



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

July 29, 2020

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

RE: Notice of Exempt Modification
35 South Bartlett Road, Quaker Hill, CT 06375
Latitude: 41.417778
Longitude: 72.105833
T-Mobile Site #: CTNL021D_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 150-foot level of the existing 180-foot Self-Supporting Tower at 35 South Bartlett Rd., Quaker, CT. The 180-foot tower is owned by SBA Towers II LLC. The property is owned by the Town of Waterford. T-Mobile now intends to install three (3) new 600/1900/2100MHZ antennas. The new antennas would be installed at the 150-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:

- (8) 1-5/8" Coax

Remove and Replace:

- (3) LNX-6515DS antenna – (Remove) – (3) RFS APXVAARR24_43-U-NA20 – (Replace)
- (3) Ericsson AIR B4A/B2P antenna – (Remove) – Ericsson AIR6449 B41 antenna – (Replace)
- (3) Ericsson RRUS 11 B12 RRU – (Remove) – (3) Ericsson Radio 4415 B25 RRU – (Replace)

Install New:

- (3) Ericsson AIR32 KRD90146-1_B66A_B2A Octo antenna
- (3) Ericsson Radio 4449 B71+B85 RRU
- (8) 1-5/8" Fiber
- (6) V-brace Kit (MS-C1B-2875P)
- (3) 2-1/2" PSTzmount Pipe (PST2875-8)

Existing Equipment to Remain:

- (1) 1-5/8" Fiber
- (3) Air 21 B2A/B4P Panel
- (3) KRY 112 144/1 TMA
- (3) T-Frames

Entitlements:

- (4) 1-5/8" Coax

GROUND

Install New:

- Equipment inside existing 6131 cabinet
- (2) Ericsson B160 Battery Cabinet mounted to existing concrete pad
- (2) Breaker within existing PPC to replace existing breakers

This facility was approved by the Town of Waterford's Planning and Zoning Commission on August 14, 2006. Special Permit PZ-2006-024 approved the installation of a 180' communications tower. No post construction stipulations were set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Waterford's First Selectman, Daniel M. Steward, and Zoning Official, Josh Lecar. (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: Daniel M. Steward, First Selectman / with attachments
Town of Waterford, 15 Rope Ferry Road, Waterford, CT 06385
Josh Lecar, Zoning Official / with attachments
Town of Waterford, 15 Rope Ferry Road, Waterford, CT 06385

EXHIBIT LIST

<u>Exhibit 1</u>	<u>Check Copy</u>	
<u>Exhibit 2</u>	<u>Notification Receipts</u>	<u>x</u>
<u>Exhibit 3</u>	<u>Property Card</u>	<u>x</u>
<u>Exhibit 4</u>	<u>Property Map</u>	<u>x</u>
<u>Exhibit 5</u>	<u>Original Zoning Approval</u>	<u>Town of Waterford P&Z 8/14/06</u>
<u>Exhibit 6</u>	<u>Construction Drawings</u>	<u>Chappell Engineering 6/18/20</u>
<u>Exhibit 7</u>	<u>Modification Drawings</u>	<u>TES 7/9/20</u>
<u>Exhibit 8</u>	<u>Structural Analysis</u>	<u>TES 7/14/20</u>
<u>Exhibit 9</u>	<u>Post-Mod Mount Analysis</u>	<u>TES 7/10/20</u>
<u>Exhibit 10</u>	<u>EME Report</u>	<u>Transcom Engineering 7/1/20</u>

EXHIBIT 1

Normally, Exhibit 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: 29 JUL 20
ACTWGT: 1.00 LB
CAD: 105843304/NET14280

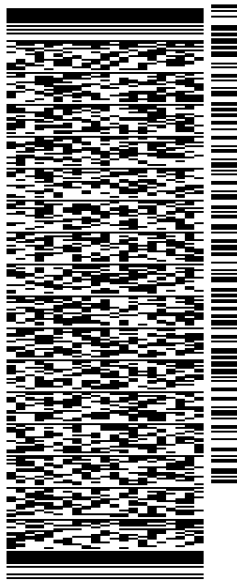
BILL SENDER

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

NEW BRITAIN CT 06051

(508) 251-0720 X 302 REF: 105692009-6089
INV# PO: DEPT:

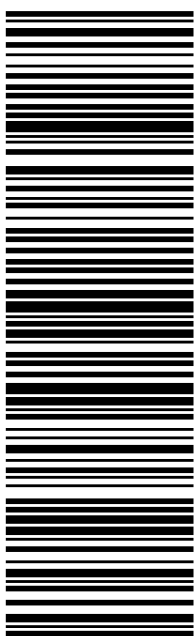
56B.J3/C6A6/B766



TRK# 7711 2666 5307 THU - 30 JUL 10:30A
0201 PRIORITY OVERNIGHT

EB BDLA

06051
CT-US BDL



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

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

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

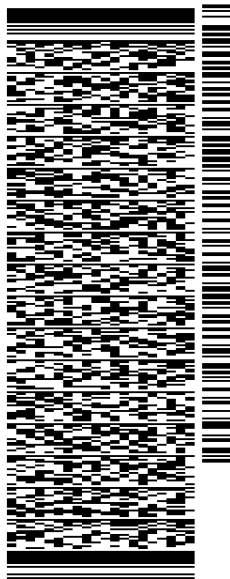
SHIP DATE: 29 JUL 20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280

BILL SENDER

TO DANIEL M. STEWARD, FIRST SELECTMAN
TOWN OF WATERFORD
15 ROPE FERRY ROAD
WATERFORD CT 06385

(508) 251-0720 X 3807 REF: 10-56-92009-6089
INV. PO. DEPT:

56B.J3/C6A6/B766

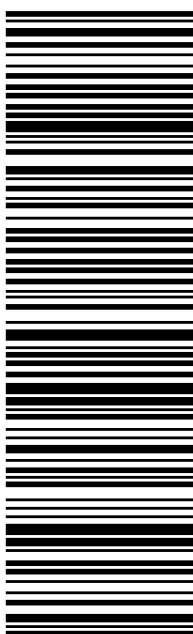


J2020071401uv

TRK# 7711 2670 8255 THU - 30 JUL 10:30A
0201 PRIORITY OVERNIGHT

EB SKKA

06385
CT:US BDL



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

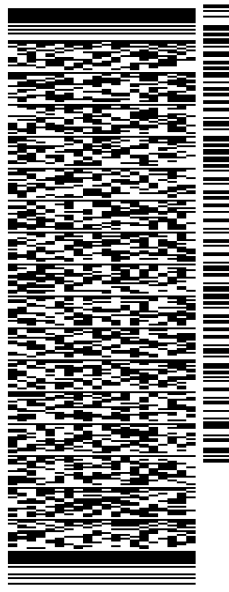
SHIP DATE: 29 JUL 20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280
BILL SENDER

TO
JOSH LECAR, ZONING OFFICIAL
TOWN OF WATERFORD
15 ROPE FERRY ROAD

WATERFORD CT 06385

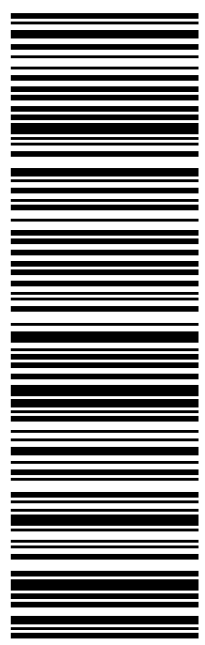
(508) 251-0720 X 3807 REF: 10-56-92009-6089
INV: DEPT:
PO:

56B.J3/C6A6/B766



TRK# 7711 2673 9563
THU - 30 JUL 10:30A
PRIORITY OVERNIGHT

EB SKKA
06385
CT-US BDL



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EXHIBIT 3

35 SOUTH BARTLETT ROAD

Location 35 SOUTH BARTLETT ROAD

Mblu 11 / 4866 / /

Acct# 00443701

Owner WATERFORD TOWN OF

Assessment \$643,430

Appraisal \$919,180

PID 4866

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$697,500	\$221,680	\$919,180

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$488,250	\$155,180	\$643,430

Parcel Addresses

Additional Addresses		
Address	City, State Zip	Type
35 SOUTH BARTLETT ROAD		Primary

Owner of Record

Owner WATERFORD TOWN OF
Co-Owner

Sale Price \$53,000
Certificate
Book & Page 777/ 90
Sale Date 04/22/2005
Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WATERFORD TOWN OF	\$53,000		777/ 90	00	04/22/2005
MASHANTUCKET PEQUOT TRIBE THE	\$0		743/ 219	00	12/07/2004

Building Information

Building 1 : Section 1

Building Photo

Year Built: 1950
Living Area: 0
Replacement Cost: \$0
Building Percent Good: 62

Building Attributes

Field	Description
STYLE	Commercial
MODEL	Comm/Ind
Grade	Below Ave
Stories:	.00
Occupancy	1
Exterior Wall 1	Average
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt
Interior Wall 1	Typical
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	None
Heating Type	None
% Central Air	0
Foundation	N/A
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	0
% Wet Sprinkler	
% Dry Sprinkler	
1st Floor Use	
Heat/AC	Typical
Frame Type	NONE
Baths/Plumbing	NONE
% Finished	0
Class	
Wall Height	23

Building Photo



(http://images.vgsi.com/photos/WaterfordCTPhotos//default.jpg)

Building Layout



(http://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/48)

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

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code 920
Description Exempt Comm
Zone IP-1
Neighborhood IND1
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 1.7
Frontage 0
Depth 0
Assessed Value \$155,180
Appraised Value \$221,680

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
LSUM	Lump Sum			775000 UNITS	\$697,500	1

Valuation History

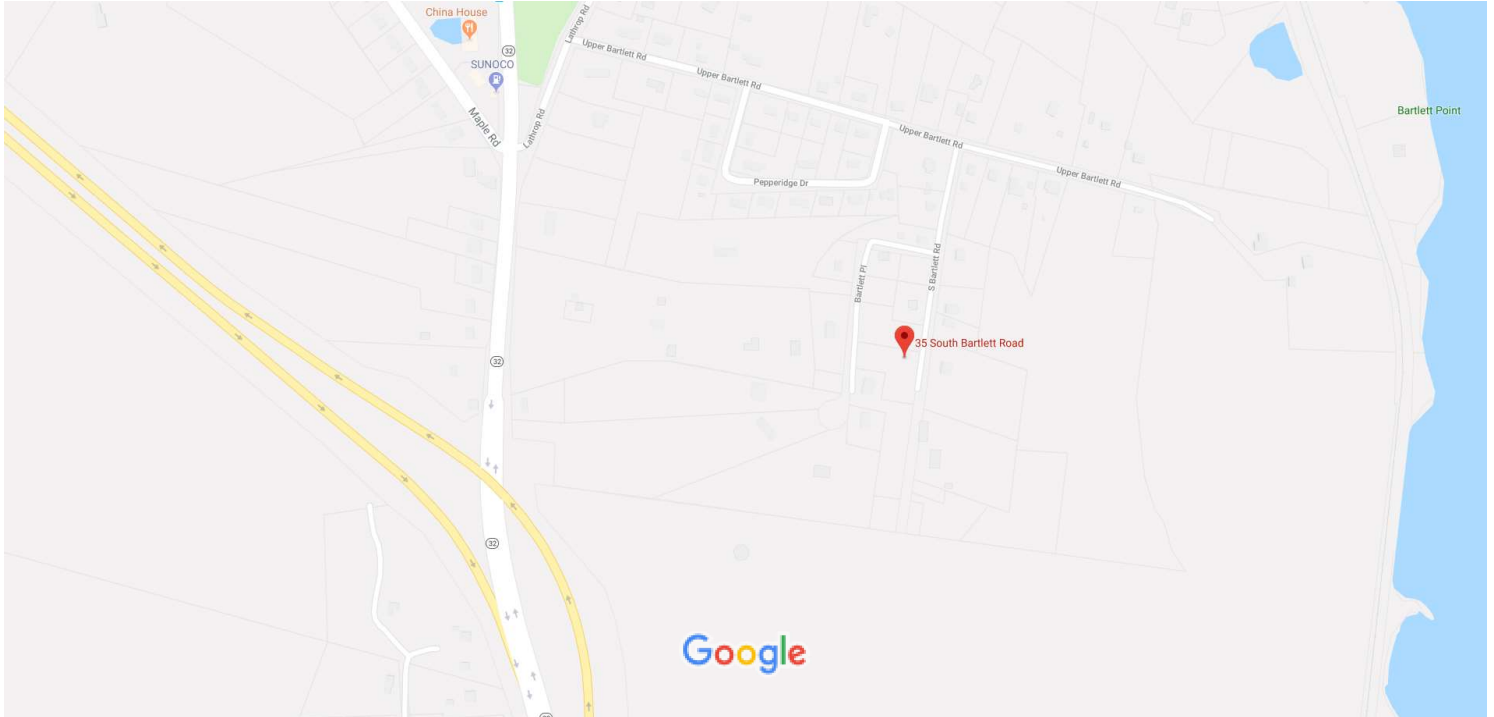
Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$697,500	\$166,260	\$863,760
2013	\$697,500	\$166,260	\$863,760
2010	\$0	\$0	\$988,386

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$488,250	\$116,380	\$604,630
2013	\$488,250	\$116,380	\$604,630
2010	\$0	\$0	\$691,870

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EXHIBIT 4

Google Maps 35 S Bartlett Rd



Map data ©2019 Google 200 ft



35 S Bartlett Rd

Quaker Hill, CT 06375



Directions



Save



Nearby



Send to your phone



Share

EXHIBIT 5

VOL 899 PAGE 309



FIFTEEN ROPE FERRY ROAD

WATERFORD, CT 06385-2886

TOWN OF WATERFORD
PLANNING & ZONING COMMISSION

NOTICE OF GRANT OF A SPECIAL PERMIT

This is to certify that on August 14, 2006, the Waterford Planning & Zoning Commission granted Special Permit #PZ2006-024.

Owner of Record: Town of Waterford

Address: 35 South Bartlett Road

Description of Premises:

As recorded in Volumes 777, Page 090 of the Waterford Land Records

Nature of Special Permit: Special Permit and site plan approval granted for installation of a communications tower.

Applicable Zoning Regulations: Sections 13.2.1 , 19, 22 and 23.

Permit findings, stipulations and conditions are filed in the office of the Town Clerk as stated in the minutes of the Planning & Zoning Commission meeting of August 14, 2006.

PLANNING & ZONING COMMISSION

By: *Dawn Choisy*
Dawn Choisy
Recording Secretary
Planning & Zoning Commission

RECEIVED FOR RECORD
WATERFORD, CT
06 SEP 13 AM 11:37
TOWN CLERK

This notice is to be recorded on the land records of the Town of Waterford, indexed in the Grantor's Index under the name of the record owner.

Planning and Zoning Commission
August 14, 2006
Page 5

There being no further comments or questions, the public hearing was closed at 7:34.

#PZ2006-024 -- Request of the Town of Waterford, Director of Emergency Management, applicant; Town of Waterford, owner, for special permit and site plan approval to locate a communications tower at 35 South Bartlett Road, IP-1 zone, in accordance with Sections 13.2.1, 19, 22 and 23 of the Zoning Regulations and as shown on plans entitled "Preliminary Antenna Site Plan Prepared for Town of Waterford Emergency Communications Committee, Waterford, Connecticut" dated June 15, 2006, with modifications requested from sections 13.4.2 and 13.4.3 of the Zoning Regulations.

Chairman Maguire opened the public hearing and read the exhibits into the record:

- EXHIBIT A - Application and support materials.
- EXHIBIT B - Notice of Public Hearing advertised in the Day newspaper on July 31, 2006 and August 7, 2006.
- EXHIBIT C - Notification letter to applicant, along with certificates of mailing.
- EXHIBIT D - Staff and agency condensed comment sheet.
- EXHIBIT E - Plans titled "Preliminary Antenna Site Plan, Prepared for Town of Waterford Emergency Communications Committee, Waterford, Connecticut, dated June 15, 2006.

Murray Pendleton, Director of Emergency Management, and Thomas Dembeck presented this application to the Commission.

Chief Pendleton stated that this proposal involves erecting a 180-foot communications tower on the site of the newly constructed water tank, which is property owned by the Town. The goal is that the system provide first responders have 95% portable radio coverage. He stated that replacing the current radio system and antennas is very important.

Chairman Maguire asked if this proposal needed to go through the siting council. T. Wagner stated that the application is being processed as a municipal tower, and may need to be reviewed by the siting council. Any future co-location by cell phone carriers will usually require approval from the siting council.

Chief Pendleton stated that they want to complete the project in the most economical way possible, and that would involve co-locating of vendors on the tower.

T. Wagner stated that two sites were originally identified as possible sites for the tower, and asked why the site at the water tank was preferred. T. Dembeck showed maps of coverage from both the proposed water tank site and the site at the Sportsman's Club, the other proposed location. These were entered into the record as Exhibits G and H.

Chief Pendleton stated that there is a tremendous financial responsibility and involvement in the licensing process that exists right now. This antenna will help to enable all emergency

Planning and Zoning Commission
August 14, 2006
Page 6

personnel in town to communicate with each other. Mr. Dembeck explained how the new communications system will work. A flyer showing the tower design was entered into the record as Exhibit F.

J. Auwood stated concerns with the effect on the neighboring properties, noting that the antenna is quite a bit higher than the water tank. T. Dembeck stated that J. Bartelli of the Utility Commission has been in contact with the neighbors who voiced concerns during the public hearing held for the water tank. The proposed tower will be at the back side of the tank, and won't be lit. An 11' x 14' modular concrete building will be constructed to support the radio equipment.

M. Pendelton stated that when the water tank was constructed, the idea was to have the communication tower attached to it, and special brackets were attached to the tank for that purpose. The study that was done showed that an antenna on the water tank would not work.

T. Wagner stated that this public hearing is being held because this proposal is a vast deviation from what was approved for the construction of the water tank.

T. Ward also stated concerns regarding the neighbors. Chief Pendelton stated that this particular antenna was not planned at the time of the approval of the water tank.

Chairman Maguire asked if there was anyone present who wished to speak regarding this application.

Wayne Wainwright of Great Neck Road asked if any of the other towers around would be sufficient for this use. He stated that it seems more like a cell phone tower. He also requested the town consider placing their system on his tower in Montville.

M. Wujtewicz stated that the neighbors were sent notices regarding the public hearing, and had opportunity to review the file.

There being no further comments or questions, the public hearing was closed at 7:56.

ITEM #6 APPLICATION REVIEWS

#PZ2006-008 - Request of New London Country Club, owner; and applicant; Gerwick-Mereen, LLC, agent; for a 2-lot resubdivision for property located at 28 Lamphere Road, OS zone, as shown on plans entitled "Jordan View Resubdivision" dated December 5, 2006 with revisions to July 10, 2006, sheets 1 through 4. A coastal site plan review is required in accordance with the Coastal Management Act.

It was the consensus of the Commission to have draft prepare a decision for review at the next meeting.

Planning and Zoning Commission

August 14, 2006

Page 7

#PZ2006-013 - Request of Waterford & Miner, LLC, owner and applicant; Glenn M. Gordon, Esq., agent, to change the zone for property located at 22 Miner Lane from C-G (General Commercial) to C-MF (Commercial Multi-Family).

The Commission will review the material submitted during the public hearing and will discuss this application at the next meeting.

#PZ2006-016 - Request of the Town of Waterford Board of Education, applicant; Town of Waterford, owner; Jacunski Humes Architects, LLC, agent for site plan approval to build a new elementary school at 116 Old Norwich Road, VR-10 zone, in accordance with Sections 6a and 22 of the Zoning Regulations and as shown on plans entitled "Planning and Zoning Commission Submittal, Quaker Hill Elementary School" dated 6/26/06.

The Commission reviewed the draft approval prepared by Staff at the direction of the Commission, outlining the stipulations and conditions of approval.

M. Wujtewicz stated that the approval of this application includes an extension of the public water line pursuant to CGS 8-24.

MOTION: Motion made by T. Ward, seconded by H. Daniels, to approve Application #PZ2006-016 with the stipulations and conditions stated in Attachment A.

VOTE: 5-0

#PZ2006-023 - Request of Crystal Mall, agent and applicant; Simon Property Group, owner, for site plan approval to locate an auto show at 850 Hartford Turnpike on August 20, 2006, in accordance with Section 3.19 of the Zoning Regulations.

Holly Carpenter of the Crystal Mall and Brian Rheume of WWRX/WBMW were present to discuss this application with the Commission.

Mr. Rheume stated that the proposed is the third annual car show held at the Mall, sponsored by Cohanzie Fire Department. Concerns regarding traffic control have been addressed.

T. Wagner stated that he had met with the Mall manager regarding outstanding issues with the stormwater system, and modifications that the Mall hopes to make.

Ms. Carpenter stated that in addition to two police officers at the site, the Mall is providing two uniformed security officers for the event.

MOTION: Motion made by T. Ward, seconded by D. Offen, to approve Application #PZ2006-023.

VOTE: 5-0

#PZ2006-024 - Request of the Town of Waterford, Director of Emergency Management, applicant; Town of Waterford, owner, for special permit and site plan approval to locate a communications tower at 35 South Bartlett Road, IP-1 zone, in accordance with Sections

Planning and Zoning Commission
August 14, 2006
Page 8

13.2.1, 19, 22 and 23 of the Zoning Regulations and as shown on plans entitled "Preliminary Antenna Site Plan Prepared for Town of Waterford Emergency Communications Committee, Waterford, Connecticut" dated June 15, 2006, with modifications requested from sections 13.4.2 and 13.4.3 of the Zoning Regulations.

MOTION: Motion made by J. Auwood, seconded by H. Daniels, to approve Application #PZ2006-024.

VOTE: 5-0

ITEM #7 ADMINISTRATIVE REVIEW

Thames Landing - Request for Building and Foundation Permits.

Richard Schneck, representing Thames Landing, addressed the Commission. Mr. Schneck stated that a consolidated site plan and a construction schedule had been submitted to Staff.

E. Maguire stated that the Commission is looking to see that some of the public improvements are completed. Mr. Schneck stated that they are moving forward on the fishing pier, tennis courts and swimming pool. Proposals have been received for the pedestrian bridge. There have been delays in some of the construction.

R. Schneck stated that they want to be able to apply for building and foundation permits. The original agreement was that 70 units be completed and the public recreation area be completed concurrently. They hope to have the public recreation area done by December or January, however it will be quite a while before 70 units are completed.

T. Wagner noted that the construction sequence submitted shows that foundation excavation to occur on October 19 for buildings 7 through 12. Mr. Schneck stated that the schedule shows the worst case scenario, and they would like to have it done sooner.

T. Wagner stated that permits have been issued based on two phases. Phase one being everything on the south side, as defined by the drainage basin and conservation easement. There is one building that is part of phase one that has yet to be started. Staff would like to see more progress completed on the public improvements. He suggested that progress on the pool and the tennis court be presented to the Commission at their next meeting.

Mr. Schneck stated that the developer is looking to refinance the project, and the bank wants the developer to have permits in place prior to re-financing.

Chairman Maguire stated that the Commission can give Staff the authority to determine if progress is being made on the public improvements. T. Wagner stated that Staff will provide to the bank verification that the project is still valid.

The Commission stated that the amenities that were supposed to be part of the development should be in place for the current owners of the units. Mr. Schneck stated that the tennis court and swimming pool have been scheduled.

M. Wujtewicz stated that the swimming pool and tennis courts are not part of the public improvements, they are for the use of the condominium owners. The beach, shoreline, etc.,

RICHARD BLUMENTHAL
ATTORNEY GENERAL



55 Elm Street
P.O. Box 180
Hartford, CT 06141-0180

Office of The Attorney General
State of Connecticut

RECEIVED
SEP - 5 2007

CONNECTICUT
SITING COUNCIL

September 5, 2007

Daniel F. Caruso, Chairman
State of Connecticut Siting Council
Ten Franklin Square
New Britain, Connecticut 06051

Dear Chairman Caruso:

Your agency has asked for an opinion on whether the Connecticut Siting Council ("Council") has jurisdiction over the siting of municipal towers pursuant to Conn. Gen. Stat. § 16-50i (a)(6). By the term "municipal tower", the Council means a tower used, at least in part, for wireless telephone (commonly called "cell phone") service when that tower is owned by a municipality on municipal property. Specifically, the Council seeks an opinion as to whether the Council has jurisdiction over proposed towers that are to be owned by a municipality, built on municipal property, and will have one or more antennas to provide commercial cell phone service. According to the information you have provided, for many years the Council has interpreted its statutory authority to prohibit jurisdiction over such municipal towers. For the reasons stated below, I conclude that the Council should seek legislative clarification on this issue.¹

The Public Utility Environmental Standards Act ("PUESA"), codified at Conn. Gen. Stat. § 16-50g, *et seq.*, grants exclusive jurisdiction over the siting of certain facilities to the Council. Such facilities are defined in Conn. Gen. Stat. § 16-50i (a). Conn. Gen. Stat. § 16-50i (a)(6) defines the term "facility" to include "such telecommunications towers, including associated telecommunications equipment, owned or operated by the state, a public service company or a certified telecommunications provider or used in a cellular system, as defined in the Code of Federal regulations Title 47, Part 22, as amended, which

¹ It should be noted that this opinion request does not include towers built by a municipality for municipal communications that have sufficient space for cell phone antennas, but are initially built without such antennas. You have informed this office that the Council maintains that it has no jurisdiction over such towers. For example, if a municipality wishes to build a tower for police and fire department communications on town land and there is no cell antenna on the tower, the Council continues to hold that it has no jurisdiction over the siting and building of such a tower, even if such a tower could, at a later date, accommodate a cell antenna.

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may have a substantial adverse environmental effect, as said council shall, by regulation, prescribe." The Council's relevant regulations include Reg. Conn. State Agencies § 16-50j-2a (g), which states, in part, that "facility" includes "telecommunications towers owned or operated by the state, a public service company as defined in section 16-1 of the General Statutes, or used for public cellular radio communications service as defined in section 16-50i of the General Statutes, which may have a substantial adverse environmental effect."

In recent years, the courts have interpreted Conn. Gen. Stat. § 16-50i (a)(6). In *Sprint Spectrum I.P. v. Connecticut Siting Council*, 274 F.3d 674 (2d Cir. 2001), the United States Court of Appeals for the Second Circuit held that the Council's jurisdiction covered both cellular systems regulated by 47 C.F.R. Part 22 and Personal Communications Services (PCS) regulated by 47 C.F.R. Part 24. In *Town of Westport v. Connecticut Siting Council*, 47 Conn. Supp. 382, 797 A.2d 6555 (2001), *affirmed*, 260 Conn. 266, 796 A.2d 510 (2002), it was held that the Council had exclusive jurisdiction over mixed use towers (towers used in part, but not exclusively, for cellular service). Neither case concerned municipal ownership of towers.

Conn. Gen. Stat. § 1-2z states: "The meaning of a statute shall, in the first instance, be ascertained from the text of the statute itself and its relationship to other statutes. If, after examining such text and considering such relationship, the meaning of such text is plain and unambiguous and does not yield absurd or unworkable results, extratextual evidence of the meaning of the statute shall not be considered." The literal text of Conn. Gen. Stat. § 16-50i (a)(6) gives the Council jurisdiction over all "telecommunications towers. . . used in a cellular system" and does not exempt municipal towers from the Council's jurisdiction. Without a specific exemption for municipalities in the statute, a municipal tower "used in a cellular system. . . which may have a substantial adverse environmental effect" appears to fall within the Council's regulatory authority. Conn. Gen. Stat. § 16-50i(a)(6).

However, while a reasonable interpretation of Conn. Gen. Stat. § 16-50i(a)(6) places municipal towers within the Council's jurisdiction, other factors make the Council's jurisdiction less clear. First, although the text of the statute does not specifically exempt municipal towers, neither does the statute include municipal towers within the Council's jurisdiction. Conn. Gen. Stat. § 16-50i(a)(6) specifically gives the Council jurisdiction over towers "owned or operated by the state," but does not give the Council similar specific authority over towers owned by municipalities. Had the legislature intended to give the Council jurisdiction over all facilities owned by governmental entities "that were

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used for public cellular radio communications services," the legislature may not have specifically included state owned facilities within the Council's jurisdiction. The legislature's failure to include towers owned or operated by municipalities within its definition of regulated facilities, while including those owned or operated by the state, may be construed as a legislative decision not to give the Council jurisdiction over municipal towers. See *Gay & Lesbian Law Students Ass'n v. Board of Trustees*, 236 Conn. 453, 476 (1996) (citing rule of statutory construction, *expressio unius est exclusio alterius*, or "the expression of one thing is the exclusion of another"); *Hyatt v. Burlington Coat Factory*, 263 Conn. 279, 295 (2003).

Second, Conn. Gen. Stat. § 16-50i (e) requires prior consultation with the chief elected official of a municipality by an applicant before filing an application with the Council, and permits the municipality to conduct public hearings. If the legislature had intended that municipal towers fall within the Council's jurisdiction, the process set forth in Section 16-50i (e) would require the town to consult with itself prior to filing an application with the council: "[w]e presume that the legislature intends sensible results from the statutes it enacts Therefore, we read each statute in a manner that will not thwart its intended purpose or lead to absurd results." *Collins v. Colonial Penn. Ins. Co.*, 257 Conn. 718, 728-29 (2001) (citations omitted; internal quotation marks omitted.) Finally, the Council itself has never interpreted this statute to give it jurisdiction over municipal towers and continues to recognize that it has no jurisdiction over towers constructed by a town on town property that do not contain cell phone antennas, even if the town installs such antennas after the tower is constructed. Courts accord "considerable deference to the construction given a statute by the administrative agency charged with its enforcement, particularly when the agency has consistently followed its construction over a long period of time." *Sutton v. Lopes*, 201 Conn. 115, 120 (1986).

The legislative history does not clarify whether municipal towers are facilities under Conn. Gen. Stat. § 16-50i (a)(6) as it contains no reference to municipal towers. As the Superior Court in *Town of Westport v. Connecticut Siting Council*, *supra*, noted:

Public Acts 1984, No. 84-249 added subsection 6 to the definitions of § 16-50i(a). The act as initially passed in the Senate gave the council exclusive jurisdiction to regulate telecommunications towers used for public cellular radio communication services. 27 S.Proc., Pt. 3, 1984 Sess., p. 842,

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remarks of Senator John B. Larson. In the House proceedings, Representative David Lavine first generally pointed out that the purpose of the legislation was to end ad hoc town-by-town regulation in favor of regulation by the council. He also introduced an amendment that changed the Senate language to the current 'used in a cellular system' terminology with a reference to the federal definition of a cellular system. 27 H.R.Proc., Pt. 9, 1984 Sess., pp. 3206-11, especially pp. 3209-10. The Senate later joined in the bill as amended in the House. Public Act 84-249 as enacted thus contains broader language than as initially proposed.

Town of Westport v. Connecticut Siting Council, supra, 47 Conn. Supp. at 398-399.²

While the legislative history supports granting the Council exclusive jurisdiction over the siting of cellular towers, in contrast to town-by-town regulation, it does not clarify the Council's jurisdiction over towers owned by municipalities themselves. Both the language of Conn. Gen. Stat. § 16-50i (a)(6), and its legislative history are ambiguous as to the Council's jurisdiction over municipal towers and legislative clarification of this matter is, therefore, appropriate.

Please advise me if any further clarification is required.

Very truly yours,


RICHARD BLUMENTHAL
ATTORNEY GENERAL

² Note that the Connecticut Supreme Court essentially adopted the Superior Court's decision. *Town of Westport v. Connecticut Siting Council*, 260 Conn. 266, 796 A.2d 510 (2002).

EXHIBIT 6

NL021/SBA WATERFORD FT

35 SOUTH BARLETT ROAD
WATERFORD, CT 06385
NEW LONDON COUNTY

SITE NO.: CTNL021D

SITE TYPE: 180'± SELF-SUPPORTING TOWER

RF DESIGN GUIDELINE: 67D5A992DB OUTDOOR

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

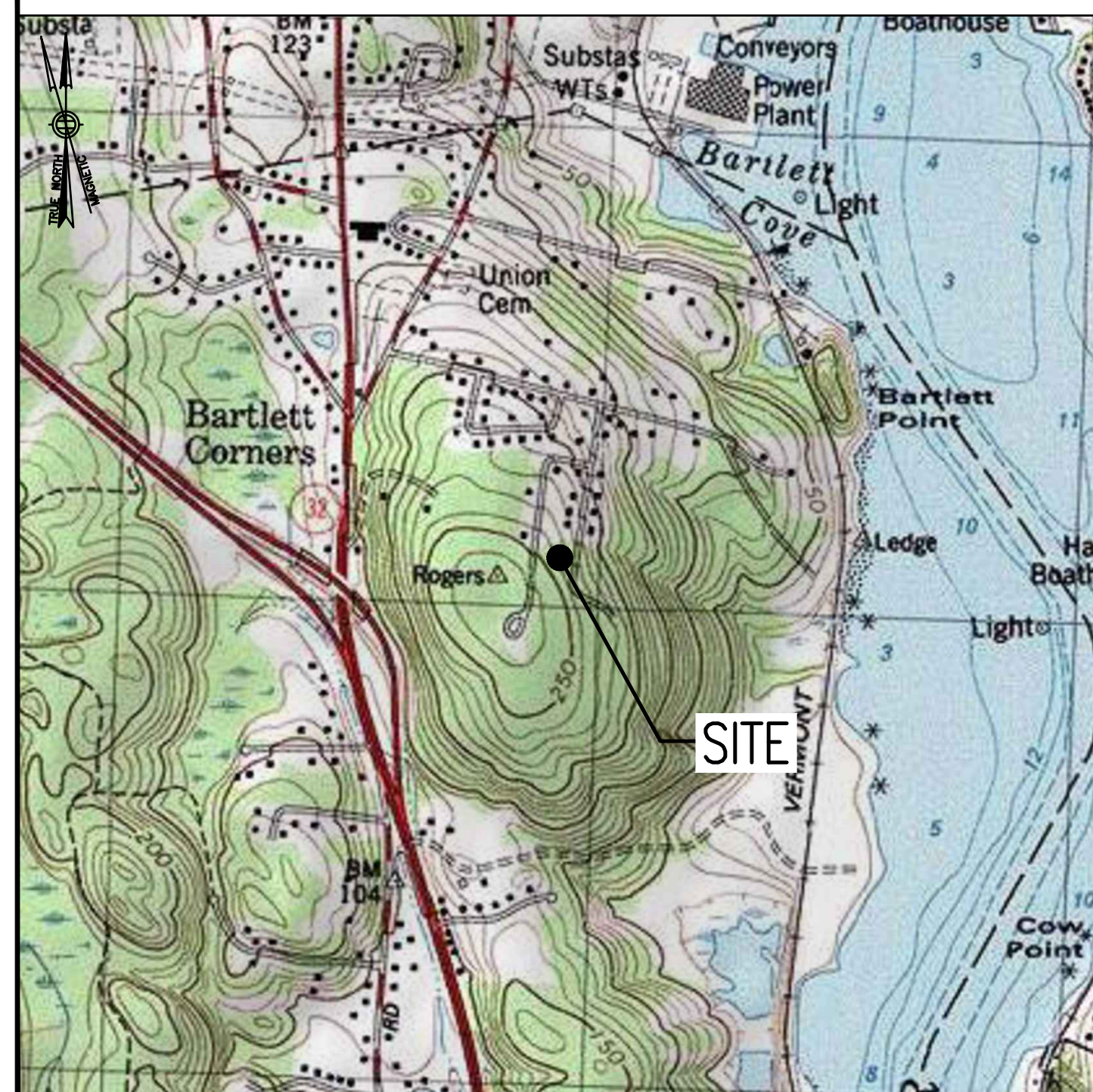
GENERAL NOTES

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

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



VICINITY MAP



DO NOT SCALE DRAWINGS

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

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLANS	2
A-2	TOWER ELEVATION & ANTENNA PLANS	2
A-3	SITE DETAILS	2
E-1	ELECTRIC & GROUNDING DETAILS	2
-	MOUNT MODIFICATION AND DESIGN DRAWINGS (BY OTHERS)	0

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

SITE NOTES

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

PROJECT SUMMARY

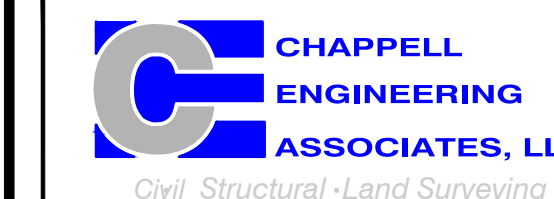
SITE NUMBER:	CTNL021D
SBA SITE NUMBER:	CT09680-S
SBA SITE NAME:	ROGERS HILL
SITE ADDRESS:	35 SOUTH BARLETT ROAD WATERFORD, CT 06385
PROPERTY OWNER:	TOWN OF WATERFORD 15 ROPE FERRY ROAD WATERFORD, CT 06385
TOWER OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW LONDON COUNTY
ZONING DISTRICT:	IP-1 (GENERAL INDUSTRIAL PARK DISTRICT)
STRUCTURE TYPE:	SELF-SUPPORTING TOWER
STRUCTURE HEIGHT:	180'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.417778° N.41'25"04.00" LONGITUDE W.72.105833° W.72°06'21.00"

T-MOBILE NORTHEAST LLC

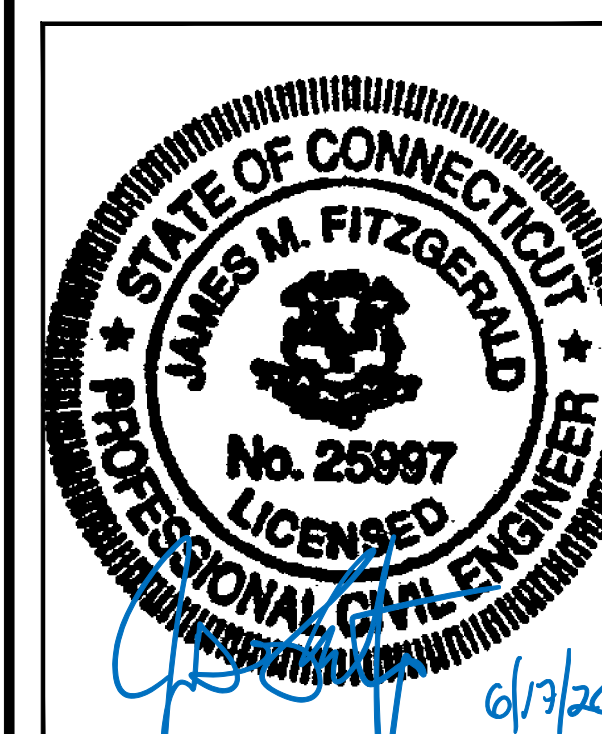
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700



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



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



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
2	06/15/20	ISSUED FOR CONSTRUCTION	JRV
1	06/04/20	ISSUED FOR CONSTRUCTION	JRV
0	05/24/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL021D

SITE ADDRESS:
35 SOUTH BARTLETT ROAD
WATERFORD, CT 06385

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (400PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF1½ IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL¾ IN.
BEAMS AND COLUMNS½ IN.
- A CHAMFER ¼" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.
- CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIER'S PLANT.
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

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

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

ELECTRICAL INSTALLATION NOTES:

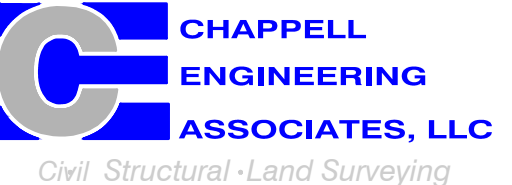
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TERCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR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

**T-MOBILE
NORTHEAST LLC**

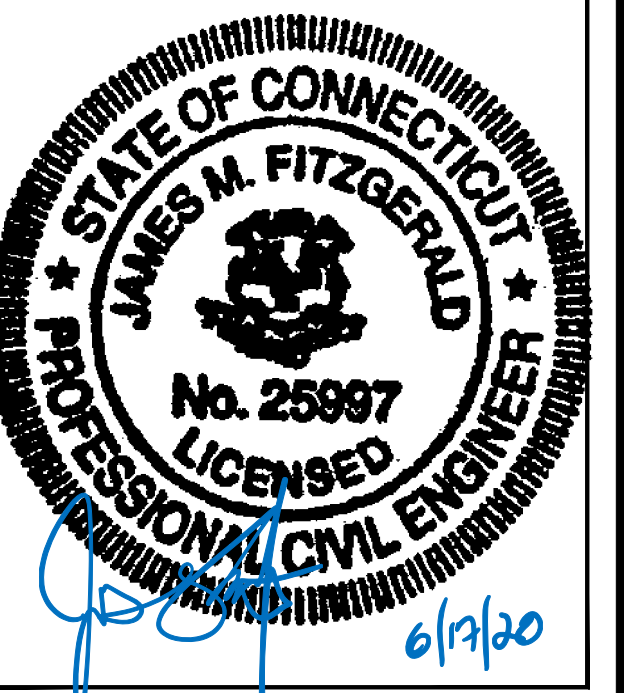
15 COMMERCE WAY, SUITE B
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APPROVED BY: JMT

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2	06/15/20	ISSUED FOR CONSTRUCTION	JRV
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0	05/24/19	ISSUED FOR REVIEW	JRV

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CTNL021D

SITE ADDRESS:
35 SOUTH BARTLETT ROAD
WATERFORD, CT 06385

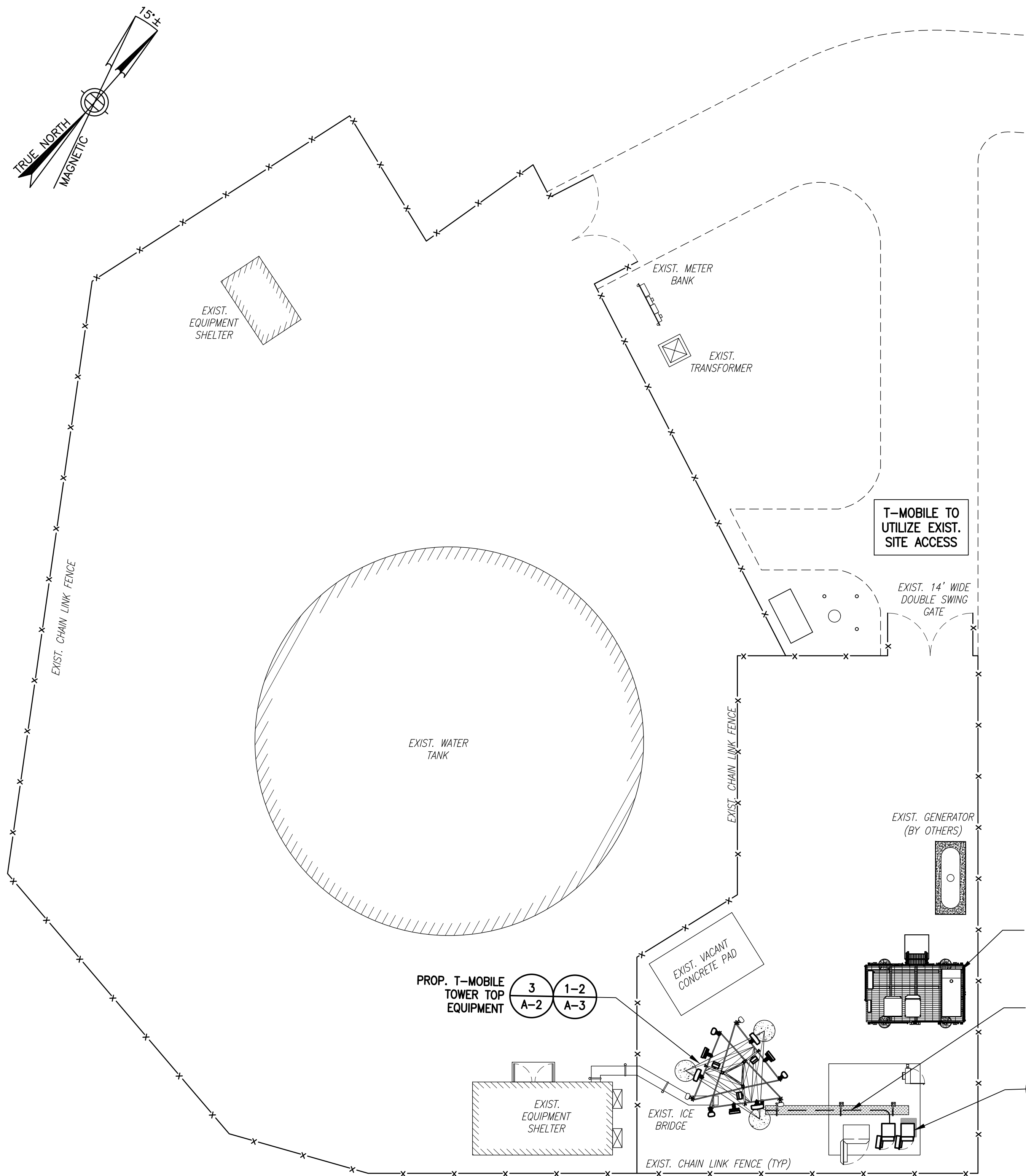
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GENERAL NOTES

SHEET NUMBER

GN-1

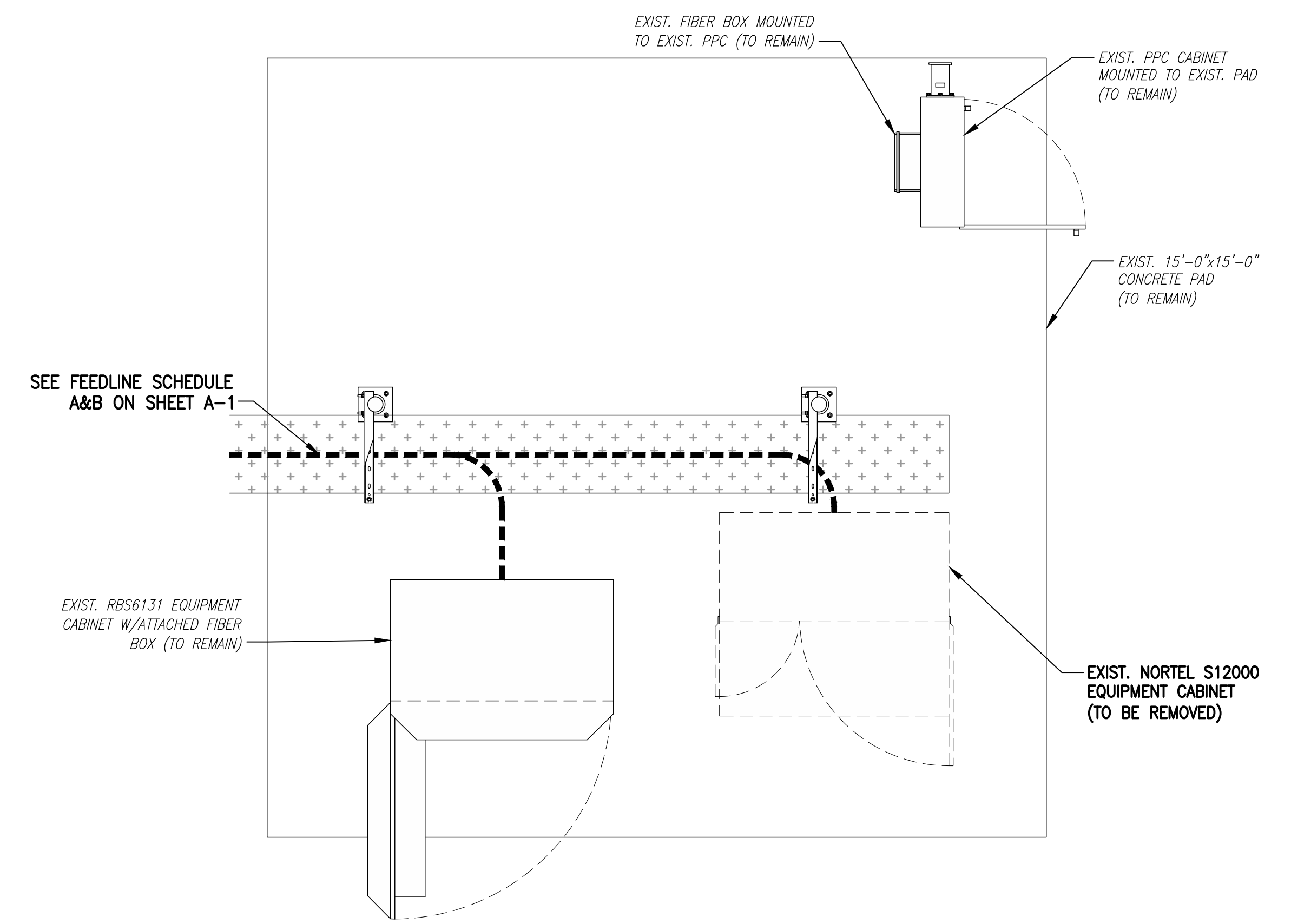
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
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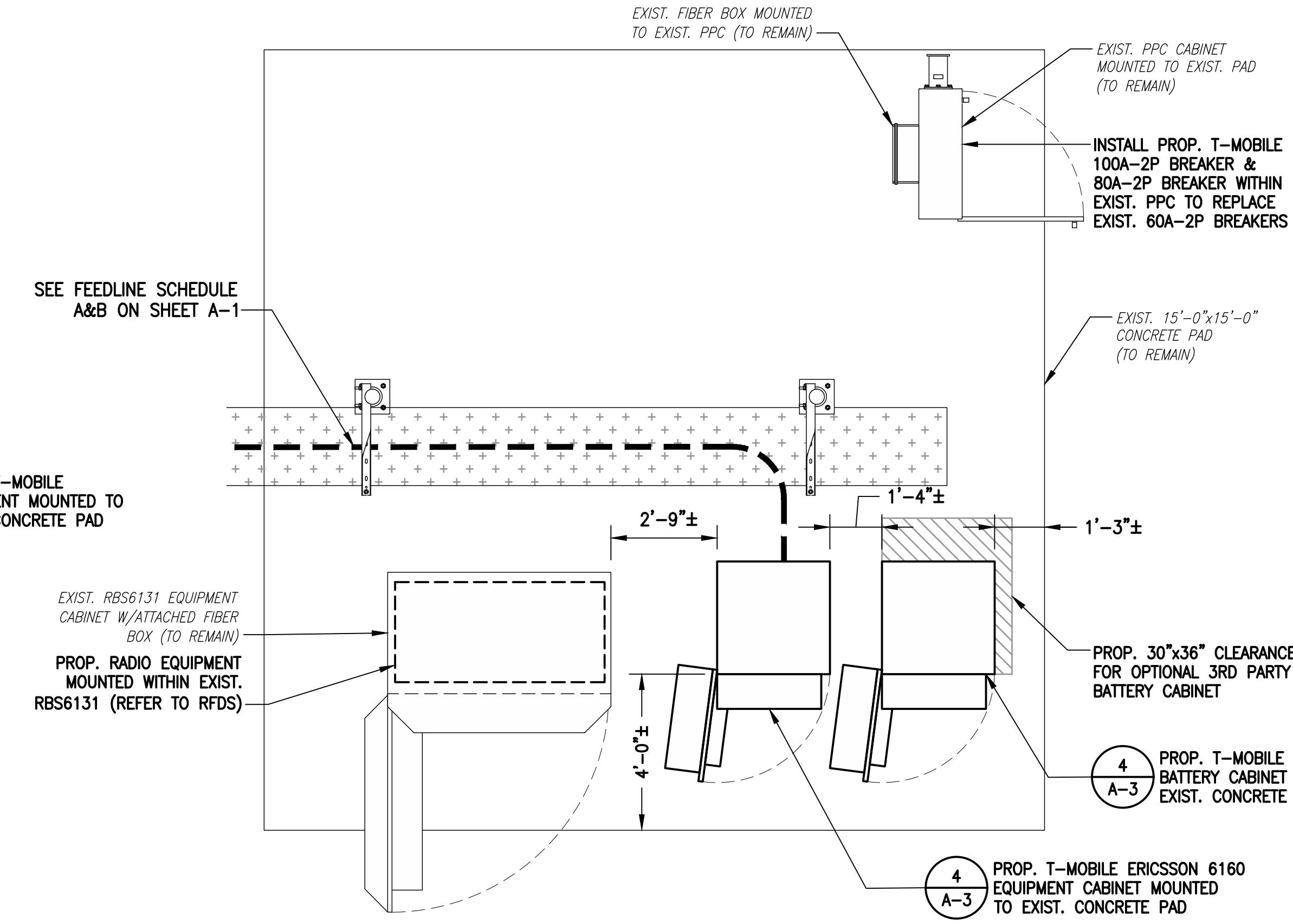
COMPOUND PLAN
 SCALE: 1" = 12'-0"
 1
 A-1

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	EXISTING TO REMAIN: NONE EXISTING TO BE REMOVED: (12) 1/2" COAX CABLES (1) 1-1/4" HCS FIBER CABLE	ROUTED PER STRUCTURAL ANALYSIS
B	PROPOSED: (9) 1-5/8" HCS FIBER CABLE	

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



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



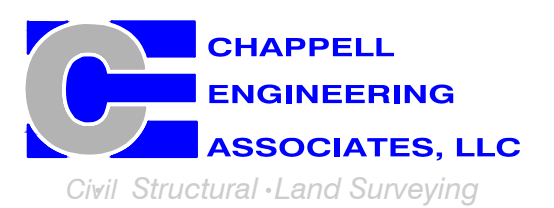
PROPOSED EQUIPMENT PLAN
 SCALE: 1/2" = 1'-0"
 3
 A-1

**T-MOBILE
 NORTHEAST LLC**

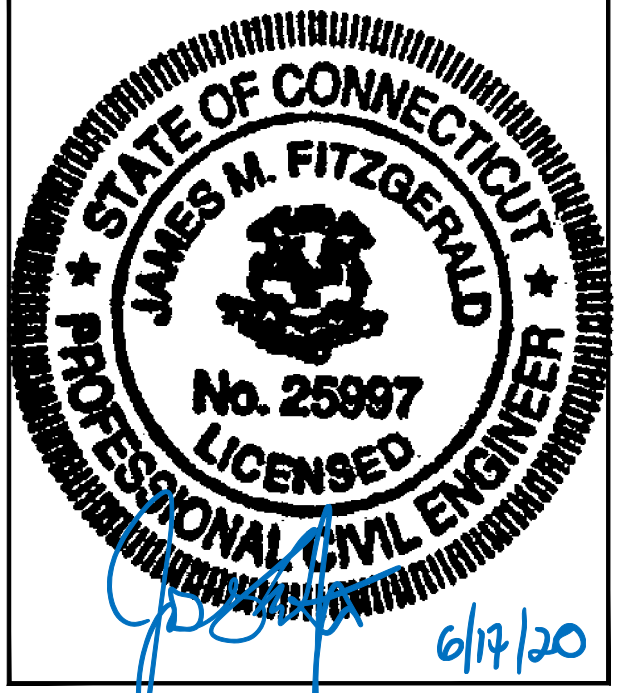
15 COMMERCE WAY, SUITE B
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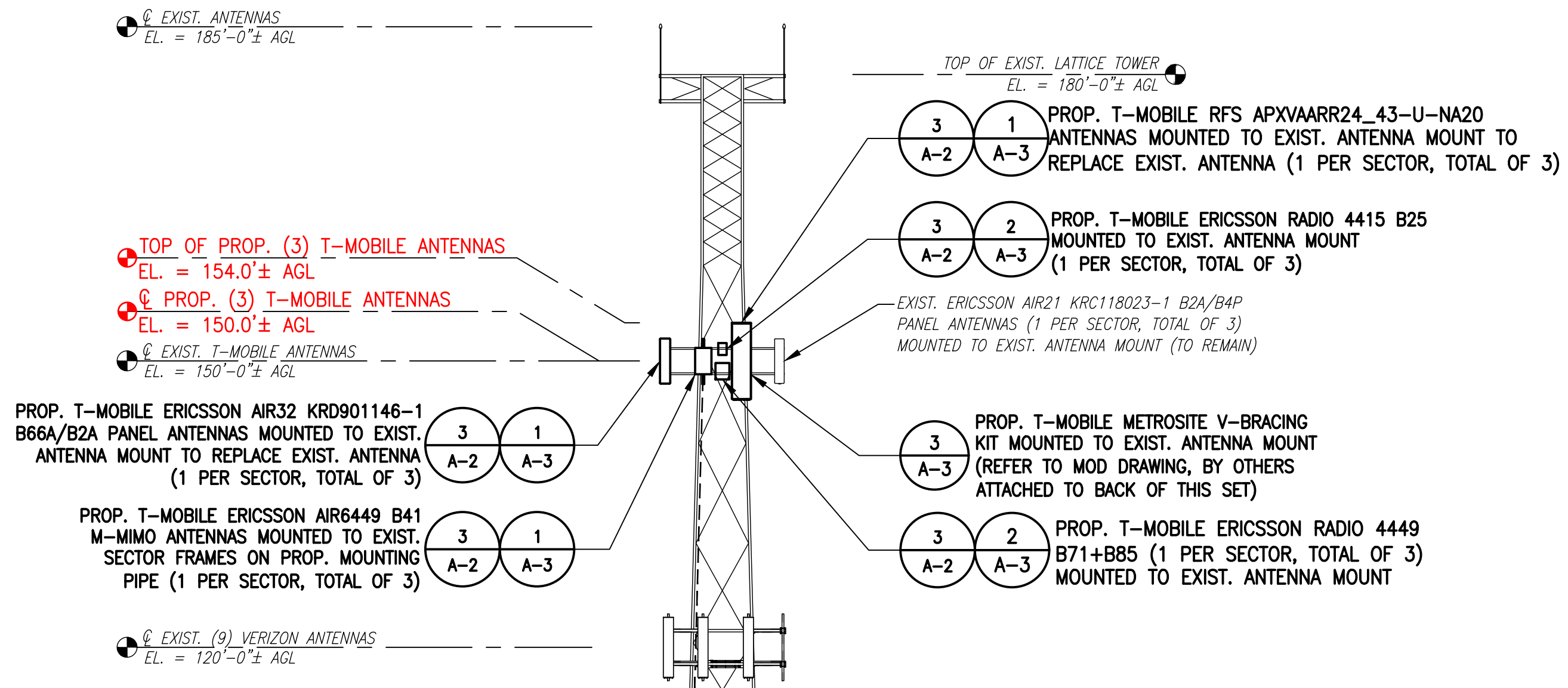
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**COMPOUND &
 EQUIPMENT PLANS**

SHEET NUMBER
A-1

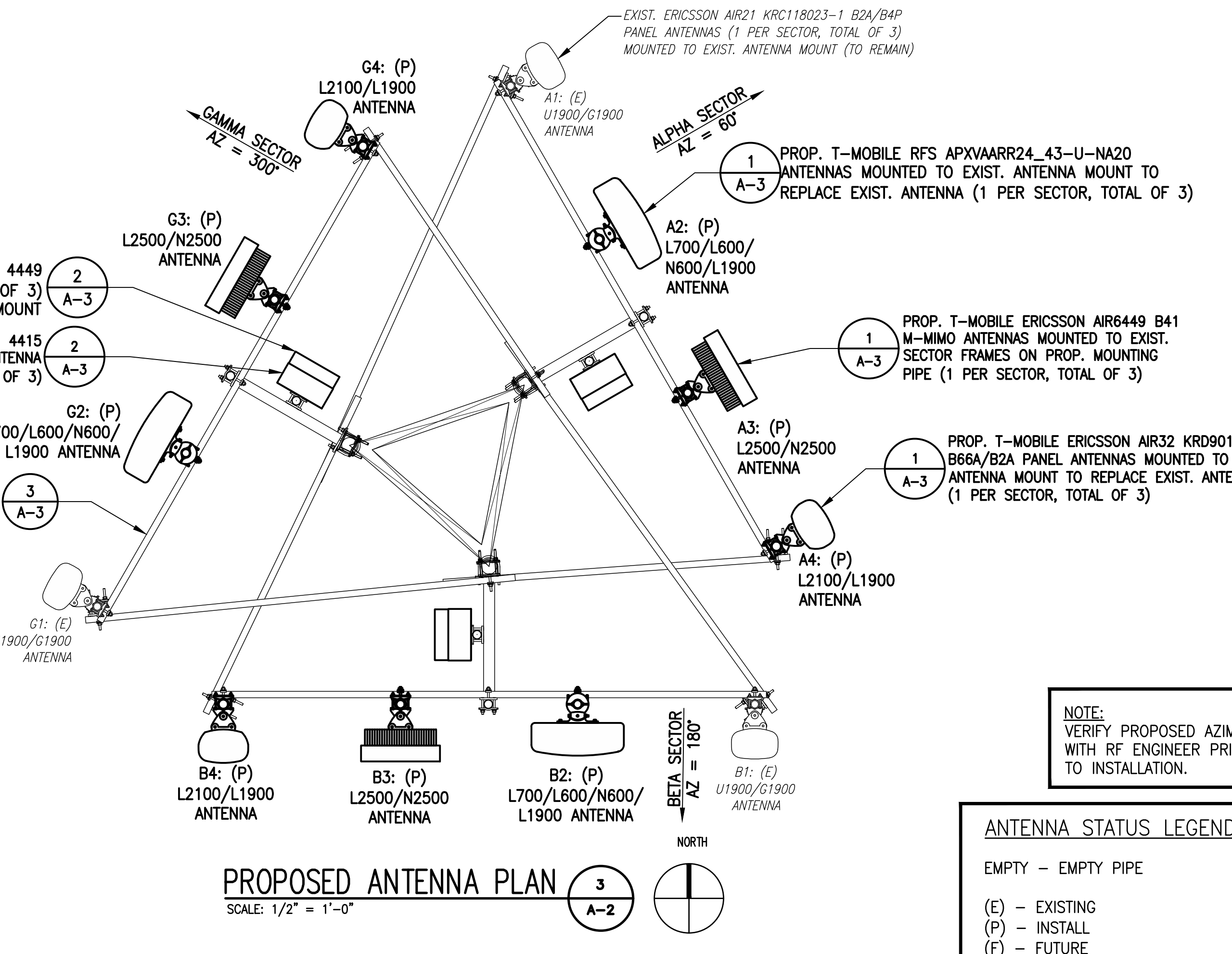
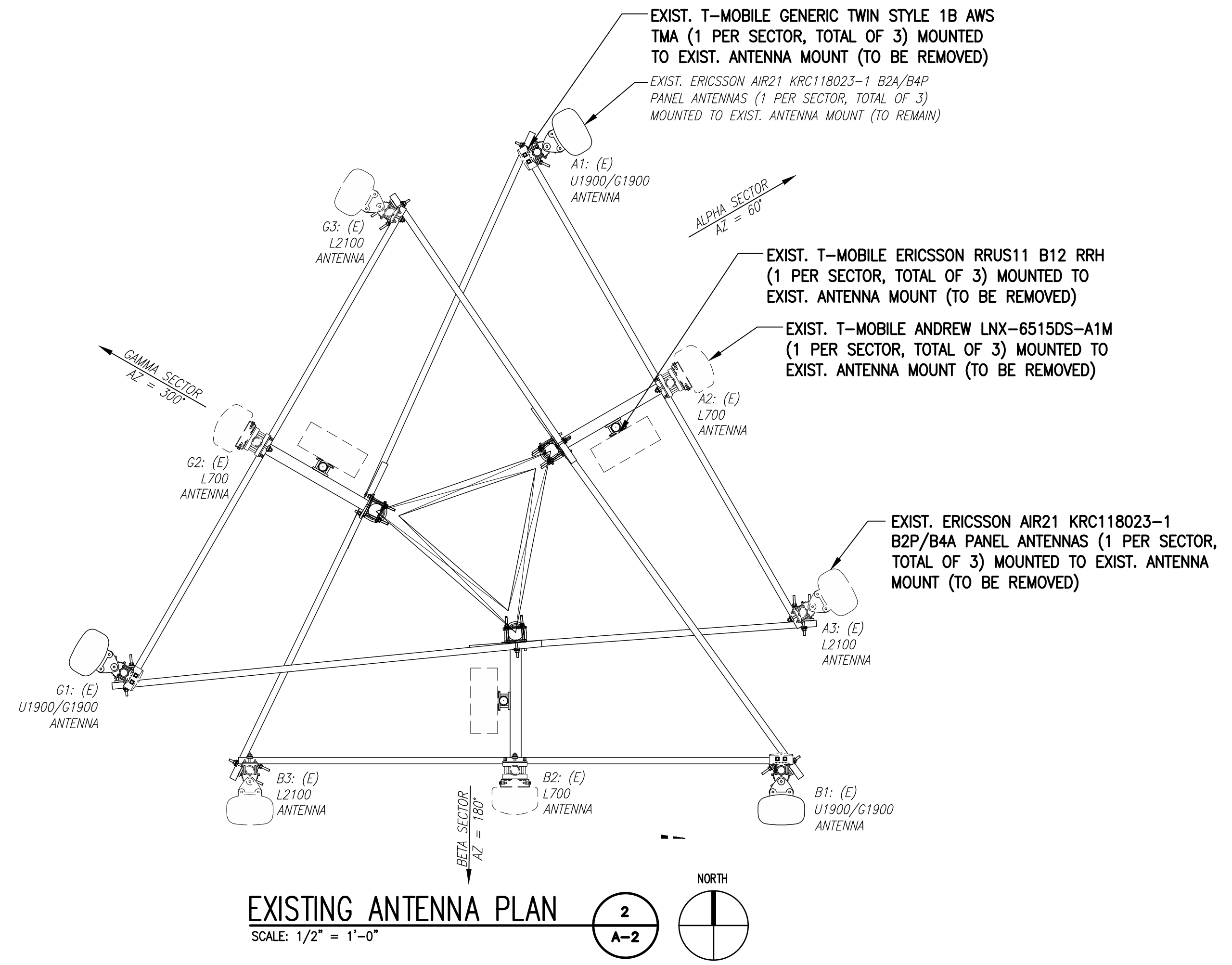
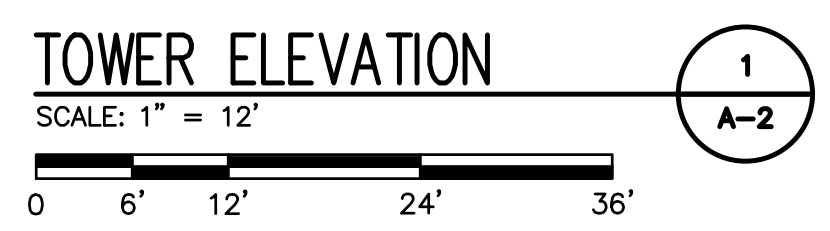
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SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
 GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED RING-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.

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



NOTE:
 GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.



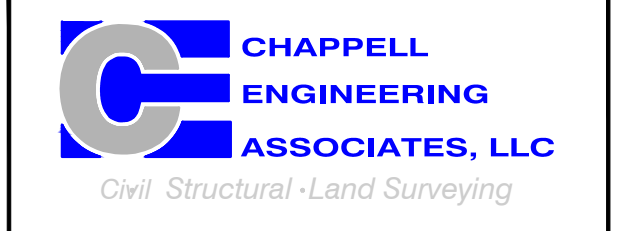
NOTE:
 VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

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

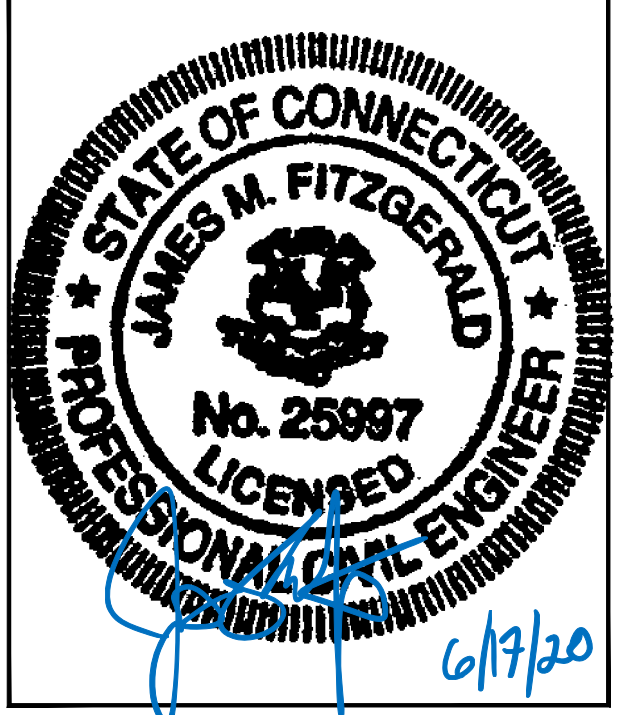
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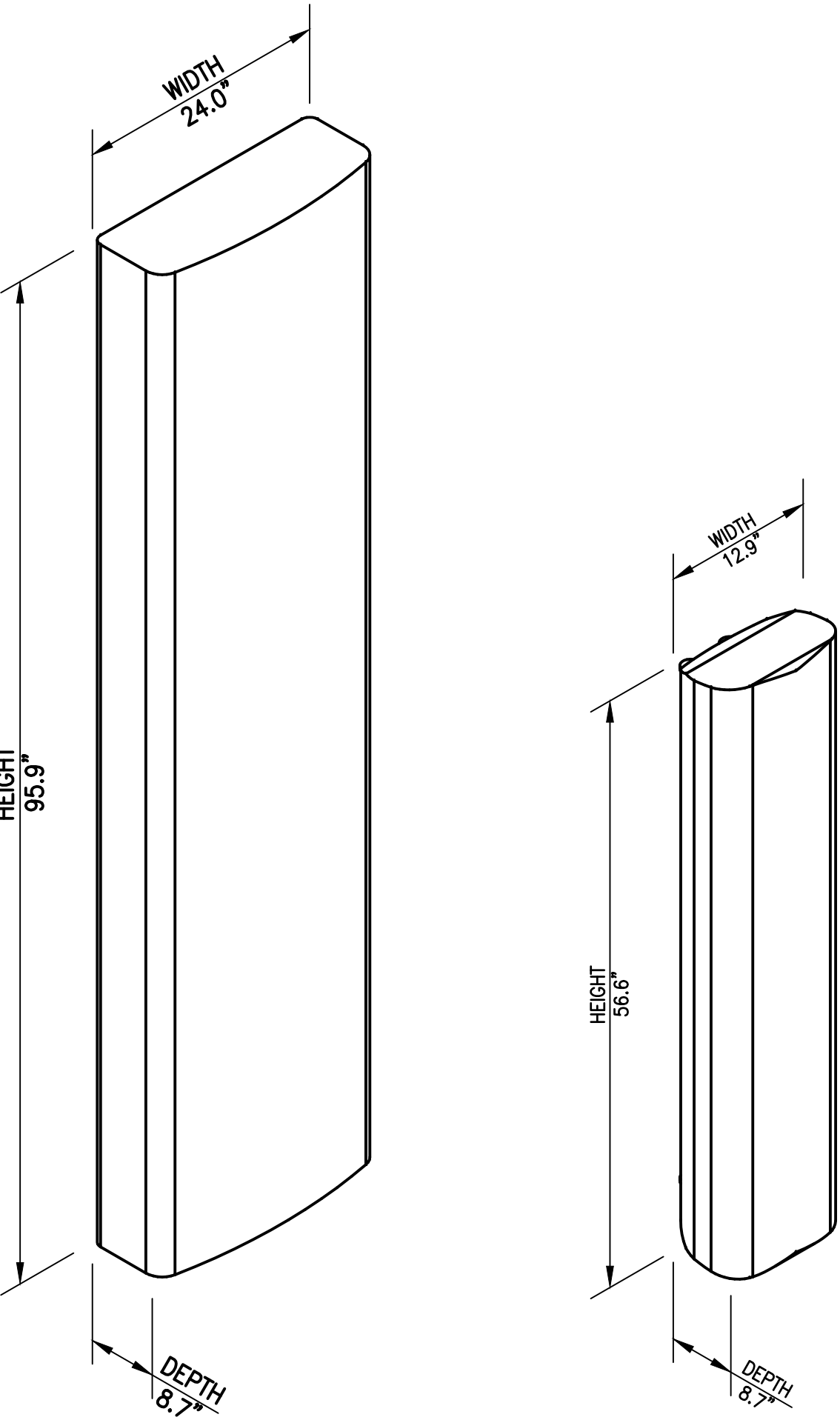
SHEET TITLE:
TOWER ELEVATION & ANTENNA PLANS

SHEET NUMBER:
A-2

FINAL ANTENNA CONFIGURATION								
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	ERICSSON AIR21 KRC118023-1 B2A/B4P	150'± AGL	60°	0°	2°	U1900/G1900	-	(9) 6x12 (1-1/8") HCS CABLE
	RFS APXVAARR24_43-U-NA20	150'± AGL	60°	0°	2°	L600/L700/N600 L1900	RADIO 4449 B71+B85 RADIO 4415 B25	
	ERICSSON AIR6449 B41 M-MIMO	150'± AGL	60°	0°	2°	L2500/N2500	-	
	ERICSSON AIR32 KRD901146-1 B66A/B2A	150'± AGL	60°	0°	2°	L2100/L1900	-	
BETA	ERICSSON AIR21 KRC118023-1 B2A/B4P	150'± AGL	180°	0°	2°	U1900/G1900	-	
	RFS APXVAARR24_43-U-NA20	150'± AGL	180°	0°	2°	L600/L700/N600 L1900	RADIO 4449 B71+B85 RADIO 4415 B25	
	ERICSSON AIR6449 B41 M-MIMO	150'± AGL	180°	0°	2°	L2500/N2500	-	
	ERICSSON AIR32 KRD901146-1 B66A/B2A	150'± AGL	180°	0°	2°	L2100/L1900	-	
GAMMA	ERICSSON AIR21 KRC118023-1 B2A/B4P	150'± AGL	300°	0°	2°	U1900/G1900	-	
	RFS APXVAARR24_43-U-NA20	150'± AGL	300°	0°	2°	L600/L700/N600 L1900	RADIO 4449 B71+B85 RADIO 4415 B25	
	ERICSSON AIR6449 B41 M-MIMO	150'± AGL	300°	0°	2°	L2500/N2500	-	
	ERICSSON AIR32 KRD901146-1 B66A/B2A	150'± AGL	300°	0°	2°	L2100/L1900	-	

CABLE NOTE: (12) EXISTING 1 1/8" COAX CABLES & (1) 1-1/8" HCS FIBER CABLE TO BE REMOVED. (SEE FEEDLINE SCHEDULE A & B ON SHEET A-1)

NOTE: RFDS REV4 - 06/04/20

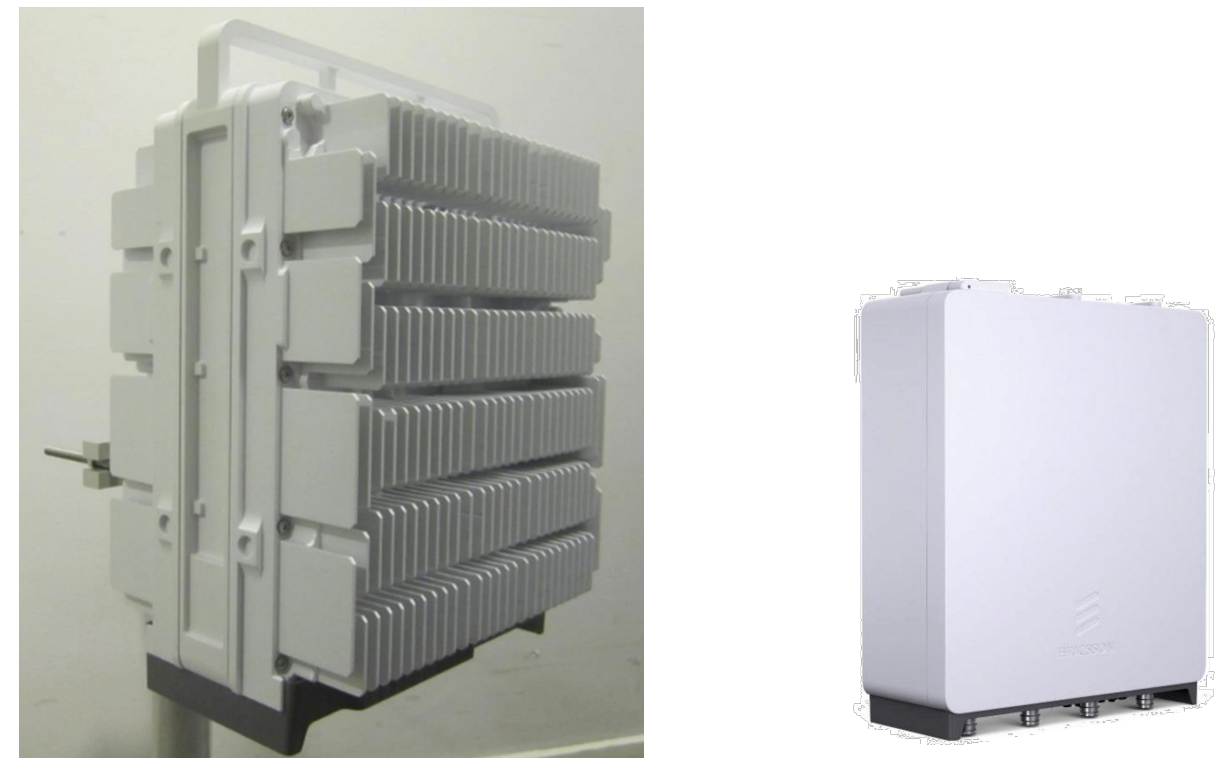
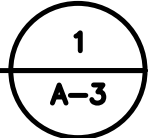


RFS APXVAARR24_43-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3

ERICSSON AIR32 KRD901146-1 B66A/B2A ANTENNA
DIMENSIONS: 56.6"H x 12.9"W x 8.7"D
WEIGHT: 132.2 LBS
1 PER SECTOR, TOTAL OF 3

ERICSSON M-MIMO AIR6449 B41 PANEL ANTENNA
DIMENSIONS: 33.1"H x 20.5"W x 8.3"D
WEIGHT: 103.0 LBS
1 PER SECTOR, TOTAL OF 3

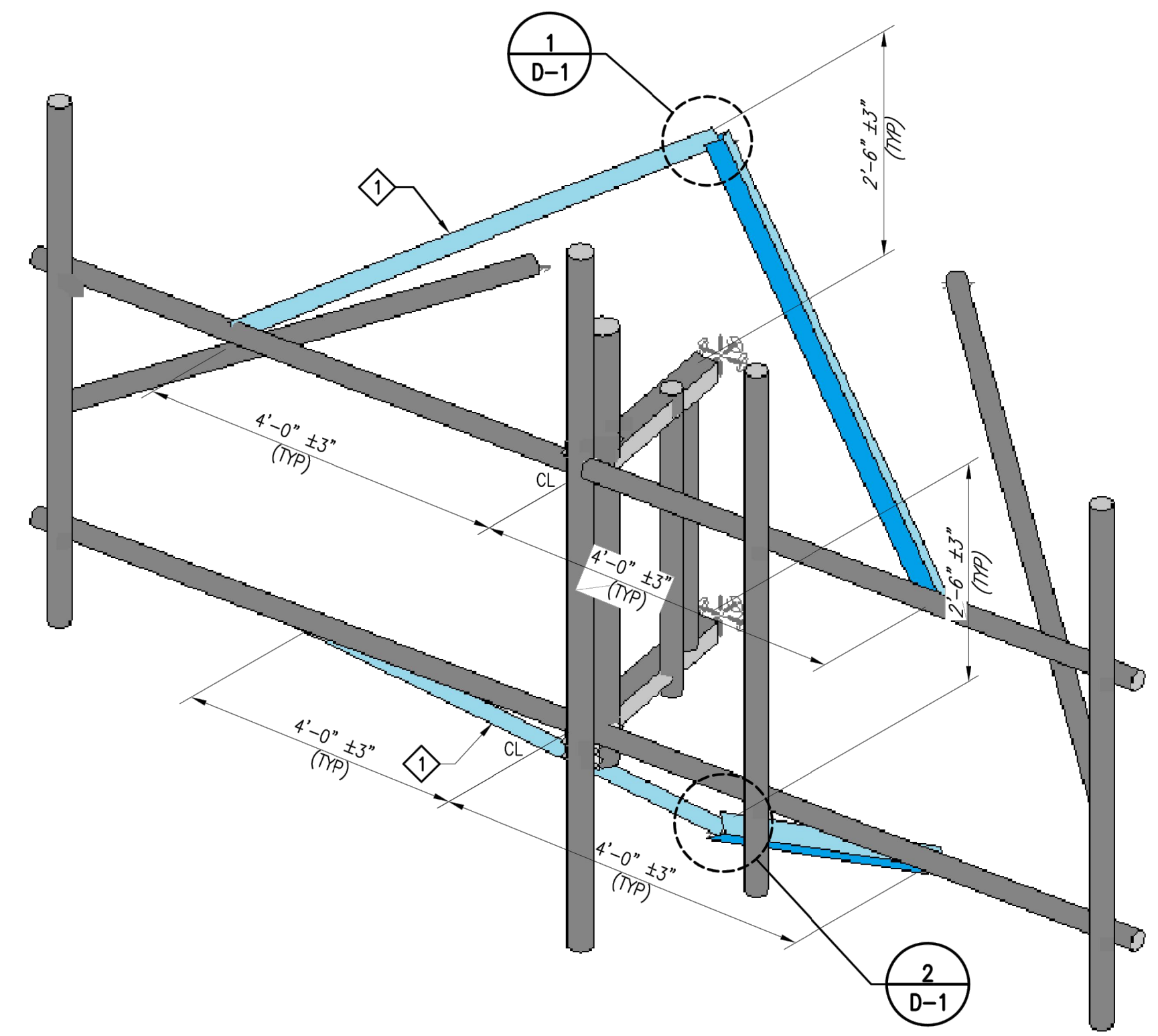
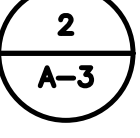
ANTENNA DETAILS
SCALE: N.T.S.



ERICSSON RADIO 4449 B12+B85
DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 LBS
1 PER SECTOR, TOTAL OF 3

ERICSSON RRUS 4415 B25
DIMENSIONS: 16.5"H x 13.4"W x 5.9"D
WEIGHT: 46 LBS
1 PER SECTOR, TOTAL OF 3

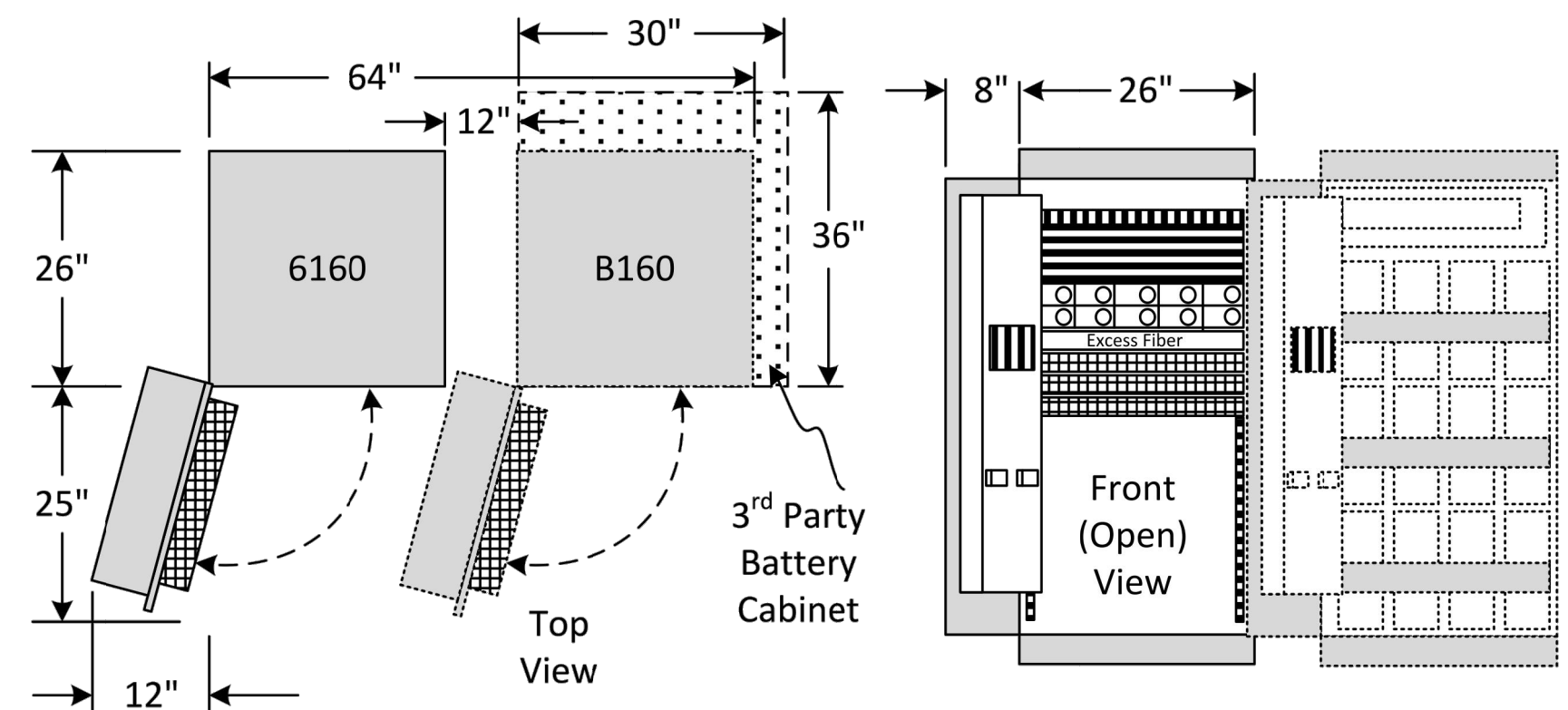
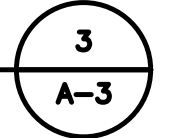
RRUS DETAILS
SCALE: N.T.S.



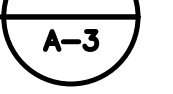
ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 150' ELEV.
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)

NOTE: FOR FURTHER DETAILS REFER TO MOD DRAWINGS, BY OTHER (ATTACHED TO BACK BACK OF THIS SET)

MOUNT MODIFICATION DETAIL
SCALE: N.T.S.



EQUIPMENT CABINET DETAIL
SCALE: N.T.S.

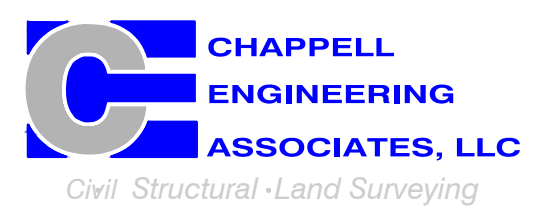


**T-MOBILE
NORTHEAST LLC**

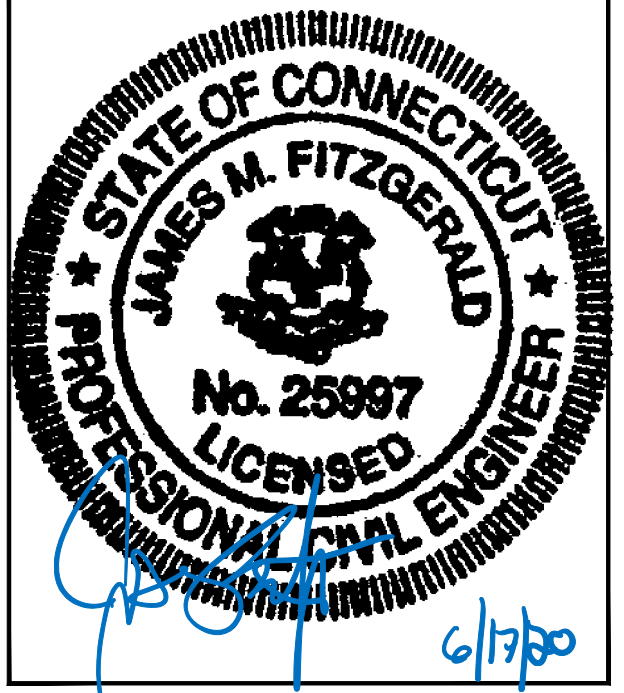
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NORTON, MA 02766
(508) 286-2700



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



R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
2	06/15/20	ISSUED FOR CONSTRUCTION	JRV
1	06/04/20	ISSUED FOR CONSTRUCTION	JRV
0	05/24/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL021D

SITE ADDRESS:
35 SOUTH BARTLETT ROAD
WATERFORD, CT 06385

SHEET TITLE
SITE DETAILS

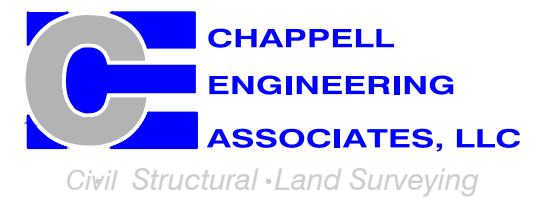
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A-3

T-MOBILE
NORTHEAST LLC

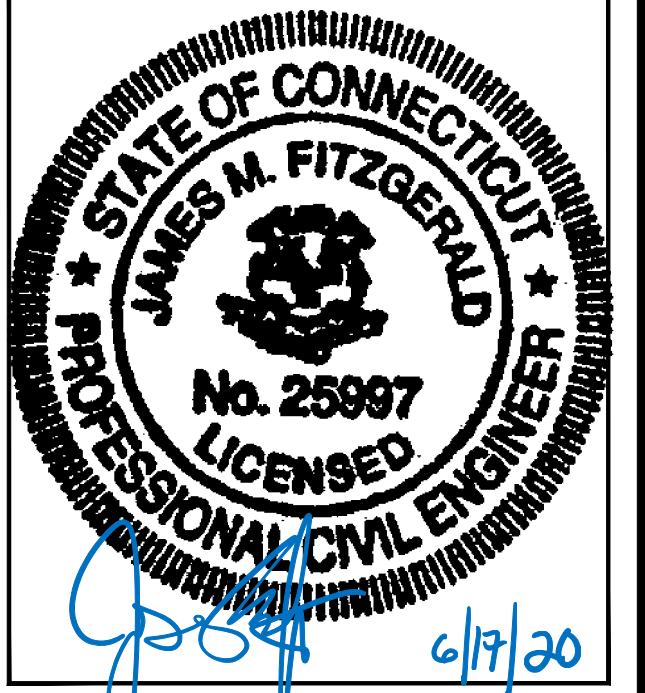
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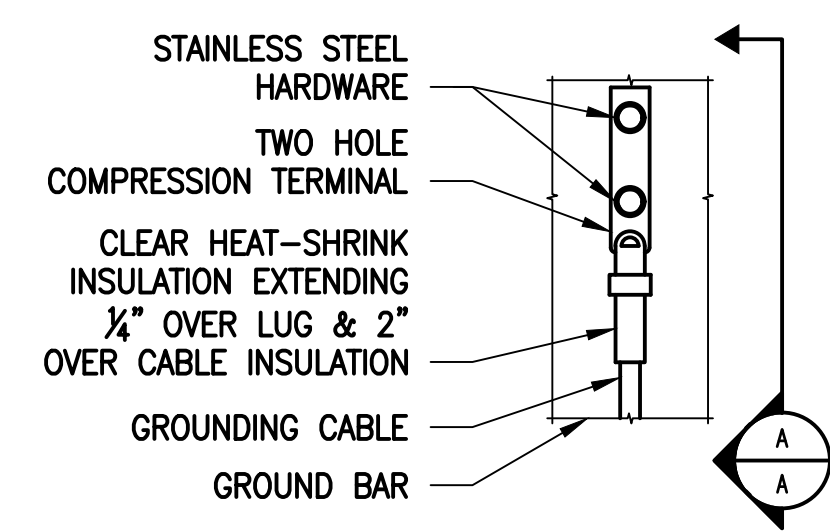
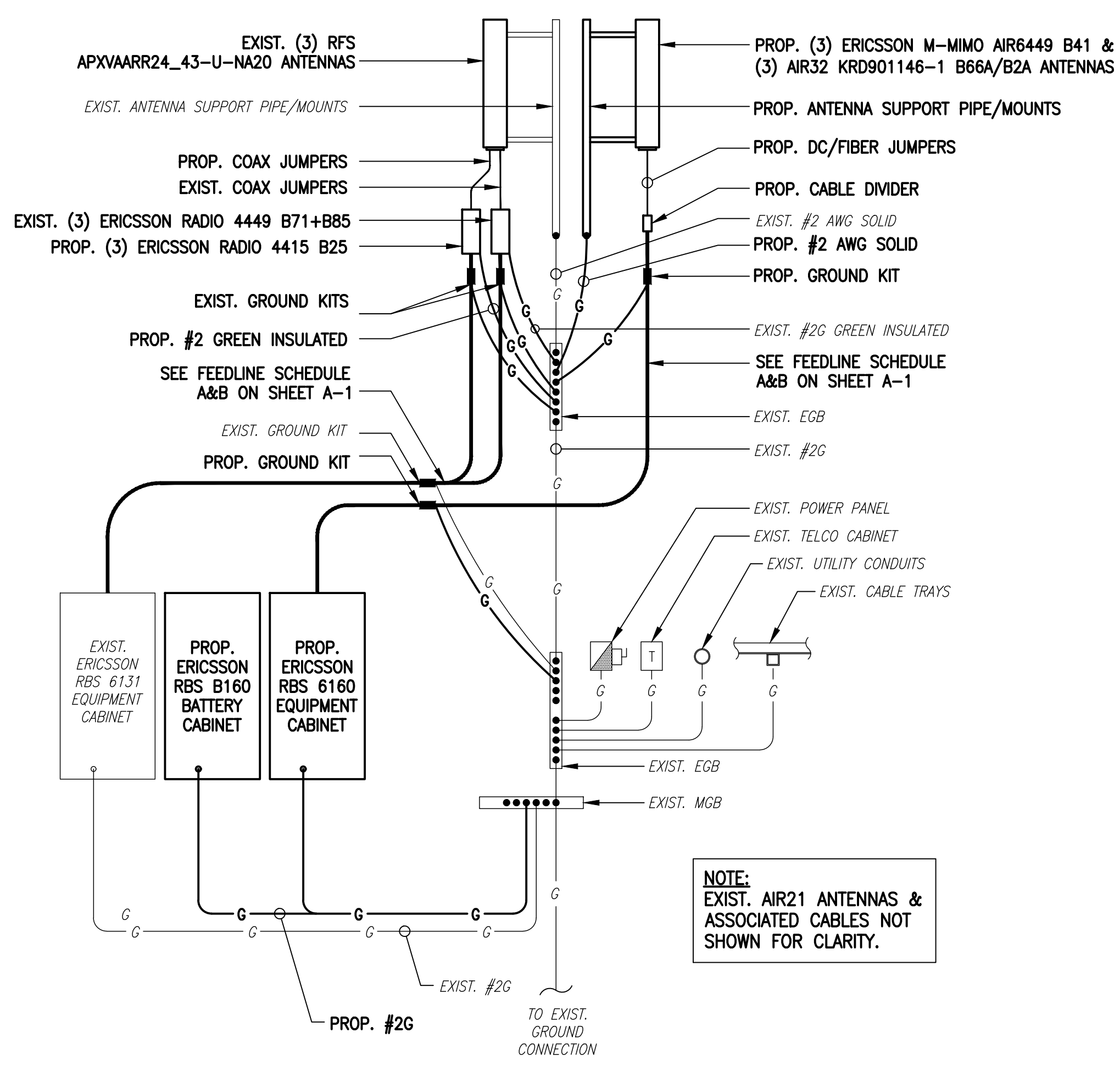
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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0	05/24/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
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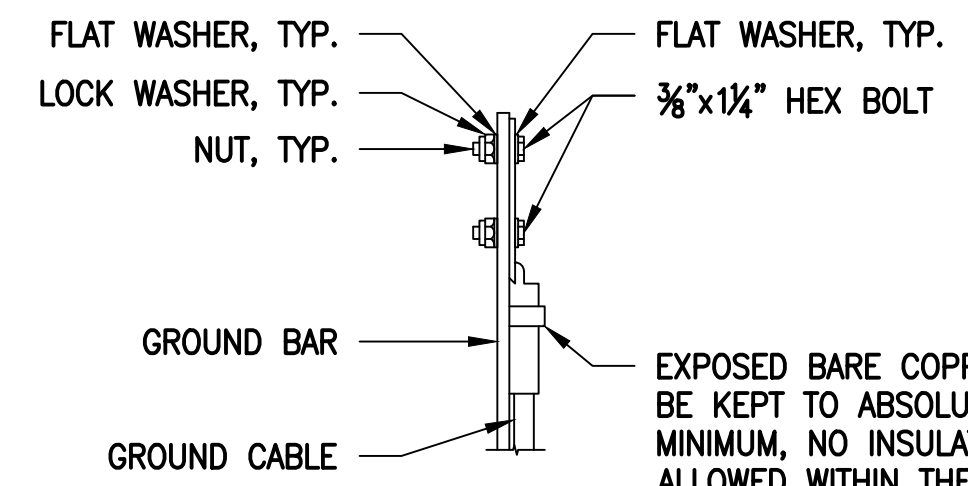
SITE ADDRESS:
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SHEET TITLE
**ELECTRIC & GROUNDING
DETAILS**

SHEET NUMBER
E-1



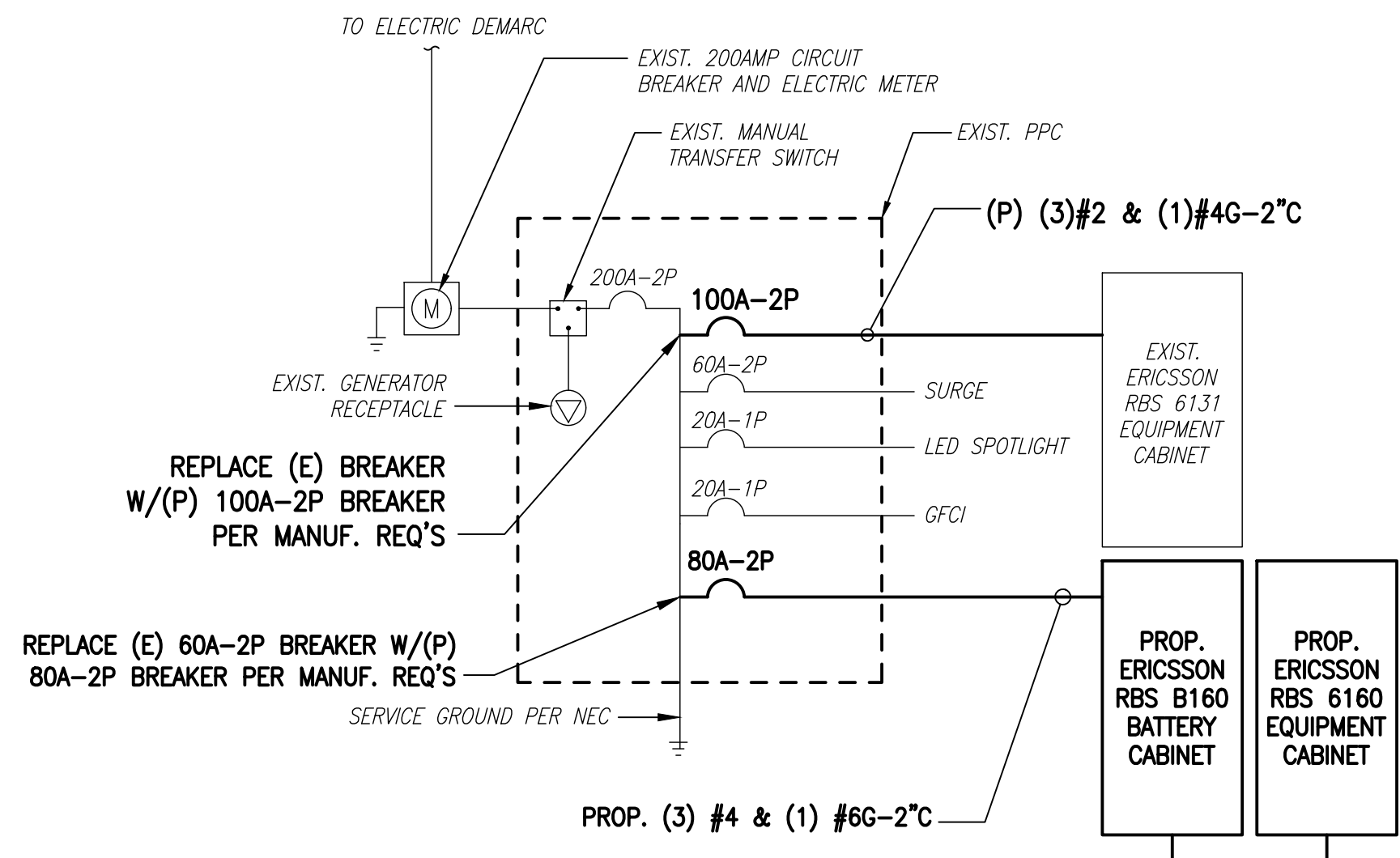
ELEVATION



SECTION A-A

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

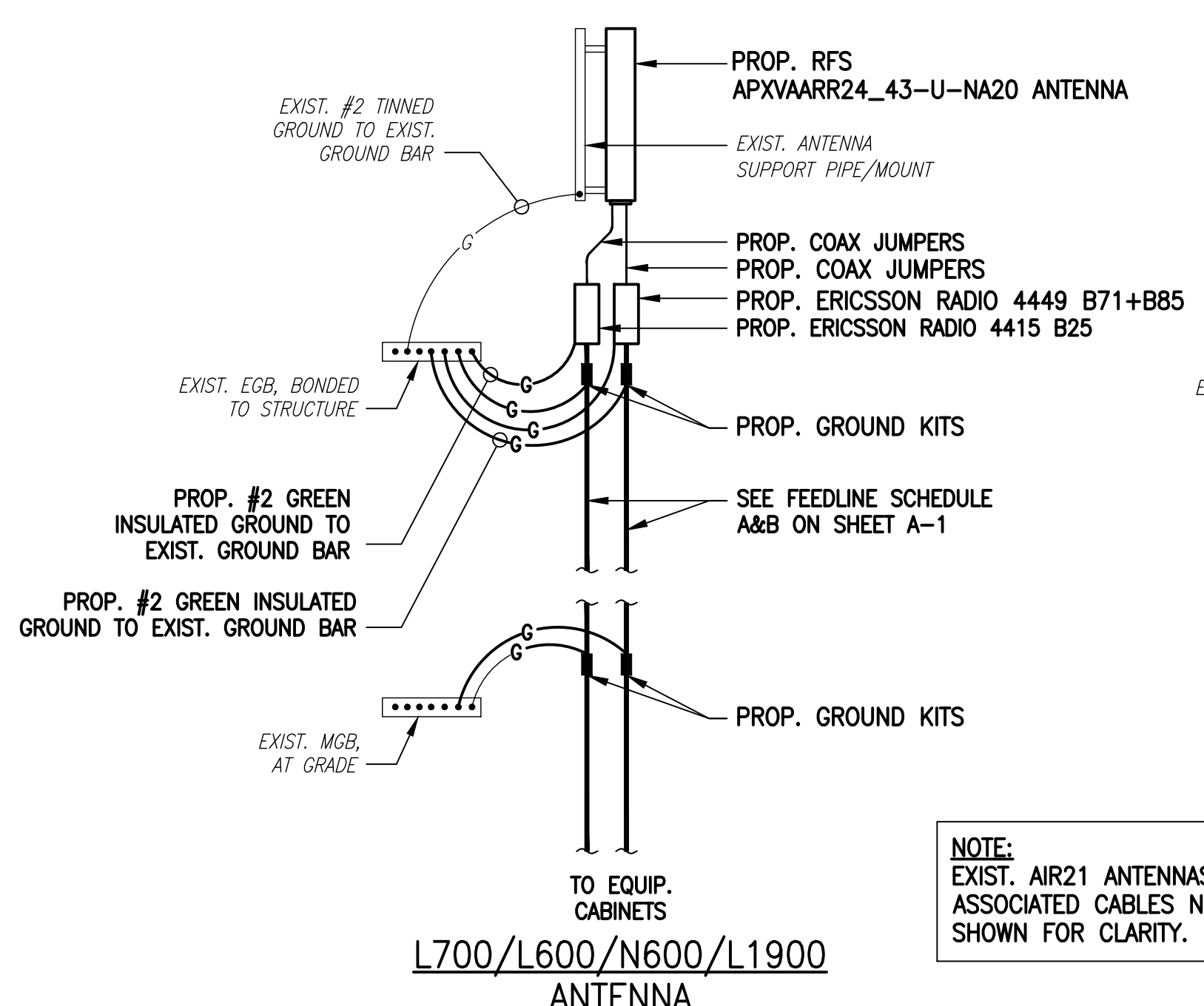
TYPICAL GROUND BAR CONNECTIONS DETAIL



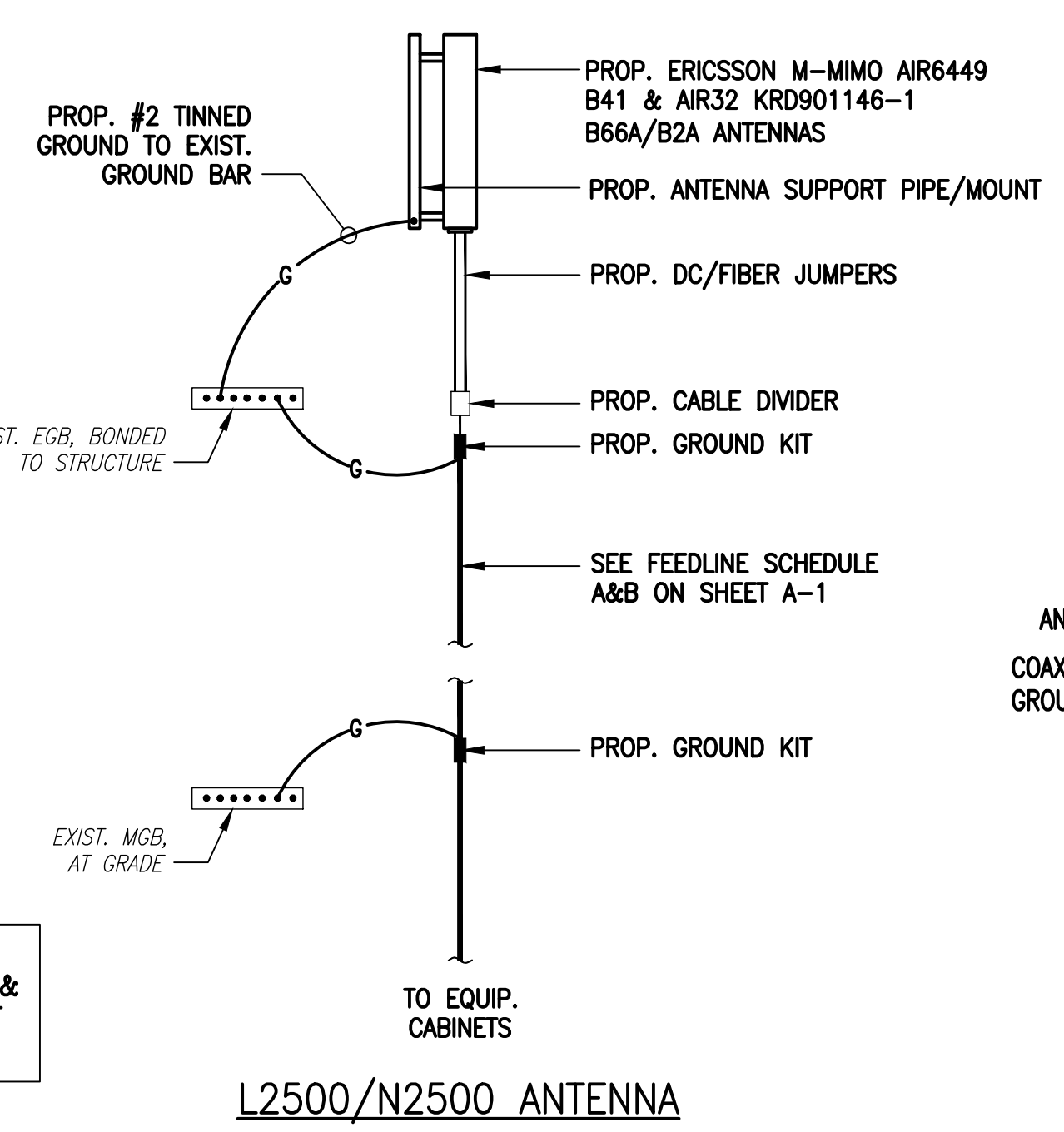
ONE LINE DIAGRAM

GROUNDING RISER DIAGRAM

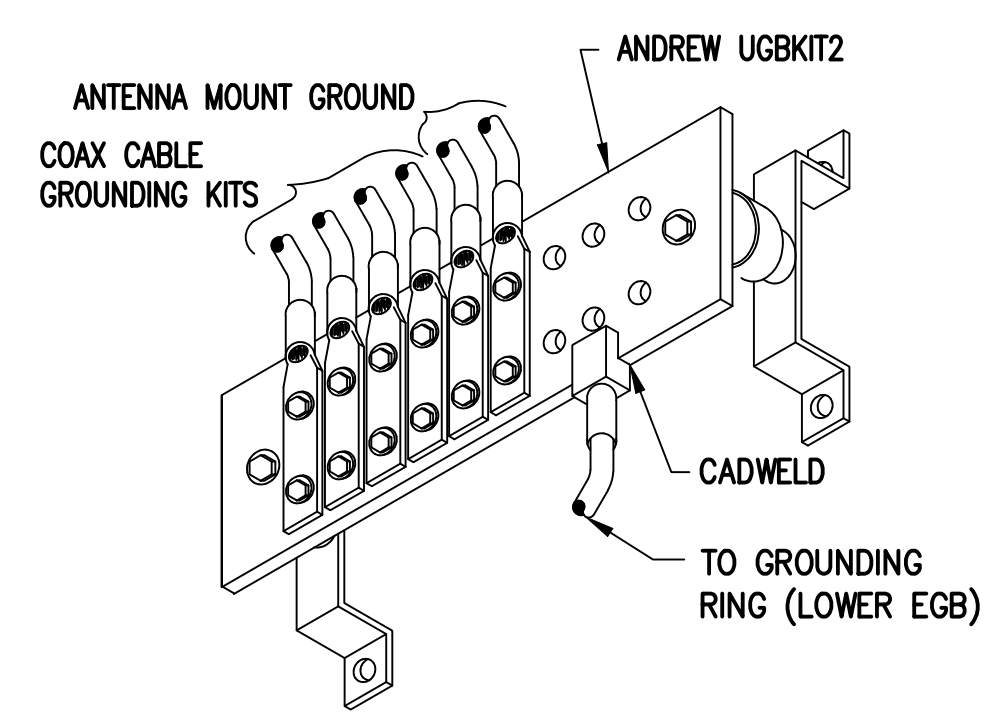
TYPICAL GROUND BAR CONNECTIONS DETAIL



COAX CABLE CONNECTION AND GROUNDING DETAIL



GROUND BAR (EGB)



ELECTRICAL AND GROUNDING NOTES

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

NOTE:
EXIST. AIR21 ANTENNAS & ASSOCIATED CABLES NOT SHOWN FOR CLARITY.

NOTE:
EXIST. AIR21 ANTENNAS & ASSOCIATED CABLES NOT SHOWN FOR CLARITY.

EXHIBIT 7

MODIFICATION AND DESIGN DRAWINGS FOR EXISTING ANTENNA MOUNTS EXISTING SELF SUPPORTING TOWER

PROPOSED CARRIER: T-MOBILE

TOWER OWNER: SBA / TOWER OWNER SITE #: CT09680-S

CARRIER SITE #/NAME: CTNL021D / ROGERS HILL

COORDINATES (LATITUDE: 41.417652°, LONGITUDE: -72.106728°)

PLEASE NOTE THIS SET OF DRAWINGS ARE FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0
D-2	STANDARD DETAILS	0
MS-C1B-2875P	METROSITE V-BRACING KIT	

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE TES PROJECT NO. 94588, DATED 06/19/2020.

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PH: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
95007

CUSTOMER SITE NO:
CT09680-S-SBA
CUSTOMER SITE NAME:
ROGERS HILL
35 SOUTH BARTLETT ROAD
QUAKER HILL, CT 06375



DRAWN BY: FL CHECKED BY: SD/SK

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	FL	07/09/20
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SHEET TITLE:

TITLE SHEET

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SHEET NUMBER: **T-1** REV #: **0**

BILL OF MATERIALS

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	SHEET LIST	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES
MATERIAL & HARDWARE							
2	2	MS-C1B-2875P	METROSITE V-BRACING KIT	A-1, MS-C1B-2875P	329.0	658.0	Galvanized
FOLLOWING ITEMS ARE "CUSTOM" PARTS							
3	3	PST2875-8	2 1/2" PST (2.875" O.D. X 0.203 THK) X 8'-0" A53 GR-B 35KSI	A-1	47.50	142.5	GALVANIZED
6	6	PL2375-2875	PL 3/8" X 7 1/8" X 10" A36	D-2	7.70	46.2	GALVANIZED
12	13	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	D-2	1.37	17.8	(2) HHN & LKW-EA GALVANIZED
12	13	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	D-2	1.17	15.2	(2) HHN & LKW-EA GALVANIZED
<p align="center">ALL METROSITE PARTS ARE AVAILABLE FROM METROSITE, LLC.</p> <p align="center">180 IND PARK BLVD COMMERCE, GA 30529</p> <p align="center">OFFICE: (706) 335-7045</p> <p align="center">FAX: (706) 335-7056</p>							
NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.							
					TOTAL WEIGHT (LBS) =	879.7	



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 BOCA RATON, FL 33487
 (800)-487-SITE

TES JOB NO:
95007

CUSTOMER SITE NO:
CT09680-S-SBA
 CUSTOMER SITE NAME:
ROGERS HILL
 35 SOUTH BARTLETT ROAD
 QUAKER HILL, CT 06375

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1	FIRST ISSUE	FL	07/09/20

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BILL OF MATERIALS

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SHEET NUMBER: **BOM** REV #: **0**

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.
7. IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES (WITH SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
8. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESORDERS@TESTOWER.US

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RSCC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 FOR STEEL CONSTRUCTION AND TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING^{a,b}

BOLT LENGTH ^f	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 ^d	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS ^d
NOT MORE THAN 4d _b	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN 4d _b BUT NOT MORE THAN 8d _b	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN 8d _b BUT NOT MORE THAN 12d _b	2/3 TURN	5/6 TURN	1 TURN

^a NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

^b APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

^c WHEN THE BOLT LENGTH EXCEEDS 12d_b, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

^d BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.



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TES JOB NO:
95007

CUSTOMER SITE NO:
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CUSTOMER SITE NAME:
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SHEET NUMBER: **GN-1** | REV #: **0**

SCOPE OF WORK

- 1 A. INSTALL NEW 2 1/2" PST ANTENNA MOUNT PIPE (8'-0" LONG), (1) PER SECTOR AS SHOWN
- B. REMOVE EXISTING ANTENNA MOUNT PIPE WITH ALL THREADED ROD, THEN RELOCATE EXISTING ANTENNA TO NEW ANTENNA MOUNT PIPE, (1) PER SECTOR. EXISTING RAD ANTENNA CENTER TO BE MAINTAINED

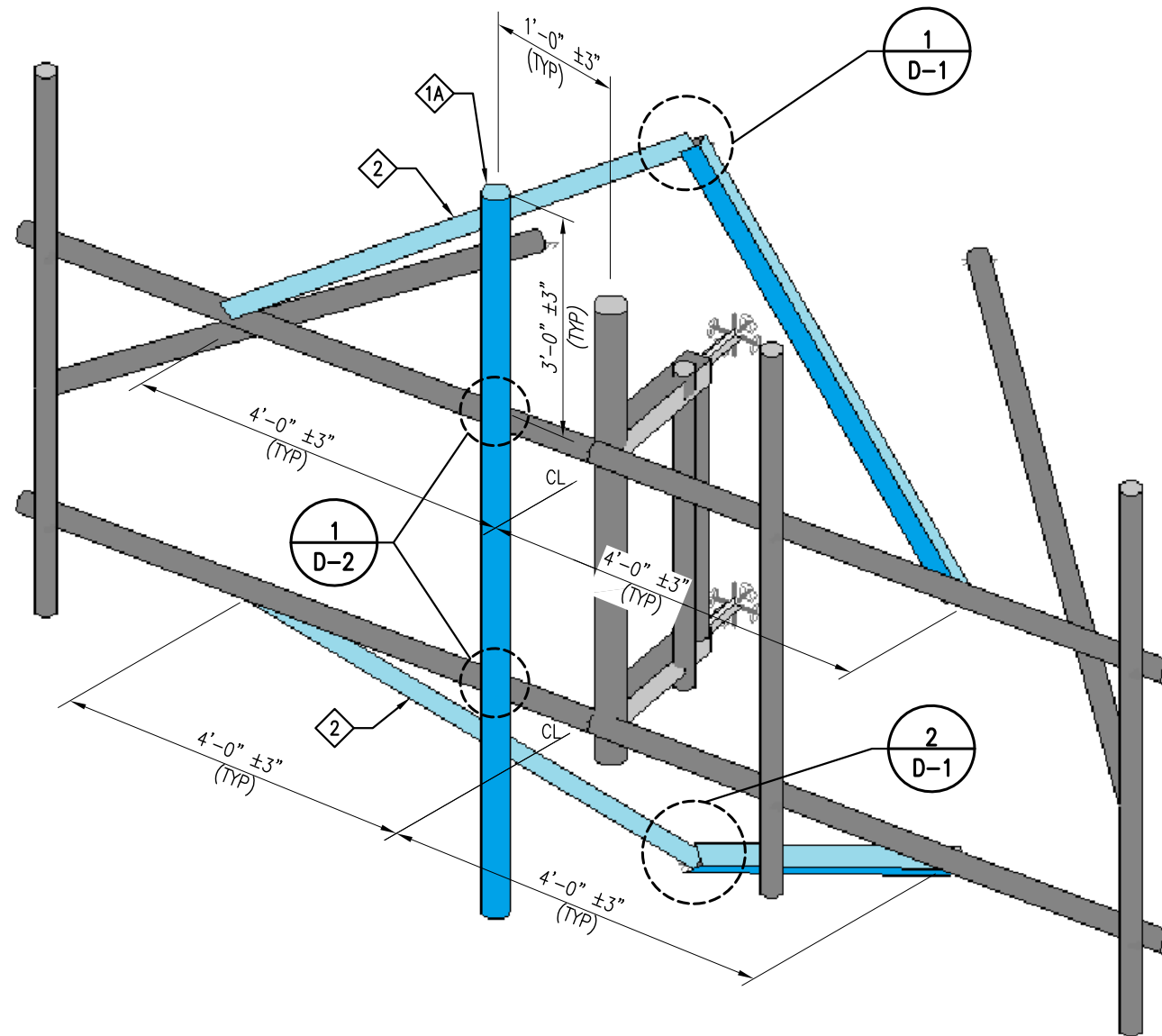
NOTE:
CONTRACTOR TO COORDINATE WITH CARRIER PRIOR TO RELOCATION EXISTING ANTENNA TO NEW MOUNT PIPE TO DETERMINE IF EXISTING ANTENNA NEED TO BE TURNED DOWN.

- 2 INSTALL NEW V-BRACING KITS ON EXISTING TOP AND BOTTOM HORIZONTALS. SEE SHEETS MS-C1B-2875P & D-1 FOR DETAILS.
- 3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.

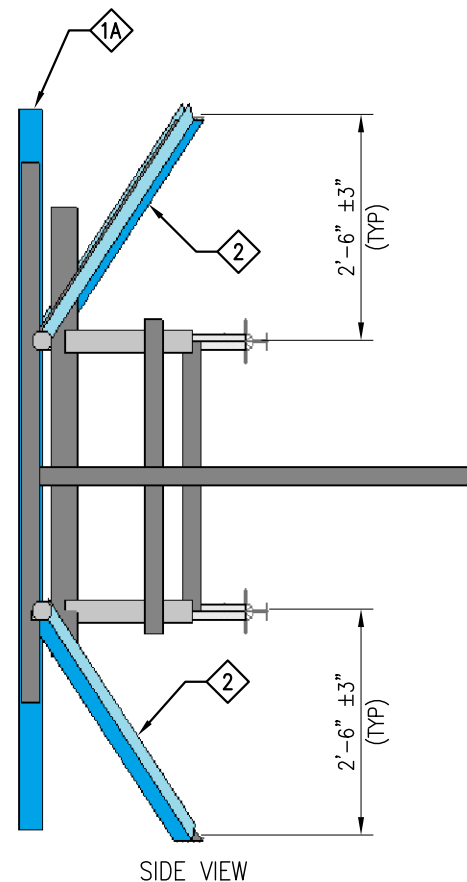


PHOTO 1

EXISTING ANTENNA MOUNT
@ 150' ELEV.



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 150' ELEV.
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)



SIDE VIEW

CONTRACTOR NOTE:

- 1. IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES WITH (SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
- 2. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESORDERS@TESTOWER.US

NOTES:

- 1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
- 2. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS.
- 3. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
- 4. MEMBERS IN BLUE COLOR ARE NEW REINFORCEMENTS.

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	3	PST2875-8	2 1/2" PST (2.875" O.D. X 0.203 THK) X 8'-0" A53 GR-B 35L
2	2	MS-C1B-2875P	METROSITE V-BRACING KIT



Tower Engineering Solutions

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IRVING, TX 75038
PH: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
95007

CUSTOMER SITE NO:
CT09680-S-SBA
CUSTOMER SITE NAME:
ROGERS HILL
35 SOUTH BARTLETT ROAD
QUAKER HILL, CT 06375

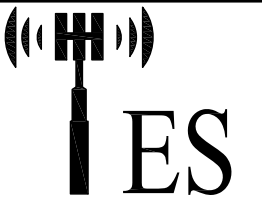
DRAWN BY: FL CHECKED BY: SD/SK

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	FL	07/09/20

SHEET TITLE:
**ANTENNA MOUNT
MODIFICATION DETAILS**

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SHEET NUMBER: **A-1** REV #: **0**



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QUAKER HILL, CT 06375

DRAWN BY: FL CHECKED BY: SD/SK

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	FL	07/09/20

SHEET TITLE:

ANTENNA MOUNT
PHOTOS

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SHEET NUMBER: REV #:

A-2 0

REMOVE EXISTING ANTENNA MOUNT PIPE WITH ALL THREADED ROD, THEN RELOCATE EXISTING ANTENNA TO NEW ANTENNA MOUNT PIPE, (1) PER SECTOR. EXISTING RAD ANTENNA CENTER TO BE MAINTAINED



PHOTO 1



PHOTO 2

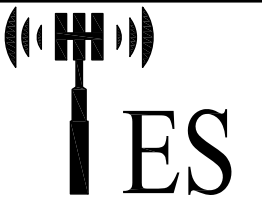


PHOTO 3



PHOTO 4

NOTE:
EXISTING RRUS/EQUIPMENT MAY BE RELOCATED ALONG THE MEMBER TO ACCOMMODATE THE INSTALLATION OF NEW MOUNT MODIFICATION



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(800)-487-SITE

TES JOB NO:
95007

CUSTOMER SITE NO:
CT09680-S-SBA

CUSTOMER SITE NAME:
ROGERS HILL

35 SOUTH BARTLETT ROAD
QUAKER HILL, CT 06375

DRAWN BY: FL | CHECKED BY: SD/SK

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	FL	07/09/20

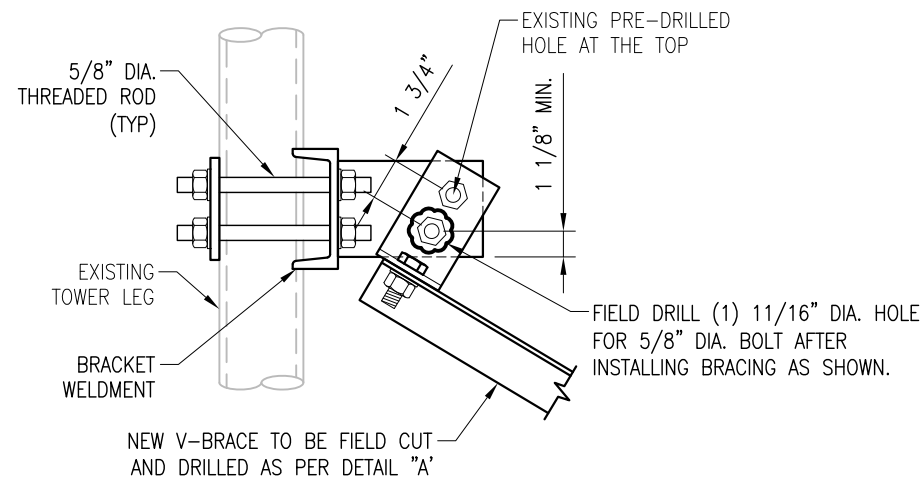
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STANDARD DETAILS

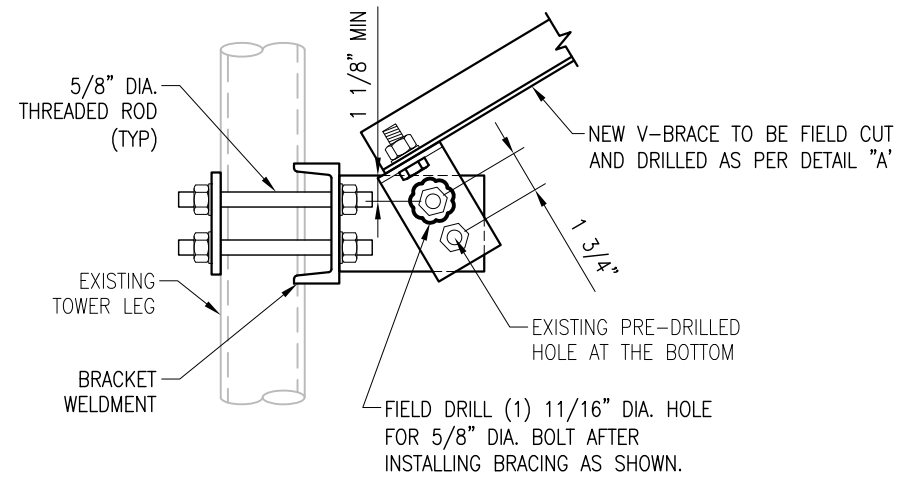
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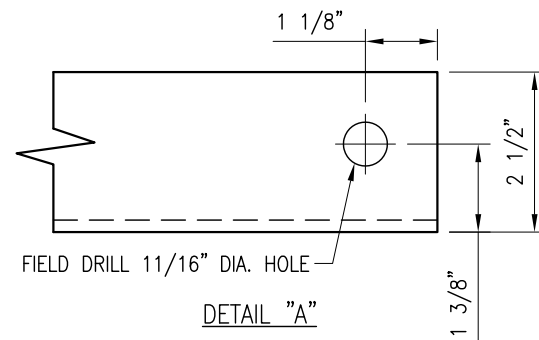
D-1 | 0



1
D-1
DETAIL



2
D-1
DETAIL



DETAIL "A"

- NOTES:
- HOT-DIPPED GALVANIZED PER ASTM A123.
 - ALL HOLES ARE 11/16" DIA. U.N.O



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DRAWN BY: FL | CHECKED BY: SD/SK

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	FL	07/09/20

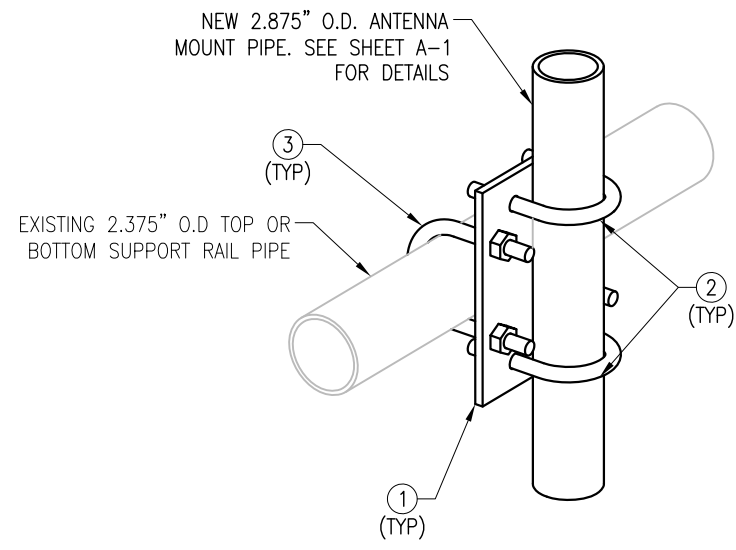
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STANDARD DETAILS

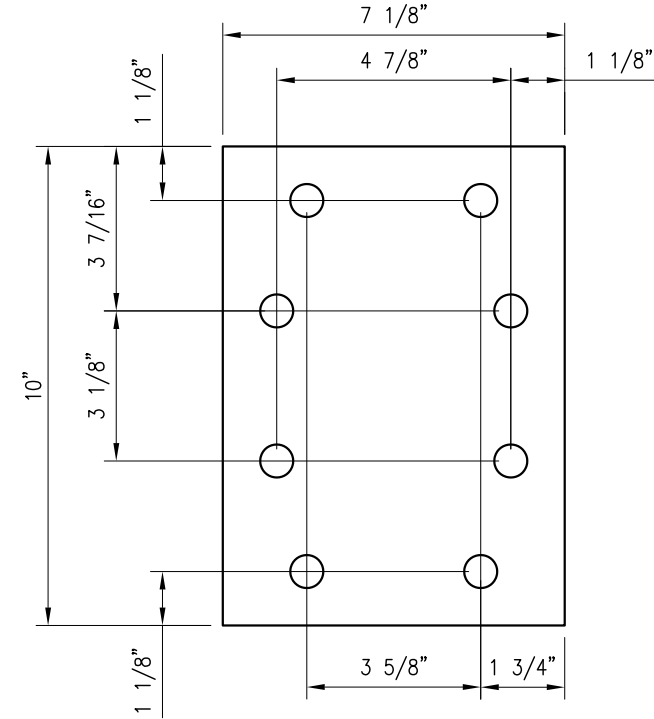
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SHEET NUMBER: | REV #:

D-2 | 0



1
 D-2
 DETAIL

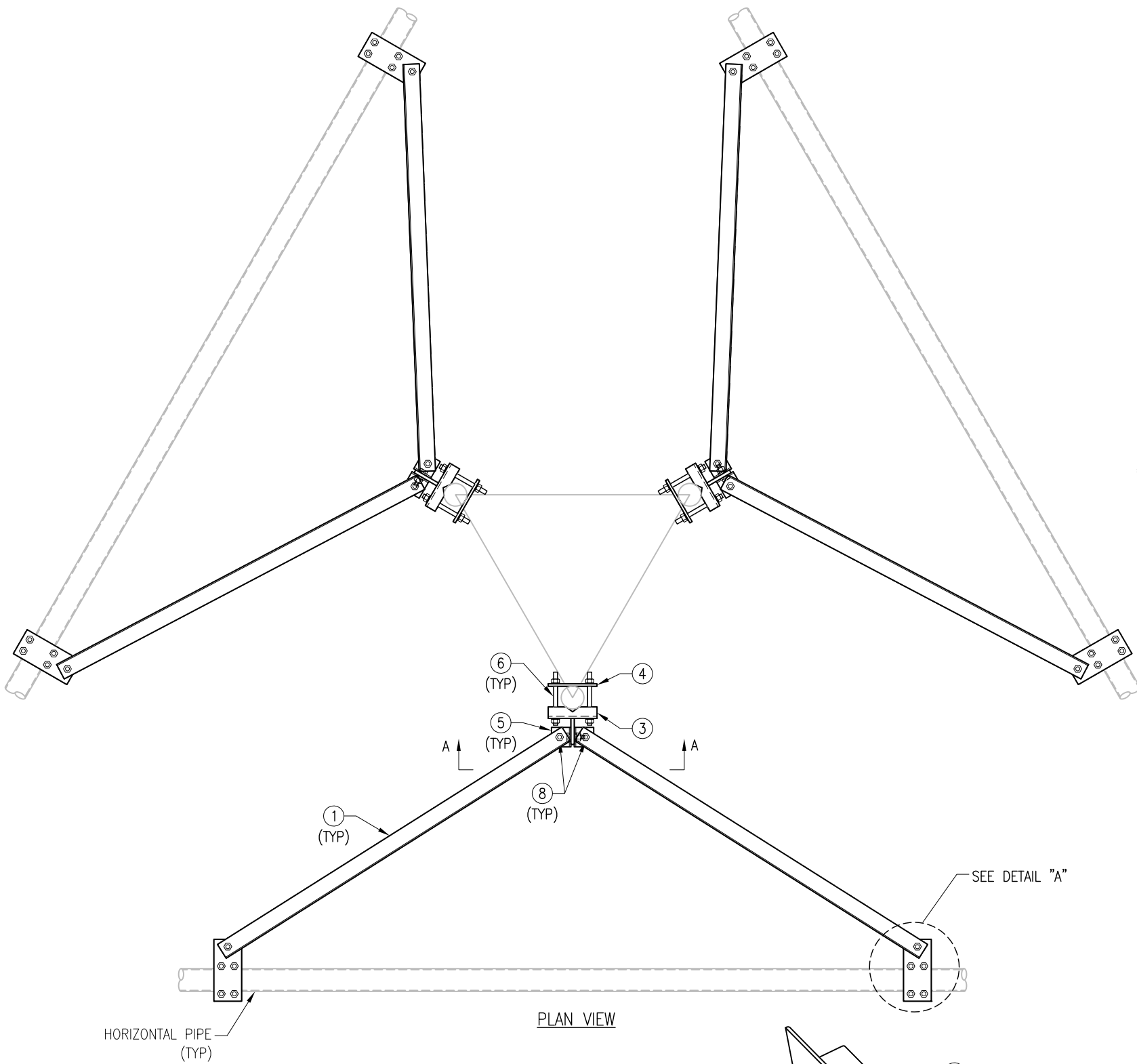


PL2375-2875
 PL 3/8" X 7 1/8" X 10" A36
 (7.7 LBS)

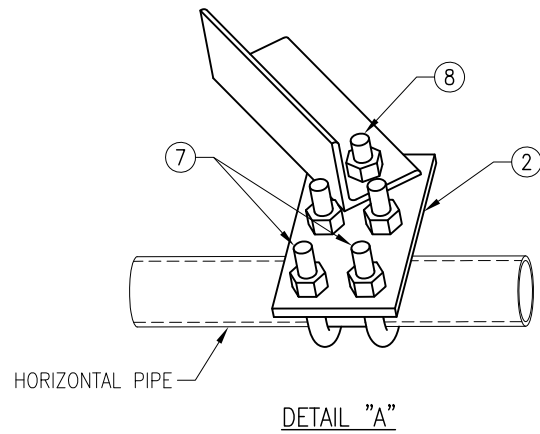
- NOTES:
- HOT-DIPPED GALVANIZED PER ASTM A123.
 - ALL HOLES ARE 11/16" DIA. U.N.O

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	6	PL2375-2875	PL 3/8" X 7 1/8" X 10" A36
2	12	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)
3	12	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)

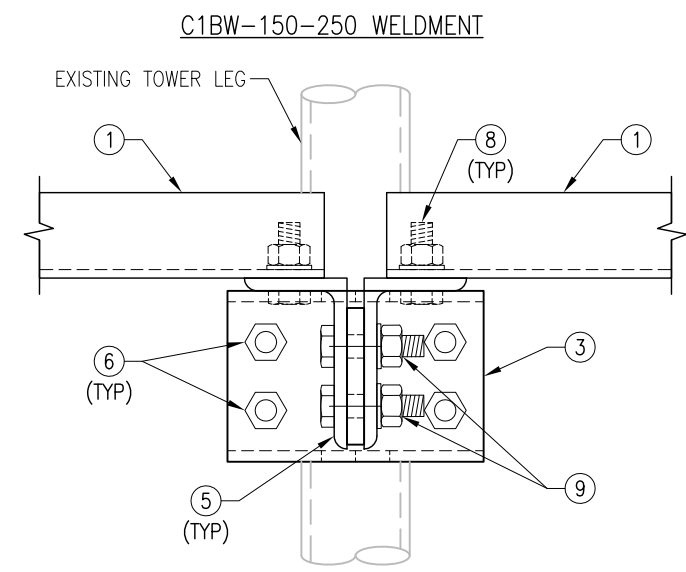
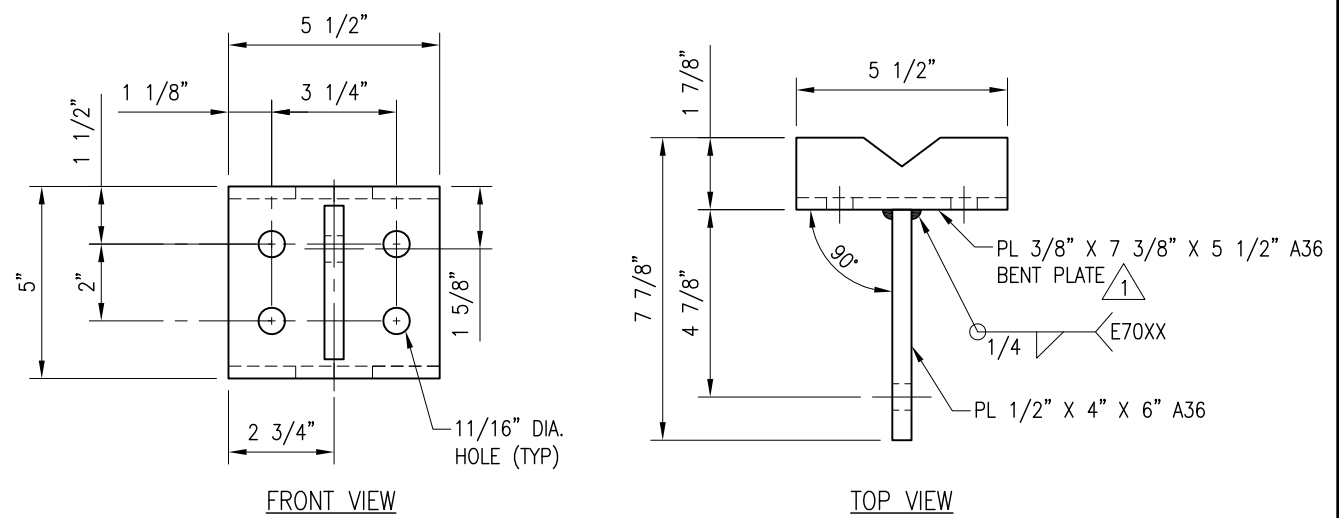
THE FOLLOWING DRAWINGS ARE INCLUDED FOR REFERENCE ONLY
PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS



NOTE:
 1) FITS 1 1/2" DIA. TO 2 1/2" DIA. LEG.
 2) THREADED ROD MAY BE CUT TO LENGTH AS REQUIRED.
 3) FITS 1 1/2" TO 2 7/8" O.D. HORIZONTAL PIPE.



MS-C1B-2875P						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	6	VB-25-10	L 2 1/2" X 2 1/2" X 1/4" X 10'-0"	A36	BK-1	258
2	6	PL375-4259	PL 3/8" X 4 1/4" X 9"	A36	BK-2	25.8
3	3	C1BW-150-250	BRACKET WELDMENT	A36	C1BW-150-250	24.0
4	3	PL5-42550	PL 1/2" X 4 1/4" X 5 1/2"	A572-50	BK-2	10.5
5	6	AL-533	L 5" X 3" X 1/4" X 3"	A36	BK-1	10.2
6	12	---	THREADED ROD 5/8" X 10" W/ (2) HHN & LKW EA.	A36	---	---
7	12	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	---	RBC-1	---
8	12	---	BOLT 5/8" X 1 3/4" A325 W/ HHN & LKW EA.	---	---	---
9	6	---	BOLT 5/8" X 2 1/4" A325 W/ HHN & LKW EA.	---	---	---
GALVANIZED WT						329



THIRD ANGLE PROJECTION			METROSITE FABRICATORS LLC 180 INDUSTRIAL PARK BLVD. COMMERCE GA 30529	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH		CONFIDENTIAL ALL INFORMATION ON THIS DOCUMENT IS PROPERTY OF METROSITE FABRICATORS LLC		TITLE MS-C1B-2875P V-BRACING KIT
STANDARD SHEET TOLERANCES		APPROVAL / SIGNATURES		DATE
DECIMALS .X ± 0.1 .XX ± 0.02 .XXX ± 0.005	ANGLES ± 1° FRACTIONS ± 1/32	DRAWN BY: XXX	REVIEWED: XXX	05/12/17
		APPROVED: XXX		
		SIZE/DWG NO B MS-C1B-2875P	REV 1	
		SCALE	SHEET 1 OF 1	

EXHIBIT 8



Tower Engineering Solutions

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

Structural Analysis Report

Existing 180 ft World Tower Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT09680-S

Customer Site Name: Rogers Hill

Carrier Name: T-Mobile (App#: 116819, V2)

Carrier Site ID / Name: CTNL021D / Rogers Hill

Site Location: 35 South Bartlett Road

Quaker Hill, Connecticut

New London County

Latitude: 41.417652

Longitude: -72.106728

Analysis Result:

Max Structural Usage: 92.5% [Pass]

Max Foundation Usage: 72.0% [Pass]

Additional Usage Caused by Mount Modification: +1.2%

Report Prepared By : Dipika Dhungana



Introduction

The purpose of this report is to summarize the analysis results on the 180 ft World Tower Self Supporting Tower 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	World Tower, Drawing # Q071062 Dated 12/05/2007
Foundation Drawing	World Tower, Drawing @ Q071062F Dated 01/08/2008
Geotechnical Report	Clarence Welti Associates, Inc., Site Name: Rogers Hill Dated 12/17/2007
Modification Drawings	N/A

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 **TESTowers**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 135.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 105.0$ 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:	$S_S = 0.161$, $S_1 = 0.058$

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	187.6	2	Sinclair SC488-HF2LNF Omni	(3) Standoffs	(3) 1 5/8"	Town of Waterford
2	185.0	1	9" x 13.25" x 21.25" TMA			
3	182.5	1	Telewave ANT150F2 Panel			
-	150.0	3	Ericsson Air 21 B2A/B4P Panel	(3) T-Frames	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson Air B4A/B2P Panel			
-		3	Commscope LNX-6515DS - Panel			
-		3	Ericsson KRY 112 144/1 TMA			
-		3	Ericsson RRUS 11 B12 RRU			
11	120.0	12	Commscope SBNHH-1D65B Panel	(3) Sector Frames (Commscope SF-QV12-B)	(9) 1 5/8" (3) 1 5/8" Fiber	Verizon
12		3	Alcatel Lucent RRH 2x60 AWS RRH			
13		3	Alcatel Lucent RRH2X60-1900 RRH			
14		3	Alcatel Lucent RRH2x60-700 RRH			
15		3	RFS DB-T1-6Z-8AB-OZ DC Surge			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
4	150.0	3	Ericsson Air 21 B2A/B4P	(3) T-Frames w/ (6) Metrosite V-Bracing Kit (MS-C1B-2875P) (3) 2 1/2" PSTmount Pipe (PST2875-8)	(4) 1 5/8" (9) 1 5/8" Fiber	T-Mobile
5		3	Ericsson AIR6449 B41			
6		3	RFS APXVAARR24_43-U-NA20			
7		3	Ericsson AIR32 KRD901146-1_B66A_B2A (Octo)			
8		3	Ericsson KRY 112 144/1			
9		3	Ericsson Radio 4449 B71+B85			
10		3	Ericsson 4415 B25			

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

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	81.3%	92.5%	29.8%
Pass/Fail	Pass	Pass	Pass

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	367.3	330.2	27.4

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2303 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G 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 EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT09680-S-SBA

Site Name: Rogers Hill	Code: EIA/TIA-222-G	7/14/2020
Type: Self Support	Base Shape: Triangle	Basic WS: 105.00
Height: 180.00 (ft)	Base Width: 14.50	Basic Ice WS: 50.00
Base Elev: 0.00 (ft)	Top Width: 4.00	Operational WS: 60.00



Page: 1

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	SOL 4" SOLID	SAE 3X3X0.25	
2	SOL 4" SOLID	SAE 3X3X0.1875	
3	SOL 3 3/4" SOLID	SAE 3X3X0.1875	
4	SOL 3 1/2" SOLID	SAE 3X3X0.1875	
5	SOL 3 1/2" SOLID	SAE 2X2X0.25	
6	SOL 3" SOLID	SAE 2X2X0.25	
7	SOL 2 3/4" SOLID	SAE 2X2X0.1875	SAE 2x2x0.125
8	SOL 2" SOLID	SOL 1 1/4" SOLID	SOL 1" SOLID
9	SOL 1 1/2" SOLID	SOL 1" SOLID	SOL 1" SOLID

Discrete Appurtenances

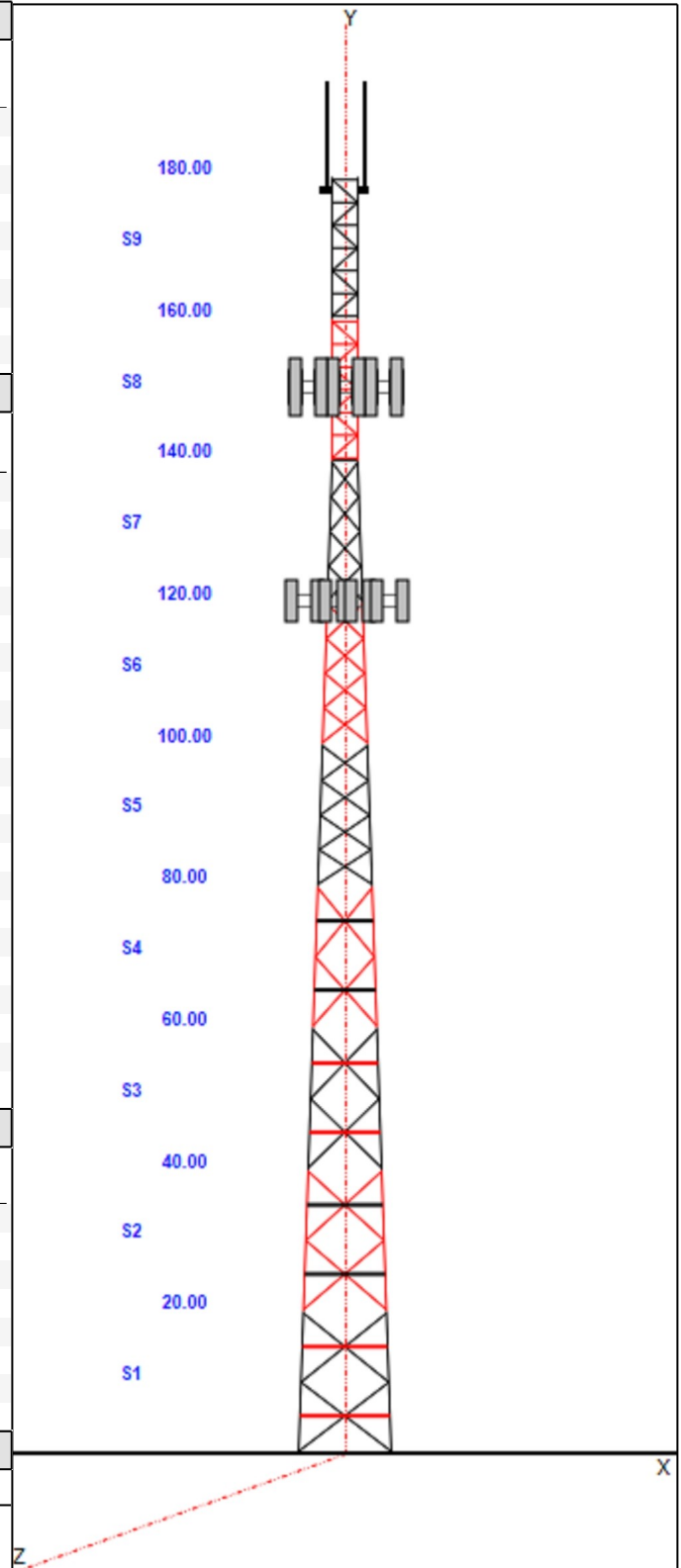
Attach Elev (ft)	Force Elev (ft)	Qty	Description
180.00	180.00	1	6' Lightning rod
180.00	180.00	1	Beacon
178.00	185.63	2	SC488-HF2LNF
178.00	182.50	1	ANT150F2
178.00	185.00	1	9" x 13.25" x 21.25"
178.00	178.00	3	4 ft Sidearm
150.00	150.00	3	T-Frames
150.00	150.00	2	MS-C1B-2875P
150.00	150.00	3	Air 21 B2A/B4P
150.00	150.00	3	AIR 6449 B41
150.00	150.00	3	APXVAARR24_43-U-NA20
150.00	150.00	3	KRY 112 144/1
150.00	150.00	3	Radio 4449 B71+B85
150.00	150.00	3	KRD 9011461-B66A-B2A
150.00	150.00	3	RRUS 4415 B25
150.00	150.00	3	15'x2.875"mount pipe
120.00	120.00	1	(3) SF-QV12-B
120.00	120.00	12	SBNHH-1D65B
120.00	120.00	3	RRH 2x60W-1900 MHz
120.00	120.00	3	DB-T1-6Z-8AB-0Z
120.00	120.00	3	RRH2x60-700
120.00	120.00	3	RRH2X60-AWS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	180.00	3	1 5/8" Coax
0.00	180.00	1	Climbing Ladder
0.00	180.00	1	W/G Ladder
0.00	150.00	4	1 5/8" Coax
0.00	150.00	9	1 5/8" Fiber
0.00	120.00	9	1 5/8" Coax
0.00	120.00	3	1 5/8" Fiber
0.00	120.00	1	W/G Ladder

Base Reactions

Leg	Overturning
Max Uplift: -330.17 (kips)	Moment: 4432.59 (ft-kips)
Max Down: 367.29 (kips)	Total Down: 42.92 (kips)
Max Shear: 27.44 (kips)	Total Shear: 46.68 (kips)



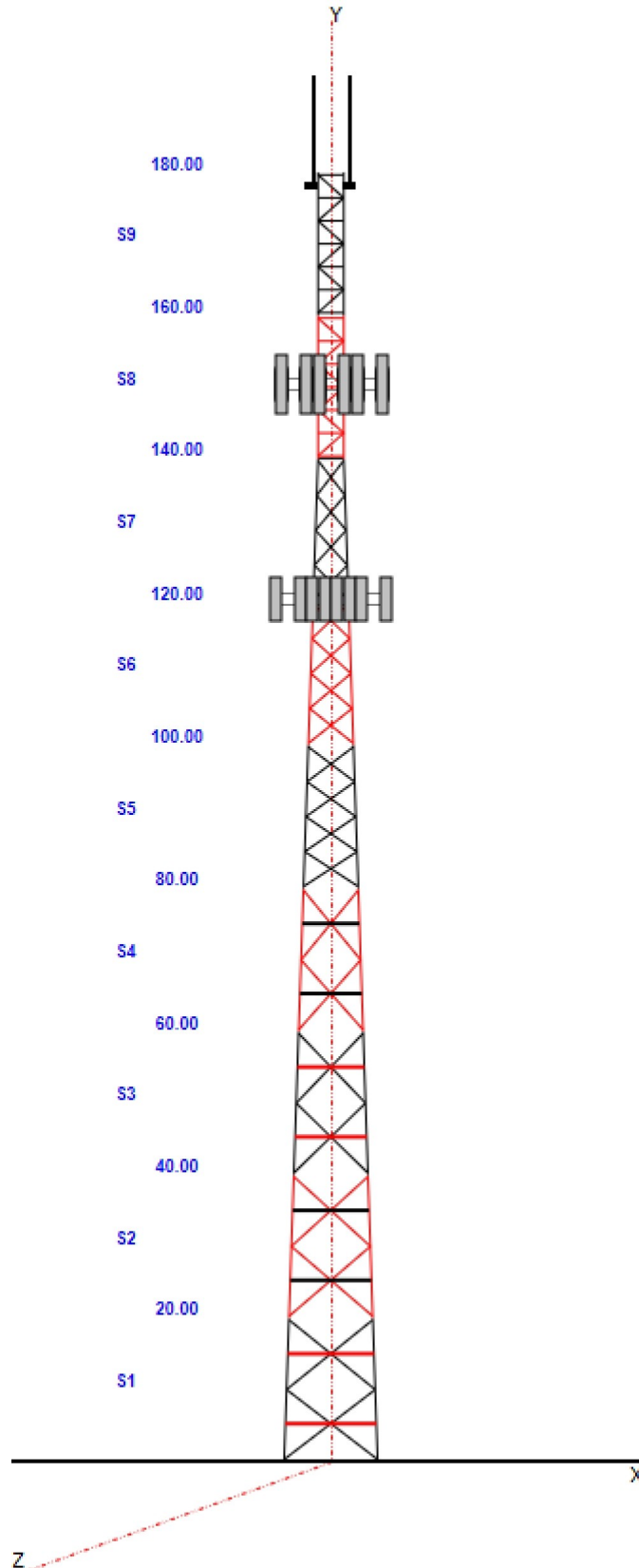
Structure: CT09680-S-SBA

Site Name: Rogers Hill
Type: Self Support
Height: 180.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: Triangle
Base Width: 14.50
Top Width: 4.00

Code: EIA/TIA-222-G
Basic WS: 105.00
Basic Ice WS: 50.00
Operational WS: 60.00

7/14/2020
Page: 2



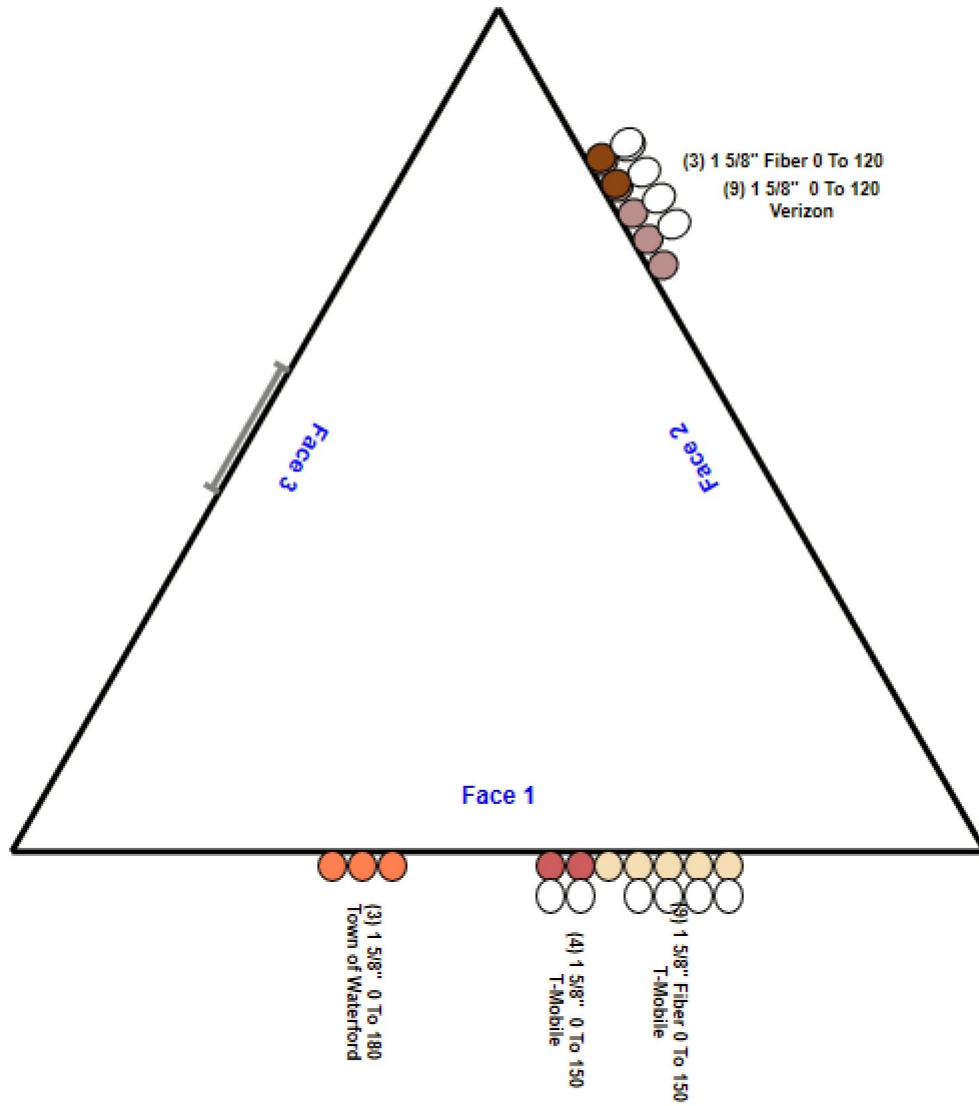
Structure: CT09680-S-SBA - Coax Line Placement

Type: Self Support
Site Name: Rogers Hill
Height: 180.00 (ft)

7/14/2020



Page: 3



Loading Summary

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



Page: 4

Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice		Ice		Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
			Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)						
180.00	6' Lightning rod	1	6.50	0.380	43.26	1.481	72.000	0.600	0.600	1.00	1.00	0.000
180.00	Beacon	1	36.00	2.720	170.87	3.681	28.000	17.500	17.500	1.00	1.00	0.000
178.00	SC488-HF2LNF	2	31.00	4.420	144.31	9.922	183.000	2.900	2.900	1.00	1.00	7.625
178.00	ANT150F2	1	13.00	1.230	46.49	2.303	60.000	2.500	2.500	1.00	1.00	4.500
178.00	9" x 13.25" x 21.25"	1	25.00	1.560	82.26	2.255	21.200	9.000	13.200	1.00	1.00	7.000
178.00	4 ft Sidearm	3	53.32	3.500	161.76	11.594	0.000	0.000	0.000	0.75	0.75	0.000
150.00	T-Frames	3	500.00	15.000	1023.56	34.546	0.000	0.000	0.000	0.75	0.75	0.000
150.00	MS-C1B-2875P	2	329.00	10.000	788.34	20.471	0.000	0.000	0.000	0.75	1.00	0.000
150.00	Air 21 B2A/B4P	3	91.50	6.090	260.39	7.187	56.000	12.100	7.900	0.80	0.86	0.000
150.00	AIR 6449 B41	3	133.20	6.530	297.34	7.600	38.300	20.500	7.200	0.80	0.70	0.000
150.00	APXVAARR24_43-U-NA20	3	128.00	20.240	545.93	22.140	95.900	24.000	7.800	0.80	0.70	0.000
150.00	KRY 112 144/1	3	11.00	0.410	21.78	0.885	6.900	6.100	2.700	0.80	0.75	0.000
150.00	Radio 4449 B71+B85	3	70.00	1.650	138.25	2.188	15.000	13.200	9.300	0.80	0.67	0.000
150.00	KRD 9011461-B66A-B2A	3	132.20	6.510	315.44	7.632	56.600	12.900	8.700	0.80	0.87	0.000
150.00	RRUS 4415 B25	3	46.00	1.640	87.10	2.155	15.000	13.200	5.400	0.80	0.67	0.000
150.00	15'x2.875"mount pipe	3	87.00	4.310	220.61	9.696	0.000	0.000	0.000	1.00	1.00	0.000
120.00	(3) SF-QV12-B	1	1611.0	52.780	3791.54	106.36	0.000	0.000	0.000	0.75	1.00	0.000
120.00	SBNHH-1D65B	12	40.60	8.080	234.91	9.330	72.000	11.900	7.100	0.80	0.83	0.000
120.00	RRH 2x60W-1900 MHz	3	19.50	1.510	77.04	2.042	20.100	9.000	7.200	0.80	0.67	0.000
120.00	DB-T1-6Z-8AB-0Z	3	18.90	4.800	157.48	5.645	24.000	24.000	10.000	0.80	0.71	0.000
120.00	RRH2x60-700	3	48.00	1.730	97.47	2.259	18.500	11.200	8.900	0.80	0.67	0.000
120.00	RRH2X60-AWS	3	55.00	3.500	132.57	4.265	37.000	11.000	6.000	0.80	0.67	0.000
Totals:		63	7,079.56		19,428.77						Number of Appurtenances :	22

Loading Summary

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	180.00	1 5/8" Coax	3	1.98	1.04	100.00	1	Individual NR		N	1.00	1.00	
0.00	180.00	Climbing Ladder	1	1.50	6.90	100.00	3	Individual NR		N	1.00	1.00	
0.00	180.00	W/G Ladder	1	1.50	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	150.00	1 5/8" Coax	4	1.98	1.04	50.00	1	Block		N	0.50	1.00	
0.00	150.00	1 5/8" Fiber	9	2.00	1.10	50.00	1	Block		N	0.50	1.00	
0.00	120.00	1 5/8" Coax	9	1.98	1.04	50.00	2	Block		N	0.50	0.63	
0.00	120.00	1 5/8" Fiber	3	2.00	1.10	50.00	2	Block		N	0.50	0.67	
0.00	120.00	W/G Ladder	1	1.50	6.00	100.00	2	Individual NR		N	1.00	1.00	

Section Forces

Structure: CT09680-S-SBA

Code: EIA/TIA-222-G

7/14/2020

Site Name: Rogers Hill

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

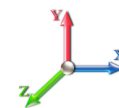
Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 0.85

Topography: 1

Struct Class: II



Page: 6

Load Case: 1.2D + 1.6W Normal Wind

1.2D + 1.6W 105 mph Wind at Normal To Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	1.00	1.00	0.00	29.78	72.17	0.00	5,744.6	0.0	2362.35	1814.23	4,176.58	
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	1.00	1.00	0.00	27.81	72.17	0.00	5,358.5	0.0	2522.45	2096.51	4,618.95	
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	1.00	1.00	0.00	24.73	72.17	0.00	4,842.2	0.0	2488.85	2334.54	4,823.39	
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	1.00	1.00	0.00	22.79	72.17	0.00	4,357.2	0.0	2431.51	2505.91	4,937.43	
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	1.00	1.00	0.00	18.33	72.17	0.00	4,370.7	0.0	2062.62	2642.06	4,704.68	
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	1.00	1.00	0.00	15.93	72.17	0.00	3,631.6	0.0	1845.67	2756.07	4,601.74	
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	1.00	1.00	0.00	14.66	42.33	0.00	2,681.0	0.0	1689.58	1650.31	3,339.89	
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	1.00	1.00	0.00	6.92	28.62	0.00	2,054.8	0.0	869.34	1145.60	2,014.94	
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	1.00	1.00	0.00	5.59	14.90	0.00	1,382.9	0.0	746.68	606.17	1,352.85	
														34,423.7	0.0				34,570.45

Load Case: 1.2D + 1.6W 60° Wind

1.2D + 1.6W 105 mph Wind at 60° From Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 1.20

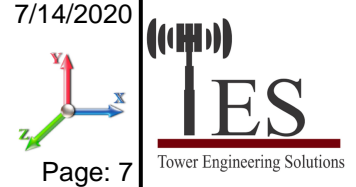
Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	0.80	1.00	0.00	25.33	72.17	0.00	5,744.6	0.0	2009.34	1814.23	3,823.58	
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	0.80	1.00	0.00	23.72	72.17	0.00	5,358.5	0.0	2151.87	2096.51	4,248.38	
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	0.80	1.00	0.00	21.17	72.17	0.00	4,842.2	0.0	2130.89	2334.54	4,465.44	
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	0.80	1.00	0.00	19.54	72.17	0.00	4,357.2	0.0	2085.16	2505.91	4,591.07	
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	0.80	1.00	0.00	15.97	72.17	0.00	4,370.7	0.0	1796.57	2642.06	4,438.63	
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	0.80	1.00	0.00	13.88	72.17	0.00	3,631.6	0.0	1608.32	2756.07	4,364.40	
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	0.80	1.00	0.00	12.78	42.33	0.00	2,681.0	0.0	1472.70	1650.31	3,123.01	
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	0.80	1.00	0.00	6.92	28.62	0.00	2,054.8	0.0	869.34	1145.60	2,014.94	
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	0.80	1.00	0.00	5.59	14.90	0.00	1,382.9	0.0	746.68	606.17	1,352.85	
														34,423.7	0.0				32,422.30

Section Forces

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 90° Wind	1.2D + 1.6W 105 mph Wind at 90° From Face
Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)						Area (sqft)
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	0.85	1.00	0.00	26.44	72.17	0.00	5,744.6	0.0	2097.60	1814.23	3,911.83	
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	0.85	1.00	0.00	24.74	72.17	0.00	5,358.5	0.0	2244.51	2096.51	4,341.02	
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	0.85	1.00	0.00	22.06	72.17	0.00	4,842.2	0.0	2220.38	2334.54	4,554.92	
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	0.85	1.00	0.00	20.35	72.17	0.00	4,357.2	0.0	2171.75	2505.91	4,677.66	
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	0.85	1.00	0.00	16.56	72.17	0.00	4,370.7	0.0	1863.08	2642.06	4,505.15	
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	0.85	1.00	0.00	14.39	72.17	0.00	3,631.6	0.0	1667.66	2756.07	4,423.73	
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	0.85	1.00	0.00	13.25	42.33	0.00	2,681.0	0.0	1526.92	1650.31	3,177.23	
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	0.85	1.00	0.00	6.92	28.62	0.00	2,054.8	0.0	869.34	1145.60	2,014.94	
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	0.85	1.00	0.00	5.59	14.90	0.00	1,382.9	0.0	746.68	606.17	1,352.85	
														34,423.7	0.0				32,959.33

Load Case: 0.9D + 1.6W Normal Wind	0.9D + 1.6W 105 mph Wind at Normal To Face
Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 0.90	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)						Area (sqft)
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	1.00	1.00	0.00	29.78	72.17	0.00	4,308.5	0.0	2362.35	1814.23	4,176.58	
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	1.00	1.00	0.00	27.81	72.17	0.00	4,018.9	0.0	2522.45	2096.51	4,618.95	
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	1.00	1.00	0.00	24.73	72.17	0.00	3,631.7	0.0	2488.85	2334.54	4,823.39	
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	1.00	1.00	0.00	22.79	72.17	0.00	3,267.9	0.0	2431.51	2505.91	4,937.43	
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	1.00	1.00	0.00	18.33	72.17	0.00	3,278.0	0.0	2062.62	2642.06	4,704.68	
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	1.00	1.00	0.00	15.93	72.17	0.00	2,723.7	0.0	1845.67	2756.07	4,601.74	
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	1.00	1.00	0.00	14.66	42.33	0.00	2,010.8	0.0	1689.58	1650.31	3,339.89	
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	1.00	1.00	0.00	6.92	28.62	0.00	1,541.1	0.0	869.34	1145.60	2,014.94	
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	1.00	1.00	0.00	5.59	14.90	0.00	1,037.2	0.0	746.68	606.17	1,352.85	
														25,817.8	0.0				34,570.45

Section Forces

Structure: CT09680-S-SBA

Code: EIA/TIA-222-G

7/14/2020

Site Name: Rogers Hill

Exposure: C



Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 0.85

Topography: 1

Struct Class: II

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Load Case: 0.9D + 1.6W 60° Wind

0.9D + 1.6W 105 mph Wind at 60° From Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Area (sqft)		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area (sqft)		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat	Round								Linear	Linear					
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	0.80	1.00	0.00	25.33	72.17	0.00	4,308.5	0.0	2009.34	1814.23	3,823.58
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	0.80	1.00	0.00	23.72	72.17	0.00	4,018.9	0.0	2151.87	2096.51	4,248.38
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	0.80	1.00	0.00	21.17	72.17	0.00	3,631.7	0.0	2130.89	2334.54	4,465.44
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	0.80	1.00	0.00	19.54	72.17	0.00	3,267.9	0.0	2085.16	2505.91	4,591.07
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	0.80	1.00	0.00	15.97	72.17	0.00	3,278.0	0.0	1796.57	2642.06	4,438.63
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	0.80	1.00	0.00	13.88	72.17	0.00	2,723.7	0.0	1608.32	2756.07	4,364.40
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	0.80	1.00	0.00	12.78	42.33	0.00	2,010.8	0.0	1472.70	1650.31	3,123.01
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	0.80	1.00	0.00	6.92	28.62	0.00	1,541.1	0.0	869.34	1145.60	2,014.94
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	0.80	1.00	0.00	5.59	14.90	0.00	1,037.2	0.0	746.68	606.17	1,352.85
25,817.8														0.0	32,422.30			

Load Case: 0.9D + 1.6W 90° Wind

0.9D + 1.6W 105 mph Wind at 90° From Face

Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Dead Load Factor: 0.90

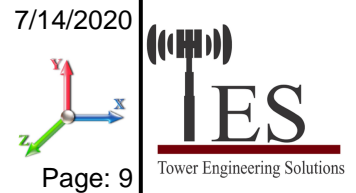
Ice Dead Load Factor: 0.00

Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Area (sqft)		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area (sqft)		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat	Round								Linear	Linear					
1	10.0	20.39	22.250	13.35	0.00	0.13	2.86	0.85	1.00	0.00	26.44	72.17	0.00	4,308.5	0.0	2097.60	1814.23	3,911.83
2	30.0	23.56	20.426	13.35	0.00	0.13	2.83	0.85	1.00	0.00	24.74	72.17	0.00	4,018.9	0.0	2244.51	2096.51	4,341.02
3	50.0	26.24	17.783	12.51	0.00	0.14	2.82	0.85	1.00	0.00	22.06	72.17	0.00	3,631.7	0.0	2220.38	2334.54	4,554.92
4	70.0	28.17	16.231	11.68	0.00	0.15	2.79	0.85	1.00	0.00	20.35	72.17	0.00	3,267.9	0.0	2171.75	2505.91	4,677.66
5	90.0	29.70	11.823	11.68	0.00	0.15	2.79	0.85	1.00	0.00	16.56	72.17	0.00	3,278.0	0.0	1863.08	2642.06	4,505.15
6	110.0	30.98	10.241	10.01	0.00	0.16	2.75	0.85	1.00	0.00	14.39	72.17	0.00	2,723.7	0.0	1667.66	2756.07	4,423.73
7	130.0	32.09	9.408	9.18	0.00	0.19	2.64	0.85	1.00	0.00	13.25	42.33	0.00	2,010.8	0.0	1526.92	1650.31	3,177.23
8	150.0	33.07	0.000	12.00	0.00	0.14	2.79	0.85	1.00	0.00	6.92	28.62	0.00	1,541.1	0.0	869.34	1145.60	2,014.94
9	170.0	33.95	0.000	9.76	0.00	0.12	2.89	0.85	1.00	0.00	5.59	14.90	0.00	1,037.2	0.0	746.68	606.17	1,352.85
25,817.8														0.0	32,959.33			

Section Forces

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 1.00	Ice Importance Factor: 1.00

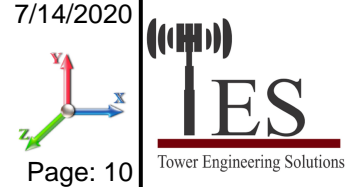
Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	4.62	22.250	37.19	23.84	0.21	2.57	1.00	1.00	1.33	43.67	103.23	13.31	10,020.	4275.6	441.14	395.71	836.85
2	30.0	5.34	20.426	38.77	25.43	0.23	2.50	1.00	1.00	1.49	42.93	106.83	14.86	10,071.	4713.3	486.86	476.23	963.10
3	50.0	5.95	17.783	38.08	25.57	0.25	2.45	1.00	1.00	1.56	40.03	108.65	15.64	9,565.5	4723.3	495.50	540.09	1,035.58
4	70.0	6.39	16.231	36.96	25.28	0.27	2.38	1.00	1.00	1.62	38.06	109.90	16.17	9,072.3	4715.1	490.83	584.57	1,075.41
5	90.0	6.73	11.823	42.99	31.32	0.33	2.22	1.00	1.00	1.66	37.99	110.86	16.58	8,847.8	4477.1	482.86	612.92	1,095.79
6	110.0	7.02	10.241	39.19	29.18	0.36	2.14	1.00	1.00	1.69	34.60	111.64	16.92	7,946.5	4314.9	441.86	638.67	1,080.54
7	130.0	7.28	9.408	37.43	28.26	0.44	1.98	1.00	1.00	1.72	33.99	65.27	17.20	6,118.9	3437.8	416.69	425.19	841.88
8	150.0	7.50	0.000	40.73	28.73	0.46	1.96	1.00	1.00	1.75	27.12	46.07	17.45	4,771.7	2716.9	339.27	330.22	669.49
9	170.0	7.70	0.000	38.85	29.09	0.44	1.99	1.00	1.00	1.77	25.51	26.68	17.67	3,627.0	2244.1	332.33	244.44	576.77
														70,041.8	35618.1			8,175.39

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 1.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	4.62	22.250	37.19	23.84	0.21	2.57	0.80	1.00	1.33	39.22	103.23	13.31	10,020.	4275.6	396.19	395.71	791.89
2	30.0	5.34	20.426	38.77	25.43	0.23	2.50	0.80	1.00	1.49	38.85	106.83	14.86	10,071.	4713.3	440.54	476.23	916.77
3	50.0	5.95	17.783	38.08	25.57	0.25	2.45	0.80	1.00	1.56	36.47	108.65	15.64	9,565.5	4723.3	451.47	540.09	991.55
4	70.0	6.39	16.231	36.96	25.28	0.27	2.38	0.80	1.00	1.62	34.81	109.90	16.17	9,072.3	4715.1	448.97	584.57	1,033.54
5	90.0	6.73	11.823	42.99	31.32	0.33	2.22	0.80	1.00	1.66	35.63	110.86	16.58	8,847.8	4477.1	452.81	612.92	1,065.73
6	110.0	7.02	10.241	39.19	29.18	0.36	2.14	0.80	1.00	1.69	32.55	111.64	16.92	7,946.5	4314.9	415.71	638.67	1,054.38
7	130.0	7.28	9.408	37.43	28.26	0.44	1.98	0.80	1.00	1.72	32.11	65.27	17.20	6,118.9	3437.8	393.63	425.19	818.82
8	150.0	7.50	0.000	40.73	28.73	0.46	1.96	0.80	1.00	1.75	27.12	46.07	17.45	4,771.7	2716.9	339.27	330.22	669.49
9	170.0	7.70	0.000	38.85	29.09	0.44	1.99	0.80	1.00	1.77	25.51	26.68	17.67	3,627.0	2244.1	332.33	244.44	576.77
														70,041.8	35618.1			7,918.94

Section Forces

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 1.00	Ice Importance Factor: 1.00

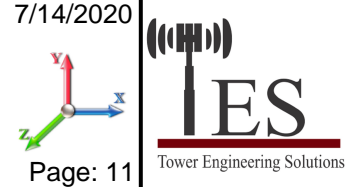
Sect Seq	Wind Height (ft)	qz (psf)	Total Area (sqft)		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area (sqft)		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	4.62	22.250	37.19	23.84	0.21	2.57	0.85	1.00	1.33	40.33	103.23	13.31	10,020.	4275.6	407.42	395.71	803.13
2	30.0	5.34	20.426	38.77	25.43	0.23	2.50	0.85	1.00	1.49	39.87	106.83	14.86	10,071.	4713.3	452.12	476.23	928.35
3	50.0	5.95	17.783	38.08	25.57	0.25	2.45	0.85	1.00	1.56	37.36	108.65	15.64	9,565.5	4723.3	462.48	540.09	1,002.56
4	70.0	6.39	16.231	36.96	25.28	0.27	2.38	0.85	1.00	1.62	35.62	109.90	16.17	9,072.3	4715.1	459.43	584.57	1,044.00
5	90.0	6.73	11.823	42.99	31.32	0.33	2.22	0.85	1.00	1.66	36.22	110.86	16.58	8,847.8	4477.1	460.32	612.92	1,073.25
6	110.0	7.02	10.241	39.19	29.18	0.36	2.14	0.85	1.00	1.69	33.07	111.64	16.92	7,946.5	4314.9	422.25	638.67	1,060.92
7	130.0	7.28	9.408	37.43	28.26	0.44	1.98	0.85	1.00	1.72	32.58	65.27	17.20	6,118.9	3437.8	399.39	425.19	824.58
8	150.0	7.50	0.000	40.73	28.73	0.46	1.96	0.85	1.00	1.75	27.12	46.07	17.45	4,771.7	2716.9	339.27	330.22	669.49
9	170.0	7.70	0.000	38.85	29.09	0.44	1.99	0.85	1.00	1.77	25.51	26.68	17.67	3,627.0	2244.1	332.33	244.44	576.77
														70,041.8	35618.1			7,983.05

Load Case: 1.0D + 1.0W Normal Wind	1.0D + 1.0W 60 mph Wind at Normal To Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Area (sqft)		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area (sqft)		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	6.66	22.250	13.35	0.00	0.13	2.86	1.00	1.00	0.00	29.80	72.17	0.00	4,787.2	0.0	482.40	370.25	852.65
2	30.0	7.69	20.426	13.35	0.00	0.13	2.83	1.00	1.00	0.00	27.98	72.17	0.00	4,465.4	0.0	518.01	427.86	945.87
3	50.0	8.57	17.783	12.51	0.00	0.14	2.82	1.00	1.00	0.00	24.87	72.17	0.00	4,035.2	0.0	510.80	476.44	987.23
4	70.0	9.20	16.231	11.68	0.00	0.15	2.79	1.00	1.00	0.00	22.85	72.17	0.00	3,631.0	0.0	497.64	511.41	1,009.05
5	90.0	9.70	11.823	11.68	0.00	0.15	2.79	1.00	1.00	0.00	18.45	72.17	0.00	3,642.3	0.0	423.56	539.20	962.75
6	110.0	10.12	10.241	10.01	0.00	0.16	2.75	1.00	1.00	0.00	15.93	72.17	0.00	3,026.4	0.0	376.67	562.46	939.13
7	130.0	10.48	9.408	9.18	0.00	0.19	2.64	1.00	1.00	0.00	14.66	42.33	0.00	2,234.2	0.0	344.81	336.80	681.61
8	150.0	10.80	0.000	12.00	0.00	0.14	2.79	1.00	1.00	0.00	6.92	28.62	0.00	1,712.4	0.0	177.42	233.79	411.21
9	170.0	11.09	0.000	9.76	0.00	0.12	2.89	1.00	1.00	0.00	5.59	14.90	0.00	1,152.4	0.0	152.38	123.71	276.09
														28,686.4	0.0			7,065.60

Section Forces

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60° Wind	1.0D + 1.0W 60 mph Wind at 60° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	6.66	22.250	13.35	0.00	0.13	2.86	0.80	1.00	0.00	25.35	72.17	0.00	4,787.2	0.0	410.36	370.25	780.61
2	30.0	7.69	20.426	13.35	0.00	0.13	2.83	0.80	1.00	0.00	23.90	72.17	0.00	4,465.4	0.0	442.38	427.86	870.24
3	50.0	8.57	17.783	12.51	0.00	0.14	2.82	0.80	1.00	0.00	21.31	72.17	0.00	4,035.2	0.0	437.74	476.44	914.18
4	70.0	9.20	16.231	11.68	0.00	0.15	2.79	0.80	1.00	0.00	19.61	72.17	0.00	3,631.0	0.0	426.96	511.41	938.37
5	90.0	9.70	11.823	11.68	0.00	0.15	2.79	0.80	1.00	0.00	16.08	72.17	0.00	3,642.3	0.0	369.26	539.20	908.46
6	110.0	10.12	10.241	10.01	0.00	0.16	2.75	0.80	1.00	0.00	13.88	72.17	0.00	3,026.4	0.0	328.23	562.46	890.69
7	130.0	10.48	9.408	9.18	0.00	0.19	2.64	0.80	1.00	0.00	12.78	42.33	0.00	2,234.2	0.0	300.55	336.80	637.35
8	150.0	10.80	0.000	12.00	0.00	0.14	2.79	0.80	1.00	0.00	6.92	28.62	0.00	1,712.4	0.0	177.42	233.79	411.21
9	170.0	11.09	0.000	9.76	0.00	0.12	2.89	0.80	1.00	0.00	5.59	14.90	0.00	1,152.4	0.0	152.38	123.71	276.09
														28,686.4	0.0			6,627.20

Load Case: 1.0D + 1.0W 90° Wind	1.0D + 1.0W 60 mph Wind at 90° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	6.66	22.250	13.35	0.00	0.13	2.86	0.85	1.00	0.00	26.46	72.17	0.00	4,787.2	0.0	428.37	370.25	798.62
2	30.0	7.69	20.426	13.35	0.00	0.13	2.83	0.85	1.00	0.00	24.92	72.17	0.00	4,465.4	0.0	461.29	427.86	889.15
3	50.0	8.57	17.783	12.51	0.00	0.14	2.82	0.85	1.00	0.00	22.20	72.17	0.00	4,035.2	0.0	456.01	476.44	932.44
4	70.0	9.20	16.231	11.68	0.00	0.15	2.79	0.85	1.00	0.00	20.42	72.17	0.00	3,631.0	0.0	444.63	511.41	956.04
5	90.0	9.70	11.823	11.68	0.00	0.15	2.79	0.85	1.00	0.00	16.67	72.17	0.00	3,642.3	0.0	382.83	539.20	922.03
6	110.0	10.12	10.241	10.01	0.00	0.16	2.75	0.85	1.00	0.00	14.39	72.17	0.00	3,026.4	0.0	340.34	562.46	902.80
7	130.0	10.48	9.408	9.18	0.00	0.19	2.64	0.85	1.00	0.00	13.25	42.33	0.00	2,234.2	0.0	311.62	336.80	648.41
8	150.0	10.80	0.000	12.00	0.00	0.14	2.79	0.85	1.00	0.00	6.92	28.62	0.00	1,712.4	0.0	177.42	233.79	411.21
9	170.0	11.09	0.000	9.76	0.00	0.12	2.89	0.85	1.00	0.00	5.59	14.90	0.00	1,152.4	0.0	152.38	123.71	276.09
														28,686.4	0.0			6,736.80

Force/Stress Compression Summary

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls	
							X	Y	Z					
1	20	SOL - 4" SOLID	-357.66	1.2D + 1.6W	Normal Wind	9.76	50	50	50	58.55	50.00	440.08	81.3	Member X
2	40	SOL - 4" SOLID	-317.15	1.2D + 1.6W	Normal Wind	9.76	50	50	50	58.55	50.00	440.08	72.1	Member X
3	60	SOL - 3 3/4" SOLID	-273.99	1.2D + 1.6W	Normal Wind	9.76	50	50	50	62.46	50.00	373.68	73.3	Member X
4	80	SOL - 3 1/2" SOLID	-229.28	1.2D + 1.6W	Normal Wind	9.76	50	50	50	66.92	50.00	312.05	73.5	Member X
5	100	SOL - 3 1/2" SOLID	-188.43	1.2D + 1.6W	Normal Wind	4.88	100	100	100	66.92	50.00	312.05	60.4	Member X
6	120	SOL - 3" SOLID	-139.25	1.2D + 1.6W	Normal Wind	4.88	100	100	100	78.07	50.00	203.71	68.4	Member X
7	140	SOL - 2 3/4" SOLID	-85.56	1.2D + 1.6W	Normal Wind	4.88	100	100	100	85.17	50.00	157.26	54.4	Member X
8	160	SOL - 2" SOLID	-45.05	1.2D + 1.6W	Normal Wind	3.21	100	100	100	77.00	50.00	91.64	49.2	Member X
9	180	SOL - 1 1/2" SOLID	-9.68	1.2D + 1.6W	Normal Wind	3.21	100	100	100	102.67	50.00	36.79	26.3	Member X

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
							X	Y	Z								
1	20									0.00	0	0					
2	40									0.00	0	0					
3	60									0.00	0	0					
4	80									0.00	0	0					
5	100									0.00	0	0					
6	120									0.00	0	0					
7	140	SAE - 2x2x0.125	-1.45	1.2D + 1.6W	60° Wind	4.00	100	100	100	120.60	36.00	7.23	1	1	12.43	6.53	22 Bolt Bear
8	160	SOL - 1" SOLID	-2.93	1.2D + 1.6W	60° Wind	4.00	100	100	100	134.40	36.00	9.82	0	0			30 Member X
9	180	SOL - 1" SOLID	-0.80	1.2D + 1.6W	60° Wind	4.00	100	100	100	134.40	36.00	9.82	0	0			8 Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
							X	Y	Z								
1	20	SAE - 3X3X0.25	-9.07	0.9D + 1.6W	90° Wind	17.16	49	49	49	170.41	36.00	11.20	1	1	17.89	14.3	81 Member Z
2	40	SAE - 3X3X0.1875	-9.20	0.9D + 1.6W	90° Wind	15.95	49	49	49	157.32	36.00	9.95	1	1	17.89	10.7	92 Member Z
3	60	SAE - 3X3X0.1875	-9.35	1.2D + 1.6W	90° Wind	14.25	49	49	49	140.55	36.00	12.47	1	1	17.89	10.7	87 Bolt Bear
4	80	SAE - 3X3X0.1875	-9.13	1.2D + 1.6W	90° Wind	13.19	49	49	49	130.15	36.00	14.48	1	1	17.89	10.7	85 Bolt Bear
5	100	SAE - 2X2X0.25	-6.50	1.2D + 1.6W	90° Wind	9.63	49	49	49	144.74	36.00	10.14	1	1	12.43	13.0	64 Member Z
6	120	SAE - 2X2X0.25	-6.70	1.2D + 1.6W	90° Wind	7.50	49	49	49	114.62	36.00	15.25	1	1	12.43	13.0	54 Bolt Shear
7	140	SAE - 2X2X0.1875	-4.72	1.2D + 1.6W	90° Wind	6.44	49	49	49	102.04	36.00	13.30	1	1	12.43	9.79	48 Bolt Bear
8	160	SOL - 1 1/4" SOLID	-8.29	1.2D + 1.6W	90° Wind	5.13	100	100	100	137.83	36.00	14.59	0	0			57 Member X
9	180	SOL - 1" SOLID	-1.77	1.2D + 1.6W	Normal Wind	5.13	100	100	100	172.29	36.00	5.98	0	0			30 Member X

Force/Stress Tension Summary

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	SOL - 4" SOLID	331.24	0.9D + 1.6W 60° Wind	50	565.47	58.6	Member
2	40	SOL - 4" SOLID	296.52	0.9D + 1.6W 60° Wind	50	565.47	52.4	Member
3	60	SOL - 3 3/4" SOLID	258.84	0.9D + 1.6W 60° Wind	50	497.03	52.1	Member
4	80	SOL - 3 1/2" SOLID	219.28	0.9D + 1.6W 60° Wind	50	432.95	50.6	Member
5	100	SOL - 3 1/2" SOLID	177.63	0.9D + 1.6W 60° Wind	50	432.95	41.0	Member
6	120	SOL - 3" SOLID	132.48	0.9D + 1.6W 60° Wind	50	318.11	41.6	Member
7	140	SOL - 2 3/4" SOLID	81.95	0.9D + 1.6W 60° Wind	50	267.28	30.7	Member
8	160	SOL - 2" SOLID	43.22	0.9D + 1.6W 60° Wind	50	141.37	30.6	Member
9	180	SOL - 1 1/2" SOLID	8.12	0.9D + 1.6W 60° Wind	50	79.52	10.2	Member

HORIZONTAL MEMBERS

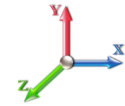
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	SAE - 2x2x0.125	1.46	0.9D + 1.6W 90° Wind	36	12.60	1	1	12.43	6.53	5.68	25.7	Blck Shear
8	160	SOL - 1" SOLID	3.07	1.2D + 1.6W Normal W	36	25.45	0	0				12.1	Member
9	180	SOL - 1" SOLID	0.84	1.2D + 1.6W Normal W	36	25.45	0	0				3.3	Member

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 3X3X0.25	9.28	0.9D + 1.6W 90° Wind	36	39.84	1	1	17.89	14.35	13.90	66.8	Blck Shear
2	40	SAE - 3X3X0.1875	9.11	0.9D + 1.6W 90° Wind	36	30.21	1	1	17.89	10.77	10.42	87.4	Blck Shear
3	60	SAE - 3X3X0.1875	8.76	0.9D + 1.6W 90° Wind	36	30.21	1	1	17.89	10.77	10.42	84.0	Blck Shear
4	80	SAE - 3X3X0.1875	8.40	1.2D + 1.6W 90° Wind	36	30.21	1	1	17.89	10.77	10.42	80.6	Blck Shear
5	100	SAE - 2X2X0.25	6.64	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	66.5	Blck Shear
6	120	SAE - 2X2X0.25	6.51	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	13.05	9.99	65.2	Blck Shear
7	140	SAE - 2X2X0.1875	4.53	1.2D + 1.6W 90° Wind	36	18.58	1	1	12.43	9.79	7.50	60.4	Blck Shear
8	160	SOL - 1 1/4" SOLID	9.27	1.2D + 1.6W 90° Wind	36	39.76	0	0				23.3	Member
9	180	SOL - 1" SOLID	2.03	1.2D + 1.6W 90° Wind	36	25.45	0	0				8.0	Member

Seismic Section Forces

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E

Dead Load Factor	1.20	Sds 0.171	Ss 0.1610	Fa 1.6000	Ke 0.0000
Seismic Load Factor	1.00	Sd1 0.092	S1 0.0580	Fv 2.4000	Kg 0.0000
Seismic Importance Factor	1.00	SA 0.102	R 3.0000	Vs 1.4715	f1 1.1078

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	4787.1	0.01	0.05	0.03	21.64
2	30.00	4465.4	0.05	0.07	0.04	36.43
3	50.00	4035.1	0.15	0.07	0.03	44.64
4	70.00	3631.0	0.29	0.05	0.01	51.43
5	90.00	3642.2	0.47	-0.01	0.01	56.34
6	110.00	5548.7	0.71	-0.09	0.03	83.67
7	130.00	2234.2	0.99	-0.11	0.12	44.22
8	150.00	5967.0	1.31	0.14	0.35	247.58
9	170.00	1454.8	1.69	1.07	0.79	129.95

Load Case: 0.9D + 1.0E

Dead Load Factor	0.90	Sds 0.171	Ss 0.1610	Fa 1.6000	Ke 0.0000
Seismic Load Factor	1.00	Sd1 0.092	S1 0.0580	Fv 2.4000	Kg 0.0000
Seismic Importance Factor	1.00	SA 0.102	R 3.0000	Vs 1.4715	f1 1.1078

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	4787.1	0.01	0.05	0.03	21.64
2	30.00	4465.4	0.05	0.07	0.04	36.43
3	50.00	4035.1	0.15	0.07	0.03	44.64
4	70.00	3631.0	0.29	0.05	0.01	51.43
5	90.00	3642.2	0.47	-0.01	0.01	56.34
6	110.00	5548.7	0.71	-0.09	0.03	83.67
7	130.00	2234.2	0.99	-0.11	0.12	44.22
8	150.00	5967.0	1.31	0.14	0.35	247.58
9	170.00	1454.8	1.69	1.07	0.79	129.95

Support Forces Summary

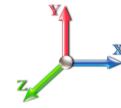
Structure: CT09680-S-SBA

Code: EIA/TIA-222-G

7/14/2020

Site Name: Rogers Hill

Exposure: C



Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 0.85

Topography: 1

Struct Class: II

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.00	367.29	-27.44	
	1a	9.74	-162.19	-9.62	
	1b	-9.74	-162.19	-9.62	
1.2D + 1.6W 60° Wind	1	-3.52	185.27	-13.10	
	1a	-13.10	184.79	3.50	
	1b	-21.94	-327.14	-12.67	
1.2D + 1.6W 90° Wind	1	-3.97	14.32	-0.14	
	1a	-20.96	312.26	9.64	
	1b	-20.14	-283.65	-9.50	
0.9D + 1.6W Normal Wind	1	0.00	363.15	-27.29	
	1a	9.86	-165.48	-9.69	
	1b	-9.86	-165.48	-9.69	
0.9D + 1.6W 60° Wind	1	-3.52	181.42	-12.96	
	1a	-12.97	180.94	3.43	
	1b	-22.08	-330.17	-12.74	
0.9D + 1.6W 90° Wind	1	-3.97	10.74	0.00	
	1a	-20.83	308.21	9.57	
	1b	-20.27	-286.76	-9.58	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	117.65	-7.07	
	1a	1.84	-14.33	-1.92	
	1b	-1.84	-14.33	-1.92	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.73	73.02	-3.79	
	1a	-3.64	72.87	1.26	
	1b	-4.85	-56.90	-2.80	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.84	29.66	-0.65	
	1a	-5.51	104.86	2.69	
	1b	-4.36	-45.54	-2.04	
1.2D + 1.0E	1	0.00	20.89	0.23	
	1a	0.73	11.02	-0.45	
	1b	-0.73	11.02	-0.45	
0.9D + 1.0E	1	0.00	17.30	0.39	
	1a	0.87	7.44	-0.53	
	1b	-0.87	7.44	-0.53	
1.0D + 1.0W Normal Wind	1	0.00	83.94	-6.00	
	1a	1.61	-24.08	-1.77	
	1b	-1.61	-24.08	-1.77	
1.0D + 1.0W 60° Wind	1	-0.69	46.80	-3.12	
	1a	-3.04	46.70	0.96	
	1b	-4.15	-57.74	-2.40	
1.0D + 1.0W 90° Wind	1	-0.80	11.92	-0.47	
	1a	-4.62	72.71	2.20	
	1b	-3.78	-48.86	-1.73	

Max Reactions

Leg		Overturning	
Max Uplift:	-330.17 (kips)	Moment:	4432.59 (ft-kips)
Max Down:	367.29 (kips)	Total Down:	42.92 (kips)
Max Shear:	27.44 (kips)	Total Shear:	46.68 (kips)

Analysis Summary

Structure: CT09680-S-SBA	Code: EIA/TIA-222-G	7/14/2020
Site Name: Rogers Hill	Exposure: C	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II
		Page: 17



Max Reactions

	Leg	Overturning
Max Uplift:	-330.17 (kips)	Moment: 4432.59 (ft-kips)
Max Down:	367.29 (kips)	Total Down: 42.92 (kips)
Max Shear:	27.44 (kips)	Total Shear: 46.68 (kips)

Anchor Bolts

Bolt Size (in.): 1.25	Number Bolts: 6
Yield Strength (Ksi): 109.00	Tensile Strength (Ksi): 125.00
Detail Type: A	

Interaction Ratio: 0.62

Max Usages

Max Leg: 81.3% (1.2D + 1.6W Normal Wind - Sect 1)
 Max Diag: 92.5% (0.9D + 1.6W 90° Wind - Sect 2)
 Max Horiz: 29.8% (1.2D + 1.6W 60° Wind - Sect 8)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	120.00	0.0201	-0.0014	0.0239
	150.00	0.0336	-0.0017	0.0306
	176.42	0.0486	-0.0002	0.0329
	180.00	0.0507	-0.0002	0.0356
0.9D + 1.6W 105 mph Wind at 60° From Face	120.00	0.9073	0.2048	1.0284
	150.00	1.4284	0.4126	1.0968
	176.42	1.9532	1.0624	1.0522
	180.00	2.0266	1.0820	1.4197
0.9D + 1.6W 105 mph Wind at 90° From Face	120.00	0.9119	0.0802	1.0206
	150.00	1.4335	0.1248	1.0938
	176.42	1.9564	0.1241	0.3849
	180.00	2.0304	0.1241	1.5643
0.9D + 1.6W 105 mph Wind at Normal To Face	120.00	0.9313	-0.0829	1.0606
	150.00	1.4641	-0.1271	1.1222
	176.42	2.0051	-0.1251	1.9381
	180.00	2.0778	-0.1250	0.8769
1.0D + 1.0W 60 mph Wind at 60° From Face	120.00	0.1853	0.0195	0.2116
	150.00	0.2917	0.0336	0.2248
	176.42	0.3989	0.0580	0.2077
	180.00	0.4139	0.0587	0.2900
1.0D + 1.0W 60 mph Wind at 90° From Face	120.00	0.1863	0.0136	0.2084
	150.00	0.2929	0.0206	0.2240
	176.42	0.3997	0.0175	0.0790
	180.00	0.4149	0.0173	0.3198

1.0D + 1.0W 60 mph Wind at Normal To Face	120.00	0.1904	-0.0163	0.2151
	150.00	0.2994	-0.0245	0.2303
	176.42	0.4100	-0.0215	0.3961
	180.00	0.4249	-0.0213	0.1797

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	120.00	0.2376	0.0312	0.2785
	150.00	0.3812	0.0556	0.3119
	176.42	0.5319	0.1102	0.2960
	180.00	0.5531	0.1117	0.4160

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	120.00	0.2379	-0.0221	0.2736
	150.00	0.3816	-0.0319	0.3094
	176.42	0.5315	-0.0302	0.1017
	180.00	0.5528	-0.0301	0.4589


1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	120.00	0.2406	-0.0275	0.2781
	150.00	0.3866	-0.0409	0.3169
	176.42	0.5410	-0.0391	0.5657
	180.00	0.5618	-0.0390	0.2505

1.2D + 1.0E - Normal To Face	120.00	0.0201	-0.0016	0.0239
	150.00	0.0337	-0.0019	0.0308
	176.42	0.0487	-0.0003	0.0330
	180.00	0.0508	-0.0002	0.0358

1.2D + 1.6W 105 mph Wind at 60° From Face	120.00	0.9093	0.2051	1.0314
	150.00	1.4319	0.4133	1.1003
	176.42	1.9582	1.0651	1.0549
	180.00	2.0319	1.0847	1.4232

1.2D + 1.6W 105 mph Wind at 90° From Face	120.00	0.9139	0.0802	1.0233
	150.00	1.4371	0.1248	1.0973
	176.42	1.9614	0.1241	0.3884
	180.00	2.0357	0.1241	1.5680

1.2D + 1.6W 105 mph Wind at Normal To Face	120.00	0.9334	-0.0838	1.0634
	150.00	1.4677	-0.1284	1.1259
	176.42	2.0103	-0.1264	1.9415
	180.00	2.0832	-0.1262	0.8807

	Mat Foundation Design for Self Supporting Tower			Date
				7/14/2020
	Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	180
	Site Nmber:	CT09680-S-SBA	Engineer Name:	J. Chen
Engr. Number:	94589	Engineer Login ID:		

Foundation Info Obtained from:

Analysis or Design?

Number of Tower Legs:

Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	367.3	Uplift Force (Kips):	330.2
Shear Force (Kips):	27.4		

(2). Tower Base:

Total Vertical Load (Kips):	42.9	Total Shear Force (Kips):	46.7
Moment (Kips-ft):	4432.6		

Foundation Geometries:

Leg distance (Center-to-Center ft.):	14.5	Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	Round 3.0	Pier Height A. G. (ft.):	1.00
Tower center to mat center (ft):	0	Depth of Base BG (ft.):	4.5
Length of Pad (ft.):	28	Width of Pad (ft.):	28
Thickness of Pad (ft):	2.50		

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	12	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:

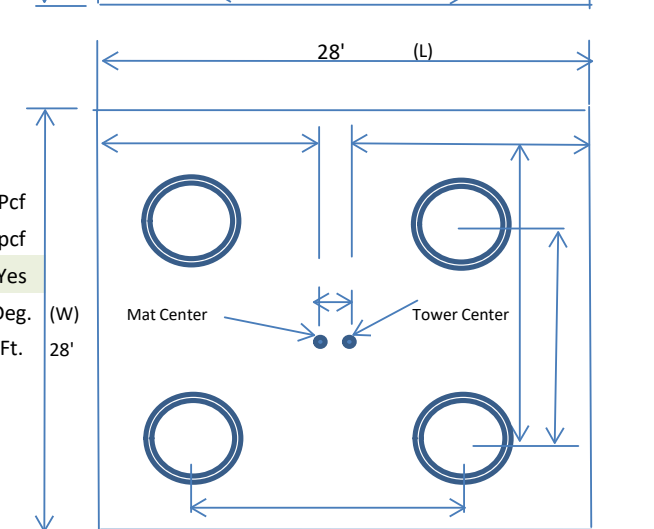
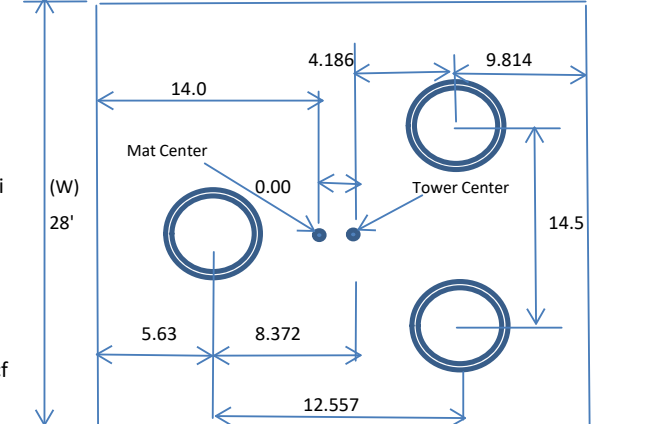
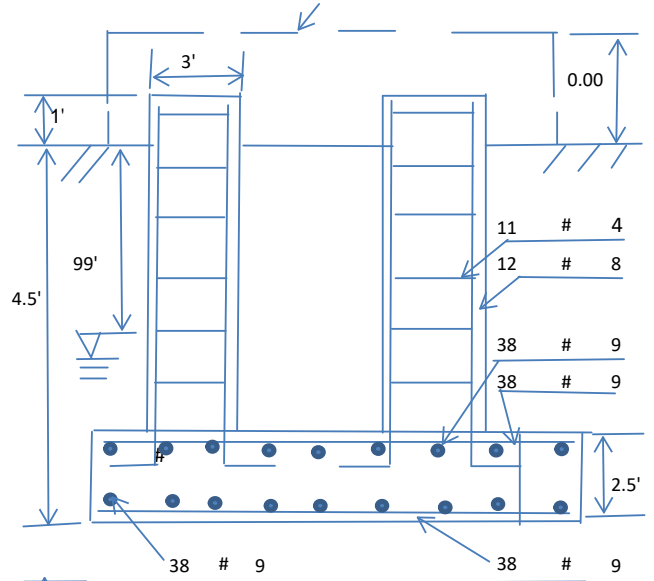
Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38
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Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38
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Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	12000	Consider ties in concrete shear strength:	Yes	
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg. (W)
		Depth to ignor lateral resistance	1.0	Ft. 28'



Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1525.59	Total Dry Soil Weight (Kips):	167.81	
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00	
Total Effective Soil Weight (Kips):	167.81	Weight from the Concrete Block at Top (K):	0.00	
Total Dry Concrete Volume (cu. Ft.):	2023.62	Total Dry Concrete Weight (Kips):	303.54	
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00	
Total Effective Concrete Weight (Kips):	303.54	Total Vertical Load on Base (Kips):	514.28	

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2489.31	<	Allowable Factored Soil Bearing (psf):	9000	0.28	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6540.0	>	Design Factored Momont (kips-ft):	4686	0.72	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.40					OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00			
				Load/ Capacity Ratio		
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.20			
Calculated Moment Capacity (Mn,Kips-Ft):	241.0	>	Design Factored Moment (Mu, Kips-Ft)	82.2	0.34	OK!
Calculated Shear Capacity (Kips):	115.4	>	Design Factored Shear (Kips):	27.4	0.24	OK!
Calculated Tension Capacity (Tn, Kips):	511.9	>	Design Factored Tension (Tu Kips):	330.2	0.64	OK!
Calculated Compression Capacity (Pn, Kips):	1782.8	>	Design Factored Axial Load (Pu Kips):	367.3	0.21	OK!
Moment & Tension Strength Combination:	0.34	OK!	Check Tie Spacing (Design/Req'd):	0.50		
Pier Reinforcement Ratio:	0.009		Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L or W Direction, Kips):	842.7	>	One-Way Factored Shear (L/W-Dir Kips)	278.1	0.33	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	780.9	>	One-Way Factored Shear (Dia. Dir, Kips)	239.3	0.31	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0043		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0038		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	4350.2	>	Moment at Bottom (L-Direct. K-Ft):	1725.2	0.40	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	4282.3	>	Moment at Bottom (Dia. Dir. K-Ft):	1683.9	0.39	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0043		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0038		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	4350.2	>	Moment at the top (L-Dir Kips-Ft):	773.8	0.18	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	4282.3	>	Moment at the top (Dia. Dir., K-Ft):	525.8	0.12	OK!
Punching Failure Capacity (Kips):	983.9	>	Punch. Failure Factored Shear (K):	367.3	0.37	OK!

EXHIBIT 9



Tower Engineering Solutions

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

Post-Mod Antenna Mount Analysis Report

Existing 180 ft. World Tower Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT09680-S-SBA

Customer Site Name: Rogers Hill

Carrier Name: T-Mobile (App#: 116819, V#2)

Carrier Site ID / Name: CTNL021D / Rogers Hill

Site Location: 35 South Bartlett Road

Quaker Hill, Connecticut

New London County

Latitude: 41.417652

Longitude: -72.106728

Analysis Result:

Max Structural Usage: 45.8% [Pass]

Report Prepared By: Saroj Dangol



Introduction

The purpose of this report is to summarize the analysis results on the (3) T Frames at 150.00' elevation including the proposed modifications to support the proposed antenna configuration. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

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

Sources of Information

Mount Drawings	Mount mapping by Full Metal Services dated 04/30/2019
Antenna Loading	SBA Application #: 116819, v2 dated 06/17/2020
Existing Modification	N/A
Proposed Modification	TES Project No. 95007

Analysis Criteria

Basic Wind Speed Used in the Analysis: $V_{ULT} = 135$ mph (3-Sec. Gust) / Equivalent to
 $V_{ASD} = 105$ mph (3-Sec. Gust)

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

Operational Wind Speed: 30 mph +0" Radial ice

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

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

(3) T Frames at 150.00' elevation

Proposed Modification:

(2) V Brace kits: MS-C1B-2875P

(3) Mount Pipes: PST2875-8

Final Antenna Configuration

- 3 Ericsson Air 21 B2A/B4P
- 3 Ericsson AIR6449 B41
- 3 RFS APXVAARR24_43-U-NA20
- 3 Ericsson KRY 112 144/1
- 3 Ericsson Radio 4449 B71+B85*
- 3 Ericsson AIR32 KRD901146-1_B66A_B2A (Octo)
- 3 Ericsson 4415 B25

* Equipment to be flush mounted directly to the standoff and aren't shown in the placement diagram.

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 after the proposed modification is successfully completed. The maximum structural usage is 45.8%, which occurs in the mount pipe. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

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



Sector: **A**

7/10/2020

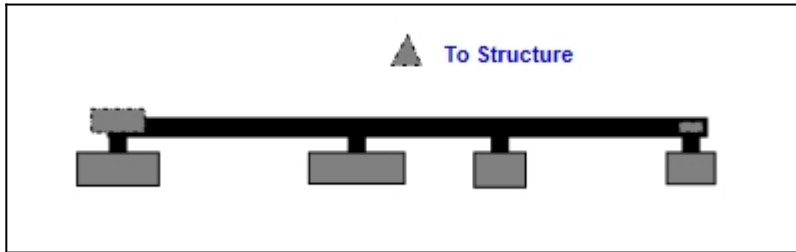


Structure Type: Self Support

Page: 1

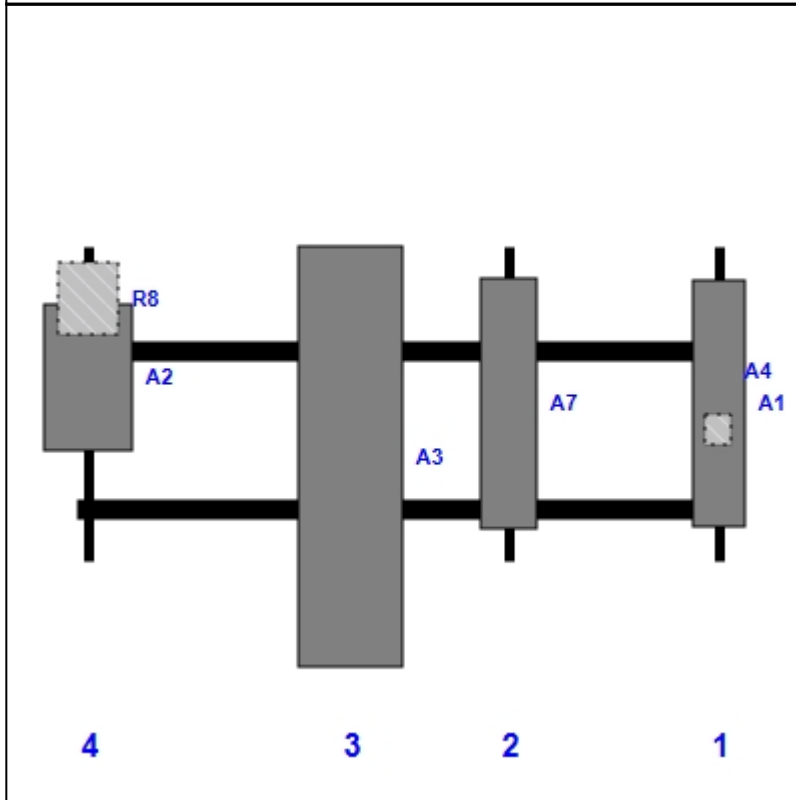
Mount Elev: 150.00

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	Air 21 B2A/B4P	56.00	12.10	147.0	1	a	Front	36.00			
A4	KRY 112 144/1	6.90	6.10	147.0	1	a	Behind	42.00			
A7	AIR32	57.00	12.90	99.00	2	a	Front	36.00			
A3	APXVAARR24_43-U-NA20	95.90	24.00	63.00	3	a	Front	48.00			
A2	AIR6449 B41	33.10	20.50	3.00	4	a	Front	30.00			
R8	4415 B25	16.50	13.40	3.00	4	a	Behind	12.00			

Sector: **B**

7/10/2020

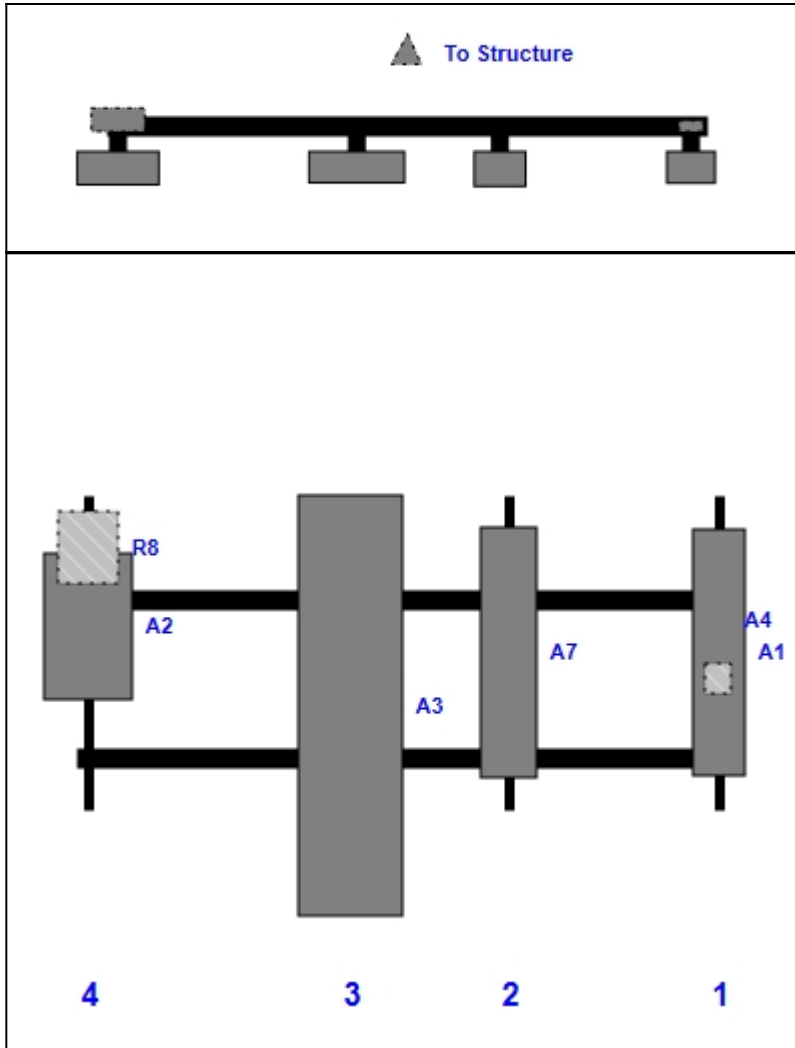
Structure Type: Self Support



Mount Elev: 150.00

Page: 2

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	Air 21 B2A/B4P	56.00	12.10	147.0	1	a	Front	36.00			
A4	KRY 112 144/1	6.90	6.10	147.0	1	a	Behind	42.00			
A7	AIR32	57.00	12.90	99.00	2	a	Front	36.00			
A3	APXVAARR24_43-U-NA20	95.90	24.00	63.00	3	a	Front	48.00			
A2	AIR6449 B41	33.10	20.50	3.00	4	a	Front	30.00			
R8	4415 B25	16.50	13.40	3.00	4	a	Behind	12.00			

Sector: C

7/10/2020

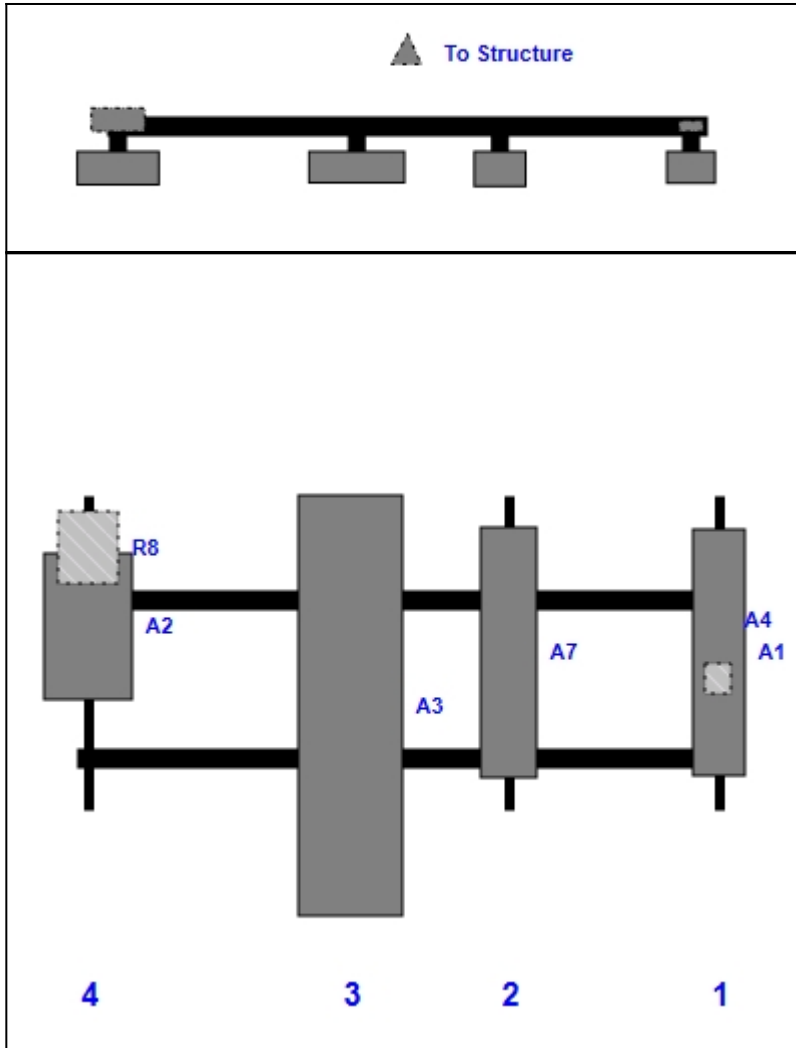
Structure Type: Self Support



Mount Elev: 150.00

Page: 3

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	Air 21 B2A/B4P	56.00	12.10	147.0	1	a	Front	36.00			
A4	KRY 112 144/1	6.90	6.10	147.0	1	a	Behind	42.00			
A7	AIR32	57.00	12.90	99.00	2	a	Front	36.00			
A3	APXVAARR24_43-U-NA20	95.90	24.00	63.00	3	a	Front	48.00			
A2	AIR6449 B41	33.10	20.50	3.00	4	a	Front	30.00			
R8	4415 B25	16.50	13.40	3.00	4	a	Behind	12.00			

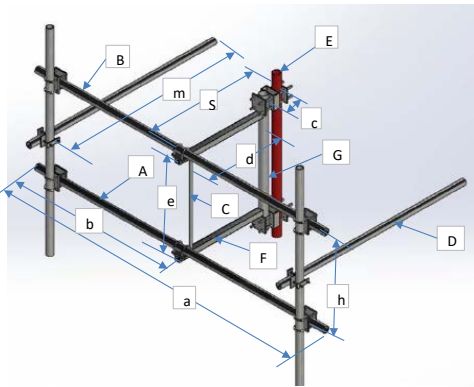


Antenna Mount Type "MT-G" Mapping Form (PATENT PENDING)

FCC #
1262077

Tower Owner:	SBA Communications	Mapping Date:	4/30/19
Site Name:	Rogers Hill	Structure Type:	3-Sided S.S. Tower
Site Number or ID:	CT09680-S-SBA	Structure Height (Ft.):	180
Mapping Contractor:	Full Metal Tower Services	Mount Height (Ft.):	150.2

This antenna mapping form is the property of TES and under **PATENT PENDING**. The formation contained herein is considered confidential in nature and is to be used only for the specific customer it was intended for. Reproduction, transmission, publication, modification or disclosure by any method is prohibited except by express written permission of TES. All means and methods are the responsibility of the contractor and the work shall be compliant with ANSI/ASSE A 10.48, OSHA, FCC, FAA and other safety requirements that may apply. TES is not warranting the usability of the safety climb as it must be assessed prior to each use in compliance with OSHA requirements.



Geometries (Unit: inches)

a	151	e	37	j	N/A	o	N/A	s	28
b	74	f	N/A	k	N/A	p	N/A	t	N/A
c	7	g	N/A	m	134	q	N/A	u*	59
d	21	h	37	n	N/A	r	N/A	v*	72

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

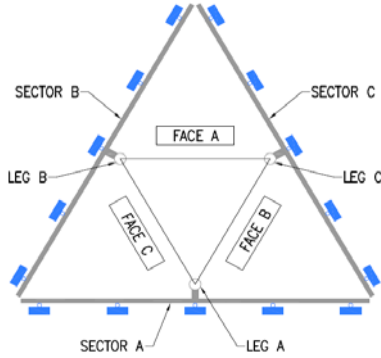
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	F	Tubing 3x3x1/4	3	3	0.25
B	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	G	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
C	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	H				
D	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	J				
E	2" SR	2	0	2	K (pipe)*	2.375 OD x 0.154 Pipe	2.375	2.067	0.154

Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)

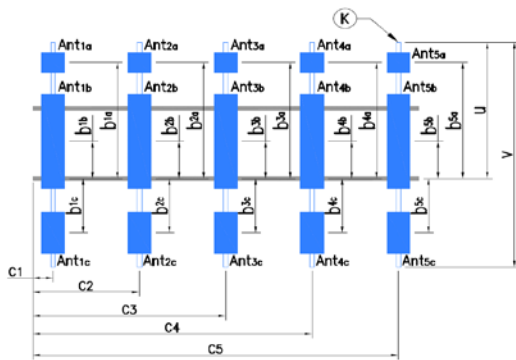
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)

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

(3) RRHs (17"x7"x20") mounted to Member C.			
Tower Face Width at the mount (ft.):	4'	Tower Leg Size at the mount (in.):	2.0" Solid Rod



Climbing facility is on Leg A, at 60° Degree Azimuth

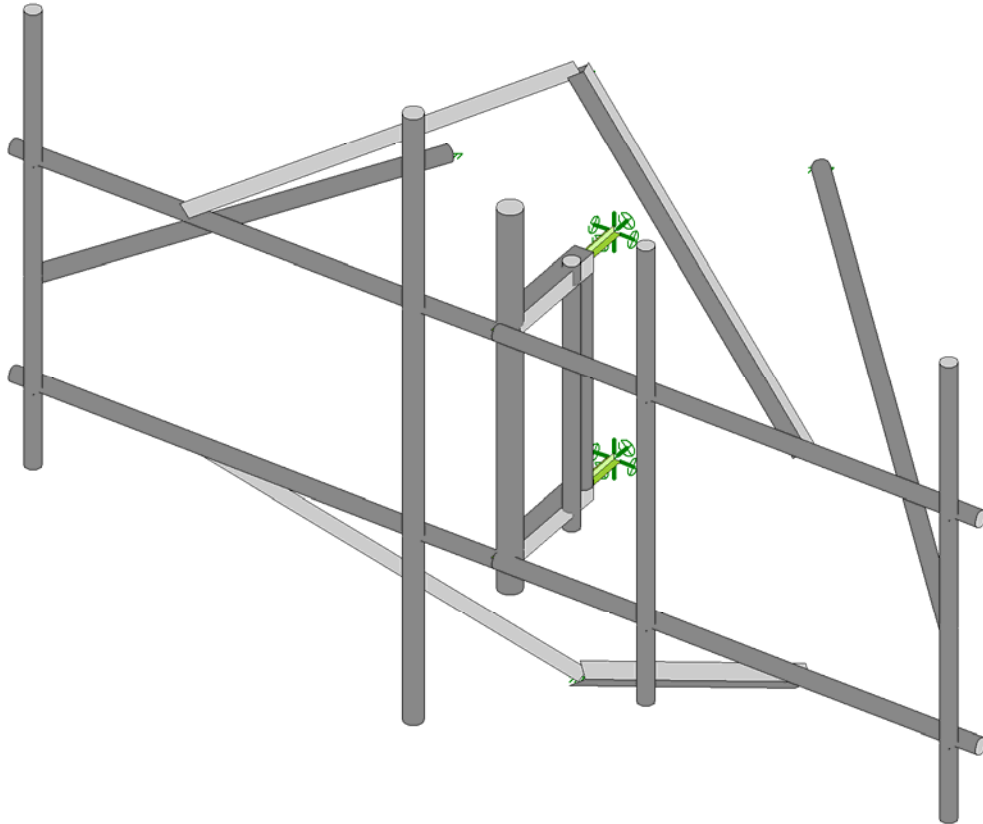
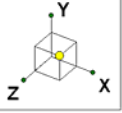


Antenna Layout

Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector.					Mounting Locations (Unit: inches)			Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Vertical Distances "b _{1a} , b _{2a} , b _{3a} , b _{1b} ,..." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C ₁ , C ₂ , C ₃ , C ₄ , C ₅ " (in.)	
Sector A									
Ant _{1a}									
Ant _{1b}	Antenna A	12	8	56	1/2" (2)	+24"	7	3	
Ant _{1c}	TMA A	6	3	8	1/2" (2)	+23"	N/A	3	
Ant _{2a}									
Ant _{2b}	Empty Mast	N/A	N/A	N/A	N/A	N/A	N/A	51	
Ant _{2c}									
Ant _{3a}									
Ant _{3b}	Antenna B	12	7.5	96.5	1/2" (2)	+26"	7	74	
Ant _{3c}									
Ant _{4a}									
Ant _{4b}	Antenna C	13	9	56	1/2" (1)	+24"	8	148	
Ant _{4c}									
Ant _{5a}									
Ant _{5b}									
Ant _{5c}									
Are Ant same as sector A?		Yes		Antennas on Sector B are the same as Sector A					

Azimuth (Degree) of Each Sector and Climbing Information

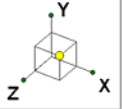
Sector A:	70°		Deg
Sector B:	190°	↗	Deg
Sector C:	320°		Deg
Climbing	60°		Deg On Leg A
Climbing Facility	Corrosion Type:	Severe corrosion observed	
	Access:	Climbing path was unobstructed.	
	Condition:	N/A	



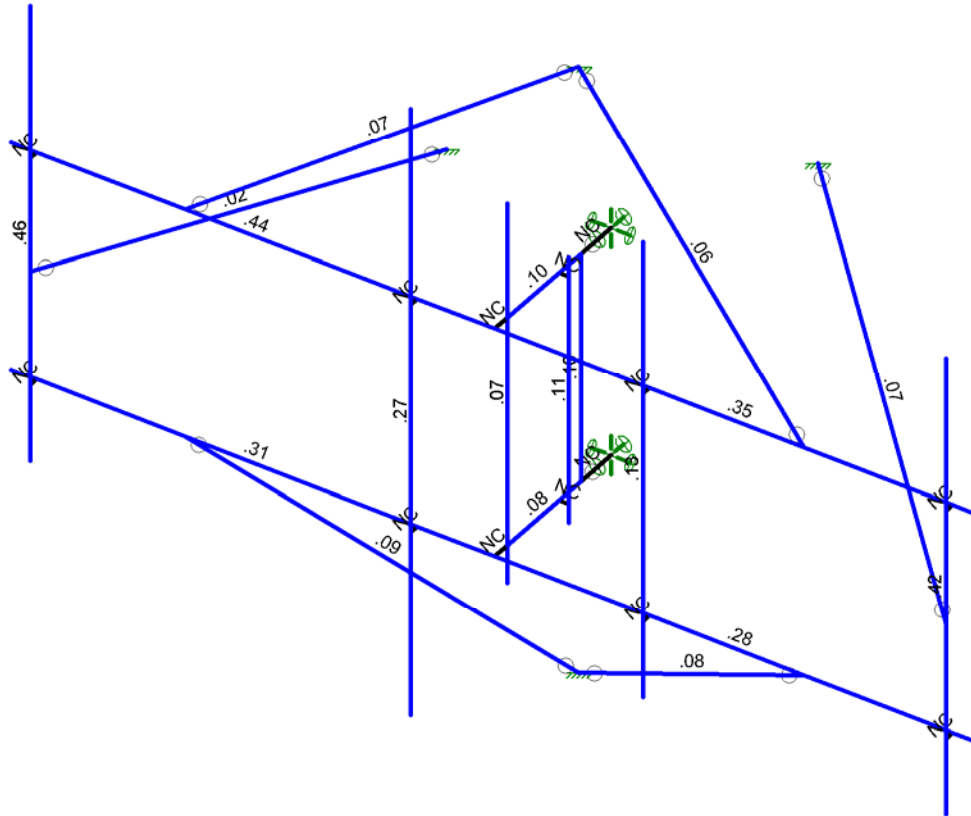
Tower Engineering Solutio...
SAROJ DANGOL
TES Project No. 95007

CT09680-S-SBA_MT_LOT_Loads Only_Sector A_G

SK - 1
July 10, 2020 at 3:23 PM
CT09680-S-SBA_95007_G_RISA_L...



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...

SAROJ DANGOL

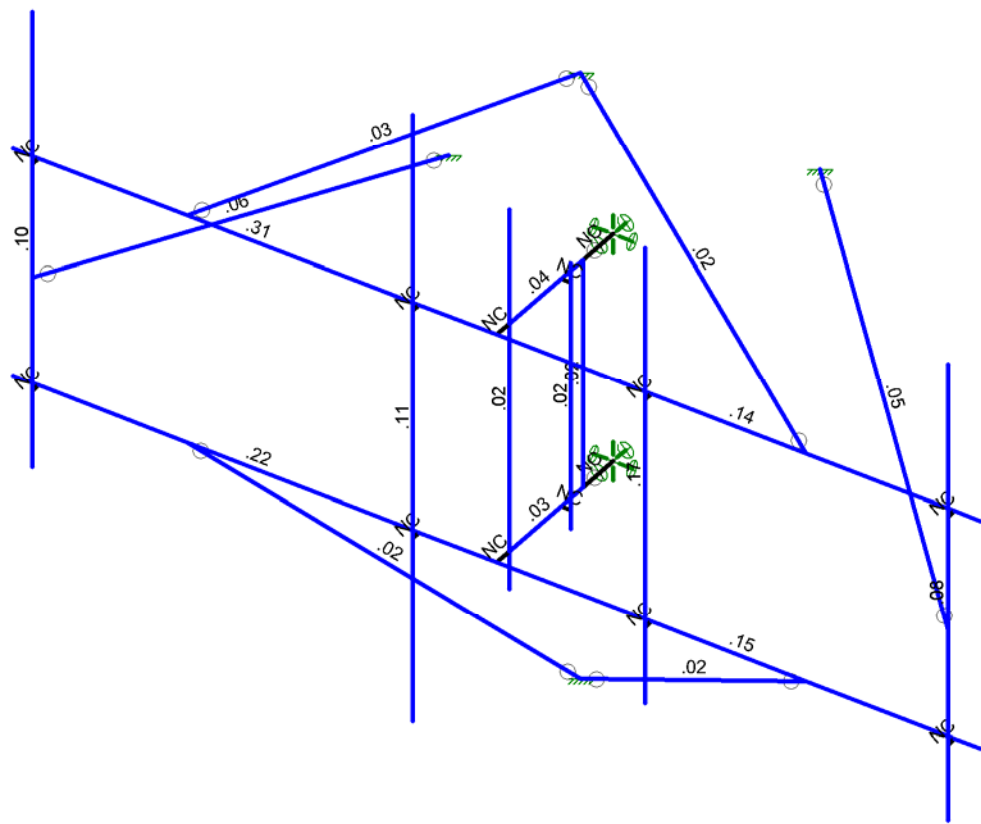
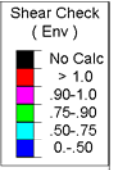
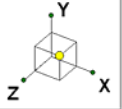
TES Project No. 95007

CT09680-S-SBA_MT_LOT_Loads Only_Sector A_G

SK - 2

July 10, 2020 at 3:23 PM

CT09680-S-SBA_95007_G_RISA_L...



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

Tower Engineering Solutio...	CT09680-S-SBA_MT_LOT_Loads Only_Sector A_G	SK - 3
SAROJ DANGOL		July 10, 2020 at 3:23 PM
TES Project No. 95007		CT09680-S-SBA_95007_G_RISA_L...



Company : Tower Engineering Solutions, LLC
 Designer : SAROJ DANGOL
 Job Number : TES Project No. 95007
 Model Name : CT09680-S-SBA_MT_LOT_Loads Only_Sector A_G

July 10, 2020
 3:24 PM
 Checked By: _____

Basic Load Cases

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Antenna D	None				11		
2	Antenna Di	None				11		
3	Antenna W Front	None				11		
4	Antenna Wi Front	None				11		
5	Antenna W Side	None				11		
6	Antenna Wi Side	None				11		
7	Service Lm1	None				1		
8	Service Lm2	None				1		
9	Structure D	None	-1					
10	Structure Di	None					19	
11	Structure W Front	None					19	
12	Structure Wi Front	None					19	
13	Structure W Side	None					19	
14	Structure Wi Side	None					19	

Load Combinations

Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
1	1.2D+1.6W (Front)	Yes	Y	1	1.2	9	1.2	3	1.6	11	1.6								
2	1.2D+1.6W (Back)	Yes	Y	1	1.2	9	1.2	3	-1.6	11	-1.6								
3	1.2D+1.6W (Left)	Yes	Y	1	1.2	9	1.2	5	1.6	13	1.6								
4	1.2D+1.6W (Right)	Yes	Y	1	1.2	9	1.2	5	-1.6	13	-1.6								
5	1.2D+1.0Di+1.0Wi (Fr...	Yes	Y	1	1.2	9	1.2	2	1	10	1	4	1	12	1				
6	1.2D+1.0Di+1.0Wi (Ba...	Yes	Y	1	1.2	9	1.2	2	1	10	1	4	-1	12	-1				
7	1.2D+1.0Di+1.0Wi (Left)	Yes	Y	1	1.2	9	1.2	2	1	10	1	6	1	14	1				
8	1.2D+1.0Di+1.0Wi (Ri...	Yes	Y	1	1.2	9	1.2	2	1	10	1	6	-1	14	-1				
9	1.2D+1.5L1+.16W (Ma...	Yes	Y	1	1.2	9	1.2	7	1.5	3	.16	11	.16						
10	1.2D+1.5L2+.16W (Ma...	Yes	Y	1	1.2	9	1.2	8	1.5	3	.16	11	.16						
11	1.4D	Yes	Y	1	1.4	9	1.4												

Joint Coordinates and Temperatures

Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	2.25	0
2	N2	0	3	2.25	0
3	N3	-6.25	0	2.25	0
4	N4	-6.25	3	2.25	0
5	N7	6.25	0	2.25	0
6	N8	6.25	3	2.25	0
7	N7A	0	0	2	0
8	N8A	0	3	2	0
9	N9	0	4.5	2	0
10	N10	0	-.5	2	0
11	N13	0	0	0	0
12	N14	0	3	0	0
13	N15	5.91667	0	2.25	0
14	N16	5.91667	3	2.25	0
15	N21A	-5.91667	0	2.25	0
16	N22A	-5.91667	3	2.25	0
17	N23	5.91667	5	2.375	0
18	N24	-5.91667	5	2.375	0
19	N25	5.91667	-1	2.375	0



Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
20	N26	-5.91667	-1	2.375	0	
21	N27	-1	5.5833	2.375	0	
22	N28	2	5	2.375	0	
23	N29	-1	-2.4167	2.375	0	
24	N30	2	-1	2.375	0	
25	N33	-3.464	1.5	-2	0	
26	N31	2	0	2.25	0	
27	N32A	2	3	2.25	0	
28	N33A	5.91667	0	2.375	0	
29	N34	5.91667	3	2.375	0	
30	N37	-5.91667	0	2.375	0	
31	N38	-5.91667	3	2.375	0	
32	N39	2	0	2.375	0	
33	N40	2	3	2.375	0	
34	N39A	0	3	0.58333	0	
35	N40A	0	0	0.58333	0	
36	N41	0	3	1	0	
37	N42	0	0	1	0	
38	N43	.125	3	1	0	
39	N44	.125	0	1	0	
40	N43A	.125	3.25	1	0	
41	N44A	.125	-.25	1	0	
42	N67A	-5.91667	1.5	2.375	0	
43	N67B	0	1.5	-4	0	
44	N68A	5.91667	1.5	2.375	0	
45	N69	-1.00001	0	2.25	0	
46	N70	-1.00001	3	2.25	0	
47	N71	-1	0	2.375	0	
48	N72	-1	3	2.375	0	
49	N49	-4	3	2.25	0	
50	N50	4	3	2.25	0	
51	N51	0	5.5	.625	0	
52	N52	-4	0	2.25	0	
53	N53	4	0	2.25	0	
54	N54	0	-2.5	.625	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MP1	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	MP2	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	Front face	HSS2.375X0.125	Beam	HSS Pipe	A500 Gr.B ...	Typical	.823	.527	.527	1.05
4	Standoff	HSS3X3X3	Beam	SquareTube	A500 Gr.B ...	Typical	1.89	2.46	2.46	4.03
5	SA V	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
6	Stabilizer	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	All Thread	0.5 All Thread	Beam	BAR	A36 Gr.36	Typical	.142	.002	.002	.003
8	N V Brace	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

Hot Rolled Steel Properties

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



Hot Rolled Steel Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Rv	Fu[ksi]	Rt	
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N1			Front face	Beam	HSS Pipe	A500 Gr.B...	Typical
2	M2	N1	N7			Front face	Beam	HSS Pipe	A500 Gr.B...	Typical
3	M3	N4	N2			Front face	Beam	HSS Pipe	A500 Gr.B...	Typical
4	M4	N2	N8			Front face	Beam	HSS Pipe	A500 Gr.B...	Typical
5	M5	N9	N10			SA V	Beam	Pipe	A53 Gr.B	Typical
6	M6	N14	N39A			RIGID	None	None	RIGID	Typical
7	M7	N13	N40A			RIGID	None	None	RIGID	Typical
8	M8	N8A	N2			RIGID	None	None	RIGID	Typical
9	M9	N7A	N1			RIGID	None	None	RIGID	Typical
10	MP4A	N24	N26			MP1	Beam	Pipe	A53 Gr.B	Typical
11	MP1A	N23	N25			MP1	Beam	Pipe	A53 Gr.B	Typical
12	MP3A	N27	N29			MP2	Beam	Pipe	A53 Gr.B	Typical
13	MP2A	N28	N30			MP1	Beam	Pipe	A53 Gr.B	Typical
14	M14	N67A	N33			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
15	M15	N22A	N38			RIGID	None	None	RIGID	Typical
16	M16	N21A	N37			RIGID	None	None	RIGID	Typical
17	M19	N32A	N40			RIGID	None	None	RIGID	Typical
18	M20	N31	N39			RIGID	None	None	RIGID	Typical
19	M21	N16	N34			RIGID	None	None	RIGID	Typical
20	M22	N15	N33A			RIGID	None	None	RIGID	Typical
21	M23	N39A	N40A			MP1	Beam	Pipe	A53 Gr.B	Typical
22	M24	N41	N43			RIGID	None	None	RIGID	Typical
23	M25	N42	N44			RIGID	None	None	RIGID	Typical
24	MP5A	N43A	N44A			MP1	Beam	Pipe	A53 Gr.B	Typical
25	M41A	N68A	N67B			Stabilizer	Beam	Pipe	A53 Gr.B	Typical
26	M42A	N39A	N8A			Standoff	Beam	SquareTube	A500 Gr.B...	Typical
27	M43	N40A	N7A			Standoff	Beam	SquareTube	A500 Gr.B...	Typical
28	M44	N70	N72			RIGID	None	None	RIGID	Typical
29	M45	N69	N71			RIGID	None	None	RIGID	Typical
30	M30	N51	N49			N V Brace	Beam	Single Angle	A36 Gr.36	Typical
31	M31	N51	N50			N V Brace	Beam	Single Angle	A36 Gr.36	Typical
32	M32	N54	N52			N V Brace	Beam	Single Angle	A36 Gr.36	Typical
33	M33	N54	N53			N V Brace	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4						Yes				None
5	M5						Yes				None
6	M6		000000				Yes	** NA **			None
7	M7		000000				Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes	** NA **			None
10	MP4A						Yes				None
11	MP1A						Yes				None
12	MP3A						Yes				None
13	MP2A						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
14	M14	BenPIN	BenPIN				Yes				None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M19						Yes	** NA **			None
18	M20						Yes	** NA **			None
19	M21						Yes	** NA **			None
20	M22						Yes	** NA **			None
21	M23						Yes				None
22	M24						Yes	** NA **			None
23	M25						Yes	** NA **			None
24	MP5A						Yes				None
25	M41A	BenPIN	BenPIN				Yes				None
26	M42A						Yes				None
27	M43						Yes				None
28	M44						Yes	** NA **			None
29	M45						Yes	** NA **			None
30	M30	BenPIN	BenPIN				Yes				None
31	M31	BenPIN	BenPIN				Yes				None
32	M32	BenPIN	BenPIN				Yes				None
33	M33	BenPIN	BenPIN				Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	Front face	6.25			Lbyy						Lateral
2	M2	Front face	6.25			Lbyy						Lateral
3	M3	Front face	6.25			Lbyy						Lateral
4	M4	Front face	6.25			Lbyy						Lateral
5	M5	SA V	5			Lbyy						Lateral
6	MP4A	MP1	6			Lbyy						Lateral
7	MP1A	MP1	6			Lbyy						Lateral
8	MP3A	MP2	8			Lbyy						Lateral
9	MP2A	MP1	6			Lbyy						Lateral
10	M14	Stabilizer	5.016			Lbyy						Lateral
11	M23	MP1	3			Lbyy						Lateral
12	MP5A	MP1	3.5			Lbyy						Lateral
13	M41A	Stabilizer	8.698			Lbyy						Lateral
14	M42A	Standoff	1.417			Lbyy						Lateral
15	M43	Standoff	1.417			Lbyy						Lateral
16	M30	N V Brace	4.989			Lbyy						Lateral
17	M31	N V Brace	4.989			Lbyy						Lateral
18	M32	N V Brace	4.989			Lbyy						Lateral
19	M33	N V Brace	4.989			Lbyy						Lateral

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N14	Reaction	Reaction	Reaction	Reaction		Reaction
2	N13	Reaction	Reaction	Reaction	Reaction		Reaction
3	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N67B	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N51	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N54	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N14	max	77.411	2	706.841	5	868.953	1	-.125	9	0	11	.092	2
2		min	-87.779	9	214.113	9	-1008.933	2	-.412	5	0	1	-.076	1
3	N13	max	76.109	2	726.034	5	691.402	1	-.074	2	0	11	.074	9
4		min	-83.9	10	127.152	2	-549.462	2	-.424	5	0	1	-.051	4
5	N33	max	248.484	2	32.742	6	456.256	1	.048	1	0	11	.044	2
6		min	-248.614	1	9.377	1	-456.651	2	-.025	2	0	1	-.085	1
7	N67B	max	410.675	1	56.499	6	473.732	1	.053	10	0	11	.057	10
8		min	-410.554	2	17.667	1	-474.31	2	0	2	0	1	0	2
9	N51	max	1206.17	4	916.676	6	142.892	1	.006	1	.002	9	0	10
10		min	-1175.273	3	-60.535	1	-569.514	6	-.003	2	-.001	10	-.001	9
11	N54	max	1053.137	4	878.504	5	553.226	5	.004	9	.002	10	0	10
12		min	-1083.937	3	102.84	2	-37.185	2	0	2	-.002	9	-.001	9
13	Totals:	max	1825.623	4	3145.123	6	3051.191	1						
14		min	-1825.623	3	1167.692	1	-3051.195	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
1	M1	1	max	0	11	0	11	0	11	0	11	0	11	0	11
2			min	0	1	-750	9	0	1	0	1	0	1	0	1
3		2	max	473.059	9	65.993	4	88.729	4	.086	2	.093	4	.069	3
4			min	-39.493	4	-469.37	9	-171.551	3	-.203	9	-.185	3	-.084	4
5		3	max	188.112	4	151.355	3	214.153	9	.086	2	.141	4	.257	9
6			min	-488.778	3	-111.237	4	-16.24	2	-.199	9	-.192	3	-.033	4
7		4	max	188.112	4	145.707	3	212.484	9	.086	2	.256	9	.162	9
8			min	-488.778	3	-116.884	4	-14.66	4	-.199	9	-.11	2	-.097	3
9		5	max	106.425	2	39.982	3	448.166	2	.223	1	.367	2	.206	6
10			min	-372.359	5	-348.619	8	-333.502	1	-.284	2	-.216	1	.007	1
11	M2	1	max	190.599	2	187.198	8	62.858	1	.157	10	.335	10	.21	8
12			min	-451.015	1	-7.807	3	-187.923	10	.029	4	-.051	1	.025	3
13		2	max	190.599	2	167.824	8	46.169	1	.157	10	.041	5	.041	3
14			min	-451.015	1	-13.454	3	-189.591	10	.029	4	-.008	2	-.089	4
15		3	max	207.003	2	122.415	3	16.86	3	.159	10	.149	3	.255	10
16			min	-530.003	1	-191.151	4	-214.086	10	.02	3	-.179	4	-.014	3
17		4	max	437.447	10	439.384	10	172.336	4	.163	10	.094	3	.073	1
18			min	-187.516	3	-79.464	3	-102.065	3	.02	3	-.175	4	-.067	2
19		5	max	0	11	750	10	0	11	0	11	0	11	0	11
20			min	0	1	0	1	0	1	0	1	0	1	0	1
21	M3	1	max	0	11	0	11	0	11	0	11	0	11	0	11
22			min	0	1	0	1	0	1	0	1	0	1	0	1
23		2	max	167.108	3	64.211	3	180.643	4	.073	2	.19	4	.11	2
24			min	-502.509	9	-506.634	9	-98.099	3	-.183	9	-.098	3	-.124	1
25		3	max	589.918	2	181.252	4	23.514	3	.071	2	.195	4	.23	9
26			min	-284.754	1	-139.703	3	-217.602	9	-.18	9	-.145	3	-.042	3
27		4	max	589.918	2	175.604	4	23.514	3	.071	2	-.018	4	.193	9
28			min	-284.754	1	-145.35	3	-219.271	9	-.18	9	-.248	9	-.134	4
29		5	max	618.653	2	74.588	2	555.634	2	.324	2	.445	2	.225	5
30			min	-377.97	1	-355.034	7	-668.686	1	-.386	1	-.595	1	-.09	2
31	M4	1	max	687.998	2	177.426	7	270.64	1	.161	10	.229	2	.209	5
32			min	-427.276	1	39.066	4	-178.239	2	-.046	2	-.401	1	.013	2
33		2	max	687.998	2	158.052	7	253.951	1	.161	10	.009	1	.039	10
34			min	-427.276	1	33.418	4	-161.55	2	-.046	2	-.043	10	-.064	2
35		3	max	671.595	2	168.032	4	213.515	10	.145	10	.184	3	.25	10
36			min	-348.288	1	-238.782	3	-34.458	4	-.038	2	-.156	4	-.004	4
37		4	max	248.688	4	488.142	10	114.784	4	.148	10	.186	3	.121	2



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
38		min	-483.5	10	-77.826	4	-183.587	3	-.038	2	-.107	4	-.114	1	
39	5	max	0	11	0	11	0	11	0	11	0	11	0	11	
40		min	0	1	0	1	0	1	0	1	0	1	0	1	
41	M5	1	max	0	11	.001	1	0	1	0	11	0	11	0	11
42		min	0	1	-.002	2	-.008	6	0	1	0	1	0	1	
43	2	max	24.545	8	19.676	4	19.676	1	0	11	.012	1	.012	3	
44		min	10.566	1	-19.676	3	-19.678	2	0	1	-.012	2	-.012	4	
45	3	max	247.802	3	33.654	10	275.611	6	.025	4	.03	1	.055	2	
46		min	-245.454	4	-25.344	9	23.652	10	-.062	10	-.149	6	-.045	1	
47	4	max	258.368	3	46.747	4	276.529	5	.025	4	.219	5	.06	2	
48		min	-234.888	4	-27.293	3	25.619	10	-.062	10	-.01	2	-.074	1	
49	5	max	0	11	0	9	.003	5	0	11	0	11	0	11	
50		min	0	1	0	8	0	2	0	1	0	1	0	1	
51	M6	1	max	868.953	1	706.841	5	87.911	9	.092	2	0	11	.412	5
52		min	-1008.933	2	214.113	9	-77.152	2	-.076	1	0	4	.125	9	
53	2	max	868.953	1	706.841	5	87.911	9	.092	2	.013	9	.309	5	
54		min	-1008.933	2	214.113	9	-77.152	2	-.076	1	-.011	2	.094	9	
55	3	max	868.953	1	706.841	5	87.911	9	.092	2	.026	9	.206	5	
56		min	-1008.933	2	214.113	9	-77.152	2	-.076	1	-.023	2	.062	9	
57	4	max	868.953	1	706.841	5	87.911	9	.092	2	.038	9	.103	5	
58		min	-1008.933	2	214.113	9	-77.152	2	-.076	1	-.034	2	.031	9	
59	5	max	868.953	1	706.841	5	87.911	9	.092	2	.051	9	0	11	
60		min	-1008.933	2	214.113	9	-77.152	2	-.076	1	-.045	2	0	1	
61	M7	1	max	691.402	1	726.034	5	83.89	10	.074	9	0	3	.424	5
62		min	-549.462	2	127.152	2	-75.897	2	-.051	4	0	1	.074	2	
63	2	max	691.402	1	726.034	5	83.89	10	.074	9	.012	10	.318	5	
64		min	-549.462	2	127.152	2	-75.897	2	-.051	4	-.011	2	.056	2	
65	3	max	691.402	1	726.034	5	83.89	10	.074	9	.024	10	.212	5	
66		min	-549.462	2	127.152	2	-75.897	2	-.051	4	-.022	2	.037	2	
67	4	max	691.402	1	726.034	5	83.89	10	.074	9	.037	10	.106	5	
68		min	-549.462	2	127.152	2	-75.897	2	-.051	4	-.033	2	.019	2	
69	5	max	691.402	1	726.034	5	83.89	10	.074	9	.049	10	0	11	
70		min	-549.462	2	127.152	2	-75.897	2	-.051	4	-.044	2	0	1	
71	M8	1	max	941.349	1	532.025	7	135.816	9	.102	2	.197	9	.365	2
72		min	-731.916	2	-29.479	4	-147.282	3	-.066	1	-.217	10	-.423	1	
73	2	max	941.349	1	532.025	7	135.816	9	.102	2	.206	9	.367	2	
74		min	-731.916	2	-29.479	4	-147.282	3	-.066	1	-.225	10	-.445	1	
75	3	max	941.349	1	532.025	7	135.816	9	.102	2	.214	9	.368	2	
76		min	-731.916	2	-29.479	4	-147.282	3	-.066	1	-.233	10	-.467	1	
77	4	max	941.349	1	532.025	7	135.816	9	.102	2	.223	9	.37	2	
78		min	-731.916	2	-29.479	4	-147.282	3	-.066	1	-.241	10	-.489	1	
79	5	max	941.349	1	532.025	7	135.816	9	.102	2	.231	9	.371	2	
80		min	-731.916	2	-29.479	4	-147.282	3	-.066	1	-.249	10	-.51	1	
81	M9	1	max	396.672	1	536.245	8	210.134	4	.113	1	.24	10	.217	1
82		min	-604.143	2	-47.768	3	-190.051	3	-.077	2	-.157	9	-.274	2	
83	2	max	396.672	1	536.245	8	210.134	4	.113	1	.249	10	.208	1	
84		min	-604.143	2	-47.768	3	-190.051	3	-.077	2	-.164	9	-.286	2	
85	3	max	396.672	1	536.245	8	210.134	4	.113	1	.257	10	.199	1	
86		min	-604.143	2	-47.768	3	-190.051	3	-.077	2	-.172	9	-.297	2	
87	4	max	396.672	1	536.245	8	210.134	4	.113	1	.266	10	.19	1	
88		min	-604.143	2	-47.768	3	-190.051	3	-.077	2	-.179	9	-.309	2	
89	5	max	396.672	1	536.245	8	210.134	4	.113	1	.274	10	.181	1	
90		min	-604.143	2	-47.768	3	-190.051	3	-.077	2	-.186	9	-.32	2	
91	MP4A	1	max	0	11	.324	8	1.366	5	0	11	0	11	0	11
92		min	0	1	-.094	3	-.609	2	0	1	0	1	0	1	
93	2	max	273.35	8	107.412	4	217.79	1	0	11	.114	1	.058	3	
94		min	123.248	1	-107.319	3	-217.434	2	0	1	-.113	2	-.058	4	



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
95	3	max	199.331	3	43.737	3	230.616	1	.119	1	.285	1	.052	1	
96		min	-375.204	9	-502.254	9	-146.987	2	-.106	2	-.315	2	-.212	9	
97	4	max	277.504	3	31.789	1	171.877	3	.119	1	.229	1	.596	9	
98		min	-296.41	9	-473.198	9	-89.15	4	-.106	2	-.156	2	-.016	2	
99	5	max	0	11	.003	2	.003	2	0	11	0	11	0	11	
100		min	0	1	-.015	5	-.052	5	0	1	0	1	0	1	
101	MP1A	1	max	0	11	.039	4	.662	5	0	11	0	11	0	11
102		min	0	1	-.149	7	-.129	2	0	1	0	1	0	1	
103	2	max	158.769	8	112.982	4	153.251	1	0	11	.081	1	.061	3	
104		min	61.147	1	-113.016	3	-153.093	2	0	1	-.081	2	-.061	4	
105	3	max	150.826	4	483.279	10	205.8	1	.034	2	.244	1	.186	2	
106		min	-418.425	10	-151.931	2	-136.54	2	-.05	10	-.267	2	-.108	1	
107	4	max	188.216	4	437.662	10	239.975	2	.034	2	.147	1	.004	2	
108		min	-380.689	10	-129.932	1	-170.212	1	-.05	10	-.09	2	-.55	10	
109	5	max	0	11	.012	5	-.004	3	0	11	0	11	0	11	
110		min	0	1	-.002	2	-.044	8	0	1	0	1	0	1	
111	MP3A	1	max	0	11	.134	8	.38	1	0	11	0	11	0	11
112		min	0	1	-.085	3	-.359	2	0	1	0	1	0	1	
113	2	max	318.617	8	210.104	4	481.366	1	0	11	.709	1	.302	3	
114		min	89.948	1	-210.091	3	-481.345	2	0	1	-.709	2	-.302	4	
115	3	max	53.721	2	28.727	2	75.979	2	.337	9	.624	1	.104	2	
116		min	-54.022	1	-109.575	5	-75.593	1	-.035	2	-.624	2	-.109	1	
117	4	max	-89.948	10	209.932	3	480.69	2	0	11	.708	1	.302	3	
118		min	-318.617	5	-209.945	4	-480.711	1	0	1	-.708	2	-.302	4	
119	5	max	0	11	.062	4	.275	1	0	11	0	11	0	11	
120		min	0	1	-.117	7	-.295	2	0	1	0	1	0	1	
121	MP2A	1	max	0	11	.026	2	.273	5	0	11	0	11	0	11
122		min	0	1	-.098	5	-.1	2	0	1	0	1	0	1	
123	2	max	190.932	8	122.891	4	162.58	1	0	11	.085	1	.065	3	
124		min	85.567	1	-122.918	3	-162.508	2	0	1	-.085	2	-.065	4	
125	3	max	232.217	4	136.33	10	67.205	2	-.018	2	.104	1	.079	1	
126		min	-233.202	3	-16.387	2	-46.055	1	-.255	10	-.114	2	-.048	2	
127	4	max	238.465	4	136.33	10	51.183	2	-.018	2	.047	1	0	4	
128		min	-226.954	3	-16.387	2	-30.034	1	-.255	10	-.025	2	-.126	10	
129	5	max	0	11	.006	7	-.001	4	0	11	0	11	0	11	
130		min	0	1	0	4	-.014	7	0	1	0	1	0	1	
131	M14	1	max	496.706	1	32.476	8	20.381	4	.05	2	0	11	0	11
132		min	-496.987	2	10.445	1	-20.381	3	-.098	1	0	1	0	1	
133	2	max	502.419	1	16.238	8	10.19	4	.05	2	.019	4	-.01	10	
134		min	-502.7	2	5.222	1	-10.19	3	-.098	1	-.019	3	-.031	5	
135	3	max	508.131	1	0	11	0	11	.05	2	.026	4	-.013	10	
136		min	-508.412	2	0	1	0	1	-.098	1	-.026	3	-.041	5	
137	4	max	513.844	1	-5.222	10	10.19	3	.05	2	.019	4	-.01	10	
138		min	-514.125	2	-16.238	5	-10.19	4	-.098	1	-.019	3	-.031	5	
139	5	max	519.557	1	-10.445	10	20.381	3	.05	2	0	11	0	11	
140		min	-519.838	2	-32.476	5	-20.381	4	-.098	1	0	1	0	1	
141	M15	1	max	97.612	3	506.536	9	166.78	3	.714	9	.101	2	.073	2
142		min	-181.412	4	-69.981	3	-502.387	9	.038	3	-.092	1	-.183	9	
143	2	max	97.612	3	506.536	9	166.78	3	.714	9	.103	2	.067	2	
144		min	-181.412	4	-69.981	3	-502.387	9	.038	3	-.099	1	-.199	9	
145	3	max	97.612	3	506.536	9	166.78	3	.714	9	.104	2	.062	2	
146		min	-181.412	4	-69.981	3	-502.387	9	.038	3	-.106	1	-.215	9	
147	4	max	97.612	3	506.536	9	166.78	3	.714	9	.105	2	.056	2	
148		min	-181.412	4	-69.981	3	-502.387	9	.038	3	-.112	1	-.231	9	
149	5	max	97.612	3	506.536	9	166.78	3	.714	9	.106	2	.05	2	
150		min	-181.412	4	-69.981	3	-502.387	9	.038	3	-.119	1	-.247	9	
151	M16	1	max	171.036	3	290.423	7	473.204	9	.832	9	.123	1	.086	2



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
152		min	-88.848	4	-291.932	9	-39.8	4	0	4	-.132	2	-.203	9	
153	2	max	171.036	3	290.423	7	473.204	9	.832	9	.122	1	.085	2	
154		min	-88.848	4	-291.932	9	-39.8	4	0	4	-.126	2	-.194	9	
155	3	max	171.036	3	290.423	7	473.204	9	.832	9	.121	1	.084	2	
156		min	-88.848	4	-291.932	9	-39.8	4	0	4	-.119	2	-.185	1	
157	4	max	171.036	3	290.423	7	473.204	9	.832	9	.12	1	.083	2	
158		min	-88.848	4	-291.932	9	-39.8	4	0	4	-.113	2	-.191	1	
159	5	max	171.036	3	290.423	7	473.204	9	.832	9	.119	1	.082	2	
160		min	-88.848	4	-291.932	9	-39.8	4	0	4	-.106	2	-.196	1	
161	M19	1	max	224.686	1	325.028	3	177.565	3	.101	3	.238	10	.017	3
162		min	-245.655	2	-140.394	4	-115.33	4	-.214	10	.02	2	-.026	4	
163	2	max	224.686	1	325.028	3	177.565	3	.101	3	.242	10	.007	3	
164		min	-245.655	2	-140.394	4	-115.33	4	-.214	10	.02	2	-.024	8	
165	3	max	224.686	1	325.028	3	177.565	3	.101	3	.247	10	-.003	3	
166		min	-245.655	2	-140.394	4	-115.33	4	-.214	10	.019	2	-.029	8	
167	4	max	224.686	1	325.028	3	177.565	3	.101	3	.251	10	-.009	9	
168		min	-245.655	2	-140.394	4	-115.33	4	-.214	10	.019	2	-.035	6	
169	5	max	224.686	1	325.028	3	177.565	3	.101	3	.255	10	-.009	4	
170		min	-245.655	2	-140.394	4	-115.33	4	-.214	10	.018	2	-.043	6	
171	M20	1	max	132.166	1	324.027	4	100.24	3	-.015	2	-.02	2	.021	4
172		min	-111.198	2	-141.4	3	-162.515	4	-.195	10	-.238	10	-.029	3	
173	2	max	132.166	1	324.027	4	100.24	3	-.015	2	-.02	2	.011	4	
174		min	-111.198	2	-141.4	3	-162.515	4	-.195	10	-.242	10	-.025	3	
175	3	max	132.166	1	324.027	4	100.24	3	-.015	2	-.019	2	0	4	
176		min	-111.198	2	-141.4	3	-162.515	4	-.195	10	-.247	10	-.03	7	
177	4	max	132.166	1	324.027	4	100.24	3	-.015	2	-.019	2	-.005	2	
178		min	-111.198	2	-141.4	3	-162.515	4	-.195	10	-.251	10	-.036	5	
179	5	max	132.166	1	324.027	4	100.24	3	-.015	2	-.018	2	-.004	2	
180		min	-111.198	2	-141.4	3	-162.515	4	-.195	10	-.255	10	-.044	5	
181	M21	1	max	114.185	4	487.281	10	483.398	10	.001	4	.034	4	.038	2
182		min	-184.25	3	-83.541	4	-248.365	4	-.669	10	-.04	3	-.148	10	
183	2	max	114.185	4	487.281	10	483.398	10	.001	4	.026	4	.035	2	
184		min	-184.25	3	-83.541	4	-248.365	4	-.669	10	-.028	3	-.163	10	
185	3	max	114.185	4	487.281	10	483.398	10	.001	4	.026	1	.031	2	
186		min	-184.25	3	-83.541	4	-248.365	4	-.669	10	-.024	2	-.179	10	
187	4	max	114.185	4	487.281	10	483.398	10	.001	4	.035	10	.027	2	
188		min	-184.25	3	-83.541	4	-248.365	4	-.669	10	-.029	2	-.194	10	
189	5	max	114.185	4	487.281	10	483.398	10	.001	4	.05	10	.023	2	
190		min	-184.25	3	-83.541	4	-248.365	4	-.669	10	-.034	2	-.209	10	
191	M22	1	max	171.722	4	258.915	8	187.809	3	.034	3	.066	2	-.02	3
192		min	-102.532	3	-320.95	10	-437.543	10	-.769	10	-.06	1	-.163	10	
193	2	max	171.722	4	258.915	8	187.809	3	.034	3	.058	2	-.018	3	
194		min	-102.532	3	-320.95	10	-437.543	10	-.769	10	-.056	1	-.153	10	
195	3	max	171.722	4	258.915	8	187.809	3	.034	3	.05	2	-.015	3	
196		min	-102.532	3	-320.95	10	-437.543	10	-.769	10	-.052	1	-.143	10	
197	4	max	171.722	4	258.915	8	187.809	3	.034	3	.042	2	-.012	3	
198		min	-102.532	3	-320.95	10	-437.543	10	-.769	10	-.048	1	-.132	10	
199	5	max	171.722	4	258.915	8	187.809	3	.034	3	.034	2	-.01	3	
200		min	-102.532	3	-320.95	10	-437.543	10	-.769	10	-.05	10	-.13	8	
201	M23	1	max	-6.247	2	10.265	3	123.834	6	.009	10	-.044	9	.011	10
202		min	-19.425	5	-11.879	9	27.86	9	-.015	9	-.183	5	-.018	9	
203	2	max	-3.124	2	7.491	10	121.275	8	.009	10	-.017	2	.006	10	
204		min	-9.713	5	-11.879	9	28.661	9	-.015	9	-.094	5	-.009	9	
205	3	max	0	11	7.491	10	123.402	5	.009	10	.008	2	.004	4	
206		min	0	1	-11.879	9	28.767	2	-.015	9	-.008	1	-.004	3	
207	4	max	9.713	6	13.61	4	126.206	5	.009	10	.091	5	.009	9	
208		min	3.124	1	-13.768	3	20.757	2	-.015	9	.022	9	-.006	10	



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
209	5	max	19.425	6	21.621	4	129.009	5	.009	10	.187	5	.018	9	
210		min	6.247	1	-21.779	3	12.746	2	-.015	9	.039	2	-.016	4	
211	M24	1	max	44.254	4	319.83	2	8.883	1	.193	6	.016	2	.036	2
212		min	-46.825	3	-212.87	1	-138.32	6	.044	9	-.006	1	-.027	1	
213		2	max	44.254	4	319.83	2	8.883	1	.193	6	.014	9	.026	2
214		min	-46.825	3	-212.87	1	-138.32	6	.044	9	-.005	1	-.02	1	
215		3	max	44.254	4	319.83	2	8.883	1	.193	6	.013	9	.018	9
216		min	-46.825	3	-212.87	1	-138.32	6	.044	9	-.005	1	-.015	3	
217		4	max	44.254	4	319.83	2	8.883	1	.193	6	.012	9	.018	4
218		min	-46.825	3	-212.87	1	-138.32	6	.044	9	-.006	4	-.019	3	
219		5	max	44.254	4	319.83	2	8.883	1	.193	6	.012	9	.018	4
220		min	-46.825	3	-212.87	1	-138.32	6	.044	9	-.007	4	-.022	3	
221	M25	1	max	44.51	4	316.248	1	139.971	5	.198	5	.001	4	.029	1
222		min	-41.939	3	-216.452	2	-15.974	2	.02	2	-.016	9	-.02	2	
223		2	max	44.51	4	316.248	1	139.971	5	.198	5	.003	4	.027	3
224		min	-41.939	3	-216.452	2	-15.974	2	.02	2	-.015	9	-.022	4	
225		3	max	44.51	4	316.248	1	139.971	5	.198	5	.004	4	.027	3
226		min	-41.939	3	-216.452	2	-15.974	2	.02	2	-.014	9	-.025	4	
227		4	max	44.51	4	316.248	1	139.971	5	.198	5	.006	4	.027	3
228		min	-41.939	3	-216.452	2	-15.974	2	.02	2	-.013	9	-.028	4	
229		5	max	44.51	4	316.248	1	139.971	5	.198	5	.007	4	.028	3
230		min	-41.939	3	-216.452	2	-15.974	2	.02	2	-.012	9	-.032	4	
231	MP5A	1	max	0	11	0	1	0	2	0	11	0	11	0	11
232		min	0	1	0	2	-.002	5	0	1	0	1	0	1	1
233		2	max	216.515	1	37.481	3	135.05	6	.007	4	-.025	2	.009	10
234		min	-316.186	2	-34.905	4	.46	1	-.012	9	-.113	5	-.01	9	9
235		3	max	308.959	1	25.815	4	133.428	5	.007	4	.028	2	.019	4
236		min	-223.741	2	-23.239	3	2.716	2	-.012	9	-.028	1	-.019	3	3
237		4	max	312.604	1	35.161	4	136.699	5	.007	4	.112	5	.009	9
238		min	-220.097	2	-32.584	3	-6.63	2	-.012	9	.026	2	-.01	10	10
239		5	max	0	11	0	9	.002	5	0	11	0	11	0	11
240		min	0	1	0	2	0	9	0	1	0	1	0	1	1
241	M41A	1	max	580.276	1	56.317	8	24.954	4	.078	10	0	11	0	11
242		min	-580.618	2	18.113	1	-24.954	3	0	2	0	1	0	1	1
243		2	max	591.857	1	28.158	8	12.477	4	.078	10	.041	4	-.03	10
244		min	-592.198	2	9.056	1	-12.477	3	0	2	-.041	3	-.092	5	5
245		3	max	603.437	1	0	11	0	11	.078	10	.054	4	-.039	10
246		min	-603.779	2	0	1	0	1	0	2	-.054	3	-.122	5	5
247		4	max	615.017	1	-9.056	10	12.477	3	.078	10	.041	4	-.03	10
248		min	-615.359	2	-28.158	5	-12.477	4	0	2	-.041	3	-.092	5	5
249		5	max	626.597	1	-18.113	10	24.954	3	.078	10	0	11	0	11
250		min	-626.939	2	-56.317	5	-24.954	4	0	2	0	1	0	1	1
251	M42A	1	max	907.781	1	687.467	5	99.796	9	.087	2	.05	1	.183	5
252		min	-964.144	2	207.959	9	-80.62	10	-.071	1	-.049	2	.044	9	9
253		2	max	907.781	1	679.965	5	99.796	9	.087	2	.078	1	-.021	4
254		min	-964.144	2	205.019	9	-80.62	10	-.071	1	-.075	2	-.06	7	7
255		3	max	898.897	1	618.603	5	110.538	9	.051	2	.109	1	.075	2
256		min	-868.529	2	-115.716	2	-99.811	3	-.044	1	-.118	2	-.136	1	1
257		4	max	898.897	1	611.101	5	110.538	9	.051	2	.135	1	.116	2
258		min	-868.529	2	-118.656	2	-107.775	3	-.044	1	-.143	2	-.316	5	5
259		5	max	898.897	1	603.599	5	115.428	4	.051	2	.174	9	.159	2
260		min	-868.529	2	-121.595	2	-115.738	3	-.044	1	-.169	2	-.531	5	5
261	M43	1	max	620.531	1	706.877	5	91.38	10	.056	9	.039	10	.187	5
262		min	-562.208	2	120.735	2	-80.313	9	-.035	4	-.04	2	.039	2	2
263		2	max	620.531	1	699.375	5	91.38	10	.056	9	.072	10	-.003	2
264		min	-562.208	2	117.796	2	-80.313	9	-.035	4	-.068	2	-.062	5	5
265		3	max	517.826	1	587.216	6	127.503	4	.03	9	.106	10	.027	1



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC	
266		min	-546.233	2	49.991	1	-126.985	3	-.017	4	-.094	2	-.087	2	
267	4	max	517.826	1	579.714	6	135.467	4	.03	9	.142	10	.01	1	
268		min	-546.233	2	47.052	1	-134.949	3	-.017	4	-.123	2	-.294	6	
269	5	max	517.826	1	572.212	6	143.43	4	.03	9	.18	4	-.006	1	
270		min	-546.233	2	44.112	1	-142.913	3	-.017	4	-.17	3	-.498	6	
271	M44	1	max	582.401	1	363.331	8	193.188	3	.417	3	.032	2	.253	2
272		min	-582.83	2	46.81	2	-257.379	4	-.321	4	-.324	9	-.228	1	
273	2	max	582.401	1	363.331	8	193.188	3	.417	3	.033	2	.252	2	
274		min	-582.83	2	46.81	2	-257.379	4	-.321	4	-.327	9	-.233	1	
275	3	max	582.401	1	363.331	8	193.188	3	.417	3	.034	2	.25	2	
276		min	-582.83	2	46.81	2	-257.379	4	-.321	4	-.33	9	-.238	1	
277	4	max	582.401	1	363.331	8	193.188	3	.417	3	.035	2	.249	2	
278		min	-582.83	2	46.81	2	-257.379	4	-.321	4	-.333	9	-.243	1	
279	5	max	582.401	1	363.331	8	193.188	3	.417	3	.035	2	.248	2	
280		min	-582.83	2	46.81	2	-257.379	4	-.321	4	-.337	9	-.248	1	
281	M45	1	max	431.285	1	362.317	7	278.541	3	.346	4	.324	9	.395	1
282		min	-430.861	2	50.436	1	-214.348	4	-.249	3	-.032	2	-.37	2	
283	2	max	431.285	1	362.317	7	278.541	3	.346	4	.327	9	.393	1	
284		min	-430.861	2	50.436	1	-214.348	4	-.249	3	-.033	2	-.375	2	
285	3	max	431.285	1	362.317	7	278.541	3	.346	4	.33	9	.392	1	
286		min	-430.861	2	50.436	1	-214.348	4	-.249	3	-.034	2	-.38	2	
287	4	max	431.285	1	362.317	7	278.541	3	.346	4	.333	9	.39	1	
288		min	-430.861	2	50.436	1	-214.348	4	-.249	3	-.034	2	-.384	2	
289	5	max	431.285	1	362.317	7	278.541	3	.346	4	.337	9	.388	1	
290		min	-430.861	2	50.436	1	-214.348	4	-.249	3	-.035	2	-.389	2	
291	M30	1	max	387.266	3	33.633	7	40.945	2	.003	2	0	11	0	11
292		min	-1108.458	9	-2.48	4	-40.945	1	-.005	1	0	1	0	1	
293	2	max	379.104	3	16.816	7	20.473	2	.003	2	.029	2	.026	2	
294		min	-1106.14	9	-1.24	4	-20.473	1	-.005	1	-.015	1	-.04	1	
295	3	max	370.941	3	0	11	0	11	.003	2	.038	2	.034	2	
296		min	-1103.823	9	0	1	0	1	-.005	1	-.02	1	-.053	1	
297	4	max	362.779	3	1.24	4	20.473	1	.003	2	.029	2	.026	2	
298		min	-1101.506	9	-16.816	7	-20.473	2	-.005	1	-.015	1	-.04	1	
299	5	max	354.617	3	2.48	4	40.945	1	.003	2	0	11	0	11	
300		min	-1099.189	9	-33.633	7	-40.945	2	-.005	1	0	1	0	1	
301	M31	1	max	470.898	4	33.633	8	40.945	1	.004	10	0	11	0	11
302		min	-1052.825	3	-2.48	3	-40.945	2	0	2	0	1	0	1	
303	2	max	462.735	4	16.816	8	20.473	1	.004	10	.04	1	.015	1	
304		min	-1045.931	10	-1.24	3	-20.473	2	0	2	-.026	2	-.029	2	
305	3	max	454.573	4	0	11	0	11	.004	10	.053	1	.02	1	
306		min	-1043.613	10	0	1	0	1	0	2	-.034	2	-.038	2	
307	4	max	446.411	4	1.24	3	20.473	2	.004	10	.04	1	.015	1	
308		min	-1041.296	10	-16.816	8	-20.473	1	0	2	-.026	2	-.029	2	
309	5	max	438.249	4	2.48	3	40.945	2	.004	10	0	11	0	11	
310		min	-1038.979	10	-33.633	8	-40.945	1	0	2	0	1	0	1	
311	M32	1	max	1101.032	9	33.633	8	40.945	2	0	2	0	11	0	11
312		min	-334.642	4	-2.48	3	-40.945	1	-.005	9	0	1	0	1	
313	2	max	1097.276	9	16.816	8	20.473	2	0	2	.04	2	.015	2	
314		min	-326.48	4	-1.24	3	-20.473	1	-.005	9	-.026	1	-.029	1	
315	3	max	1093.519	9	0	11	0	11	0	2	.053	2	.02	2	
316		min	-318.318	4	0	1	0	1	-.005	9	-.034	1	-.038	1	
317	4	max	1089.762	9	1.24	3	20.473	1	0	2	.04	2	.015	2	
318		min	-310.156	4	-16.816	8	-20.473	2	-.005	9	-.026	1	-.029	1	
319	5	max	1086.005	9	2.48	3	40.945	1	0	2	0	11	0	11	
320		min	-301.993	4	-33.633	8	-40.945	2	-.005	9	0	1	0	1	
321	M33	1	max	1058.504	10	33.633	7	40.945	1	.004	10	0	11	0	11
322		min	-384.079	3	-2.48	4	-40.945	2	0	2	0	1	0	1	



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mom...	LC
323	2	max	1054.747	10	16.816	7	20.473	1	.004	10	.029	1	.026	1
324		min	-375.917	3	-1.24	4	-20.473	2	0	2	-.015	2	-.04	2
325	3	max	1050.99	10	0	11	0	11	.004	10	.038	1	.034	1
326		min	-367.755	3	0	1	0	1	0	2	-.02	2	-.053	2
327	4	max	1047.234	10	1.24	4	20.473	2	.004	10	.029	1	.026	1
328		min	-359.593	3	-16.816	7	-20.473	1	0	2	-.015	2	-.04	2
329	5	max	1043.477	10	2.48	4	40.945	2	.004	10	0	11	0	11
330		min	-351.43	3	-33.633	7	-40.945	1	0	2	0	1	0	1

Envelope AISC 13th(360-05): LRFD Steel Code Checks

Member	Shape	Code Check	Loc[ft]	LC	Shear	Loc[ft]	Dir	LC	phi*Pnc	phi*Pnt	phi*Mn	phi*Mn	Cb	Eqn	
1	MP4A	PIPE 2.0	.458	5	9	.105	3.5	1	20866.7...	32130	1.872	1.872	2...	H1-1b	
2	M3	HSS2.375...	.438	6.25	1	.306	6.25	1	18137.5...	31109.4	1.865	1.865	1...	H3-6	
3	MP1A	PIPE 2.0	.422	5	10	.083	3.5	10	20866.7...	32130	1.872	1.872	2...	H1-1b	
4	M4	HSS2.375...	.352	5.859	10	.142	4.036	10	18137.5...	31109.4	1.865	1.865	2...	H1-1b	
5	M1	HSS2.375...	.311	.391	9	.220	6.25	2	18137.5...	31109.4	1.865	1.865	2...	H1-1b	
6	M2	HSS2.375...	.277	5.859	10	.146	4.036	10	18137.5...	31109.4	1.865	1.865	2...	H1-1b	
7	MP3A	PIPE 2.5	.266	2.5	1	.114	2.583	9	30038.4...	50715	3.596	3.596	2.9	H1-1b	
8	MP2A	PIPE 2.0	.126	2	1	.168	5	10	20866.7...	32130	1.872	1.872	2...	H1-1b	
9	MP5A	PIPE 2.0	.108	3.245	5	.017	3.245	5	27741.09	32130	1.872	1.872	2...	H1-1b	
10	M42A	HSS3X3X3	.101	1.417	1	.035	0	y	5	77086.0...	78246	6.796	6.796	2...	H1-1b
11	M23	PIPE 2.0	.100	3	5	.016	3	5	28843.4...	32130	1.872	1.872	2...	H1-1b	
12	M32	L2.5x2.5x4	.086	2.443	7	.023	0	y	9	17114.4...	38556	1.114	2.303	1...	H2-1
13	M33	L2.5x2.5x4	.084	2.443	5	.021	0	y	10	17114.4...	38556	1.114	2.303	1...	H2-1
14	M43	HSS3X3X3	.080	1.417	8	.034	0	y	8	77086.0...	78246	6.796	6.796	2...	H1-1b
15	M5	PIPE 3.0	.074	1.51	6	.016	1.51	6	57037.4...	65205	5.749	5.749	1...	H1-1b	
16	M41A	PIPE 2.0	.072	4.349	5	.049	0	10	12971.9...	32130	1.872	1.872	1...	H1-1b	
17	M30	L2.5x2.5x4	.067	2.495	2	.026	4.989	z	1	17114.4...	38556	1.114	2.303	1...	H2-1
18	M31	L2.5x2.5x4	.064	2.495	2	.021	0	y	10	17114.4...	38556	1.114	2.303	1...	H2-1
19	M14	PIPE 2.0	.024	2.508	5	.060	5.016	1	23763.9...	32130	1.872	1.872	1...	H1-1b	

EXHIBIT 10

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

T-Mobile Existing Facility

Site ID: CTNL021D

NL021 / SBA Waterford FT
35 South Bartlett Road
Waterford, Connecticut 06385

July 1, 2020

EBI Project Number: 6220002823

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.00%

July 1, 2020

T-Mobile

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

Emissions Analysis for Site: CTNL021D - NL021 / SBA Waterford FT

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **35 South Bartlett Road in Waterford, 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 35 South Bartlett Road in Waterford, 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) 2 UMTS 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.

- 6) 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.
- 7) 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.
- 8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 10) 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.
- 11) 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.
- 12) The antennas used in this modeling are the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 21 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and

20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 13) The antenna mounting height centerline of the proposed antennas is 150 feet above ground level (AGL).
- 14) 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.
- 15) 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 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz
Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	6,169.82	ERP (W):	6,169.82	ERP (W):	6,169.82
Antenna A1 MPE %:	0.99%	Antenna B1 MPE %:	0.99%	Antenna C1 MPE %:	0.99%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20
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 / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 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):	8,466.41	ERP (W):	8,466.41	ERP (W):	8,466.41
Antenna A2 MPE %:	2.25%	Antenna B2 MPE %:	2.25%	Antenna C2 MPE %:	2.25%
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):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A3 MPE %:	4.10%	Antenna B3 MPE %:	4.10%	Antenna C3 MPE %:	4.10%
Antenna #:	4	Antenna #:	4	Antenna #:	4
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A4 MPE %:	1.39%	Antenna B4 MPE %:	1.39%	Antenna C4 MPE %:	1.39%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	8.73%
Verizon	3.09%
Metro PCS	0.18%
Site Total MPE % :	12.00%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	8.73%
T-Mobile Sector B Total:	8.73%
T-Mobile Sector C Total:	8.73%
Site Total MPE % :	12.00%

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	150.0	6.57	1900 MHz GSM	1000	0.66%
T-Mobile 1900 MHz UMTS	2	1028.30	150.0	3.29	1900 MHz UMTS	1000	0.33%
T-Mobile 600 MHz LTE	2	591.73	150.0	1.89	600 MHz LTE	400	0.47%
T-Mobile 600 MHz NR	1	1577.94	150.0	2.52	600 MHz NR	400	0.63%
T-Mobile 700 MHz LTE	2	648.82	150.0	2.07	700 MHz LTE	467	0.44%
T-Mobile 1900 MHz LTE	2	2203.69	150.0	7.04	1900 MHz LTE	1000	0.70%
T-Mobile 2500 MHz LTE	2	6412.98	150.0	20.49	2500 MHz LTE	1000	2.05%
T-Mobile 2500 MHz NR	2	6412.98	150.0	20.49	2500 MHz NR	1000	2.05%
T-Mobile 1900 MHz LTE	2	2056.61	150.0	6.57	1900 MHz LTE	1000	0.66%
T-Mobile 2100 MHz LTE	2	2307.55	150.0	7.37	2100 MHz LTE	1000	0.74%
						Total:	8.73%

• 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:	8.73%
Sector B:	8.73%
Sector C:	8.73%
T-Mobile Maximum MPE % (Sector A):	8.73%
Site Total:	12.00%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.00%** 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.