50 | 0.00 | 898.50 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 3.05 | -0.59 | 0.233 |
| 55.00 | -72.78 | -9.73 | 0.00 | -849.13 | 0.00 | 849.13 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 3.71 | -0.67 | 0.229 |
| 60.00 | -70.54 | -9.58 | 0.00 | -800.49 | 0.00 | 800.49 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 4.45 | -0.74 | 0.224 |
| 65.00 | -68.35 | -9.43 | 0.00 | -752.58 | 0.00 | 752.58 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 5.27 | -0.82 | 0.219 |
| 70.00 | -66.19 | -9.29 | 0.00 | -705.41 | 0.00 | 705.41 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 6.16 | -0.89 | 0.215 |
| 75.00 | -64.08 | -9.14 | 0.00 | -658.97 | 0.00 | 658.97 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 7.14 | -0.97 | 0.209 |
| 80.00 | -62.02 | -8.99 | 0.00 | -613.27 | 0.00 | 613.27 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 8.20 | -1.05 | 0.204 |
| 85.00 | -60.00 | -8.88 | 0.00 | -568.30 | 0.00 | 568.30 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 9.33 | -1.12 | 0.199 |
| 87.00 | -59.20 | -8.83 | 0.00 | -550.54 | 0.00 | 550.54 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 9.81 | -1.15 | 0.197 |
| 88.00 | -58.41 | -8.72 | 0.00 | -541.71 | 0.00 | 541.71 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 10.05 | -1.17 | 0.196 |
| 90.00 | -57.27 | -8.66 | 0.00 | -524.26 | 0.00 | 524.26 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 10.55 | -1.20 | 0.194 |
| 92.00 | -56.13 | -8.58 | 0.00 | -506.95 | 0.00 | 506.95 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 11.06 | -1.23 | 0.225 |
| 95.00 | -55.05 | -8.50 | 0.00 | -481.21 | 0.00 | 481.21 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 11.84 | -1.28 | 0.220 |
| 97.00 | -54.08 | -8.36 | 0.00 | -464.21 | 0.00 | 464.21 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 12.39 | -1.31 | 0.216 |
| 100.00 | -53.03 | -8.26 | 0.00 | -439.13 | 0.00 | 439.13 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 13.23 | -1.36 | 0.211 |
| 105.00 | -51.30 | -8.13 | 0.00 | -397.86 | 0.00 | 397.86 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 14.70 | -1.44 | 0.201 |
| 108.00 | -50.24 | -8.04 | 0.00 | -373.43 | 0.00 | 373.43 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 15.62 | -1.49 | 0.195 |
| 110.00 | -49.40 | -7.91 | 0.00 | -357.35 | 0.00 | 357.35 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 16.26 | -1.53 | 0.191 |
| 115.00 | -47.75 | -7.76 | 0.00 | -317.81 | 0.00 | 317.81 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 17.90 | -1.61 | 0.180 |
| 120.00 | -46.15 | -7.62 | 0.00 | -279.00 | 0.00 | 279.00 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 19.62 | -1.68 | 0.169 |
| 125.00 | -44.58 | -7.47 | 0.00 | -240.92 | 0.00 | 240.92 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 21.43 | -1.76 | 0.157 |
| 130.00 | -43.05 | -7.35 | 0.00 | -203.58 | 0.00 | 203.58 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 23.30 | -1.83 | 0.143 |
| 132.00 | -42.45 | -7.28 | 0.00 | -188.88 | 0.00 | 188.88 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 24.07 | -1.85 | 0.137 |
| 135.00 | -41.29 | -7.20 | 0.00 | -167.05 | 0.00 | 167.05 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 25.25 | -1.89 | 0.128 |
| 136.00 | -40.91 | -7.16 | 0.00 | -159.85 | 0.00 | 159.85 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 25.65 | -1.90 | 0.209 |
| 137.00 | -35.23 | -6.04 | 0.00 | -152.68 | 0.00 | 152.68 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 26.05 | -1.91 | 0.199 |
| 140.00 | -34.55 | -5.93 | 0.00 | -134.58 | 0.00 | 134.58 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 27.27 | -1.96 | 0.183 |
| 145.00 | -33.46 | -5.83 | 0.00 | -104.91 | 0.00 | 104.91 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 29.36 | -2.04 | 0.156 |
| 147.00 | -29.10 | -5.28 | 0.00 | -93.26 | 0.00 | 93.26 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 30.22 | -2.07 | 0.141 |
| 148.00 | -26.00 | -4.69 | 0.00 | -87.98 | 0.00 | 87.98 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 30.66 | -2.08 | 0.133 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:47 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

| | | | | | | | | | | | | | |
|--------|--------|-------|------|--------|------|-------|----------|--------|----------|--------|-------|-------|-------|
| 150.00 | -25.60 | -4.60 | 0.00 | -78.60 | 0.00 | 78.60 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 31.54 | -2.10 | 0.124 |
| 155.00 | -24.64 | -4.47 | 0.00 | -55.62 | 0.00 | 55.62 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 33.77 | -2.16 | 0.098 |
| 158.00 | -19.90 | -3.65 | 0.00 | -41.08 | 0.00 | 41.08 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 35.13 | -2.18 | 0.076 |
| 160.00 | -15.61 | -2.81 | 0.00 | -33.77 | 0.00 | 33.77 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 36.05 | -2.20 | 0.063 |
| 165.00 | -14.79 | -2.68 | 0.00 | -19.74 | 0.00 | 19.74 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 38.36 | -2.22 | 0.044 |
| 168.00 | -6.78 | -1.22 | 0.00 | -11.70 | 0.00 | 11.70 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 39.76 | -2.23 | 0.026 |
| 170.00 | -6.48 | -1.13 | 0.00 | -9.26 | 0.00 | 9.26 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 40.70 | -2.24 | 0.022 |
| 175.00 | -5.78 | -1.01 | 0.00 | -3.62 | 0.00 | 3.62 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 43.05 | -2.25 | 0.012 |
| 178.00 | 0.00 | -0.78 | 0.00 | -0.60 | 0.00 | 0.60 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 44.46 | -2.25 | 0.001 |

| | | |
|-------------------------------|------------------------------|------------------------------|
| Load Case: 1.0D + 1.0W | Serviceability 60 mph | 25 Iterations |
| Gust Response Factor :1.10 | | Wind Importance Factor :1.00 |
| Dead Load Factor :1.00 | | |
| Wind Load Factor :1.00 | | |

Applied Segment Forces Summary

| Seg Elev (ft) | Description | Shaft Forces | | Discrete Forces | | | Linear Forces | | Sum of Forces | | | | |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
| | | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00 | | 99.8 | 0.0 | | | | | 0.0 | 0.0 | 99.8 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 193.6 | 1,509.1 | | | | | 0.0 | 259.9 | 193.6 | 1,769.0 | 0.0 | 0.0 |
| 10.00 | | 129.8 | 1,481.2 | | | | | 0.0 | 259.9 | 129.8 | 1,741.1 | 0.0 | 0.0 |
| 12.00 | Appurtenance(s) | 88.4 | 584.6 | 36.7 | 0.0 | 0.0 | 100.6 | 0.0 | 104.0 | 125.1 | 789.2 | 0.0 | 0.0 |
| 15.00 | | 135.8 | 868.6 | | | | | 0.0 | 155.5 | 135.8 | 1,024.1 | 0.0 | 0.0 |
| 20.00 | | 162.2 | 1,425.3 | | | | | 0.0 | 259.2 | 162.2 | 1,684.4 | 0.0 | 0.0 |
| 25.00 | | 153.3 | 1,397.3 | | | | | 0.0 | 259.2 | 153.3 | 1,656.5 | 0.0 | 0.0 |
| 30.00 | | 146.9 | 1,369.4 | | | | | 0.0 | 259.2 | 146.9 | 1,628.5 | 0.0 | 0.0 |
| 35.00 | | 143.8 | 1,341.4 | | | | | 0.0 | 259.2 | 143.8 | 1,600.6 | 0.0 | 0.0 |
| 40.00 | | 110.4 | 1,313.5 | | | | | 0.0 | 259.2 | 110.4 | 1,572.6 | 0.0 | 0.0 |
| 42.75 | Bot - Section 2 | 70.9 | 710.5 | | | | | 0.0 | 142.5 | 70.9 | 853.0 | 0.0 | 0.0 |
| 45.00 | | 88.4 | 1,051.2 | | | | | 0.0 | 116.6 | 88.4 | 1,167.8 | 0.0 | 0.0 |
| 49.00 | Top - Section 1 | 70.3 | 1,843.5 | | | | | 0.0 | 207.3 | 70.3 | 2,050.8 | 0.0 | 0.0 |
| 50.00 | | 82.9 | 206.5 | | | | | 0.0 | 51.8 | 82.9 | 258.3 | 0.0 | 0.0 |
| 55.00 | | 136.4 | 1,019.0 | | | | | 0.0 | 259.2 | 136.4 | 1,278.1 | 0.0 | 0.0 |
| 60.00 | | 133.4 | 996.3 | | | | | 0.0 | 259.2 | 133.4 | 1,255.4 | 0.0 | 0.0 |
| 65.00 | | 130.3 | 973.5 | | | | | 0.0 | 259.2 | 130.3 | 1,232.7 | 0.0 | 0.0 |
| 70.00 | | 127.1 | 950.8 | | | | | 0.0 | 259.2 | 127.1 | 1,210.0 | 0.0 | 0.0 |
| 75.00 | | 124.0 | 928.1 | | | | | 0.0 | 259.2 | 124.0 | 1,187.3 | 0.0 | 0.0 |
| 80.00 | | 120.8 | 905.4 | | | | | 0.0 | 259.2 | 120.8 | 1,164.6 | 0.0 | 0.0 |
| 85.00 | | 83.0 | 882.7 | | | | | 0.0 | 259.2 | 83.0 | 1,141.9 | 0.0 | 0.0 |
| 87.00 | Bot - Section 3 | 35.2 | 346.7 | | | | | 0.0 | 103.7 | 35.2 | 450.4 | 0.0 | 0.0 |
| 88.00 | Appurtenance(s) | 35.2 | 320.3 | 41.6 | 0.0 | 0.0 | 110.0 | 0.0 | 51.8 | 76.8 | 482.2 | 0.0 | 0.0 |
| 90.00 | | 46.6 | 635.6 | | | | | 0.0 | 103.1 | 46.6 | 738.7 | 0.0 | 0.0 |
| 92.00 | Top - Section 2 | 57.5 | 628.9 | | | | | 0.0 | 103.1 | 57.5 | 732.0 | 0.0 | 0.0 |
| 95.00 | | 56.9 | 431.1 | | | | | 0.0 | 154.6 | 56.9 | 585.7 | 0.0 | 0.0 |
| 97.00 | Appurtenance(s) | 55.9 | 283.6 | 51.1 | 0.0 | 0.0 | 120.0 | 0.0 | 103.1 | 107.0 | 506.6 | 0.0 | 0.0 |
| 100.00 | | 87.8 | 419.6 | | | | | 0.0 | 153.7 | 87.8 | 573.3 | 0.0 | 0.0 |
| 105.00 | | 86.3 | 684.0 | | | | | 0.0 | 256.2 | 86.3 | 940.1 | 0.0 | 0.0 |
| 108.00 | Appurtenance(s) | 52.9 | 401.2 | 9.6 | 0.0 | 19.1 | 10.0 | 0.0 | 153.7 | 62.4 | 564.9 | 0.0 | 0.0 |
| 110.00 | Appurtenance(s) | 72.3 | 263.6 | 31.9 | 0.0 | 0.0 | 100.0 | 0.0 | 102.2 | 104.2 | 465.8 | 0.0 | 0.0 |
| 115.00 | | 101.2 | 645.6 | | | | | 0.0 | 255.4 | 101.2 | 901.0 | 0.0 | 0.0 |
| 120.00 | | 98.2 | 626.4 | | | | | 0.0 | 255.4 | 98.2 | 881.8 | 0.0 | 0.0 |
| 125.00 | | 95.3 | 607.1 | | | | | 0.0 | 255.4 | 95.3 | 862.5 | 0.0 | 0.0 |
| 130.00 | | 65.2 | 587.9 | | | | | 0.0 | 255.4 | 65.2 | 843.3 | 0.0 | 0.0 |
| 132.00 | Bot - Section 4 | 45.8 | 229.8 | | | | | 0.0 | 102.2 | 45.8 | 332.0 | 0.0 | 0.0 |
| 135.00 | | 36.5 | 558.6 | | | | | 0.0 | 153.2 | 36.5 | 711.8 | 0.0 | 0.0 |
| 136.00 | Top - Section 3 | 18.0 | 183.7 | | | | | 0.0 | 51.1 | 18.0 | 234.8 | 0.0 | 0.0 |
| 137.00 | Appurtenance(s) | 35.6 | 71.8 | 689.5 | 0.0 | 0.0 | 2,169.9 | 0.0 | 51.1 | 725.0 | 2,292.7 | 0.0 | 0.0 |
| 140.00 | | 69.7 | 212.3 | | | | | 0.0 | 104.1 | 69.7 | 316.4 | 0.0 | 0.0 |
| 145.00 | | 60.0 | 344.1 | | | | | 0.0 | 173.5 | 60.0 | 517.5 | 0.0 | 0.0 |
| 147.00 | Appurtenance(s) | 25.2 | 134.2 | 235.5 | 0.0 | 0.0 | 2,000.0 | 0.0 | 69.4 | 260.6 | 2,203.6 | 0.0 | 0.0 |
| 148.00 | Appurtenance(s) | 24.8 | 66.4 | 432.1 | 0.0 | -71.7 | 725.4 | 0.0 | 34.7 | 456.9 | 826.5 | 0.0 | 0.0 |
| 150.00 | | 56.7 | 131.3 | | | | | 0.0 | 46.5 | 56.7 | 177.8 | 0.0 | 0.0 |
| 155.00 | | 63.7 | 319.6 | | | | | 0.0 | 116.2 | 63.7 | 435.8 | 0.0 | 0.0 |
| 158.00 | Appurtenance(s) | 38.8 | 185.9 | 576.2 | 0.0 | 1,137.3 | 850.9 | 0.0 | 69.7 | 614.9 | 1,106.5 | 0.0 | 0.0 |
| 160.00 | Appurtenance(s) | 52.7 | 121.5 | 456.1 | 0.0 | 0.0 | 2,000.0 | 0.0 | 20.4 | 508.7 | 2,141.9 | 0.0 | 0.0 |
| 165.00 | | 59.0 | 295.2 | | | | | 0.0 | 50.9 | 59.0 | 346.1 | 0.0 | 0.0 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:52 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

| | | | | | | | | | | | | | |
|---------|-----------------|------|-------|-------|-----|-------|---------|-----|------|----------|----------|------|------|
| 168.00 | Appurtenance(s) | 35.9 | 171.2 | 889.2 | 0.0 | 0.0 | 3,108.2 | 0.0 | 30.5 | 925.1 | 3,310.0 | 0.0 | 0.0 |
| 170.00 | | 48.6 | 111.7 | | | | | 0.0 | 2.5 | 48.6 | 114.2 | 0.0 | 0.0 |
| 175.00 | | 54.4 | 270.7 | | | | | 0.0 | 6.3 | 54.4 | 277.0 | 0.0 | 0.0 |
| 178.00 | Appurtenance(s) | 20.0 | 156.6 | 671.6 | 0.0 | 776.7 | 1,684.8 | 0.0 | 3.8 | 691.5 | 1,845.2 | 0.0 | 0.0 |
| Totals: | | | | | | | | | | 8,344.18 | 52,983.9 | 0.00 | 0.00 |

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -52.98 | -8.26 | 0.00 | -1,003.85 | 0.00 | 1,003.85 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.143 |
| 5.00 | -51.21 | -8.10 | 0.00 | -962.55 | 0.00 | 962.55 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.02 | -0.04 | 0.141 |
| 10.00 | -49.46 | -7.99 | 0.00 | -922.03 | 0.00 | 922.03 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.08 | -0.08 | 0.140 |
| 12.00 | -48.67 | -7.89 | 0.00 | -906.05 | 0.00 | 906.05 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.12 | -0.09 | 0.139 |
| 15.00 | -47.64 | -7.77 | 0.00 | -882.39 | 0.00 | 882.39 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.19 | -0.12 | 0.138 |
| 20.00 | -45.95 | -7.64 | 0.00 | -843.52 | 0.00 | 843.52 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 0.33 | -0.16 | 0.137 |
| 25.00 | -44.29 | -7.51 | 0.00 | -805.31 | 0.00 | 805.31 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 0.52 | -0.20 | 0.135 |
| 30.00 | -42.66 | -7.39 | 0.00 | -767.74 | 0.00 | 767.74 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 0.75 | -0.24 | 0.133 |
| 35.00 | -41.05 | -7.27 | 0.00 | -730.78 | 0.00 | 730.78 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 1.03 | -0.28 | 0.132 |
| 40.00 | -39.48 | -7.18 | 0.00 | -694.42 | 0.00 | 694.42 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 1.35 | -0.33 | 0.131 |
| 42.75 | -38.62 | -7.11 | 0.00 | -674.69 | 0.00 | 674.69 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 1.54 | -0.35 | 0.130 |
| 45.00 | -37.45 | -7.04 | 0.00 | -658.68 | 0.00 | 658.68 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 1.71 | -0.37 | 0.130 |
| 49.00 | -35.40 | -6.97 | 0.00 | -630.53 | 0.00 | 630.53 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 2.04 | -0.40 | 0.158 |
| 50.00 | -35.14 | -6.90 | 0.00 | -623.57 | 0.00 | 623.57 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 2.12 | -0.41 | 0.158 |
| 55.00 | -33.85 | -6.78 | 0.00 | -589.07 | 0.00 | 589.07 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 2.58 | -0.46 | 0.155 |
| 60.00 | -32.59 | -6.67 | 0.00 | -555.15 | 0.00 | 555.15 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 3.10 | -0.52 | 0.152 |
| 65.00 | -31.36 | -6.56 | 0.00 | -521.80 | 0.00 | 521.80 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 3.67 | -0.57 | 0.148 |
| 70.00 | -30.14 | -6.44 | 0.00 | -489.02 | 0.00 | 489.02 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 4.29 | -0.62 | 0.145 |
| 75.00 | -28.95 | -6.33 | 0.00 | -456.80 | 0.00 | 456.80 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 4.97 | -0.67 | 0.141 |
| 80.00 | -27.78 | -6.22 | 0.00 | -425.14 | 0.00 | 425.14 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 5.70 | -0.73 | 0.137 |
| 85.00 | -26.64 | -6.14 | 0.00 | -394.02 | 0.00 | 394.02 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 6.49 | -0.78 | 0.134 |
| 87.00 | -26.18 | -6.11 | 0.00 | -381.74 | 0.00 | 381.74 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 6.82 | -0.80 | 0.133 |
| 88.00 | -25.70 | -6.03 | 0.00 | -375.63 | 0.00 | 375.63 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 6.99 | -0.81 | 0.132 |
| 90.00 | -24.96 | -5.98 | 0.00 | -363.56 | 0.00 | 363.56 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 7.34 | -0.83 | 0.130 |
| 92.00 | -24.23 | -5.93 | 0.00 | -351.59 | 0.00 | 351.59 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 7.69 | -0.85 | 0.151 |
| 95.00 | -23.64 | -5.87 | 0.00 | -333.81 | 0.00 | 333.81 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 8.24 | -0.89 | 0.148 |
| 97.00 | -23.13 | -5.77 | 0.00 | -322.06 | 0.00 | 322.06 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 8.61 | -0.91 | 0.145 |
| 100.00 | -22.56 | -5.69 | 0.00 | -304.75 | 0.00 | 304.75 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 9.20 | -0.95 | 0.142 |
| 105.00 | -21.61 | -5.61 | 0.00 | -276.29 | 0.00 | 276.29 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 10.22 | -1.00 | 0.135 |
| 108.00 | -21.05 | -5.55 | 0.00 | -259.45 | 0.00 | 259.45 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 10.86 | -1.04 | 0.131 |
| 110.00 | -20.58 | -5.45 | 0.00 | -248.36 | 0.00 | 248.36 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 11.30 | -1.06 | 0.128 |
| 115.00 | -19.67 | -5.35 | 0.00 | -221.13 | 0.00 | 221.13 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 12.44 | -1.12 | 0.120 |
| 120.00 | -18.79 | -5.25 | 0.00 | -194.40 | 0.00 | 194.40 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 13.64 | -1.17 | 0.113 |
| 125.00 | -17.93 | -5.15 | 0.00 | -168.16 | 0.00 | 168.16 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 14.89 | -1.22 | 0.104 |
| 130.00 | -17.08 | -5.08 | 0.00 | -142.40 | 0.00 | 142.40 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 16.20 | -1.27 | 0.095 |
| 132.00 | -16.75 | -5.03 | 0.00 | -132.25 | 0.00 | 132.25 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 16.73 | -1.29 | 0.091 |
| 135.00 | -16.04 | -4.98 | 0.00 | -117.16 | 0.00 | 117.16 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 17.55 | -1.31 | 0.084 |
| 136.00 | -15.80 | -4.96 | 0.00 | -112.18 | 0.00 | 112.18 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 17.83 | -1.32 | 0.137 |
| 137.00 | -13.52 | -4.19 | 0.00 | -107.22 | 0.00 | 107.22 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 18.10 | -1.33 | 0.132 |
| 140.00 | -13.21 | -4.12 | 0.00 | -94.65 | 0.00 | 94.65 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 18.95 | -1.37 | 0.121 |
| 145.00 | -12.69 | -4.06 | 0.00 | -74.04 | 0.00 | 74.04 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 20.41 | -1.42 | 0.102 |
| 147.00 | -10.49 | -3.74 | 0.00 | -65.92 | 0.00 | 65.92 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 21.01 | -1.44 | 0.092 |
| 148.00 | -9.67 | -3.27 | 0.00 | -62.18 | 0.00 | 62.18 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 21.31 | -1.45 | 0.088 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:52 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

| | | | | | | | | | | | | | |
|--------|-------|-------|------|--------|------|-------|----------|--------|----------|--------|-------|-------|-------|
| 150.00 | -9.50 | -3.21 | 0.00 | -55.64 | 0.00 | 55.64 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 21.92 | -1.46 | 0.081 |
| 155.00 | -9.06 | -3.14 | 0.00 | -39.58 | 0.00 | 39.58 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 23.48 | -1.50 | 0.063 |
| 158.00 | -7.97 | -2.50 | 0.00 | -29.02 | 0.00 | 29.02 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 24.43 | -1.52 | 0.049 |
| 160.00 | -5.84 | -1.94 | 0.00 | -24.02 | 0.00 | 24.02 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 25.07 | -1.53 | 0.041 |
| 165.00 | -5.50 | -1.87 | 0.00 | -14.34 | 0.00 | 14.34 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 26.68 | -1.55 | 0.028 |
| 168.00 | -2.21 | -0.85 | 0.00 | -8.73 | 0.00 | 8.73 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 27.66 | -1.56 | 0.017 |
| 170.00 | -2.10 | -0.80 | 0.00 | -7.02 | 0.00 | 7.02 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 28.31 | -1.56 | 0.014 |
| 175.00 | -1.83 | -0.74 | 0.00 | -3.00 | 0.00 | 3.00 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 29.95 | -1.57 | 0.007 |
| 178.00 | 0.00 | -0.69 | 0.00 | -0.78 | 0.00 | 0.78 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 30.93 | -1.57 | 0.002 |

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

| | |
|--|---------|
| Spectral Response Acceleration for Short Period (S_s): | 0.18 |
| Spectral Response Acceleration at 1.0 Second Period (S_1): | 0.06 |
| Long-Period Transition Period (T_L): | 6 |
| Importance Factor (I_E): | 1.00 |
| Site Coefficient F_a : | 1.00 |
| Site Coefficient F_v : | 1.00 |
| Response Modification Coefficient (R): | 1.50 |
| Design Spectral Response Acceleration at Short Period (S_{ds}): | 0.12 |
| Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}): | 0.04 |
| Seismic Response Coefficient (C_s): | 0.03 |
| Upper Limit C_s | 0.03 |
| Lower Limit C_s | 0.03 |
| Period based on Rayleigh Method (sec): | 2.85 |
| Redundancy Factor (ρ): | 1.00 |
| Seismic Force Distribution Exponent (k): | 2.00 |
| Total Unfactored Dead Load: | 52.98 k |
| Seismic Base Shear (E): | 1.59 k |

Load Case (1.2 + 0.2Sds) * DL + E ELFM

Seismic Equivalent Lateral Forces Method

| Segment | Height Above Base (ft) | Weight (lb) | W_z (lb-ft) | C_{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|---------|------------------------|-------------|---------------|----------|-----------------------|---------------------|
| 51 | 176.50 | 160 | 4,995 | 0.009 | 14 | 196 |
| 50 | 172.50 | 277 | 8,244 | 0.014 | 23 | 339 |
| 49 | 169.00 | 114 | 3,263 | 0.006 | 9 | 140 |
| 48 | 166.50 | 202 | 5,594 | 0.010 | 15 | 247 |
| 47 | 162.50 | 346 | 9,139 | 0.016 | 25 | 423 |
| 46 | 159.00 | 142 | 3,586 | 0.006 | 10 | 174 |
| 45 | 156.50 | 256 | 6,261 | 0.011 | 17 | 313 |
| 44 | 152.50 | 436 | 10,136 | 0.018 | 28 | 533 |
| 43 | 149.00 | 178 | 3,946 | 0.007 | 11 | 217 |
| 42 | 147.50 | 101 | 2,199 | 0.004 | 6 | 124 |
| 41 | 146.00 | 204 | 4,340 | 0.008 | 12 | 249 |
| 40 | 142.50 | 518 | 10,509 | 0.018 | 29 | 633 |
| 39 | 138.50 | 316 | 6,069 | 0.011 | 17 | 387 |
| 38 | 136.50 | 123 | 2,289 | 0.004 | 6 | 150 |
| 37 | 135.50 | 235 | 4,310 | 0.007 | 12 | 287 |
| 36 | 133.50 | 712 | 12,686 | 0.022 | 35 | 871 |
| 35 | 131.00 | 332 | 5,697 | 0.010 | 16 | 406 |
| 34 | 127.50 | 843 | 13,709 | 0.024 | 38 | 1,032 |
| 33 | 122.50 | 863 | 12,943 | 0.022 | 36 | 1,055 |
| 32 | 117.50 | 882 | 12,174 | 0.021 | 33 | 1,079 |
| 31 | 112.50 | 901 | 11,403 | 0.020 | 31 | 1,102 |
| 30 | 109.00 | 366 | 4,346 | 0.008 | 12 | 448 |
| 29 | 106.50 | 555 | 6,293 | 0.011 | 17 | 679 |

| | | | | | | |
|----------------------|--------|-------|--------|-------|-----|-------|
| 28 | 102.50 | 940 | 9,877 | 0.017 | 27 | 1,150 |
| 27 | 98.50 | 573 | 5,562 | 0.010 | 15 | 701 |
| 26 | 96.00 | 387 | 3,563 | 0.006 | 10 | 473 |
| 25 | 93.50 | 586 | 5,121 | 0.009 | 14 | 717 |
| 24 | 91.00 | 732 | 6,062 | 0.010 | 17 | 896 |
| 23 | 89.00 | 739 | 5,851 | 0.010 | 16 | 904 |
| 22 | 87.50 | 372 | 2,849 | 0.005 | 8 | 455 |
| 21 | 86.00 | 450 | 3,331 | 0.006 | 9 | 551 |
| 20 | 82.50 | 1,142 | 7,772 | 0.013 | 21 | 1,397 |
| 19 | 77.50 | 1,165 | 6,995 | 0.012 | 19 | 1,425 |
| 18 | 72.50 | 1,187 | 6,241 | 0.011 | 17 | 1,453 |
| 17 | 67.50 | 1,210 | 5,513 | 0.010 | 15 | 1,480 |
| 16 | 62.50 | 1,233 | 4,815 | 0.008 | 13 | 1,508 |
| 15 | 57.50 | 1,255 | 4,151 | 0.007 | 11 | 1,536 |
| 14 | 52.50 | 1,278 | 3,523 | 0.006 | 10 | 1,564 |
| 13 | 49.50 | 258 | 633 | 0.001 | 2 | 316 |
| 12 | 47.00 | 2,051 | 4,530 | 0.008 | 12 | 2,509 |
| 11 | 43.88 | 1,168 | 2,248 | 0.004 | 6 | 1,429 |
| 10 | 41.38 | 853 | 1,460 | 0.003 | 4 | 1,044 |
| 9 | 37.50 | 1,573 | 2,212 | 0.004 | 6 | 1,924 |
| 8 | 32.50 | 1,601 | 1,691 | 0.003 | 5 | 1,958 |
| 7 | 27.50 | 1,629 | 1,232 | 0.002 | 3 | 1,992 |
| 6 | 22.50 | 1,656 | 839 | 0.001 | 2 | 2,027 |
| 5 | 17.50 | 1,684 | 516 | 0.001 | 1 | 2,061 |
| 4 | 13.50 | 1,024 | 187 | 0.000 | 1 | 1,253 |
| 3 | 11.00 | 689 | 83 | 0.000 | 0 | 842 |
| 2 | 7.50 | 1,741 | 98 | 0.000 | 0 | 2,130 |
| 1 | 2.50 | 1,769 | 11 | 0.000 | 0 | 2,164 |
| Powerwave Allgon 712 | 178.00 | 185 | 5,855 | 0.010 | 16 | 226 |
| Flat Low Profile Pla | 178.00 | 1,500 | 47,526 | 0.082 | 131 | 1,835 |
| Alcatel-Lucent RRH2x | 168.00 | 317 | 8,958 | 0.016 | 25 | 388 |
| Alcatel-Lucent 1900 | 168.00 | 180 | 5,080 | 0.009 | 14 | 220 |
| Alcatel-Lucent TD-RR | 168.00 | 210 | 5,927 | 0.010 | 16 | 257 |
| RFS APXVTM14-ALU-I20 | 168.00 | 169 | 4,759 | 0.008 | 13 | 206 |
| Commscope NNVV-65B-R | 168.00 | 232 | 6,554 | 0.011 | 18 | 284 |
| Flat Platform w/ Han | 168.00 | 2,000 | 56,448 | 0.098 | 155 | 2,447 |
| Flat Platform w/ Han | 160.00 | 2,000 | 51,200 | 0.089 | 141 | 2,447 |
| RFS FD9R6004/2C-3L | 158.00 | 16 | 389 | 0.001 | 1 | 19 |
| Alcatel-Lucent RRH2x | 158.00 | 170 | 4,246 | 0.007 | 12 | 208 |
| Alcatel-Lucent B66a | 158.00 | 201 | 5,018 | 0.009 | 14 | 246 |
| RFS DB-T1-6Z-8AB-OZ | 158.00 | 88 | 2,197 | 0.004 | 6 | 108 |
| Antel LPA-80080/4CF | 158.00 | 72 | 1,797 | 0.003 | 5 | 88 |
| Andrew SBNHH-1D65B | 158.00 | 304 | 7,594 | 0.013 | 21 | 372 |
| Ericsson KRY 112 144 | 148.00 | 33 | 723 | 0.001 | 2 | 40 |
| Ericsson KRY 112 489 | 148.00 | 46 | 1,012 | 0.002 | 3 | 57 |
| Ericsson Radio 4449 | 148.00 | 222 | 4,863 | 0.008 | 13 | 272 |
| EMS RR90-17-02DP | 148.00 | 41 | 887 | 0.002 | 2 | 50 |
| RFS APXVAARR24_43-U- | 148.00 | 384 | 8,405 | 0.015 | 23 | 469 |
| Low Profile Platfor | 147.00 | 2,000 | 43,218 | 0.075 | 119 | 2,447 |
| LGP Allgon LGP21903 | 137.00 | 33 | 619 | 0.001 | 2 | 40 |
| Powerwave Allgon LGP | 137.00 | 85 | 1,588 | 0.003 | 4 | 104 |
| Raycap DC6-48-60-18- | 137.00 | 32 | 597 | 0.001 | 2 | 39 |
| Ericsson RRUS 11 (Ba | 137.00 | 165 | 3,097 | 0.005 | 9 | 202 |
| Powerwave Allgon 777 | 137.00 | 210 | 3,941 | 0.007 | 11 | 257 |
| KMW AM-X-CD-16-65-00 | 137.00 | 146 | 2,731 | 0.005 | 8 | 178 |
| Flat Low Profile Pla | 137.00 | 1,500 | 28,154 | 0.049 | 77 | 1,835 |
| Stand-Off | 110.00 | 100 | 1,210 | 0.002 | 3 | 122 |
| Generic GPS | 108.00 | 10 | 117 | 0.000 | 0 | 12 |
| Generic GPS | 97.00 | 10 | 94 | 0.000 | 0 | 12 |
| Generic GPS | 97.00 | 10 | 94 | 0.000 | 0 | 12 |
| Stand-Off | 97.00 | 100 | 941 | 0.002 | 3 | 122 |
| Generic GPS | 88.00 | 10 | 77 | 0.000 | 0 | 12 |
| Stand-Off | 88.00 | 100 | 774 | 0.001 | 2 | 122 |
| PCTEL GPS-TMG-HR-26N | 12.00 | 1 | 0 | 0.000 | 0 | 1 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:52 PM

Customer: T-MOBILE

| | | | | | | |
|-----------|-------|--------|---------|-------|-------|--------|
| Stand-Off | 12.00 | 100 | 14 | 0.000 | 0 | 122 |
| | | 52,984 | 577,802 | 1.000 | 1,590 | 64,824 |

Load Case (0.9 - 0.2Sds) * DL + E ELMF Seismic (Reduced DL) Equivalent Lateral Forces Method

| Segment | Height Above Base (ft) | Weight (lb) | W _z (lb-ft) | C _{vx} | Horizontal Force (lb) | Vertical Force (lb) |
|----------------------|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 51 | 176.50 | 160 | 4,995 | 0.009 | 14 | 141 |
| 50 | 172.50 | 277 | 8,244 | 0.014 | 23 | 243 |
| 49 | 169.00 | 114 | 3,263 | 0.006 | 9 | 100 |
| 48 | 166.50 | 202 | 5,594 | 0.010 | 15 | 177 |
| 47 | 162.50 | 346 | 9,139 | 0.016 | 25 | 303 |
| 46 | 159.00 | 142 | 3,586 | 0.006 | 10 | 124 |
| 45 | 156.50 | 256 | 6,261 | 0.011 | 17 | 224 |
| 44 | 152.50 | 436 | 10,136 | 0.018 | 28 | 382 |
| 43 | 149.00 | 178 | 3,946 | 0.007 | 11 | 156 |
| 42 | 147.50 | 101 | 2,199 | 0.004 | 6 | 89 |
| 41 | 146.00 | 204 | 4,340 | 0.008 | 12 | 178 |
| 40 | 142.50 | 518 | 10,509 | 0.018 | 29 | 454 |
| 39 | 138.50 | 316 | 6,069 | 0.011 | 17 | 277 |
| 38 | 136.50 | 123 | 2,289 | 0.004 | 6 | 108 |
| 37 | 135.50 | 235 | 4,310 | 0.007 | 12 | 206 |
| 36 | 133.50 | 712 | 12,686 | 0.022 | 35 | 624 |
| 35 | 131.00 | 332 | 5,697 | 0.010 | 16 | 291 |
| 34 | 127.50 | 843 | 13,709 | 0.024 | 38 | 739 |
| 33 | 122.50 | 863 | 12,943 | 0.022 | 36 | 756 |
| 32 | 117.50 | 882 | 12,174 | 0.021 | 33 | 773 |
| 31 | 112.50 | 901 | 11,403 | 0.020 | 31 | 790 |
| 30 | 109.00 | 366 | 4,346 | 0.008 | 12 | 321 |
| 29 | 106.50 | 555 | 6,293 | 0.011 | 17 | 486 |
| 28 | 102.50 | 940 | 9,877 | 0.017 | 27 | 824 |
| 27 | 98.50 | 573 | 5,562 | 0.010 | 15 | 503 |
| 26 | 96.00 | 387 | 3,563 | 0.006 | 10 | 339 |
| 25 | 93.50 | 586 | 5,121 | 0.009 | 14 | 513 |
| 24 | 91.00 | 732 | 6,062 | 0.010 | 17 | 642 |
| 23 | 89.00 | 739 | 5,851 | 0.010 | 16 | 647 |
| 22 | 87.50 | 372 | 2,849 | 0.005 | 8 | 326 |
| 21 | 86.00 | 450 | 3,331 | 0.006 | 9 | 395 |
| 20 | 82.50 | 1,142 | 7,772 | 0.013 | 21 | 1,001 |
| 19 | 77.50 | 1,165 | 6,995 | 0.012 | 19 | 1,021 |
| 18 | 72.50 | 1,187 | 6,241 | 0.011 | 17 | 1,041 |
| 17 | 67.50 | 1,210 | 5,513 | 0.010 | 15 | 1,061 |
| 16 | 62.50 | 1,233 | 4,815 | 0.008 | 13 | 1,081 |
| 15 | 57.50 | 1,255 | 4,151 | 0.007 | 11 | 1,100 |
| 14 | 52.50 | 1,278 | 3,523 | 0.006 | 10 | 1,120 |
| 13 | 49.50 | 258 | 633 | 0.001 | 2 | 226 |
| 12 | 47.00 | 2,051 | 4,530 | 0.008 | 12 | 1,798 |
| 11 | 43.88 | 1,168 | 2,248 | 0.004 | 6 | 1,024 |
| 10 | 41.38 | 853 | 1,460 | 0.003 | 4 | 748 |
| 9 | 37.50 | 1,573 | 2,212 | 0.004 | 6 | 1,378 |
| 8 | 32.50 | 1,601 | 1,691 | 0.003 | 5 | 1,403 |
| 7 | 27.50 | 1,629 | 1,232 | 0.002 | 3 | 1,427 |
| 6 | 22.50 | 1,656 | 839 | 0.001 | 2 | 1,452 |
| 5 | 17.50 | 1,684 | 516 | 0.001 | 1 | 1,476 |
| 4 | 13.50 | 1,024 | 187 | 0.000 | 1 | 898 |
| 3 | 11.00 | 689 | 83 | 0.000 | 0 | 604 |
| 2 | 7.50 | 1,741 | 98 | 0.000 | 0 | 1,526 |
| 1 | 2.50 | 1,769 | 11 | 0.000 | 0 | 1,551 |
| Powerwave Allgon 712 | 178.00 | 185 | 5,855 | 0.010 | 16 | 162 |
| Flat Low Profile Pla | 178.00 | 1,500 | 47,526 | 0.082 | 131 | 1,315 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

| | | | | | | |
|----------------------|--------|--------|---------|-------|-------|--------|
| Alcatel-Lucent RRH2x | 168.00 | 317 | 8,958 | 0.016 | 25 | 278 |
| Alcatel-Lucent 1900 | 168.00 | 180 | 5,080 | 0.009 | 14 | 158 |
| Alcatel-Lucent TD-RR | 168.00 | 210 | 5,927 | 0.010 | 16 | 184 |
| RFS APXVTM14-ALU-I20 | 168.00 | 169 | 4,759 | 0.008 | 13 | 148 |
| Commscope NNVV-65B-R | 168.00 | 232 | 6,554 | 0.011 | 18 | 204 |
| Flat Platform w/ Han | 168.00 | 2,000 | 56,448 | 0.098 | 155 | 1,753 |
| Flat Platform w/ Han | 160.00 | 2,000 | 51,200 | 0.089 | 141 | 1,753 |
| RFS FD9R6004/2C-3L | 158.00 | 16 | 389 | 0.001 | 1 | 14 |
| Alcatel-Lucent RRH2x | 158.00 | 170 | 4,246 | 0.007 | 12 | 149 |
| Alcatel-Lucent B66a | 158.00 | 201 | 5,018 | 0.009 | 14 | 176 |
| RFS DB-T1-6Z-8AB-OZ | 158.00 | 88 | 2,197 | 0.004 | 6 | 77 |
| Antel LPA-80080/4CF | 158.00 | 72 | 1,797 | 0.003 | 5 | 63 |
| Andrew SBNHH-1D65B | 158.00 | 304 | 7,594 | 0.013 | 21 | 267 |
| Ericsson KRY 112 144 | 148.00 | 33 | 723 | 0.001 | 2 | 29 |
| Ericsson KRY 112 489 | 148.00 | 46 | 1,012 | 0.002 | 3 | 40 |
| Ericsson Radio 4449 | 148.00 | 222 | 4,863 | 0.008 | 13 | 195 |
| EMS RR90-17-02DP | 148.00 | 41 | 887 | 0.002 | 2 | 35 |
| RFS APXVAARR24_43-U- | 148.00 | 384 | 8,405 | 0.015 | 23 | 336 |
| Low Profile Platfor | 147.00 | 2,000 | 43,218 | 0.075 | 119 | 1,753 |
| LGP Allgon LGP21903 | 137.00 | 33 | 619 | 0.001 | 2 | 29 |
| Powerwave Allgon LGP | 137.00 | 85 | 1,588 | 0.003 | 4 | 74 |
| Raycap DC6-48-60-18- | 137.00 | 32 | 597 | 0.001 | 2 | 28 |
| Ericsson RRUS 11 (Ba | 137.00 | 165 | 3,097 | 0.005 | 9 | 145 |
| Powerwave Allgon 777 | 137.00 | 210 | 3,941 | 0.007 | 11 | 184 |
| KMW AM-X-CD-16-65-00 | 137.00 | 146 | 2,731 | 0.005 | 8 | 128 |
| Flat Low Profile Pla | 137.00 | 1,500 | 28,154 | 0.049 | 77 | 1,315 |
| Stand-Off | 110.00 | 100 | 1,210 | 0.002 | 3 | 88 |
| Generic GPS | 108.00 | 10 | 117 | 0.000 | 0 | 9 |
| Generic GPS | 97.00 | 10 | 94 | 0.000 | 0 | 9 |
| Generic GPS | 97.00 | 10 | 94 | 0.000 | 0 | 9 |
| Stand-Off | 97.00 | 100 | 941 | 0.002 | 3 | 88 |
| Generic GPS | 88.00 | 10 | 77 | 0.000 | 0 | 9 |
| Stand-Off | 88.00 | 100 | 774 | 0.001 | 2 | 88 |
| PCTEL GPS-TMG-HR-26N | 12.00 | 1 | 0 | 0.000 | 0 | 1 |
| Stand-Off | 12.00 | 100 | 14 | 0.000 | 0 | 88 |
| | | 52,984 | 577,802 | 1.000 | 1,590 | 46,442 |

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -62.66 | -1.59 | 0.00 | -233.33 | 0.00 | 233.33 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.041 |
| 5.00 | -60.53 | -1.60 | 0.00 | -225.36 | 0.00 | 225.36 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.00 | -0.01 | 0.041 |
| 10.00 | -59.69 | -1.61 | 0.00 | -217.35 | 0.00 | 217.35 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.02 | -0.02 | 0.041 |
| 12.00 | -58.31 | -1.61 | 0.00 | -214.13 | 0.00 | 214.13 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.03 | -0.02 | 0.040 |
| 15.00 | -56.25 | -1.62 | 0.00 | -209.29 | 0.00 | 209.29 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.04 | -0.03 | 0.040 |
| 20.00 | -54.22 | -1.62 | 0.00 | -201.20 | 0.00 | 201.20 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 0.08 | -0.04 | 0.040 |
| 25.00 | -52.23 | -1.63 | 0.00 | -193.08 | 0.00 | 193.08 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 0.12 | -0.05 | 0.039 |
| 30.00 | -50.27 | -1.63 | 0.00 | -184.94 | 0.00 | 184.94 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 0.18 | -0.06 | 0.039 |
| 35.00 | -48.35 | -1.63 | 0.00 | -176.79 | 0.00 | 176.79 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 0.24 | -0.07 | 0.039 |
| 40.00 | -47.30 | -1.63 | 0.00 | -168.63 | 0.00 | 168.63 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 0.32 | -0.08 | 0.038 |
| 42.75 | -45.87 | -1.63 | 0.00 | -164.14 | 0.00 | 164.14 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 0.37 | -0.08 | 0.038 |
| 45.00 | -43.36 | -1.62 | 0.00 | -160.48 | 0.00 | 160.48 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 0.41 | -0.09 | 0.038 |
| 49.00 | -43.05 | -1.62 | 0.00 | -154.01 | 0.00 | 154.01 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 0.48 | -0.10 | 0.047 |
| 50.00 | -41.48 | -1.61 | 0.00 | -152.39 | 0.00 | 152.39 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 0.50 | -0.10 | 0.046 |
| 55.00 | -39.95 | -1.61 | 0.00 | -144.33 | 0.00 | 144.33 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 0.61 | -0.11 | 0.045 |
| 60.00 | -38.44 | -1.60 | 0.00 | -136.30 | 0.00 | 136.30 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 0.74 | -0.12 | 0.044 |
| 65.00 | -36.96 | -1.59 | 0.00 | -128.30 | 0.00 | 128.30 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 0.88 | -0.14 | 0.044 |
| 70.00 | -35.51 | -1.58 | 0.00 | -120.36 | 0.00 | 120.36 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 1.03 | -0.15 | 0.043 |
| 75.00 | -34.08 | -1.56 | 0.00 | -112.48 | 0.00 | 112.48 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 1.19 | -0.16 | 0.042 |
| 80.00 | -32.68 | -1.54 | 0.00 | -104.68 | 0.00 | 104.68 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 1.37 | -0.18 | 0.040 |
| 85.00 | -32.13 | -1.54 | 0.00 | -96.97 | 0.00 | 96.97 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 1.56 | -0.19 | 0.040 |
| 87.00 | -31.68 | -1.53 | 0.00 | -93.90 | 0.00 | 93.90 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 1.64 | -0.19 | 0.039 |
| 88.00 | -30.64 | -1.51 | 0.00 | -92.37 | 0.00 | 92.37 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 1.68 | -0.20 | 0.039 |
| 90.00 | -29.74 | -1.49 | 0.00 | -89.35 | 0.00 | 89.35 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 1.76 | -0.20 | 0.038 |
| 92.00 | -29.03 | -1.48 | 0.00 | -86.37 | 0.00 | 86.37 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 1.85 | -0.21 | 0.045 |
| 95.00 | -28.55 | -1.47 | 0.00 | -81.93 | 0.00 | 81.93 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 1.98 | -0.22 | 0.044 |
| 97.00 | -27.70 | -1.45 | 0.00 | -78.99 | 0.00 | 78.99 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 2.07 | -0.22 | 0.043 |
| 100.00 | -26.55 | -1.43 | 0.00 | -74.63 | 0.00 | 74.63 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 2.21 | -0.23 | 0.042 |
| 105.00 | -25.88 | -1.41 | 0.00 | -67.50 | 0.00 | 67.50 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 2.46 | -0.24 | 0.040 |
| 108.00 | -25.42 | -1.40 | 0.00 | -63.27 | 0.00 | 63.27 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 2.62 | -0.25 | 0.039 |
| 110.00 | -24.19 | -1.36 | 0.00 | -60.46 | 0.00 | 60.46 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 2.73 | -0.26 | 0.038 |
| 115.00 | -23.11 | -1.33 | 0.00 | -53.64 | 0.00 | 53.64 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 3.00 | -0.27 | 0.036 |
| 120.00 | -22.06 | -1.30 | 0.00 | -46.99 | 0.00 | 46.99 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 3.29 | -0.28 | 0.034 |
| 125.00 | -21.02 | -1.26 | 0.00 | -40.51 | 0.00 | 40.51 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 3.60 | -0.30 | 0.032 |
| 130.00 | -20.62 | -1.24 | 0.00 | -34.23 | 0.00 | 34.23 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 3.92 | -0.31 | 0.029 |
| 132.00 | -19.75 | -1.20 | 0.00 | -31.75 | 0.00 | 31.75 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 4.05 | -0.31 | 0.028 |
| 135.00 | -19.46 | -1.19 | 0.00 | -28.14 | 0.00 | 28.14 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 4.24 | -0.32 | 0.027 |
| 136.00 | -19.31 | -1.19 | 0.00 | -26.94 | 0.00 | 26.94 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 4.31 | -0.32 | 0.044 |
| 137.00 | -16.27 | -1.04 | 0.00 | -25.76 | 0.00 | 25.76 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 4.38 | -0.32 | 0.041 |
| 140.00 | -15.64 | -1.01 | 0.00 | -22.63 | 0.00 | 22.63 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 4.59 | -0.33 | 0.038 |
| 145.00 | -15.39 | -1.00 | 0.00 | -17.58 | 0.00 | 17.58 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 4.94 | -0.34 | 0.033 |
| 147.00 | -12.82 | -0.86 | 0.00 | -15.58 | 0.00 | 15.58 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 5.08 | -0.35 | 0.029 |
| 148.00 | -11.71 | -0.80 | 0.00 | -14.71 | 0.00 | 14.71 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 5.16 | -0.35 | 0.028 |
| 150.00 | -11.18 | -0.77 | 0.00 | -13.11 | 0.00 | 13.11 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 5.31 | -0.36 | 0.026 |
| 155.00 | -10.87 | -0.75 | 0.00 | -9.26 | 0.00 | 9.26 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 5.68 | -0.36 | 0.021 |
| 158.00 | -9.65 | -0.68 | 0.00 | -7.01 | 0.00 | 7.01 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 5.91 | -0.37 | 0.018 |
| 160.00 | -6.78 | -0.49 | 0.00 | -5.65 | 0.00 | 5.65 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 6.07 | -0.37 | 0.014 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

| | | | | | | | | | | | | | |
|--------|-------|-------|------|-------|------|------|----------|--------|----------|--------|------|-------|-------|
| 165.00 | -6.54 | -0.48 | 0.00 | -3.19 | 0.00 | 3.19 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 6.46 | -0.37 | 0.011 |
| 168.00 | -2.60 | -0.20 | 0.00 | -1.76 | 0.00 | 1.76 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 6.69 | -0.38 | 0.005 |
| 170.00 | -2.26 | -0.18 | 0.00 | -1.36 | 0.00 | 1.36 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 6.85 | -0.38 | 0.004 |
| 175.00 | -2.06 | -0.16 | 0.00 | -0.48 | 0.00 | 0.48 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 7.25 | -0.38 | 0.003 |
| 178.00 | 0.00 | -0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 7.48 | -0.38 | 0.000 |

Load Case (0.9 - 0.2Sds) * DL + E ELMF

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -44.89 | -1.59 | 0.00 | -229.35 | 0.00 | 229.35 | 6,434.86 | 3,217.43 | 14,900.4 | 7,461.32 | 0.00 | 0.00 | 0.038 |
| 5.00 | -43.37 | -1.60 | 0.00 | -221.39 | 0.00 | 221.39 | 6,350.74 | 3,175.37 | 14,433.5 | 7,227.48 | 0.00 | -0.01 | 0.037 |
| 10.00 | -42.76 | -1.60 | 0.00 | -213.39 | 0.00 | 213.39 | 6,265.35 | 3,132.68 | 13,970.9 | 6,995.84 | 0.02 | -0.02 | 0.037 |
| 12.00 | -41.78 | -1.61 | 0.00 | -210.19 | 0.00 | 210.19 | 6,230.84 | 3,115.42 | 13,787.1 | 6,903.82 | 0.03 | -0.02 | 0.037 |
| 15.00 | -40.30 | -1.61 | 0.00 | -205.37 | 0.00 | 205.37 | 6,178.70 | 3,089.35 | 13,512.8 | 6,766.48 | 0.04 | -0.03 | 0.037 |
| 20.00 | -38.85 | -1.61 | 0.00 | -197.33 | 0.00 | 197.33 | 6,090.77 | 3,045.39 | 13,059.5 | 6,539.47 | 0.08 | -0.04 | 0.037 |
| 25.00 | -37.42 | -1.61 | 0.00 | -189.27 | 0.00 | 189.27 | 6,001.58 | 3,000.79 | 12,611.0 | 6,314.89 | 0.12 | -0.05 | 0.036 |
| 30.00 | -36.02 | -1.61 | 0.00 | -181.20 | 0.00 | 181.20 | 5,911.12 | 2,955.56 | 12,167.6 | 6,092.85 | 0.17 | -0.06 | 0.036 |
| 35.00 | -34.64 | -1.61 | 0.00 | -173.12 | 0.00 | 173.12 | 5,796.61 | 2,898.31 | 11,683.4 | 5,850.41 | 0.24 | -0.07 | 0.036 |
| 40.00 | -33.89 | -1.61 | 0.00 | -165.06 | 0.00 | 165.06 | 5,674.58 | 2,837.29 | 11,194.2 | 5,605.46 | 0.31 | -0.08 | 0.035 |
| 42.75 | -32.87 | -1.61 | 0.00 | -160.62 | 0.00 | 160.62 | 5,607.46 | 2,803.73 | 10,929.6 | 5,472.97 | 0.36 | -0.08 | 0.035 |
| 45.00 | -31.07 | -1.60 | 0.00 | -157.01 | 0.00 | 157.01 | 5,552.55 | 2,776.27 | 10,715.5 | 5,365.75 | 0.40 | -0.09 | 0.035 |
| 49.00 | -30.84 | -1.60 | 0.00 | -150.62 | 0.00 | 150.62 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 0.47 | -0.09 | 0.043 |
| 50.00 | -29.72 | -1.59 | 0.00 | -149.02 | 0.00 | 149.02 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 0.49 | -0.10 | 0.043 |
| 55.00 | -28.62 | -1.58 | 0.00 | -141.08 | 0.00 | 141.08 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 0.60 | -0.11 | 0.042 |
| 60.00 | -27.54 | -1.57 | 0.00 | -133.17 | 0.00 | 133.17 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 0.72 | -0.12 | 0.041 |
| 65.00 | -26.48 | -1.56 | 0.00 | -125.30 | 0.00 | 125.30 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 0.86 | -0.13 | 0.040 |
| 70.00 | -25.44 | -1.55 | 0.00 | -117.50 | 0.00 | 117.50 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 1.01 | -0.15 | 0.039 |
| 75.00 | -24.42 | -1.53 | 0.00 | -109.77 | 0.00 | 109.77 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 1.17 | -0.16 | 0.038 |
| 80.00 | -23.41 | -1.51 | 0.00 | -102.12 | 0.00 | 102.12 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 1.34 | -0.17 | 0.037 |
| 85.00 | -23.02 | -1.50 | 0.00 | -94.56 | 0.00 | 94.56 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 1.53 | -0.18 | 0.037 |
| 87.00 | -22.69 | -1.50 | 0.00 | -91.55 | 0.00 | 91.55 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 1.61 | -0.19 | 0.036 |
| 88.00 | -21.95 | -1.48 | 0.00 | -90.05 | 0.00 | 90.05 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 1.65 | -0.19 | 0.036 |
| 90.00 | -21.31 | -1.46 | 0.00 | -87.10 | 0.00 | 87.10 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 1.73 | -0.20 | 0.035 |
| 92.00 | -20.79 | -1.45 | 0.00 | -84.18 | 0.00 | 84.18 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 1.81 | -0.20 | 0.041 |
| 95.00 | -20.46 | -1.44 | 0.00 | -79.84 | 0.00 | 79.84 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 1.94 | -0.21 | 0.040 |
| 97.00 | -19.85 | -1.42 | 0.00 | -76.96 | 0.00 | 76.96 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 2.03 | -0.22 | 0.040 |
| 100.00 | -19.02 | -1.39 | 0.00 | -72.70 | 0.00 | 72.70 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 2.17 | -0.22 | 0.038 |
| 105.00 | -18.54 | -1.38 | 0.00 | -65.73 | 0.00 | 65.73 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 2.41 | -0.24 | 0.037 |
| 108.00 | -18.21 | -1.37 | 0.00 | -61.60 | 0.00 | 61.60 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 2.56 | -0.25 | 0.036 |
| 110.00 | -17.33 | -1.33 | 0.00 | -58.87 | 0.00 | 58.87 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 2.67 | -0.25 | 0.035 |
| 115.00 | -16.56 | -1.30 | 0.00 | -52.21 | 0.00 | 52.21 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 2.94 | -0.27 | 0.033 |
| 120.00 | -15.80 | -1.26 | 0.00 | -45.73 | 0.00 | 45.73 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 3.22 | -0.28 | 0.031 |
| 125.00 | -15.06 | -1.22 | 0.00 | -39.42 | 0.00 | 39.42 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 3.52 | -0.29 | 0.029 |
| 130.00 | -14.77 | -1.21 | 0.00 | -33.30 | 0.00 | 33.30 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 3.83 | -0.30 | 0.026 |
| 132.00 | -14.15 | -1.17 | 0.00 | -30.88 | 0.00 | 30.88 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 3.96 | -0.31 | 0.025 |
| 135.00 | -13.94 | -1.16 | 0.00 | -27.37 | 0.00 | 27.37 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 4.15 | -0.31 | 0.024 |
| 136.00 | -13.83 | -1.15 | 0.00 | -26.21 | 0.00 | 26.21 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 4.22 | -0.31 | 0.039 |
| 137.00 | -11.65 | -1.01 | 0.00 | -25.06 | 0.00 | 25.06 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 4.28 | -0.32 | 0.037 |
| 140.00 | -11.20 | -0.98 | 0.00 | -22.02 | 0.00 | 22.02 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 4.48 | -0.32 | 0.034 |
| 145.00 | -11.02 | -0.97 | 0.00 | -17.10 | 0.00 | 17.10 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 4.83 | -0.34 | 0.029 |
| 147.00 | -9.18 | -0.84 | 0.00 | -15.15 | 0.00 | 15.15 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 4.97 | -0.34 | 0.026 |
| 148.00 | -8.39 | -0.78 | 0.00 | -14.32 | 0.00 | 14.32 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 5.04 | -0.34 | 0.025 |
| 150.00 | -8.01 | -0.75 | 0.00 | -12.76 | 0.00 | 12.76 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 5.19 | -0.35 | 0.023 |
| 155.00 | -7.78 | -0.73 | 0.00 | -9.01 | 0.00 | 9.01 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 5.56 | -0.35 | 0.019 |
| 158.00 | -6.91 | -0.66 | 0.00 | -6.82 | 0.00 | 6.82 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 5.78 | -0.36 | 0.015 |
| 160.00 | -4.86 | -0.48 | 0.00 | -5.50 | 0.00 | 5.50 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 5.93 | -0.36 | 0.012 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

| | | | | | | | | | | | | | |
|--------|-------|-------|------|-------|------|------|----------|--------|----------|--------|------|-------|-------|
| 165.00 | -4.68 | -0.46 | 0.00 | -3.10 | 0.00 | 3.10 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 6.31 | -0.37 | 0.009 |
| 168.00 | -1.86 | -0.20 | 0.00 | -1.71 | 0.00 | 1.71 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 6.54 | -0.37 | 0.004 |
| 170.00 | -1.62 | -0.17 | 0.00 | -1.32 | 0.00 | 1.32 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 6.70 | -0.37 | 0.004 |
| 175.00 | -1.48 | -0.16 | 0.00 | -0.47 | 0.00 | 0.47 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 7.08 | -0.37 | 0.002 |
| 178.00 | 0.00 | -0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 7.31 | -0.37 | 0.000 |

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

| | |
|--|------|
| Spectral Response Acceleration for Short Period (S_s): | 0.18 |
| Spectral Response Acceleration at 1.0 Second Period (S_1): | 0.06 |
| Importance Factor (I_E): | 1.00 |
| Site Coefficient F_a : | 1.00 |
| Site Coefficient F_v : | 1.00 |
| Response Modification Coefficient (R): | 1.50 |
| Design Spectral Response Acceleration at Short Period (S_{ds}): | 0.12 |
| Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}): | 0.04 |
| Period Based on Rayleigh Method (sec): | 2.85 |
| Redundancy Factor (ρ): | 1.00 |

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

| Segment | Height Above Base (ft) | Weight (lb) | a | b | c | Saz | Horizontal Force (lb) | Vertical Force (lb) |
|---------|---------------------------------|----------------|-------|--------|-------|--------|-----------------------------|---------------------------|
| 51 | 176.50 | 160 | 1.858 | 1.817 | 1.081 | 0.207 | 22 | 196 |
| 50 | 172.50 | 277 | 1.775 | 1.427 | 0.935 | 0.175 | 32 | 339 |
| 49 | 169.00 | 114 | 1.704 | 1.136 | 0.820 | 0.149 | 11 | 140 |
| 48 | 166.50 | 202 | 1.654 | 0.954 | 0.745 | 0.132 | 18 | 247 |
| 47 | 162.50 | 346 | 1.575 | 0.704 | 0.637 | 0.106 | 24 | 423 |
| 46 | 159.00 | 142 | 1.508 | 0.521 | 0.552 | 0.085 | 8 | 174 |
| 45 | 156.50 | 256 | 1.461 | 0.410 | 0.498 | 0.071 | 12 | 313 |
| 44 | 152.50 | 436 | 1.387 | 0.260 | 0.419 | 0.050 | 15 | 533 |
| 43 | 149.00 | 178 | 1.324 | 0.156 | 0.358 | 0.034 | 4 | 217 |
| 42 | 147.50 | 101 | 1.298 | 0.117 | 0.334 | 0.027 | 2 | 124 |
| 41 | 146.00 | 204 | 1.272 | 0.083 | 0.312 | 0.021 | 3 | 249 |
| 40 | 142.50 | 518 | 1.211 | 0.016 | 0.263 | 0.008 | 3 | 633 |
| 39 | 138.50 | 316 | 1.144 | -0.042 | 0.215 | -0.006 | -1 | 387 |
| 38 | 136.50 | 123 | 1.111 | -0.063 | 0.194 | -0.012 | -1 | 150 |
| 37 | 135.50 | 235 | 1.095 | -0.073 | 0.184 | -0.015 | -2 | 287 |
| 36 | 133.50 | 712 | 1.063 | -0.088 | 0.165 | -0.020 | -9 | 871 |
| 35 | 131.00 | 332 | 1.024 | -0.103 | 0.143 | -0.026 | -6 | 406 |
| 34 | 127.50 | 843 | 0.970 | -0.116 | 0.117 | -0.033 | -18 | 1,032 |
| 33 | 122.50 | 863 | 0.895 | -0.122 | 0.085 | -0.040 | -23 | 1,055 |
| 32 | 117.50 | 882 | 0.824 | -0.116 | 0.061 | -0.044 | -26 | 1,079 |
| 31 | 112.50 | 901 | 0.755 | -0.102 | 0.042 | -0.044 | -26 | 1,102 |
| 30 | 109.00 | 366 | 0.709 | -0.090 | 0.032 | -0.042 | -10 | 448 |
| 29 | 106.50 | 555 | 0.677 | -0.080 | 0.026 | -0.040 | -15 | 679 |
| 28 | 102.50 | 940 | 0.627 | -0.063 | 0.018 | -0.034 | -21 | 1,150 |
| 27 | 98.50 | 573 | 0.579 | -0.045 | 0.012 | -0.025 | -10 | 701 |
| 26 | 96.00 | 387 | 0.550 | -0.034 | 0.010 | -0.019 | -5 | 473 |
| 25 | 93.50 | 586 | 0.521 | -0.024 | 0.008 | -0.012 | -5 | 717 |
| 24 | 91.00 | 732 | 0.494 | -0.014 | 0.007 | -0.005 | -2 | 896 |
| 23 | 89.00 | 739 | 0.472 | -0.006 | 0.006 | 0.001 | 0 | 904 |
| 22 | 87.50 | 372 | 0.457 | -0.001 | 0.006 | 0.005 | 1 | 455 |
| 21 | 86.00 | 450 | 0.441 | 0.005 | 0.006 | 0.009 | 3 | 551 |
| 20 | 82.50 | 1,142 | 0.406 | 0.016 | 0.006 | 0.018 | 14 | 1,397 |
| 19 | 77.50 | 1,165 | 0.358 | 0.031 | 0.008 | 0.027 | 21 | 1,425 |
| 18 | 72.50 | 1,187 | 0.314 | 0.042 | 0.011 | 0.034 | 27 | 1,453 |

| | | | | | | | | |
|----------------------|--------|--------|--------|--------|--------|--------|-------|--------|
| 17 | 67.50 | 1,210 | 0.272 | 0.051 | 0.015 | 0.037 | 30 | 1,480 |
| 16 | 62.50 | 1,233 | 0.233 | 0.058 | 0.019 | 0.039 | 32 | 1,508 |
| 15 | 57.50 | 1,255 | 0.197 | 0.063 | 0.024 | 0.039 | 33 | 1,536 |
| 14 | 52.50 | 1,278 | 0.164 | 0.067 | 0.028 | 0.039 | 33 | 1,564 |
| 13 | 49.50 | 258 | 0.146 | 0.068 | 0.031 | 0.038 | 7 | 316 |
| 12 | 47.00 | 2,051 | 0.132 | 0.069 | 0.033 | 0.038 | 52 | 2,509 |
| 11 | 43.88 | 1,168 | 0.115 | 0.070 | 0.035 | 0.037 | 29 | 1,429 |
| 10 | 41.38 | 853 | 0.102 | 0.071 | 0.037 | 0.037 | 21 | 1,044 |
| 9 | 37.50 | 1,573 | 0.084 | 0.071 | 0.039 | 0.036 | 38 | 1,924 |
| 8 | 32.50 | 1,601 | 0.063 | 0.072 | 0.041 | 0.036 | 38 | 1,958 |
| 7 | 27.50 | 1,629 | 0.045 | 0.071 | 0.042 | 0.035 | 38 | 1,992 |
| 6 | 22.50 | 1,656 | 0.030 | 0.068 | 0.041 | 0.034 | 37 | 2,027 |
| 5 | 17.50 | 1,684 | 0.018 | 0.063 | 0.037 | 0.032 | 36 | 2,061 |
| 4 | 13.50 | 1,024 | 0.011 | 0.056 | 0.033 | 0.030 | 21 | 1,253 |
| 3 | 11.00 | 689 | 0.007 | 0.050 | 0.029 | 0.028 | 13 | 842 |
| 2 | 7.50 | 1,741 | 0.003 | 0.039 | 0.022 | 0.024 | 27 | 2,130 |
| 1 | 2.50 | 1,769 | 0.000 | 0.016 | 0.008 | 0.012 | 14 | 2,164 |
| Powerwave Allgon 712 | 178.00 | 185 | 1.890 | 1.980 | 1.140 | 0.219 | 27 | 226 |
| Flat Low Profile Pla | 178.00 | 1,500 | 1.890 | 1.980 | 1.140 | 0.219 | 219 | 1,835 |
| Alcatel-Lucent RRH2x | 168.00 | 317 | 1.684 | 1.061 | 0.790 | 0.142 | 30 | 388 |
| Alcatel-Lucent 1900 | 168.00 | 180 | 1.684 | 1.061 | 0.790 | 0.142 | 17 | 220 |
| Alcatel-Lucent TD-RR | 168.00 | 210 | 1.684 | 1.061 | 0.790 | 0.142 | 20 | 257 |
| RFS APXVTM14-ALU-I20 | 168.00 | 169 | 1.684 | 1.061 | 0.790 | 0.142 | 16 | 206 |
| Commscope NNVV- | 168.00 | 232 | 1.684 | 1.061 | 0.790 | 0.142 | 22 | 284 |
| Flat Platform w/ Han | 168.00 | 2,000 | 1.684 | 1.061 | 0.790 | 0.142 | 190 | 2,447 |
| Flat Platform w/ Han | 160.00 | 2,000 | 1.527 | 0.570 | 0.576 | 0.091 | 121 | 2,447 |
| RFS FD9R6004/2C-3L | 158.00 | 16 | 1.489 | 0.475 | 0.530 | 0.079 | 1 | 19 |
| Alcatel-Lucent RRH2x | 158.00 | 170 | 1.489 | 0.475 | 0.530 | 0.079 | 9 | 208 |
| Alcatel-Lucent B66a | 158.00 | 201 | 1.489 | 0.475 | 0.530 | 0.079 | 11 | 246 |
| RFS DB-T1-6Z-8AB-OZ | 158.00 | 88 | 1.489 | 0.475 | 0.530 | 0.079 | 5 | 108 |
| Antel LPA-80080/4CF | 158.00 | 72 | 1.489 | 0.475 | 0.530 | 0.079 | 4 | 88 |
| Andrew SBNHH-1D65B | 158.00 | 304 | 1.489 | 0.475 | 0.530 | 0.079 | 16 | 372 |
| Ericsson KRY 112 144 | 148.00 | 33 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 40 |
| Ericsson KRY 112 489 | 148.00 | 46 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 57 |
| Ericsson Radio 4449 | 148.00 | 222 | 1.307 | 0.130 | 0.342 | 0.029 | 4 | 272 |
| EMS RR90-17-02DP | 148.00 | 41 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 50 |
| RFS APXVAARR24_43-U- | 148.00 | 384 | 1.307 | 0.130 | 0.342 | 0.029 | 8 | 469 |
| Low Profile Platfor | 147.00 | 2,000 | 1.289 | 0.106 | 0.326 | 0.025 | 34 | 2,447 |
| LGP Allgon LGP21903 | 137.00 | 33 | 1.120 | -0.058 | 0.199 | -0.010 | 0 | 40 |
| Powerwave Allgon LGP | 137.00 | 85 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 104 |
| Raycap DC6-48-60-18- | 137.00 | 32 | 1.120 | -0.058 | 0.199 | -0.010 | 0 | 39 |
| Ericsson RRUS 11 (Ba | 137.00 | 165 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 202 |
| Powerwave Allgon 777 | 137.00 | 210 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 257 |
| KMW AM-X-CD-16-65-00 | 137.00 | 146 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 178 |
| Flat Low Profile Pla | 137.00 | 1,500 | 1.120 | -0.058 | 0.199 | -0.010 | -10 | 1,835 |
| Stand-Off | 110.00 | 100 | 0.722 | -0.093 | 0.034 | -0.043 | -3 | 122 |
| Generic GPS | 108.00 | 10 | 0.696 | -0.086 | 0.029 | -0.041 | 0 | 12 |
| Generic GPS | 97.00 | 10 | 0.561 | -0.039 | 0.011 | -0.022 | 0 | 12 |
| Generic GPS | 97.00 | 10 | 0.561 | -0.039 | 0.011 | -0.022 | 0 | 12 |
| Stand-Off | 97.00 | 100 | 0.561 | -0.039 | 0.011 | -0.022 | -1 | 122 |
| Generic GPS | 88.00 | 10 | 0.462 | -0.003 | 0.006 | 0.004 | 0 | 12 |
| Stand-Off | 88.00 | 100 | 0.462 | -0.003 | 0.006 | 0.004 | 0 | 122 |
| PCTEL GPS-TMG-HR- | 12.00 | 1 | 0.009 | 0.053 | 0.030 | 0.029 | 0 | 1 |
| Stand-Off | 12.00 | 100 | 0.009 | 0.053 | 0.030 | 0.029 | 2 | 122 |
| | | 52,984 | 79.181 | 21.434 | 23.200 | 3.191 | 1,276 | 64,824 |

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

| Segment | Height Above Base (ft) | Weight (lb) | a | b | c | Saz | Horizontal Force (lb) | Vertical Force (lb) |
|----------------------|------------------------|-------------|-------|--------|-------|--------|-----------------------|---------------------|
| 51 | 176.50 | 160 | 1.858 | 1.817 | 1.081 | 0.207 | 22 | 141 |
| 50 | 172.50 | 277 | 1.775 | 1.427 | 0.935 | 0.175 | 32 | 243 |
| 49 | 169.00 | 114 | 1.704 | 1.136 | 0.820 | 0.149 | 11 | 100 |
| 48 | 166.50 | 202 | 1.654 | 0.954 | 0.745 | 0.132 | 18 | 177 |
| 47 | 162.50 | 346 | 1.575 | 0.704 | 0.637 | 0.106 | 24 | 303 |
| 46 | 159.00 | 142 | 1.508 | 0.521 | 0.552 | 0.085 | 8 | 124 |
| 45 | 156.50 | 256 | 1.461 | 0.410 | 0.498 | 0.071 | 12 | 224 |
| 44 | 152.50 | 436 | 1.387 | 0.260 | 0.419 | 0.050 | 15 | 382 |
| 43 | 149.00 | 178 | 1.324 | 0.156 | 0.358 | 0.034 | 4 | 156 |
| 42 | 147.50 | 101 | 1.298 | 0.117 | 0.334 | 0.027 | 2 | 89 |
| 41 | 146.00 | 204 | 1.272 | 0.083 | 0.312 | 0.021 | 3 | 178 |
| 40 | 142.50 | 518 | 1.211 | 0.016 | 0.263 | 0.008 | 3 | 454 |
| 39 | 138.50 | 316 | 1.144 | -0.042 | 0.215 | -0.006 | -1 | 277 |
| 38 | 136.50 | 123 | 1.111 | -0.063 | 0.194 | -0.012 | -1 | 108 |
| 37 | 135.50 | 235 | 1.095 | -0.073 | 0.184 | -0.015 | -2 | 206 |
| 36 | 133.50 | 712 | 1.063 | -0.088 | 0.165 | -0.020 | -9 | 624 |
| 35 | 131.00 | 332 | 1.024 | -0.103 | 0.143 | -0.026 | -6 | 291 |
| 34 | 127.50 | 843 | 0.970 | -0.116 | 0.117 | -0.033 | -18 | 739 |
| 33 | 122.50 | 863 | 0.895 | -0.122 | 0.085 | -0.040 | -23 | 756 |
| 32 | 117.50 | 882 | 0.824 | -0.116 | 0.061 | -0.044 | -26 | 773 |
| 31 | 112.50 | 901 | 0.755 | -0.102 | 0.042 | -0.044 | -26 | 790 |
| 30 | 109.00 | 366 | 0.709 | -0.090 | 0.032 | -0.042 | -10 | 321 |
| 29 | 106.50 | 555 | 0.677 | -0.080 | 0.026 | -0.040 | -15 | 486 |
| 28 | 102.50 | 940 | 0.627 | -0.063 | 0.018 | -0.034 | -21 | 824 |
| 27 | 98.50 | 573 | 0.579 | -0.045 | 0.012 | -0.025 | -10 | 503 |
| 26 | 96.00 | 387 | 0.550 | -0.034 | 0.010 | -0.019 | -5 | 339 |
| 25 | 93.50 | 586 | 0.521 | -0.024 | 0.008 | -0.012 | -5 | 513 |
| 24 | 91.00 | 732 | 0.494 | -0.014 | 0.007 | -0.005 | -2 | 642 |
| 23 | 89.00 | 739 | 0.472 | -0.006 | 0.006 | 0.001 | 0 | 647 |
| 22 | 87.50 | 372 | 0.457 | -0.001 | 0.006 | 0.005 | 1 | 326 |
| 21 | 86.00 | 450 | 0.441 | 0.005 | 0.006 | 0.009 | 3 | 395 |
| 20 | 82.50 | 1,142 | 0.406 | 0.016 | 0.006 | 0.018 | 14 | 1,001 |
| 19 | 77.50 | 1,165 | 0.358 | 0.031 | 0.008 | 0.027 | 21 | 1,021 |
| 18 | 72.50 | 1,187 | 0.314 | 0.042 | 0.011 | 0.034 | 27 | 1,041 |
| 17 | 67.50 | 1,210 | 0.272 | 0.051 | 0.015 | 0.037 | 30 | 1,061 |
| 16 | 62.50 | 1,233 | 0.233 | 0.058 | 0.019 | 0.039 | 32 | 1,081 |
| 15 | 57.50 | 1,255 | 0.197 | 0.063 | 0.024 | 0.039 | 33 | 1,100 |
| 14 | 52.50 | 1,278 | 0.164 | 0.067 | 0.028 | 0.039 | 33 | 1,120 |
| 13 | 49.50 | 258 | 0.146 | 0.068 | 0.031 | 0.038 | 7 | 226 |
| 12 | 47.00 | 2,051 | 0.132 | 0.069 | 0.033 | 0.038 | 52 | 1,798 |
| 11 | 43.88 | 1,168 | 0.115 | 0.070 | 0.035 | 0.037 | 29 | 1,024 |
| 10 | 41.38 | 853 | 0.102 | 0.071 | 0.037 | 0.037 | 21 | 748 |
| 9 | 37.50 | 1,573 | 0.084 | 0.071 | 0.039 | 0.036 | 38 | 1,378 |
| 8 | 32.50 | 1,601 | 0.063 | 0.072 | 0.041 | 0.036 | 38 | 1,403 |
| 7 | 27.50 | 1,629 | 0.045 | 0.071 | 0.042 | 0.035 | 38 | 1,427 |
| 6 | 22.50 | 1,656 | 0.030 | 0.068 | 0.041 | 0.034 | 37 | 1,452 |
| 5 | 17.50 | 1,684 | 0.018 | 0.063 | 0.037 | 0.032 | 36 | 1,476 |
| 4 | 13.50 | 1,024 | 0.011 | 0.056 | 0.033 | 0.030 | 21 | 898 |
| 3 | 11.00 | 689 | 0.007 | 0.050 | 0.029 | 0.028 | 13 | 604 |
| 2 | 7.50 | 1,741 | 0.003 | 0.039 | 0.022 | 0.024 | 27 | 1,526 |
| 1 | 2.50 | 1,769 | 0.000 | 0.016 | 0.008 | 0.012 | 14 | 1,551 |
| Powerwave Allgon 712 | 178.00 | 185 | 1.890 | 1.980 | 1.140 | 0.219 | 27 | 162 |
| Flat Low Profile Pla | 178.00 | 1,500 | 1.890 | 1.980 | 1.140 | 0.219 | 219 | 1,315 |
| Alcatel-Lucent RRH2x | 168.00 | 317 | 1.684 | 1.061 | 0.790 | 0.142 | 30 | 278 |
| Alcatel-Lucent 1900 | 168.00 | 180 | 1.684 | 1.061 | 0.790 | 0.142 | 17 | 158 |
| Alcatel-Lucent TD-RR | 168.00 | 210 | 1.684 | 1.061 | 0.790 | 0.142 | 20 | 184 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

| | | | | | | | | |
|----------------------|--------|--------|--------|--------|--------|--------|-------|--------|
| RFS APXVTM14-ALU-I20 | 168.00 | 169 | 1.684 | 1.061 | 0.790 | 0.142 | 16 | 148 |
| Commscope NNVV- | 168.00 | 232 | 1.684 | 1.061 | 0.790 | 0.142 | 22 | 204 |
| Flat Platform w/ Han | 168.00 | 2,000 | 1.684 | 1.061 | 0.790 | 0.142 | 190 | 1,753 |
| Flat Platform w/ Han | 160.00 | 2,000 | 1.527 | 0.570 | 0.576 | 0.091 | 121 | 1,753 |
| RFS FD9R6004/2C-3L | 158.00 | 16 | 1.489 | 0.475 | 0.530 | 0.079 | 1 | 14 |
| Alcatel-Lucent RRH2x | 158.00 | 170 | 1.489 | 0.475 | 0.530 | 0.079 | 9 | 149 |
| Alcatel-Lucent B66a | 158.00 | 201 | 1.489 | 0.475 | 0.530 | 0.079 | 11 | 176 |
| RFS DB-T1-6Z-8AB-OZ | 158.00 | 88 | 1.489 | 0.475 | 0.530 | 0.079 | 5 | 77 |
| Antel LPA-80080/4CF | 158.00 | 72 | 1.489 | 0.475 | 0.530 | 0.079 | 4 | 63 |
| Andrew SBNHH-1D65B | 158.00 | 304 | 1.489 | 0.475 | 0.530 | 0.079 | 16 | 267 |
| Ericsson KRY 112 144 | 148.00 | 33 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 29 |
| Ericsson KRY 112 489 | 148.00 | 46 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 40 |
| Ericsson Radio 4449 | 148.00 | 222 | 1.307 | 0.130 | 0.342 | 0.029 | 4 | 195 |
| EMS RR90-17-02DP | 148.00 | 41 | 1.307 | 0.130 | 0.342 | 0.029 | 1 | 35 |
| RFS APXVAARR24_43-U- | 148.00 | 384 | 1.307 | 0.130 | 0.342 | 0.029 | 8 | 336 |
| Low Profile Platfor | 147.00 | 2,000 | 1.289 | 0.106 | 0.326 | 0.025 | 34 | 1,753 |
| LGP Allgon LGP21903 | 137.00 | 33 | 1.120 | -0.058 | 0.199 | -0.010 | 0 | 29 |
| Powerwave Allgon LGP | 137.00 | 85 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 74 |
| Raycap DC6-48-60-18- | 137.00 | 32 | 1.120 | -0.058 | 0.199 | -0.010 | 0 | 28 |
| Ericsson RRUS 11 (Ba | 137.00 | 165 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 145 |
| Powerwave Allgon 777 | 137.00 | 210 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 184 |
| KMW AM-X-CD-16-65-00 | 137.00 | 146 | 1.120 | -0.058 | 0.199 | -0.010 | -1 | 128 |
| Flat Low Profile Pla | 137.00 | 1,500 | 1.120 | -0.058 | 0.199 | -0.010 | -10 | 1,315 |
| Stand-Off | 110.00 | 100 | 0.722 | -0.093 | 0.034 | -0.043 | -3 | 88 |
| Generic GPS | 108.00 | 10 | 0.696 | -0.086 | 0.029 | -0.041 | 0 | 9 |
| Generic GPS | 97.00 | 10 | 0.561 | -0.039 | 0.011 | -0.022 | 0 | 9 |
| Generic GPS | 97.00 | 10 | 0.561 | -0.039 | 0.011 | -0.022 | 0 | 9 |
| Stand-Off | 97.00 | 100 | 0.561 | -0.039 | 0.011 | -0.022 | -1 | 88 |
| Generic GPS | 88.00 | 10 | 0.462 | -0.003 | 0.006 | 0.004 | 0 | 9 |
| Stand-Off | 88.00 | 100 | 0.462 | -0.003 | 0.006 | 0.004 | 0 | 88 |
| PCTEL GPS-TMG-HR- | 12.00 | 1 | 0.009 | 0.053 | 0.030 | 0.029 | 0 | 1 |
| Stand-Off | 12.00 | 100 | 0.009 | 0.053 | 0.030 | 0.029 | 2 | 88 |
| | | 52,984 | 79.181 | 21.434 | 23.200 | 3.191 | 1,276 | 46,442 |

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -62.66 | -1.26 | 0.00 | -160.95 | 0.00 | 160.95 | 6,434.86 | 3,217.43 | 14,900.49 | 7,461.32 | 0.00 | 0.00 | 0.031 |
| 5.00 | -60.53 | -1.24 | 0.00 | -154.63 | 0.00 | 154.63 | 6,350.74 | 3,175.37 | 14,433.52 | 7,227.48 | 0.00 | -0.01 | 0.031 |
| 10.00 | -59.69 | -1.23 | 0.00 | -148.41 | 0.00 | 148.41 | 6,265.35 | 3,132.68 | 13,970.92 | 6,995.84 | 0.01 | -0.01 | 0.031 |
| 12.00 | -58.31 | -1.22 | 0.00 | -145.94 | 0.00 | 145.94 | 6,230.84 | 3,115.42 | 13,787.14 | 6,903.82 | 0.02 | -0.02 | 0.030 |
| 15.00 | -56.25 | -1.18 | 0.00 | -142.30 | 0.00 | 142.30 | 6,178.70 | 3,089.35 | 13,512.86 | 6,766.48 | 0.03 | -0.02 | 0.030 |
| 20.00 | -54.22 | -1.15 | 0.00 | -136.38 | 0.00 | 136.38 | 6,090.77 | 3,045.39 | 13,059.52 | 6,539.47 | 0.05 | -0.03 | 0.030 |
| 25.00 | -52.23 | -1.12 | 0.00 | -130.62 | 0.00 | 130.62 | 6,001.58 | 3,000.79 | 12,611.04 | 6,314.89 | 0.08 | -0.03 | 0.029 |
| 30.00 | -50.27 | -1.09 | 0.00 | -125.03 | 0.00 | 125.03 | 5,911.12 | 2,955.56 | 12,167.60 | 6,092.85 | 0.12 | -0.04 | 0.029 |
| 35.00 | -48.35 | -1.05 | 0.00 | -119.60 | 0.00 | 119.60 | 5,796.61 | 2,898.31 | 11,683.46 | 5,850.41 | 0.17 | -0.05 | 0.029 |
| 40.00 | -47.30 | -1.03 | 0.00 | -114.35 | 0.00 | 114.35 | 5,674.58 | 2,837.29 | 11,194.28 | 5,605.46 | 0.22 | -0.05 | 0.029 |
| 42.75 | -45.88 | -1.01 | 0.00 | -111.50 | 0.00 | 111.50 | 5,607.46 | 2,803.73 | 10,929.69 | 5,472.97 | 0.25 | -0.06 | 0.029 |
| 45.00 | -43.37 | -0.96 | 0.00 | -109.24 | 0.00 | 109.24 | 5,552.55 | 2,776.27 | 10,715.57 | 5,365.75 | 0.28 | -0.06 | 0.028 |
| 49.00 | -43.05 | -0.95 | 0.00 | -105.42 | 0.00 | 105.42 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 0.33 | -0.07 | 0.035 |
| 50.00 | -41.49 | -0.92 | 0.00 | -104.47 | 0.00 | 104.47 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 0.34 | -0.07 | 0.035 |
| 55.00 | -39.95 | -0.89 | 0.00 | -99.87 | 0.00 | 99.87 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 0.42 | -0.08 | 0.034 |
| 60.00 | -38.44 | -0.86 | 0.00 | -95.41 | 0.00 | 95.41 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 0.50 | -0.08 | 0.034 |
| 65.00 | -36.96 | -0.84 | 0.00 | -91.10 | 0.00 | 91.10 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 0.60 | -0.09 | 0.034 |
| 70.00 | -35.51 | -0.81 | 0.00 | -86.91 | 0.00 | 86.91 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 0.70 | -0.10 | 0.033 |
| 75.00 | -34.08 | -0.80 | 0.00 | -82.85 | 0.00 | 82.85 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 0.81 | -0.11 | 0.033 |
| 80.00 | -32.69 | -0.78 | 0.00 | -78.87 | 0.00 | 78.87 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 0.94 | -0.12 | 0.033 |
| 85.00 | -32.14 | -0.78 | 0.00 | -74.95 | 0.00 | 74.95 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 1.07 | -0.13 | 0.033 |
| 87.00 | -31.68 | -0.78 | 0.00 | -73.38 | 0.00 | 73.38 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 1.12 | -0.14 | 0.033 |
| 88.00 | -30.64 | -0.78 | 0.00 | -72.60 | 0.00 | 72.60 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 1.15 | -0.14 | 0.032 |
| 90.00 | -29.75 | -0.78 | 0.00 | -71.04 | 0.00 | 71.04 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 1.21 | -0.14 | 0.032 |
| 92.00 | -29.03 | -0.79 | 0.00 | -69.47 | 0.00 | 69.47 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 1.27 | -0.15 | 0.038 |
| 95.00 | -28.56 | -0.80 | 0.00 | -67.10 | 0.00 | 67.10 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 1.37 | -0.15 | 0.038 |
| 97.00 | -27.71 | -0.81 | 0.00 | -65.50 | 0.00 | 65.50 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 1.43 | -0.16 | 0.037 |
| 100.00 | -26.56 | -0.83 | 0.00 | -63.08 | 0.00 | 63.08 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 1.53 | -0.17 | 0.037 |
| 105.00 | -25.88 | -0.85 | 0.00 | -58.92 | 0.00 | 58.92 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 1.71 | -0.18 | 0.036 |
| 108.00 | -25.42 | -0.86 | 0.00 | -56.38 | 0.00 | 56.38 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 1.83 | -0.18 | 0.036 |
| 110.00 | -24.19 | -0.89 | 0.00 | -54.66 | 0.00 | 54.66 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 1.91 | -0.19 | 0.035 |
| 115.00 | -23.12 | -0.92 | 0.00 | -50.22 | 0.00 | 50.22 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 2.11 | -0.20 | 0.034 |
| 120.00 | -22.06 | -0.94 | 0.00 | -45.64 | 0.00 | 45.64 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 2.33 | -0.21 | 0.033 |
| 125.00 | -21.03 | -0.96 | 0.00 | -40.94 | 0.00 | 40.94 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 2.56 | -0.23 | 0.032 |
| 130.00 | -20.62 | -0.97 | 0.00 | -36.15 | 0.00 | 36.15 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 2.80 | -0.24 | 0.031 |
| 132.00 | -19.75 | -0.97 | 0.00 | -34.21 | 0.00 | 34.21 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 2.90 | -0.24 | 0.030 |
| 135.00 | -19.46 | -0.98 | 0.00 | -31.29 | 0.00 | 31.29 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 3.06 | -0.25 | 0.029 |
| 136.00 | -19.31 | -0.98 | 0.00 | -30.32 | 0.00 | 30.32 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 3.11 | -0.25 | 0.048 |
| 137.00 | -16.27 | -0.98 | 0.00 | -29.34 | 0.00 | 29.34 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 3.17 | -0.25 | 0.045 |
| 140.00 | -15.64 | -0.98 | 0.00 | -26.40 | 0.00 | 26.40 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 3.33 | -0.26 | 0.042 |
| 145.00 | -15.39 | -0.98 | 0.00 | -21.50 | 0.00 | 21.50 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 3.61 | -0.28 | 0.038 |
| 147.00 | -12.82 | -0.93 | 0.00 | -19.54 | 0.00 | 19.54 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 3.73 | -0.29 | 0.034 |
| 148.00 | -11.71 | -0.91 | 0.00 | -18.61 | 0.00 | 18.61 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 3.79 | -0.29 | 0.033 |
| 150.00 | -11.18 | -0.89 | 0.00 | -16.80 | 0.00 | 16.80 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 3.91 | -0.29 | 0.031 |
| 155.00 | -10.87 | -0.88 | 0.00 | -12.33 | 0.00 | 12.33 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 4.23 | -0.30 | 0.026 |
| 158.00 | -9.65 | -0.82 | 0.00 | -9.69 | 0.00 | 9.69 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 4.42 | -0.31 | 0.022 |
| 160.00 | -6.78 | -0.66 | 0.00 | -8.05 | 0.00 | 8.05 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 4.55 | -0.31 | 0.018 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

| | | | | | | | | | | | | | |
|--------|-------|-------|------|-------|------|------|----------|--------|----------|--------|------|-------|-------|
| 165.00 | -6.54 | -0.64 | 0.00 | -4.74 | 0.00 | 4.74 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 4.88 | -0.32 | 0.013 |
| 168.00 | -2.59 | -0.32 | 0.00 | -2.81 | 0.00 | 2.81 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 5.09 | -0.32 | 0.007 |
| 170.00 | -2.26 | -0.28 | 0.00 | -2.18 | 0.00 | 2.18 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 5.22 | -0.32 | 0.006 |
| 175.00 | -2.06 | -0.26 | 0.00 | -0.77 | 0.00 | 0.77 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 5.56 | -0.33 | 0.003 |
| 178.00 | 0.00 | -0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 5.77 | -0.33 | 0.000 |

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00 | -44.89 | -1.26 | 0.00 | -158.04 | 0.00 | 158.04 | 6,434.86 | 3,217.43 | 14,900.49 | 7,461.32 | 0.00 | 0.00 | 0.028 |
| 5.00 | -43.37 | -1.24 | 0.00 | -151.73 | 0.00 | 151.73 | 6,350.74 | 3,175.37 | 14,433.52 | 7,227.48 | 0.00 | -0.01 | 0.028 |
| 10.00 | -42.76 | -1.23 | 0.00 | -145.53 | 0.00 | 145.53 | 6,265.35 | 3,132.68 | 13,970.92 | 6,995.84 | 0.01 | -0.01 | 0.028 |
| 12.00 | -41.78 | -1.21 | 0.00 | -143.06 | 0.00 | 143.06 | 6,230.84 | 3,115.42 | 13,787.14 | 6,903.82 | 0.02 | -0.01 | 0.027 |
| 15.00 | -40.30 | -1.18 | 0.00 | -139.43 | 0.00 | 139.43 | 6,178.70 | 3,089.35 | 13,512.86 | 6,766.48 | 0.03 | -0.02 | 0.027 |
| 20.00 | -38.85 | -1.14 | 0.00 | -133.55 | 0.00 | 133.55 | 6,090.77 | 3,045.39 | 13,059.52 | 6,539.47 | 0.05 | -0.03 | 0.027 |
| 25.00 | -37.42 | -1.11 | 0.00 | -127.83 | 0.00 | 127.83 | 6,001.58 | 3,000.79 | 12,611.04 | 6,314.89 | 0.08 | -0.03 | 0.026 |
| 30.00 | -36.02 | -1.07 | 0.00 | -122.28 | 0.00 | 122.28 | 5,911.12 | 2,955.56 | 12,167.60 | 6,092.85 | 0.12 | -0.04 | 0.026 |
| 35.00 | -34.64 | -1.04 | 0.00 | -116.91 | 0.00 | 116.91 | 5,796.61 | 2,898.31 | 11,683.46 | 5,850.41 | 0.16 | -0.04 | 0.026 |
| 40.00 | -33.89 | -1.02 | 0.00 | -111.72 | 0.00 | 111.72 | 5,674.58 | 2,837.29 | 11,194.28 | 5,605.46 | 0.21 | -0.05 | 0.026 |
| 42.75 | -32.87 | -0.99 | 0.00 | -108.91 | 0.00 | 108.91 | 5,607.46 | 2,803.73 | 10,929.69 | 5,472.97 | 0.24 | -0.06 | 0.026 |
| 45.00 | -31.07 | -0.94 | 0.00 | -106.68 | 0.00 | 106.68 | 5,552.55 | 2,776.27 | 10,715.57 | 5,365.75 | 0.27 | -0.06 | 0.025 |
| 49.00 | -30.84 | -0.94 | 0.00 | -102.91 | 0.00 | 102.91 | 4,334.74 | 2,167.37 | 8,395.94 | 4,204.21 | 0.32 | -0.06 | 0.032 |
| 50.00 | -29.72 | -0.90 | 0.00 | -101.98 | 0.00 | 101.98 | 4,321.48 | 2,160.74 | 8,333.21 | 4,172.80 | 0.34 | -0.07 | 0.031 |
| 55.00 | -28.62 | -0.87 | 0.00 | -97.45 | 0.00 | 97.45 | 4,254.40 | 2,127.20 | 8,021.52 | 4,016.72 | 0.41 | -0.07 | 0.031 |
| 60.00 | -27.54 | -0.85 | 0.00 | -93.08 | 0.00 | 93.08 | 4,186.06 | 2,093.03 | 7,713.24 | 3,862.35 | 0.49 | -0.08 | 0.031 |
| 65.00 | -26.48 | -0.82 | 0.00 | -88.85 | 0.00 | 88.85 | 4,116.45 | 2,058.22 | 7,408.53 | 3,709.77 | 0.58 | -0.09 | 0.030 |
| 70.00 | -25.44 | -0.79 | 0.00 | -84.77 | 0.00 | 84.77 | 4,045.56 | 2,022.78 | 7,107.57 | 3,559.07 | 0.68 | -0.10 | 0.030 |
| 75.00 | -24.42 | -0.77 | 0.00 | -80.80 | 0.00 | 80.80 | 3,973.41 | 1,986.71 | 6,810.50 | 3,410.31 | 0.80 | -0.11 | 0.030 |
| 80.00 | -23.42 | -0.76 | 0.00 | -76.93 | 0.00 | 76.93 | 3,899.99 | 1,950.00 | 6,517.51 | 3,263.60 | 0.92 | -0.12 | 0.030 |
| 85.00 | -23.02 | -0.76 | 0.00 | -73.11 | 0.00 | 73.11 | 3,805.04 | 1,902.52 | 6,195.74 | 3,102.48 | 1.05 | -0.13 | 0.030 |
| 87.00 | -22.70 | -0.76 | 0.00 | -71.59 | 0.00 | 71.59 | 3,765.38 | 1,882.69 | 6,066.61 | 3,037.81 | 1.10 | -0.13 | 0.030 |
| 88.00 | -21.95 | -0.76 | 0.00 | -70.83 | 0.00 | 70.83 | 3,745.55 | 1,872.77 | 6,002.55 | 3,005.74 | 1.13 | -0.14 | 0.029 |
| 90.00 | -21.31 | -0.76 | 0.00 | -69.31 | 0.00 | 69.31 | 3,705.89 | 1,852.94 | 5,875.46 | 2,942.10 | 1.19 | -0.14 | 0.029 |
| 92.00 | -20.80 | -0.77 | 0.00 | -67.79 | 0.00 | 67.79 | 3,054.73 | 1,527.36 | 4,893.34 | 2,450.31 | 1.25 | -0.14 | 0.034 |
| 95.00 | -20.46 | -0.77 | 0.00 | -65.48 | 0.00 | 65.48 | 3,020.24 | 1,510.12 | 4,760.42 | 2,383.75 | 1.34 | -0.15 | 0.034 |
| 97.00 | -19.85 | -0.79 | 0.00 | -63.94 | 0.00 | 63.94 | 2,996.99 | 1,498.50 | 4,672.40 | 2,339.67 | 1.40 | -0.15 | 0.034 |
| 100.00 | -19.03 | -0.81 | 0.00 | -61.58 | 0.00 | 61.58 | 2,961.74 | 1,480.87 | 4,541.28 | 2,274.01 | 1.50 | -0.16 | 0.034 |
| 105.00 | -18.54 | -0.82 | 0.00 | -57.55 | 0.00 | 57.55 | 2,901.98 | 1,450.99 | 4,325.26 | 2,165.84 | 1.68 | -0.17 | 0.033 |
| 108.00 | -18.21 | -0.84 | 0.00 | -55.07 | 0.00 | 55.07 | 2,865.51 | 1,432.75 | 4,197.21 | 2,101.73 | 1.79 | -0.18 | 0.033 |
| 110.00 | -17.33 | -0.86 | 0.00 | -53.40 | 0.00 | 53.40 | 2,840.94 | 1,420.47 | 4,112.52 | 2,059.32 | 1.86 | -0.19 | 0.032 |
| 115.00 | -16.56 | -0.89 | 0.00 | -49.08 | 0.00 | 49.08 | 2,777.06 | 1,388.53 | 3,901.02 | 1,953.41 | 2.06 | -0.20 | 0.031 |
| 120.00 | -15.80 | -0.91 | 0.00 | -44.63 | 0.00 | 44.63 | 2,693.16 | 1,346.58 | 3,667.73 | 1,836.59 | 2.28 | -0.21 | 0.030 |
| 125.00 | -15.06 | -0.93 | 0.00 | -40.06 | 0.00 | 40.06 | 2,609.26 | 1,304.63 | 3,441.64 | 1,723.38 | 2.50 | -0.22 | 0.029 |
| 130.00 | -14.77 | -0.94 | 0.00 | -35.39 | 0.00 | 35.39 | 2,525.36 | 1,262.68 | 3,222.75 | 1,613.77 | 2.74 | -0.23 | 0.028 |
| 132.00 | -14.15 | -0.95 | 0.00 | -33.51 | 0.00 | 33.51 | 2,491.80 | 1,245.90 | 3,137.20 | 1,570.93 | 2.84 | -0.24 | 0.027 |
| 135.00 | -13.94 | -0.95 | 0.00 | -30.67 | 0.00 | 30.67 | 2,441.46 | 1,220.73 | 3,011.04 | 1,507.76 | 2.99 | -0.24 | 0.026 |
| 136.00 | -13.84 | -0.95 | 0.00 | -29.72 | 0.00 | 29.72 | 1,416.30 | 708.15 | 1,774.76 | 888.70 | 3.04 | -0.25 | 0.043 |
| 137.00 | -11.66 | -0.96 | 0.00 | -28.77 | 0.00 | 28.77 | 1,410.39 | 705.20 | 1,755.27 | 878.94 | 3.09 | -0.25 | 0.041 |
| 140.00 | -11.20 | -0.96 | 0.00 | -25.89 | 0.00 | 25.89 | 1,392.36 | 696.18 | 1,697.02 | 849.77 | 3.25 | -0.26 | 0.039 |
| 145.00 | -11.02 | -0.96 | 0.00 | -21.10 | 0.00 | 21.10 | 1,361.30 | 680.65 | 1,600.81 | 801.59 | 3.53 | -0.27 | 0.034 |
| 147.00 | -9.18 | -0.91 | 0.00 | -19.19 | 0.00 | 19.19 | 1,348.51 | 674.26 | 1,562.66 | 782.49 | 3.65 | -0.28 | 0.031 |
| 148.00 | -8.39 | -0.89 | 0.00 | -18.28 | 0.00 | 18.28 | 1,342.05 | 671.02 | 1,543.66 | 772.98 | 3.71 | -0.28 | 0.030 |
| 150.00 | -8.01 | -0.88 | 0.00 | -16.50 | 0.00 | 16.50 | 1,328.96 | 664.48 | 1,505.82 | 754.03 | 3.83 | -0.29 | 0.028 |
| 155.00 | -7.78 | -0.86 | 0.00 | -12.12 | 0.00 | 12.12 | 1,295.36 | 647.68 | 1,412.23 | 707.16 | 4.13 | -0.30 | 0.023 |
| 158.00 | -6.91 | -0.81 | 0.00 | -9.53 | 0.00 | 9.53 | 1,274.59 | 637.29 | 1,356.80 | 679.41 | 4.32 | -0.30 | 0.019 |
| 160.00 | -4.86 | -0.65 | 0.00 | -7.92 | 0.00 | 7.92 | 1,260.48 | 630.24 | 1,320.18 | 661.07 | 4.45 | -0.31 | 0.016 |

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: 12927164_C3_02

7/20/2019 12:41:53 PM

Customer: T-MOBILE

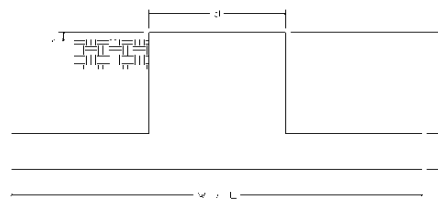
| | | | | | | | | | | | | | |
|--------|-------|-------|------|-------|------|------|----------|--------|----------|--------|------|-------|-------|
| 165.00 | -4.68 | -0.63 | 0.00 | -4.67 | 0.00 | 4.67 | 1,224.34 | 612.17 | 1,229.85 | 615.84 | 4.77 | -0.31 | 0.011 |
| 168.00 | -1.86 | -0.31 | 0.00 | -2.77 | 0.00 | 2.77 | 1,202.05 | 601.02 | 1,176.54 | 589.15 | 4.97 | -0.32 | 0.006 |
| 170.00 | -1.62 | -0.28 | 0.00 | -2.15 | 0.00 | 2.15 | 1,186.93 | 593.46 | 1,141.40 | 571.55 | 5.10 | -0.32 | 0.005 |
| 175.00 | -1.48 | -0.25 | 0.00 | -0.76 | 0.00 | 0.76 | 1,148.25 | 574.12 | 1,054.98 | 528.28 | 5.44 | -0.32 | 0.003 |
| 178.00 | 0.00 | -0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 1,123.52 | 561.76 | 1,003.37 | 502.43 | 5.64 | -0.32 | 0.000 |

Analysis Summary

| Load Case | Reactions | | | | | | Max Usage | |
|------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|---------------------------|--------------|----------------------|
| | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) | Elev (ft) | Interaction Ratio |
| 1.2D + 1.6W | 41.89 | 0.00 | 63.51 | 0.00 | 0.00 | 5125.39 | 49.00 | 0.78 |
| 0.9D + 1.6W | 41.86 | 0.00 | 47.61 | 0.00 | 0.00 | 5049.87 | 49.00 | 0.76 |
| 1.2D + 1.0Di + 1.0Wi | 11.61 | 0.00 | 104.38 | 0.00 | 0.00 | 1437.43 | 49.00 | 0.23 |
| (1.2 + 0.2Sds) * DL + E ELFM | 1.59 | 0.00 | 62.66 | 0.00 | 0.00 | 233.33 | 49.00 | 0.05 |
| (1.2 + 0.2Sds) * DL + E EMAM | 1.26 | 0.00 | 62.66 | 0.00 | 0.00 | 160.95 | 136.00 | 0.05 |
| (0.9 - 0.2Sds) * DL + E ELFM | 1.59 | 0.00 | 44.89 | 0.00 | 0.00 | 229.35 | 49.00 | 0.04 |
| (0.9 - 0.2Sds) * DL + E EMAM | 1.26 | 0.00 | 44.89 | 0.00 | 0.00 | 158.04 | 136.00 | 0.04 |
| 1.0D + 1.0W | 8.26 | 0.00 | 52.98 | 0.00 | 0.00 | 1003.85 | 49.00 | 0.16 |

Site Name: Andover-bunker Hill Rd, CT
 Site Number: 302472
 Engineering Number: 12927164_C3_02
 Engineer: Cole.Koffi
 Date: 07/20/19
 Tower Type: MP

Program Last Updated: 5/13/2014



Design Loads (Factored) - Analysis per TIA-222-G Standards

| Design / Analysis / Mapping: | Analysis | | |
|--|-------------------|-------------------------------------|-----------------------|
| Compression/Leg: | 63.5 k | Concrete Strength (f'_c): | 3000 psi |
| Uplift/Leg: | 0 k | Pad Tension Steel Depth: | 44.0 in |
| Total Shear: | 41.9 k | ϕ_{Shear} : | 0.75 |
| Moment: | 5125.4 k-ft | $\phi_{\text{Flexure / Tension}}$: | 0.9 |
| Tower + Appurtenance Weight: | 63.5 k | $\phi_{\text{Compression}}$: | 0.65 |
| Depth to Base of Foundation (l + t - h): | 9.5 ft | β : | 0.85 |
| Diameter of Pier (d): | 8 ft | Bottom Pad Rebar Size #: | 11 |
| Height of Pier above Ground (h): | 0.5 ft | # of Bottom Pad Rebar: | 24 |
| Width of Pad (W): | 24 ft | Pad Bottom Steel Area: | 37.44 in ² |
| Length of Pad (L): | 24 ft | Pad Steel F_y : | 60000 psi |
| Thickness of Pad (t): | 4 ft | Top Pad Rebar Size #: | 11 |
| Tower Leg Center to Center: | 0 ft | # of Top Pad Rebar: | 24 |
| Number of Tower Legs: | 1 (1 if MP or GT) | Pad Top Steel Area: | 37.44 in ² |
| Tower Center from Mat Center: | 0 ft | Pier Rebar Size #: | 11 |
| Depth Below Ground Surface to Water Table: | 99 ft | Pier Steel Area (Single Bar): | 1.56 in ² |
| Unit Weight of Concrete: | 150 pcf | # of Pier Rebar: | 40 |
| Unit Weight of Soil Above Water Table: | 125 pcf | Pier Steel F_y : | 60000 psi |
| Unit Weight of Water: | 62.4 pcf | Pier Cage Diameter: | 88.0 in |
| Unit Weight of Soil Below Water Table: | 62.6 pcf | Rebar Strain Limit: | 0.008 |
| Friction Angle of Uplift: | 15 Degrees | Steel Elastic Modulus: | 29000 ksi |
| Ultimate Coefficient of Shear Friction: | 0.3 | Tie Rebar Size #: | 5 |
| Ultimate Compressive Bearing Pressure: | 8000 psf | Tie Steel Area (Single Bar): | 0.31 in ² |
| Ultimate Passive Pressure on Pad Face: | 0 psf | Tie Spacing: | 6 in |
| $\phi_{\text{Soil and Concrete Weight}}$: | 0.9 | Tie Steel F_y : | 40000 psi |
| ϕ_{Soil} : | 0.75 | | |

Overturning Moment Usage

Design OTM: 5544.3 k-ft
 OTM Resistance: 9507.4 k-ft
 Design OTM / OTM Resistance: 0.58 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure: 3815 psf
 Factored Nominal Bearing Pressure: 6000 psf
 Net Bearing Pressure/Factored Nominal Bearing Pressure: 0.64 Result: OK
 Load Direction Controlling Design Bearing Pressure: Diagonal to Pad Edge

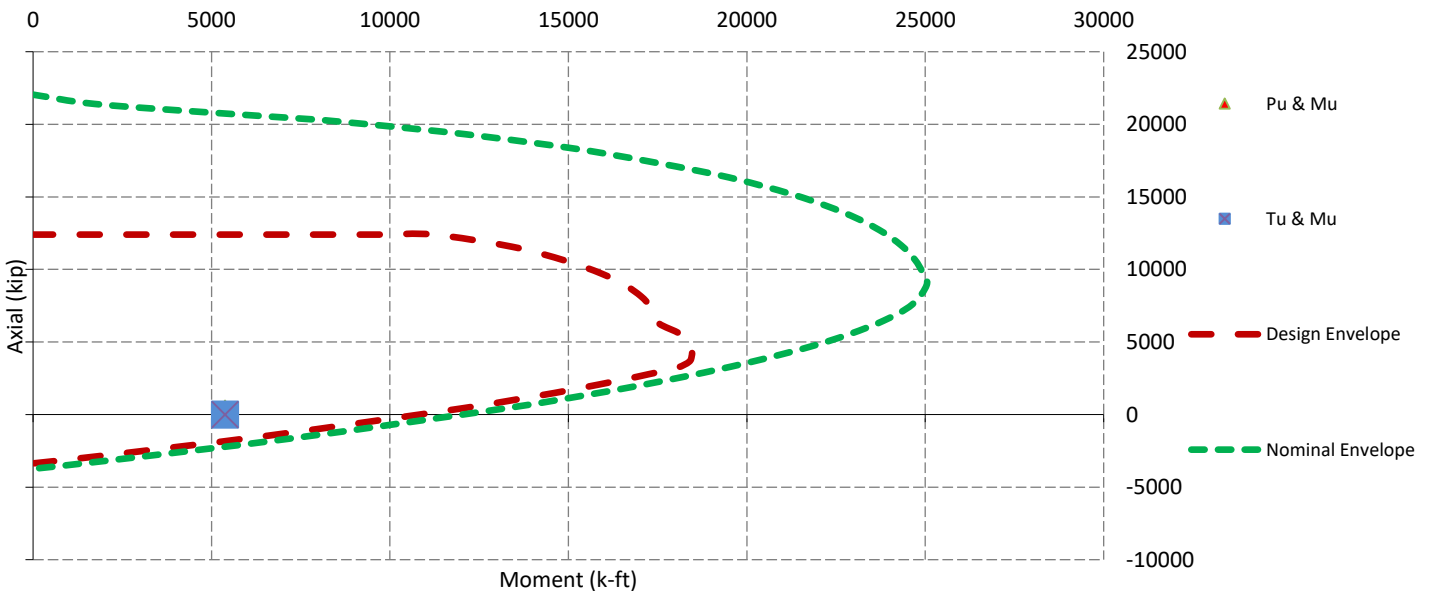
Sliding Factor of Safety

Total Factored Sliding Resistance: 181.2 k
 Sliding Design / Sliding Resistance: 0.23 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

| | |
|---|---|
| Factored One Way Shear (V_u): | 219.2 k |
| One Way Shear Capacity (ϕV_c): | 807.2 k - ACI11.3.1.1 |
| $V_u / \phi V_c$: | 0.27 Result: OK |
| Load Direction Controlling Shear Capacity: | Diagonal to Pad Edge |
| Lower Steel Pad Factored Moment (M_u): | 1799.0 k-ft |
| Lower Steel Pad Moment Capacity (ϕM_n): | 7594.6 k-ft - ACI10.3 |
| $M_u / \phi M_n$: | 0.24 Result: OK |
| Load Direction Controlling Flexural Capacity: | Diagonal to Pad Edge |
| Upper Steel Pad Factored Moment (M_u): | 1263.9 k-ft |
| Upper Steel Pad Moment Capacity (ϕM_n): | 7194.1 k-ft |
| $M_u / \phi M_n$: | 0.18 Result: OK |
| Lower Pad Flexural Reinforcement Ratio: | 0.0030 OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Upper Pad Flexural Reinforcement Ratio: | 0.0030 OK - Minimum Reinforcement Ratio Met - ACI10.5.1 |
| Lower Pad Reinforcement Spacing: | 12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Upper Pad Reinforcement Spacing: | 12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4 |
| Factored Punching Shear (V_u): | 0.0 k |
| Nominal Punching Shear Capacity ($\phi_c V_n$): | 3179.9 k - ACI11.12.2.1 |
| $V_u / \phi V_c$: | 0.00 Result: OK |
| Factored Moment in Pier (M_u): | 5376.7 k-ft |
| Pier Moment Capacity (ϕM_n): | 12085.4 k-ft |
| $M_u / \phi M_n$: | 0.44 Result: OK |
| Factored Shear in Pier (V_u): | 41.9 k |
| Pier Shear Capacity (ϕV_n): | 597.3 k |
| $V_u / \phi V_c$: | 0.07 Result: OK |
| Pier Shear Reinforcement Ratio: | 0.0005 No Ties Necessary for Shear - ACI11.5.6.1 |
| Factored Tension in Pier (T_u): | 0.0 k |
| Pier Tension Capacity (ϕT_n): | 3369.6 k |
| $T_u / \phi T_n$: | 0.00 Result: OK |
| Factored Compression in Pier (P_u): | 63.5 k |
| Pier Compression Capacity (ϕP_n): | 9515.1 k - ACI10.3.6.2 |
| $P_u / \phi P_n$: | 0.01 Result: OK |
| Pier Compression Reinforcement Ratio: | 0.009 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4 |
| $M_u / \phi_B M_n + T_u / \phi_T T_n$: | 0.44 Result: OK |

Nominal and Design Moment Capacity and Factored Design Loads





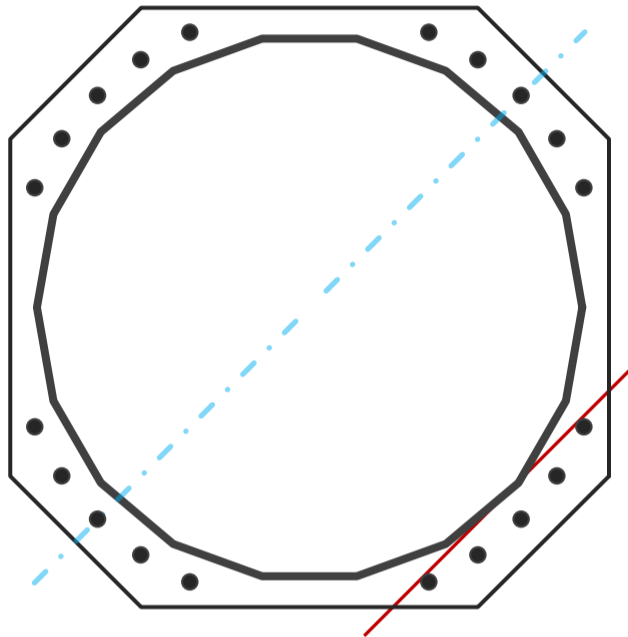
Base Plate & Anchor Rod Analysis

| Pole Dimensions | | |
|--------------------|-------|----|
| Number of Sides | 18 | - |
| Diameter | 56.91 | in |
| Thickness | 0.5 | in |
| Orientation Offset | 0 | ° |

| Base Reactions | | |
|----------------|--------|------|
| Moment, Mu | 5125.4 | k-ft |
| Axial, Pu | 63.5 | k |
| Shear, Vu | 41.9 | k |
| Neutral Axis | 225 | ° |

| Report Capacities | | |
|-------------------|----------|--------|
| Component | Capacity | Result |
| Base Plate | 62% | Pass |
| Anchor Rods | 76% | Pass |
| Dwyidag | - | - |

| Base Plate | | |
|----------------------|---------|-------|
| Shape | Square | - |
| Width | 64 | in |
| Thickness | 3 | in |
| Grade | A572-50 | - |
| Yield Strength, Fy | 50 | ksi |
| Tensile Strength, Fu | 65 | ksi |
| Clip | 14 | in |
| Orientation Offset | 0 | ° |
| Anchor Rod Detail | d | η=0.5 |
| Clear Distance | 3 | in |
| Applied Moment, Mu | 2082.7 | k |
| Bending Stress, φMn | 3351.3 | k |



| Original Anchor Rods | | |
|----------------------|---------|-----|
| Arrangement | Cluster | - |
| Quantity | 20 | - |
| Diameter, φ | 2 1/4 | in |
| Bolt Circle | 64 | in |
| Grade | A615-75 | - |
| Yield Strength, Fy | 75 | ksi |
| Tensile Strength, Fu | 100 | ksi |
| Spacing | 6.0 | in |
| Orientation Offset | 0 | ° |
| Applied Force, Pu | 195.3 | k |
| Anchor Rods, φPn | 259.8 | k |

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

| Reaction | Shear Vu | Moment Mu | Factor |
|-------------------------------|-------------|--------------|--------|
| - | k | k-ft | - |
| Base Forces | 41.9 | 5125.4 | 1.00 |
| Anchor Rod Forces | 41.9 | 5125.4 | 1.00 |
| Additional Bolt (Grp1) Forces | 0.0 | 0.0 | 0.00 |
| Additional Bolt (Grp2) Forces | 0.0 | 0.0 | 0.00 |
| Dywidag Forces | 0.0 | 0.0 | 0.00 |
| Stiffener Forces | 0.0 | 0.0 | 0.00 |

Geometric Properties

| Section | Gross Area | Net Area | Individual Inertia | Threads per Inch | Moment of Inertia |
|-----------|-----------------|-----------------|--------------------|------------------|-------------------|
| - | in ² | in ² | in ⁴ | # | in ⁴ |
| Pole | 88.1594 | 4.8977 | 0.4100 | | 35073.77 |
| Bolt | 3.9761 | 3.2477 | 0.8393 | 4.5 | 33273.13 |
| Bolt1 | 0.0000 | 0.0000 | 0.0000 | 0 | 0.00 |
| Bolt2 | 0.0000 | 0.0000 | 0.0000 | 0 | 0.00 |
| Dywidag | 0.0000 | 0.0000 | 0.0000 | | 0.00 |
| Stiffener | 0.0000 | 0.0000 | 0.0000 | | 0.00 |

Base Plate

| | | |
|----------------------|--------|-----|
| Shape | Square | - |
| Width, W | 64 | in |
| Thickness, t | 3 | in |
| Yield Strength, Fy | 50 | ksi |
| Tensile Strength, Fu | 65 | ksi |
| Base Plate Chord | 29.279 | in |
| Detail Type | d | - |
| Detail Factor | 0.50 | - |
| Clear Distance | 3 | - |

Anchor Rods

| | | |
|----------------------------------|-------|-----|
| Anchor Rod Quantity, N | 20 | - |
| Rod Diameter, d | 2.25 | in |
| Bolt Circle, BC | 64 | in |
| Yield Strength, Fy | 75 | ksi |
| Tensile Strength, Fu | 100 | ksi |
| Applied Axial, Pu | 195.3 | k |
| Applied Shear, Vu | 0.7 | k |
| Compressive Capacity, ϕP_n | 259.8 | k |
| Tensile Capacity, ϕR_n | 0.752 | OK |
| Interaction Capacity | 0.757 | OK |

External Base Plate

| | | |
|------------------------------|--------|-----------------|
| Chord Length AA | 33.100 | in |
| Additional AA | 0.000 | in |
| Section Modulus, Z | 74.474 | in ³ |
| Applied Moment, Mu | 2082.7 | k-ft |
| Bending Capacity, ϕM_n | 3351.3 | k-ft |
| Capacity, Mu/ ϕM_n | 0.621 | OK |

| | | |
|------------------------------|--------|-----------------|
| Chord Length AB | 32.214 | in |
| Additional AB | 0.000 | in |
| Section Modulus, Z | 72.482 | in ³ |
| Applied Moment, Mu | 1665.1 | k-ft |
| Bending Capacity, ϕM_n | 3261.7 | k-ft |
| Capacity, Mu/ ϕM_n | 0.511 | OK |

| | | |
|------------------------------|-------|-----------------|
| Bend Line Length | 0.000 | in |
| Additional Bend Line | 0.000 | in |
| Section Modulus, Z | 0.000 | in ³ |
| Applied Moment, Mu | 0.0 | k-ft |
| Bending Capacity, ϕM_n | 0.0 | k-ft |
| Capacity, Mu/ ϕM_n | | |

Internal Base Plate

| | | |
|------------------------------|-------|-----------------|
| Arc Length | 0.000 | in |
| Section Modulus, Z | 0.000 | in ³ |
| Moment Arm | 0.000 | in |
| Applied Moment, Mu | 0.0 | k-ft |
| Bending Capacity, ϕM_n | 0.0 | k-ft |
| Capacity, Mu/ ϕM_n | | |

Exhibit E

Mount Analysis

**Mount Analysis of Existing Low Profile Platform for
 American Tower on behalf of T-Mobile
 302472 - Andover-bunker Hill Road
 Project #: 12927164
 T-Mobile Site ID: CT11502A
 Program: L600**

CLS Engineering PLLC Project #41124-12927164-01-MA-R1
 July 5, 2019

| | |
|-------------------|--|
| MOUNT DESCRIPTION | Existing Low Profile Platform at 147 ft AGL |
| ANTENNA ELEVATION | Nominal Rad. Elevation of 148 ft AGL (Eccentricity of ~1 ft) |
| SITE DESCRIPTION | 178 ft Monopole |
| SITE ADDRESS | 104 Bunker Hill Road, Andover, CT 06232-1301, Tolland County |
| GPS COORDINATES | 41.73778611, -72.34983889 |
| ANALYSIS STANDARD | 2015 IBC / 2018 Connecticut Building Code / TIA-222-G |
| LOADING CRITERIA | 125 mph, V_{ut} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice |

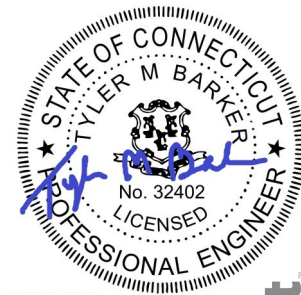
■ ANALYSIS RESULT: Pass (Conditional)

| | | |
|--------------|-----|------|
| MEMBER USAGE | 73% | Pass |
|--------------|-----|------|

Modifications are proposed to bring mounts into compliance; see conclusion for details.

Prepared by:
Sean Rock, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.



Tyler M. Barker
 CLS Engineering, PLLC
 Director of Engineering
 PE # 32402 Exp. 1/31/2020
 COA # PEC.001833 Exp. 8/14/2019



Digitally signed by Tyler Barker
 DN: c=US, o=Telamon Corporation,
 ou=A01427E0000016A4525ADF
 800001D17, cn=Tyler Barker
 Date: 2019.07.08 09:08:25 -0400

■ INTRODUCTION

The proposed equipment is to be mounted to the existing Low Profile Platform. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

■ STRUCTURAL DOCUMENTS PROVIDED

| | |
|-------------------|--|
| STRUCTURAL DATA | Site photos, dated January 3, 2018 Assembly Drawings by Site Pro 1, Part No. PRK-1245L, dated July 22, 2014 |
| PREVIOUS ANALYSES | Structural Analysis by ATC, Engineering #OAA710391_C3_05, dated June 21, 2018 |
| LOADING DATA | ATC Application, Project #12927584, dated April 2, 2019 |

■ ANALYSIS CRITERIA

| | |
|-----------------------------------|--|
| STANDARD | 2015 IBC / 2018 Connecticut Building Code / TIA-222-G |
| BASIC WIND SPEED | 125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) |
| BASIC WIND SPEED W/ ICE | 50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating) |
| EXPOSURE CATEGORY | B |
| MAX. TOPOGRAPHIC FACTOR, K_{zt} | 1.00 |
| RISK CATEGORY | II |
| MAINTENANCE LIVE LOAD | L_M : 500 lb |

■ FINAL EQUIPMENT

| ELEVATION (ft) | | ANTENNAS | |
|----------------|-------|----------|----------------------------------|
| MOUNT | RAD. | # | NAME |
| 147.0 | 148.0 | 3 | EMS RR90-17-02DP |
| | | 3 | Ericsson RADIO 4449 B12/B71 |
| | | 3 | Ericsson KRY 112 489/2 |
| | | 3 | Ericsson KRY 112 144/1 |
| | | 3 | RFS Celwave APXVAARR24_43-U-NA20 |

■ RESULTS SUMMARY

| COMPONENT | PEAK USAGE | RESULT |
|-----------------------|------------|--------|
| Corner Plates | 73% | Pass |
| Mount Pipes | 41% | Pass |
| Platform Base | 20% | Pass |
| Collar Reactions | 18% | Pass |
| Stand-Off Horizontals | 16% | Pass |
| Reinforcement Members | 14% | Pass |
| Face Horizontals | 10% | Pass |

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **CONDITIONALLY PASS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- Install (1) proposed Site Pro 1 PRK-1245L platform reinforcement kit on existing platform mount as shown in the following sketches. Field-Cut proposed members as required. Maintain minimum bolt edge distance.
DO NOT PINCH SAFETY CLIMB.

See following sketches and Site Pro 1 assembly drawings for additional details.

■ ASSUMPTIONS AND CONDITIONS

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, CLS Engineering PLLC should be notified immediately to revise results.

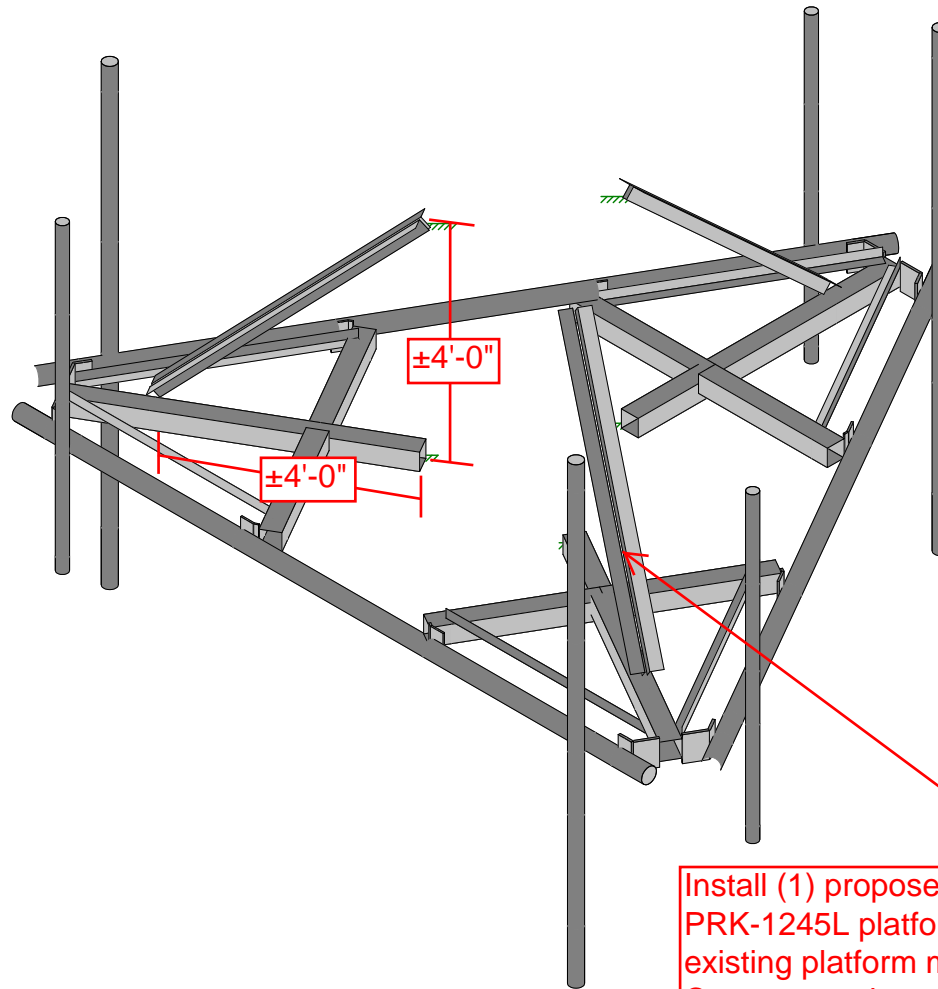
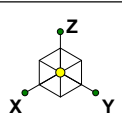
This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from CLS Engineering PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS Engineering PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by CLS Engineering PLLC verifies the adequacy of the primary members of the structure. CLS Engineering PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.



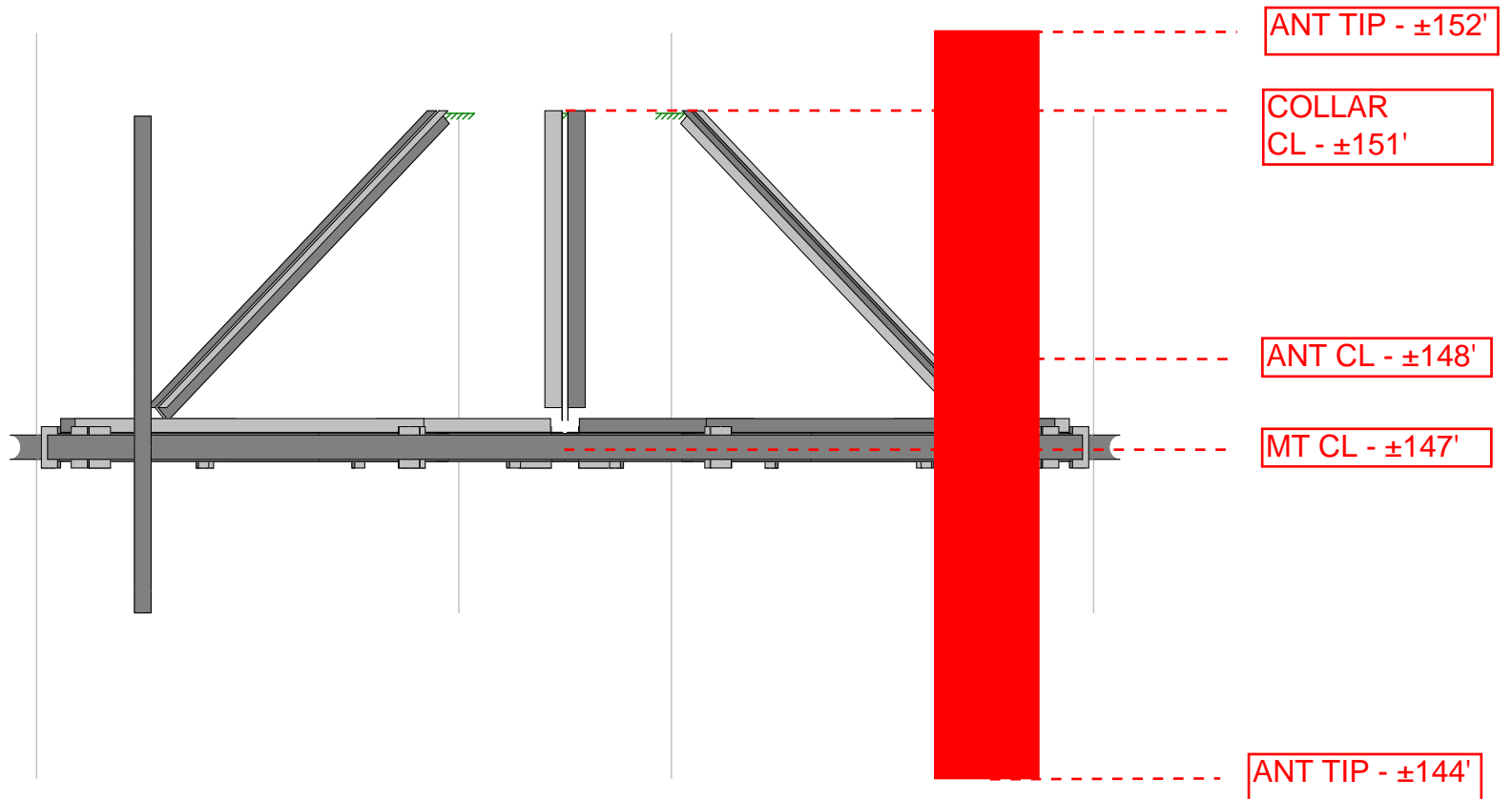
Install (1) proposed Site Pro 1 PRK-1245L platform reinforcement kit on existing platform mount as shown. Field-Cut proposed members as required. Maintain minimum bolt edge distance. DO NOT PINCH SAFETY CLIMB.

Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Installation Sketch - Isometric View |

| |
|-----------------------------|
| SK - 0 |
| July 5, 2019 at 9:53 AM |
| 41124-12927164-01-MA-R1.r3d |

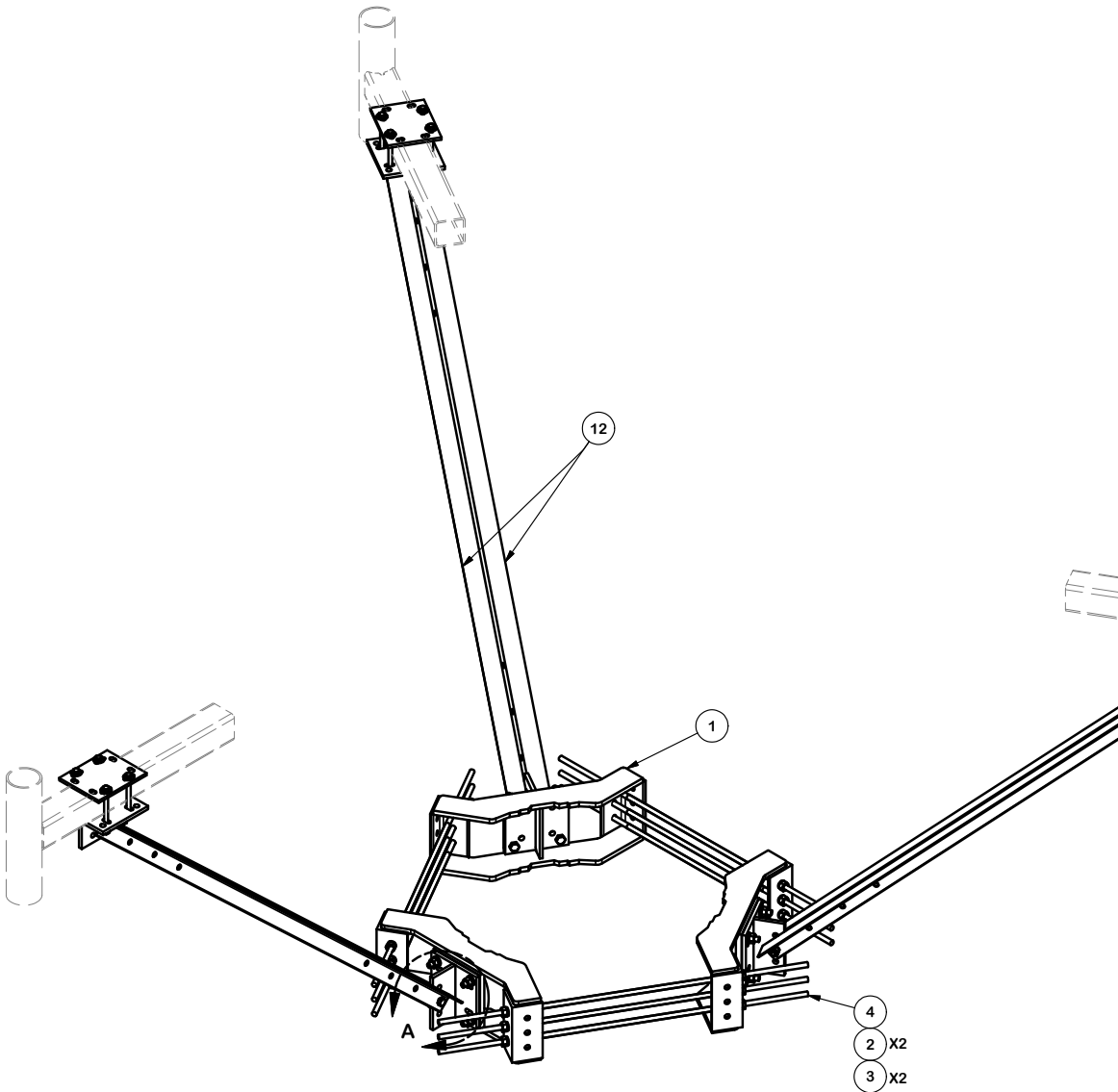


Envelope Only Solution

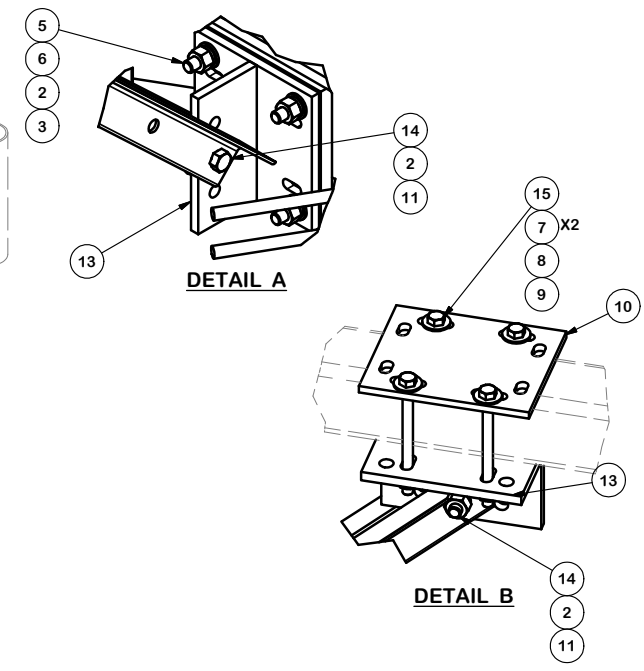
| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Installation Sketch - Elevation View |

| |
|-----------------------------|
| SK - 0 |
| July 5, 2019 at 9:57 AM |
| 41124-12927164-01-MA-R1.r3d |



| PARTS LIST | | | | | | |
|--------------------|-----|----------|--|----------|----------|---------------|
| ITEM | QTY | PART NO. | PART DESCRIPTION | LENGTH | UNIT WT. | NET WT. |
| 1 | 3 | X-LWRM | RING MOUNT WELDMENT | | 68.81 | 206.42 |
| 2 | 36 | G58LW | 5/8" HDG LOCKWASHER | | 0.03 | 0.94 |
| 3 | 30 | A58NUT | 5/8" HDG A325 HEX NUT | | 0.13 | 3.90 |
| 4 | 9 | G58R-24 | 5/8" x 24" THREADED ROD (HDG.) | | 0.55 | 4.94 |
| 4 | 9 | G58R-48 | 5/8" x 48" THREADED ROD (HDG.) | | 0.55 | 4.94 |
| 5 | 12 | A58234 | 5/8" x 2-3/4" HDG A325 HEX BOLT | 2 3/4 in | 0.36 | 4.27 |
| 6 | 12 | A58FW | 5/8" HDG A325 FLATWASHER | | 0.03 | 0.41 |
| 7 | 24 | G12FW | 1/2" HDG USS FLATWASHER | | 0.03 | 0.82 |
| 8 | 12 | G12LW | 1/2" HDG LOCKWASHER | | 0.01 | 0.17 |
| 9 | 12 | G12NUT | 1/2" HDG HEAVY 2H HEX NUT | | 0.07 | 0.86 |
| 10 | 3 | SCX4 | CROSSOVER PLATE | 8 1/2 in | 6.02 | 18.06 |
| 11 | 6 | G58NUT | 5/8" HDG HEAVY 2H HEX NUT | | 0.13 | 0.78 |
| 12 | 6 | X-254923 | PLATFORM REINFORCEMENT KIT ANGLE | 84 in | 22.83 | 137.00 |
| 13 | 6 | X-253992 | T-BRACKET FOR REINFORCEMENT KIT | | 13.55 | 81.27 |
| 14 | 6 | G5802 | 5/8" x 2" HDG HEX BOLT GR5 | | 0.27 | 1.62 |
| 15 | 12 | G12065 | 1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD | 6 1/2 in | 0.41 | 4.91 |
| TOTAL WT. # | | | | | | 515.92 |

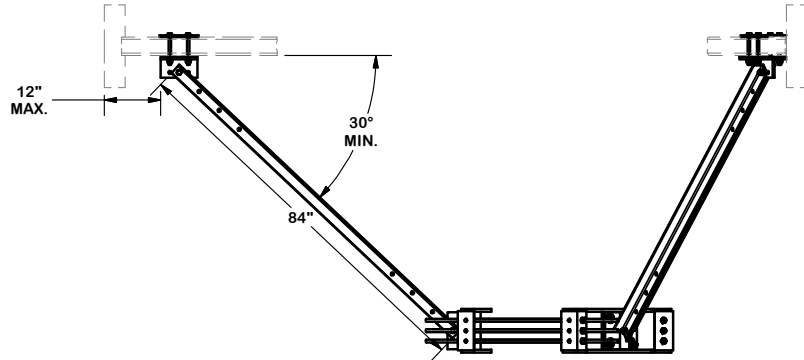
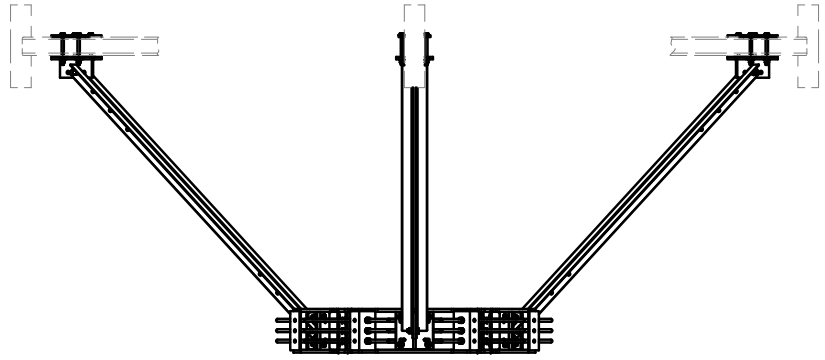
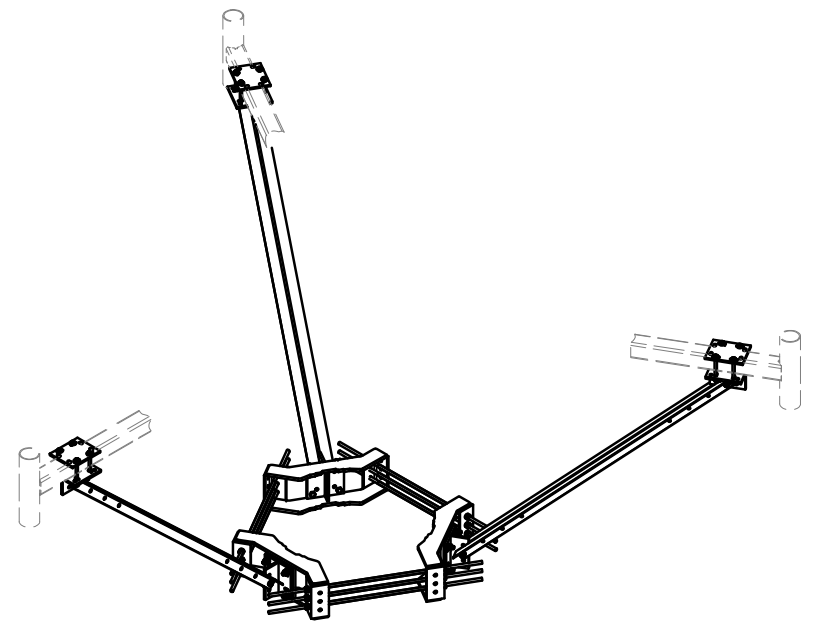
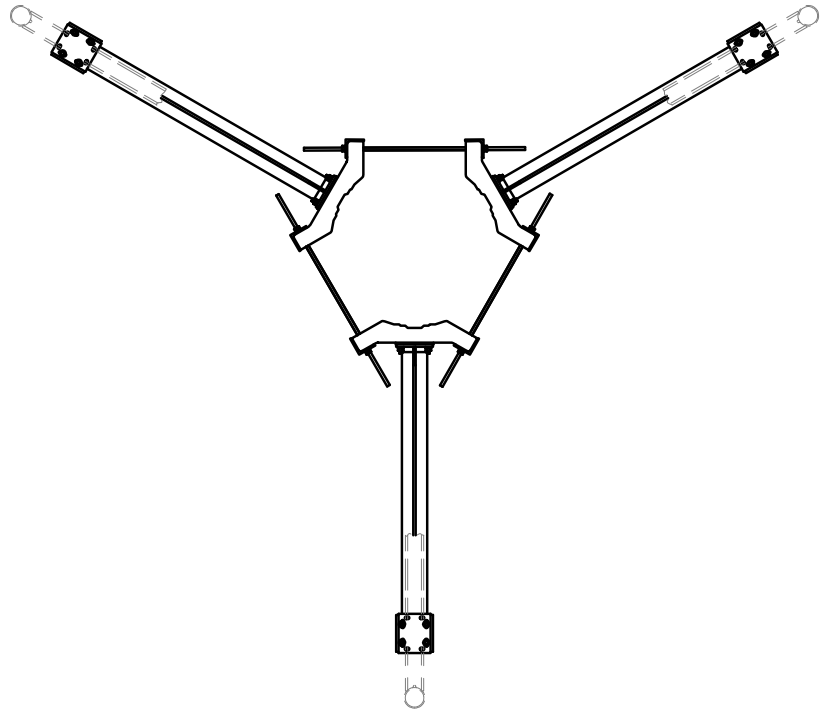


TOLERANCE NOTES
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

| | | |
|---|---------------------------|-----------------------------|
| DESCRIPTION PLATFORM REINFORCEMENT ON A 12" TO 45" POLE 7" ANGLE | | |
| CPD NO. 4488 | DRAWN BY CEK 7/15/2014 | ENG. APPROVAL |
| CLASS 81 | SUB 01 | DRAWING USAGE CUSTOMER |
| | | CHECKED BY BMC 7/22/2014 |

| | |
|-----------------------|---|
| A valmont COMPANY | Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX |
| | Engineering Support Team: 1-888-753-7446 |
| PART NO. PRK-1245L | PAGE 1 OF 2 |
| DWG. NO. PRK-1245L | |



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

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DESCRIPTION
**PLATFORM REINFORCEMENT
 ON A 12" TO 45" POLE
 7° ANGLE**

| | | |
|------------------------|----------------------------------|------------------------------------|
| CPD NO. 4488 | DRAWN BY CEK 7/15/2014 | ENG. APPROVAL |
| CLASS 81 | SUB 01 | DRAWING USAGE CUSTOMER |
| | | CHECKED BY BMC 7/22/2014 |



Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

Engineering
 Support Team:
 1-888-753-7446

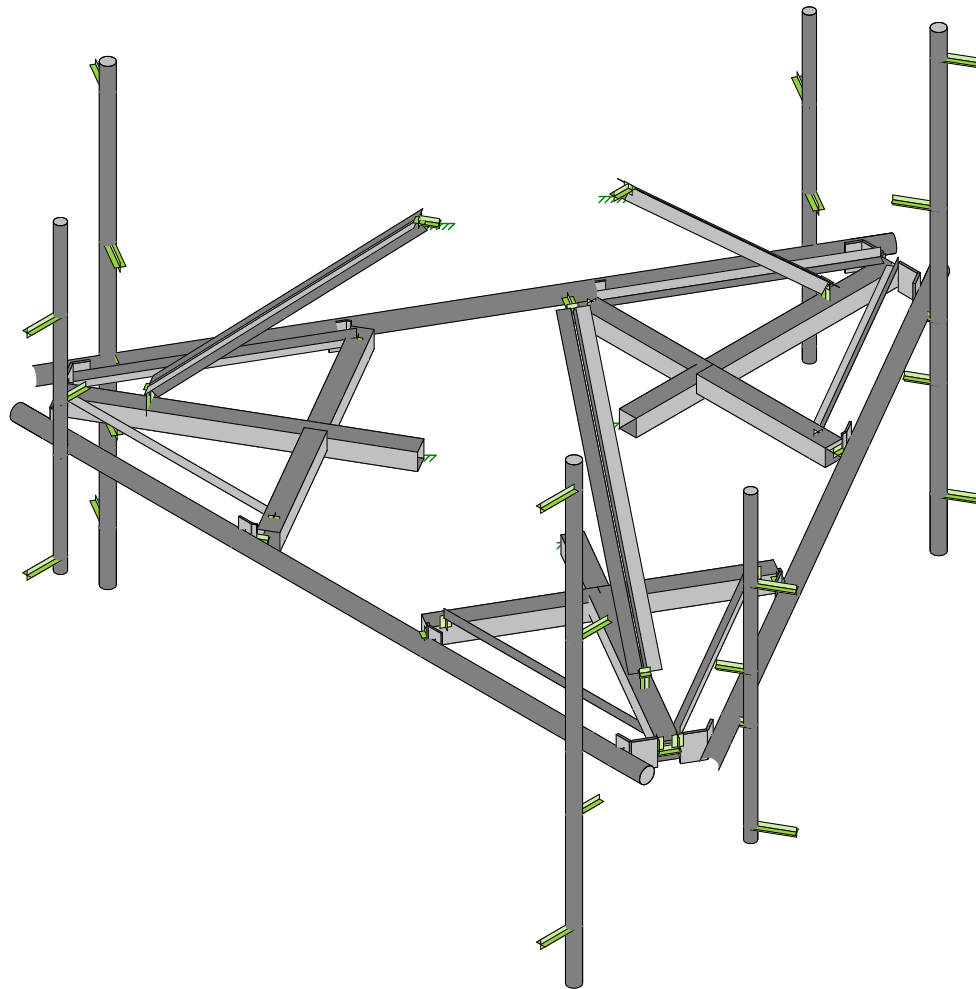
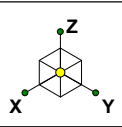
| | |
|------------------------------|-----------------------|
| PART NO. PRK-1245L | PAGE 2 OF 2 |
| DWG. NO. PRK-1245L | |

| Wind & Ice Loading | | | |
|--|---------|--------------|----------|
| Nominal Mount Elevation (AGL), z_{mount} | 147 ft | K_a | 0.90 |
| Nominal Rad Elevation (AGL), z_{rad} | 148 ft | K_d | 0.95 |
| Elevation AMSL (ft) | - | K_e | - |
| TIA Standard | G | K_z | 1.10 |
| Basic Wind Speed, V_{ult} (bare) | 125 mph | K_{zt} | 1.00 |
| Basic Wind Speed, V (ice) | 50 mph | K_s | - |
| Design Ice Thickness, t_i | 1 in | t_{iz} | 2.32 in |
| Exposure Category | B | G_h | 1.00 |
| Risk Category | II | q_z (bare) | 41.9 psf |
| Seismic Response Coeff., C_s | - | q_z (ice) | 6.7 psf |

| Live Loading | |
|-------------------------|--------|
| At Mount Pipes, L_M | 500 lb |
| Joint Labels Considered | M1 |
| | M2 |
| | |
| | |

| Member Distributed Loading | | | | |
|----------------------------|----------------|---------------|------|-----------------|
| Section Set Label | Shape Label | F_A (lb/ft) | | Ice Wt. (lb/ft) |
| | | Bare | Ice | |
| Grating Angle | L2x2x3 | 12.58 | 4.51 | 14.61 |
| Mount Pipe 2.0 | PIPE_2.0 | 8.96 | 4.24 | 13.33 |
| Mount Pipe 2.5 | PIPE_2.5 | 10.85 | 4.54 | 14.75 |
| Offset End Plate | 0.5 x 6 Plate | 37.73 | 6.44 | 18.33 |
| Offset Side Plate | 0.38 X 6 Plate | 37.73 | 6.43 | 18.11 |
| Offset Tube | HSS4X4X4 | 25.15 | 3.11 | 21.04 |
| Platform Horizontal Pipe | PIPE_3.0 | 13.21 | 4.92 | 16.52 |
| MOD PRK | L2.5x2.5x3 | 15.72 | 2.99 | 15.17 |

| Appurtenances | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--------|--------------------------------------|-------------------------|--------------------------|----------------------|------|------------------|------|--------------------------|---------------------|-----------|----|-------------|----|-------------|-----|-------------|------------|------------|--------------------|-------|--------------------|-------------------------------|------|------------------------------|------|----------------------------|-------|---------------------------|-------|
| Appurtenance Model | Status | Azimuth Offset ($^\circ$, \cup) | Rad Elev. Override (ft) | Swap Width & Depth | Area Factor | | Qty. per Azimuth | | | Total Qty. Override | 0° Joints | | 120° Joints | | 240° Joints | | Height (in) | Width (in) | Depth (in) | Weight (Bare) (lb) | Shape | Weight of Ice (lb) | EPA _A (Bare) (ft²) | | EPA _A (Ice) (ft²) | | F _A (Bare) (lb) | | F _A (Ice) (lb) | |
| | | | | | Front | Side | 0° | 120° | 240° | | 1 | 2 | 1 | 2 | 1 | 2 | | | | | | | N | T | N | T | N | T | N | T |
| | | | | | APXVAARR24_43-U-NA20 | | | | <input type="checkbox"/> | | | | 1 | 1 | 1 | | | | | | | | A1 | A2 | A5 | A6 | A9 | A10 | 0 | 0 |
| RR90-17-02DP | | | | <input type="checkbox"/> | | | 1 | 1 | 1 | | A3 | A4 | A7 | A8 | A11 | A12 | 56 | 8 | 2.75 | 14 | Flat | 104.19 | 4.36 | 1.97 | 6.94 | 4.49 | 164.65 | 74.61 | 41.95 | 27.14 |
| KRY 112 489/2 | | | | <input type="checkbox"/> | 0.25 | | 1 | 1 | 1 | | T1 | | T3 | | T5 | | 11 | 6.1 | 3.94 | 15.4 | Flat | 23.57 | 0.14 | 0.37 | 0.35 | 1.12 | 5.28 | 13.80 | 2.12 | 6.77 |
| KRY 112 144/1 | | | | <input type="checkbox"/> | 0.25 | | 1 | 1 | 1 | | T2 | | T4 | | T6 | | 7 | 6 | 3 | 11 | Flat | 14.76 | 0.09 | 0.18 | 0.26 | 0.74 | 3.31 | 6.62 | 1.56 | 4.49 |
| RADIO 4449 B12/B71 | | | | <input type="checkbox"/> | 0.5 | | 1 | 1 | 1 | | R1 | | R2 | | R3 | | 15 | 13.2 | 10.4 | 75 | Flat | 79.96 | 0.83 | 1.30 | 1.46 | 2.46 | 31.19 | 49.14 | 8.84 | 14.90 |

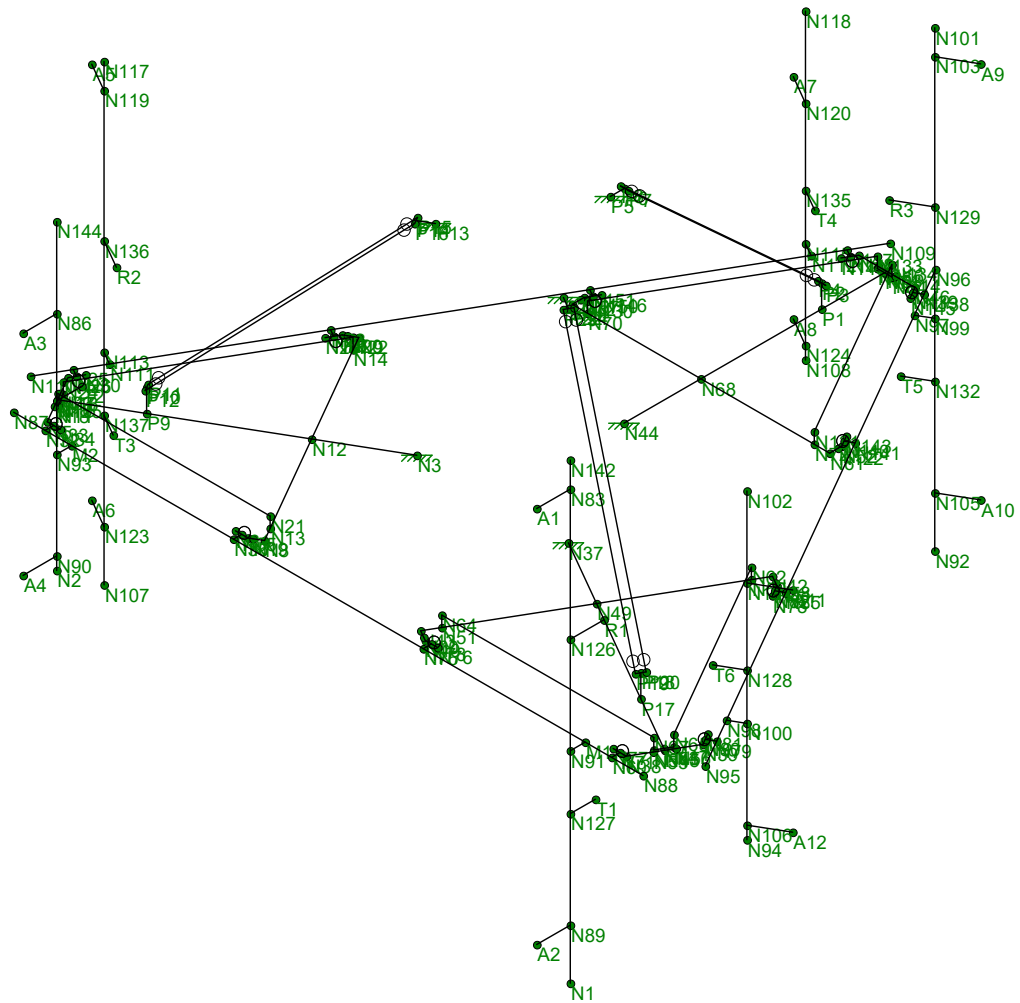
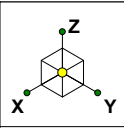


Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Rendered |

| |
|-----------------------------|
| SK - 1 |
| July 5, 2019 at 9:48 AM |
| 41124-12927164-01-MA-R1.r3d |

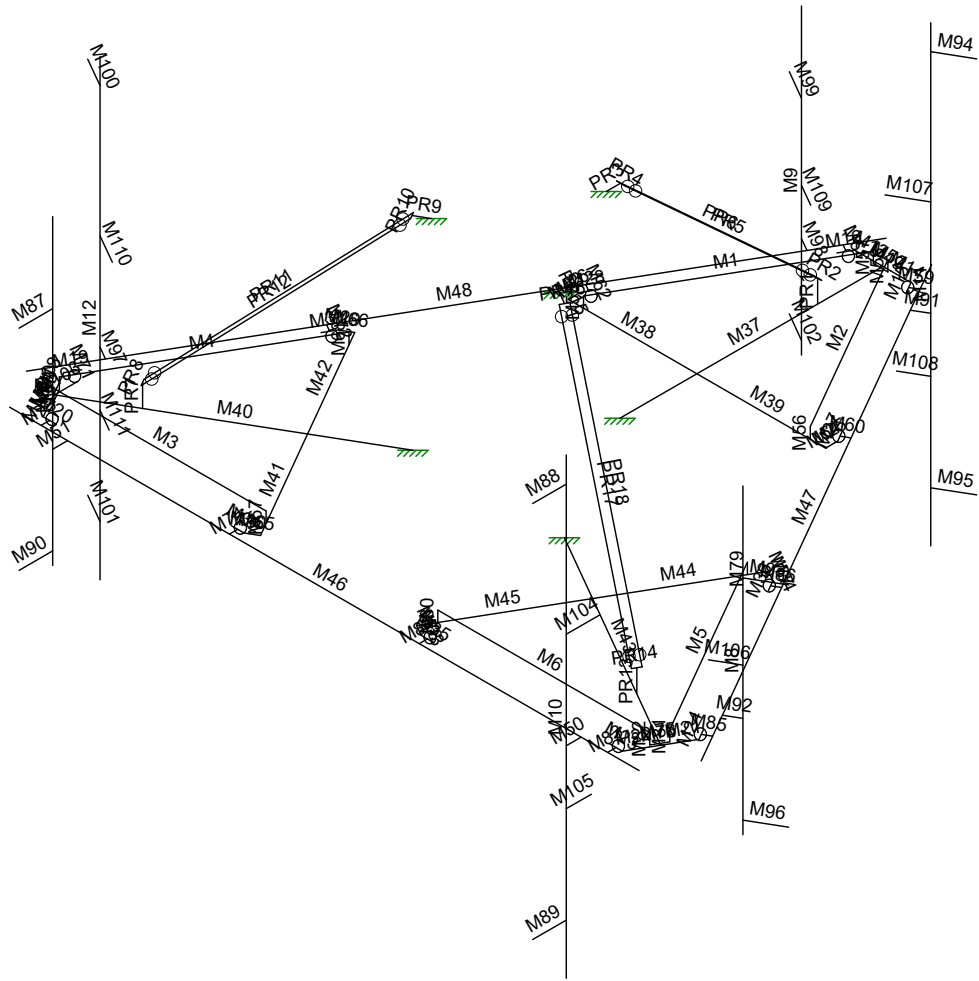
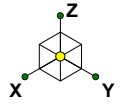


Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Joint Labels |

| |
|-----------------------------|
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| 41124-12927164-01-MA-R1.r3d |

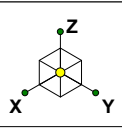


Envelope Only Solution

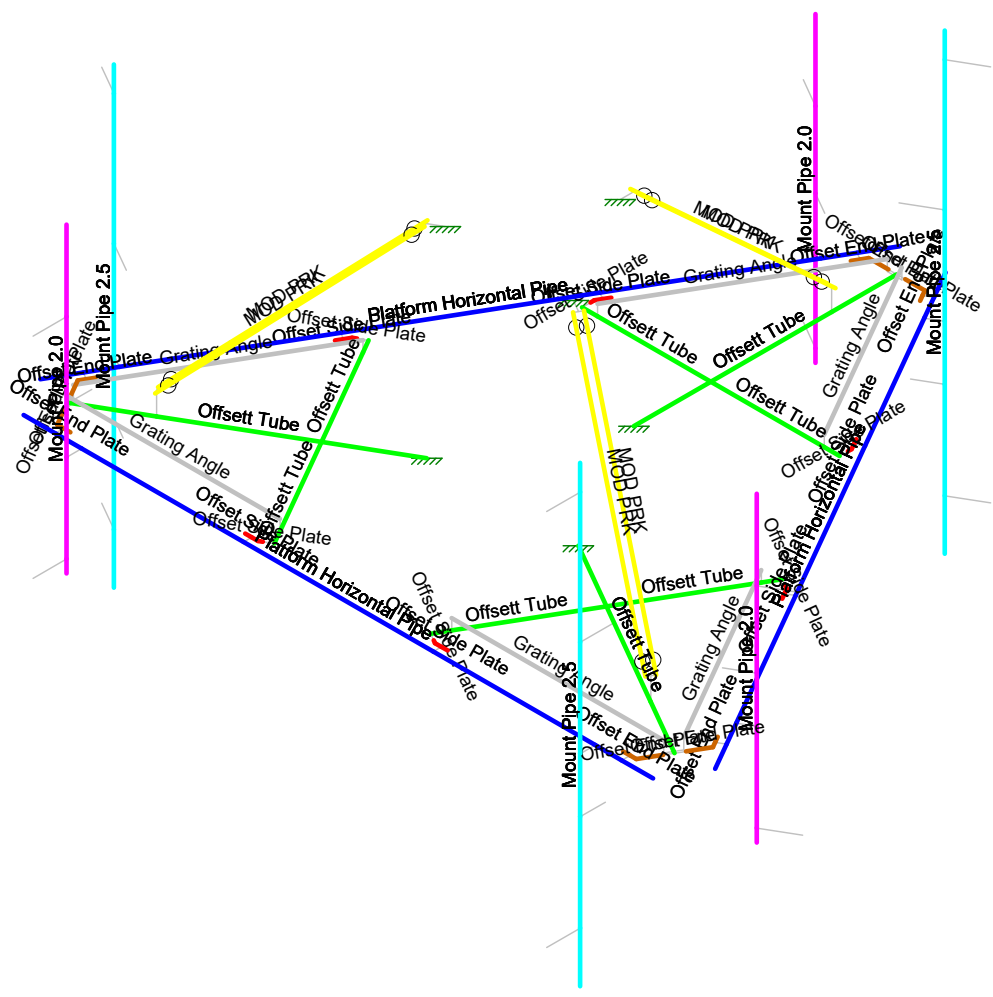
| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Member Labels |

| |
|-----------------------------|
| SK - 3 |
| July 5, 2019 at 9:49 AM |
| 41124-12927164-01-MA-R1.r3d |



- Section Sets
- Platform Horizontal Pipe
 - Offset Tube
 - Offset Side Plate
 - Grating Angle
 - Mount Pipe 2.0
 - Mount Pipe 2.5
 - Offset End Plate
 - MOD PRK
 - RIGID

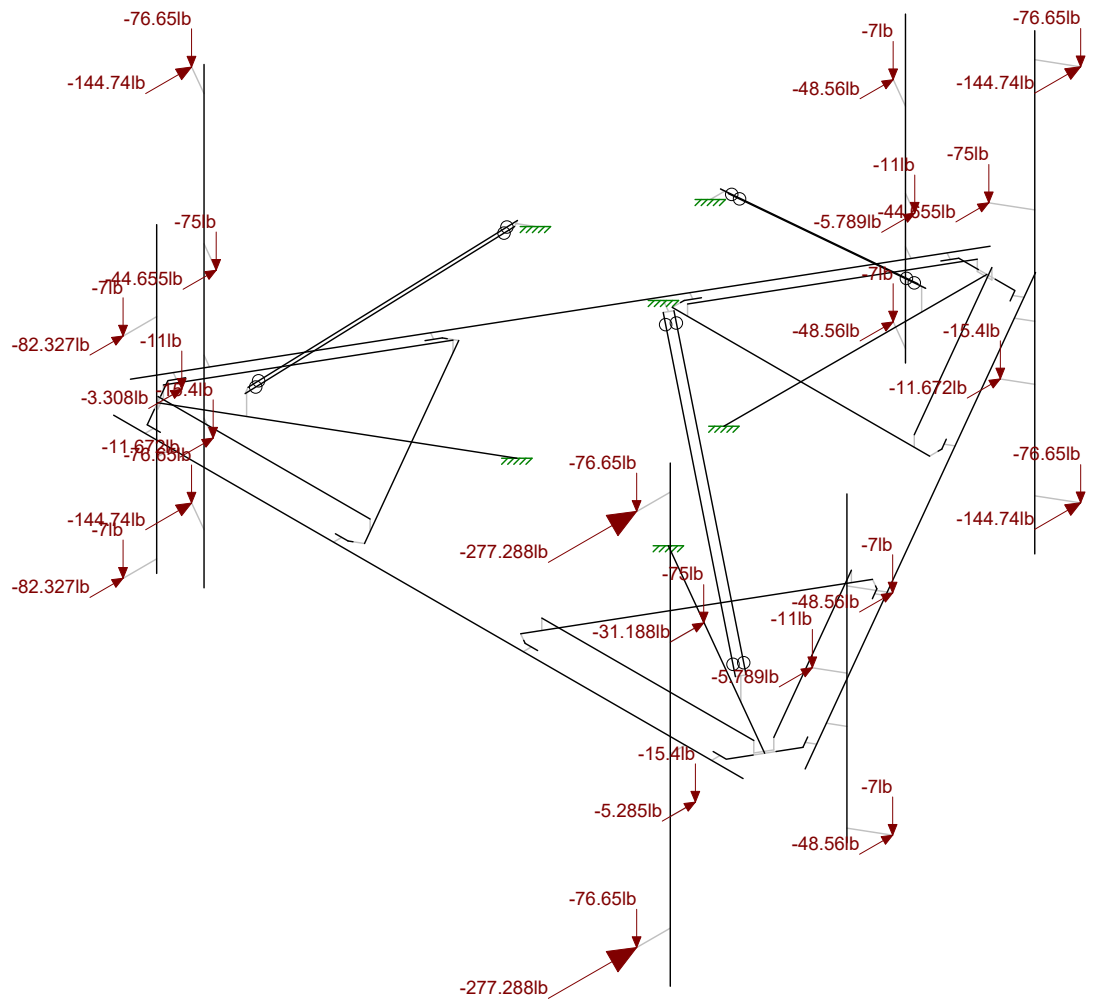
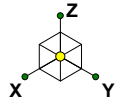


Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Section Sets |

| |
|-----------------------------|
| SK - 4 |
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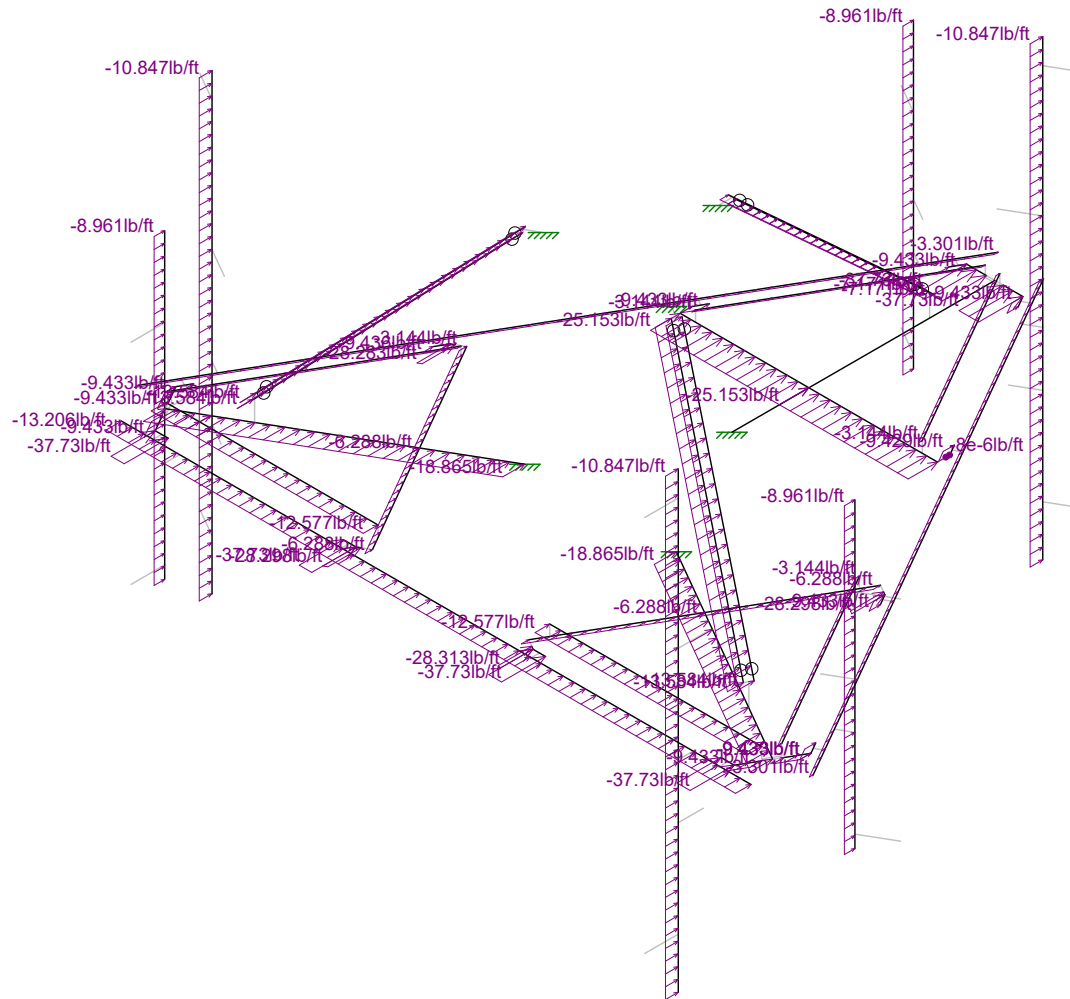
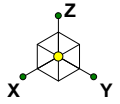


Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

41124-12927164-Andover-bunker Hill Road
Joint Loads - Dead and Normal Wind

| |
|-----------------------------|
| SK - 5 |
| July 5, 2019 at 9:49 AM |
| 41124-12927164-01-MA-R1.r3d |

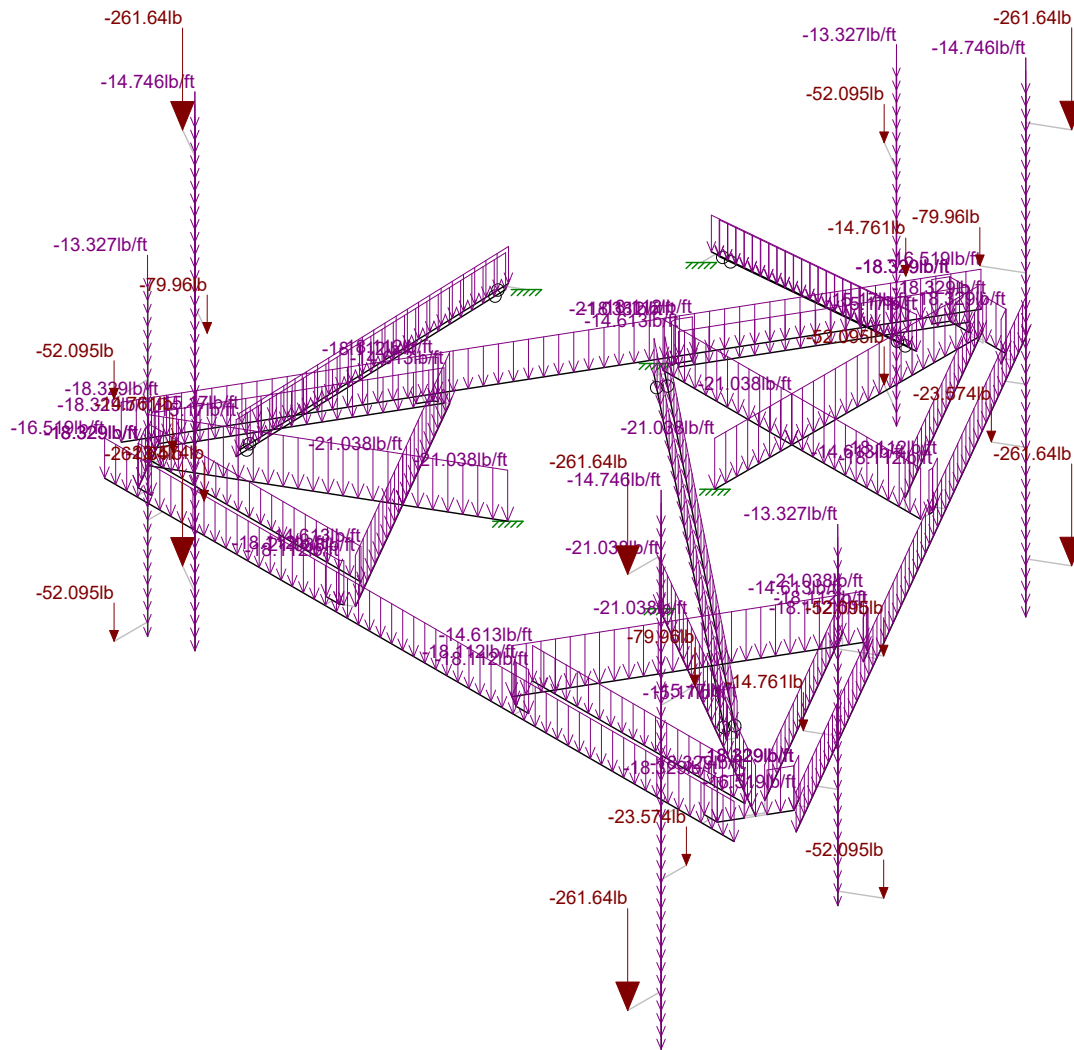
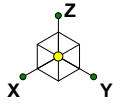


Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Distributed Load - Normal Wind |

| |
|-----------------------------|
| SK - 6 |
| July 5, 2019 at 9:50 AM |
| 41124-12927164-01-MA-R1.r3d |

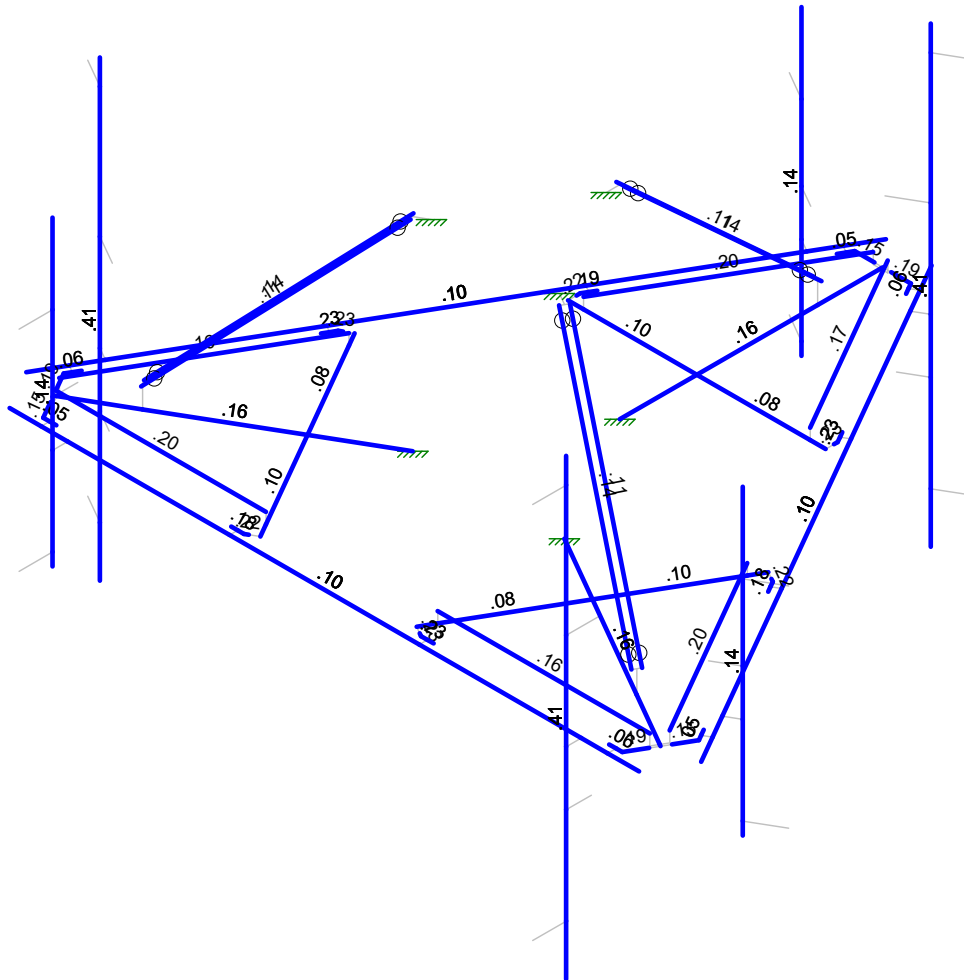
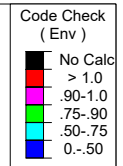
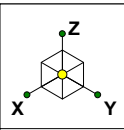


Loads: BLC 2, Ice Dead
Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Ice Dead Loads |

| |
|-----------------------------|
| SK - 7 |
| July 5, 2019 at 9:50 AM |
| 41124-12927164-01-MA-R1.r3d |

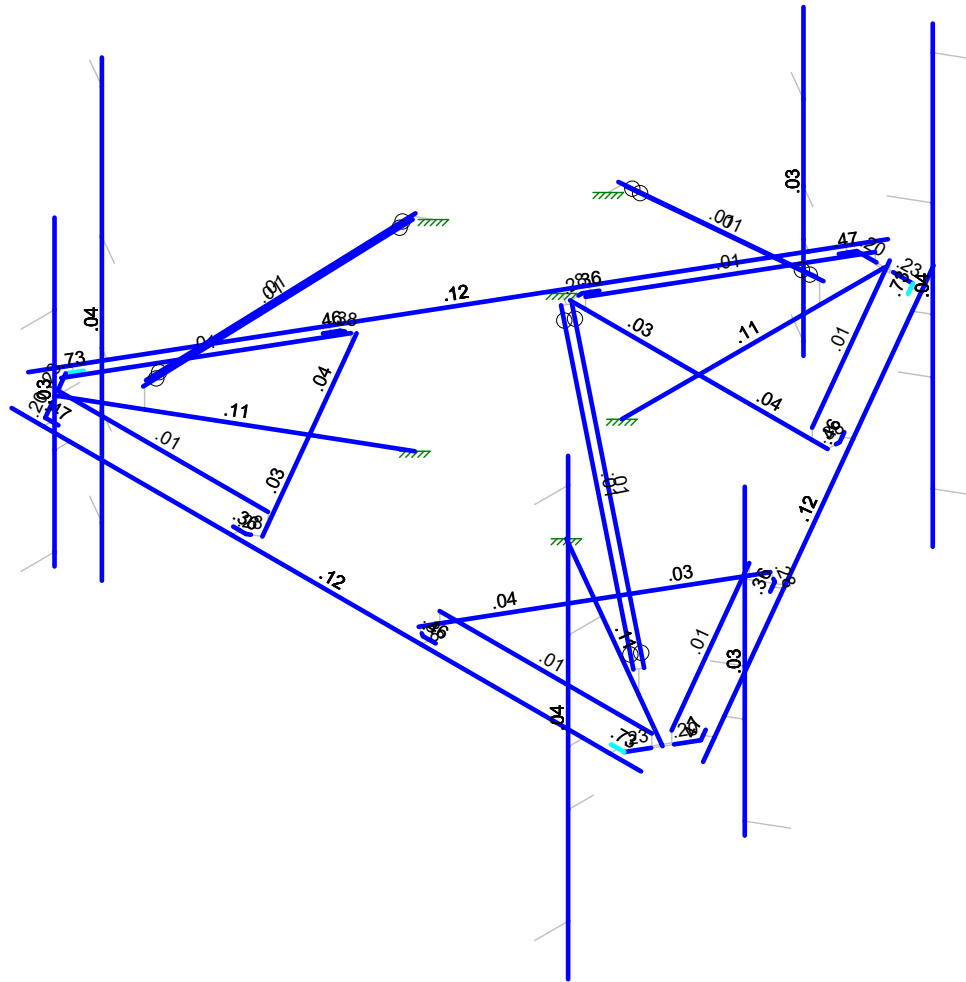
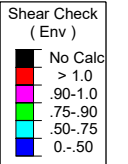
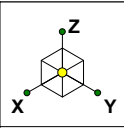


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

41124-12927164-Andover-bunker Hill Road
Envelope Member Unity Check Results - Bending

| |
|-----------------------------|
| SK - 8 |
| July 5, 2019 at 9:50 AM |
| 41124-12927164-01-MA-R1.r3d |



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

| |
|-------------------------|
| CLS |
| SMR |
| 41124-12927164-01-MA-R1 |

| |
|---|
| 41124-12927164-Andover-bunker Hill Road |
| Envelope Member Check Results - Shear |

| |
|-----------------------------|
| SK - 9 |
| July 5, 2019 at 9:50 AM |
| 41124-12927164-01-MA-R1.r3d |

Exhibit F

Power Density/RF Emissions Report

**RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS**

T-Mobile Existing Facility

Site ID: CT11502A

**SpectraSite Andover
104 Bunker Hill Road
Andover, Connecticut 06232**

May 31, 2019

EBI Project Number: 6219001987

| Site Compliance Summary | |
|---|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general population allowable limit: | 10.30% |

May 31, 2019

T-Mobile

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11502A - SpectraSite Andover

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **104 Bunker Hill Road in Andover, Connecticut** 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.

Public 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 and 700 MHz frequency 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), 2100 MHz (AWS) and 11 GHz frequency 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.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 104 Bunker Hill Road in Andover, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.
- 9) The antenna mounting height centerline of the proposed antennas is 148 feet above ground level (AGL).
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 11) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

| Sector: | A | Sector: | B | Sector: | C |
|---------------------|---|---------------------|---|---------------------|---|
| Antenna #: | I | Antenna #: | I | Antenna #: | I |
| Make / Model: | RFS APXVAARR24_43-U-NA20 | Make / Model: | RFS APXVAARR24_43-U-NA20 | Make / Model: | RFS APXVAARR24_43-U-NA20 |
| Frequency Bands: | 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz | Frequency Bands: | 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz | Frequency Bands: | 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz |
| Gain: | 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd | Gain: | 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd | Gain: | 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd |
| Height (AGL): | 148 feet | Height (AGL): | 148 feet | Height (AGL): | 148 feet |
| Channel Count: | 12 | Channel Count: | 12 | Channel Count: | 12 |
| Total TX Power (W): | 480 Watts | Total TX Power (W): | 480 Watts | Total TX Power (W): | 480 Watts |
| ERP (W): | 16,474.09 | ERP (W): | 16,474.09 | ERP (W): | 16,474.09 |
| Antenna AI MPE %: | 3.24% | Antenna BI MPE %: | 3.24% | Antenna CI MPE %: | 3.24% |

| Site Composite MPE % | |
|-----------------------------|---------------|
| Carrier | MPE % |
| T-Mobile (Max at Sector A): | 3.24% |
| AT&T | 1.87% |
| Verizon | 2.9% |
| Nextel | 0.19% |
| Sprint | 2.1% |
| Site Total MPE % : | 10.30% |

| T-Mobile MPE % Per Sector | |
|---------------------------|---------------|
| T-Mobile Sector A Total: | 3.24% |
| T-Mobile Sector B Total: | 3.24% |
| T-Mobile Sector C Total: | 3.24% |
| Site Total MPE % : | |
| | 10.30% |

| T-Mobile Maximum MPE Power Values (Sector A) | | | | | | | |
|---|------------|-------------------------|---------------|---|------------------|---|------------------|
| T-Mobile Frequency Band / Technology (Sector A) | # 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 600 MHz LTE | 2 | 591.73 | 148.0 | 1.94 | 600 MHz LTE | 400 | 0.49% |
| T-Mobile 700 MHz LTE | 2 | 648.82 | 148.0 | 2.13 | 700 MHz LTE | 467 | 0.46% |
| T-Mobile 1900 MHz GSM | 4 | 1101.85 | 148.0 | 7.23 | 1900 MHz GSM | 1000 | 0.72% |
| T-Mobile 1900 MHz LTE PCS | 2 | 2203.69 | 148.0 | 7.23 | 1900 MHz LTE PCS | 1000 | 0.72% |
| T-Mobile 2100 MHz LTE AWS | 2 | 2589.11 | 148.0 | 8.50 | 2100 MHz LTE AWS | 1000 | 0.85% |
| | | | | | | Total: | 3.24% |

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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: | 3.24% |
| Sector B: | 3.24% |
| Sector C: | 3.24% |
| T-Mobile Maximum MPE % (Sector A): | 3.24% |
| | |
| Site Total: | 10.30% |
| | |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **10.30%** 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.

Exhibit G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

- 1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
- 2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
- 3. **GETTING YOUR SHIPMENT TO UPS**
Customers with a Daily Pickup
 Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

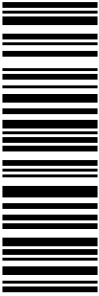
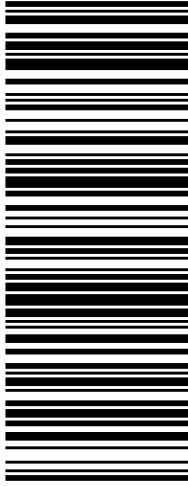

Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages. Hand the package to any UPS driver in your area.

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE

| | | | |
|---|---|---|---|
| <p>1 LBS</p> <p>1 OF 1</p> <p>NEIL GUERRERO 3473040176 TRANSCEND WIRELESS 10 INDUSTRIAL AVE MAHWAH NJ 07430</p> <p>SHIP TO: JOHN VALENTE TOWN OF ANDOVER ANDOVER TOWN HALL 17 SCHOOL ROAD ANDOVER CT 06232-1526</p> | <p>CT 061 9-01</p>  | <p>UPS GROUND</p> <p>TRACKING #: 1Z V25 742 03 9049 3533</p>  | <p>BILLING: P/P</p> <p>Reference#1: CT11502A Reference#2: UPS-Planner</p>  <p>UPS 21.5.24- WNTNVS0 15.04.07/2019</p> |
|---|---|---|---|

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. GETTING YOUR SHIPMENT TO UPS

Customers with a Daily Pickup

Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.

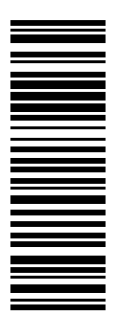
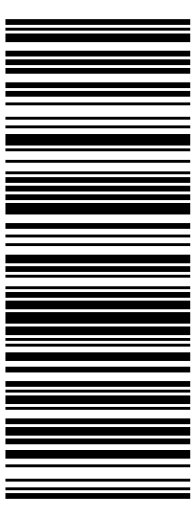

Hand the package to any UPS driver in your area.

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE

| | | | |
|---|---|--|--|
| <p>NEIL GUERRIERO 3473040176 TRANSCEND WIRELESS 10 INDUSTRIAL AVE MAHWAH NJ 07430</p> <p>SHIP TO: AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN MA 01801-1053</p> | <p style="text-align: right;">1 OF 1</p> <p style="text-align: center; font-size: 2em;">MA 018 9-04</p>  | <p style="text-align: center;">UPS GROUND</p> <p>TRACKING #: 1Z V25 742 03 9139 8368</p>  | <p style="text-align: center;">BILLING: P/P</p> <p>Reference#1: CT11502A Reference#2: UPS-ATC</p> <p style="text-align: center;">  <small>UPS 21.5.22. WINTNVS0 12.0A 04/2019</small> </p> |
|---|---|--|--|

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. GETTING YOUR SHIPMENT TO UPS

Customers with a Daily Pickup

Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.


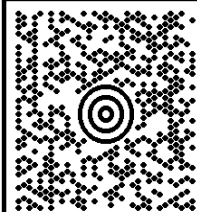

Hand the package to any UPS driver in your area.

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

UPS Access Point™
POSTNET NY137
74 LAFAYETTE AVE
SUFFERN ,NY 10901

FOLD HERE

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|--|--|---|
| <p style="text-align: right;">1 LBS</p> <p style="text-align: right;">1 OF 1</p> <p>NEIL GUERRIERO 3473040176 TRANSCEND WIRELESS 10 INDUSTRIAL AVE MAHWAH NJ 07430</p> <p>SHIP TO: ROBERT BURBANK TOWN OF ANDOVER 17 SCHOOL RD ANDOVER CT 06232-1526</p> | <p style="font-size: 2em;">CT 061 9-01</p>   <p>UPS GROUND</p> <p>TRACKING #: 1Z V25 742 03 9010 2384</p>  | <p style="text-align: right;">BILLING: P/P</p> <p>Reference#1: CT11502A Reference#2: UPS-Mayor</p> <p style="text-align: right; font-size: 0.8em;">UPS 21.5.22. WINTNVE0 12.0A 04/2019</p>  |
|--|--|---|

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. **GETTING YOUR SHIPMENT TO UPS**
Customers with a Daily Pickup
Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

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|--|-----------------------|--|--|---|---|
| NEIL GUERRIERO 3473040176 TRANSCEND WIRELESS 10 INDUSTRIAL AVE MAHWAH NJ 07430 | 1.0 LBS LTR 1 OF 1 | SHIP TO: LEON AND BENJAMIN PRICE 104 BUNKER HILL ROAD ANDOVER CT 06232-1301 | CT 061 9-01  | UPS 2ND DAY AIR 2 TRACKING #: 1Z V25 742 02 9545 8207  | BILLING: P/P Reference#1: CT11502A Reference#2: LL UPS 21.5.24- WNTNVS0 15.04.07/2019  |
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