



Filed by:

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

March 3, 2021

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

RE: Notice of Exempt Modification
134 R Creamery Rd., (a.k.a 128R) Durham, CT 01588
Latitude: 41.441352
Longitude: -72.696147
Sprint, now a part of T-Mobile USA #: CTHA475A_Sprint Retain

Dear Ms. Bachman:

Sprint/T-Mobile currently maintains three (3) antennas at the 96.6-foot level of the existing 109-foot Monopole Tower at 134 R (a.k.a 128R) Creamery Rd., CT. The 109-foot tower is owned by SBA Steel, LLC. The property is owned by Rising Sun Tower, LLC. T-Mobile now intends to remove three (3) antennas and replace with three (3) new 2500 MHz antennas and install six (6) additional new 600/700/1900/2100 MHz antennas.

The new antennas would support 5g services and would be installed at the 96.6-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- (3) KMW ETCR-654L12H6 antenna (remove) – (3) AIR6449 B41 2500 MHz antennas (replace)

Install New:

- (3) Ericsson AIR32 KRD901146-1_B66A_B2A antenna
- (3) RFS APXVAALL24-43_U-NA20 antenna
- (3) Ericsson 4415 B25 RRU
- (3) Ericsson 4449 B71+ B85 RRU
- (3) 1-5/8" Hybrid
- (1) Site Pro ULPD12-472 - Platform w/HR

Existing Equipment to Remain:

- (1) 6' side mount & GPS antenna @76'

Entitlements:

- (6) ALU 800 MHz – RRUs
- (4) 1-1/4" Fiber

GROUND

Install New:

- (1) 2" conduit (underground)
- (1) 2: conduit on top of concrete pad
- (2) 2" conduits (between new B160 Battery cabinet)
- (1) 6160 Cabinet
- (1) B160 Battery Cabinet
- (1) AAV Cabinet and H-Frame

Remove:

- Existing Sprint Equipment (cabinets)

This facility was approved by the Council on December 9, 2003 under Docket 254. Approval was given for a flush mounted tower no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of the carrier and other entities, both public and private, but not to exceed 100-feet above ground level and capable of being increased in height by means of a petition to the Council. The Council further approved a ten-foot extension to the Tower under Petition No. 1092 on March 6, 2014 (attached). The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and b) construction plans for site clearing,

water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended. 3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order. 4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards. 5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. 6. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. 7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function. 8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Ashford's First Selectman, Cathryn E. Silver-Smith, and Building Official James Rupert, as well as to the property owner, Rising Sun Tower, LLC. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments

cc: Robin Newton, Town Planner / with attachments
Durham Town Hall, 30 Townhouse Rd. P.O. Box 428 Durham, CT 06422
Laura L. Francis, First Selectman / with attachments
Durham Town Hall, 30 Townhouse Rd. P.O. Box 428 Durham, CT 06422
Rising Sun Tower, LLC / with attachments
191 Dasher Circle, Aiken, SC 29803

XHIBIT LIST

| | | |
|------------|--------------------------|--|
| Exhibit 1 | Check Copy | To be invoiced at a later date per Covid guidelines |
| Exhibit 2 | Notification Receipts | x |
| Exhibit 3 | Property Card | x |
| Exhibit 4 | Property Map | x |
| Exhibit 5 | Original Zoning Approval | CSC Docket No. 254, CSC Petition No. 1092 3/6/14, Town of Durham BP #05-76 9/21/04 |
| Exhibit 6 | Construction Drawings | Centerline 2/24/21 |
| Exhibit 7 | Structural Analysis | TES 12/18/20 |
| Exhibit 8 | Mount Analysis | TES 12/18/20 |
| Exhibit 10 | EME Report | EBI Consulting 2/22/21 |

EXHIBIT 1

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

EXHIBIT 2

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

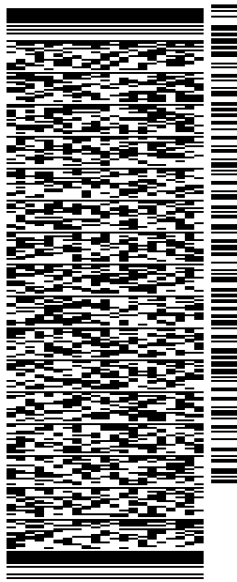
SHIP DATE: 03MAR21
ACTWGT: 1.00 LB
CAD: 105843304/NET14340

BILL SENDER

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

NEW BRITAIN CT 06051

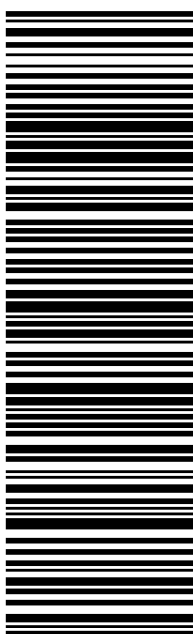
(508) 251-0720 X.3807 REF: 105692009-6089
INV# PO: DEPT:



TRK# 7730 5817 9202 THU - 04 MAR 10:30A
0201 PRIORITY OVERNIGHT

EB BDLA

06051
CT:US BDL



56DJ3/AC39/FE4A

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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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

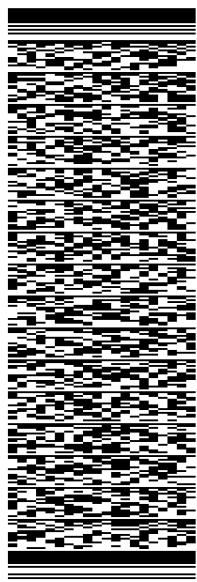
ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 03MAR21
ACTWGT: 1.00 LB
CAD: 105843304/NET4340
BILL SENDER

TO
ROBIN NEWTON, TOWN PLANNER
TOWN OF DURHAM
30 TOWNHOUSE RD.

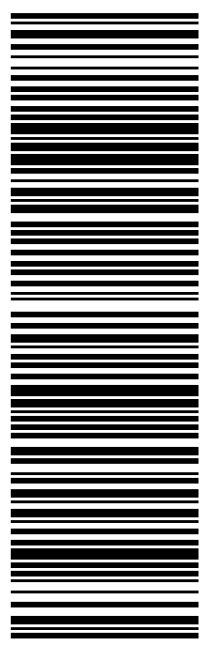
DURHAM CT 06422

(508) 251-0720 X.3807 REF: 1056920096089
INV# DEPT:



TRK# 7730 5822 2490 THU - 04 MAR 10:30A
0201 PRIORITY OVERNIGHT

EB RSPA 06422
CT-US BDL



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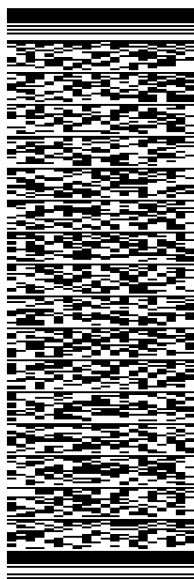
ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 03MAR21
ACTWGT: 1.00 LB
CAD: 105843304/NET4340

BILL SENDER

TO LAURA L. FRANCIS, FIRST SELECTMAN
TOWN OF DURHAM
30 TOWNHOUSE RD.
DURHAM CT 06422

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



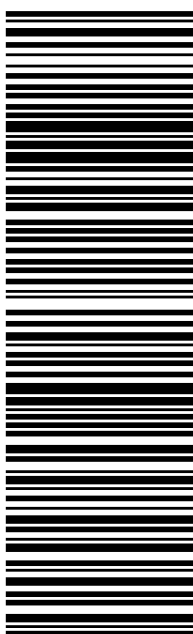
J211121011901uv

56DJ3/AC39/FE4A

TRK# 7730 5824 1646 THU - 04 MAR 10:30A
0201 PRIORITY OVERNIGHT

EB RSPA

06422
CT:US BDL



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EXHIBIT 3

Durham, CT : Commercial Property Record Card

[\[Back to Search Results \]](#)
[\[Start a New Search \]](#) [\[Help with Printing \]](#)

Search For Properties

Parcel ID

Name

Street Name

| Parcel ID | Card | Routing No | Location | Zoning | State Class | Acres |
|-----------|------|------------|------------------|--------|-------------|-------|
| L0141901 | 1 | 100 030 | 128R CREAMERY RD | FR | 200 - n/a | 6.430 |

Living Units

0

Owner Information

Rising Sun Tower Llc C/O Sprint Spectrum Lp
191 Dasher Circle
Aiken SC 29803

Property Picture

[No Picture Available]

Deed Information

Book/Page: 279/570

Deed Date: 2018/02/26

Building Information

Building No: 0

Year Built: 0

No of Units: 0

Structure Type:

Grade:

Identical Units: 0

Valuation

Land: \$236,700

Building: \$64,800

Total: \$231,200

Net Assessment: \$161,840

Sales History

| Book/Page | Date | Price | Type | Validity |
|-----------|------|-------|------|----------|
|-----------|------|-------|------|----------|

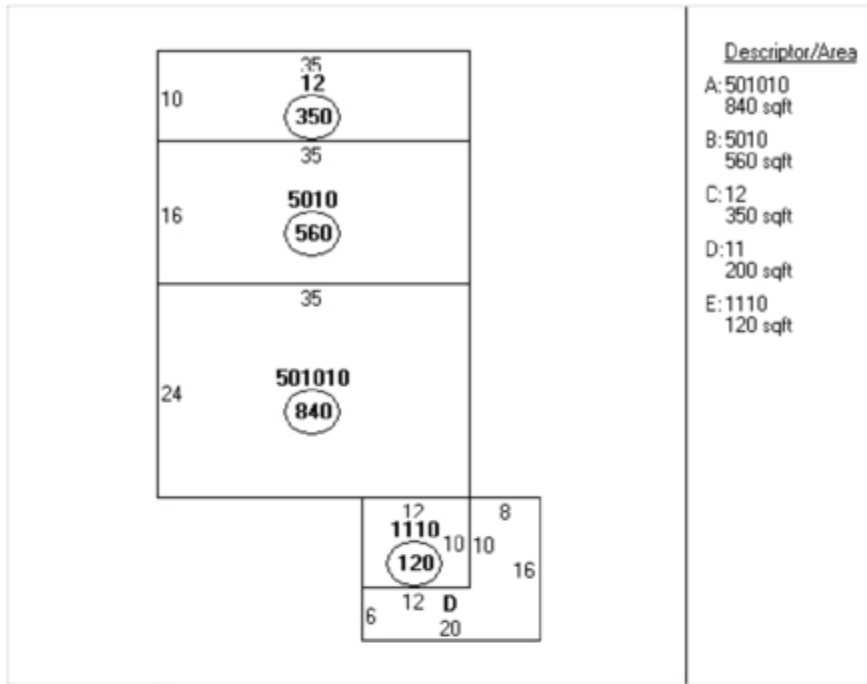
Out Building Information

| Structure Code | Width | Lgth/SqFt | Year | RCNLD |
|----------------|-------|-----------|------|-------|
|----------------|-------|-----------|------|-------|

Exterior/Interior Information

| Levels | Size | Use Type | Ext. Walls | Const. Type | Partitions | Heating | A/C | Plumbing | Condition | Func. Utility | Unadj. RCNLD |
|--------|------|----------|------------|-------------|------------|---------|-----|----------|-----------|---------------|--------------|
|--------|------|----------|------------|-------------|------------|---------|-----|----------|-----------|---------------|--------------|

Building Sketch



Descriptor/Area

- A: 501010
840 sqft
- B: 5010
560 sqft
- C: 12
350 sqft
- D: 11
200 sqft
- E: 1110
120 sqft

Notice

The information delivered through this on-line database is provided in the spirit of open access to government information and is intended as an enhanced service and convenience for citizens of Durham, CT.

The providers of this database: CLT, Big Room Studios, and Durham, CT assume no liability for any error or omission in the information provided here.

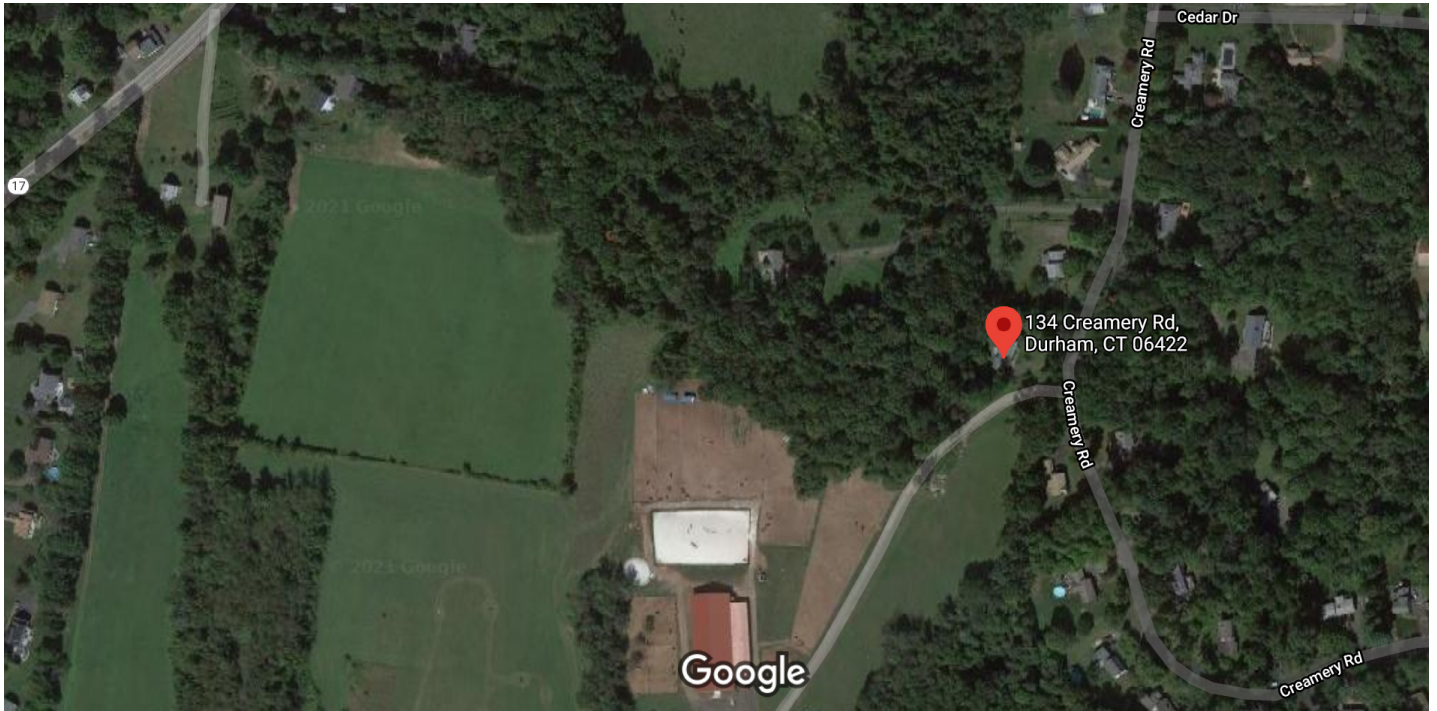
Currently All Values Have Not Been Finalized and Are Subject To Change.

Comments regarding this service should be directed to: jphilip@townofdurhamct.org



EXHIBIT 4

Google Maps 134 Creamery Rd



Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 200 ft

Google Maps 128R Creamery Rd



Imagery ©2021 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 200 ft

EXHIBIT 5

Connecticut Siting Council^(/CSC)

[CT.gov Home](#) [\(/\)](#) [Connecticut Siting Council](#) [\(/CSC\)](#) DO 254 Durham D&O

[Decisions \(/CSC/Decisions/Decisions\)](#) >

[Meetings and Minutes \(/CSC/Common-Elements/v4-template/Council-Activity\)](#) >

[Pending Matters \(/CSC/1_Applications-and-Other-Pending-Matters/Pending-Matters\)](#) >

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[Contact Us \(/CSC/Common-Elements/Common-Elements/Contact-Us\)](#) >

Search Connecticut Siting Council



| | | |
|---|---|------------------|
| DOCKET NO. 254 - Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 134R Creamery Road, Durham, Connecticut. | } | Connecticut |
| | } | Siting |
| | } | Council |
| | | December 9, 2003 |

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the proposed site, located at 134R Creamery Road, Durham, Connecticut.

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

1. The tower shall be constructed as a flush-mounted tower, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 100 feet above ground level, capable of being increased in height by means of a petition to the Council.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

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

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

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case

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

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

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

6. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, The Town Times and The Middletown Press.

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

The parties and intervenors to this proceeding are:

| <u>Applicant</u> | <u>Its Representative</u> |
|--|---|
| Sprint Spectrum, L..P. d/b/a Sprint PCS | Thomas J. Regan, Esq. Brown Rudnick Berlack Israels LLP CityPlace I, 38 th Floor 185 Asylum Street Hartford, CT 06103-3402 |
| <u>Intervenor</u> | <u>Its Representative</u> |
| Tower Ventures II, LLC | Scott T. Penner, Esq. Hurwitz & Sagarin, LLC 147 N. Broad St. P.O. Box 112 Milford, CT 06460 |

Petition No. 1092
Verizon
Durham, Connecticut
Staff Report
March 6, 2014

On January 16, 2014, the Connecticut Siting Council (Council) received a petition from Cellco Partnership d/b/a Verizon Wireless (Verizon) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the extension of an existing telecommunications facility at 134R Creamery Road in Durham, Connecticut. Council member Dr. Barbara Bell and Siting Analyst David Martin visited the site on February 21, 2014 to review the proposal. Attorney Kenneth Baldwin represented Verizon at the field review. Durham's First Selectman Laura Francis and two members of the Durham South End Cellular Action Group, Charles Stengel and Carleton Stoup, were also present at the field review. The Town of Durham's Communications Officer, Scott Wright, participated in the field review via cellphone.

The existing telecommunications tower is currently owned by SBA and was approved by the Council under Docket 254 on December 9, 2003 at a height of 100 feet and capable of being increased in height by means of a petition to the Council. The Decision and Order also specified that all antennas on the tower would have to be flush mounted. According to engineering drawings submitted with the Development and Management Plan, the tower was designed to be extendable to a maximum height of 130 feet, which is the height the docket applicant, Sprint, originally proposed. Currently, Sprint has three flush mounted antennas at a centerline height of 96.5 feet and the Town of Durham has a whip antenna at a mounting height of 78.5 feet and a dipole antenna at a mounting height of 71.7 feet.

Verizon now proposes to extend the tower by 10 feet to a height of 110 feet in order to install nine cluster mounted antennas at a centerline height of 107 feet. Verizon would also install a 12-foot by 30-foot shelter, within the existing 50-foot by 50-foot compound, for its ground equipment and a diesel generator for backup power.

In addition to notifying the Town, Verizon provided notice to abutting property owners. No opposing comments have been received.

This petition is somewhat unusual in that a local citizens' group, the Durham South End Cellular Action Group, is asking the Council to consider approving a higher extension of the tower than the petitioner is proposing. This group is concerned about the lack of wireless coverage in the southern part of Durham and has been working with town officials to find a solution for this problem. The group has submitted a letter to the Council stating its concerns and suggesting that the tower be extended to 140 feet and that platforms be allowed instead of restricting antennas to flush-mounts. During the field review, the First Selectman made it clear that she supported this group's efforts to improve coverage in this part of the town. The town's Communications Officer also stated that Verizon's proposed tower extension would be welcomed because it would enable the town to improve the coverage of its emergency services wireless network. Durham's State Senator, Ed Meyer, submitted a letter requesting an extension of the tower to 140 feet, and State Representative Vincent Candelora wrote to support the proposed height extension. This municipal and legislative support for the petition is especially noteworthy given the considerable opposition voiced by neighbors and town officials during the original docket proceeding.

For this petition, Council staff sent a memo to telecom carriers asking if any of them had an interest in co-locating on this tower. To date, only T-Mobile has responded, stating that it does have an interest in this site "in the immediate future."

The maps of Verizon's existing and proposed coverage submitted in support of this petition indicate that extending the tower to 110 feet will meet Verizon's coverage objectives and that going to a height of 140 feet would not significantly improve the coverage possible from this tower. At the request of the Cellular Action Group and the Council for evidence of this position, Verizon supplied supplemental maps showing the predicted coverage from 140 feet. These maps corroborate Verizon's stance that locating its antennas at the 140-foot height would not result in any significant improvement in coverage.

A Visibility Analysis was submitted as part of the petition materials. The low height of the existing tower makes it scarcely visible in the surrounding area. This condition was confirmed by the two members of the Durham South End Cellular Action Group, who took their own, informal visual survey from vantage points in the neighborhood. It was also confirmed by the Council's representatives who, while standing in the driveway of the property owner's house, could not see the tower. A 10-foot extension of the tower should hardly make a discernible difference in its visibility.

The proposed tower extension is not expected to have any substantial adverse environmental effects. Staff recommends approval.



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

www.ct.gov/csc

August 27, 2004

Thomas J. Regan, Esq.
Brown Rudnick Berlack Israels LLP
CityPlace I, 38th Floor
185 Asylum Street
Hartford, CT 06103-3402

RE: **DOCKET NO. 254** - Sprint Spectrum, L.P. d/b/a Sprint PCS Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 134R Creamery Road, Durham, Connecticut.

Dear Attorney Regan


At a public meeting of the Connecticut Siting Council held on August 26, 2004, the Connecticut Siting Council (Council) considered and approved the Development and Management (D&M) Plan submitted for this project on August 10, 2004, and additional information on August 25, 2004, with the condition that the plantings intended for visual screening around the facility compound be planted in a less regimented, more naturalistic manner. To this end, the Certificate Holder is directed to submit a revised landscaping plan for staff review.

This approval applies only to the D&M Plan submitted on August 10, 2004 and August 25, 2004. Any changes to the D&M Plan require advance Council notification and approval.

Please be advised that deviations from this plan are enforceable under the provisions of the Connecticut General Statutes § 16-50u. Enclosed is a copy of the staff report on this D&M Plan, dated August 26, 2004.

Thank you for your attention and cooperation.

Very truly yours,


Pamela B. Katz, P.E.
Chairman

PBK/laf

Enclosure: Staff Report, dated August 26, 2004

c: Parties and Intervenors



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

www.ct.gov/csc

DOCKET NO. 254

Sprint Spectrum L.P.

Development and Management Plan

Durham, Connecticut

Staff Report

August 26, 2004

On August 10, 2004, Sprint Spectrum L.P. (Sprint) submitted a Development and Management Plan (D&M Plan) for a tower in Durham, Connecticut, which was approved by the Connecticut Siting Council (Council) on December 9, 2003. Sprint has submitted plans to construct a 100-foot growable monopole within a 50-foot by 50-foot fenced compound within the 100-foot by 100-foot Sprint lease area. Sprint would place its equipment cabinets on an 18-foot by 9.5-foot equipment pad within the fenced enclosure. Utilities would be brought in underground from Creamery Road. The access road from Creamery Road would be gravel and 12 feet in width. Erosion and sediment controls would be placed along the eastern and southeastern portions of the compound and along the access road as needed. Trees would be preserved and protected along the access route as noted on Plan C-2. Staff recommends the erosion and sediment controls be removed no more than 30 days after final site stabilization has been achieved after consultation with Council Staff. Sprint proposes to plant 19 evergreen trees along the outside perimeter of the fence. Staff recommends that these plantings be staggered to present a more natural appearance.

Sprint would place 3 low-visibility panel antennas at 98.5 feet (centerline) above ground level on the 100-foot monopole. The monopole would be designed in accordance with TIA/EIA Standard 222F for 95 mile per hour winds and one-half inch of radial ice. Staff has confirmed with Sprint that the tower will not exceed a total height of 100 feet above ground level, in accordance with the Council's Decision and Order in this docket. On August 25, 2004, Sprint filed revised drawings consistent with a 100-foot monopole. Elements of the D&M plan appear to be in compliance with the Council's Decision and Order, and Staff therefore recommends approval.

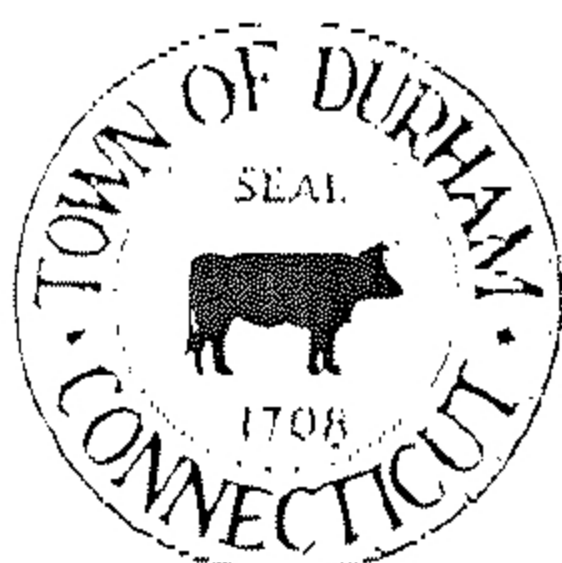
LIST OF PARTIES AND INTERVENORS
SERVICE LIST

| Status Granted | Status Holder (name, address & phone number) | Representative (name, address & phone number) |
|-----------------------|---|---|
| Applicant | Sprint Spectrum, L..P. d/b/a Sprint PCS | Thomas J. Regan, Esq. Brown Rudnick Berlack Israels LLP CityPlace I, 38 th Floor 185 Asylum Street Hartford, CT 06103-3402 (860) 509-6522 (860) 509-6501 - fax tregan@brbilaw.com |
| Intervenor | Tower Ventures II, LLC | Scott T. Penner, Esq. Hurwitz & Sagarin, LLC 147 N. Broad St. P.O. Box 112 Milford, CT 06460 (203) 877-8000 |
| | | |
| | | |
| | | |

CT33x0526

TOWN OF DURHAM

Department of Building and Zoning
30 Town House Road, Durham, CT 06422



Building/Zoning Permit
Date: _____

AFFECTED ADDRESS:

100 30 *34R CREAMERY ROAD
Map # Lot # Street # Street Name

Owner: SPRINT PCS

Applicant STEVEN FLORIO

Address: 1 INTERNATIONAL BLVD SUITE 800

Address: 21 WINDMILL ROAD, HARTWICK CT.

Phone: (201) 684-4000
MORRIS HILLS N.J. 07495

Phone: (860) 485-0361 Cell: 860-655-7943

License # 900923 Exp 6/30/05

Zoning Application

Building Application

Application for: _____

Description of Work: CONSTRUCT 100' SPRINT PCS TOWER.

Estimated Structure Cost: 152,500.00

| | |
|------------------------|-----------------------------|
| Approval Dates: | Is proposed work in |
| PZC _____ | flood plain? If yes, |
| ZBA _____ | Base Flood _____ |
| IWWCA _____ | Elevation _____ |
| Historic Dist. _____ | Lowest Flood _____ |
| | Elevation _____ |

Electric INC.
 Plumbing _____
 Heating/Cooling _____

Total Cost \$ _____

Setbacks to property lines

Front _____ Rear _____
 Side _____ Side _____

| | |
|------------------------------|------------------------------|
| Type of Construction: | Building Description: |
| New <u>X</u> | Length <u>NOVE.</u> |
| Addition _____ | Width _____ |
| Accessory _____ | Height _____ |
| Demolition _____ | |
| Pool: _____ | |
| Remodeling: _____ | |

Square Footage:

| | |
|-----------------|--------------------|
| 1st Floor _____ | Basement _____ |
| 2nd Floor _____ | Garage _____ |
| 3rd Floor _____ | Total _____ |

Attach lot map or sketch below with dimensions:

See attached site plan w/ siting Council Meeting

Per Siting Council - revised buffer plan to follow.

FOR DEPARTMENT USE:

Permit Fee \$ 1520.00
 State Fee \$ 24.32
 Total Permit Fee \$ \$1544.32
 Permit # 05-73

I hereby certify that I am the owner or agent for owner of the above referenced property. I authorize access to the property referenced for the purpose of inspections. By signing this permit, it is agreed that all laws and regulations will be conformed to. All information contained within is true and accurate to the best of my knowledge and belief.

Signature of Applicant: _____

| | | | |
|--|------------|--|------------------------|
| <u>N/A</u> Zoning Enforcement Officer | _____ Date | <u>R. McMANUS</u> Building Official | <u>9.21-04</u> Date |
|--|------------|--|------------------------|

EXHIBIT 6

PROJECT INFORMATION

TOWER OWNER: SBA PROPERTIES, LLC
8501 CONGRESS AVENUE
BOCA RATON, FL 33487
PHONE: 561-226-9523

SBA TOWER ID: CT46140-A

SBA SITE NAME: S DURHAM-RT17/LAWSON

T-MOBILE SITE NAME: CT33XC526

T-MOBILE SITE NUMBER: CTHA475A

SBA SITE ADDRESS: 134 R CREAMERY RD
DURHAM, CT 01588

LATITUDE: 41.44135300

LONGITUDE: -72.69614700

TOWER HEIGHT: 109'-0"± AGL

RAD CENTER: 96'-0"± AGL

ZONING JURISDICTION: TOWN OF DURHAM

COUNTY: MIDDLESEX COUNTY

DESCRIPTION OF WORK:
TELECOMMUNICATIONS FACILITY UPGRADE (SPRINT RETAIN);
MONOPOLE

COMPLIANCE CODES:

- BUILDING CODE:
IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018
- ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
- CONCRETE CODE:
AMERICAN CONCRETE INSTITUTE (ACI) 318
- STEEL CODE:
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC),
14TH EDITION
- TELECOMMUNICATIONS CODE:
EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL

BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

PROJECT DIRECTORY

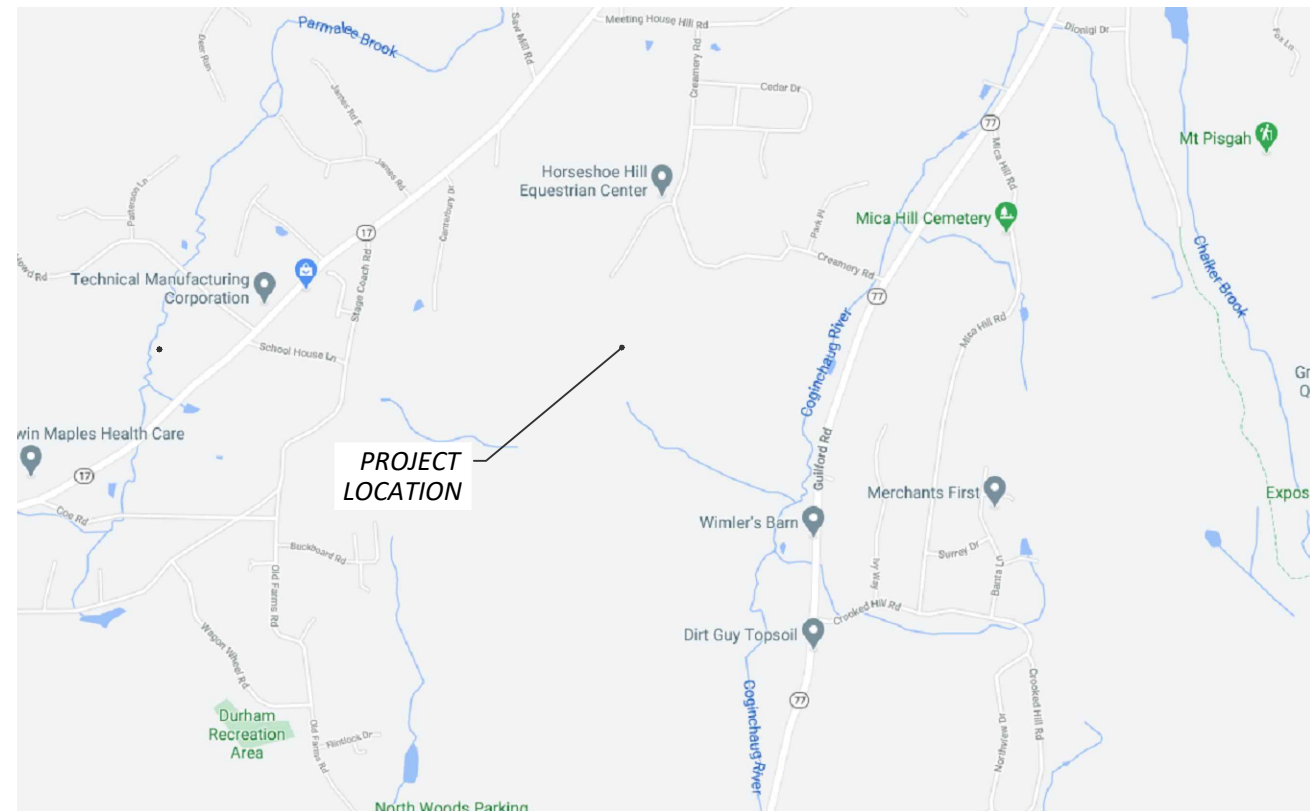
A&E / PROJECT MANAGER:
CENTERLINE COMMUNICATIONS
750 WEST CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE 781.713.4725

APPLICANT:
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

SITE NAME: CT33XC526
134 R CREAMERY RD
DURHAM, CT 01588

SITE NUMBER: CTHA475A
SBA SITE #: CT46140-A
PROJECT: SPRINT RETAIN

CONFIGURATION: 67D5A997DB 6160 (GSM ONLY)



VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSE OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

DRAWING INDEX

| NO. | DESCRIPTION | REV. | DATE |
|------|-----------------------------|------|----------|
| T-1 | TITLE SHEET | 1 | 02/24/21 |
| GN-1 | GENERAL NOTES | 1 | 02/24/21 |
| A-1 | COMPOUND & EQUIPMENT PLANS | 1 | 02/24/21 |
| A-2 | ANTENNA LAYOUT & ELEVATIONS | 1 | 02/24/21 |
| A-3 | DETAILS | 1 | 02/24/21 |
| SN-1 | STRUCTURAL NOTES | 1 | 02/24/21 |
| RF-1 | RF PLUMBING DIAGRAM | 1 | 02/24/21 |
| G-1 | GROUNDING DETAILS | 1 | 02/24/21 |
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T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



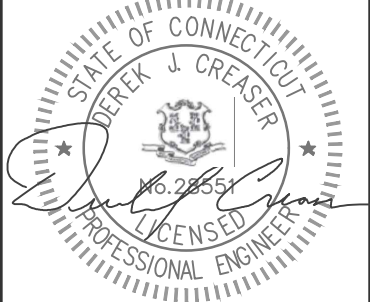
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
PHONE: (508) 251-0720



750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

| NO. | DATE | DESCRIPTION |
|--------------|----------|-------------------------|
| 1 | 02/24/21 | ISSUED FOR CONSTRUCTION |
| 0 | 12/16/20 | ISSUED FOR REVIEW |
| DESIGNED BY: | AG | APPROVED BY: |
| | | DC |



DATE: 02/24/21

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SITE NAME: CT33XC526

SITE NUMBER: CTHA475A

SITE ADDRESS:
134 R CREAMERY RD
DURHAM, CT 01588

PROJECT TYPE:
SPRINT RETAIN

SHEET TITLE:
TITLE SHEET

DRAWING #: T-1 REVISION: 1

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – CENTERLINE COMMUNICATIONS
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – T-MOBILE

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

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

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

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

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

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

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

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

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

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

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

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

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (A.H.J) FOR THE LOCATION. THE EDITION OF THE A.H.J ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018
ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
LIGHTNING CODE: NFPA 70-2017

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G,
STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

RF NOTES

1. ACTUAL LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR

2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.

3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.

4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G. OUT DOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.

5. RADIO SIGNAL CABLE SHALL BE SUPPORTED AT MINIMUM OF EVERY THREE (3) FEET EXCEPT INSIDE MONOPOLES OR MONOPOLES WHERE CABLE AND CONNECTOR MANUFACTURERS SUPPORT RECOMMENDATIONS SHALL BE FOLLOWED. MANUFACTURER RECOMMENDATION CABLES SUPPORT ACCESSORIES SHALL BE USED.

6. THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS.

7. DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT.

8. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS.

9. 7/16 DIN CONNECTORS REQUIRE NO ADDITIONAL WEATHER PROOFING IN INDOOR APPLICATIONS IF INSTALLED AND TORQUED PROPERLY. IN OUTDOOR APPLICATIONS WEATHER PROOFING IS REQUIRED AND THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED.

10. USING WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR START TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR, AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER INCH OR TWO. PASS THE BUTYL RUBBER AND FINISH WITH A FINAL LAYER OF TAPE.

11. ANTENNAS SHALL BE PAINTED, WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY OF HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACES PREPARATION AND PAINTING REQUIREMENTS.

12. CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF THE TOWERS THAT ARE BETWEEN 60 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 60 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.

ANTENNA CABLE AND SCHEDULING NOTES

1. SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION.

2. TAG AND COLOR CODE ALL MAIN CABLES AT LOCATIONS PER T-MOBILE ANTENNA CABLE MARKING STANDARD:

- TOP OF TOWER END OF MAIN COAX
- BOTTOM OF TOWER END OF MAIN COAX
- DIRECTLY BEFORE AND AFTER RF EQUIPMENT
- END OF JUMPERS AT BTS EQUIPMENT

3. ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER.

4. PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT.

T - Mobile

NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



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



750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

| NO. | DATE | DESCRIPTION |
|--------------|----------|-------------------------|
| 1 | 02/24/21 | ISSUED FOR CONSTRUCTION |
| 0 | 12/16/20 | ISSUED FOR REVIEW |
| DESIGNED BY: | AG | APPROVED BY: |
| | | DC |



DATE: 02/24/21

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ABBREVIATIONS

| | | | | | |
|----------|--------------------------|----------|--------------------|------|----------------------------|
| AGL | ABOVE GRADE LEVEL | G.C. | GENERAL CONTRACTOR | RF | RADIO FREQUENCY |
| AWG | AMERICAN WIRE GAUGE | MGB | MASTER GROUND BUS | | |
| BCW | BARE COPPER WIRE | MIN | MINIMUM | TBD | TO BE DETERMINED |
| BTS | BASE TRANSCIEVER STATION | PROPOSED | NEW | TBR | TO BE REMOVED |
| EXISTING | EXISTING | N.T.S. | NOT TO SCALE | TBRR | TO BE REMOVED AND REPLACED |
| EG | EQUIPMENT GROUND | REF | REFERENCE | TYP | TYPICAL |
| EGR | EQUIPMENT GROUND RING | REQ | REQUIRED | | |

SITE NAME: CT33XC526

SITE NUMBER: CTHA475A

SITE ADDRESS:
134 R CREAMERY RD
DURHAM, CT 01588

PROJECT TYPE:
SPRINT RETAIN

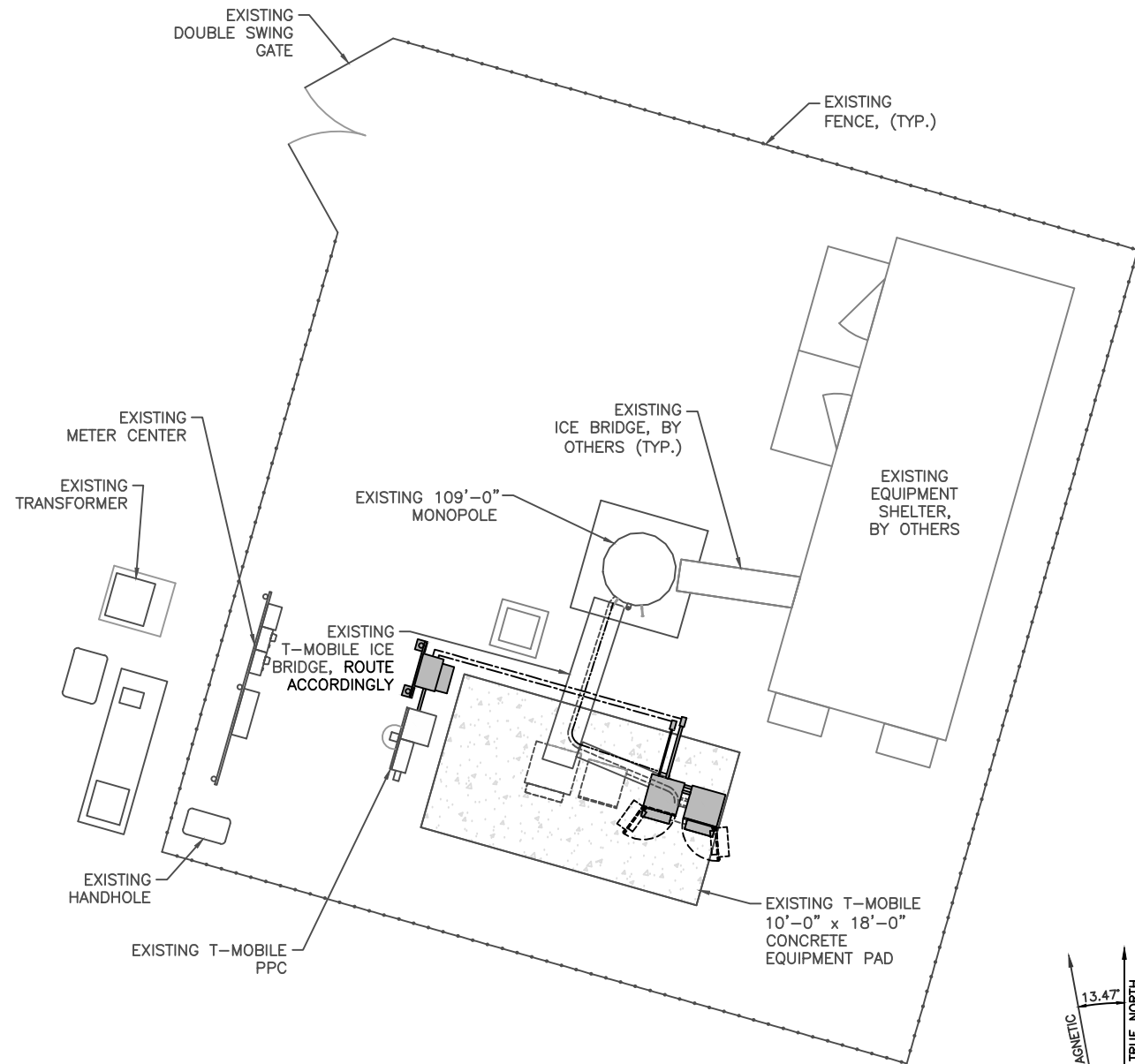
SHEET TITLE:
GENERAL NOTES

DRAWING #: GN-1 REVISION: 1

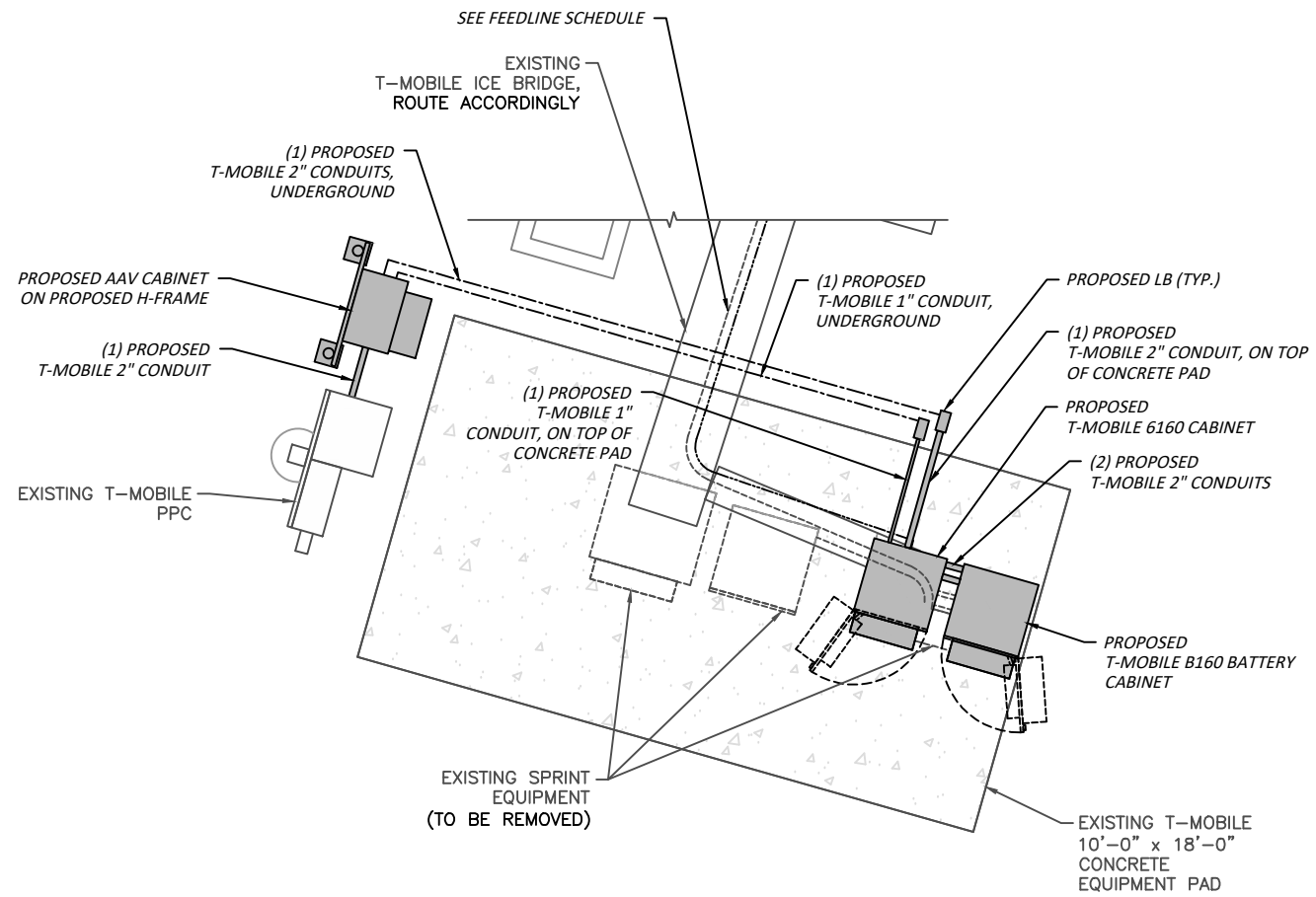
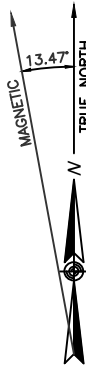
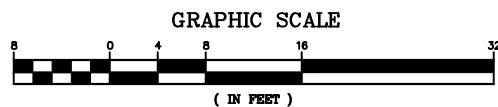
- NOTES:**
1. REFERENCE STRUCTURAL ANALYSIS BY OTHERS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
 2. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

| FEEDLINE SCHEDULE | FEEDLINES | LOCATION |
|-------------------|---|---------------------------|
| A | EXISTING TO BE REMOVED: (3) 1-5/8" HYBRID CABLES | UP INSIDE MONOPOLE TO RAD |
| B | PROPOSED: (3) 6x12 (1-5/8") HYBRID FIBER | UP INSIDE MONOPOLE TO RAD |

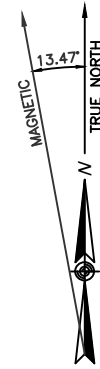
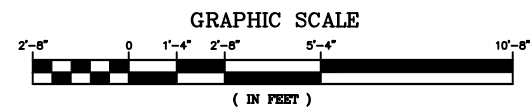
NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON COLLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.
SEE STRUCTURAL ANALYSIS FOR FEEDLINE INSTALLATION.



COMPOUND PLAN
SCALE: 3/16" = 1'-0" (22"X34")
3/32" = 1'-0" (11"X17")



EQUIPMENT PLAN
SCALE: 3/8" = 1'-0" (22"X34")
3/16" = 1'-0" (11"X17")



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PHONE: 781.713.4725

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DATE: 02/24/21

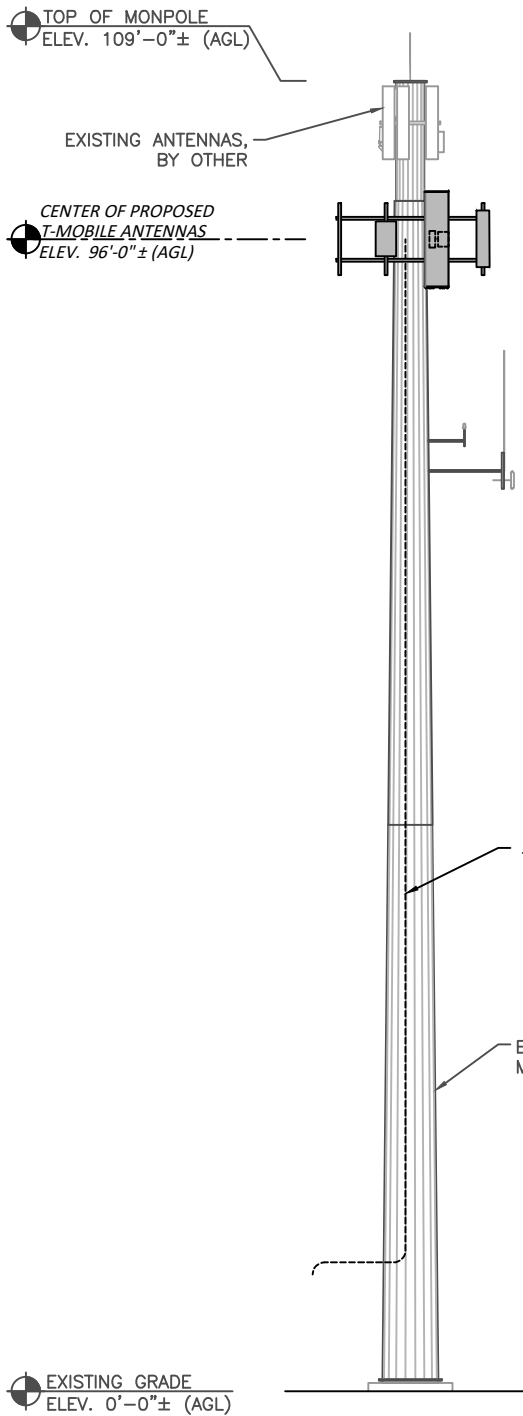
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| SITE NUMBER: | CTHA475A |
| SITE ADDRESS: | 134 R CREAMERY RD DURHAM, CT 01588 |
| PROJECT TYPE: | SPRINT RETAIN |
| SHEET TITLE: | COMPOUND & EQUIPMENT PLANS |
| DRAWING #: | A-1 |
| REVISION: | 1 |

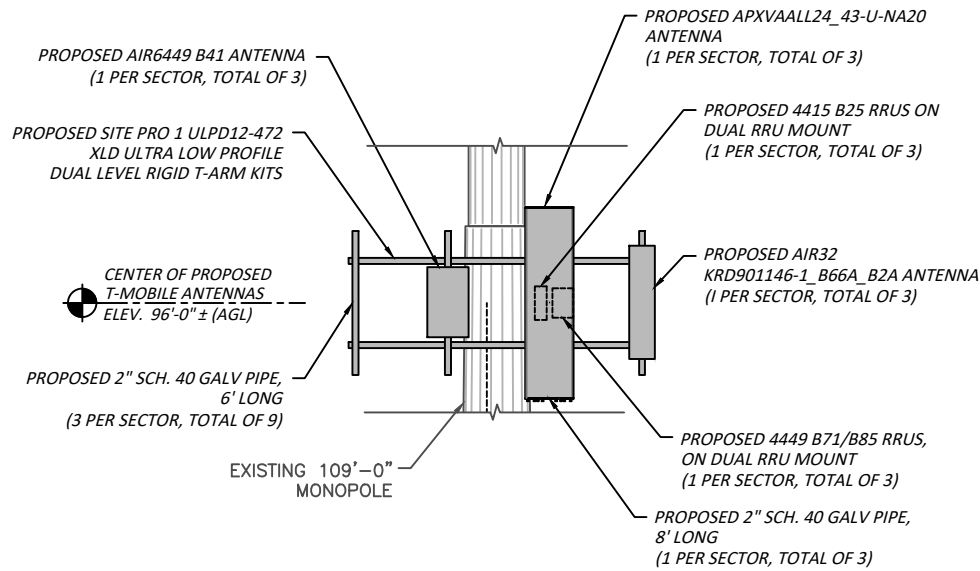
NOTES:

1. REFERENCE STRUCTURAL ANALYSIS BY OTHERS FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
2. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

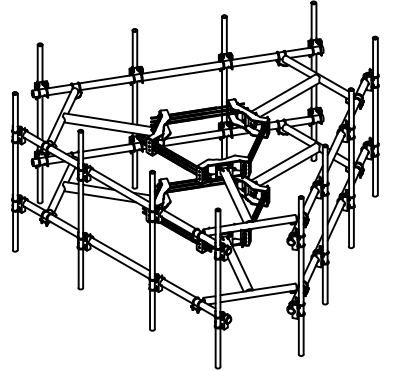
SPECIAL CONSTRUCTION NOTE:
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED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



TOWER ELEVATION
 SCALE: 1/8" = 1'-0" (22"x34")
 1/16" = 1'-0" (11"x17")

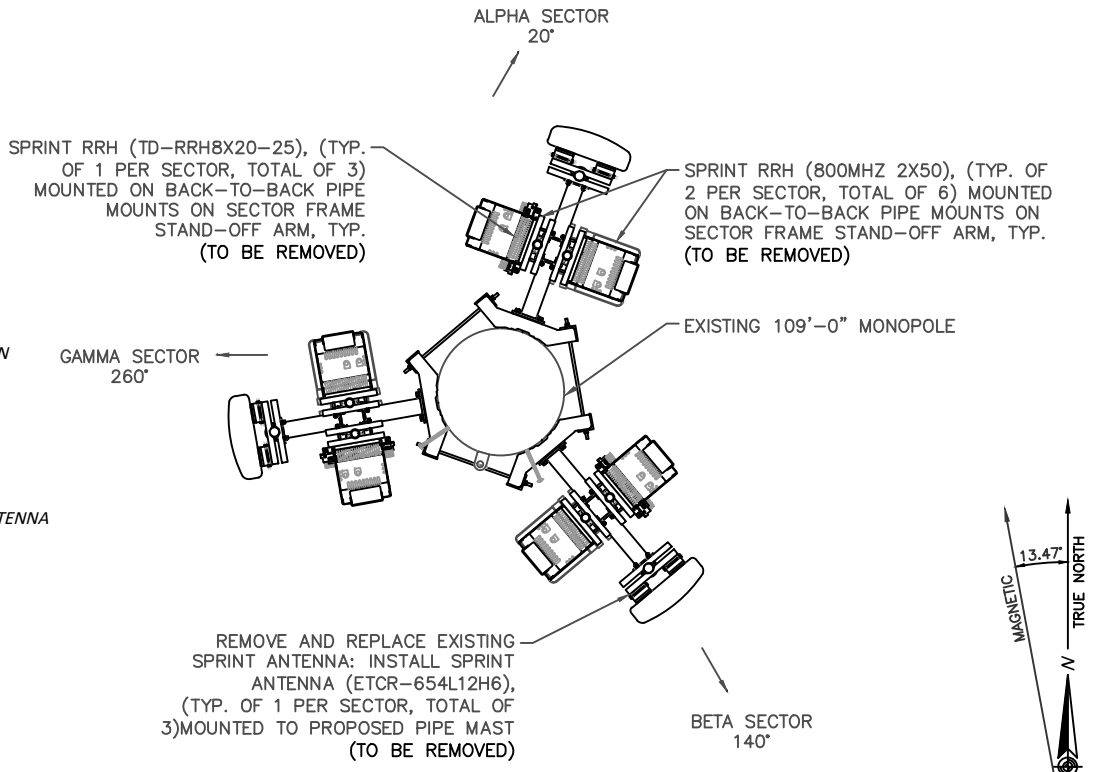
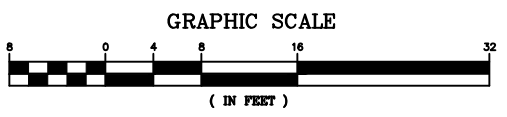


ENLARGED ANTENNA ELEVATION
 SCALE: N.T.S

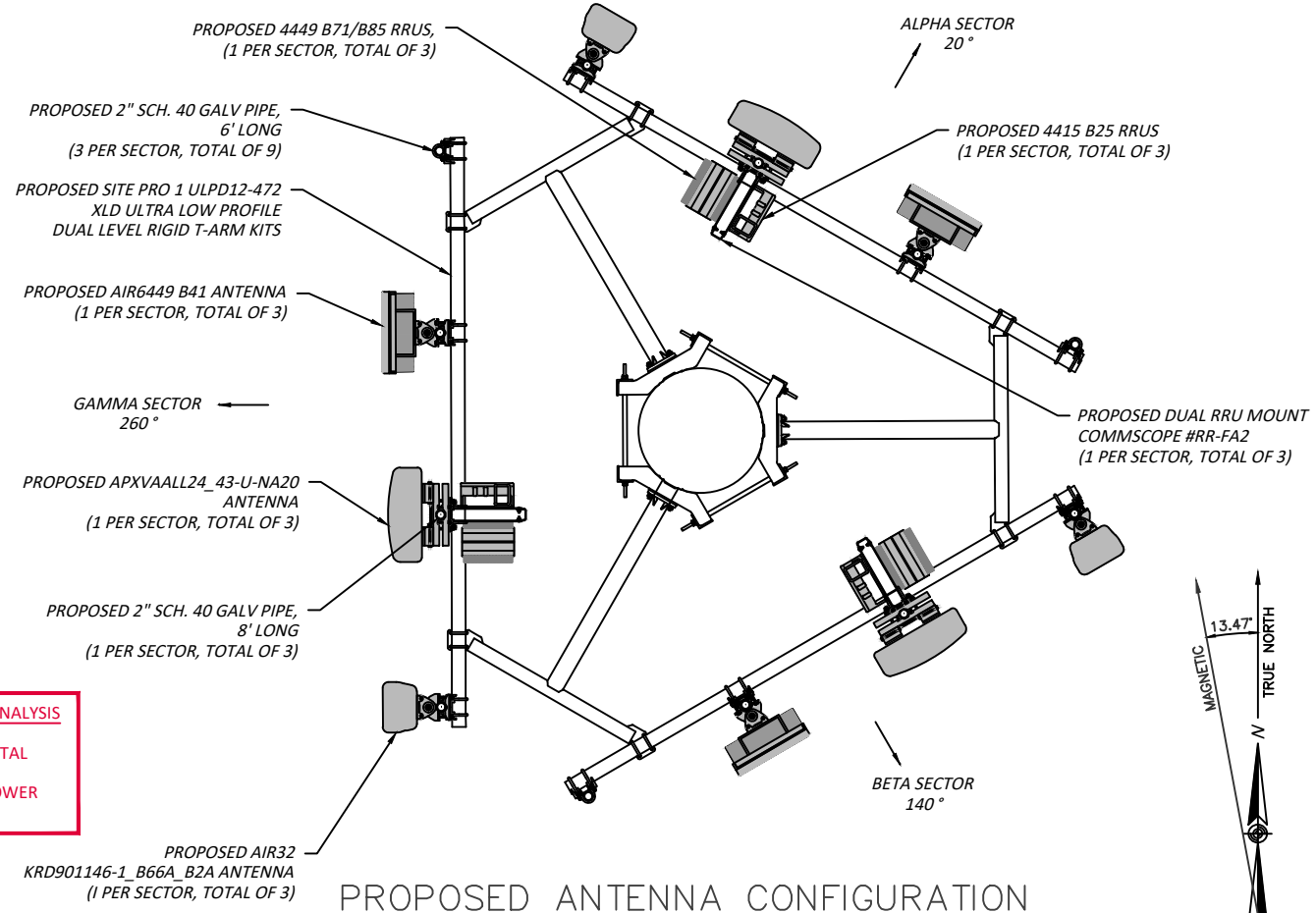


SITE PRO 1 ULPD12-472
 SCALE: N.T.S

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



EXISTING ANTENNA CONFIGURATION
 SCALE: N.T.S



PROPOSED ANTENNA CONFIGURATION
 SCALE: N.T.S

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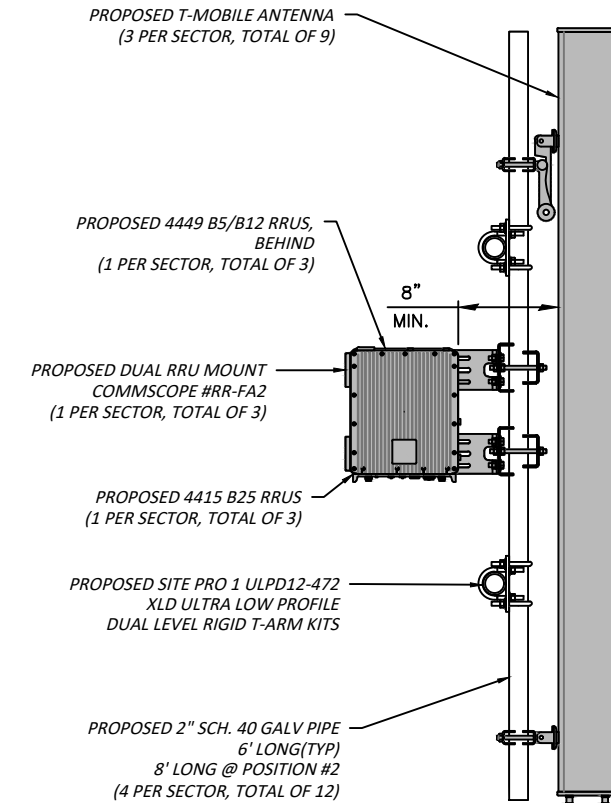
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| SITE NUMBER: | CTHA475A |
| SITE ADDRESS: | 134 R CREAMERY RD DURHAM, CT 01588 |
| PROJECT TYPE: | SPRINT RETAIN |
| SHEET TITLE: | ANTENNA LAYOUT & ELEVATIONS |
| DRAWING #: | A-2 |
| REVISION: | 1 |

ANTENNA SCHEDULE

| SECTOR | EXISTING/ PROPOSED | BAND | ANTENNA | SIZE (INCHES) (L x W x D) | ANTENNA CL HEIGHT | AZIMUTH | TMA/ DIPLEXER | RRU | SIZE (INCHES) (L x W x D) | FEEDER |
|--------|-----------------------|----------------------------|----------------------------------|------------------------------|----------------------|---------|------------------|--|-------------------------------|-----------------------|
| A1 | PROPOSED | L2100, G1900, L1900 | AIR32 KRD901146-1 B66A_B2A | 56.6x12.9x8.7 | ±96' | 20° | - | - | - | (P) (3) 1-5/8" HCS |
| A2 | PROPOSED | L700, L600, N600, L1900 | RFS-APXVALL24_4 3-U-NA20 | 95.9x24.0x8.7 | ±96' | 20° | - | (P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS | 15x13.2x10.4 16.5x13.4x5.9 | |
| A3 | PROPOSED | L2500, N2500 | AIR6449 B41 | 33.1x20.6x8.6 | ±96' | 20° | - | - | - | |
| B1 | PROPOSED | L2100, G1900, L1900 | AIR32 KRD901146-1 B66A_B2A | 56.6x12.9x8.7 | ±96' | 140° | - | - | - | |
| B2 | PROPOSED | L700, L600, N600, L1900 | RFS-APXVALL24_4 3-U-NA20 | 95.9x24.0x8.7 | ±96' | 140° | - | (P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS | 15x13.2x10.4 16.5x13.4x5.9 | |
| B3 | PROPOSED | L2500, N2500 | AIR6449 B41 | 33.1x20.6x8.6 | ±96' | 140° | - | - | - | |
| C1 | PROPOSED | L2100, G1900, L1900 | AIR32 KRD901146-1 B66A_B2A | 56.6x12.9x8.7 | ±96' | 260° | - | - | - | |
| C2 | PROPOSED | L700, L600, N600, L1900 | RFS-APXVALL24_4 3-U-NA20 | 95.9x24.0x8.7 | ±96' | 260° | - | (P) (1) 4449 B71 B85 RRUS (P) (1) 4415 B25 RRUS | 15x13.2x10.4 16.5x13.4x5.9 | |
| C3 | PROPOSED | L2500, N2500 | AIR6449 B41 | 33.1x20.6x8.6 | ±96' | 260° | - | - | - | |



ANTENNA MOUNTING DETAIL

N.T.S.

- NOTES:**
- REFERENCE STRUCTURAL ANALYSIS BY SBA FOR FURTHER INFORMATION REGARDING THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THIS EQUIPMENT UPGRADE.
 - REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

RRU CHART

| QUANTITY | MODEL | L | W | D |
|----------|--------------|-------|-------|-------|
| 3(P) | 4449 B71/B85 | 15.0" | 13.2" | 10.4" |
| 3(P) | 4415 B25 | 16.5" | 13.4" | 5.9" |

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.



RRUS DETAIL
N.T.S.

REFER TO THE FINAL RFDS AND TABLE FOR THE PROPOSED RRUS MODEL, QUANTITY, AND DIMENSIONS



ERICSSON RBS6160 EQUIPMENT CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 63" X 25.6" X 33.5"
WEIGHT: 188LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

EQUIPMENT CABINET DETAIL
N.T.S.



ERICSSON B160 BATTERY CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 63" X 26" X 26"
WEIGHT: 188LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

EQUIPMENT CABINET DETAIL
N.T.S.

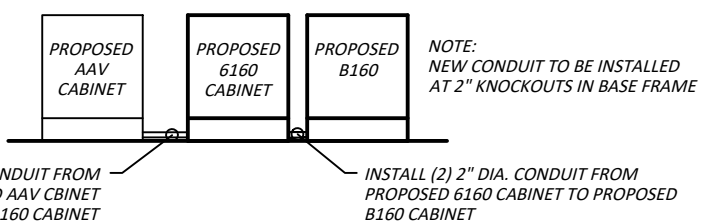


EMMERSON NETXTEND COMPACT 2416 CABINET

ENCLOSURE: ALUMINUM
DIMENSIONS (HxWxD): 24" X 24" X 25.25"
WEIGHT: 64LBS (EXCLUDES EQUIPMENT)
WEATHER TIGHTNESS: NEMA TYPE 3R

AAV CABINET DETAIL

N.T.S.



CONDUIT DETAIL

N.T.S.

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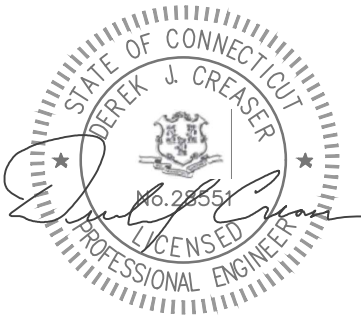
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DESIGNED BY: AG APPROVED BY: DC



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SITE NAME: CT33XC526

SITE NUMBER: CTHA475A

SITE ADDRESS:
134 R CREAMERY RD
DURHAM, CT 01588

PROJECT TYPE: SPRINT RETAIN

SHEET TITLE: DETAILS

DRAWING #: A-3 **REVISION:** 1

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UNON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

| SPECIAL INSPECTION CHECKLIST | |
|--|--|
| BEFORE CONSTRUCTION | |
| CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD) | REPORT ITEM |
| N/A | ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹ |
| N/A | MATERIAL SPECIFICATIONS REPORT ² |
| N/A | FABRICATOR NDE INSPECTION |
| N/A | PACKING SLIPS ³ |
| ADDITIONAL TESTING AND INSPECTIONS: | |
| DURING CONSTRUCTION | |
| CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD) | REPORT ITEM |
| REQUIRED | STEEL INSPECTIONS |
| N/A | HIGH STRENGTH BOLT INSPECTIONS |
| N/A | HIGH WIND ZONE INSPECTIONS ⁴ |
| N/A | FOUNDATION INSPECTIONS |
| N/A | CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT |
| N/A | POST INSTALLED ANCHOR VERIFICATION ⁵ |
| N/A | GROUT VERIFICATION |
| N/A | CERTIFIED WELD INSPECTION |
| N/A | EARTHWORK: LIFT AND DENSITY |
| N/A | ON SITE COLD GALVANIZING VERIFICATION |
| N/A | GUY WIRE TENSION REPORT |
| ADDITIONAL TESTING AND INSPECTIONS: | |
| AFTER CONSTRUCTION | |
| CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD) | REPORT ITEM |
| REQUIRED | MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶ |
| N/A | POST INSTALLED ANCHOR PULL-OUT TESTING |
| REQUIRED | PHOTOGRAPHS |
| ADDITIONAL TESTING AND INSPECTIONS: | |

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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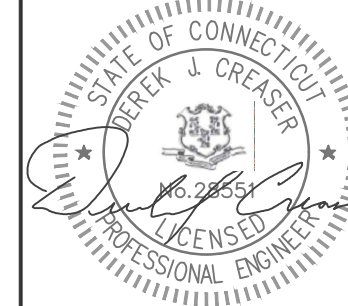


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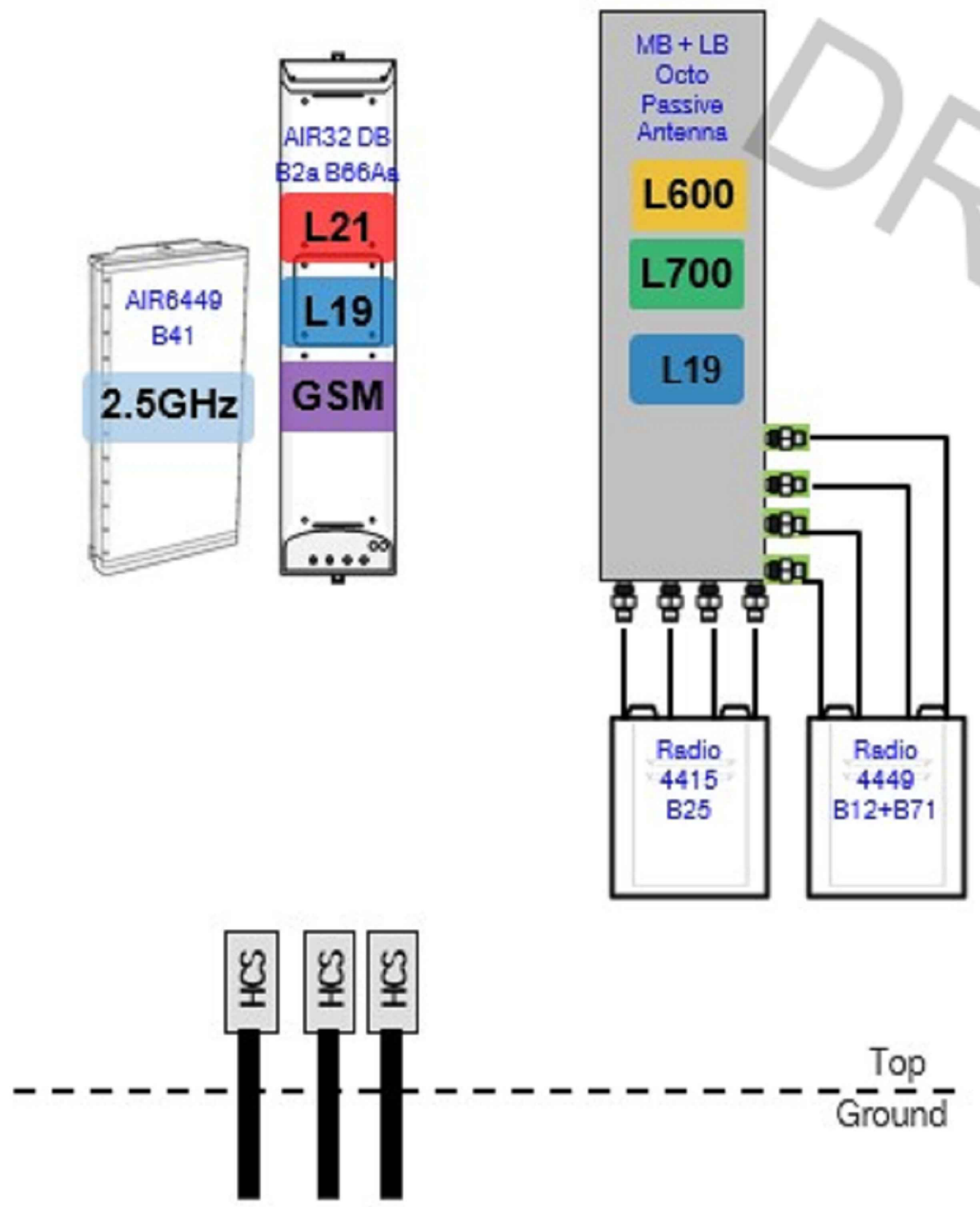


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| SITE NUMBER: | CTHA475A |
| SITE ADDRESS: | 134 R CREAMERY RD DURHAM, CT 01588 |
| PROJECT TYPE: | SPRINT RETAIN |
| SHEET TITLE: | STRUCTURAL NOTES |
| DRAWING #: | SN-1 |
| REVISION #: | 1 |

67D5A997DB_2xAIR+1xOP.jpg



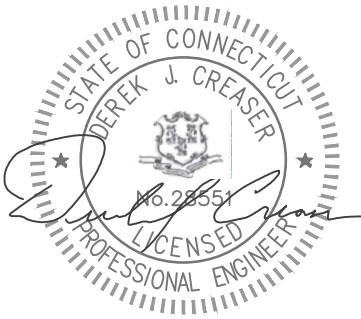
PLUMBING DIAGRAM
N.T.S.

T-Mobile
NORTHEAST LLC
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

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

CENTERLINE
COMMUNICATIONS
750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

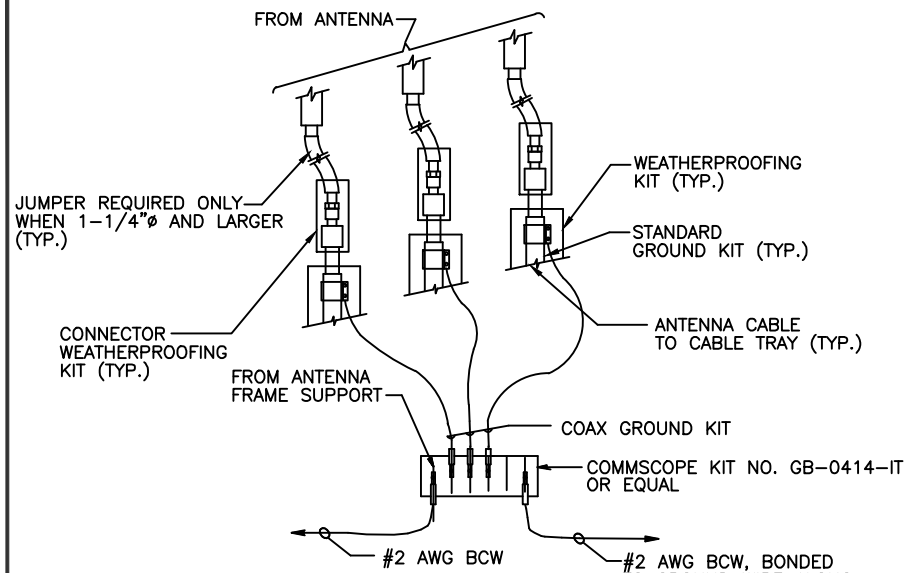
| REVISIONS | | |
|--------------|----------|-------------------------|
| NO. | DATE | DESCRIPTION |
| 1 | 02/24/21 | ISSUED FOR CONSTRUCTION |
| 0 | 12/16/20 | ISSUED FOR REVIEW |
| DESIGNED BY: | | APPROVED BY: |
| AG | | DC |



DATE: 02/24/21

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| | |
|---------------|---------------------------------------|
| SITE NAME: | CT33XC526 |
| SITE NUMBER: | CTHA475A |
| SITE ADDRESS: | 134 R CREAMERY RD DURHAM, CT 01588 |
| PROJECT TYPE: | SPRINT RETAIN |
| SHEET TITLE: | RF PLUMBING DIAGRAM |
| DRAWING #: | RF-1 |
| REVISION: | 1 |



NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUNDING RISER DIAGRAM

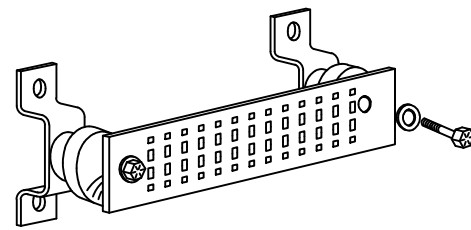
FACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

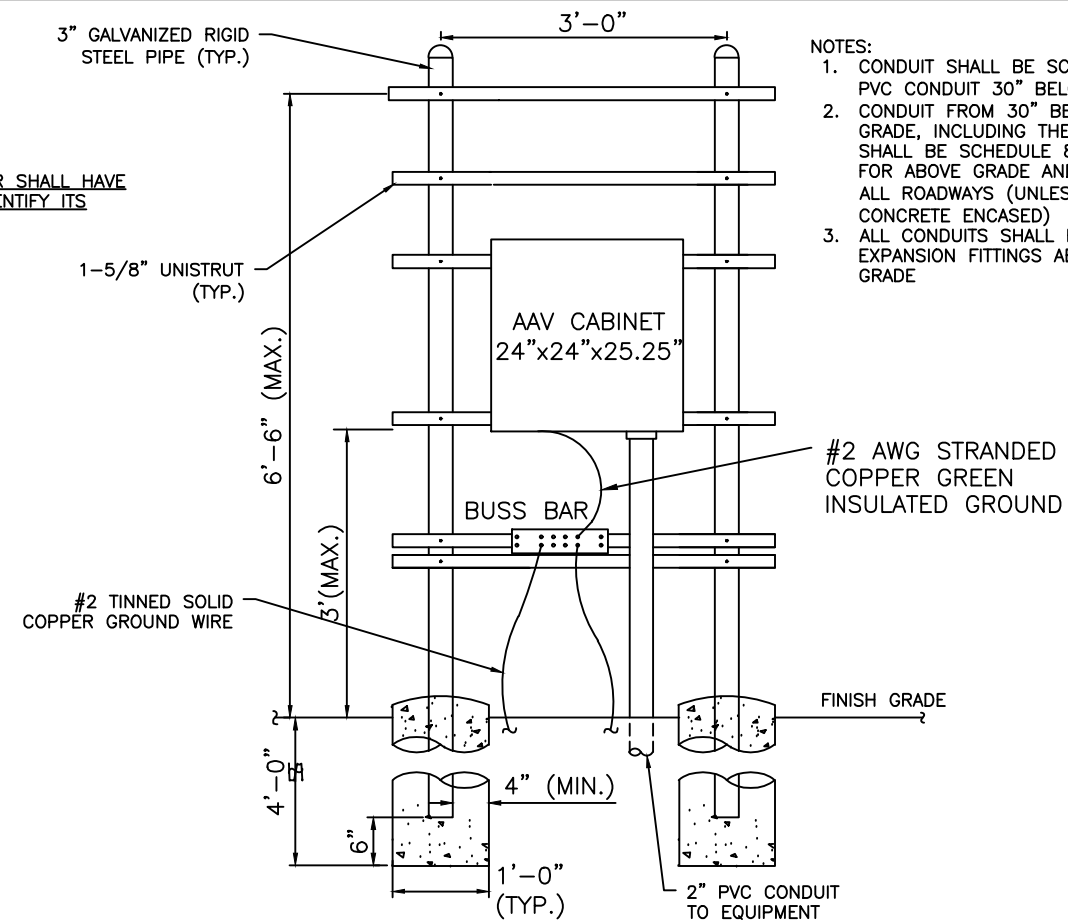
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

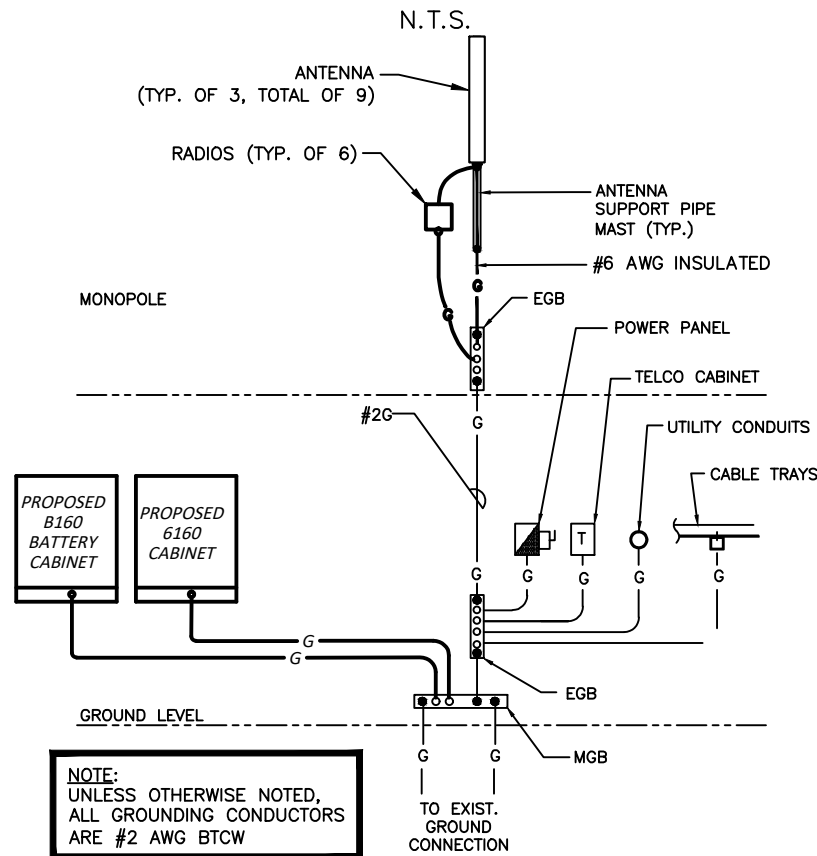


GROUND BAR DETAIL



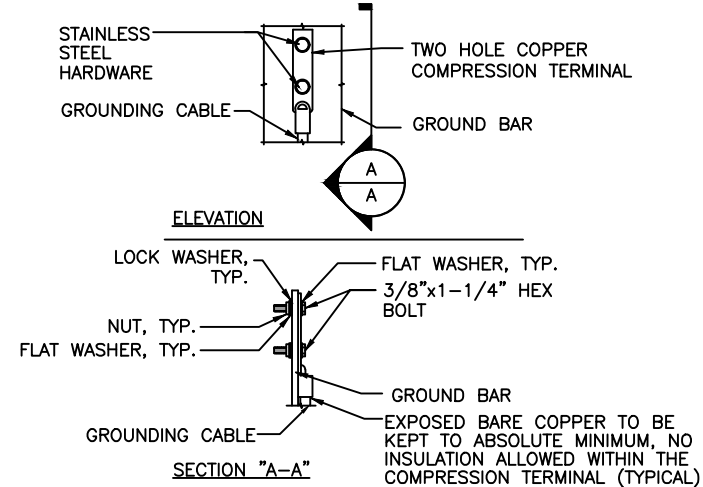
- NOTES:**
- CONDUIT SHALL BE SCHEDULE 40 PVC CONDUIT 30" BELOW GRADE
 - CONDUIT FROM 30" BELOW GRADE, INCLUDING THE SWEEP, SHALL BE SCHEDULE 80 PVC FOR ABOVE GRADE AND UNDER ALL ROADWAYS (UNLESS CONCRETE ENCASED)
 - ALL CONDUITS SHALL HAVE EXPANSION FITTINGS ABOVE GRADE

H-FRAME DETAIL



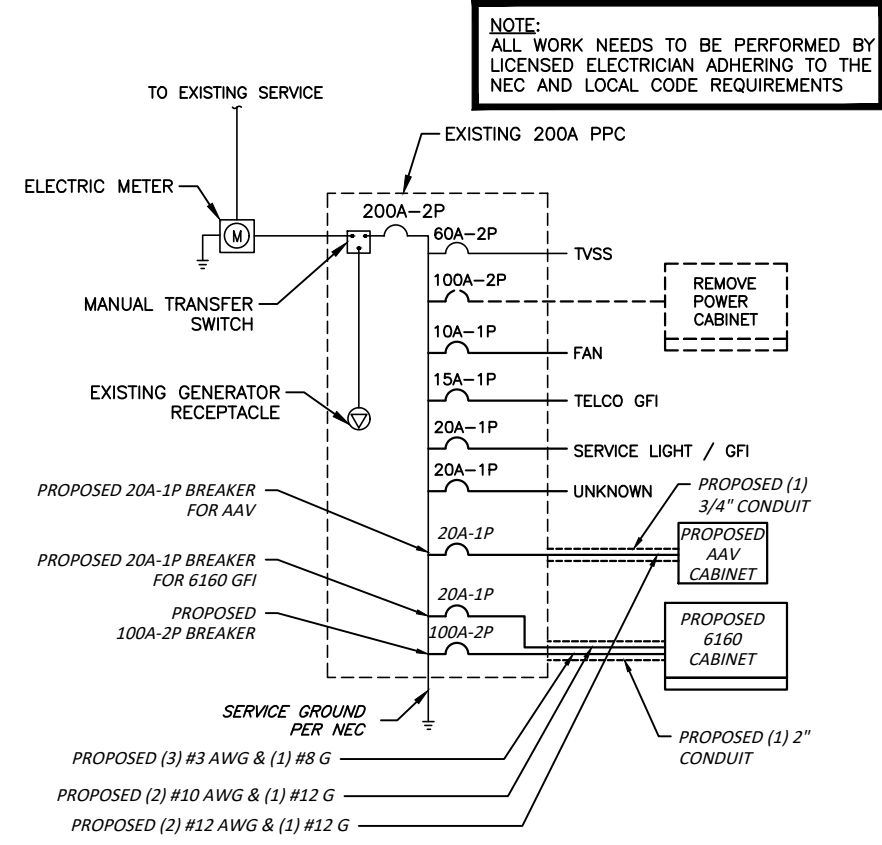
NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

GROUNDING RISER DIAGRAM



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

GROUND BAR CONNECTION DETAIL



NOTE:
ALL WORK NEEDS TO BE PERFORMED BY LICENSED ELECTRICIAN ADHERING TO THE NEC AND LOCAL CODE REQUIREMENTS

ONE LINE POWER DIAGRAM

T-Mobile
NORTHEAST LLC
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

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

CENTERLINE COMMUNICATIONS
750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

| REVISIONS | |
|--------------|----------------------------------|
| NO. | DESCRIPTION |
| 1 | 02/24/21 ISSUED FOR CONSTRUCTION |
| 0 | 12/16/20 ISSUED FOR REVIEW |
| DESIGNED BY: | APPROVED BY: |
| AG | DC |

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED PROFESSIONAL ENGINEER

DATE: 02/24/21

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| | |
|---------------|---------------------------------------|
| SITE NAME: | CT33XC526 |
| SITE NUMBER: | CTHA475A |
| SITE ADDRESS: | 134 R CREAMERY RD DURHAM, CT 01588 |
| PROJECT TYPE: | SPRINT RETAIN |
| SHEET TITLE: | GROUNDING DETAILS |
| DRAWING #: | G-1 |
| REVISION: | 1 |

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 109 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46140-A

Customer Site Name: S. Durham-rt 17/ Lawson

Carrier Name: T-Mobile Sprint (App#: 143988-3)

Carrier Site ID / Name: CT33XC526

Site Location: 134 R Creamery Road

Durham, Connecticut

MIDDLESEX County

Latitude: 41.441352

Longitude: -72.696147

Exp.01/31/2021

Analysis Result:

Max Structural Usage: 49.7% [Pass]

Max Foundation Usage: 31.0% [Pass]

Additional Usage Caused by New Mount: +3.4%



12/18/2020

Report Prepared By: Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 109 ft EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

| | |
|------------------------------|--|
| Tower Drawings | Engineered Endeavors, Inc. (Job No. 12807-E01 Rev. 1) Structure Design Calculations dated August 4, 2004 |
| Foundation Drawing | Engineered Endeavors, Inc. (Project No. 12807) Foundation Design Calculations dated July 28, 2004 |
| Geotechnical Report | Clarence Welti Assoc., Inc. (Project Name Sprint Site-CT33XC526) Geotechnical Study dated October 25, 2000 |
| Modification Drawings | FDH, Project # 13TFSP1400, Dated 12/27/2013 |
| Mount Analysis | T-Mobile MA by TES#100932. Dated 12/18/2020. |

Analysis Criteria

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

| | |
|---|---|
| Wind Speed Used in the Analysis: | Ultimate Design Wind Speed $V_{ult} = 126.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 98.0$ mph (3-Sec. Gust) |
| Wind Speed with Ice: | 50 mph (3-Sec. Gust) with 3/4" radial ice concurrent |
| Operational Wind Speed: | 60 mph + 0" Radial ice |
| Standard/Codes: | TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code |
| Exposure Category: | C |
| Structure Class: | II |
| Topographic Category: | 1 |
| Crest Height: | 0 ft |
| Seismic Parameters: | $S_s = 0.179$, $S_1 = 0.062$ |

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

Existing Antennas, Mounts and Transmission Lines

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

| Items | Elevation (ft) | Qty. | Antenna Descriptions | Mount Type & Qty. | Transmission Lines | Owner |
|-------|----------------|------|-----------------------------|--|--------------------|----------------|
| 1 | 108.0 | 9 | Andrew SBNHH-1D65B - Panel | Flush Mount | (2) 1 5/8" Fiber | Verizon |
| 2 | | 3 | Alcatel Lucent RRH 4x45-AWS | | | |
| 3 | | 3 | Alcatel Lucent RRH2x60-700 | | | |
| 4 | | 3 | Alcatel Lucent RRH2X60-PCS | | | |
| 5 | | 2 | Rfs Celwave DB-T1-6Z-8AB-OZ | | | |
| 6 | 96.6 | 3 | KMW ETCR-654L12H6 - Panel | (2) Ring Mounts with 3' Standoff & RRU mounting assemblies | (4) 1 1/4" Fiber | Sprint |
| 7 | | 3 | ALU 1900 Mhz RRU | | | |
| 8 | | 6 | ALU 800 Mhz RRU | | | |
| 9 | | 3 | ALU TD-RRH8x20-25 RRU | | | |
| 10 | 76.0 | 1 | GPS | (1) 6' Side Mount | (1) 1/2" | Town of Durham |
| 11 | 78.5 | 1 | 10'x1" Omni | (1) Side Mount | (2) 1/2" | |
| 12 | 71.7 | 1 | 3'6" x 2'6" Dipole | | | |

Proposed Carrier’s Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier’s final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

| Items | Elevation (ft) | Qty. | Antenna Descriptions | Mount Type & Qty. | Transmission Lines | Owner |
|-------|----------------|------|--|--------------------|--------------------|-----------------|
| 6 | 96.0 | 3 | Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo) - Panel | SitePro ULPD12-472 | (3) 2" Hybrid | T-Mobile Sprint |
| 7 | | 3 | RFS - APXVAALL24-43-U-NA20 - Panel | | | |
| 8 | | 3 | Ericsson - AIR6449 B41 - Panel | | | |
| 9 | | 3 | Ericsson 4415 B25 RRU | | | |
| 10 | | 3 | Ericsson 4449 B71 + B85 RRUs | | | |
| 11 | | 6 | ALU 800 MHz RRH RRU | | | |

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

Analysis Results

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

| | Pole shafts | Anchor Bolts | Base Plate |
|-------------|--------------|--------------|--------------|
| Max. Usage: | 46.1% | 43.1% | 49.7% |
| Pass/Fail | Pass | Pass | Pass |

Foundations

| | Moment (Kip-Ft) | Shear (Kips) |
|---------------------------|-----------------|--------------|
| Original Design Reactions | 2596.4 | 28.5 |
| Analysis Reactions | 1705.6 | 21.8 |
| Factored Reactions* | 3505.1 | 38.5 |
| % of Design Reactions | 48.7% | 56.5% |

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.4370 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 46.12% at 0.0ft

Structure: CT46140-A-SBA
Site Name: S. Durham-rt 17/ Lawson
Height: 108.50 (ft)
Base Elev: 0.000 (ft)

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

12/18/2020

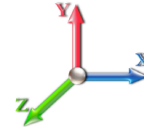
Page: 1



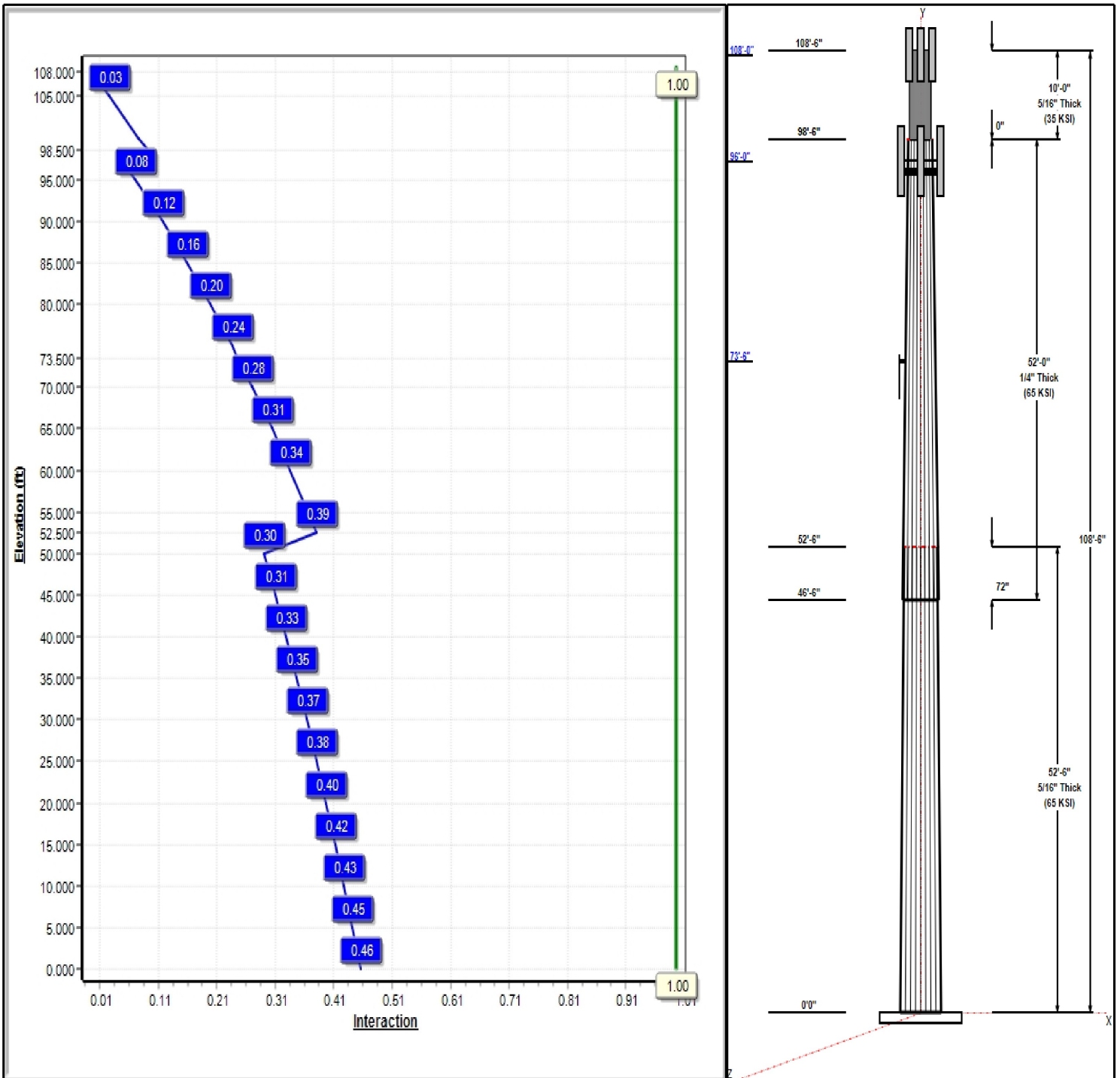
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Iterations: 18

Load Case : 1.2D + 1.6W 98 mph Wind



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Structure: CT46140-A-SBA

Type: Custom
Site Name: S. Durham-rt 17/ Lawson
Height: 108.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.25659

12/18/2020

Page: 2



Shaft Properties

| Seq | Length (ft) | Top (in) | Bottom (in) | Thick (in) | Joint Type | Taper | Grade (ksi) |
|-----|-------------|----------|-------------|------------|------------|---------|-------------|
| 1 | 52.50 | 42.53 | 56.00 | 0.313 | | 0.25659 | 65 |
| 2 | 52.00 | 31.23 | 44.57 | 0.250 | Slip | 0.25659 | 65 |
| 3 | 10.00 | 28.00 | 28.00 | 0.312 | Butt | 0.00000 | 35 |

Discrete Appurtenances

| Attach Elev (ft) | Force Elev (ft) | Qty | Description | Carrier |
|------------------|-----------------|-----|-------------------------|-----------------|
| 108.50 | 108.50 | 1 | Lightning Rod | |
| 108.00 | 108.00 | 9 | SBNHH-1D65B | Verizon |
| 108.00 | 108.00 | 3 | RRH2x60-700 | Verizon |
| 108.00 | 108.00 | 3 | RRH2X60-PCS | Verizon |
| 108.00 | 108.00 | 2 | DB-T1-6Z-8AB-0Z | Verizon |
| 108.00 | 108.00 | 1 | Flush Mount | Verizon |
| 108.00 | 108.00 | 3 | RRH 4x45-AWS | Verizon |
| 96.00 | 96.00 | 3 | AIR32 | T-Mobile Sprint |
| 96.00 | 96.00 | 3 | APXVAALL24-43-U-NA20 | T-Mobile Sprint |
| 96.00 | 96.00 | 3 | AIR6449 B41 | T-Mobile Sprint |
| 96.00 | 96.00 | 3 | Ericsson 4415 B25 RRU | T-Mobile Sprint |
| 96.00 | 96.00 | 3 | Ericsson 4449 B71 + B85 | T-Mobile Sprint |
| 96.00 | 96.00 | 6 | ALU 800 MHz RRH RRU | T-Mobile Sprint |
| 96.00 | 96.00 | 1 | ULPD12-472 | T-Mobile Sprint |
| 73.50 | 78.50 | 1 | 10' x1" Omni | Town of Durham |
| 73.50 | 71.70 | 1 | 3'6" x 2'6" Dipole | Town of Durham |
| 73.50 | 73.50 | 1 | Sidearm | Town of Durham |

Linear Appurtenances

| Elev From (ft) | Elev To (ft) | Placement | Description | Carrier |
|----------------|--------------|-----------|--------------|-----------------|
| 0.00 | 108.00 | Inside | 1 5/8" Fiber | Verizon |
| 0.00 | 96.60 | Inside | 2" Hybrid | T-Mobile Sprint |
| 0.00 | 73.50 | Inside | 1/2" Coax | Town of Durham |

Anchor Bolts

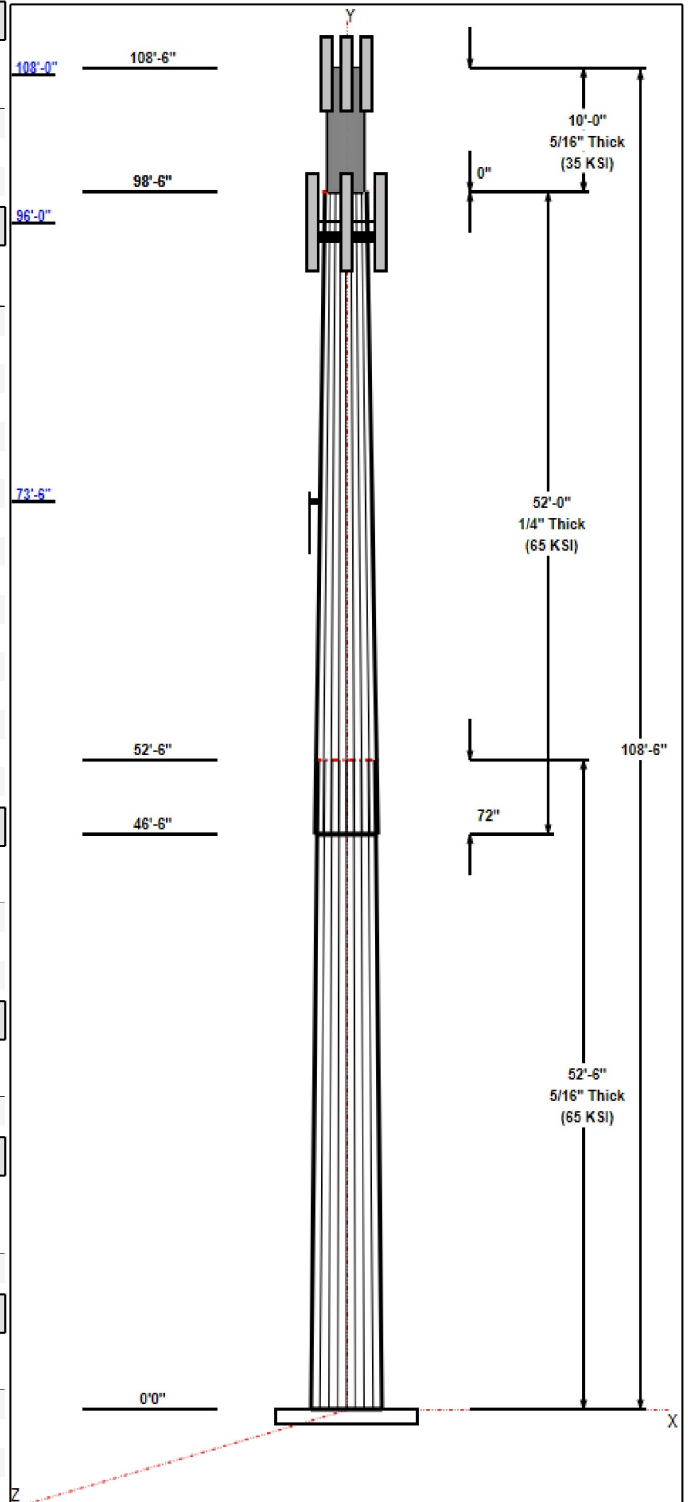
| Qty | Specifications | Grade (ksi) | Arrangement |
|-----|----------------|-------------|-------------|
| 12 | 2.25" 18J | 75.0 | Radial |

Base Plate

| Thickness (in) | Specifications (in) | Grade (ksi) | Geometry |
|----------------|---------------------|-------------|----------|
| 1.5000 | 71.0 | 60.0 | Round |

Reactions

| Load Case | Moment (FT-Kips) | Shear (Kips) | Axial (Kips) |
|----------------------------------|------------------|--------------|--------------|
| 1.2D + 1.6W 98 mph Wind | 1705.6 | 21.8 | 24.9 |
| 0.9D + 1.6W 98 mph Wind | 1699.8 | 21.8 | 18.7 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 447.8 | 6.0 | 41.3 |
| 1.2D + 1.0E | 65.7 | 0.8 | 24.9 |
| 0.9D + 1.0E | 65.5 | 0.8 | 18.7 |
| 1.0D + 1.0W 60 mph Wind | 398.7 | 5.1 | 20.8 |



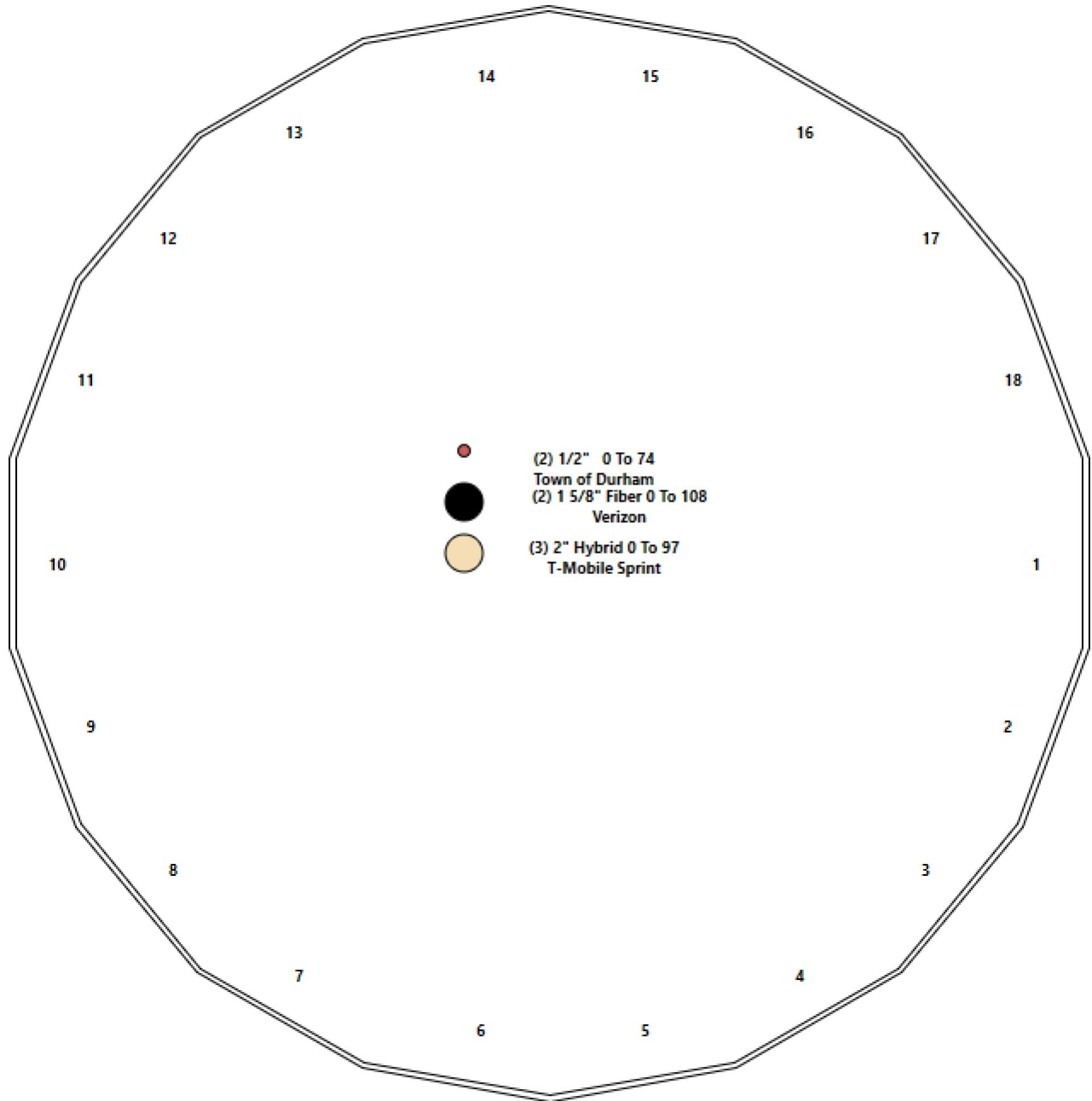
Structure: CT46140-A-SBA - Coax Line Placement

Type: Monopole
Site Name: S. Durham-rt 17/ Lawson
Height: 108.50 (ft)

12/18/2020



Page: 3



Shaft Properties

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 4

| Sec. No. | Shape | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Overlap (in) | Weight (lb) |
|----------------------------|-------|-------------|------------|----------|------------|--------------|---------------|
| 1 | 18 | 52.500 | 0.3125 | 65 | | 0.00 | 8,674 |
| 2 | 18 | 52.000 | 0.2500 | 65 | Slip | 72.00 | 5,286 |
| 3 | R | 10.000 | 0.3120 | 35 | Flange | 0.00 | 923 |
| Total Shaft Weight: | | | | | | | 14,883 |

Bottom

Top

| Sec. No. | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Taper |
|----------|----------|-----------|-------------|-----------|-----------|-----------|----------|-----------|-------------|-----------|-----------|-----------|----------|
| 1 | 56.00 | 0.00 | 55.23 | 21640.51 | 30.19 | 179.20 | 42.53 | 52.50 | 41.87 | 9428.49 | 22.59 | 136.0 | 0.256590 |
| 2 | 44.57 | 46.50 | 35.17 | 8726.53 | 30.02 | 178.27 | 31.23 | 98.50 | 24.58 | 2979.59 | 20.61 | 124.9 | 0.256590 |
| 3 | 28.00 | 98.50 | 27.14 | 2602.69 | 0.00 | 89.74 | 28.00 | 108.50 | 27.14 | 2602.69 | 0.00 | 89.74 | 0.000000 |

Load Summary

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 5

Discrete Appurtenances

| No. | Elev (ft) | Description | Qty | No Ice | | | Ice | | | Hor. Ecc. (ft) | Vert Ecc (ft) |
|----------------|-----------|------------------------------|-----------|-----------------|-----------|-------------|------------------|-----------|-------------|----------------|---------------|
| | | | | Weight (lb) | CaAa (sf) | CaAa Factor | Weight (lb) | CaAa (sf) | CaAa Factor | | |
| 1 | 108.50 | Lightning Rod | 1 | 5.00 | 0.50 | 1.00 | 25.28 | 2.190 | 1.00 | 0.00 | 0.00 |
| 2 | 108.00 | SBNHH-1D65B | 9 | 40.00 | 8.16 | 0.83 | 235.35 | 9.415 | 0.83 | 0.00 | 0.00 |
| 3 | 108.00 | RRH2x60-700 | 3 | 60.00 | 3.50 | 0.76 | 144.47 | 4.264 | 0.76 | 0.00 | 0.00 |
| 4 | 108.00 | RRH2X60-PCS | 3 | 55.00 | 2.20 | 0.89 | 136.18 | 2.814 | 0.89 | 0.00 | 0.00 |
| 5 | 108.00 | DB-T1-6Z-8AB-0Z | 2 | 18.90 | 4.80 | 0.90 | 157.18 | 5.644 | 0.90 | 0.00 | 0.00 |
| 6 | 108.00 | Flush Mount | 1 | 350.00 | 5.00 | 1.00 | 633.72 | 8.378 | 1.00 | 0.00 | 0.00 |
| 7 | 108.00 | RRH 4x45-AWS | 3 | 60.00 | 2.77 | 0.99 | 140.74 | 3.998 | 0.99 | 0.00 | 0.00 |
| 8 | 96.00 | AIR32 KRD901146-1_B66A_B2A | 3 | 132.20 | 6.51 | 0.87 | 307.12 | 7.638 | 0.87 | 0.00 | 0.00 |
| 9 | 96.00 | APXVAALL24-43-U-NA20 | 3 | 122.80 | 20.24 | 0.73 | 529.61 | 22.054 | 0.73 | 0.00 | 0.00 |
| 10 | 96.00 | AIR6449 B41 | 3 | 103.00 | 5.65 | 0.71 | 234.13 | 6.559 | 0.71 | 0.00 | 0.00 |
| 11 | 96.00 | Ericsson 4415 B25 RRU | 3 | 46.30 | 1.86 | 0.67 | 103.71 | 2.397 | 0.67 | 0.00 | 0.00 |
| 12 | 96.00 | Ericsson 4449 B71 + B85 RRUs | 3 | 73.20 | 1.97 | 0.67 | 128.42 | 2.514 | 0.67 | 0.00 | 0.00 |
| 13 | 96.00 | ALU 800 MHz RRH RRU | 6 | 53.00 | 2.49 | 0.67 | 123.73 | 3.584 | 0.67 | 0.00 | 0.00 |
| 14 | 96.00 | ULPD12-472 | 1 | 2331.00 | 40.30 | 1.00 | 5443.43 | 80.657 | 1.00 | 0.00 | 0.00 |
| 15 | 73.50 | 10' x1" Omni | 1 | 12.00 | 1.25 | 1.00 | 35.40 | 5.313 | 1.00 | 0.00 | 5.00 |
| 16 | 73.50 | 3'6" x 2'6" Dipole | 1 | 15.00 | 1.74 | 1.00 | 67.61 | 3.844 | 1.00 | 0.00 | -1.80 |
| 17 | 73.50 | Sidarm | 1 | 53.32 | 3.50 | 1.00 | 153.03 | 10.943 | 1.00 | 0.00 | 0.00 |
| Totals: | | | 47 | 5,439.62 | | | 14,706.53 | | | | |

Linear Appurtenances

| Bottom Elev. (ft) | Top Elev. (ft) | Description | Exposed Width | Exposed |
|-------------------|----------------|------------------|---------------|---------|
| 0.00 | 108.00 | (2) 1 5/8" Fiber | 0.00 | Inside |
| 0.00 | 96.60 | (3) 2" Hybrid | 0.00 | Inside |
| 0.00 | 73.50 | (2) 1/2" Coax | 0.00 | Inside |

Shaft Section Properties

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 6

Increment Length: 5 (ft)

| Elev (ft) | Description | Thick (in) | Dia (in) | Area (in ²) | Ix (in ⁴) | W/t Ratio | D/t Ratio | Fpy (ksi) | S (in ³) | Weight (lb) |
|-----------|-----------------|------------|----------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|-------------|
| 0.00 | | 0.3125 | 56.000 | 55.233 | 21640.5 | 30.19 | 179.20 | 65.9 | 761.1 | 0.0 |
| 5.00 | | 0.3125 | 54.717 | 53.961 | 20179.0 | 29.46 | 175.09 | 66.7 | 726.4 | 928.9 |
| 10.00 | | 0.3125 | 53.434 | 52.688 | 18784.9 | 28.74 | 170.99 | 67.6 | 692.4 | 907.3 |
| 15.00 | | 0.3125 | 52.151 | 51.416 | 17456.4 | 28.02 | 166.88 | 68.4 | 659.3 | 885.6 |
| 20.00 | | 0.3125 | 50.868 | 50.143 | 16192.2 | 27.29 | 162.78 | 69.3 | 627.0 | 864.0 |
| 25.00 | | 0.3125 | 49.585 | 48.871 | 14990.5 | 26.57 | 158.67 | 70.2 | 595.4 | 842.3 |
| 30.00 | | 0.3125 | 48.302 | 47.598 | 13849.7 | 25.84 | 154.57 | 71.0 | 564.7 | 820.7 |
| 35.00 | | 0.3125 | 47.019 | 46.326 | 12768.4 | 25.12 | 150.46 | 71.9 | 534.9 | 799.0 |
| 40.00 | | 0.3125 | 45.736 | 45.053 | 11744.9 | 24.40 | 146.36 | 72.7 | 505.8 | 777.4 |
| 45.00 | | 0.3125 | 44.453 | 43.781 | 10777.5 | 23.67 | 142.25 | 73.6 | 477.5 | 755.7 |
| 46.50 | Bot - Section 2 | 0.3125 | 44.069 | 43.399 | 10498.1 | 23.45 | 141.02 | 73.8 | 469.2 | 222.5 |
| 50.00 | | 0.3125 | 43.171 | 42.508 | 9864.8 | 22.95 | 138.15 | 74.4 | 450.1 | 926.1 |
| 52.50 | Top - Section 1 | 0.2500 | 43.029 | 33.944 | 7848.3 | 28.94 | 172.12 | 0.0 | 0.0 | 649.8 |
| 55.00 | | 0.2500 | 42.388 | 33.435 | 7500.5 | 28.49 | 169.55 | 67.9 | 348.5 | 286.6 |
| 60.00 | | 0.2500 | 41.105 | 32.417 | 6836.1 | 27.58 | 164.42 | 69.0 | 327.6 | 560.2 |
| 65.00 | | 0.2500 | 39.822 | 31.399 | 6212.1 | 26.68 | 159.29 | 70.0 | 307.3 | 542.9 |
| 70.00 | | 0.2500 | 38.539 | 30.381 | 5627.3 | 25.77 | 154.15 | 71.1 | 287.6 | 525.6 |
| 73.50 | | 0.2500 | 37.641 | 29.668 | 5240.5 | 25.14 | 150.56 | 71.8 | 274.2 | 357.6 |
| 75.00 | | 0.2500 | 37.256 | 29.363 | 5080.3 | 24.87 | 149.02 | 72.2 | 268.6 | 150.7 |
| 80.00 | | 0.2500 | 35.973 | 28.345 | 4570.1 | 23.96 | 143.89 | 73.2 | 250.2 | 490.9 |
| 85.00 | | 0.2500 | 34.690 | 27.327 | 4095.1 | 23.06 | 138.76 | 74.3 | 232.5 | 473.6 |
| 90.00 | | 0.2500 | 33.407 | 26.309 | 3654.3 | 22.15 | 133.63 | 75.3 | 215.5 | 456.3 |
| 95.00 | | 0.2500 | 32.124 | 25.291 | 3246.3 | 21.25 | 128.50 | 76.4 | 199.0 | 439.0 |
| 96.00 | | 0.2500 | 31.867 | 25.087 | 3168.6 | 21.07 | 127.47 | 76.6 | 195.8 | 85.7 |
| 98.50 | Top - Section 2 | 0.2500 | 31.226 | 24.578 | 2979.6 | 20.61 | 124.90 | 77.2 | 187.9 | 211.3 |
| 98.50 | Bot - Section 3 | 0.3120 | 28.000 | 27.139 | 2602.7 | 16.52 | 100.08 | 35.0 | 185.9 | |
| 100.00 | | 0.3120 | 28.000 | 27.139 | 2602.7 | 0.00 | 89.74 | 35.0 | 185.9 | 138.5 |
| 105.00 | | 0.3120 | 28.000 | 27.139 | 2602.7 | 0.00 | 89.74 | 35.0 | 185.9 | 461.7 |
| 108.00 | | 0.3120 | 28.000 | 27.139 | 2602.7 | 0.00 | 89.74 | 35.0 | 185.9 | 277.0 |
| 108.50 | | 0.3120 | 28.000 | 27.139 | 2602.7 | 0.00 | 89.74 | 35.0 | 185.9 | 46.2 |

14882.9

Wind Loading - Shaft

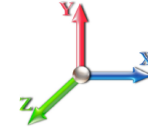
| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 7

Load Case: 1.2D + 1.6W 98 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 18

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 428.14 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 418.34 | 0.650 | 0.000 | 5.00 | 23.422 | 15.22 | 532.0 | 0.0 | 1114.7 |
| 10.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 408.53 | 0.650 | 0.000 | 5.00 | 22.879 | 14.87 | 519.6 | 0.0 | 1088.7 |
| 15.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 398.72 | 0.650 | 0.000 | 5.00 | 22.336 | 14.52 | 507.3 | 0.0 | 1062.7 |
| 20.00 | | 1.00 | 0.90 | 21.065 | 23.17 | 400.60 | 0.650 | 0.000 | 5.00 | 21.793 | 14.17 | 525.2 | 0.0 | 1036.7 |
| 25.00 | | 1.00 | 0.95 | 22.078 | 24.29 | 399.78 | 0.650 | 0.000 | 5.00 | 21.251 | 13.81 | 536.7 | 0.0 | 1010.8 |
| 30.00 | | 1.00 | 0.98 | 22.942 | 25.24 | 396.98 | 0.650 | 0.000 | 5.00 | 20.708 | 13.46 | 543.5 | 0.0 | 984.8 |
| 35.00 | | 1.00 | 1.01 | 23.699 | 26.07 | 392.76 | 0.650 | 0.000 | 5.00 | 20.165 | 13.11 | 546.7 | 0.0 | 958.8 |
| 40.00 | | 1.00 | 1.04 | 24.375 | 26.81 | 387.45 | 0.650 | 0.000 | 5.00 | 19.622 | 12.75 | 547.2 | 0.0 | 932.8 |
| 45.00 | | 1.00 | 1.07 | 24.987 | 27.49 | 381.28 | 0.650 | 0.000 | 5.00 | 19.079 | 12.40 | 545.4 | 0.0 | 906.8 |
| 46.50 | Bot - Section 2 | 1.00 | 1.08 | 25.160 | 27.68 | 379.29 | 0.650 | 0.000 | 1.50 | 5.618 | 3.65 | 161.7 | 0.0 | 267.0 |
| 50.00 | | 1.00 | 1.09 | 25.547 | 28.10 | 374.41 | 0.650 | 0.000 | 3.50 | 13.067 | 8.49 | 381.9 | 0.0 | 1111.4 |
| 52.50 | Top - Section 1 | 1.00 | 1.11 | 25.811 | 28.39 | 370.74 | 0.650 | 0.000 | 2.50 | 9.171 | 5.96 | 270.8 | 0.0 | 779.8 |
| 55.00 | | 1.00 | 1.12 | 26.065 | 28.67 | 371.32 | 0.650 | 0.000 | 2.50 | 9.035 | 5.87 | 269.4 | 0.0 | 343.9 |
| 60.00 | | 1.00 | 1.14 | 26.547 | 29.20 | 363.40 | 0.650 | 0.000 | 5.00 | 17.663 | 11.48 | 536.4 | 0.0 | 672.2 |
| 65.00 | | 1.00 | 1.16 | 26.998 | 29.70 | 355.03 | 0.650 | 0.000 | 5.00 | 17.120 | 11.13 | 528.8 | 0.0 | 651.5 |
| 70.00 | | 1.00 | 1.17 | 27.423 | 30.16 | 346.29 | 0.650 | 0.000 | 5.00 | 16.577 | 10.77 | 520.0 | 0.0 | 630.7 |
| 73.50 | Appurtenance(s) | 1.00 | 1.19 | 27.706 | 30.48 | 339.96 | 0.650 | 0.000 | 3.50 | 11.281 | 7.33 | 357.6 | 0.0 | 429.1 |
| 75.00 | | 1.00 | 1.19 | 27.824 | 30.61 | 337.20 | 0.650 | 0.000 | 1.50 | 4.753 | 3.09 | 151.3 | 0.0 | 180.8 |
| 80.00 | | 1.00 | 1.21 | 28.204 | 31.02 | 327.81 | 0.650 | 0.000 | 5.00 | 15.491 | 10.07 | 499.8 | 0.0 | 589.1 |
| 85.00 | | 1.00 | 1.22 | 28.567 | 31.42 | 318.14 | 0.650 | 0.000 | 5.00 | 14.948 | 9.72 | 488.5 | 0.0 | 568.3 |
| 90.00 | | 1.00 | 1.24 | 28.912 | 31.80 | 308.22 | 0.650 | 0.000 | 5.00 | 14.406 | 9.36 | 476.5 | 0.0 | 547.5 |
| 95.00 | | 1.00 | 1.25 | 29.243 | 32.17 | 298.08 | 0.650 | 0.000 | 5.00 | 13.863 | 9.01 | 463.8 | 0.0 | 526.8 |
| 96.00 | Appurtenance(s) | 1.00 | 1.25 | 29.308 | 32.24 | 296.02 | 0.650 | 0.000 | 1.00 | 2.707 | 1.76 | 90.8 | 0.0 | 102.9 |
| 98.50 | Top - Section 2 | 1.00 | 1.26 | 29.467 | 32.41 | 290.85 | 0.650 | 0.000 | 2.50 | 6.674 | 4.34 | 225.0 | 0.0 | 253.5 |
| 100.00 | | 1.00 | 1.27 | 29.561 | 32.52 | 257.25 | 0.600 | 0.000 | 1.50 | 3.500 | 2.10 | 109.3 | 0.0 | 166.2 |
| 105.00 | | 1.00 | 1.28 | 29.866 | 32.85 | 258.57 | 0.600 | 0.000 | 5.00 | 11.667 | 7.00 | 368.0 | 0.0 | 554.1 |
| 108.00 | Appurtenance(s) | 1.00 | 1.29 | 30.044 | 33.05 | 259.34 | 0.600 | 0.000 | 3.00 | 7.000 | 4.20 | 222.1 | 0.0 | 332.5 |
| 108.50 | Appurtenance(s) | 1.00 | 1.29 | 30.073 | 33.08 | 259.47 | 0.600 | 0.000 | 0.50 | 1.167 | 0.70 | 37.1 | 0.0 | 55.4 |
| Totals: | | | | | | | | | 108.50 | | | 10,962.1 | | 17,859.5 |

Discrete Appurtenance Forces

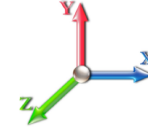
| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 8

Load Case: 1.2D + 1.6W 98 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 18

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1 | 108.50 | Lightning Rod | 1 | 30.073 | 33.080 | 1.00 | 1.00 | 0.50 | 6.00 | 0.000 | 0.000 | 26.46 | 0.00 | 0.00 |
| 2 | 108.00 | RRH 4x45-AWS | 3 | 30.044 | 33.048 | 0.99 | 1.00 | 8.23 | 216.00 | 0.000 | 0.000 | 435.01 | 0.00 | 0.00 |
| 3 | 108.00 | Flush Mount | 1 | 30.044 | 33.048 | 1.00 | 1.00 | 5.00 | 420.00 | 0.000 | 0.000 | 264.39 | 0.00 | 0.00 |
| 4 | 108.00 | DB-T1-6Z-8AB-OZ | 2 | 30.044 | 33.048 | 0.90 | 1.00 | 8.64 | 45.36 | 0.000 | 0.000 | 456.86 | 0.00 | 0.00 |
| 5 | 108.00 | RRH2X60-PCS | 3 | 30.044 | 33.048 | 0.89 | 1.00 | 5.87 | 198.00 | 0.000 | 0.000 | 310.60 | 0.00 | 0.00 |
| 6 | 108.00 | RRH2x60-700 | 3 | 30.044 | 33.048 | 0.76 | 1.00 | 7.98 | 216.00 | 0.000 | 0.000 | 421.96 | 0.00 | 0.00 |
| 7 | 108.00 | SBNHH-1D65B | 9 | 30.044 | 33.048 | 0.83 | 1.00 | 60.96 | 432.00 | 0.000 | 0.000 | 3223.14 | 0.00 | 0.00 |
| 8 | 96.00 | ULPD12-472 | 1 | 29.308 | 32.239 | 0.75 | 0.75 | 30.22 | 2797.20 | 0.000 | 0.000 | 1559.07 | 0.00 | 0.00 |
| 9 | 96.00 | ALU 800 MHz RRH RRU | 6 | 29.308 | 32.239 | 0.54 | 0.80 | 8.01 | 381.60 | 0.000 | 0.000 | 413.06 | 0.00 | 0.00 |
| 10 | 96.00 | Ericsson 4449 B71 + B85 | 3 | 29.308 | 32.239 | 0.54 | 0.80 | 3.17 | 263.52 | 0.000 | 0.000 | 163.40 | 0.00 | 0.00 |
| 11 | 96.00 | Ericsson 4415 B25 RRU | 3 | 29.308 | 32.239 | 0.54 | 0.80 | 2.99 | 166.68 | 0.000 | 0.000 | 154.28 | 0.00 | 0.00 |
| 12 | 96.00 | AIR6449 B41 | 3 | 29.308 | 32.239 | 0.57 | 0.80 | 9.63 | 370.80 | 0.000 | 0.000 | 496.61 | 0.00 | 0.00 |
| 13 | 96.00 | APXVAALL24-43-U-NA20 | 3 | 29.308 | 32.239 | 0.58 | 0.80 | 35.46 | 442.08 | 0.000 | 0.000 | 1829.13 | 0.00 | 0.00 |
| 14 | 96.00 | AIR32 | 3 | 29.308 | 32.239 | 0.70 | 0.80 | 13.59 | 475.92 | 0.000 | 0.000 | 701.15 | 0.00 | 0.00 |
| 15 | 73.50 | Sidarm | 1 | 27.706 | 30.476 | 1.00 | 1.00 | 3.50 | 63.98 | 0.000 | 0.000 | 170.67 | 0.00 | 0.00 |
| 16 | 73.50 | 3'6" x 2'6" Dipole | 1 | 27.561 | 30.318 | 1.00 | 1.00 | 1.74 | 18.00 | 0.000 | -1.800 | 84.40 | 0.00 | -151.93 |
| 17 | 73.50 | 10' x1" Omni | 1 | 28.092 | 30.901 | 1.00 | 1.00 | 1.25 | 14.40 | 0.000 | 5.000 | 61.80 | 0.00 | 309.01 |

Totals: 6,527.54 10,771.98

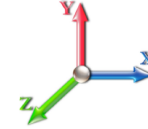
Total Applied Force Summary

| | | | |
|---|---------------------------------------|-------------------------|---------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 | |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | | |
| Height: 108.50 (ft) | Crest Height: 0.00 | | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | | |
| Gh: 1.1 | Topography: 1 | Struct Class: II | Page: 9 |



Load Case: 1.2D + 1.6W 98 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 18

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|----------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 531.96 | 1141.68 | 0.00 | 0.00 |
| 10.00 | | 519.64 | 1115.71 | 0.00 | 0.00 |
| 15.00 | | 507.31 | 1089.73 | 0.00 | 0.00 |
| 20.00 | | 525.19 | 1063.75 | 0.00 | 0.00 |
| 25.00 | | 536.74 | 1037.77 | 0.00 | 0.00 |
| 30.00 | | 543.50 | 1011.79 | 0.00 | 0.00 |
| 35.00 | | 546.71 | 985.81 | 0.00 | 0.00 |
| 40.00 | | 547.16 | 959.83 | 0.00 | 0.00 |
| 45.00 | | 545.38 | 933.85 | 0.00 | 0.00 |
| 46.50 | | 161.70 | 275.09 | 0.00 | 0.00 |
| 50.00 | | 381.89 | 1130.26 | 0.00 | 0.00 |
| 52.50 | | 270.79 | 793.30 | 0.00 | 0.00 |
| 55.00 | | 269.40 | 357.41 | 0.00 | 0.00 |
| 60.00 | | 536.40 | 699.24 | 0.00 | 0.00 |
| 65.00 | | 528.76 | 678.45 | 0.00 | 0.00 |
| 70.00 | | 520.04 | 657.67 | 0.00 | 0.00 |
| 73.50 | (3) attachments | 674.42 | 544.39 | 0.00 | 157.09 |
| 75.00 | | 151.30 | 188.31 | 0.00 | 0.00 |
| 80.00 | | 499.84 | 614.18 | 0.00 | 0.00 |
| 85.00 | | 488.52 | 593.40 | 0.00 | 0.00 |
| 90.00 | | 476.48 | 572.62 | 0.00 | 0.00 |
| 95.00 | | 463.78 | 551.83 | 0.00 | 0.00 |
| 96.00 | (22) attachments | 5407.47 | 5005.67 | 0.00 | 0.00 |
| 98.50 | | 224.97 | 261.53 | 0.00 | 0.00 |
| 100.00 | | 109.26 | 170.19 | 0.00 | 0.00 |
| 105.00 | | 367.95 | 567.29 | 0.00 | 0.00 |
| 108.00 | (21) attachments | 5334.04 | 1867.73 | 0.00 | 0.00 |
| 108.50 | (1) attachments | 63.51 | 61.41 | 0.00 | 0.00 |
| Totals: | | 21,734.12 | 24,929.86 | 0.00 | 157.09 |

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 10

Load Case: 1.2D + 1.6W 98 mph Wind

Iterations 18

Dead Load Factor 1.20
Wind Load Factor 1.60



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -24.91 | -21.76 | 0.00 | -1705.5 | 0.00 | 1705.57 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.000 | 0.000 | 0.461 |
| 5.00 | -23.73 | -21.27 | 0.00 | -1596.7 | 0.00 | 1596.79 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.06 | -0.109 | 0.000 | 0.447 |
| 10.00 | -22.57 | -20.79 | 0.00 | -1490.4 | 0.00 | 1490.44 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.23 | -0.217 | 0.000 | 0.432 |
| 15.00 | -21.45 | -20.32 | 0.00 | -1386.5 | 0.00 | 1386.50 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.52 | -0.326 | 0.000 | 0.417 |
| 20.00 | -20.35 | -19.82 | 0.00 | -1284.9 | 0.00 | 1284.91 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.92 | -0.435 | 0.000 | 0.401 |
| 25.00 | -19.28 | -19.32 | 0.00 | -1185.7 | 0.00 | 1185.79 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 1.43 | -0.544 | 0.000 | 0.385 |
| 30.00 | -18.24 | -18.80 | 0.00 | -1089.2 | 0.00 | 1089.21 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 2.06 | -0.652 | 0.000 | 0.368 |
| 35.00 | -17.23 | -18.27 | 0.00 | -995.24 | 0.00 | 995.24 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 2.80 | -0.759 | 0.000 | 0.351 |
| 40.00 | -16.24 | -17.74 | 0.00 | -903.89 | 0.00 | 903.89 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 3.66 | -0.864 | 0.000 | 0.333 |
| 45.00 | -15.30 | -17.20 | 0.00 | -815.21 | 0.00 | 815.21 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 4.62 | -0.969 | 0.000 | 0.315 |
| 46.50 | -15.01 | -17.04 | 0.00 | -789.42 | 0.00 | 789.42 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 4.93 | -1.000 | 0.000 | 0.309 |
| 50.00 | -13.87 | -16.66 | 0.00 | -729.77 | 0.00 | 729.77 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 5.69 | -1.072 | 0.000 | 0.296 |
| 52.50 | -13.07 | -16.38 | 0.00 | -688.13 | 0.00 | 688.13 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 6.27 | -1.123 | 0.000 | 0.386 |
| 55.00 | -12.69 | -16.12 | 0.00 | -647.18 | 0.00 | 647.18 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 6.87 | -1.174 | 0.000 | 0.371 |
| 60.00 | -11.97 | -15.60 | 0.00 | -566.56 | 0.00 | 566.56 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 8.16 | -1.289 | 0.000 | 0.341 |
| 65.00 | -11.28 | -15.07 | 0.00 | -488.59 | 0.00 | 488.59 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 9.57 | -1.399 | 0.000 | 0.309 |
| 70.00 | -10.61 | -14.55 | 0.00 | -413.23 | 0.00 | 413.23 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 11.09 | -1.502 | 0.000 | 0.275 |
| 73.50 | -10.07 | -13.87 | 0.00 | -362.15 | 0.00 | 362.15 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 12.22 | -1.571 | 0.000 | 0.251 |
| 75.00 | -9.88 | -13.72 | 0.00 | -341.34 | 0.00 | 341.34 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 12.72 | -1.599 | 0.000 | 0.240 |
| 80.00 | -9.26 | -13.22 | 0.00 | -272.72 | 0.00 | 272.72 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 14.44 | -1.685 | 0.000 | 0.204 |
| 85.00 | -8.66 | -12.72 | 0.00 | -206.62 | 0.00 | 206.62 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 16.25 | -1.760 | 0.000 | 0.164 |
| 90.00 | -8.10 | -12.24 | 0.00 | -143.00 | 0.00 | 143.00 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 18.13 | -1.821 | 0.000 | 0.122 |
| 95.00 | -7.55 | -11.76 | 0.00 | -81.81 | 0.00 | 81.81 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 20.06 | -1.864 | 0.000 | 0.076 |
| 96.00 | -2.73 | -6.19 | 0.00 | -70.05 | 0.00 | 70.05 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 20.45 | -1.871 | 0.000 | 0.064 |
| 98.50 | -2.47 | -5.96 | 0.00 | -54.57 | 0.00 | 54.57 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 21.44 | -1.885 | 0.000 | 0.052 |
| 98.50 | -2.47 | -5.96 | 0.00 | -54.57 | 0.00 | 54.57 | 854.88 | 427.44 | 974.68 | 581.27 | 21.44 | -1.885 | 0.000 | 0.097 |
| 100.00 | -2.30 | -5.84 | 0.00 | -45.63 | 0.00 | 45.63 | 854.88 | 427.44 | 974.68 | 581.27 | 22.03 | -1.892 | 0.000 | 0.081 |
| 105.00 | -1.75 | -5.46 | 0.00 | -16.41 | 0.00 | 16.41 | 854.88 | 427.44 | 974.68 | 581.27 | 24.02 | -1.909 | 0.000 | 0.030 |
| 108.00 | -0.06 | -0.07 | 0.00 | -0.03 | 0.00 | 0.03 | 854.88 | 427.44 | 974.68 | 581.27 | 25.22 | -1.912 | 0.000 | 0.000 |
| 108.50 | 0.00 | -0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 25.42 | -1.912 | 0.000 | 0.000 |

Wind Loading - Shaft

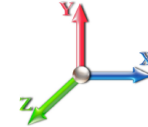
| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 11

Load Case: 0.9D + 1.6W 98 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 18

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 428.14 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 418.34 | 0.650 | 0.000 | 5.00 | 23.422 | 15.22 | 532.0 | 0.0 | 836.0 |
| 10.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 408.53 | 0.650 | 0.000 | 5.00 | 22.879 | 14.87 | 519.6 | 0.0 | 816.5 |
| 15.00 | | 1.00 | 0.85 | 19.853 | 21.84 | 398.72 | 0.650 | 0.000 | 5.00 | 22.336 | 14.52 | 507.3 | 0.0 | 797.0 |
| 20.00 | | 1.00 | 0.90 | 21.065 | 23.17 | 400.60 | 0.650 | 0.000 | 5.00 | 21.793 | 14.17 | 525.2 | 0.0 | 777.6 |
| 25.00 | | 1.00 | 0.95 | 22.078 | 24.29 | 399.78 | 0.650 | 0.000 | 5.00 | 21.251 | 13.81 | 536.7 | 0.0 | 758.1 |
| 30.00 | | 1.00 | 0.98 | 22.942 | 25.24 | 396.98 | 0.650 | 0.000 | 5.00 | 20.708 | 13.46 | 543.5 | 0.0 | 738.6 |
| 35.00 | | 1.00 | 1.01 | 23.699 | 26.07 | 392.76 | 0.650 | 0.000 | 5.00 | 20.165 | 13.11 | 546.7 | 0.0 | 719.1 |
| 40.00 | | 1.00 | 1.04 | 24.375 | 26.81 | 387.45 | 0.650 | 0.000 | 5.00 | 19.622 | 12.75 | 547.2 | 0.0 | 699.6 |
| 45.00 | | 1.00 | 1.07 | 24.987 | 27.49 | 381.28 | 0.650 | 0.000 | 5.00 | 19.079 | 12.40 | 545.4 | 0.0 | 680.1 |
| 46.50 | Bot - Section 2 | 1.00 | 1.08 | 25.160 | 27.68 | 379.29 | 0.650 | 0.000 | 1.50 | 5.618 | 3.65 | 161.7 | 0.0 | 200.2 |
| 50.00 | | 1.00 | 1.09 | 25.547 | 28.10 | 374.41 | 0.650 | 0.000 | 3.50 | 13.067 | 8.49 | 381.9 | 0.0 | 833.5 |
| 52.50 | Top - Section 1 | 1.00 | 1.11 | 25.811 | 28.39 | 370.74 | 0.650 | 0.000 | 2.50 | 9.171 | 5.96 | 270.8 | 0.0 | 584.8 |
| 55.00 | | 1.00 | 1.12 | 26.065 | 28.67 | 371.32 | 0.650 | 0.000 | 2.50 | 9.035 | 5.87 | 269.4 | 0.0 | 257.9 |
| 60.00 | | 1.00 | 1.14 | 26.547 | 29.20 | 363.40 | 0.650 | 0.000 | 5.00 | 17.663 | 11.48 | 536.4 | 0.0 | 504.2 |
| 65.00 | | 1.00 | 1.16 | 26.998 | 29.70 | 355.03 | 0.650 | 0.000 | 5.00 | 17.120 | 11.13 | 528.8 | 0.0 | 488.6 |
| 70.00 | | 1.00 | 1.17 | 27.423 | 30.16 | 346.29 | 0.650 | 0.000 | 5.00 | 16.577 | 10.77 | 520.0 | 0.0 | 473.0 |
| 73.50 | Appurtenance(s) | 1.00 | 1.19 | 27.706 | 30.48 | 339.96 | 0.650 | 0.000 | 3.50 | 11.281 | 7.33 | 357.6 | 0.0 | 321.8 |
| 75.00 | | 1.00 | 1.19 | 27.824 | 30.61 | 337.20 | 0.650 | 0.000 | 1.50 | 4.753 | 3.09 | 151.3 | 0.0 | 135.6 |
| 80.00 | | 1.00 | 1.21 | 28.204 | 31.02 | 327.81 | 0.650 | 0.000 | 5.00 | 15.491 | 10.07 | 499.8 | 0.0 | 441.8 |
| 85.00 | | 1.00 | 1.22 | 28.567 | 31.42 | 318.14 | 0.650 | 0.000 | 5.00 | 14.948 | 9.72 | 488.5 | 0.0 | 426.2 |
| 90.00 | | 1.00 | 1.24 | 28.912 | 31.80 | 308.22 | 0.650 | 0.000 | 5.00 | 14.406 | 9.36 | 476.5 | 0.0 | 410.7 |
| 95.00 | | 1.00 | 1.25 | 29.243 | 32.17 | 298.08 | 0.650 | 0.000 | 5.00 | 13.863 | 9.01 | 463.8 | 0.0 | 395.1 |
| 96.00 | Appurtenance(s) | 1.00 | 1.25 | 29.308 | 32.24 | 296.02 | 0.650 | 0.000 | 1.00 | 2.707 | 1.76 | 90.8 | 0.0 | 77.1 |
| 98.50 | Top - Section 2 | 1.00 | 1.26 | 29.467 | 32.41 | 290.85 | 0.650 | 0.000 | 2.50 | 6.674 | 4.34 | 225.0 | 0.0 | 190.1 |
| 100.00 | | 1.00 | 1.27 | 29.561 | 32.52 | 257.25 | 0.600 | 0.000 | 1.50 | 3.500 | 2.10 | 109.3 | 0.0 | 124.7 |
| 105.00 | | 1.00 | 1.28 | 29.866 | 32.85 | 258.57 | 0.600 | 0.000 | 5.00 | 11.667 | 7.00 | 368.0 | 0.0 | 415.6 |
| 108.00 | Appurtenance(s) | 1.00 | 1.29 | 30.044 | 33.05 | 259.34 | 0.600 | 0.000 | 3.00 | 7.000 | 4.20 | 222.1 | 0.0 | 249.3 |
| 108.50 | Appurtenance(s) | 1.00 | 1.29 | 30.073 | 33.08 | 259.47 | 0.600 | 0.000 | 0.50 | 1.167 | 0.70 | 37.1 | 0.0 | 41.6 |
| Totals: | | | | | | | | | 108.50 | | | 10,962.1 | | 13,394.6 |

Discrete Appurtenance Forces

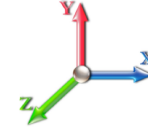
| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 12

Load Case: 0.9D + 1.6W 98 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 18

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1 | 108.50 | Lightning Rod | 1 | 30.073 | 33.080 | 1.00 | 1.00 | 0.50 | 4.50 | 0.000 | 0.000 | 26.46 | 0.00 | 0.00 |
| 2 | 108.00 | RRH 4x45-AWS | 3 | 30.044 | 33.048 | 0.99 | 1.00 | 8.23 | 162.00 | 0.000 | 0.000 | 435.01 | 0.00 | 0.00 |
| 3 | 108.00 | Flush Mount | 1 | 30.044 | 33.048 | 1.00 | 1.00 | 5.00 | 315.00 | 0.000 | 0.000 | 264.39 | 0.00 | 0.00 |
| 4 | 108.00 | DB-T1-6Z-8AB-OZ | 2 | 30.044 | 33.048 | 0.90 | 1.00 | 8.64 | 34.02 | 0.000 | 0.000 | 456.86 | 0.00 | 0.00 |
| 5 | 108.00 | RRH2X60-PCS | 3 | 30.044 | 33.048 | 0.89 | 1.00 | 5.87 | 148.50 | 0.000 | 0.000 | 310.60 | 0.00 | 0.00 |
| 6 | 108.00 | RRH2x60-700 | 3 | 30.044 | 33.048 | 0.76 | 1.00 | 7.98 | 162.00 | 0.000 | 0.000 | 421.96 | 0.00 | 0.00 |
| 7 | 108.00 | SBNHH-1D65B | 9 | 30.044 | 33.048 | 0.83 | 1.00 | 60.96 | 324.00 | 0.000 | 0.000 | 3223.14 | 0.00 | 0.00 |
| 8 | 96.00 | ULPD12-472 | 1 | 29.308 | 32.239 | 0.75 | 0.75 | 30.22 | 2097.90 | 0.000 | 0.000 | 1559.07 | 0.00 | 0.00 |
| 9 | 96.00 | ALU 800 MHz RRH RRU | 6 | 29.308 | 32.239 | 0.54 | 0.80 | 8.01 | 286.20 | 0.000 | 0.000 | 413.06 | 0.00 | 0.00 |
| 10 | 96.00 | Ericsson 4449 B71 + B85 | 3 | 29.308 | 32.239 | 0.54 | 0.80 | 3.17 | 197.64 | 0.000 | 0.000 | 163.40 | 0.00 | 0.00 |
| 11 | 96.00 | Ericsson 4415 B25 RRU | 3 | 29.308 | 32.239 | 0.54 | 0.80 | 2.99 | 125.01 | 0.000 | 0.000 | 154.28 | 0.00 | 0.00 |
| 12 | 96.00 | AIR6449 B41 | 3 | 29.308 | 32.239 | 0.57 | 0.80 | 9.63 | 278.10 | 0.000 | 0.000 | 496.61 | 0.00 | 0.00 |
| 13 | 96.00 | APXVAALL24-43-U-NA20 | 3 | 29.308 | 32.239 | 0.58 | 0.80 | 35.46 | 331.56 | 0.000 | 0.000 | 1829.13 | 0.00 | 0.00 |
| 14 | 96.00 | AIR32 | 3 | 29.308 | 32.239 | 0.70 | 0.80 | 13.59 | 356.94 | 0.000 | 0.000 | 701.15 | 0.00 | 0.00 |
| 15 | 73.50 | Sidarm | 1 | 27.706 | 30.476 | 1.00 | 1.00 | 3.50 | 47.99 | 0.000 | 0.000 | 170.67 | 0.00 | 0.00 |
| 16 | 73.50 | 3'6" x 2'6" Dipole | 1 | 27.561 | 30.318 | 1.00 | 1.00 | 1.74 | 13.50 | 0.000 | -1.800 | 84.40 | 0.00 | -151.93 |
| 17 | 73.50 | 10' x1" Omni | 1 | 28.092 | 30.901 | 1.00 | 1.00 | 1.25 | 10.80 | 0.000 | 5.000 | 61.80 | 0.00 | 309.01 |

Totals: 4,895.66 10,771.98

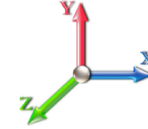
Total Applied Force Summary

| | | | |
|---|---------------------------------------|-------------------------|----------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 | |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | | |
| Height: 108.50 (ft) | Crest Height: 0.00 | | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | | |
| Gh: 1.1 | Topography: 1 | Struct Class: II | Page: 13 |



Load Case: 0.9D + 1.6W 98 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 18

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|----------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 531.96 | 856.26 | 0.00 | 0.00 |
| 10.00 | | 519.64 | 836.78 | 0.00 | 0.00 |
| 15.00 | | 507.31 | 817.29 | 0.00 | 0.00 |
| 20.00 | | 525.19 | 797.81 | 0.00 | 0.00 |
| 25.00 | | 536.74 | 778.32 | 0.00 | 0.00 |
| 30.00 | | 543.50 | 758.84 | 0.00 | 0.00 |
| 35.00 | | 546.71 | 739.35 | 0.00 | 0.00 |
| 40.00 | | 547.16 | 719.87 | 0.00 | 0.00 |
| 45.00 | | 545.38 | 700.38 | 0.00 | 0.00 |
| 46.50 | | 161.70 | 206.32 | 0.00 | 0.00 |
| 50.00 | | 381.89 | 847.70 | 0.00 | 0.00 |
| 52.50 | | 270.79 | 594.97 | 0.00 | 0.00 |
| 55.00 | | 269.40 | 268.06 | 0.00 | 0.00 |
| 60.00 | | 536.40 | 524.43 | 0.00 | 0.00 |
| 65.00 | | 528.76 | 508.84 | 0.00 | 0.00 |
| 70.00 | | 520.04 | 493.25 | 0.00 | 0.00 |
| 73.50 | (3) attachments | 674.42 | 408.29 | 0.00 | 157.09 |
| 75.00 | | 151.30 | 141.23 | 0.00 | 0.00 |
| 80.00 | | 499.84 | 460.64 | 0.00 | 0.00 |
| 85.00 | | 488.52 | 445.05 | 0.00 | 0.00 |
| 90.00 | | 476.48 | 429.46 | 0.00 | 0.00 |
| 95.00 | | 463.78 | 413.87 | 0.00 | 0.00 |
| 96.00 | (22) attachments | 5407.47 | 3754.25 | 0.00 | 0.00 |
| 98.50 | | 224.97 | 196.15 | 0.00 | 0.00 |
| 100.00 | | 109.26 | 127.64 | 0.00 | 0.00 |
| 105.00 | | 367.95 | 425.47 | 0.00 | 0.00 |
| 108.00 | (21) attachments | 5334.04 | 1400.80 | 0.00 | 0.00 |
| 108.50 | (1) attachments | 63.51 | 46.06 | 0.00 | 0.00 |
| Totals: | | 21,734.12 | 18,697.40 | 0.00 | 157.09 |

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 14

Load Case: 0.9D + 1.6W 98 mph Wind

Iterations 18

Dead Load Factor 0.90

Wind Load Factor 1.60



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -18.68 | -21.75 | 0.00 | -1699.8 | 0.00 | 1699.81 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.000 | 0.000 | 0.458 |
| 5.00 | -17.78 | -21.25 | 0.00 | -1591.0 | 0.00 | 1591.05 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.06 | -0.108 | 0.000 | 0.443 |
| 10.00 | -16.91 | -20.76 | 0.00 | -1484.7 | 0.00 | 1484.79 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.23 | -0.217 | 0.000 | 0.428 |
| 15.00 | -16.05 | -20.28 | 0.00 | -1380.9 | 0.00 | 1380.98 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.52 | -0.325 | 0.000 | 0.413 |
| 20.00 | -15.22 | -19.78 | 0.00 | -1279.5 | 0.00 | 1279.58 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.92 | -0.433 | 0.000 | 0.398 |
| 25.00 | -14.41 | -19.26 | 0.00 | -1180.6 | 0.00 | 1180.68 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 1.43 | -0.542 | 0.000 | 0.382 |
| 30.00 | -13.62 | -18.74 | 0.00 | -1084.3 | 0.00 | 1084.36 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 2.06 | -0.649 | 0.000 | 0.365 |
| 35.00 | -12.86 | -18.21 | 0.00 | -990.67 | 0.00 | 990.67 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 2.79 | -0.756 | 0.000 | 0.348 |
| 40.00 | -12.11 | -17.67 | 0.00 | -899.64 | 0.00 | 899.64 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 3.64 | -0.861 | 0.000 | 0.330 |
| 45.00 | -11.40 | -17.13 | 0.00 | -811.29 | 0.00 | 811.29 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 4.60 | -0.965 | 0.000 | 0.312 |
| 46.50 | -11.18 | -16.97 | 0.00 | -785.60 | 0.00 | 785.60 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 4.91 | -0.996 | 0.000 | 0.306 |
| 50.00 | -10.32 | -16.59 | 0.00 | -726.20 | 0.00 | 726.20 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 5.67 | -1.068 | 0.000 | 0.293 |
| 52.50 | -9.72 | -16.31 | 0.00 | -684.73 | 0.00 | 684.73 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 6.24 | -1.119 | 0.000 | 0.382 |
| 55.00 | -9.43 | -16.05 | 0.00 | -643.95 | 0.00 | 643.95 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 6.84 | -1.169 | 0.000 | 0.368 |
| 60.00 | -8.89 | -15.52 | 0.00 | -563.69 | 0.00 | 563.69 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 8.13 | -1.283 | 0.000 | 0.337 |
| 65.00 | -8.37 | -15.00 | 0.00 | -486.08 | 0.00 | 486.08 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 9.53 | -1.393 | 0.000 | 0.306 |
| 70.00 | -7.86 | -14.48 | 0.00 | -411.10 | 0.00 | 411.10 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 11.05 | -1.495 | 0.000 | 0.272 |
| 73.50 | -7.46 | -13.80 | 0.00 | -360.28 | 0.00 | 360.28 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 12.17 | -1.564 | 0.000 | 0.248 |
| 75.00 | -7.31 | -13.65 | 0.00 | -339.58 | 0.00 | 339.58 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 12.67 | -1.592 | 0.000 | 0.238 |
| 80.00 | -6.85 | -13.15 | 0.00 | -271.33 | 0.00 | 271.33 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 14.38 | -1.678 | 0.000 | 0.201 |
| 85.00 | -6.40 | -12.65 | 0.00 | -205.60 | 0.00 | 205.60 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 16.18 | -1.752 | 0.000 | 0.162 |
| 90.00 | -5.98 | -12.17 | 0.00 | -142.34 | 0.00 | 142.34 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 18.05 | -1.812 | 0.000 | 0.120 |
| 95.00 | -5.57 | -11.69 | 0.00 | -81.50 | 0.00 | 81.50 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 19.97 | -1.856 | 0.000 | 0.075 |
| 96.00 | -2.00 | -6.17 | 0.00 | -69.80 | 0.00 | 69.80 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 20.36 | -1.862 | 0.000 | 0.063 |
| 98.50 | -1.81 | -5.94 | 0.00 | -54.38 | 0.00 | 54.38 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 21.34 | -1.876 | 0.000 | 0.051 |
| 98.50 | -1.81 | -5.94 | 0.00 | -54.38 | 0.00 | 54.38 | 854.88 | 427.44 | 974.68 | 581.27 | 21.34 | -1.876 | 0.000 | 0.096 |
| 100.00 | -1.68 | -5.82 | 0.00 | -45.48 | 0.00 | 45.48 | 854.88 | 427.44 | 974.68 | 581.27 | 21.93 | -1.883 | 0.000 | 0.080 |
| 105.00 | -1.27 | -5.44 | 0.00 | -16.36 | 0.00 | 16.36 | 854.88 | 427.44 | 974.68 | 581.27 | 23.92 | -1.900 | 0.000 | 0.030 |
| 108.00 | -0.04 | -0.06 | 0.00 | -0.03 | 0.00 | 0.03 | 854.88 | 427.44 | 974.68 | 581.27 | 25.11 | -1.903 | 0.000 | 0.000 |
| 108.50 | 0.00 | -0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 25.31 | -1.903 | 0.000 | 0.000 |

Wind Loading - Shaft

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

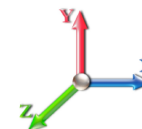


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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 18

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.85 | 5.168 | 5.68 | 0.00 | 1.200 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.85 | 5.168 | 5.68 | 0.00 | 1.200 | 1.242 | 5.00 | 24.457 | 29.35 | 166.8 | 431.0 | 1545.7 |
| 10.00 | | 1.00 | 0.85 | 5.168 | 5.68 | 0.00 | 1.200 | 1.331 | 5.00 | 23.988 | 28.79 | 163.6 | 452.0 | 1540.7 |
| 15.00 | | 1.00 | 0.85 | 5.168 | 5.68 | 0.00 | 1.200 | 1.386 | 5.00 | 23.491 | 28.19 | 160.3 | 460.2 | 1522.9 |
| 20.00 | | 1.00 | 0.90 | 5.483 | 6.03 | 0.00 | 1.200 | 1.427 | 5.00 | 22.982 | 27.58 | 166.4 | 462.6 | 1499.4 |
| 25.00 | | 1.00 | 0.95 | 5.747 | 6.32 | 0.00 | 1.200 | 1.459 | 5.00 | 22.466 | 26.96 | 170.4 | 461.7 | 1472.5 |
| 30.00 | | 1.00 | 0.98 | 5.972 | 6.57 | 0.00 | 1.200 | 1.486 | 5.00 | 21.946 | 26.34 | 173.0 | 458.6 | 1443.4 |
| 35.00 | | 1.00 | 1.01 | 6.169 | 6.79 | 0.00 | 1.200 | 1.509 | 5.00 | 21.422 | 25.71 | 174.4 | 454.0 | 1412.8 |
| 40.00 | | 1.00 | 1.04 | 6.345 | 6.98 | 0.00 | 1.200 | 1.529 | 5.00 | 20.897 | 25.08 | 175.0 | 448.1 | 1380.9 |
| 45.00 | | 1.00 | 1.07 | 6.504 | 7.15 | 0.00 | 1.200 | 1.547 | 5.00 | 20.369 | 24.44 | 174.9 | 441.3 | 1348.1 |
| 46.50 | Bot - Section 2 | 1.00 | 1.08 | 6.549 | 7.20 | 0.00 | 1.200 | 1.552 | 1.50 | 6.006 | 7.21 | 51.9 | 131.7 | 398.7 |
| 50.00 | | 1.00 | 1.09 | 6.650 | 7.32 | 0.00 | 1.200 | 1.564 | 3.50 | 13.979 | 16.77 | 122.7 | 306.9 | 1418.3 |
| 52.50 | Top - Section 1 | 1.00 | 1.11 | 6.719 | 7.39 | 0.00 | 1.200 | 1.571 | 2.50 | 9.825 | 11.79 | 87.1 | 217.2 | 997.0 |
| 55.00 | | 1.00 | 1.12 | 6.785 | 7.46 | 0.00 | 1.200 | 1.579 | 2.50 | 9.693 | 11.63 | 86.8 | 215.1 | 559.1 |
| 60.00 | | 1.00 | 1.14 | 6.910 | 7.60 | 0.00 | 1.200 | 1.592 | 5.00 | 18.990 | 22.79 | 173.2 | 421.5 | 1093.7 |
| 65.00 | | 1.00 | 1.16 | 7.028 | 7.73 | 0.00 | 1.200 | 1.605 | 5.00 | 18.457 | 22.15 | 171.2 | 412.2 | 1063.7 |
| 70.00 | | 1.00 | 1.17 | 7.138 | 7.85 | 0.00 | 1.200 | 1.617 | 5.00 | 17.925 | 21.51 | 168.9 | 402.6 | 1033.2 |
| 73.50 | Appurtenance(s) | 1.00 | 1.19 | 7.212 | 7.93 | 0.00 | 1.200 | 1.625 | 3.50 | 12.229 | 14.67 | 116.4 | 276.9 | 706.0 |
| 75.00 | | 1.00 | 1.19 | 7.243 | 7.97 | 0.00 | 1.200 | 1.628 | 1.50 | 5.160 | 6.19 | 49.3 | 117.7 | 298.5 |
| 80.00 | | 1.00 | 1.21 | 7.342 | 8.08 | 0.00 | 1.200 | 1.639 | 5.00 | 16.857 | 20.23 | 163.4 | 382.1 | 971.2 |
| 85.00 | | 1.00 | 1.22 | 7.436 | 8.18 | 0.00 | 1.200 | 1.649 | 5.00 | 16.323 | 19.59 | 160.2 | 371.4 | 939.7 |
| 90.00 | | 1.00 | 1.24 | 7.526 | 8.28 | 0.00 | 1.200 | 1.658 | 5.00 | 15.788 | 18.95 | 156.8 | 360.4 | 908.0 |
| 95.00 | | 1.00 | 1.25 | 7.612 | 8.37 | 0.00 | 1.200 | 1.667 | 5.00 | 15.252 | 18.30 | 153.3 | 349.2 | 876.0 |
| 96.00 | Appurtenance(s) | 1.00 | 1.25 | 7.629 | 8.39 | 0.00 | 1.200 | 1.669 | 1.00 | 2.986 | 3.58 | 30.1 | 69.4 | 172.2 |
| 98.50 | Top - Section 2 | 1.00 | 1.26 | 7.671 | 8.44 | 0.00 | 1.200 | 1.673 | 2.50 | 7.371 | 8.84 | 74.6 | 170.6 | 424.1 |
| 100.00 | | 1.00 | 1.27 | 7.695 | 8.46 | 0.00 | 1.200 | 1.676 | 1.50 | 3.919 | 4.70 | 39.8 | 91.1 | 257.4 |
| 105.00 | | 1.00 | 1.28 | 7.774 | 8.55 | 0.00 | 1.200 | 1.684 | 5.00 | 13.070 | 15.68 | 134.1 | 305.4 | 859.5 |
| 108.00 | Appurtenance(s) | 1.00 | 1.29 | 7.821 | 8.60 | 0.00 | 1.200 | 1.689 | 3.00 | 7.844 | 9.41 | 81.0 | 183.8 | 516.2 |
| 108.50 | Appurtenance(s) | 1.00 | 1.29 | 7.828 | 8.61 | 0.00 | 1.200 | 1.690 | 0.50 | 1.307 | 1.57 | 13.5 | 30.6 | 86.1 |
| Totals: | | | | | | | | | 108.50 | | | 3,559.3 | | 26,745.0 |

Discrete Appurtenance Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 18

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1 | 108.50 | Lightning Rod | 1 | 7.828 | 8.611 | 1.00 | 1.00 | 2.19 | 20.28 | 0.000 | 0.000 | 18.85 | 0.00 | 0.00 |
| 2 | 108.00 | RRH 4x45-AWS | 3 | 7.821 | 8.603 | 0.99 | 1.00 | 11.87 | 386.52 | 0.000 | 0.000 | 102.14 | 0.00 | 0.00 |
| 3 | 108.00 | Flush Mount | 1 | 7.821 | 8.603 | 1.00 | 1.00 | 8.38 | 603.72 | 0.000 | 0.000 | 72.07 | 0.00 | 0.00 |
| 4 | 108.00 | DB-T1-6Z-8AB-OZ | 2 | 7.821 | 8.603 | 0.90 | 1.00 | 10.16 | 321.92 | 0.000 | 0.000 | 87.39 | 0.00 | 0.00 |
| 5 | 108.00 | RRH2X60-PCS | 3 | 7.821 | 8.603 | 0.89 | 1.00 | 7.51 | 441.53 | 0.000 | 0.000 | 64.63 | 0.00 | 0.00 |
| 6 | 108.00 | RRH2x60-700 | 3 | 7.821 | 8.603 | 0.76 | 1.00 | 9.72 | 409.10 | 0.000 | 0.000 | 83.63 | 0.00 | 0.00 |
| 7 | 108.00 | SBNHH-1D65B | 9 | 7.821 | 8.603 | 0.83 | 1.00 | 70.33 | 2190.17 | 0.000 | 0.000 | 605.04 | 0.00 | 0.00 |
| 8 | 96.00 | ULPD12-472 | 1 | 7.629 | 8.392 | 0.75 | 0.75 | 60.49 | 4819.63 | 0.000 | 0.000 | 507.66 | 0.00 | 0.00 |
| 9 | 96.00 | ALU 800 MHz RRH RRU | 6 | 7.629 | 8.392 | 0.54 | 0.80 | 11.53 | 679.39 | 0.000 | 0.000 | 96.72 | 0.00 | 0.00 |
| 10 | 96.00 | Ericsson 4449 B71 + B85 | 3 | 7.629 | 8.392 | 0.54 | 0.80 | 4.04 | 253.99 | 0.000 | 0.000 | 33.93 | 0.00 | 0.00 |
| 11 | 96.00 | Ericsson 4415 B25 RRU | 3 | 7.629 | 8.392 | 0.54 | 0.80 | 3.85 | 338.92 | 0.000 | 0.000 | 32.35 | 0.00 | 0.00 |
| 12 | 96.00 | AIR6449 B41 | 3 | 7.629 | 8.392 | 0.57 | 0.80 | 11.18 | 669.10 | 0.000 | 0.000 | 93.79 | 0.00 | 0.00 |
| 13 | 96.00 | APXVAALL24-43-U-NA20 | 3 | 7.629 | 8.392 | 0.58 | 0.80 | 38.64 | 1662.50 | 0.000 | 0.000 | 324.26 | 0.00 | 0.00 |
| 14 | 96.00 | AIR32 | 3 | 7.629 | 8.392 | 0.70 | 0.80 | 15.95 | 1000.68 | 0.000 | 0.000 | 133.83 | 0.00 | 0.00 |
| 15 | 73.50 | Sidarm | 1 | 7.212 | 7.933 | 1.00 | 1.00 | 10.94 | 133.02 | 0.000 | 0.000 | 86.81 | 0.00 | 0.00 |
| 16 | 73.50 | 3'6" x 2'6" Dipole | 1 | 7.174 | 7.892 | 1.00 | 1.00 | 3.84 | 54.41 | 0.000 | -1.800 | 30.33 | 0.00 | -54.60 |
| 17 | 73.50 | 10' x1" Omni | 1 | 7.313 | 8.044 | 1.00 | 1.00 | 5.31 | 23.80 | 0.000 | 5.000 | 42.73 | 0.00 | 213.67 |

Totals: 14,008.68

2,416.18

Total Applied Force Summary

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 18

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|----------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 166.84 | 1572.66 | 0.00 | 0.00 |
| 10.00 | | 163.64 | 1567.75 | 0.00 | 0.00 |
| 15.00 | | 160.25 | 1549.91 | 0.00 | 0.00 |
| 20.00 | | 166.35 | 1526.36 | 0.00 | 0.00 |
| 25.00 | | 170.44 | 1499.49 | 0.00 | 0.00 |
| 30.00 | | 173.00 | 1470.43 | 0.00 | 0.00 |
| 35.00 | | 174.45 | 1439.78 | 0.00 | 0.00 |
| 40.00 | | 175.02 | 1407.92 | 0.00 | 0.00 |
| 45.00 | | 174.88 | 1375.11 | 0.00 | 0.00 |
| 46.50 | | 51.92 | 406.80 | 0.00 | 0.00 |
| 50.00 | | 122.71 | 1437.21 | 0.00 | 0.00 |
| 52.50 | | 87.14 | 1010.53 | 0.00 | 0.00 |
| 55.00 | | 86.81 | 572.55 | 0.00 | 0.00 |
| 60.00 | | 173.22 | 1120.74 | 0.00 | 0.00 |
| 65.00 | | 171.22 | 1090.70 | 0.00 | 0.00 |
| 70.00 | | 168.90 | 1060.23 | 0.00 | 0.00 |
| 73.50 | (3) attachments | 276.30 | 936.12 | 0.00 | 159.07 |
| 75.00 | | 49.33 | 306.06 | 0.00 | 0.00 |
| 80.00 | | 163.37 | 996.28 | 0.00 | 0.00 |
| 85.00 | | 160.22 | 964.80 | 0.00 | 0.00 |
| 90.00 | | 156.84 | 933.05 | 0.00 | 0.00 |
| 95.00 | | 153.26 | 901.04 | 0.00 | 0.00 |
| 96.00 | (22) attachments | 1252.62 | 9601.46 | 0.00 | 0.00 |
| 98.50 | | 74.63 | 432.14 | 0.00 | 0.00 |
| 100.00 | | 39.81 | 261.33 | 0.00 | 0.00 |
| 105.00 | | 134.13 | 872.66 | 0.00 | 0.00 |
| 108.00 | (21) attachments | 1095.87 | 4877.11 | 0.00 | 0.00 |
| 108.50 | (1) attachments | 32.37 | 106.33 | 0.00 | 0.00 |
| Totals: | | 5,975.51 | 41,296.54 | 0.00 | 159.07 |

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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

Iterations 18

Dead Load Factor 1.20
Wind Load Factor 1.00



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -41.29 | -5.99 | 0.00 | -447.84 | 0.00 | 447.84 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.000 | 0.000 | 0.132 |
| 5.00 | -39.72 | -5.84 | 0.00 | -417.91 | 0.00 | 417.91 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.02 | -0.028 | 0.000 | 0.127 |
| 10.00 | -38.15 | -5.69 | 0.00 | -388.72 | 0.00 | 388.72 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.06 | -0.057 | 0.000 | 0.123 |
| 15.00 | -36.60 | -5.55 | 0.00 | -360.26 | 0.00 | 360.26 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.14 | -0.085 | 0.000 | 0.118 |
| 20.00 | -35.07 | -5.40 | 0.00 | -332.52 | 0.00 | 332.52 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.24 | -0.113 | 0.000 | 0.113 |
| 25.00 | -33.57 | -5.24 | 0.00 | -305.54 | 0.00 | 305.54 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 0.37 | -0.142 | 0.000 | 0.108 |
| 30.00 | -32.09 | -5.08 | 0.00 | -279.34 | 0.00 | 279.34 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 0.54 | -0.169 | 0.000 | 0.103 |
| 35.00 | -30.65 | -4.91 | 0.00 | -253.95 | 0.00 | 253.95 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 0.73 | -0.197 | 0.000 | 0.098 |
| 40.00 | -29.24 | -4.75 | 0.00 | -229.39 | 0.00 | 229.39 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 0.95 | -0.224 | 0.000 | 0.093 |
| 45.00 | -27.87 | -4.57 | 0.00 | -205.66 | 0.00 | 205.66 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 1.20 | -0.250 | 0.000 | 0.088 |
| 46.50 | -27.46 | -4.53 | 0.00 | -198.80 | 0.00 | 198.80 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 1.28 | -0.258 | 0.000 | 0.086 |
| 50.00 | -26.02 | -4.40 | 0.00 | -182.95 | 0.00 | 182.95 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 1.48 | -0.276 | 0.000 | 0.082 |
| 52.50 | -25.01 | -4.32 | 0.00 | -171.94 | 0.00 | 171.94 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 1.62 | -0.289 | 0.000 | 0.107 |
| 55.00 | -24.44 | -4.24 | 0.00 | -161.15 | 0.00 | 161.15 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 1.78 | -0.301 | 0.000 | 0.103 |
| 60.00 | -23.32 | -4.07 | 0.00 | -139.96 | 0.00 | 139.96 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 2.11 | -0.330 | 0.000 | 0.094 |
| 65.00 | -22.22 | -3.90 | 0.00 | -119.62 | 0.00 | 119.62 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 2.47 | -0.357 | 0.000 | 0.085 |
| 70.00 | -21.16 | -3.73 | 0.00 | -100.12 | 0.00 | 100.12 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 2.86 | -0.382 | 0.000 | 0.076 |
| 73.50 | -20.23 | -3.45 | 0.00 | -86.89 | 0.00 | 86.89 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 3.14 | -0.399 | 0.000 | 0.069 |
| 75.00 | -19.92 | -3.41 | 0.00 | -81.71 | 0.00 | 81.71 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 3.27 | -0.406 | 0.000 | 0.067 |
| 80.00 | -18.93 | -3.24 | 0.00 | -64.67 | 0.00 | 64.67 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 3.71 | -0.426 | 0.000 | 0.057 |
| 85.00 | -17.96 | -3.08 | 0.00 | -48.45 | 0.00 | 48.45 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 4.16 | -0.444 | 0.000 | 0.047 |
| 90.00 | -17.03 | -2.92 | 0.00 | -33.05 | 0.00 | 33.05 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 4.64 | -0.458 | 0.000 | 0.037 |
| 95.00 | -16.13 | -2.76 | 0.00 | -18.45 | 0.00 | 18.45 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 5.12 | -0.468 | 0.000 | 0.025 |
| 96.00 | -6.54 | -1.43 | 0.00 | -15.69 | 0.00 | 15.69 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 5.22 | -0.469 | 0.000 | 0.018 |
| 98.50 | -6.11 | -1.35 | 0.00 | -12.11 | 0.00 | 12.11 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 5.47 | -0.472 | 0.000 | 0.015 |
| 98.50 | -6.11 | -1.35 | 0.00 | -12.11 | 0.00 | 12.11 | 854.88 | 427.44 | 974.68 | 581.27 | 5.47 | -0.472 | 0.000 | 0.028 |
| 100.00 | -5.85 | -1.31 | 0.00 | -10.08 | 0.00 | 10.08 | 854.88 | 427.44 | 974.68 | 581.27 | 5.62 | -0.474 | 0.000 | 0.024 |
| 105.00 | -4.97 | -1.17 | 0.00 | -3.53 | 0.00 | 3.53 | 854.88 | 427.44 | 974.68 | 581.27 | 6.11 | -0.478 | 0.000 | 0.012 |
| 108.00 | -0.11 | -0.03 | 0.00 | -0.02 | 0.00 | 0.02 | 854.88 | 427.44 | 974.68 | 581.27 | 6.42 | -0.478 | 0.000 | 0.000 |
| 108.50 | 0.00 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 6.47 | -0.478 | 0.000 | 0.000 |

Seismic Segment Forces (Factored)

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | | | |
|-------------------------------|------|---------------------------------|------|------------|------|---------------------------------------|
| Load Case: 1.2D + 1.0E | | | | | | Iterations 16 |
| Gust Response Factor | 1.10 | | | Sds | 0.12 | Ss 0.18 |
| Dead Load Factor | 1.20 | Seismic Load Factor | 1.00 | Sd1 | 0.04 | S1 0.06 |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.72 | SA | 0.03 | Seismic Importance Factor 1.00 |



| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|----------------|-----------------|-----------------|------|-------|------|-----------------|-----------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 928.90 | 0.00 | 0.04 | 0.02 | 10.52 | |
| 10.00 | | 907.25 | 0.02 | 0.06 | 0.04 | 14.36 | |
| 15.00 | | 885.60 | 0.04 | 0.07 | 0.04 | 15.71 | |
| 20.00 | | 863.95 | 0.06 | 0.07 | 0.04 | 16.18 | |
| 25.00 | | 842.30 | 0.10 | 0.07 | 0.04 | 16.41 | |
| 30.00 | | 820.65 | 0.14 | 0.07 | 0.03 | 16.54 | |
| 35.00 | | 799.01 | 0.20 | 0.06 | 0.02 | 16.36 | |
| 40.00 | | 777.36 | 0.26 | 0.05 | 0.02 | 15.45 | |
| 45.00 | | 755.71 | 0.33 | 0.04 | 0.01 | 13.29 | |
| 46.50 | Bot - Section 2 | 222.49 | 0.35 | 0.03 | 0.01 | 3.66 | |
| 50.00 | | 926.13 | 0.40 | 0.02 | 0.01 | 11.99 | |
| 52.50 | Top - Section 1 | 649.83 | 0.44 | 0.00 | 0.01 | 6.28 | |
| 55.00 | | 286.59 | 0.49 | -0.01 | 0.01 | 1.68 | |
| 60.00 | | 560.20 | 0.58 | -0.04 | 0.01 | -1.45 | |
| 65.00 | | 542.88 | 0.68 | -0.08 | 0.03 | -5.50 | |
| 70.00 | | 525.56 | 0.79 | -0.11 | 0.05 | -7.52 | |
| 73.50 | Appurtenance(s) | 437.91 | 0.87 | -0.12 | 0.08 | -6.25 | |
| 75.00 | | 150.65 | 0.90 | -0.12 | 0.09 | -2.02 | |
| 80.00 | | 490.92 | 1.03 | -0.10 | 0.15 | -3.26 | |
| 85.00 | | 473.60 | 1.16 | -0.03 | 0.23 | 2.98 | |
| 90.00 | | 456.28 | 1.30 | 0.12 | 0.34 | 11.62 | |
| 95.00 | | 438.96 | 1.45 | 0.38 | 0.48 | 22.36 | |
| 96.00 | Appurtenance(s) | 4167.2 | 1.48 | 0.45 | 0.52 | 236.69 | |
| 98.50 | Top - Section 2 | 211.25 | 1.56 | 0.65 | 0.61 | 15.33 | |
| 100.00 | | 138.52 | 1.61 | 0.80 | 0.68 | 11.47 | |
| 105.00 | | 461.74 | 1.77 | 1.41 | 0.93 | 56.00 | |
| 108.00 | Appurtenance(s) | 1549.8 | 1.87 | 1.89 | 1.11 | 228.73 | |
| 108.50 | Appurtenance(s) | 51.17 | 1.89 | 1.98 | 1.14 | 7.79 | |
| Totals: | | 20,322.5 | | | | 725.4 | Total Wind: 21,734.1 |

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

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | | | | |
|-------------------------------|------|---------------------------------|------|------------|------|----------------------------------|----------------------|
| Load Case: 1.2D + 1.0E | | | | | | | Iterations 16 |
| Gust Response Factor | 1.10 | | | Sds | 0.12 | | Ss 0.18 |
| Dead Load Factor | 1.20 | Seismic Load Factor | 1.00 | Sd1 | 0.04 | | S1 0.06 |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.72 | SA | 0.03 | Seismic Importance Factor | 1.00 |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -24.93 | -0.75 | 0.00 | -65.73 | 0.00 | 65.73 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.00 | 0.00 | 0.025 |
| 5.00 | -23.79 | -0.74 | 0.00 | -61.97 | 0.00 | 61.97 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.00 | 0.00 | 0.00 | 0.024 |
| 10.00 | -22.67 | -0.73 | 0.00 | -58.26 | 0.00 | 58.26 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.01 | -0.01 | 0.00 | 0.024 |
| 15.00 | -21.58 | -0.72 | 0.00 | -54.61 | 0.00 | 54.61 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.02 | -0.01 | 0.00 | 0.023 |
| 20.00 | -20.52 | -0.70 | 0.00 | -51.03 | 0.00 | 51.03 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.04 | -0.02 | 0.00 | 0.022 |
| 25.00 | -19.48 | -0.69 | 0.00 | -47.53 | 0.00 | 47.53 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 0.06 | -0.02 | 0.00 | 0.021 |
| 30.00 | -18.47 | -0.67 | 0.00 | -44.10 | 0.00 | 44.10 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 0.08 | -0.03 | 0.00 | 0.021 |
| 35.00 | -17.48 | -0.65 | 0.00 | -40.75 | 0.00 | 40.75 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 0.11 | -0.03 | 0.00 | 0.020 |
| 40.00 | -16.52 | -0.64 | 0.00 | -37.48 | 0.00 | 37.48 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 0.14 | -0.03 | 0.00 | 0.019 |
| 45.00 | -15.59 | -0.63 | 0.00 | -34.28 | 0.00 | 34.28 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 0.18 | -0.04 | 0.00 | 0.018 |
| 46.50 | -15.31 | -0.62 | 0.00 | -33.34 | 0.00 | 33.34 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 0.19 | -0.04 | 0.00 | 0.018 |
| 50.00 | -14.18 | -0.61 | 0.00 | -31.16 | 0.00 | 31.16 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 0.23 | -0.04 | 0.00 | 0.017 |
| 52.50 | -13.39 | -0.60 | 0.00 | -29.63 | 0.00 | 29.63 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 0.25 | -0.05 | 0.00 | 0.023 |
| 55.00 | -13.03 | -0.60 | 0.00 | -28.12 | 0.00 | 28.12 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 0.27 | -0.05 | 0.00 | 0.022 |
| 60.00 | -12.33 | -0.60 | 0.00 | -25.10 | 0.00 | 25.10 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 0.33 | -0.05 | 0.00 | 0.021 |
| 65.00 | -11.66 | -0.60 | 0.00 | -22.08 | 0.00 | 22.08 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 0.38 | -0.06 | 0.00 | 0.020 |
| 70.00 | -11.00 | -0.60 | 0.00 | -19.06 | 0.00 | 19.06 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 0.45 | -0.06 | 0.00 | 0.018 |
| 73.50 | -10.45 | -0.60 | 0.00 | -16.95 | 0.00 | 16.95 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 0.49 | -0.07 | 0.00 | 0.017 |
| 75.00 | -10.27 | -0.60 | 0.00 | -16.04 | 0.00 | 16.04 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 0.51 | -0.07 | 0.00 | 0.016 |
| 80.00 | -9.65 | -0.60 | 0.00 | -13.01 | 0.00 | 13.01 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 0.59 | -0.07 | 0.00 | 0.015 |
| 85.00 | -9.06 | -0.60 | 0.00 | -9.99 | 0.00 | 9.99 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 0.66 | -0.07 | 0.00 | 0.013 |
| 90.00 | -8.48 | -0.59 | 0.00 | -6.98 | 0.00 | 6.98 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 0.74 | -0.08 | 0.00 | 0.010 |
| 95.00 | -7.93 | -0.57 | 0.00 | -4.04 | 0.00 | 4.04 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 0.82 | -0.08 | 0.00 | 0.008 |
| 96.00 | -2.93 | -0.32 | 0.00 | -3.47 | 0.00 | 3.47 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 0.84 | -0.08 | 0.00 | 0.005 |
| 98.50 | -2.67 | -0.31 | 0.00 | -2.66 | 0.00 | 2.66 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 0.88 | -0.08 | 0.00 | 0.004 |
| 98.50 | -2.67 | -0.31 | 0.00 | -2.66 | 0.00 | 2.66 | 854.88 | 427.44 | 974.68 | 581.27 | 0.88 | -0.08 | 0.00 | 0.008 |
| 100.00 | -2.50 | -0.30 | 0.00 | -2.20 | 0.00 | 2.20 | 854.88 | 427.44 | 974.68 | 581.27 | 0.91 | -0.08 | 0.00 | 0.007 |
| 105.00 | -1.93 | -0.24 | 0.00 | -0.72 | 0.00 | 0.72 | 854.88 | 427.44 | 974.68 | 581.27 | 0.99 | -0.08 | 0.00 | 0.003 |
| 108.00 | -0.06 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 1.04 | -0.08 | 0.00 | 0.000 |
| 108.50 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 1.05 | -0.08 | 0.00 | 0.000 |

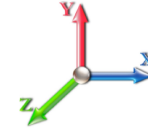
Seismic Segment Forces (Factored)

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | |
|-------------------------------|------|---------------------------------|------|---------------------------------------|
| Load Case: 0.9D + 1.0E | | | | Iterations 16 |
| Gust Response Factor | 1.10 | Sds | 0.12 | Ss 0.18 |
| Dead Load Factor | 0.90 | Seismic Load Factor | 1.00 | S1 0.06 |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.72 | SA 0.03 |
| | | | | Seismic Importance Factor 1.00 |



| Top Elev (ft) | Description | Wz (lb) | a | b | c | Lateral Fs (lb) | R: 1.50 |
|----------------|-----------------|-----------------|------|-------|------|-----------------|-----------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5.00 | | 928.90 | 0.00 | 0.04 | 0.02 | 10.52 | |
| 10.00 | | 907.25 | 0.02 | 0.06 | 0.04 | 14.36 | |
| 15.00 | | 885.60 | 0.04 | 0.07 | 0.04 | 15.71 | |
| 20.00 | | 863.95 | 0.06 | 0.07 | 0.04 | 16.18 | |
| 25.00 | | 842.30 | 0.10 | 0.07 | 0.04 | 16.41 | |
| 30.00 | | 820.65 | 0.14 | 0.07 | 0.03 | 16.54 | |
| 35.00 | | 799.01 | 0.20 | 0.06 | 0.02 | 16.36 | |
| 40.00 | | 777.36 | 0.26 | 0.05 | 0.02 | 15.45 | |
| 45.00 | | 755.71 | 0.33 | 0.04 | 0.01 | 13.29 | |
| 46.50 | Bot - Section 2 | 222.49 | 0.35 | 0.03 | 0.01 | 3.66 | |
| 50.00 | | 926.13 | 0.40 | 0.02 | 0.01 | 11.99 | |
| 52.50 | Top - Section 1 | 649.83 | 0.44 | 0.00 | 0.01 | 6.28 | |
| 55.00 | | 286.59 | 0.49 | -0.01 | 0.01 | 1.68 | |
| 60.00 | | 560.20 | 0.58 | -0.04 | 0.01 | -1.45 | |
| 65.00 | | 542.88 | 0.68 | -0.08 | 0.03 | -5.50 | |
| 70.00 | | 525.56 | 0.79 | -0.11 | 0.05 | -7.52 | |
| 73.50 | Appurtenance(s) | 437.91 | 0.87 | -0.12 | 0.08 | -6.25 | |
| 75.00 | | 150.65 | 0.90 | -0.12 | 0.09 | -2.02 | |
| 80.00 | | 490.92 | 1.03 | -0.10 | 0.15 | -3.26 | |
| 85.00 | | 473.60 | 1.16 | -0.03 | 0.23 | 2.98 | |
| 90.00 | | 456.28 | 1.30 | 0.12 | 0.34 | 11.62 | |
| 95.00 | | 438.96 | 1.45 | 0.38 | 0.48 | 22.36 | |
| 96.00 | Appurtenance(s) | 4167.2 | 1.48 | 0.45 | 0.52 | 236.69 | |
| 98.50 | Top - Section 2 | 211.25 | 1.56 | 0.65 | 0.61 | 15.33 | |
| 100.00 | | 138.52 | 1.61 | 0.80 | 0.68 | 11.47 | |
| 105.00 | | 461.74 | 1.77 | 1.41 | 0.93 | 56.00 | |
| 108.00 | Appurtenance(s) | 1549.8 | 1.87 | 1.89 | 1.11 | 228.73 | |
| 108.50 | Appurtenance(s) | 51.17 | 1.89 | 1.98 | 1.14 | 7.79 | |
| Totals: | | 20,322.5 | | | | 725.4 | Total Wind: 21,734.1 |

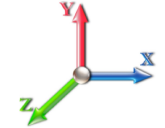
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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| | | | | | | | |
|-------------------------------|------|---------------------------------|------|------------|------|---|----------------------|
| Load Case: 0.9D + 1.0E | | | | | |  | Iterations 16 |
| Gust Response Factor | 1.10 | | | Sds | 0.12 | Ss 0.18 | |
| Dead Load Factor | 0.90 | Seismic Load Factor | 1.00 | Sd1 | 0.04 | S1 0.06 | |
| Wind Load Factor | 0.00 | Structure Frequency (f1) | 0.72 | SA | 0.03 | Seismic Importance Factor 1.00 | |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -18.70 | -0.75 | 0.00 | -65.50 | 0.00 | 65.50 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.00 | 0.00 | 0.023 |
| 5.00 | -17.84 | -0.74 | 0.00 | -61.74 | 0.00 | 61.74 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.00 | 0.00 | 0.00 | 0.022 |
| 10.00 | -17.00 | -0.73 | 0.00 | -58.03 | 0.00 | 58.03 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.01 | -0.01 | 0.00 | 0.022 |
| 15.00 | -16.19 | -0.71 | 0.00 | -54.39 | 0.00 | 54.39 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.02 | -0.01 | 0.00 | 0.021 |
| 20.00 | -15.39 | -0.70 | 0.00 | -50.82 | 0.00 | 50.82 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.04 | -0.02 | 0.00 | 0.021 |
| 25.00 | -14.61 | -0.68 | 0.00 | -47.32 | 0.00 | 47.32 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 0.06 | -0.02 | 0.00 | 0.020 |
| 30.00 | -13.85 | -0.67 | 0.00 | -43.90 | 0.00 | 43.90 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 0.08 | -0.03 | 0.00 | 0.019 |
| 35.00 | -13.11 | -0.65 | 0.00 | -40.57 | 0.00 | 40.57 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 0.11 | -0.03 | 0.00 | 0.018 |
| 40.00 | -12.39 | -0.64 | 0.00 | -37.31 | 0.00 | 37.31 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 0.14 | -0.03 | 0.00 | 0.018 |
| 45.00 | -11.69 | -0.62 | 0.00 | -34.12 | 0.00 | 34.12 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 0.18 | -0.04 | 0.00 | 0.017 |
| 46.50 | -11.49 | -0.62 | 0.00 | -33.19 | 0.00 | 33.19 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 0.19 | -0.04 | 0.00 | 0.017 |
| 50.00 | -10.64 | -0.61 | 0.00 | -31.01 | 0.00 | 31.01 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 0.22 | -0.04 | 0.00 | 0.016 |
| 52.50 | -10.04 | -0.60 | 0.00 | -29.49 | 0.00 | 29.49 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 0.25 | -0.05 | 0.00 | 0.021 |
| 55.00 | -9.77 | -0.60 | 0.00 | -27.99 | 0.00 | 27.99 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 0.27 | -0.05 | 0.00 | 0.021 |
| 60.00 | -9.25 | -0.60 | 0.00 | -24.98 | 0.00 | 24.98 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 0.32 | -0.05 | 0.00 | 0.019 |
| 65.00 | -8.74 | -0.60 | 0.00 | -21.98 | 0.00 | 21.98 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 0.38 | -0.06 | 0.00 | 0.018 |
| 70.00 | -8.25 | -0.60 | 0.00 | -18.97 | 0.00 | 18.97 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 0.44 | -0.06 | 0.00 | 0.017 |
| 73.50 | -7.84 | -0.60 | 0.00 | -16.87 | 0.00 | 16.87 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 0.49 | -0.07 | 0.00 | 0.016 |
| 75.00 | -7.70 | -0.60 | 0.00 | -15.96 | 0.00 | 15.96 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 0.51 | -0.07 | 0.00 | 0.015 |
| 80.00 | -7.24 | -0.60 | 0.00 | -12.96 | 0.00 | 12.96 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 0.58 | -0.07 | 0.00 | 0.013 |
| 85.00 | -6.79 | -0.60 | 0.00 | -9.95 | 0.00 | 9.95 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 0.66 | -0.07 | 0.00 | 0.011 |
| 90.00 | -6.36 | -0.59 | 0.00 | -6.96 | 0.00 | 6.96 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 0.74 | -0.08 | 0.00 | 0.009 |
| 95.00 | -5.95 | -0.56 | 0.00 | -4.02 | 0.00 | 4.02 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 0.82 | -0.08 | 0.00 | 0.007 |
| 96.00 | -2.20 | -0.32 | 0.00 | -3.46 | 0.00 | 3.46 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 0.84 | -0.08 | 0.00 | 0.004 |
| 98.50 | -2.00 | -0.31 | 0.00 | -2.65 | 0.00 | 2.65 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 0.88 | -0.08 | 0.00 | 0.004 |
| 98.50 | -2.00 | -0.31 | 0.00 | -2.65 | 0.00 | 2.65 | 854.88 | 427.44 | 974.68 | 581.27 | 0.88 | -0.08 | 0.00 | 0.007 |
| 100.00 | -1.87 | -0.29 | 0.00 | -2.19 | 0.00 | 2.19 | 854.88 | 427.44 | 974.68 | 581.27 | 0.90 | -0.08 | 0.00 | 0.006 |
| 105.00 | -1.45 | -0.24 | 0.00 | -0.72 | 0.00 | 0.72 | 854.88 | 427.44 | 974.68 | 581.27 | 0.99 | -0.08 | 0.00 | 0.003 |
| 108.00 | -0.05 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 1.04 | -0.08 | 0.00 | 0.000 |
| 108.50 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 1.05 | -0.08 | 0.00 | 0.000 |

Wind Loading - Shaft

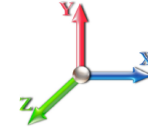
| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 17

| Elev (ft) | Description | Kzt | Kz | qz (psf) | qzGh (psf) | C (mph-ft) | Cf | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00 | | 1.00 | 0.85 | 7.442 | 8.19 | 262.13 | 0.650 | 0.000 | 0.00 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 |
| 5.00 | | 1.00 | 0.85 | 7.442 | 8.19 | 256.12 | 0.650 | 0.000 | 5.00 | 23.422 | 15.22 | 124.6 | 0.0 | 928.9 |
| 10.00 | | 1.00 | 0.85 | 7.442 | 8.19 | 250.12 | 0.650 | 0.000 | 5.00 | 22.879 | 14.87 | 121.7 | 0.0 | 907.3 |
| 15.00 | | 1.00 | 0.85 | 7.442 | 8.19 | 244.11 | 0.650 | 0.000 | 5.00 | 22.336 | 14.52 | 118.9 | 0.0 | 885.6 |
| 20.00 | | 1.00 | 0.90 | 7.896 | 8.69 | 245.27 | 0.650 | 0.000 | 5.00 | 21.793 | 14.17 | 123.0 | 0.0 | 864.0 |
| 25.00 | | 1.00 | 0.95 | 8.276 | 9.10 | 244.76 | 0.650 | 0.000 | 5.00 | 21.251 | 13.81 | 125.7 | 0.0 | 842.3 |
| 30.00 | | 1.00 | 0.98 | 8.600 | 9.46 | 243.05 | 0.650 | 0.000 | 5.00 | 20.708 | 13.46 | 127.3 | 0.0 | 820.7 |
| 35.00 | | 1.00 | 1.01 | 8.883 | 9.77 | 240.47 | 0.650 | 0.000 | 5.00 | 20.165 | 13.11 | 128.1 | 0.0 | 799.0 |
| 40.00 | | 1.00 | 1.04 | 9.137 | 10.05 | 237.22 | 0.650 | 0.000 | 5.00 | 19.622 | 12.75 | 128.2 | 0.0 | 777.4 |
| 45.00 | | 1.00 | 1.07 | 9.366 | 10.30 | 233.44 | 0.650 | 0.000 | 5.00 | 19.079 | 12.40 | 127.8 | 0.0 | 755.7 |
| 46.50 | Bot - Section 2 | 1.00 | 1.08 | 9.431 | 10.37 | 232.22 | 0.650 | 0.000 | 1.50 | 5.618 | 3.65 | 37.9 | 0.0 | 222.5 |
| 50.00 | | 1.00 | 1.09 | 9.576 | 10.53 | 229.23 | 0.650 | 0.000 | 3.50 | 13.067 | 8.49 | 89.5 | 0.0 | 926.1 |
| 52.50 | Top - Section 1 | 1.00 | 1.11 | 9.675 | 10.64 | 226.99 | 0.650 | 0.000 | 2.50 | 9.171 | 5.96 | 63.4 | 0.0 | 649.8 |
| 55.00 | | 1.00 | 1.12 | 9.770 | 10.75 | 227.34 | 0.650 | 0.000 | 2.50 | 9.035 | 5.87 | 63.1 | 0.0 | 286.6 |
| 60.00 | | 1.00 | 1.14 | 9.951 | 10.95 | 222.49 | 0.650 | 0.000 | 5.00 | 17.663 | 11.48 | 125.7 | 0.0 | 560.2 |
| 65.00 | | 1.00 | 1.16 | 10.120 | 11.13 | 217.37 | 0.650 | 0.000 | 5.00 | 17.120 | 11.13 | 123.9 | 0.0 | 542.9 |
| 70.00 | | 1.00 | 1.17 | 10.279 | 11.31 | 212.01 | 0.650 | 0.000 | 5.00 | 16.577 | 10.77 | 121.8 | 0.0 | 525.6 |
| 73.50 | Appurtenance(s) | 1.00 | 1.19 | 10.385 | 11.42 | 208.14 | 0.650 | 0.000 | 3.50 | 11.281 | 7.33 | 83.8 | 0.0 | 357.6 |
| 75.00 | | 1.00 | 1.19 | 10.430 | 11.47 | 206.45 | 0.650 | 0.000 | 1.50 | 4.753 | 3.09 | 35.4 | 0.0 | 150.7 |
| 80.00 | | 1.00 | 1.21 | 10.572 | 11.63 | 200.70 | 0.650 | 0.000 | 5.00 | 15.491 | 10.07 | 117.1 | 0.0 | 490.9 |
| 85.00 | | 1.00 | 1.22 | 10.708 | 11.78 | 194.78 | 0.650 | 0.000 | 5.00 | 14.948 | 9.72 | 114.4 | 0.0 | 473.6 |
| 90.00 | | 1.00 | 1.24 | 10.838 | 11.92 | 188.71 | 0.650 | 0.000 | 5.00 | 14.406 | 9.36 | 111.6 | 0.0 | 456.3 |
| 95.00 | | 1.00 | 1.25 | 10.962 | 12.06 | 182.50 | 0.650 | 0.000 | 5.00 | 13.863 | 9.01 | 108.7 | 0.0 | 439.0 |
| 96.00 | Appurtenance(s) | 1.00 | 1.25 | 10.986 | 12.08 | 181.24 | 0.650 | 0.000 | 1.00 | 2.707 | 1.76 | 21.3 | 0.0 | 85.7 |
| 98.50 | Top - Section 2 | 1.00 | 1.26 | 11.046 | 12.15 | 178.07 | 0.650 | 0.000 | 2.50 | 6.674 | 4.34 | 52.7 | 0.0 | 211.3 |
| 100.00 | | 1.00 | 1.27 | 11.081 | 12.19 | 157.50 | 0.600 | 0.000 | 1.50 | 3.500 | 2.10 | 25.6 | 0.0 | 138.5 |
| 105.00 | | 1.00 | 1.28 | 11.195 | 12.31 | 158.31 | 0.600 | 0.000 | 5.00 | 11.667 | 7.00 | 86.2 | 0.0 | 461.7 |
| 108.00 | Appurtenance(s) | 1.00 | 1.29 | 11.262 | 12.39 | 158.78 | 0.600 | 0.000 | 3.00 | 7.000 | 4.20 | 52.0 | 0.0 | 277.0 |
| 108.50 | Appurtenance(s) | 1.00 | 1.29 | 11.273 | 12.40 | 158.86 | 0.600 | 0.000 | 0.50 | 1.167 | 0.70 | 8.7 | 0.0 | 46.2 |
| Totals: | | | | | | | | | 108.50 | | | 2,568.2 | | 14,882.9 |

Discrete Appurtenance Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 17

| No. | Elev (ft) | Description | Qty | qz (psf) | qzGh (psf) | Orient Factor x Ka | Ka | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|-------------------------|-----|----------|------------|--------------------|------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1 | 108.50 | Lightning Rod | 1 | 11.273 | 12.400 | 1.00 | 1.00 | 0.50 | 5.00 | 0.000 | 0.000 | 6.20 | 0.00 | 0.00 |
| 2 | 108.00 | RRH 4x45-AWS | 3 | 11.262 | 12.388 | 0.99 | 1.00 | 8.23 | 180.00 | 0.000 | 0.000 | 101.91 | 0.00 | 0.00 |
| 3 | 108.00 | Flush Mount | 1 | 11.262 | 12.388 | 1.00 | 1.00 | 5.00 | 350.00 | 0.000 | 0.000 | 61.94 | 0.00 | 0.00 |
| 4 | 108.00 | DB-T1-6Z-8AB-OZ | 2 | 11.262 | 12.388 | 0.90 | 1.00 | 8.64 | 37.80 | 0.000 | 0.000 | 107.03 | 0.00 | 0.00 |
| 5 | 108.00 | RRH2X60-PCS | 3 | 11.262 | 12.388 | 0.89 | 1.00 | 5.87 | 165.00 | 0.000 | 0.000 | 72.77 | 0.00 | 0.00 |
| 6 | 108.00 | RRH2x60-700 | 3 | 11.262 | 12.388 | 0.76 | 1.00 | 7.98 | 180.00 | 0.000 | 0.000 | 98.86 | 0.00 | 0.00 |
| 7 | 108.00 | SBNHH-1D65B | 9 | 11.262 | 12.388 | 0.83 | 1.00 | 60.96 | 360.00 | 0.000 | 0.000 | 755.11 | 0.00 | 0.00 |
| 8 | 96.00 | ULPD12-472 | 1 | 10.986 | 12.085 | 0.75 | 0.75 | 30.22 | 2331.00 | 0.000 | 0.000 | 365.25 | 0.00 | 0.00 |
| 9 | 96.00 | ALU 800 MHz RRH RRU | 6 | 10.986 | 12.085 | 0.54 | 0.80 | 8.01 | 318.00 | 0.000 | 0.000 | 96.77 | 0.00 | 0.00 |
| 10 | 96.00 | Ericsson 4449 B71 + B85 | 3 | 10.986 | 12.085 | 0.54 | 0.80 | 3.17 | 219.60 | 0.000 | 0.000 | 38.28 | 0.00 | 0.00 |
| 11 | 96.00 | Ericsson 4415 B25 RRU | 3 | 10.986 | 12.085 | 0.54 | 0.80 | 2.99 | 138.90 | 0.000 | 0.000 | 36.14 | 0.00 | 0.00 |
| 12 | 96.00 | AIR6449 B41 | 3 | 10.986 | 12.085 | 0.57 | 0.80 | 9.63 | 309.00 | 0.000 | 0.000 | 116.34 | 0.00 | 0.00 |
| 13 | 96.00 | APXVAALL24-43-U-NA20 | 3 | 10.986 | 12.085 | 0.58 | 0.80 | 35.46 | 368.40 | 0.000 | 0.000 | 428.52 | 0.00 | 0.00 |
| 14 | 96.00 | AIR32 | 3 | 10.986 | 12.085 | 0.70 | 0.80 | 13.59 | 396.60 | 0.000 | 0.000 | 164.26 | 0.00 | 0.00 |
| 15 | 73.50 | Sidarm | 1 | 10.385 | 11.424 | 1.00 | 1.00 | 3.50 | 53.32 | 0.000 | 0.000 | 39.98 | 0.00 | 0.00 |
| 16 | 73.50 | 3'6" x 2'6" Dipole | 1 | 10.331 | 11.364 | 1.00 | 1.00 | 1.74 | 15.00 | 0.000 | -1.800 | 19.77 | 0.00 | -35.59 |
| 17 | 73.50 | 10' x1" Omni | 1 | 10.530 | 11.583 | 1.00 | 1.00 | 1.25 | 12.00 | 0.000 | 5.000 | 14.48 | 0.00 | 72.40 |

Totals: 5,439.62

2,523.63

Total Applied Force Summary

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |



Page: 25

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 17

| Elev (ft) | Description | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|----------------|------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | 124.63 | 951.40 | 0.00 | 0.00 |
| 10.00 | | 121.74 | 929.75 | 0.00 | 0.00 |
| 15.00 | | 118.85 | 908.10 | 0.00 | 0.00 |
| 20.00 | | 123.04 | 886.45 | 0.00 | 0.00 |
| 25.00 | | 125.75 | 864.80 | 0.00 | 0.00 |
| 30.00 | | 127.33 | 843.15 | 0.00 | 0.00 |
| 35.00 | | 128.08 | 821.51 | 0.00 | 0.00 |
| 40.00 | | 128.19 | 799.86 | 0.00 | 0.00 |
| 45.00 | | 127.77 | 778.21 | 0.00 | 0.00 |
| 46.50 | | 37.88 | 229.24 | 0.00 | 0.00 |
| 50.00 | | 89.47 | 941.88 | 0.00 | 0.00 |
| 52.50 | | 63.44 | 661.08 | 0.00 | 0.00 |
| 55.00 | | 63.12 | 297.84 | 0.00 | 0.00 |
| 60.00 | | 125.67 | 582.70 | 0.00 | 0.00 |
| 65.00 | | 123.88 | 565.38 | 0.00 | 0.00 |
| 70.00 | | 121.83 | 548.06 | 0.00 | 0.00 |
| 73.50 | (3) attachments | 158.00 | 453.66 | 0.00 | 36.80 |
| 75.00 | | 35.45 | 156.92 | 0.00 | 0.00 |
| 80.00 | | 117.10 | 511.82 | 0.00 | 0.00 |
| 85.00 | | 114.45 | 494.50 | 0.00 | 0.00 |
| 90.00 | | 111.63 | 477.18 | 0.00 | 0.00 |
| 95.00 | | 108.65 | 459.86 | 0.00 | 0.00 |
| 96.00 | (22) attachments | 1266.85 | 4171.39 | 0.00 | 0.00 |
| 98.50 | | 52.71 | 217.94 | 0.00 | 0.00 |
| 100.00 | | 25.60 | 141.82 | 0.00 | 0.00 |
| 105.00 | | 86.20 | 472.74 | 0.00 | 0.00 |
| 108.00 | (21) attachments | 1249.64 | 1556.45 | 0.00 | 0.00 |
| 108.50 | (1) attachments | 14.88 | 51.17 | 0.00 | 0.00 |
| Totals: | | 5,091.81 | 20,774.89 | 0.00 | 36.80 |

Calculated Forces

| | | |
|---|---------------------------------------|-------------------------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | |
| Height: 108.50 (ft) | Crest Height: 0.00 | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | |
| Gh: 1.1 | Topography: 1 | Struct Class: II |

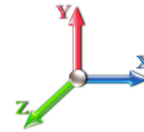


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 17

Dead Load Factor 1.00
Wind Load Factor 1.00



| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Total Deflect (in) | Rotation Sway (deg) | Rotation Twist (deg) | Stress Ratio |
|---------------|------------------|------------------|---------------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|---------------------|----------------------|--------------|
| 0.00 | -20.77 | -5.10 | 0.00 | -398.67 | 0.00 | 398.67 | 3275.65 | 1637.82 | 7512.12 | 3761.64 | 0.00 | 0.000 | 0.000 | 0.112 |
| 5.00 | -19.82 | -4.98 | 0.00 | -373.19 | 0.00 | 373.19 | 3241.53 | 1620.76 | 7261.66 | 3636.23 | 0.01 | -0.025 | 0.000 | 0.109 |
| 10.00 | -18.89 | -4.87 | 0.00 | -348.30 | 0.00 | 348.30 | 3205.46 | 1602.73 | 7010.56 | 3510.49 | 0.05 | -0.051 | 0.000 | 0.105 |
| 15.00 | -17.98 | -4.75 | 0.00 | -323.97 | 0.00 | 323.97 | 3167.44 | 1583.72 | 6759.13 | 3384.59 | 0.12 | -0.076 | 0.000 | 0.101 |
| 20.00 | -17.09 | -4.64 | 0.00 | -300.20 | 0.00 | 300.20 | 3127.48 | 1563.74 | 6507.68 | 3258.68 | 0.22 | -0.102 | 0.000 | 0.098 |
| 25.00 | -16.22 | -4.52 | 0.00 | -277.02 | 0.00 | 277.02 | 3085.56 | 1542.78 | 6256.52 | 3132.91 | 0.34 | -0.127 | 0.000 | 0.094 |
| 30.00 | -15.38 | -4.39 | 0.00 | -254.44 | 0.00 | 254.44 | 3041.69 | 1520.85 | 6005.97 | 3007.45 | 0.48 | -0.152 | 0.000 | 0.090 |
| 35.00 | -14.56 | -4.27 | 0.00 | -232.47 | 0.00 | 232.47 | 2995.87 | 1497.94 | 5756.34 | 2882.45 | 0.66 | -0.177 | 0.000 | 0.086 |
| 40.00 | -13.75 | -4.14 | 0.00 | -211.12 | 0.00 | 211.12 | 2948.10 | 1474.05 | 5507.93 | 2758.06 | 0.85 | -0.202 | 0.000 | 0.081 |
| 45.00 | -12.98 | -4.02 | 0.00 | -190.40 | 0.00 | 190.40 | 2898.39 | 1449.19 | 5261.05 | 2634.44 | 1.08 | -0.226 | 0.000 | 0.077 |
| 46.50 | -12.75 | -3.98 | 0.00 | -184.37 | 0.00 | 184.37 | 2883.09 | 1441.55 | 5187.33 | 2597.52 | 1.15 | -0.234 | 0.000 | 0.075 |
| 50.00 | -11.80 | -3.89 | 0.00 | -170.44 | 0.00 | 170.44 | 2846.72 | 1423.36 | 5016.02 | 2511.74 | 1.33 | -0.251 | 0.000 | 0.072 |
| 52.50 | -11.14 | -3.83 | 0.00 | -160.71 | 0.00 | 160.71 | 2057.96 | 1028.98 | 3624.72 | 1815.05 | 1.46 | -0.262 | 0.000 | 0.094 |
| 55.00 | -10.84 | -3.77 | 0.00 | -151.14 | 0.00 | 151.14 | 2043.11 | 1021.55 | 3544.30 | 1774.78 | 1.60 | -0.274 | 0.000 | 0.090 |
| 60.00 | -10.26 | -3.64 | 0.00 | -132.31 | 0.00 | 132.31 | 2011.95 | 1005.98 | 3383.36 | 1694.19 | 1.91 | -0.301 | 0.000 | 0.083 |
| 65.00 | -9.69 | -3.52 | 0.00 | -114.10 | 0.00 | 114.10 | 1978.85 | 989.42 | 3222.55 | 1613.67 | 2.24 | -0.327 | 0.000 | 0.076 |
| 70.00 | -9.14 | -3.40 | 0.00 | -96.50 | 0.00 | 96.50 | 1943.79 | 971.90 | 3062.19 | 1533.37 | 2.59 | -0.351 | 0.000 | 0.068 |
| 73.50 | -8.69 | -3.24 | 0.00 | -84.57 | 0.00 | 84.57 | 1918.09 | 959.05 | 2950.37 | 1477.38 | 2.86 | -0.367 | 0.000 | 0.062 |
| 75.00 | -8.53 | -3.20 | 0.00 | -79.72 | 0.00 | 79.72 | 1906.79 | 953.39 | 2902.59 | 1453.45 | 2.97 | -0.374 | 0.000 | 0.059 |
| 80.00 | -8.02 | -3.09 | 0.00 | -63.69 | 0.00 | 63.69 | 1867.83 | 933.91 | 2744.05 | 1374.07 | 3.37 | -0.394 | 0.000 | 0.051 |
| 85.00 | -7.53 | -2.97 | 0.00 | -48.26 | 0.00 | 48.26 | 1826.92 | 913.46 | 2586.89 | 1295.37 | 3.80 | -0.411 | 0.000 | 0.041 |
| 90.00 | -7.05 | -2.86 | 0.00 | -33.41 | 0.00 | 33.41 | 1784.07 | 892.03 | 2431.43 | 1217.52 | 4.24 | -0.425 | 0.000 | 0.031 |
| 95.00 | -6.59 | -2.75 | 0.00 | -19.12 | 0.00 | 19.12 | 1739.26 | 869.63 | 2277.96 | 1140.67 | 4.69 | -0.435 | 0.000 | 0.021 |
| 96.00 | -2.43 | -1.45 | 0.00 | -16.38 | 0.00 | 16.38 | 1730.06 | 865.03 | 2247.53 | 1125.44 | 4.78 | -0.437 | 0.000 | 0.016 |
| 98.50 | -2.21 | -1.39 | 0.00 | -12.76 | 0.00 | 12.76 | 1706.74 | 853.37 | 2171.89 | 1087.56 | 5.01 | -0.440 | 0.000 | 0.013 |
| 98.50 | -2.21 | -1.39 | 0.00 | -12.76 | 0.00 | 12.76 | 854.88 | 427.44 | 974.68 | 581.27 | 5.01 | -0.440 | 0.000 | 0.025 |
| 100.00 | -2.07 | -1.37 | 0.00 | -10.67 | 0.00 | 10.67 | 854.88 | 427.44 | 974.68 | 581.27 | 5.15 | -0.442 | 0.000 | 0.021 |
| 105.00 | -1.60 | -1.28 | 0.00 | -3.84 | 0.00 | 3.84 | 854.88 | 427.44 | 974.68 | 581.27 | 5.61 | -0.446 | 0.000 | 0.008 |
| 108.00 | -0.05 | -0.02 | 0.00 | -0.01 | 0.00 | 0.01 | 854.88 | 427.44 | 974.68 | 581.27 | 5.89 | -0.447 | 0.000 | 0.000 |
| 108.50 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 854.88 | 427.44 | 974.68 | 581.27 | 5.94 | -0.447 | 0.000 | 0.000 |

Final Analysis Summary

| | | | |
|---|---------------------------------------|-------------------------|----------|
| Structure: CT46140-A-SBA | Code: EIA/TIA-222-G | 12/18/2020 | |
| Site Name: S. Durham-rt 17/ Lawson | Exposure: C | | |
| Height: 108.50 (ft) | Crest Height: 0.00 | | |
| Base Elev: 0.000 (ft) | Site Class: B - Competent Rock | | |
| Gh: 1.1 | Topography: 1 | Struct Class: II | Page: 27 |



Reactions

| Load Case | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) |
|----------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|---------------------------|
| 1.2D + 1.6W 98 mph Wind | 21.8 | 0.00 | 24.91 | 0.00 | 0.00 | 1705.57 |
| 0.9D + 1.6W 98 mph Wind | 21.8 | 0.00 | 18.68 | 0.00 | 0.00 | 1699.81 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | 6.0 | 0.00 | 41.29 | 0.00 | 0.00 | 447.84 |
| 1.2D + 1.0E | 0.8 | 0.00 | 24.93 | 0.00 | 0.00 | 65.73 |
| 0.9D + 1.0E | 0.8 | 0.00 | 18.70 | 0.00 | 0.00 | 65.50 |
| 1.0D + 1.0W 60 mph Wind | 5.1 | 0.00 | 20.77 | 0.00 | 0.00 | 398.67 |

Max Stresses

| Load Case | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (-) (ft-kips) | Mu MZ (ft-kips) | Mu MX (ft-kips) | Resultant Moment (ft-kips) | phi Pn (kips) | phi Vn (kips) | phi Tn (ft-kips) | phi Mn (ft-kips) | Elev (ft) | Stress Ratio |
|----------------------------------|------------------------|------------------------|---------------------------|-----------------------|-----------------------|----------------------------------|---------------------|---------------------|------------------------|------------------------|--------------|-----------------|
| 1.2D + 1.6W 98 mph Wind | -24.91 | -21.76 | 0.00 | -1705.5 | 0.00 | -1705.5 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.461 |
| 0.9D + 1.6W 98 mph Wind | -18.68 | -21.75 | 0.00 | -1699.8 | 0.00 | -1699.8 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.458 |
| 1.2D + 1.0Di + 1.0Wi 50 mph Wind | -41.29 | -5.99 | 0.00 | -447.84 | 0.00 | -447.84 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.132 |
| 1.2D + 1.0E | -24.93 | -0.75 | 0.00 | -65.73 | 0.00 | -65.73 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.025 |
| 0.9D + 1.0E | -18.70 | -0.75 | 0.00 | -65.50 | 0.00 | -65.50 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.023 |
| 1.0D + 1.0W 60 mph Wind | -20.77 | -5.10 | 0.00 | -398.67 | 0.00 | -398.67 | 3275.65 | 1637.8 | 7512.12 | 3761.64 | 0.00 | 0.112 |



Monopole Mat Foundation Design

Date
12/18/2020

| | | | |
|-----------------------|-----------------|--------------------------------|-----------|
| Customer Name: | T-Mobile Sprint | EIA/TIA Standard: | EIA-222-G |
| Site Name: | | Structure Height (Ft.): | 108.5 |
| Site Number: | CT46140-A-SBA | Engineer Name: | T. Alajaj |
| Engr. Number: | 100931 | Engineer Login ID: | |

Foundation Info Obtained from:

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

Structure Type:

Analysis or Design?

Base Reactions (Factored):

| | | | |
|----------------------|------|---------------------|--------|
| Axial Load (Kips): | 24.9 | Shear Force (Kips): | 21.8 |
| Uplift Force (Kips): | 0.0 | Moment (Kips-ft): | 1705.6 |

Allowable overstress %: 5.0%

Foundation Geometries:

| | | | |
|--------------------------|------|--------------------------|------|
| Diameter of Pier (ft.): | 7.0 | Mods required -Yes/No ?: | No |
| Pier Height A. G. (ft.): | 0.50 | Depth of Base BG (ft.): | 7.5 |
| Length of Pad (ft.): | 25 | Thickness of Pad (ft.): | 3.00 |
| | | Width of Pad (ft.): | 25 |
| Final Length of pad (ft) | 25.0 | Final width of pad (ft): | 25.0 |

Material Properties and Rebar Info:

| | | | | |
|--------------------------|------|---------------------------|-------|-----|
| Concrete Strength (psi): | 3000 | Steel Elastic Modulus: | 29000 | ksi |
| Vertical bar yield (ksi) | 60 | Tie steel yield (ksi): | 60 | |
| Vertical Rebar Size #: | 9 | Tie / Stirrup Size #: | 5 | |
| Qty. of Vertical Rebars: | 37 | Tie Spacing (in): | 6.0 | |
| Pad Rebar Yield (Ksi): | 60 | Pad Steel Rebar Size (#): | 9 | |
| Concrete Cover (in.): | 3 | Unit Weight of Concrete: | 150.0 | pcf |

Rebar at the bottom of the concrete pad:

| | | | |
|---------------------------|----|---------------------------|----|
| Qty. of Rebar in Pad (L): | 30 | Qty. of Rebar in Pad (W): | 30 |
|---------------------------|----|---------------------------|----|

Rebar at the top of the concrete pad:

| | | | |
|---------------------------|----|---------------------------|----|
| Qty. of Rebar in Pad (L): | 30 | Qty. of Rebar in Pad (W): | 30 |
|---------------------------|----|---------------------------|----|

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

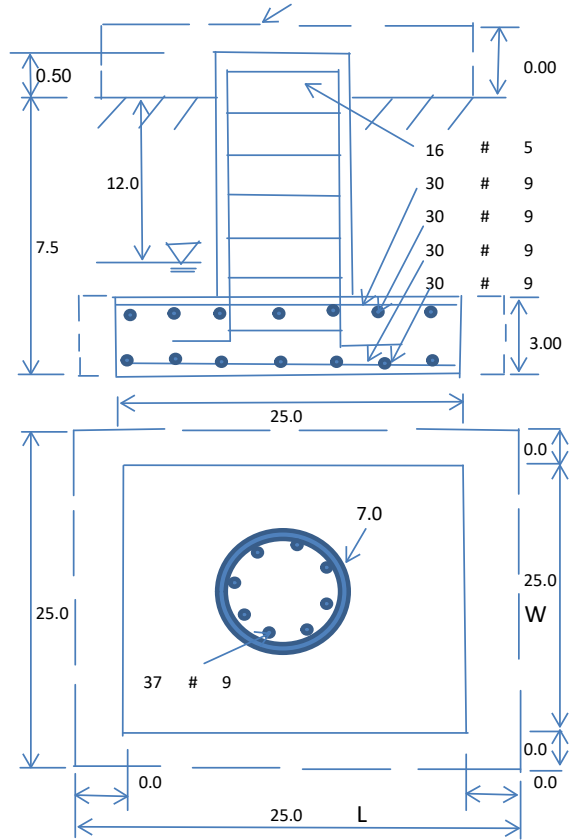
| | | | | | | |
|--------------------------------------|-------|--------------------------------------|------|-----|--|------|
| Soil Unit Weight (pcf): | 110.0 | Soil Buoyant Weight: | 50.0 | Pcf | Angle from Top of Pad: | 30 |
| Water Table B.G.S. (ft): | 12.0 | Unit Weight of Water: | 62.4 | pcf | Angle from Bottm of Pad: | 25 |
| Ultimate Bearing Pressure (psf): | 12000 | Ultimate Skin Friction: | 0 | Psf | Angle from Bottm of Pad: | 25 |
| Consider Friction for O.T.M. (Y/N): | No | Consider Friction for bearing (Y/N): | No | | Reduction factor on the maximum soil bearing pressure: | 1.00 |
| Consider soil hor. resist. for OTM.: | No | | | | | |

Foundation Analysis and Design:

| | | | |
|--|---------|--|--------|
| Uplift Strength Reduction Factor: | 0.75 | Compression Strength Reduction Factor: | 0.75 |
| Total Dry Soil Volume (cu. Ft.): | 2639.32 | Total Dry Soil Weight (Kips): | 290.33 |
| Total Buoyant Soil Volume (cu. Ft.): | 0.00 | Total Buoyant Soil Weight (Kips): | 0.00 |
| Total Effective Soil Weight (Kips): | 290.33 | Weight from the Concrete Block at Top (K): | 0.00 |
| Total Dry Concrete Volume (cu. Ft.): | 2067.42 | Total Dry Concrete Weight (Kips): | 310.11 |
| Total Buoyant Concrete Volume (cu. Ft.): | 0.00 | Total Buoyant Concrete Weight (Kips): | 0.00 |
| Total Effective Concrete Weight (Kips): | 310.11 | Total Vertical Load on Base (Kips): | 625.34 |

Check Soil Capacities:

| | | | | | |
|--|--------|--|------|------|-----|
| Calculated Maxium Net Soil Pressure under the base (psf): | 1498 | < Allowable Factored Soil Bearing (psf): | 9000 | 0.17 | OK! |
| Allowable Foundation Overturning Resistance (kips-ft.): | 7066.2 | > Design Factored Momont (kips-ft): | 1880 | 0.27 | OK! |
| Factor of Safety Against Overturning (O. R. Moment/Design Moment): | 3.76 | | | | OK! |



Check the capacities of Reinforcing Concrete:

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

Load/
Capacity
Ratio

(1) Concrete Pier:

| | | | | | |
|---|--------|--|--------|------|-----|
| Vertical Steel Rebar Area (sq. in./each): | 1.00 | Tie / Stirrup Area (sq. in./each): | 0.31 | | |
| Calculated Moment Capacity (Mn,Kips-Ft): | 5899.1 | > Design Factored Moment (Mu, Kips-F | 1814.6 | 0.31 | OK! |
| Calculated Shear Capacity (Kips): | 871.9 | > Design Factored Shear (Kips): | 21.8 | 0.03 | OK! |
| Calculated Tension Capacity (Tn, Kips): | 1998.0 | > Design Factored Tension (Tu Kips): | 0.0 | 0.00 | OK! |
| Calculated Compression Capacity (Pn, Kips): | 7299.3 | > Design Factored Axial Load (Pu Kips): | 24.9 | 0.00 | OK! |
| Moment & Axial Strength Combination: | 0.31 | OK! Check Tie Spacing (Design/Required): | 0.5 | | OK! |
| Pier Reinforcement Ratio: | 0.007 | Reinforcement Ratio is satisfied per ACI | | | |

(2).Concrete Pad:

| | | | | | |
|---|--------|---|--------|------|-----|
| One-Way Design Shear Capacity (L-Direction, Kips): | 799.5 | > One-Way Factored Shear (L-D. Kips): | 150.0 | 0.19 | OK! |
| One-Way Design Shear Capacity (W-Direction, Kips): | 799.5 | > One-Way Factored Shear (W-D., Kips) | 150.0 | 0.19 | OK! |
| One-Way Design Shear Capacity (Corner-Corner, Kips): | 733.9 | > One-Way Factored Shear (C-C, Kips): | 131.1 | 0.18 | OK! |
| Lower Steel Pad Reinforcement Ratio (L-Direct.): | 0.0031 | OK! Lower Steel Pad Reinf. Ratio (W-Direc | 0.0031 | | |
| Lower Steel Pad Moment Capacity (L-Direction, Kips-ft): | 4220.2 | > Moment at Bottom (L-Dir. K-Ft): | 850.9 | 0.20 | OK! |
| Lower Steel Pad Moment Capacity (W-Direction, Kips-ft): | 4220.2 | > Moment at Bottom (W-Dir. K-Ft): | 850.9 | 0.20 | OK! |
| Lower Steel Pad Moment Capacity (Corner-Corner, K-ft): | 5912.9 | > Moment at Bottom (C-C Dir. K-Ft): | 1203.4 | 0.20 | OK! |
| Upper Steel Pad Reinforcement Ratio (L-Direct.): | 0.0031 | OK! Upper Steel Reinf. Ratio (W-Dir.): | 0.0031 | | |
| Upper Steel Pad Moment Capacity (L-Direc. Kips-ft): | 4220.2 | > Moment at the top (L-Dir K-Ft): | 305.5 | 0.07 | OK! |
| Upper Steel Pad Moment Capacity (W-Direc. Kips-ft): | 4220.2 | > Moment at the top (W-Dir K-Ft): | 305.5 | 0.07 | OK! |
| Upper Steel Pad Moment Capacity (Corner-Corner, K-ft): | 5912.9 | > Moment at the top (C-C Dir. K-Ft): | 286.6 | 0.05 | OK! |

(3).Check Punching Shear Capacity due to Moment in the Pier:

| | | | | | |
|---|-------|-------|---|-------|-----|
| Moment transferred by punching shear: | 682.2 | k-ft. | Max. factored shear stress $v_{u,CD}$: | 1.6 | Psi |
| Max. factored shear stress $v_{u,AB}$: | 4.9 | Psi | Factored shear Strength ϕv_n : | 164.3 | Psi |
| Max. factored shear stress v_u : | 4.9 | Psi | Check Usage of Punching Shear Capacity: | 0.03 | OK! |

EXHIBIT 8



Tower Engineering Solutions

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

Antenna Mount Analysis Report

Existing 109-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT46140-A

Customer Site Name: S. Durham-rt 17/ Lawson

Carrier Name: T-Mobile Sprint (App#: 143988-3, V3)

Carrier Site ID / Name: CT33XC526

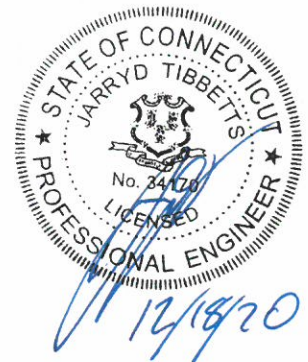
Site Location: 128 R Creamery Road

Durham, Connecticut

MIDDLESEX County

Latitude: 41.441352

Longitude: -72.696147



Analysis Result:

Max Structural Usage: 58.3% [Pass]

Report Prepared By: Manoj Kandel

NOTE: The proposed Site Pro 1 ULPD12-472 mount is not currently installed on the tower. The proposed mount was assumed to be installed per the manufacturer's instructions, and it is assumed that it can be installed properly on the tower. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.



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Introduction

The purpose of this report is to summarize the analysis results on the (1) Platform w/ Hand Rail at 96.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

| | |
|-----------------------|--|
| Mount Drawings | Mount information form Site Pro 1 for ULPD12-472 |
| Antenna Loading | SBA, Application #: 143988, v3, dated 12/18/2020 |
| Modification Drawings | N/A |

Analysis Criteria

Basic Wind Speed Used in the Analysis: $V_{ULT} = 130.0$ mph (3-Sec. Gust) / Equivalent to
 $V_{ASD} = 101$ mph (3-Sec. Gust)

Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 0.75" radial ice concurrent

Operational Wind Speed: 60 mph +0" Radial ice

Standard/Codes: ANSI/TIA/EIA 222-G/ 2015 IBC / 2018 Connecticut State Building Code

Exposure Category: C

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

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

Mount Information

(1) Platform w/ Hand Rail at 96.00' elevation

Final Antenna Configuration

- 3 Ericsson AIR32 KRD901146-1_B66A_B2A (Octo)
- 3 RFS APXVAALL24-43-U-NA20
- 3 Ericsson AIR6449 B41
- 3 Ericsson 4415 B25
- 3 Ericsson 4449 B71 + B85
- 6 ALU 800 MHz RRH

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

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 58.3%, which occurs in the mount pipe. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

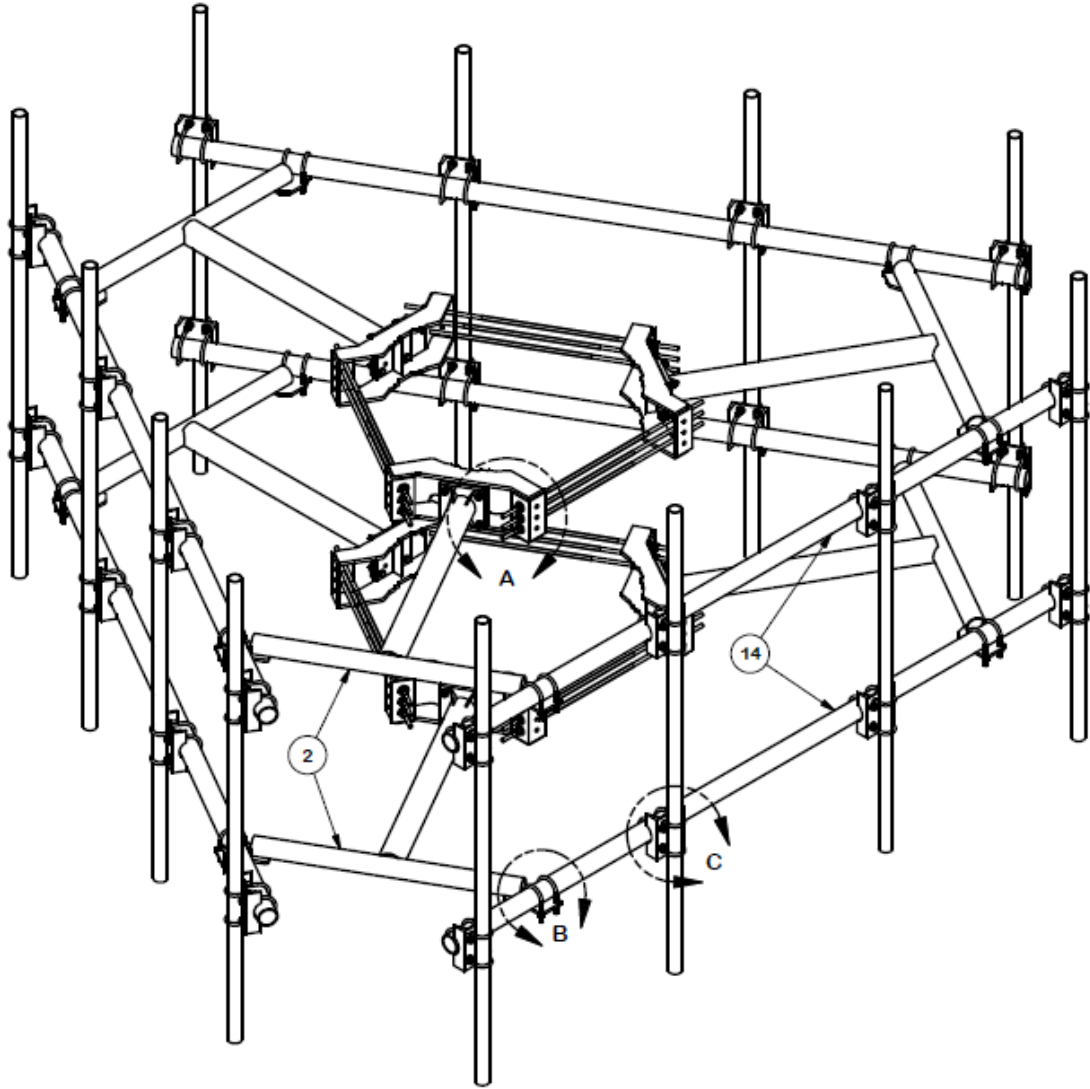
NOTE: The proposed Site Pro 1 ULPD12-472 mount is not currently installed on the tower. The proposed mount was assumed to be installed per the manufacturer's instructions, and it is assumed that it can be installed properly on the tower. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

Attachments

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

Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.
2. The analysis is based on the presumption that the antenna mount members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion. The mount analysis is not a condition assessment of the mount.
4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.
5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.
6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.
7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.
8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.
9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.



Dwg: Site Pro 1 ULPD12-472

Sector: **A**

12/18/2020

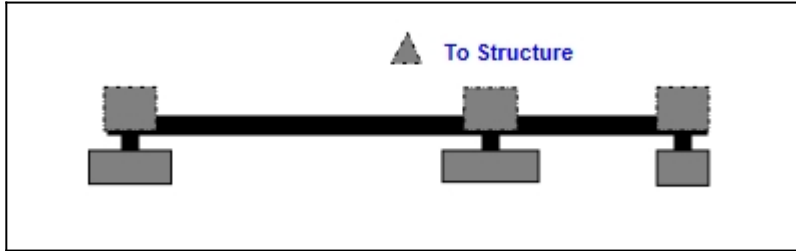


Structure Type: Monopole

Page: 1

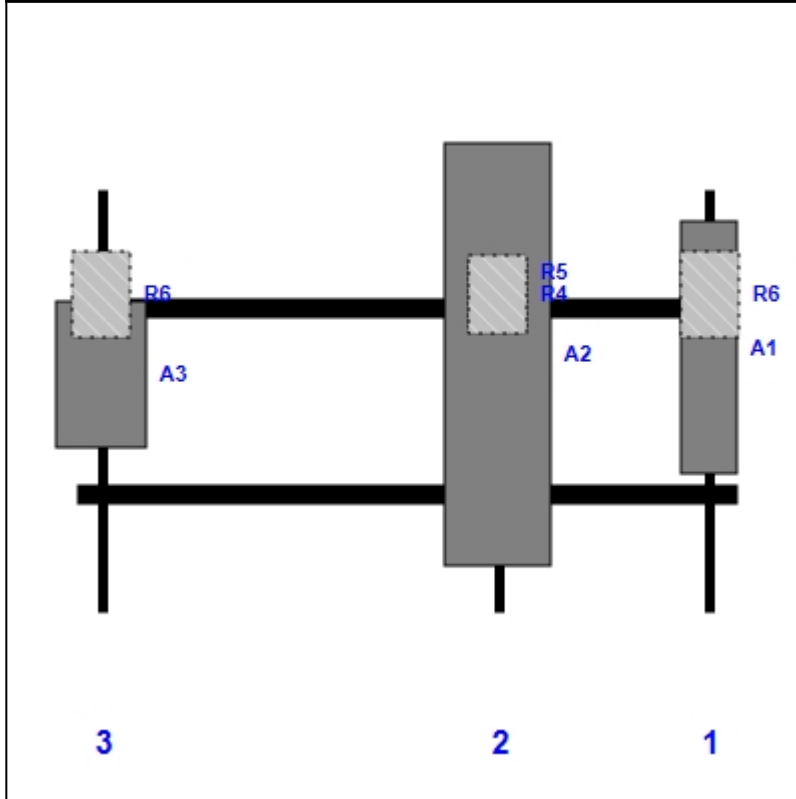
Mount Elev: 96.60

Plan View



Front View

Looking Toward Structure



| Ref | Model | Height (in) | Width (in) | H Dist Left | Pipe | Pipe Pos V | Pos | From Top | H Offset | Status | Validation |
|-----|----------------------------|-------------|------------|-------------|------|------------|--------|----------|----------|--------|------------|
| A1 | AIR32 KRD901146-1_B66A_B2A | 57.00 | 12.90 | 144.00 | 1 | a | Front | 36.00 | | | |
| R6 | 800 MHz RRH | 19.70 | 13.00 | 144.00 | 1 | a | Behind | 24.00 | | | |
| A2 | APXVAALL24-43-U-NA20 | 95.90 | 24.00 | 96.00 | 2 | a | Front | 37.50 | | | |
| R4 | 4415 B25 | 15.00 | 13.20 | 96.00 | 2 | a | Behind | 24.00 | | | |
| R5 | 4449 B71 + B85 | 17.90 | 13.20 | 96.00 | 2 | a | Behind | 24.00 | | | |
| A3 | AIR6449 B41 | 33.10 | 20.50 | 6.00 | 3 | a | Front | 42.00 | | | |
| R6 | 800 MHz RRH | 19.70 | 13.00 | 6.00 | 3 | a | Behind | 24.00 | | | |

Sector: **B**

12/18/2020

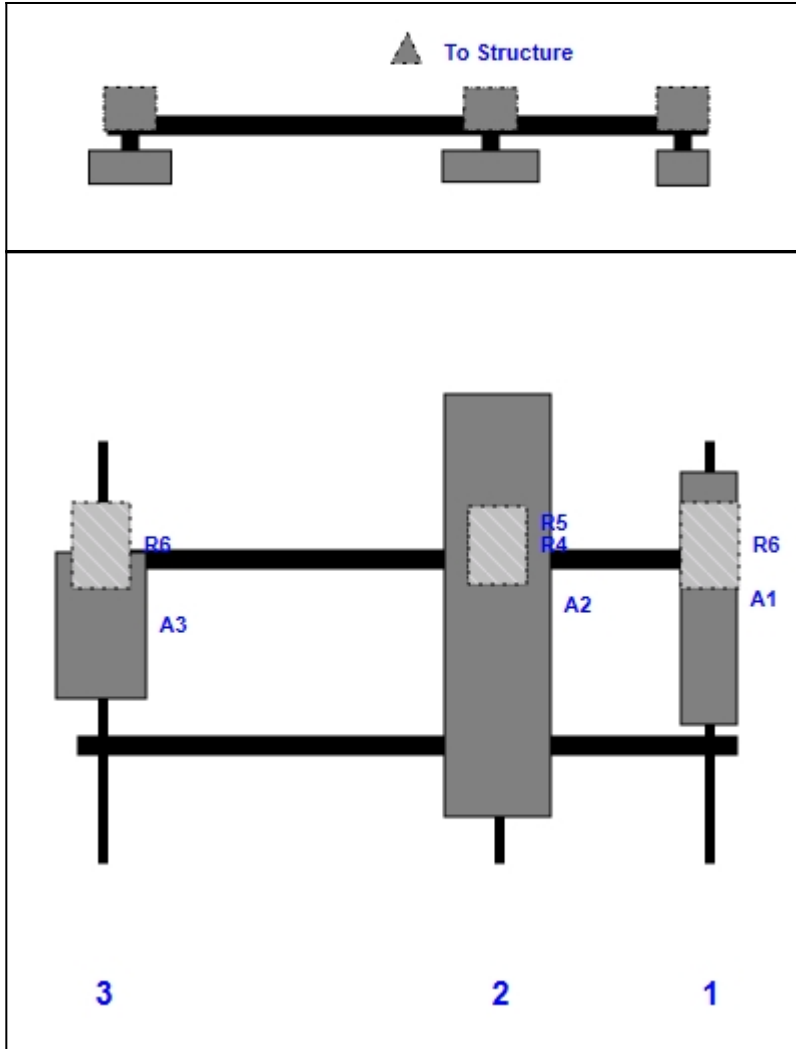


Structure Type: Monopole

Page: 2

Mount Elev: 96.60

Plan View



Front View
Looking Toward Structure

| Ref | Model | Height (in) | Width (in) | H Dist Left | Pipe | Pipe Pos V | Pos | From Top | H Offset | Status | Validation |
|-----|----------------------------|-------------|------------|-------------|------|------------|--------|----------|----------|--------|------------|
| A1 | AIR32 KRD901146-1_B66A_B2A | 57.00 | 12.90 | 144.00 | 1 | a | Front | 36.00 | | | |
| R6 | 800 MHz RRH | 19.70 | 13.00 | 144.00 | 1 | a | Behind | 24.00 | | | |
| A2 | APXVAALL24-43-U-NA20 | 95.90 | 24.00 | 96.00 | 2 | a | Front | 37.50 | | | |
| R4 | 4415 B25 | 15.00 | 13.20 | 96.00 | 2 | a | Behind | 24.00 | | | |
| R5 | 4449 B71 + B85 | 17.90 | 13.20 | 96.00 | 2 | a | Behind | 24.00 | | | |
| A3 | AIR6449 B41 | 33.10 | 20.50 | 6.00 | 3 | a | Front | 42.00 | | | |
| R6 | 800 MHz RRH | 19.70 | 13.00 | 6.00 | 3 | a | Behind | 24.00 | | | |

Sector: **C**

12/18/2020

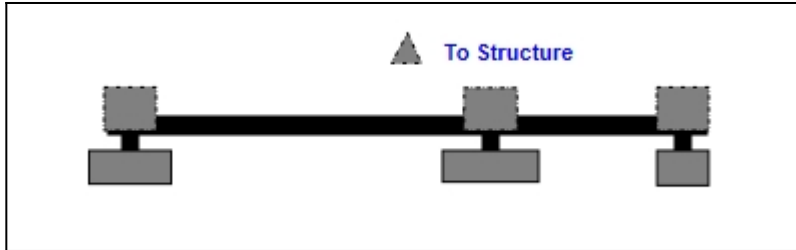


Structure Type: Monopole

Page: 3

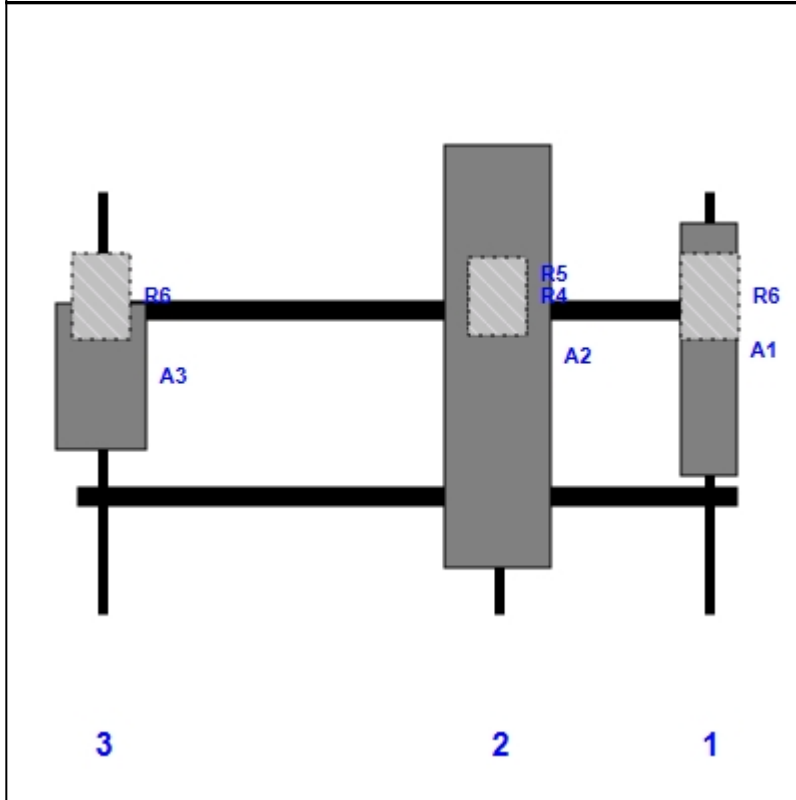
Mount Elev: 96.60

Plan View

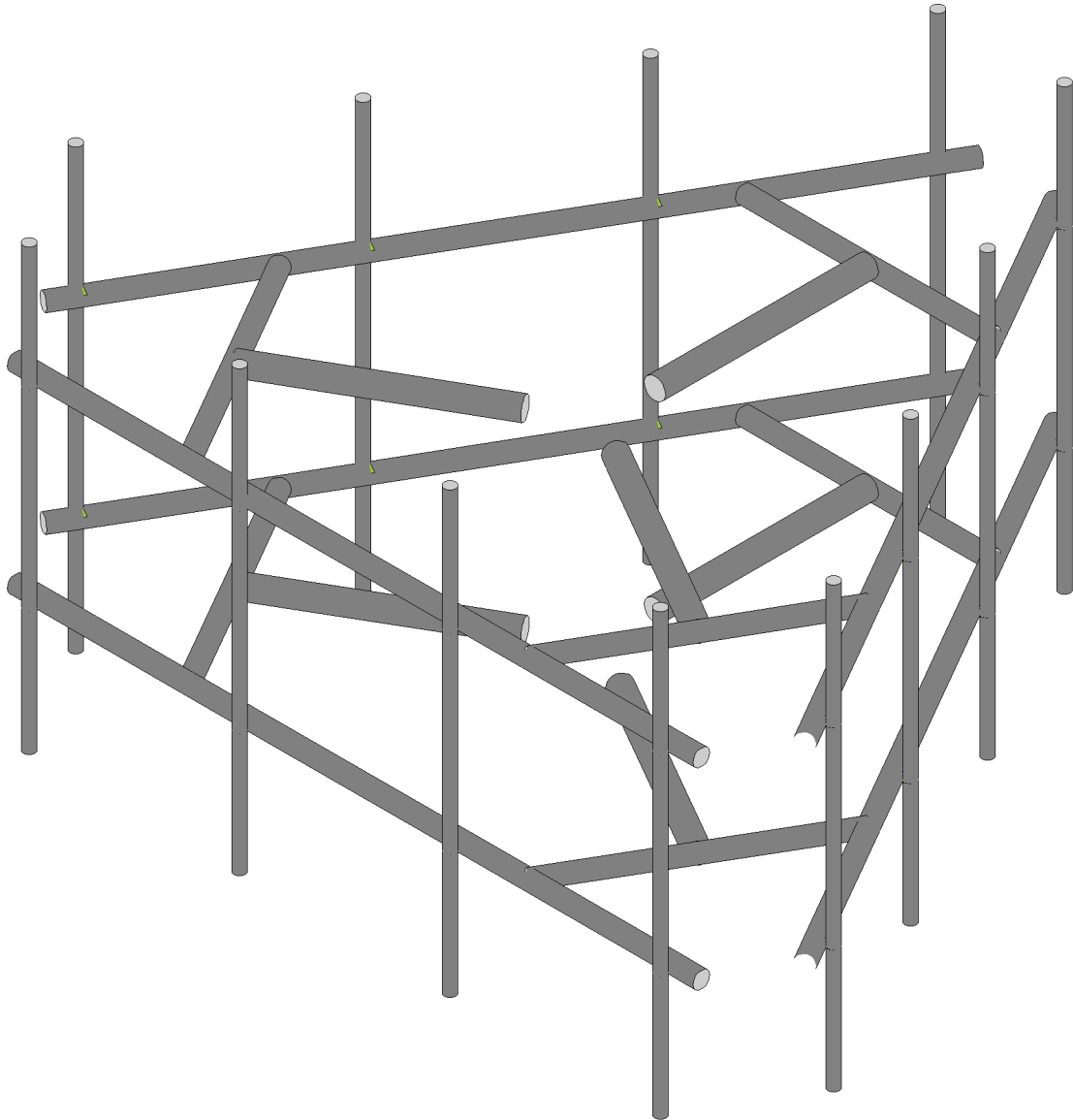
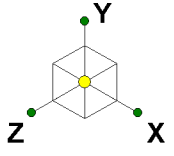


Front View

Looking Toward Structure



| Ref | Model | Height (in) | Width (in) | H Dist Left | Pipe | Pipe Pos V | Pos | From Top | H Offset | Status | Validation |
|-----|----------------------------|-------------|------------|-------------|------|------------|--------|----------|----------|--------|------------|
| A1 | AIR32 KRD901146-1_B66A_B2A | 57.00 | 12.90 | 144.00 | 1 | a | Front | 36.00 | | | |
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| A3 | AIR6449 B41 | 33.10 | 20.50 | 6.00 | 3 | a | Front | 42.00 | | | |
| R6 | 800 MHz RRH | 19.70 | 13.00 | 6.00 | 3 | a | Behind | 24.00 | | | |



Tower Engineering Solutio...

KW

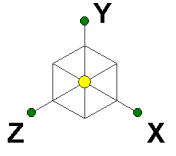
TES Project No. 100932

CT46140-A-SBA_MT_LO_Loads Only_G

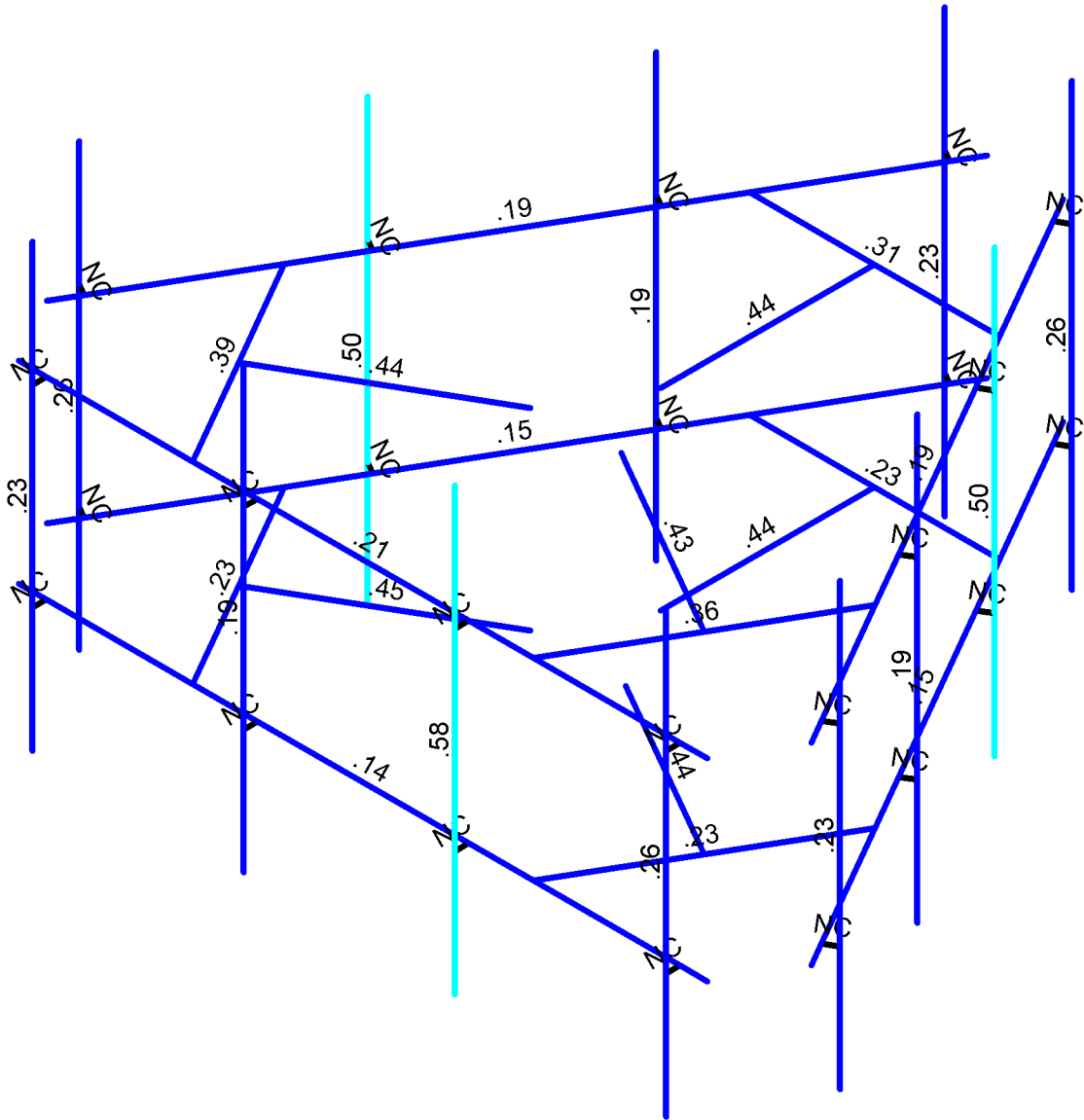
SK - 1

Dec 18, 2020 at 9:59 AM

CT46140-A-SBA_100932_G_RISA_...

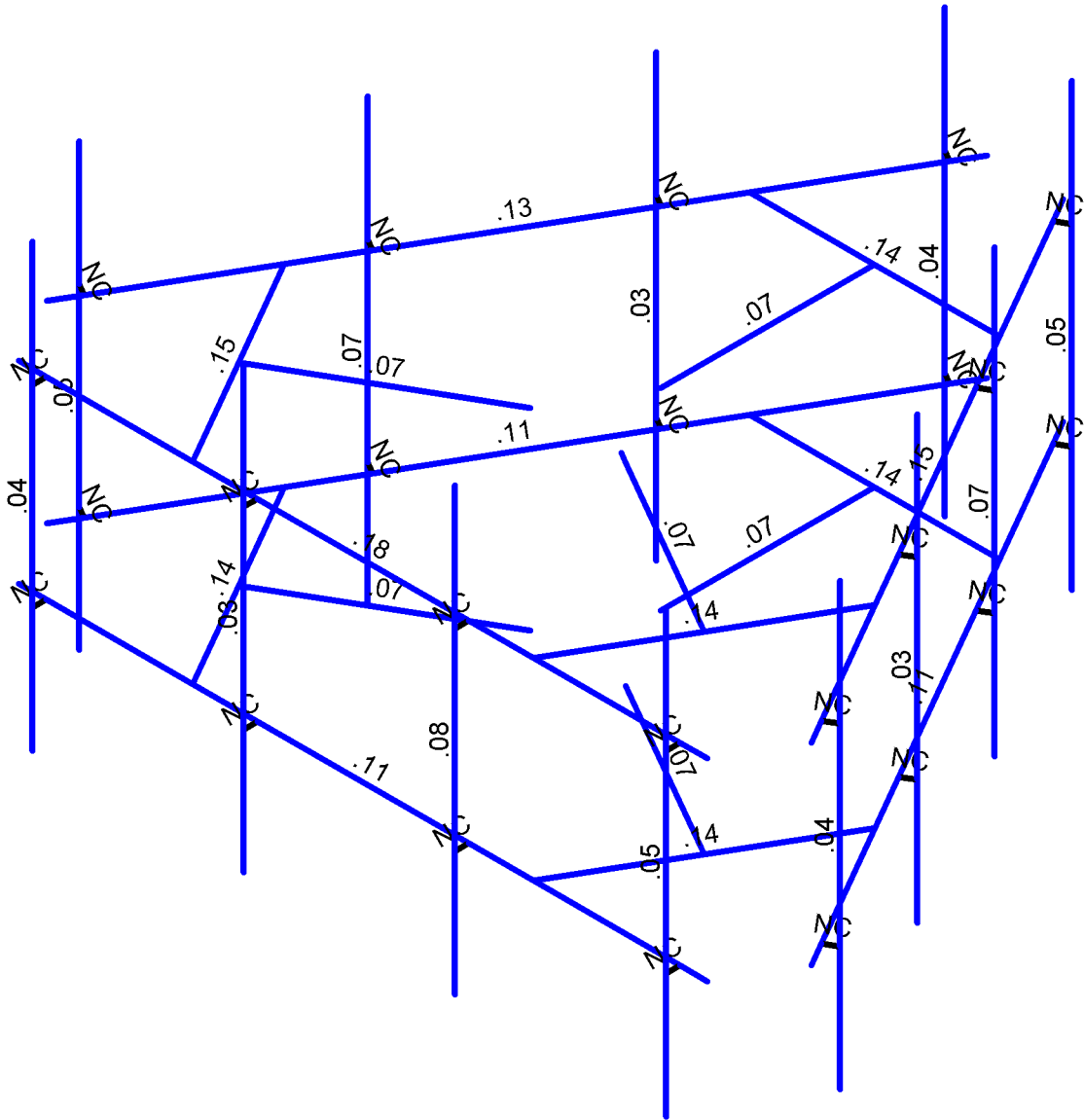
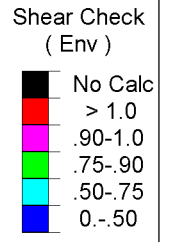
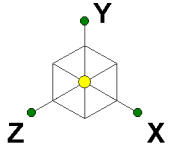


| Code Check (Env) | |
|--------------------|---------|
| Black | No Calc |
| Red | > 1.0 |
| Magenta | .90-1.0 |
| Green | .75-.90 |
| Cyan | .50-.75 |
| Blue | 0-.50 |



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

| | | |
|------------------------------|----------------------------------|---------------------------------|
| Tower Engineering Solutio... | CT46140-A-SBA_MT_LO_Loads Only_G | SK - 2 |
| KW | | Dec 18, 2020 at 9:59 AM |
| TES Project No. 100932 | | CT46140-A-SBA_100932_G_RISA_... |



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

| | | |
|------------------------------|----------------------------------|---------------------------------|
| Tower Engineering Solutio... | CT46140-A-SBA_MT_LO_Loads Only_G | SK - 3 |
| KW | | Dec 18, 2020 at 10:00 AM |
| TES Project No. 100932 | | CT46140-A-SBA_100932_G_RISA_... |



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| G | FÖÖEFË Y ÄUä D | Ý^• Ý | F FË J FË H FË | FF FË | | | | | | |
| H | FÖÖEFË Y ÄU^ ç | Ý^• Ý | F FË J FË Í FË | FH FË | | | | | | |
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| F€ | FÖÖEFË SFEË Y ÄUä Æ | Ý^• Ý | F FË J FË Î FË | H FË | FF FË | | | | | |
| FF | FË Ö | Ý^• Ý | F FË J FË | | | | | | | |

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| F | pG | Í Æ | HË | I Ë É Ê | € | | | |
| G | pG | Í Ë | HË | I Ë É Ê | € | | | |
| H | pÍ | Í Æ H I J | HË | HË F F Í | € | | | |
| I | pÍ € | HË F J I | HË | I Ë É Ê | € | | | |
| Í | pÍ F | F Æ F Í I | HË | I Ë É Ê | € | | | |
| Î | pF | I Æ G H Í | HË | GË I F F | € | | | |
| Ï | pHF | Í Ë Í É GH | HË | ËË Í É GF | € | | | |
| Ì | pÍ I | Ë Æ F Í I | HË | I Ë É Ê | € | | | |
| J | pÍ H | Ë Ë F J I | HË | I Ë É Ê | € | | | |
| F€ | pG | ËË Í H É G | HË | ËË I G FH | € | | | |
| FF | pÍ G | Ë Ë Í | HË | I Ë É Ê | € | | | |
| FG | pGF | Ë Æ | HË | I Ë É Ê | € | | | |
| FH | pÍ | Ë Æ G H Í | HË | GË I F F | € | | | |
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| FÌ | PH | ÈÈ^ÈH | HÈ | È ÈÍ ÈGEJ | € | |
| FJ | PII | ÈÈÈ ÍI ÍI | HÈ | È ÈÍ ÈGEJ | € | |
| GE | PFÈ | ÈÈ ÍI IJ | HÈ | È ÈÍ FÍ FÍH | € | |
| GF | PFH | ÈÈÈ ÍI IJ | HÈ | È ÈÍ FÍ FÍH | € | |
| GG | PIÍ | € | HÈ | € | € | |
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| HÌ | PIG | € | € | ÈF | € | |
| HÌ | PIH | È ÈÍ ÈI GH | € | ÈÈ ÍI GF | € | |
| HÌ | PIÍ | ÈÈ ÍI ÍI | € | È ÈÍ ÈGEJ | € | |
| HJ | PIÍ | ÈÈ^ÈH | € | È ÈÍ ÈGEJ | € | |
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| ÍG | TÍCE | | | | | Ÿ^. | ÉÁpOÁÉÉ | | p[]^ |
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EXHIBIT 9

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

T-Mobile Existing Facility

Site ID: CTHA475A

CT33XC526

134 R Creamery Road
Durham, Connecticut 01588

February 22, 2021

EBI Project Number: 6221000645

| Site Compliance Summary | |
|---|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general population allowable limit: | 34.37% |

February 22, 2021

T-Mobile

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

Emissions Analysis for Site: CTHA475A - CT33XC526

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **134 R Creamery Road** in **Durham, 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 134 R Creamery Road in Durham, 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) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 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.
- 4) 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.
- 5) 4 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.
- 6) 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.

- 7) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 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.
- 10) 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.
- 11) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 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.
- 12) The antenna mounting height centerline of the proposed antennas is 96 feet above ground level (AGL).

- 13) 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.
- 14) 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 #: | 1 | Antenna #: | 1 | Antenna #: | 1 |
| Make / Model: | Ericsson AIR 32 | Make / Model: | Ericsson AIR 32 | Make / Model: | Ericsson AIR 32 |
| Frequency Bands: | 1900 MHz / 1900 MHz / 2100 MHz | Frequency Bands: | 1900 MHz / 1900 MHz / 2100 MHz | Frequency Bands: | 1900 MHz / 1900 MHz / 2100 MHz |
| Gain: | 15.35 dBd / 15.35 dBd / 15.85 dBd | Gain: | 15.35 dBd / 15.35 dBd / 15.85 dBd | Gain: | 15.35 dBd / 15.35 dBd / 15.85 dBd |
| Height (AGL): | 96 feet | Height (AGL): | 96 feet | Height (AGL): | 96 feet |
| Channel Count: | 8 | Channel Count: | 8 | Channel Count: | 8 |
| Total TX Power (W): | 360 Watts | Total TX Power (W): | 360 Watts | Total TX Power (W): | 360 Watts |
| ERP (W): | 12,841.53 | ERP (W): | 12,841.53 | ERP (W): | 12,841.53 |
| Antenna A1 MPE %: | 5.01% | Antenna B1 MPE %: | 5.01% | Antenna C1 MPE %: | 5.01% |
| Antenna #: | 2 | Antenna #: | 2 | Antenna #: | 2 |
| Make / Model: | RFS APXVAALL24_43-U-NA20 | Make / Model: | RFS APXVAALL24_43-U-NA20 | Make / Model: | RFS APXVAALL24_43-U-NA20 |
| Frequency Bands: | 600 MHz / 600 MHz / 700 MHz / 1900 MHz | Frequency Bands: | 600 MHz / 600 MHz / 700 MHz / 1900 MHz | Frequency Bands: | 600 MHz / 600 MHz / 700 MHz / 1900 MHz |
| Gain: | 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd | Gain: | 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd | Gain: | 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd |
| Height (AGL): | 96 feet | Height (AGL): | 96 feet | Height (AGL): | 96 feet |
| Channel Count: | 7 | Channel Count: | 7 | Channel Count: | 7 |
| Total TX Power (W): | 320 Watts | Total TX Power (W): | 320 Watts | Total TX Power (W): | 320 Watts |
| ERP (W): | 8,360.85 | ERP (W): | 8,360.85 | ERP (W): | 8,360.85 |
| Antenna A2 MPE %: | 5.50% | Antenna B2 MPE %: | 5.50% | Antenna C2 MPE %: | 5.50% |
| Antenna #: | 3 | Antenna #: | 3 | Antenna #: | 3 |
| Make / Model: | Ericsson AIR 6449 | Make / Model: | Ericsson AIR 6449 | Make / Model: | Ericsson AIR 6449 |
| Frequency Bands: | 2500 MHz / 2500 MHz | Frequency Bands: | 2500 MHz / 2500 MHz | Frequency Bands: | 2500 MHz / 2500 MHz |
| Gain: | 22.05 dBd / 22.05 dBd | Gain: | 22.05 dBd / 22.05 dBd | Gain: | 22.05 dBd / 22.05 dBd |
| Height (AGL): | 96 feet | Height (AGL): | 96 feet | Height (AGL): | 96 feet |
| Channel Count: | 2 | Channel Count: | 2 | Channel Count: | 2 |
| Total TX Power (W): | 240 Watts | Total TX Power (W): | 240 Watts | Total TX Power (W): | 240 Watts |
| ERP (W): | 38,477.89 | ERP (W): | 38,477.89 | ERP (W): | 38,477.89 |
| Antenna A3 MPE %: | 15.01% | Antenna B3 MPE %: | 15.01% | Antenna C3 MPE %: | 15.01% |

| Site Composite MPE % | |
|-----------------------------|---------------|
| Carrier | MPE % |
| T-Mobile (Max at Sector A): | 25.52% |
| Sprint | 5.55% |
| Verizon | 3.3% |
| Site Total MPE % : | 34.37% |

| T-Mobile MPE % Per Sector | |
|---------------------------|---------------|
| T-Mobile Sector A Total: | 25.52% |
| T-Mobile Sector B Total: | 25.52% |
| T-Mobile Sector C Total: | 25.52% |
| | |
| Site Total MPE % : | 34.37% |

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 1900 MHz GSM | 4 | 1028.30 | 96.0 | 16.05 | 1900 MHz GSM | 1000 | 1.60% |
| T-Mobile 1900 MHz LTE | 2 | 2056.61 | 96.0 | 16.05 | 1900 MHz LTE | 1000 | 1.60% |
| T-Mobile 2100 MHz LTE | 2 | 2307.55 | 96.0 | 18.00 | 2100 MHz LTE | 1000 | 1.80% |
| T-Mobile 600 MHz LTE | 2 | 591.73 | 96.0 | 4.62 | 600 MHz LTE | 400 | 1.15% |
| T-Mobile 600 MHz NR | 1 | 1577.94 | 96.0 | 6.16 | 600 MHz NR | 400 | 1.54% |
| T-Mobile 700 MHz LTE | 2 | 695.22 | 96.0 | 5.42 | 700 MHz LTE | 467 | 1.16% |
| T-Mobile 1900 MHz LTE | 2 | 2104.51 | 96.0 | 16.42 | 1900 MHz LTE | 1000 | 1.64% |
| T-Mobile 2500 MHz LTE | 1 | 19238.94 | 96.0 | 75.05 | 2500 MHz LTE | 1000 | 7.51% |
| T-Mobile 2500 MHz NR | 1 | 19238.94 | 96.0 | 75.05 | 2500 MHz NR | 1000 | 7.51% |
| | | | | | | Total: | 25.52% |

• 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: | 25.52% |
| Sector B: | 25.52% |
| Sector C: | 25.52% |
| T-Mobile Maximum MPE % (Sector A): | 25.52% |
| | |
| Site Total: | 34.37% |
| | |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **34.37%** 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 10