



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

September 1, 2021

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

Notice of Exempt Modification

1662 Route 184 (aka 1662 Gold Star Highway), Groton, CT

Latitude: 41.385666

Longitude: -72.013306

T-Mobile #: CTNL011B_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 137-foot level of the existing 150-foot Rohn Monopole Tower at **1662 Route 184, Groton, CT**. The tower is owned by SBA Infrastructure LLC. The property is owned by Chester G. Crouch, Jr. T-Mobile intends to install three (3) new 2500 MHz antennas. The total amount of antennas will be nine (9).

- **The new antennas would support 5G services and would be installed at the 139-foot level of the tower.**

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- N/A

Install New:

- (3) Ericsson AIR6449 B41 2500 MHz antennas

Existing Equipment to Remain:

- (3) Ericsson AIR3246 B666 2100 MHz antennas
- (3) RFS APXVAARR24_43-U-NA20 600/700/1900 MHz antennas
- (1) Low Profile Platform w/Sitepro RMQP-4096-HK
- (3) Ericsson 4449 B71 + B85 RRUs
- (4) Ericsson Radio 4415 B25 RRUs
- (3) Ericsson 4424 B25 RRUs
- (4) 1-5/8" Fiber

Entitlements:

- N/A

GROUND

Install New:

- N/A

Existing Equipment to Remain:

- (1) 10' x 15' concrete pad
- (1) Delta ESO48-CC-A02 Diesel Generator
- GPS antenna to exist. Ics bridge
- (1) Slackbox
- 2" conduit for AAV from RAC24
- Purcell RAC24 mounted to exist. H-Frame
- Light fixture
- Emerson Nextend CAC-A75201090 PPC mounted to exist. H-Frame
- H-Frame
- (2) 2" conduit for alarm & Spare
- 2" conduit for DC power
- 2" conduit for power from exist. PPC
- T-Mobile Ericsson B160 battery cabinet
- T-Mobile Ericsson 6160 equip. cabinet

Entitlements:

- N/A

This facility was initially approved Council under Docket 319 on February 27, 2007, with the following conditions: 1. The Tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services; 2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. 3. The Certificate Holder shall construct a reduced size equipment compound. 4. The Certificate Holder shall conduct non-routine maintenance activities during fall, winter and early spring and plant Connecticut-native evergreens around the perimeter. 5. The Certificate Holder shall, prior to commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all entities' antennas at the closest point of uncontrolled access to the Tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. 6. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standard. 7. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair considerations. 8. The Certificate Holder shall provide reasonable space on the Tower for no compensation for any Town of Groton public safety services. 9. Unless otherwise approved by Council, if the facility authorized herein is not full constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order, This Decision and Order shall be void and the Certificate Holder shall dismantle the tower and remove all associated equipment. 10. Any request for extension of the time period referred to in Condition No. 9 shall be filed with Council not later than 60 days prior to the expiration date of this Certificate. 11. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void. 12. The Certificate holder shall remove any nonfunctioning antennas and associated equipment. 13. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of this site construction activities. Council further approved the extension of the Tower from 133' to 150' under Verizon's Petition No. 822 on July 26, 2007. Additionally, on May 7, 2021 the Connecticut Siting Council approved a Tower Share Request under Petition EM-T-MOBILE-059T-210326. 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 Groton's Town Manager, John Burt and Deborah G. Jones, AICP, Planning & Zoning, as well as to the property owners. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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



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:

John Burt, Town Manager / with attachments
Town of Groton, Center Groton, CT 45 Fort Hill Rd., Groton, CT 06340
Jonathan J. Reiner, AICP, Planning & Development / with attachments
Town of Groton, Center Groton, CT 45 Fort Hill Rd., Groton, CT 06340
Chester G. Crouch, Jr. / with attachments
603 Princeton St. Brandon FL 33511 (SBA address of file)

EXHIBIT LIST

Exhibit 1	Check Copy	x
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	CSC EM-T-MOBILE-059T-210326 (5/7/21), CSC Petition No. 319 (2/27/07), CSC Petition No. 822 (7/26/07), CSC TS-T-Mobile-059T-190228 (3/29/19)
Exhibit 6	Construction Drawings	Chappell Engineering 9/1/21
Exhibit 7	Structural Analysis	TES 6/2/21
Exhibit 8	Mount Analysis	TES 4/19/21
Exhibit 8	EME Report	EBI Consulting 6/17/21

EXHIBIT 1

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: 01/SEP/21
ACTWGT: 2.00 LB
CAD: 105843304/NET4400

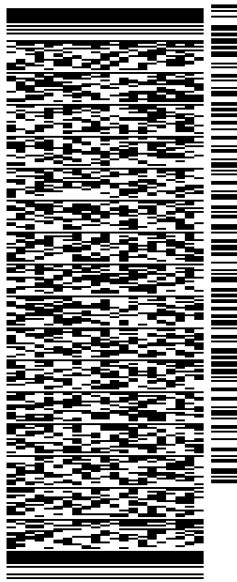
BILL SENDER

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

NEW BRITAIN CT 06051

REF: 105692009-6089

(508) 251-0720 X 3807
INV#
PO:
DEPT:



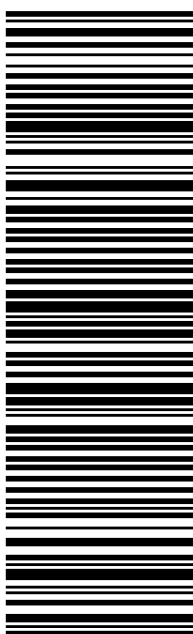
J212021070901uv

56D.J2/56C0/FE4A

TRK# 7747 0102 3659
0201
THU - 02 SEP 10:30A
PRIORITY OVERNIGHT

EB BDLA

06051
BDL
CT-US



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
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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.



TRACK ANOTHER SHIPMENT

774701023659

[ADD NICKNAME](#)

Scheduled delivery:
Pending

**IN TRANSIT**

At FedEx destination facility
WINDSOR LOCKS, CT

[GET STATUS UPDATES](#)**FROM**

SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO

Melanie A. Bachman Exec. Dir
Connecticut Siting Council
Ten Franklin Square
NEW BRITAIN, CT US 06051
508-251-0720

[MANAGE DELIVERY](#)

Travel History

TIME ZONE

Local Scan Time

Friday, September 3, 2021

8:49 AM	WINDSOR LOCKS, CT	At local FedEx facility
7:26 AM	EAST GRANBY, CT	At destination sort facility
6:29 AM	NEWARK, NJ	Departed FedEx hub

Thursday, September 2, 2021

12:47 PM	NEWARK, NJ	Arrived at FedEx hub
12:20 AM	EAST BOSTON, MA	Local Delay Delay beyond our control



Wednesday, September 1, 2021

8:35 PM	FRAMINGHAM, MA	Left FedEx origin facility
5:17 PM	FRAMINGHAM, MA	Picked up

12:57 PM

Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774701023659	SERVICE FedEx Priority Overnight	WEIGHT 2 lbs / 0.91 kgs
TOTAL PIECES 1	TOTAL SHIPMENT WEIGHT 2 lbs / 0.91 kgs	TERMS Shipper
SHIPPER REFERENCE 10-56-92009-6089	PACKAGING FedEx Pak	SPECIAL HANDLING SECTION Deliver Weekday
SHIP DATE 9/1/21 	STANDARD TRANSIT 9/2/21 before 10:30 am 	SCHEDULED DELIVERY Pending

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

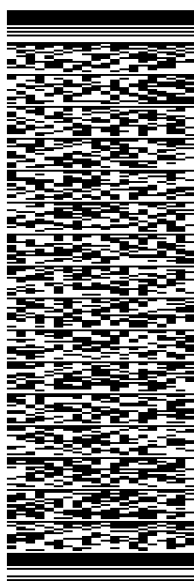
SHIP DATE: 01/SEP/21
ACTWGT: 1.00 LB
CAD: 105843304/NET4400

BILL SENDER

TO JOHN BURT, TOWN MANAGER
TOWN OF GROTON
45 FORT HILL RD.

CENTER GROTON CT 06340

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



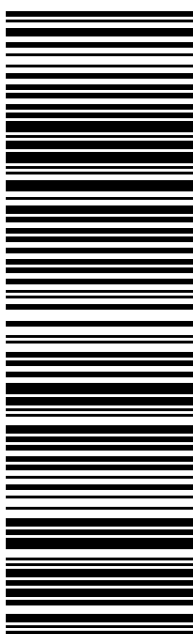
J212021070901uv

56D.J2/56C0/FE4A

TRK# 7747 0106 4762 THU - 02 SEP 10:30A
0201 PRIORITY OVERNIGHT

EB GONA

06340
CT-US BDL



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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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TRACK ANOTHER SHIPMENT

774701064762


[ADD NICKNAME](#)

Scheduled delivery:
Pending

**IN TRANSIT**

At destination sort facility
EAST GRANBY, CT

[GET STATUS UPDATES](#)
FROM

SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO

John Burt, Town Manager
Town of Groton
45 Fort Hill Rd.
GROTON, CT US 06340
508-251-0720

[MANAGE DELIVERY](#)

Travel History

TIME ZONE

Local Scan Time

Friday, September 3, 2021

7:26 AM	EAST GRANBY, CT	At destination sort facility
5:50 AM	NEWARK, NJ	Departed FedEx hub

Thursday, September 2, 2021

12:47 PM	NEWARK, NJ	Arrived at FedEx hub
12:20 AM	EAST BOSTON, MA	Local Delay Delay beyond our control

Wednesday, September 1, 2021

8:35 PM	FRAMINGHAM, MA	Left FedEx origin facility
5:17 PM	FRAMINGHAM, MA	Picked up
12:59 PM		Shipment information sent to FedEx

Shipment Facts

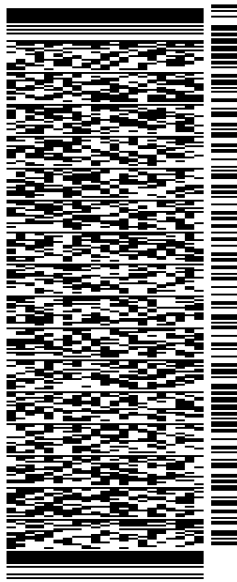
TRACKING NUMBER 774701064762	SERVICE FedEx Priority Overnight	WEIGHT 0.5 lbs / 0.23 kgs
TOTAL PIECES 1	TOTAL SHIPMENT WEIGHT 0.5 lbs / 0.23 kgs	TERMS Shipper
SHIPPER REFERENCE 10-56-92009-6089	PACKAGING FedEx Envelope	SPECIAL HANDLING SECTION Deliver Weekday
SHIP DATE 9/1/21 ?	STANDARD TRANSIT 9/2/21 before 10:30 am ?	SCHEDULED DELIVERY Pending

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

SHIP DATE: 01/SEP/21
ACTWGT: 1.00 LB
CAD: 105843304/NET4400
BILL SENDER

TO JONATHAN J. REINER, AICP
TOWN OF GROTON
PLANNING & DEVELOPMENT
45 FORT HILL RD.
CENTER GROTON CT 06340
(508) 251-0720 X 3807
REF: 105692009-6089
INV#
PO: DEPT:

56D.J2/56C0/FE4A

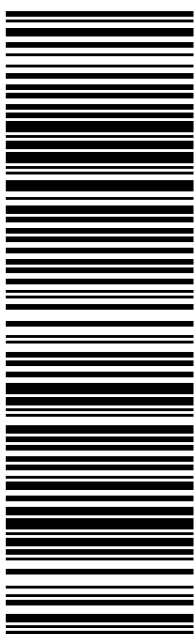


J212021070901uv

TRK# 7747 0115 6057
THU - 02 SEP 10:30A
PRIORITY OVERNIGHT

EB GONA

06340
CT-US BDL



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TRACK ANOTHER SHIPMENT

774701156057



[ADD NICKNAME](#)

Scheduled delivery:
Pending



IN TRANSIT

At FedEx destination facility
NORWICH, CT

[GET STATUS UPDATES](#)

FROM

SBA COMMUNICATIONS CORPORATION
Rick Woods
134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO

Jonathan J. Reiner, AICP
Town of Groton
Planning & Development
45 Fort Hill Rd.
GROTON, CT US 06340
508-251-0720

[MANAGE DELIVERY](#)

Travel History

TIME ZONE

Local Scan Time



Friday, September 3, 2021

8:16 AM NORWICH, CT At local FedEx facility

Thursday, September 2, 2021

12:47 PM NEWARK, NJ Arrived at FedEx hub

12:20 AM EAST BOSTON, MA Local Delay
Delay beyond our control



Wednesday, September 1, 2021

8:35 PM FRAMINGHAM, MA Left FedEx origin facility

5:17 PM FRAMINGHAM, MA Picked up

1:03 PM Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774701156057	SERVICE FedEx Priority Overnight	WEIGHT 1 lbs / 0.45 kgs
TOTAL PIECES 1	TOTAL SHIPMENT WEIGHT 1 lbs / 0.45 kgs	TERMS Shipper
SHIPPER REFERENCE 10-56-92009-6089	PACKAGING FedEx Envelope	SPECIAL HANDLING SECTION Deliver Weekday
SHIP DATE 9/1/21 	STANDARD TRANSIT 9/2/21 before 10:30 am 	SCHEDULED DELIVERY Pending

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

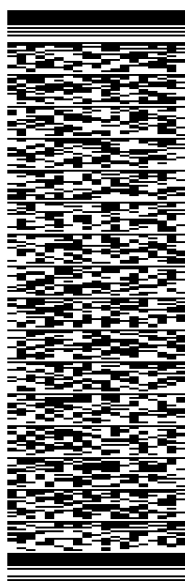
SHIP DATE: 01/SEP/21
ACTWGT: 1.00 LB
CAD: 105843304/NET4400
BILL SENDER

TO CHESTER G. CROUCH, JR.

603 PRINCETON ST

BRANDON FL 33511

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



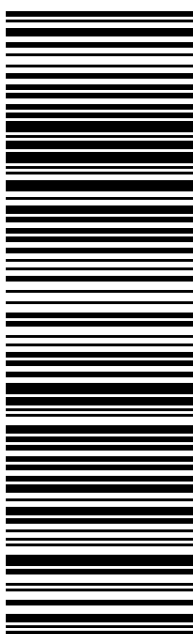
J212021070901uv

56D.J2/56C0/FE4A

TRK# 7747 0121 2793 THU - 02 SEP 10:30A
0201 PRIORITY OVERNIGHT

XJ MCFA

FL-US 33511
TPA



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TRACK ANOTHER SHIPMENT

774701212793

[ADD NICKNAME](#)

Delivered

Thursday, September 2, 2021 at 10:44 am

**DELIVERED**

Signature not required

[GET STATUS UPDATES](#)[OBTAIN PROOF OF DELIVERY](#)**FROM**

SBA COMMUNICATIONS CORPORATION
 Rick Woods
 134 Flanders Rd
 Suite 125
 WESTBOROUGH, MA US 01581
 508-614-0389

TO

Chester G. Crouch, Jr.
 603 Princeton St
 BRANDON, FL US 33511
 508-251-0720

Travel History

TIME ZONE

Local Scan Time



Thursday, September 2, 2021

10:44 AM	BRANDON, FL	Delivered Package delivered to recipient address - release authorized
8:59 AM	TAMPA, FL	On FedEx vehicle for delivery
8:19 AM	TAMPA, FL	At local FedEx facility
6:25 AM	TAMPA, FL	At destination sort facility
3:57 AM	MEMPHIS, TN	Departed FedEx hub

Wednesday, September 1, 2021

8:15 PM	FRAMINGHAM, MA	Left FedEx origin facility
5:17 PM	FRAMINGHAM, MA	Picked up
1:06 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774701212793	SERVICE FedEx Priority Overnight	WEIGHT 1 lbs / 0.45 kgs
DELIVERY ATTEMPTS 1	DELIVERED TO Residence	TOTAL PIECES 1
TOTAL SHIPMENT WEIGHT 1 lbs / 0.45 kgs	TERMS Shipper	SHIPPER REFERENCE 10-56-92009-6089
PACKAGING FedEx Envelope	SPECIAL HANDLING SECTION Deliver Weekday, Residential Delivery	SHIP DATE 9/1/21 ?
STANDARD TRANSIT 9/2/21 before 12:00 pm ?	ACTUAL DELIVERY 9/2/21 at 10:44 am	

EXHIBIT 3

Print Card

Farm Property Card

Print Date: 1/18/2019

Card 1 Of 1

Account	Location	Grand List Code	Zoning	Acres
270013126797	1662 GOLD STAR HWY	FARM	RU-40	32.248
District	Neighborhood	Deed Book/Page	Use Code	
CENTER GROTON	1010	1100/751	PA FOREST	

Current Owner
 CROUCH CHESTER G JR
 4120 SILVERMOON DR
 PLANT CITY FL 33566

Property Picture



Residential Building Information

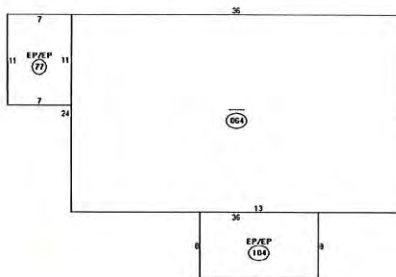
Style:	RAISED RANCH
Exterior:	FRAME
Attic:	NONE
Stories:	1
Basement:	FULL
Year Built:	1957
Tot Living Area:	1614 SqFt.
Fuel:	OIL
Heating:	BASIC
System:	HOT WATER
Bedrooms:	4
Full Baths:	2
Half Baths:	

Building Sketch

Valuation	
Land:	\$148,400
Building:	\$119,300
Total:	\$267,700
Assessed Value:	\$187,360

Recent Sales

Book/Page	Date	Price
1100/751	9/26/2012	\$0
1013/844	7/10/2008	\$0



Descriptor
 A 664 sqft
 B 824 sqft
 C 152 sqft
 D 800 sqft
 E 201 sqft
 F 260 sqft
 G 631 sqft
 360 sqft

Sketch Legend

----	Main Living Area	1SMA	Masonry	GRHS	Attached Greenhouse
1FR	Frame	OMP	Open Masonry Porch	CAT	Cathedral Ceiling
OPF	Open Frame Porch	EMP	Enclosed Msry Porch	SOP	Screen Open Frame Prch
EFP	Enclosed Frame Porch	MUB	Masonry Utility	SMP	Screen Open Msry Prch
FUB	Frame Utility Building	MB	Masonry Bay	CPAT	Concrete Patio
FB	Frame Bay	MOH	Masonry Overhang	B	Basement
FG	Frame Garage	.5MA	1/2 Story Masonry		
FOH	Frame Overhang	MP	Masonry Patio		
.5FR	1/2 Story Frame	WD	Wood Deck		
A(U)	Attic (Unfinished)	CPY	Canopy		
A(F)	Attic (Finished)				

EXHIBIT 4



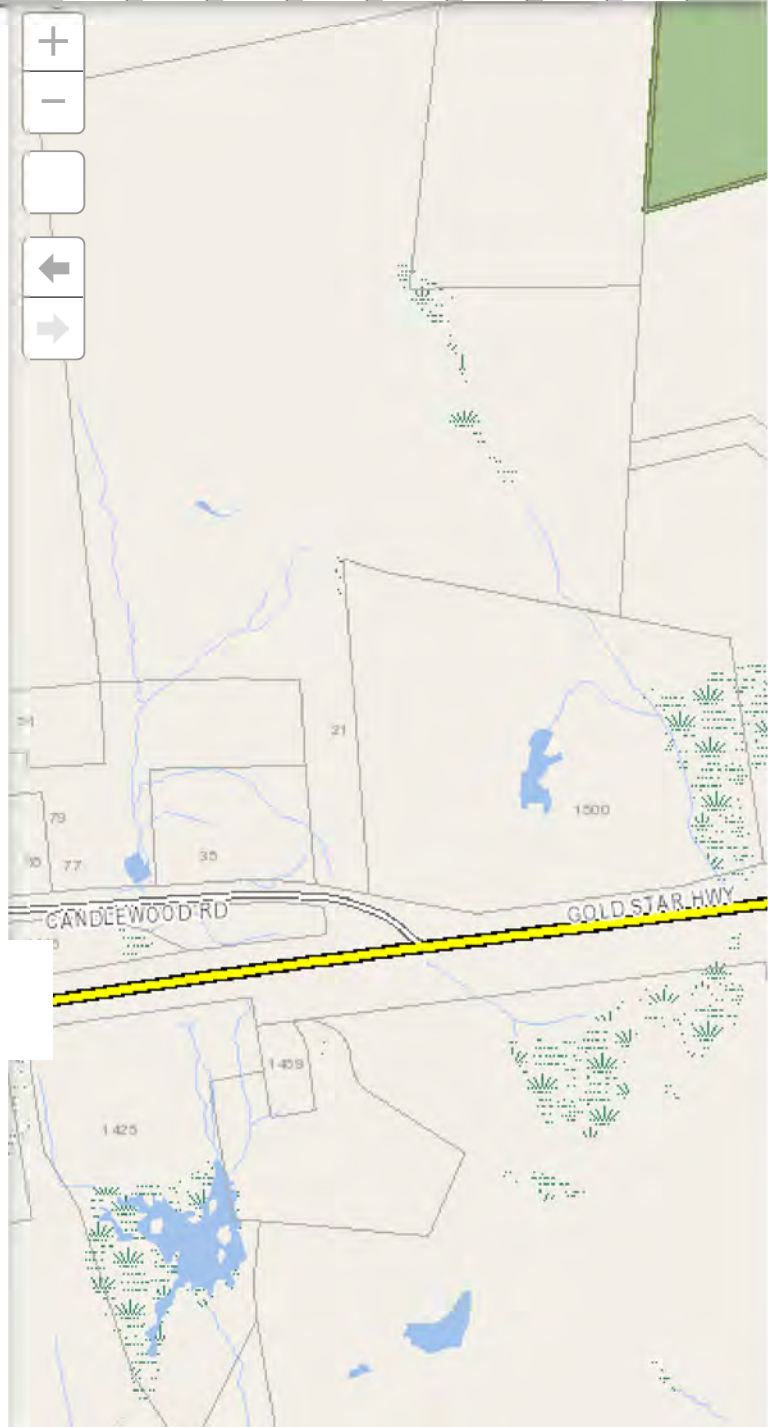
Town of Groton, CT - GIS Viewer



By Shape By Value By Spatial Results

Features selected: 1

Property Type: FARM
District: CENTER GROTON
PIN: 270013126797
Property Location: 1662 GOLD STAR HWY
Owner: CROUCH CHESTER G JR
Owner Two:
In Care Of:
Mailing Address: 603 PRINCETON ST
City: BRANDON
State: FL
Zip: 33511
Acreage: 32.248
Zoning: RU-40
Use Code: PUB ACT FOREST LAND
CT Grand List Code: USE ASSESSMENT
Living Units: 1
Neighborhood: 1010
Deed Book: 1100
Deed Page: 751
Land Value: \$148,400.00
Building Value: \$119,300.00
Total Value: \$267,700.00
Gross Assessed Value: \$187,360.00



App State
 Click to restore the map extent and layers visibility where you left off.

1,202,826.479 702,1



EXHIBIT 5



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: www.ct.gov/csc

VIA ELECTRONIC MAIL

May 7, 2021

G. Scott Shepherd
Site Development Specialist II
SBA Communications
134 Flanders Road, Suite 125
Westborough, MA 01581

RE: **TS-T-MOBILE-059T-210326** – T-Mobile request for an order to approve tower sharing at an existing telecommunications facility located at 1662 Route 184 (a/k/a 1662 Gold Star Highway), Groton, Connecticut.

Dear Mr. Shepherd:

At a public meeting held on May 6, 2021, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

1. Conduct non-routine maintenance activities during the fall, winter and early spring to minimize potential impact to whip-poor-wills (*Caprimulgus vociferous*) consistent with condition No. 4 of the Council's Decision and Order in Docket No. 319;
2. Approval of any changes be delegated to Council staff;
3. Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;
4. Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65;
5. Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation has been completed;
6. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile shall be removed within 60 days of the date the antenna ceased to function;

7. The validity of this action shall expire one year from the date of this letter; and
8. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated March 30, 2021. This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower. Any deviation from the approved tower sharing request is enforceable under the provisions of Connecticut General Statutes § 16-50u.

The proposed shared use is to be implemented as specified in your letter dated March 30, 2021, including the placement of all necessary equipment and shelters within the tower compound.

Please be advised that the validity of this action shall expire one year from the date of this letter.

Thank you for your attention and cooperation.

Sincerely,

s/ Melanie A. Bachman

Melanie Bachman
Executive Director

MAB/IN/emr

- c: The Honorable Patrice Granatosky, Mayor, Town of Groton (pgranatosky@groton-ct.gov)
John Burt, Town Manager, Town of Groton (jburt@groton-ct.gov)



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

March 29, 2019

Kri Pelletier
Property Specialist
SBA Communications Corporation
134 Flanders Road, Suite 125
Westborough, MA 01581

RE: **TS-T-MOBILE-059T-190228** – T-Mobile request for an order to approve tower sharing at an existing telecommunications facility located at 1662 Gold Star Highway, Groton, Connecticut.

Dear Ms. Pelletier:

At a public meeting held on March 28, 2019, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

1. Conduct non-routine maintenance activities during the fall, winter and early spring to minimize potential impact to whip-poor-wills (*Caprimulgus vociferous*) consistent with condition No. 4 of the Council's Decision and Order in Docket No. 319;
2. Approval of any minor changes be delegated to Council staff;
3. Approval of any minor changes be delegated to Council staff;
4. Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;
5. Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65;
6. Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation has been completed;
7. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile shall be removed within 60 days of the date the antenna ceased to function.
8. The validity of this action shall expire one year from the date of this letter; and
9. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated February 27, 2019. This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower. Any deviation from the approved tower sharing request is enforceable under the provisions of Connecticut General Statutes § 16-50u.



CONNECTICUT SITING COUNCIL

Affirmative Action / Equal Opportunity Employer

The proposed shared use is to be implemented as specified in your letter dated February 27, 2019, including the placement of all necessary equipment and shelters within the tower compound.

Please be advised that the validity of this action shall expire one year from the date of this letter.

Thank you for your attention and cooperation.

Sincerely, \



Melanie Bachman
Executive Director

MAB/lm

- c: The Honorable Patrice Granatosky, Mayor, Town of Groton
- John Burt, Town Manager, Town of Groton
- Jonathan J. Reiner, AICP, Director of Planning, Town of Groton
- Chester G. Crouch, Jr., property owner

BUILDING INSPECTION DEPARTMENT
Groton, Connecticut

File # 7064

CERTIFICATE OF USE OR OCCUPANCY
CERTIFICATE OF ZONING COMPLIANCE

Zone CB-15


Dated August 4, 2008

This is to certify that building at 1662 Gold Star Highway

as commercial under Permit No. 07-138 conforms substantially to the requirements of the State of Connecticut Building Code and the Zoning Regulations of the Town of Groton and is hereby approved for use or occupancy as indicated below.

Approved for use or occupancy as a telecommunication tower

Owner: Ketty Jean Crouch (Life Use)


Building Inspector

Peter R. Vandembosch


Building/Zoning Official

Kevin A. Quinn

Any change or extension of the use herein approved requires a new certificate for use or occupancy and a new certificate of zoning compliance.

If this certificate is lost or destroyed, a duplicate should be obtained immediately from the Building Inspection Department.



ORIGINAL BUILDING/ZONING PERMIT APPLICATION

PAID
4-18-07
SD

Please Print

Permit No. <u>3907-138</u>	(office use only)
Fees/Bldg. <u>1,620</u> - <u>Zon.</u> <u>10</u> - <u>v.o.</u> <u>32.40</u> State <u>25.76</u> Total <u>1,688.16</u>	

Estimated Cost: 161,000

Address of Building: 1662 Route 184, Groton, CT

Zone: CB-15 PIN: _____

Owner: Chester G. Crouch db Groton Garden Ctr. Ph. #: 860 445-6474

Address: 2501 West Keyville Rd, Plant City, FL 33567

Contractor: Anthony's Building Co., Inc Ph. #: 401-567-0600

Address: 953 Putnam Pike, Cheongchet, RI 02814

Nature of Proposed Work and Use: Construction of telecommunication tower

Plans: _____ Type of Construction: _____ Size: _____

No. of Stories: N/A No. of Rooms: N/A No. of Baths: N/A

Fireplace(s): N/A Garage: N/A Bay(s) N/A No. of Units: N/A

ZP07-60 ZONING PERMIT

(To be filled out in conjunction with a building permit involving any new structure, addition to an existing structure, or change of use.)

Flood Hazard District: C HDC #: _____ ZBA #: _____

Site Plan Approval #: _____ Special Zoning Permit #: _____

Wetlands: _____ Coastal Area Management: _____

Site Suitability #: _____ Sewer #: _____ A2 Survey: Provided

[Signature] Zoning Official 4-26-07 Date

CERTIFICATION: I hereby certify that: I am the owner of record of the named property or that the proposed work is authorized by the owner of record and/or I have been authorized to make this application as an authorized agent, and we agree to conform to all applicable laws, codes, regulations and ordinances. All information contained within is true and accurate to the best of my knowledge and belief.

Jeff Gold 401-567-0600 900617

Print Name in Ink Phone # Lic. #

[Signature] 4/18/07

(Signature in INK) of _____ Authorized Agent Date

[Signature] 5-8-07

Building Official Completed Application Received Date

This permit shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance. Refunds will be subject to the refund policy.

W PV

999-0020

DOCKET NO. 319 - Optasite, Inc. and New Cingular Wireless)
PCS, LLC application for a Certificate of Environmental)
Compatibility and Public Need for the construction, maintenance)
and operation of a telecommunications facility on one of two sites)
at 1662 Gold Star Memorial Highway (Route 184), Groton,)
Connecticut.

Connecticut

Siting

Council

February 27, 2007

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Optasite, Inc. and New Cingular Wireless PCS, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Site B, located at 1662 Gold Star Memorial Highway, Groton, Connecticut. The Council denies certification of Site A, also located at 1662 Gold Star Memorial Highway, Groton, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC and other entities, both public and private, but such tower shall not exceed a height of 133 feet above ground level. The height at the top of the antennas shall not exceed 133 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Groton for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall construct a reduced size equipment compound.
4. The Certificate Holder shall conduct non-routine maintenance activities during the fall, winter and early spring and plant Connecticut-native evergreens around the perimeter of the compound to minimize potential impact to whip-poor-wills (*Caprimulgus vociferous*).

5. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
6. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
7. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Groton public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
9. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.
10. Any request for extension of the time period referred to in Condition 9 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Groton. Any proposed modifications to this Decision and Order shall likewise be so served.
11. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
12. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.
13. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The New London Day and The Groton Times.

Docket No. 319
Decision and Order
Page 3

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

The parties and intervenors to this proceeding are:

Applicant

Optasite, Inc.

New Cingular Wireless PCS, LLC

Representative

Lucia Chiocchio, Esq.
Cuddy & Feder, LLC

Petition No. 822
Cellco Partnership d/b/a Verizon Wireless
Groton, CT
Staff Report
July 26, 2007

On June 29, 2007, Cellco Partnership d/b/a Verizon Wireless (Verizon) submitted a petition (Petition) to the Connecticut Siting Council (Council) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required to extend the height of the existing telecommunications tower at 1662 Gold Star Highway in Groton, Connecticut.

The Council granted a Certificate to Optasite Incorporated and New Cingular Wireless PCS, LLC (Cingular) on February 27, 2007 in Docket 319. The Certificate holders had applied for a 160-foot tower; however, the Council approved the construction of a 133-foot monopole since Cingular was the only carrier involved in the proceeding and needed a height of 130 feet above ground level. The additional three feet were to allow the tower to be extended in the future.

On April 10, 2007, the Council approved a Development and Management (D&M) plan for a 133 foot structure at the site. Due to the potential presence of the whip-poor-will, construction at the site should be from the end of May to early August. Cingular has installed antennas at the 130-foot level of the structure as approved by the Council in the D&M plan.

Verizon currently has coverage gaps along portions of I-95, near the Exit 88 interchange, Route 117, Route 184 and local roads at both cellular and PCS frequencies. Verizon would require a height of 148 feet above ground level (agl) to achieve adequate coverage from the tower. Verizon proposes to extend the tower by 17 feet to a total height of 150 feet agl. The tower was designed and constructed to accommodate a tower extension to 150 feet agl.

Verizon would install equipment within a 12 foot by 30 foot shelter located in the southeast corner of the existing compound. A diesel-powered back-up generator would be installed in a segregated generator room within Verizon's equipment shelter.

The existing 133-foot structure is visible year-round from approximately 24-acres within a two mile radius of the site. The proposed increase of the tower height to 150 feet agl would result in year-round visibility of the structure from approximately 41-acres within a two mile radius of the site.

With the installation of Verizon's antennas at the 148-foot level, the worst-case total power density level would be 18.33 % of the Federal Communications Commission standard.

The tower would not require Federal Aviation Administration marking or lighting.

On June 29, 2007, a copy of this petition was sent to Groton's Town Manager, Mark R. Oefinger, and the property owner, Chester G. Crouch. Verizon sent a notice of intent to file this petition to

all adjacent property owners on June 28, 2007. No comments from the town, the property owner or adjacent land owners have been received.

On July 24, 2007, Verizon sent a letter to Michael J. Murphy, AICP, Director of Planning and Zoning. The letter mentions a conversation between Verizon and Mr. Murphy on July 24, 2007 and includes a copy of the D&M plan that was approved by the Council.

EXHIBIT 6

GROTON NORTH

1662 GOLD STAR HWY
GROTON, CT 06340
NEW LONDON COUNTY

SITE NO.: CTNL011B

SITE TYPE: 150'± MONOPOLE

RF DESIGN GUIDELINE: 67D5A993M OUTDOOR

SCOPE OF WORK

- INSTALL:
- 3 ANTENNAS

SITE NOTES

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

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OWNERS REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

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



VICINITY MAP

SCALE: 1" = 1000'-0"



DIRECTIONS

TURN LEFT ONTO S WASHINGTON ST. TURN RIGHT ONTO MA-123 E. TURN LEFT TO MERGE ONTO I-495 NORTH TOWARD MANSFIELD/MARLBORO. MERGE ONTO I-495 NORTH. TAKE EXIT 13B TO MERGE ONTO I-95 SOUTH TOWARD PROVIDENCE RI. KEEP LEFT TO STAY ON I-95 SOUTH. KEEP RIGHT AT THE FORK TO STAY ON I-95 SOUTH. TAKE EXIT 88 FOR CT-117 TOWARD DOWNTOWN GROTON. TURN RIGHT ONTO CT-117 NORTH. TURN RIGHT ONTO CT-184 EAST. SITE WILL BE ON THE RIGHT

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	TOWER ELEVATION & ANTENNA PLANS	1
A-3	SITE DETAILS, ANTENNA & FEEDLINE CHARTS	1
E-1	ELECTRIC & GROUNDING DETAILS	1

DO NOT SCALE DRAWINGS

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

PROJECT SUMMARY

SITE NUMBER:	CTNL011B
SITE NAME:	GROTON NORTH
SBA SITE NUMBER:	CT13073A
SBA SITE NAME:	GROTON NORTH
SITE ADDRESS:	1662 ROUTE 184 (GOLD STAR HWY) GROTON, CT 06340
TOWER OWNER:	SBA INFRASTRUCTURE, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW LONDON
ZONING DISTRICT:	RURAL (RU-40)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	150'
APPLICANT:	T-MOBILE NORTHEAST LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SROth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: 41.3857771° N.41'23"08.798" LONGITUDE: -72.0133155° W.72'00"49.936"

SPECIAL ZONING NOTE:

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

T-MOBILE NORTHEAST LLC

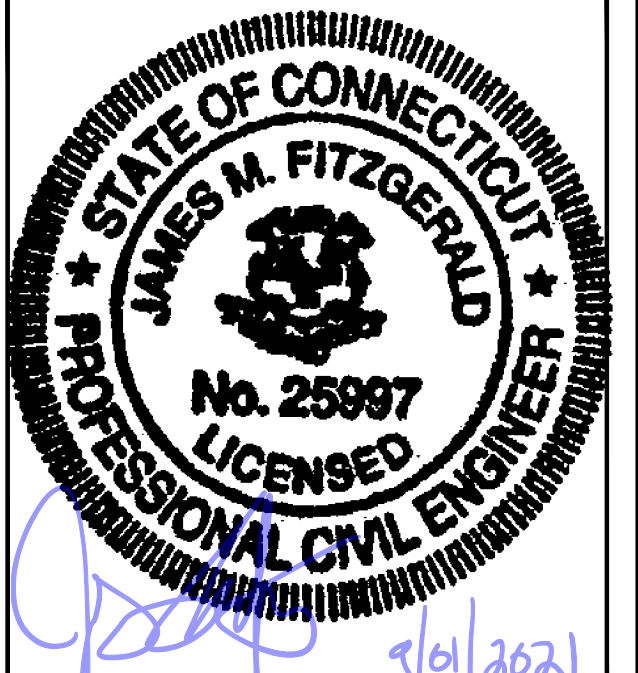
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
(860) 648-1116



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
1	08/31/21	ISSUED FOR CONSTRUCTION	JRV
0	04/05/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL011B

SITE ADDRESS:
1662 ROUTE 184 (GOLD STAR HWY)
GROTON, CT 06340

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 ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.
- CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIER'S PLANT.
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

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

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

ELECTRICAL INSTALLATION NOTES:

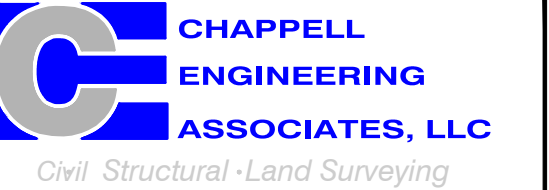
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLE TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR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

**T-MOBILE
NORTHEAST LLC**

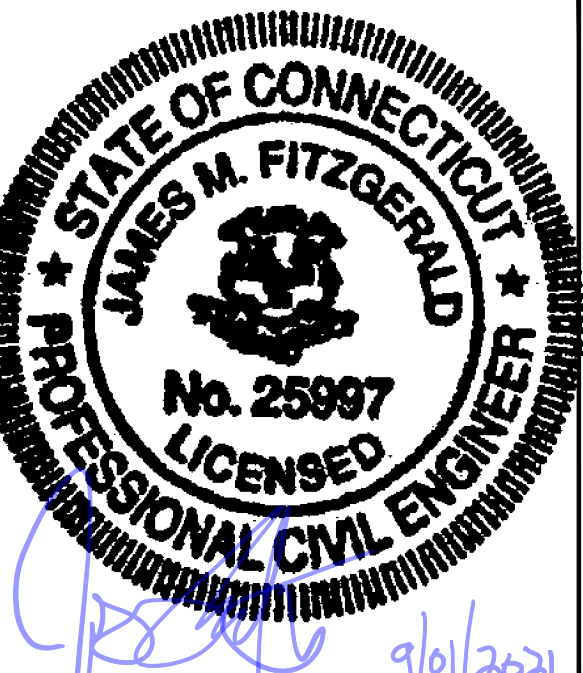
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CHECKED BY: *[Signature]* JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	08/31/21	ISSUED FOR CONSTRUCTION	JRV
0	04/05/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL011B

SITE ADDRESS:
1662 ROUTE 184 (GOLD STAR HWY)
GROTON, CT 06340

SHEET TITLE

GENERAL NOTES

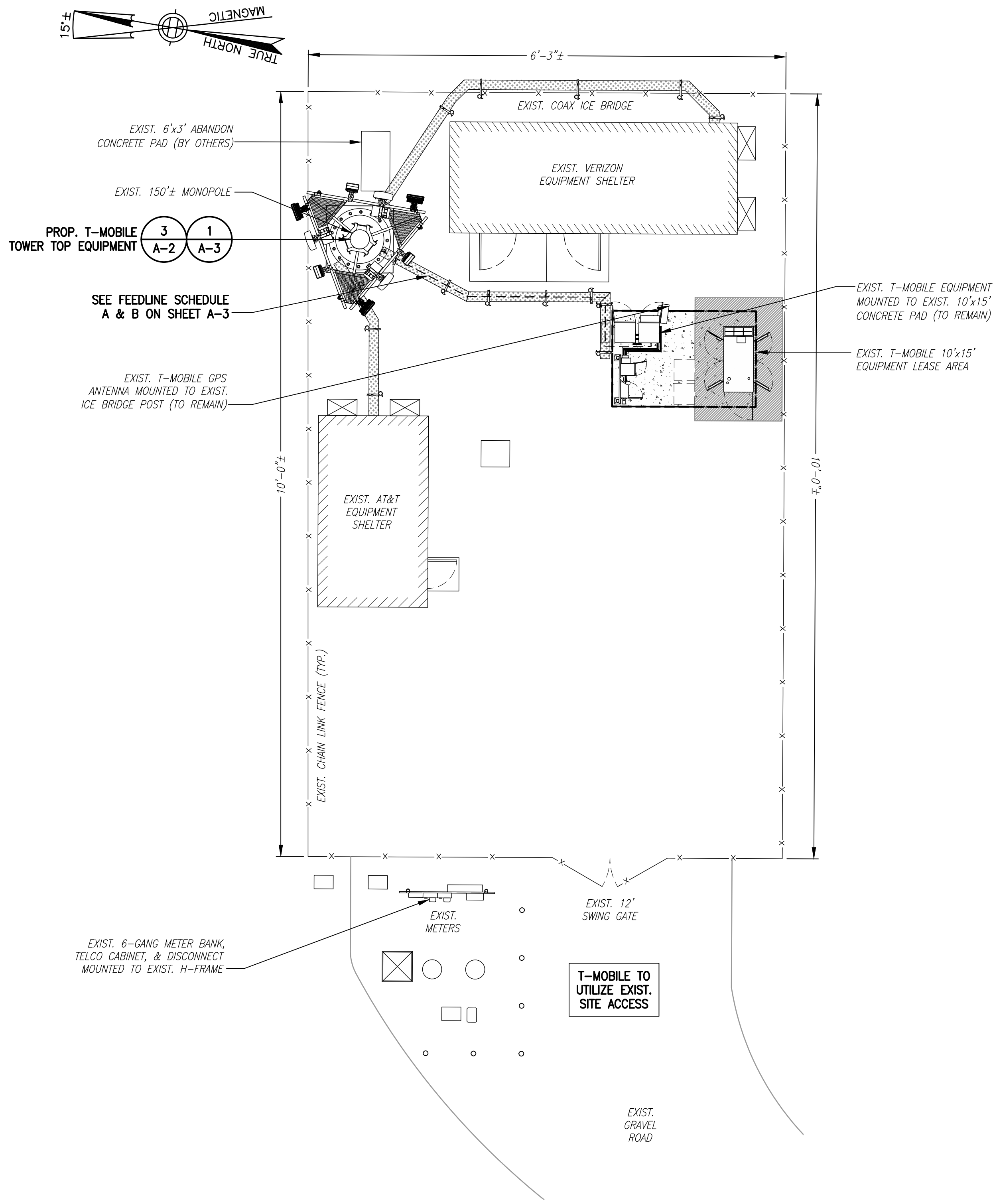
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GN-1

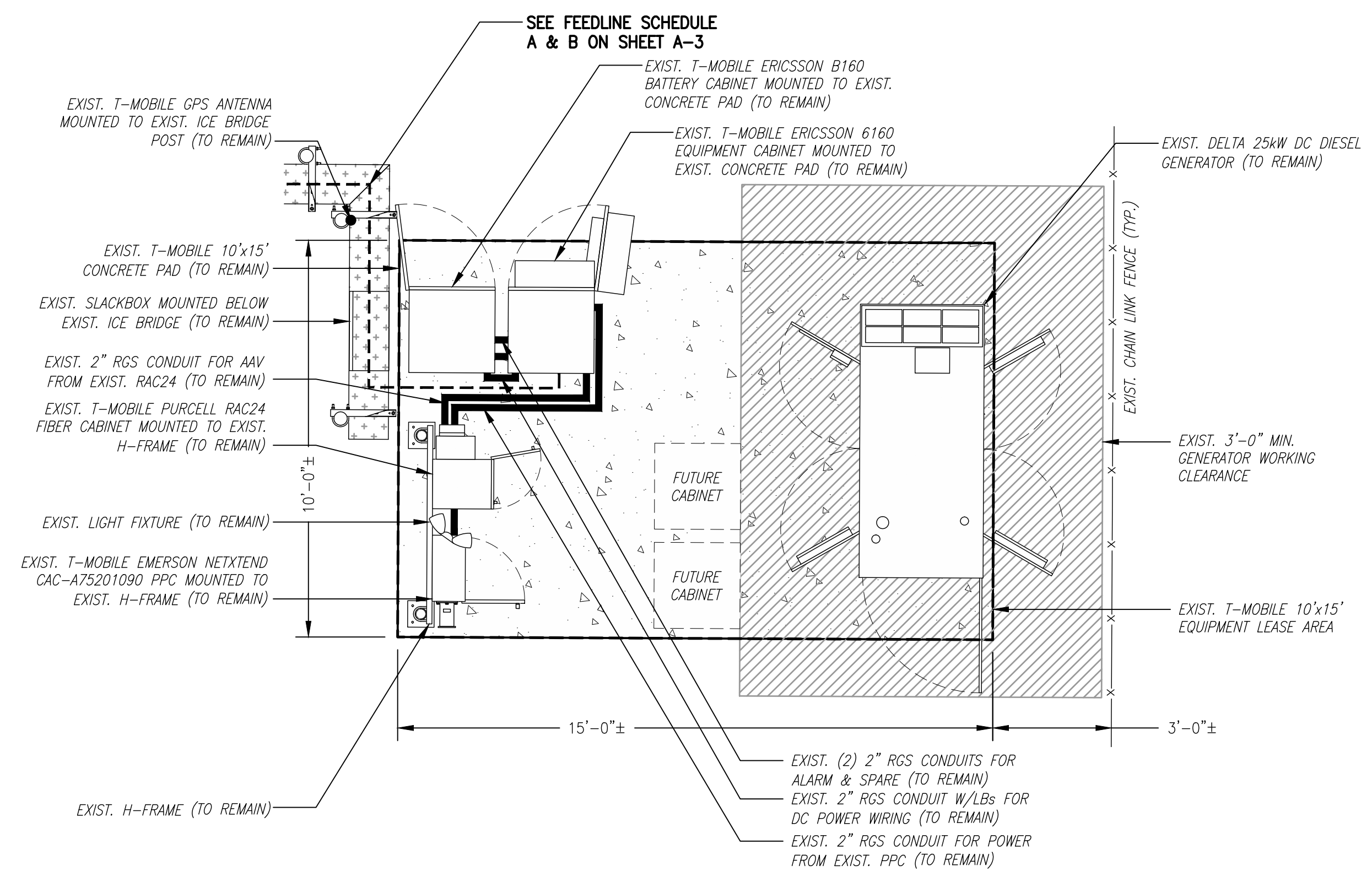
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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

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.

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



COMPOUND PLAN
 SCALE: 1/8" = 1'-0"
 0 4'-0" 8'-0" 16'-0" 24'-0"



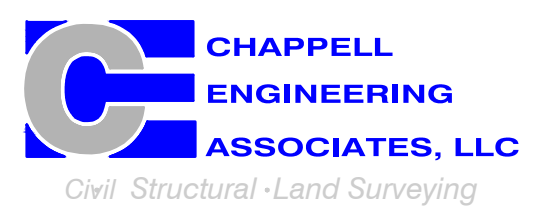
EXISTING EQUIPMENT PLAN
 SCALE: 1/2" = 1'-0"
 0 1' 2' 4' 6'

**T-MOBILE
 NORTHEAST LLC**

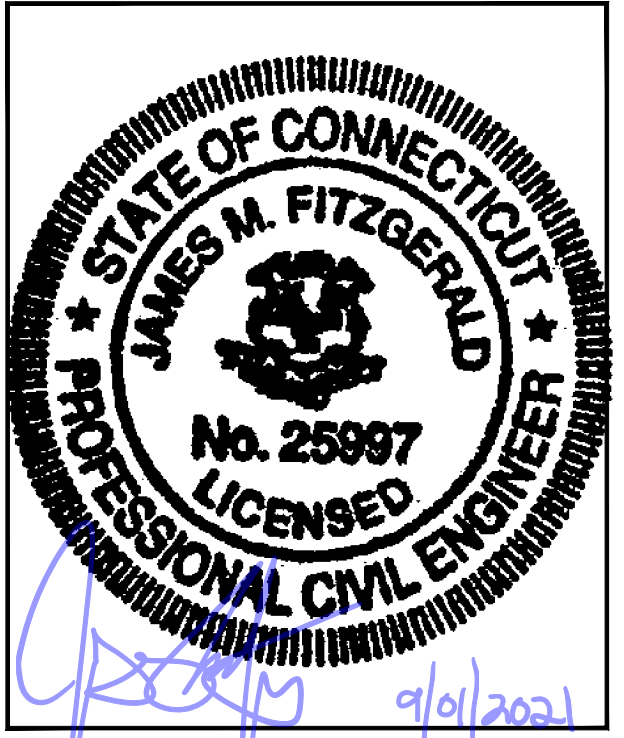
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**COMPOUND &
 EQUIPMENT PLAN**

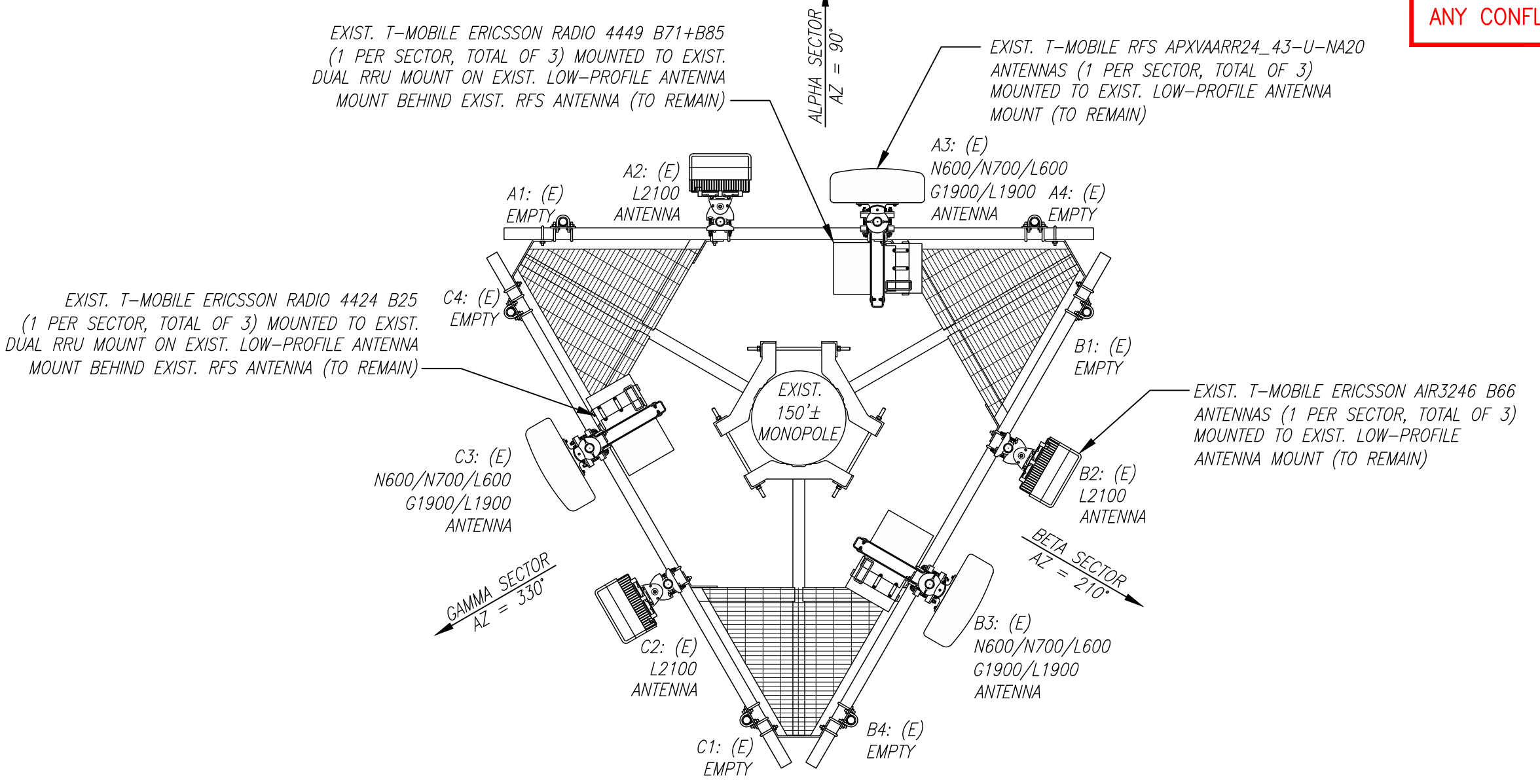
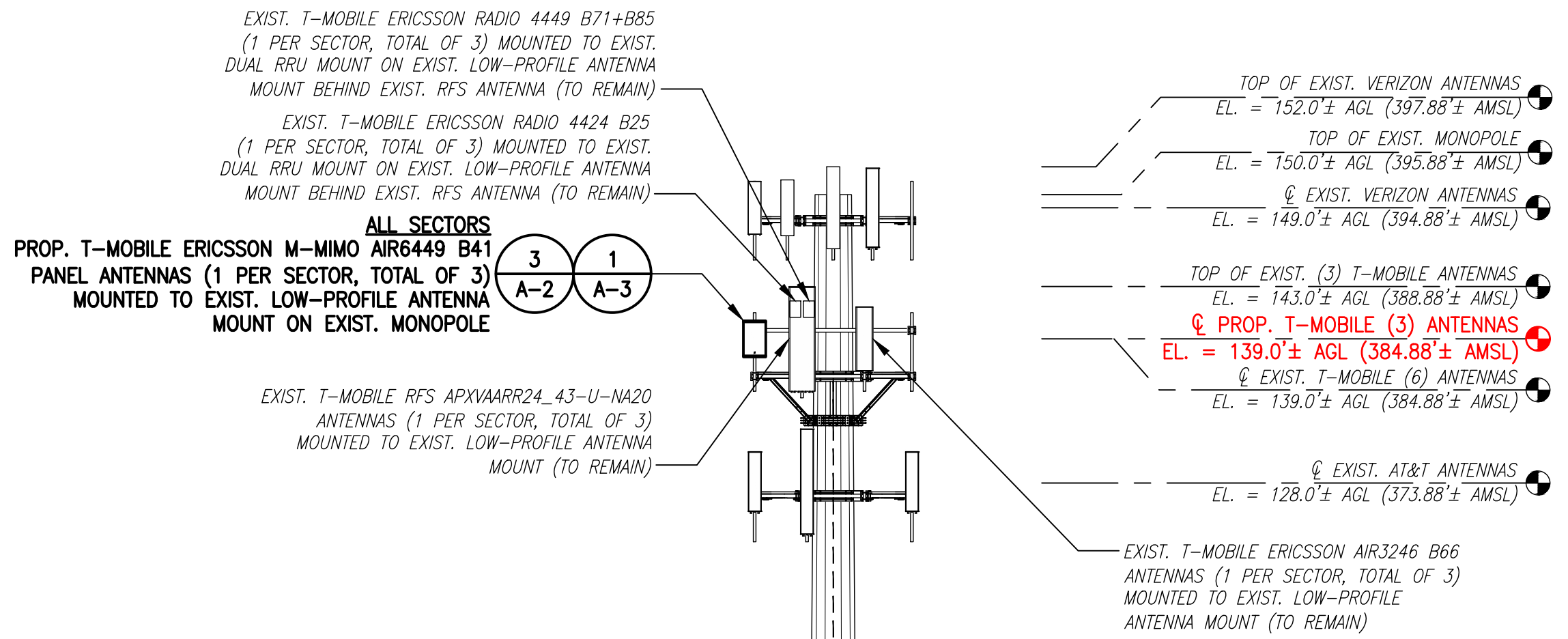
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A-1

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

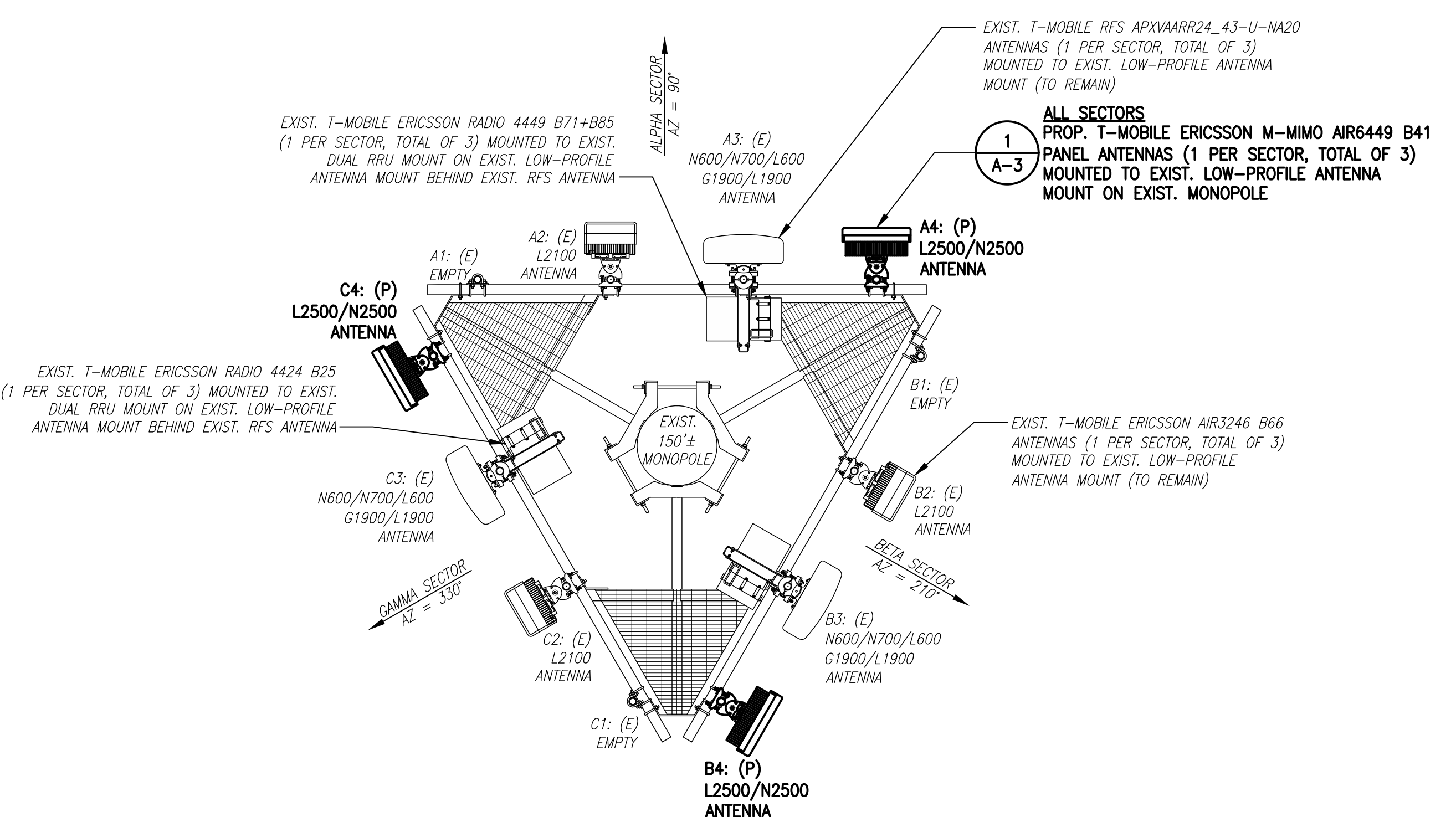
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 GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED RING-MOUNT HARDWARE. GENERAL 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.

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

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.



EXISTING ANTENNA PLAN
 SCALE: 1/2" = 1'-0"
 NORTH



PROPOSED ANTENNA PLAN
 SCALE: N.T.S.
 NORTH

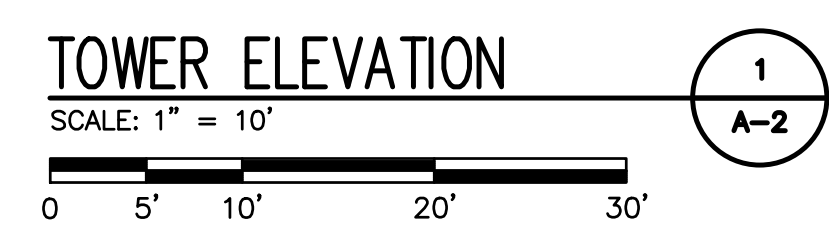
NOTE:
 GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

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

ANTENNA STATUS LEGEND:

EMPTY - EMPTY PIPE

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



**T-MOBILE
 NORTHEAST LLC**

35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 (860) 648-1116



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



CHECKED BY: JMT
 APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	08/31/21	ISSUED FOR CONSTRUCTION	JRV
0	04/05/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL011B

SITE ADDRESS:
 1662 ROUTE 184 (GOLD STAR HWY)
 GROTON, CT 06340

SHEET TITLE
**TOWER ELEVATIONS &
 ANTENNA PLAN**

SHEET NUMBER
A-2

FINAL ANTENNA CONFIGURATION								
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	A1 EMPTY PIPE MOUNT	-	-	-	-	-	-	EXIST. (4) 1-5/8" (6x12) HCS FIBER CABLES
	A1 ERICSSON M-MIMO AIR3246 B66	139'± AGL	90°	0°	-	L2100	-	
	A3 RFS APXVAARR24_43-U-NA20	139'± AGL	90°	0	-	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
	A4 ERICSSON M-MIMO AIR6449 B41	139'± AGL	90°	0°	-	L2500/N2500	-	
BETA	B1 EMPTY PIPE MOUNT	-	-	-	-	-	-	
	B2 ERICSSON M-MIMO AIR3246 B66	139'± AGL	210°	0°	-	L2100	-	
	B3 RFS APXVAARR24_43-U-NA20	139'± AGL	210°	0	-	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
	B4 ERICSSON M-MIMO AIR6449 B41	139'± AGL	210°	0°	-	L2500/N2500	-	
GAMMA	C1 EMPTY PIPE MOUNT	-	-	-	-	-	-	
	C2 ERICSSON M-MIMO AIR3246 B66	139'± AGL	330°	0°	-	L2100	-	
	C3 RFS APXVAARR24_43-U-NA20	139'± AGL	330°	0	-	L700/L600/N600	ERICSSON RADIO 4449 B71+B85	
	C4 ERICSSON M-MIMO AIR6449 B41	139'± AGL	330°	0°	-	L2500/N2500	-	

CABLE NOTE: SEE FEEDLINE SCHEDULE A & B BELOW.

NOTE: RFDS REV2 - 01/19/21

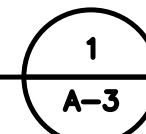
FEEDLINE SCHEDULE		
SCHEDULE	FEEDLINES	LOCATION
A	EXISTING TO REMAIN: (4) 1-5/8" (6x12) HCS FIBER CABLE EXISTING TO BE REMOVED: NONE	ROUTED PER STRUCTURAL ANALYSIS
B	PROPOSED: NONE	

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



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

ANTENNA DETAILS
 SCALE: N.T.S.

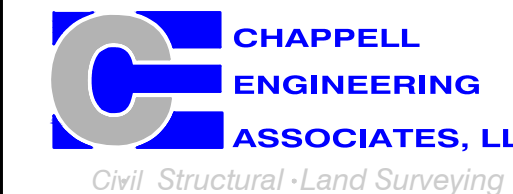


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CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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0	04/05/21	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTNL011B

SITE ADDRESS:
1662 ROUTE 184 (GOLD STAR HWY)
GROTON, CT 06340

SHEET TITLE
SITE DETAILS, ANTENNA
& FEEDLINE CHARTS

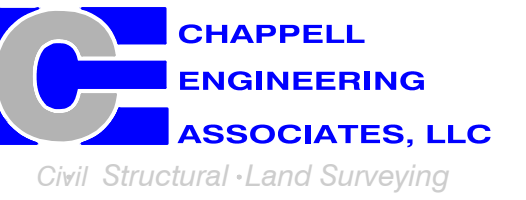
SHEET NUMBER
A-3

T-MOBILE NORTHEAST LLC

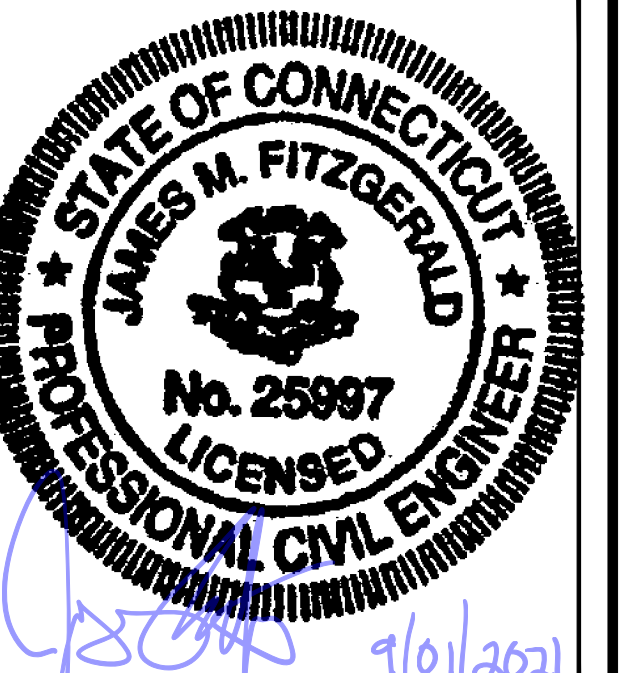
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APPROVED BY: JMT

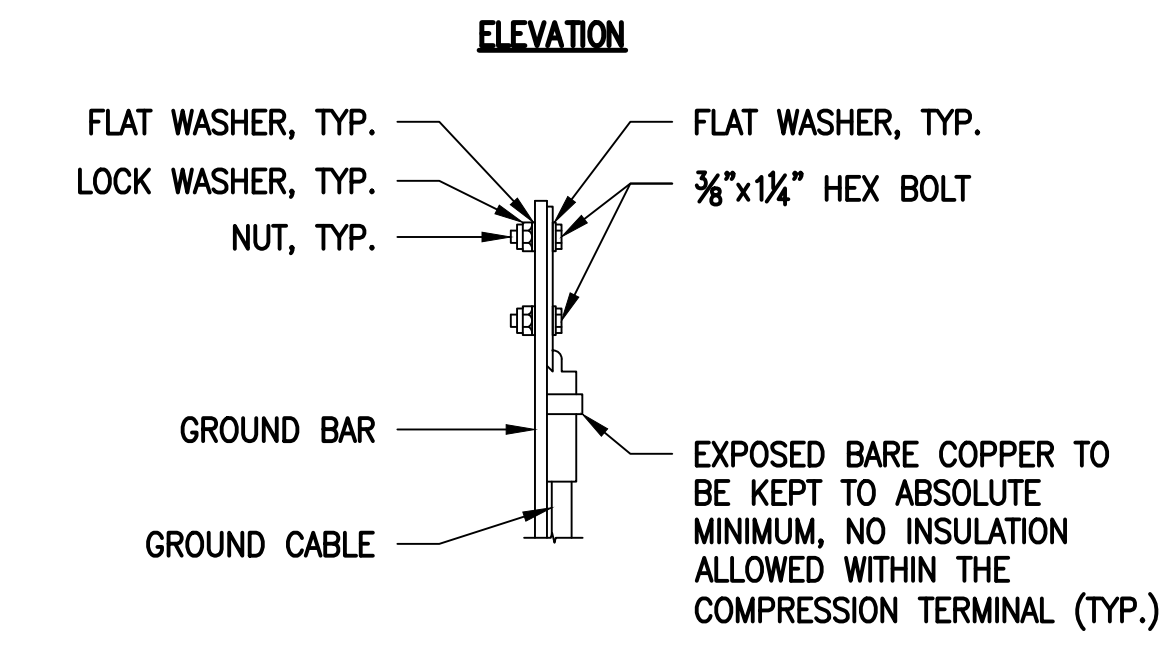
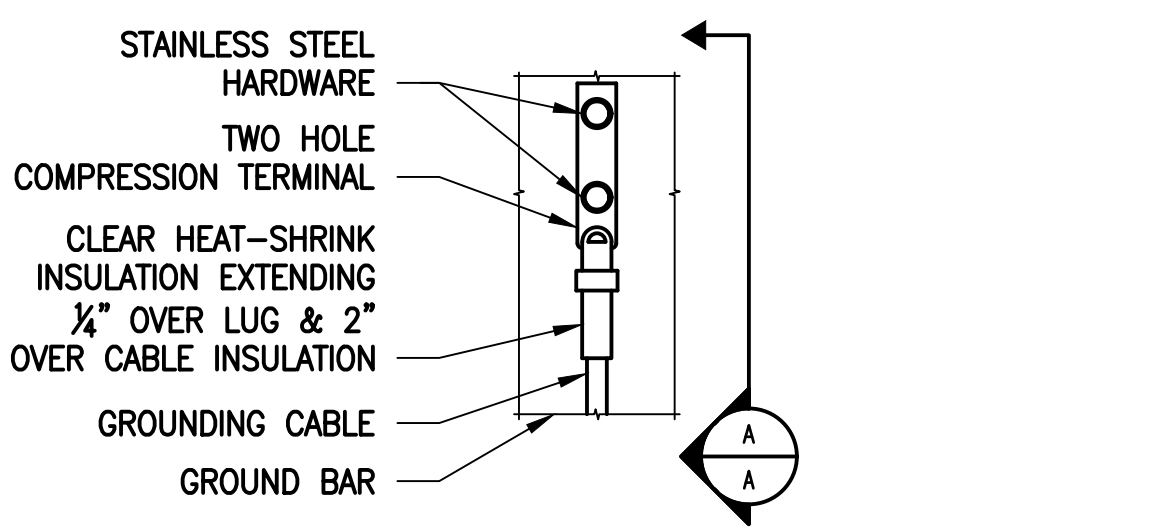
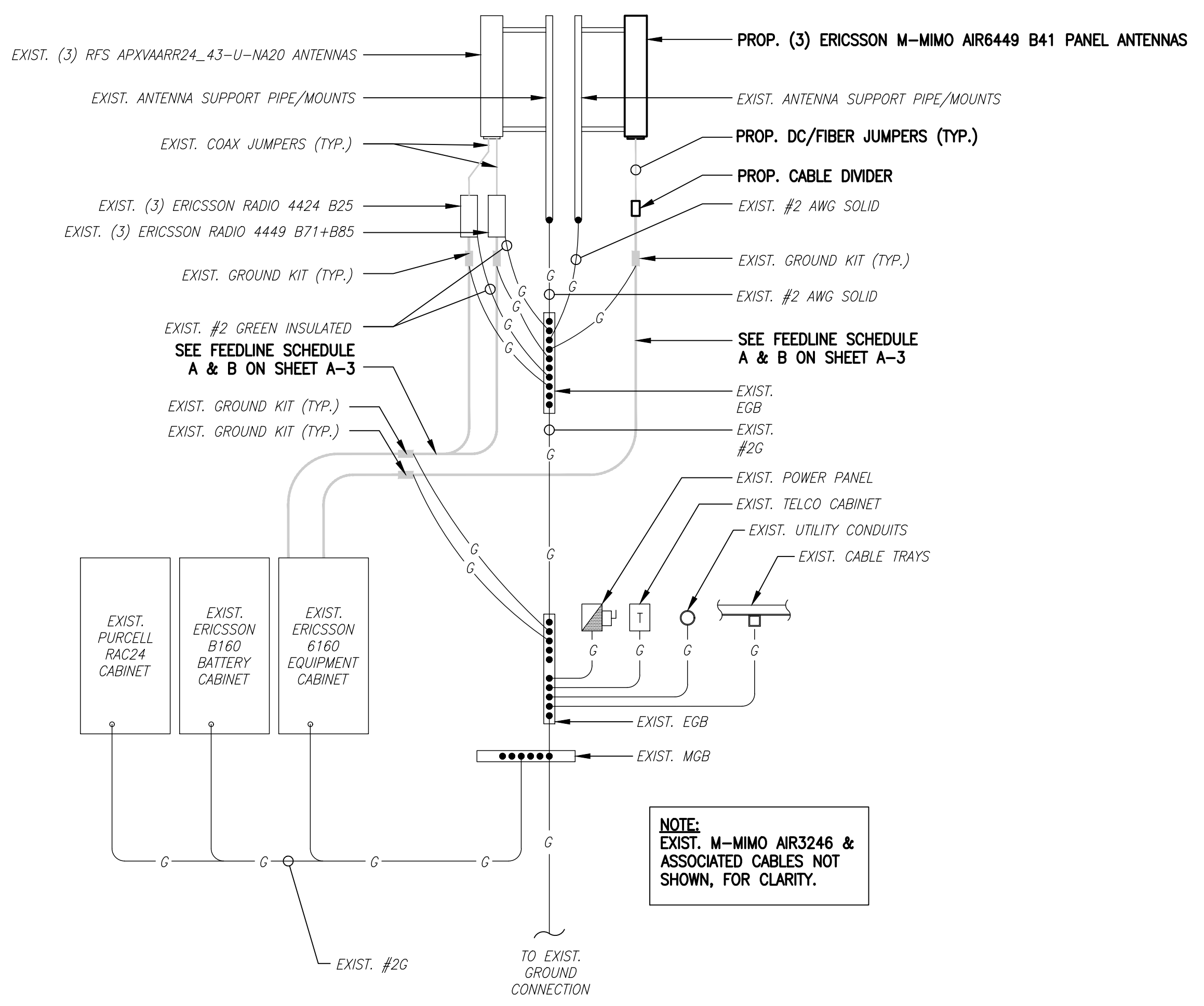
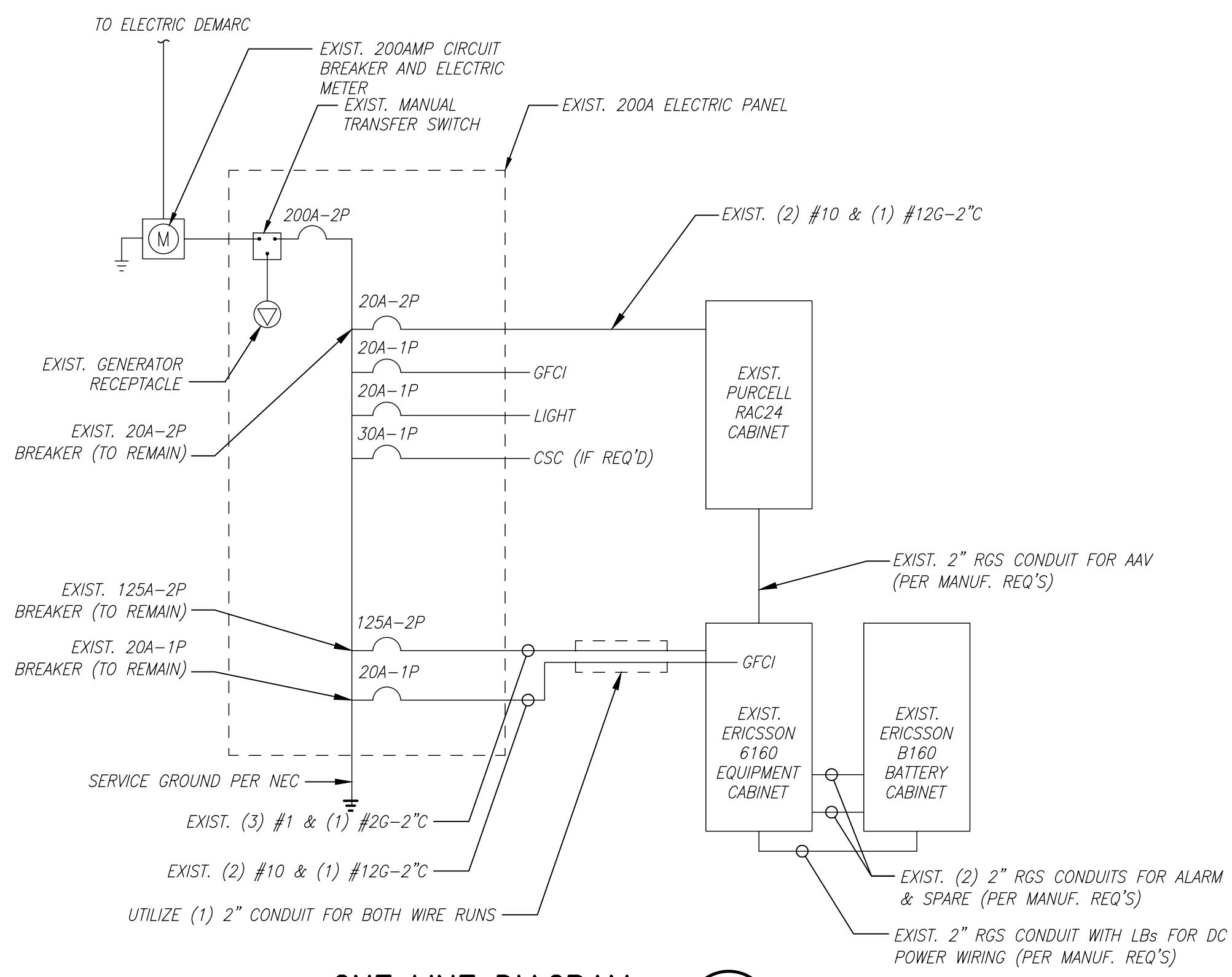
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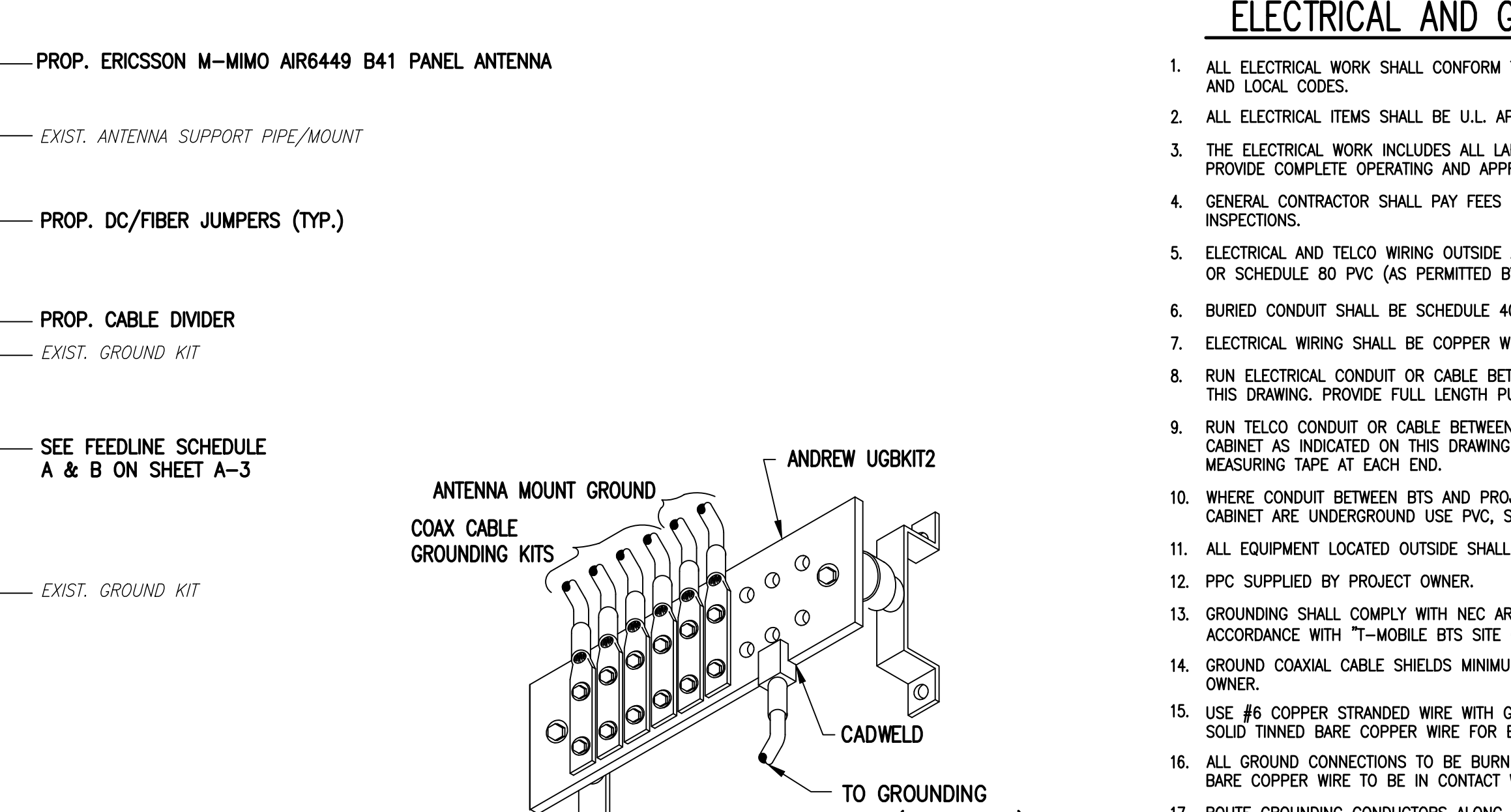
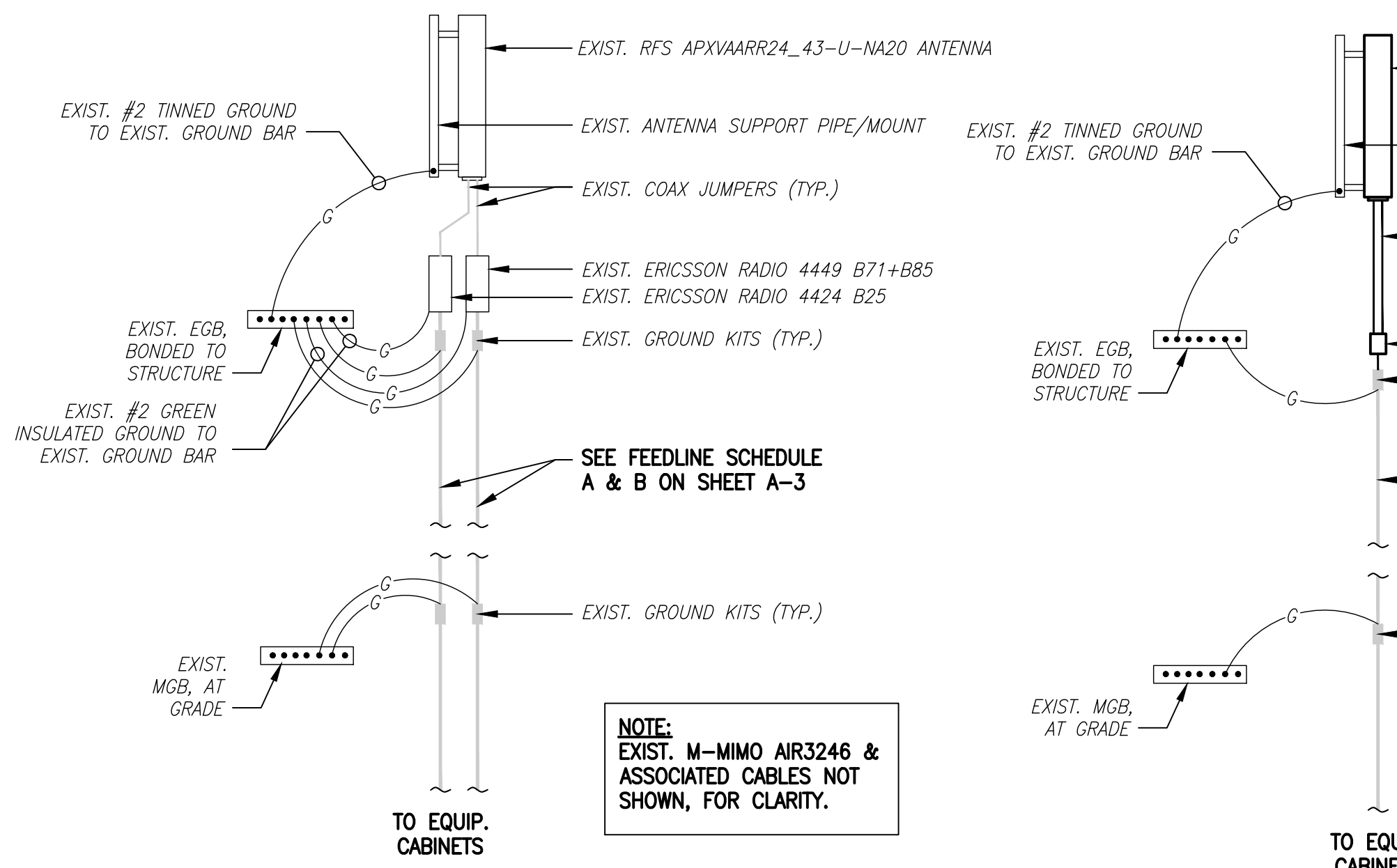
SHEET TITLE
**ELECTRICAL NOTES,
DIAGRAMS & DETAILS**

SHEET NUMBER
E-1



- 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
SCALE: NOT TO SCALE



ELECTRICAL AND GROUNDING NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURNED HYDROGEN 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.

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 150 ft Rohn Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13073-A

Customer Site Name: Groton North

Carrier Name: T-Mobile (App#: 151788, v1)

Carrier Site ID / Name: CTNL011B / Groton North

Site Location: 1662 Route 184

Groton, Connecticut

New London County

Latitude: 41.385666

Longitude: -72.013306

Analysis Result:

Max Structural Usage: 67.5% [Pass]

Max Foundation Usage: 62.0% [Pass]

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



Report Prepared by: Matthew Baker, PE

Introduction

The purpose of this report is to summarize the analysis results on the 150 ft Rohn Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Radian, File Nos. 060-3663 & 57974EH, Drawing No. A070130, dated March 16, 2007
Foundation Drawing	Radian, File Nos. 060-3663 & 57974EH, Drawing No. A070131, dated March 16, 2007
Geotechnical Report	Gemini Geotechnical Associates, Inc., Project No. 07022CT, dated March 13, 2007
Modification Drawings	N/A
Mount Analysis	TES Project # 105929, dated 04/19/2021

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 135.0$ 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:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.27$, $S_1 = 0.24$

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	149.0	3	Amphenol Antel - BXA-70063-6CF - Panel	Low Profile Platform	(13) 1 5/8"	Verizon
2		3	Andrew - HBXX-6517DS-VTM - Panel			
3		3	Andrew - HBXX-6516DS-VTM - Panel			
4		3	Andrew - LNX-6512DS-A1M - Panel			
5		1	DB-T1-6Z-8AB-0Z			
6		3	ALU RRH 2x60 AWS			
7		6	RFS FD9R6004/2C-3L Diplexer			
-	137.0	3	Ericsson - Air 3246 B66 - Panel	Platform w/ Hand Rail (Site Pro RMQP-4096-HK)	(4) 1 5/8" Fiber	T-Mobile
-		3	RFS - APXVAARR24_43-U-NA2 - Panel			
-		3	Ericsson - Radio 4424 B25 - RRU			
-		3	Ericsson - Radio 2217 B2 - RRU			
-		4	Ericsson - Radio 4415 B25 - RRU			
14	128.0	3	Powerwave - 7770.00A - Panel	Low Profile Platform	(6) 1 5/8" (4) 3/4" DC (2) 5/16" Fiber	AT&T
15		1	CCI - HPA-65R-BU4AA - Panel			
16		1	CCI - DMP65R-BU4DA - Panel			
17		2	CCI - HPA-65R-BU8AA - Panel			
18		2	CCI - DMP65R-BU8DA - Panel			
19		3	Ericsson - 4449 B5/B12 - RRU			
20		3	Ericsson - 8843 B2/B66A - RRU			
21		2	Raycap - DC6-48-60-18-8F - OVP			

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
8	139.0	3	Ericsson - Air 3246 B66 - Panel	Platform w/ Hand Rail (Sitepro RMQP-4096-HK)	(4) 1 5/8" Fiber	T-Mobile
9		3	RFS - APXVAARR24_43-U-NA2 - Panel			
10		3	Ericsson - AIR6449 B41 - Panel			
11		3	Ericsson - 4449 B71 + B85 - RRU			
12		3	Ericsson - 4424 B25 - RRU			
13		4	Ericsson - Radio 4415 B25 - RRU			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	40.9%	53.1%	67.5%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3261.6	29.9	77.5

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.5759 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 40.94% at 0.0ft

Structure: CT13073-A-SBA
Site Name: Groton North
Height: 150.00 (ft)
Base Elev: 0.000 (ft)

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

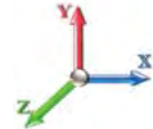
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Page: 1

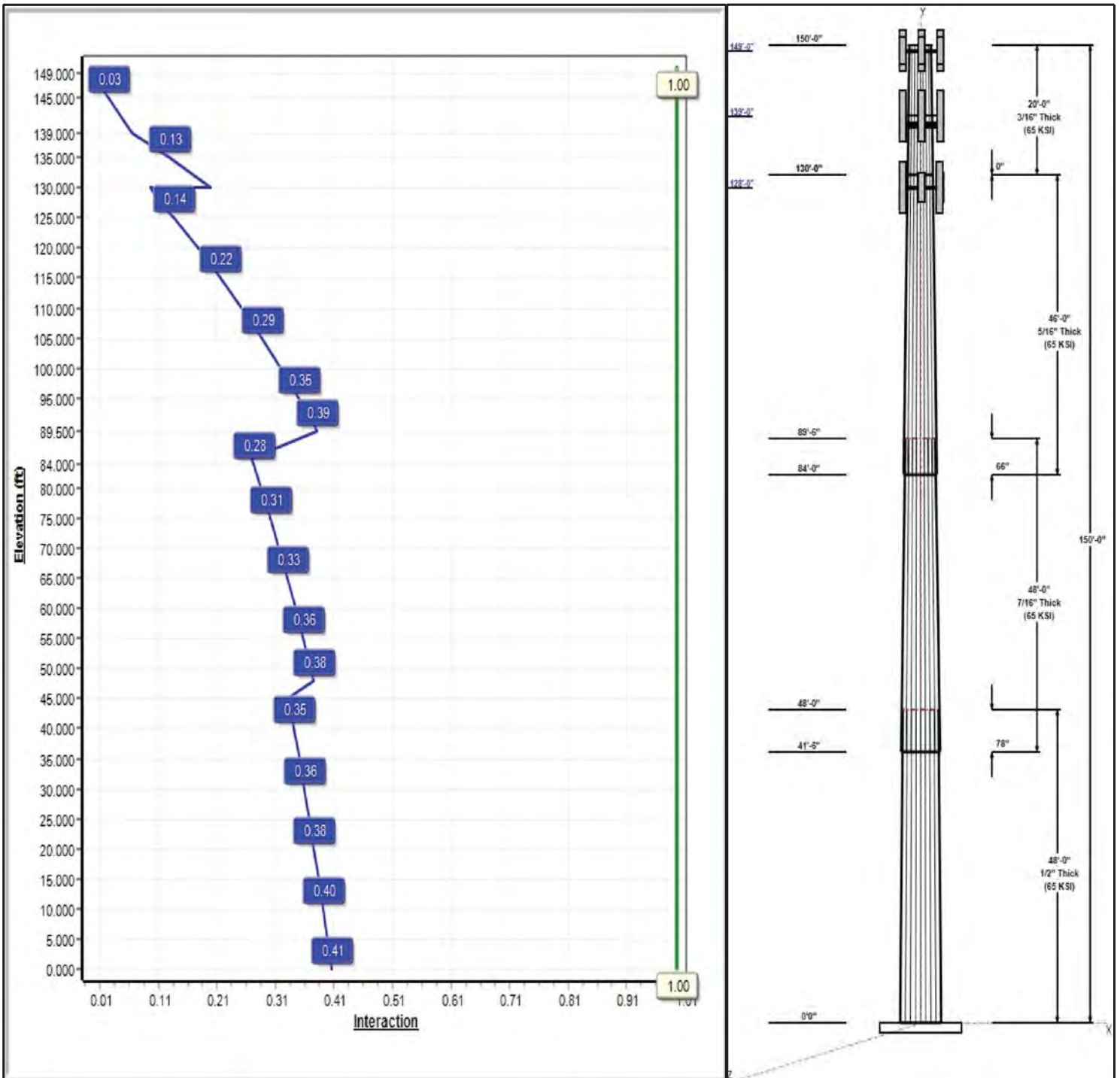
Dead Load Factor: 1.20
 Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 105 mph Wind



Iterations: 21

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Structure: CT13073-A-SBA

Type: Custom
Site Name: Groton North
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.20967

6/2/2021

Page: 2



Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	49.94	60.00	0.500		0.20967	65
2	48.00	42.11	52.17	0.438	Slip	0.20967	65
3	46.00	34.24	43.89	0.313	Slip	0.20967	65
4	20.00	30.00	34.24	0.188	Butt	0.21215	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.00	149.00	3	BXA-70063-6CF	Verizon
149.00	149.00	3	HBXX-6517DS-VTM	Verizon
149.00	149.00	3	HBXX-6516DS-VTM	Verizon
149.00	149.00	3	LNx-6512DS-A1M	Verizon
149.00	149.00	1	DB-T1-6Z-8AB-0Z	Verizon
149.00	149.00	3	ALU RRH 2x60 AWS	Verizon
149.00	149.00	6	RFS FD9R6004/2C-3L	Verizon
149.00	149.00	1	Low Profile Platform	Verizon
139.00	139.00	1	RMQP-4096-HK	T-Mobile
139.00	139.00	3	Air 3246 B66	T-Mobile
139.00	139.00	3	APXVAARR24_43-U-NA20	T-Mobile
139.00	139.00	3	AIR6449 B41	T-Mobile
139.00	139.00	3	4449 B71 + B85	T-Mobile
139.00	139.00	3	4424	T-Mobile
139.00	139.00	4	RRUS 4415 B25	T-Mobile
128.00	128.00	1	Low Profile Platform	AT&T
128.00	128.00	1	HPA-65R-BU4AA	AT&T
128.00	128.00	1	DMP65R-BU4DA	AT&T
128.00	128.00	2	HPA-65R-BU8AA	AT&T
128.00	128.00	2	DMP65R-BU8DA	AT&T
128.00	128.00	3	4449	AT&T
128.00	128.00	3	B2 B66A 8843	AT&T
128.00	128.00	2	DC6-48-60-18-8F	AT&T
128.00	128.00	3	7770.00A	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	149.00	Inside	1 5/8" Coax	Verizon
0.00	139.00	Inside	1 5/8" Fiber	T-Mobile
0.00	128.00	Inside	1 5/8" Coax	AT&T
0.00	128.00	Inside	3/4" DC	AT&T
0.00	128.00	Inside	5/16" Fiber	AT&T

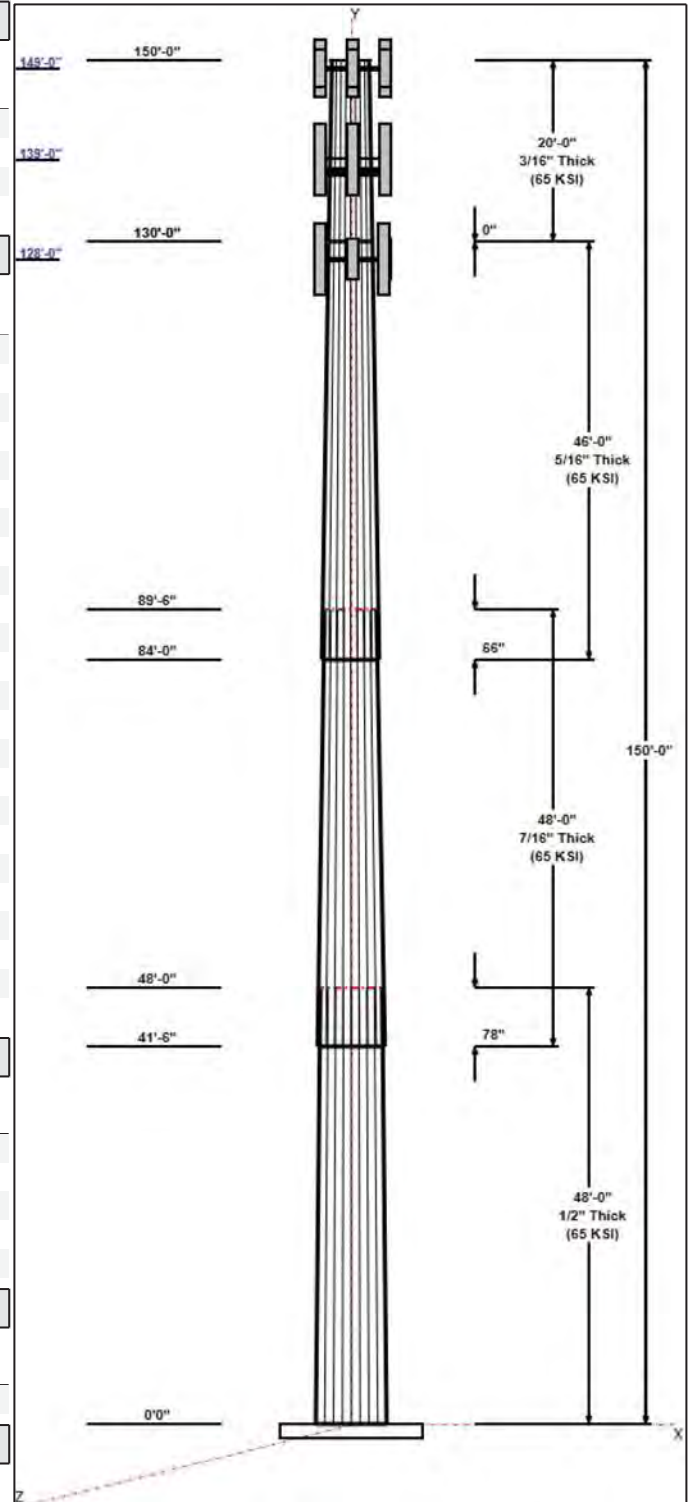
Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
34	1.5" F1554 105	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	69.5	50.0	Round

Reactions



Structure: CT13073-A-SBA

Type: Custom
Site Name: Groton North
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.21215

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Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	3261.6	29.9	53.6
0.9D + 1.6W 105 mph Wind	3240.5	29.9	40.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	769.0	7.3	77.5
1.2D + 1.0E	450.7	3.7	53.6
0.9D + 1.0E	447.6	3.7	40.2
1.0D + 1.0W 60 mph Wind	663.0	6.1	44.7

Structure: CT13073-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Groton North
Height: 150.00 (ft)

6/2/2021

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Shaft Properties

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.5000	65		0.00	14,118
2	18	48.000	0.4375	65	Slip	78.00	10,593
3	18	46.000	0.3125	65	Slip	66.00	6,016
4	18	20.000	0.1875	65	Flange	0.00	1,293
Total Shaft Weight:							32,020

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	60.00	0.00	94.42	42234.30	19.75	120.00	49.94	48.00	78.45	24223.7	16.20	99.87	0.209669
2	52.17	41.50	71.84	24294.43	19.62	119.25	42.11	89.50	57.86	12695.7	15.56	96.25	0.209669
3	43.89	84.00	43.22	10368.48	23.35	140.44	34.24	130.00	33.65	4895.14	17.91	109.5	0.209669
4	34.24	130.0	20.27	2969.66	30.79	182.63	30.00	150.00	17.74	1992.24	26.80	160.0	0.212150

Load Summary

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	149.00	BXA-70063-6CF	3	17.00	7.57	0.73	165.20	10.332	0.73	0.00	0.00
2	149.00	HBXX-6517DS-VTM	3	40.70	8.55	0.77	216.82	11.467	0.77	0.00	0.00
3	149.00	HBXX-6516DS-VTM	3	30.60	5.43	0.77	153.82	7.411	0.77	0.00	0.00
4	149.00	LNK-6512DS-A1M	3	28.00	5.09	0.80	149.46	6.979	0.80	0.00	0.00
5	149.00	DB-T1-6Z-8AB-0Z	1	18.90	4.80	1.00	162.51	5.673	1.00	0.00	0.00
6	149.00	ALU RRR 2x60 AWS	3	55.00	3.50	0.67	134.96	4.289	0.67	0.00	0.00
7	149.00	RFS FD9R6004/2C-3L Diplexer	6	3.10	0.36	1.00	11.12	0.803	1.00	0.00	0.00
8	149.00	Low Profile Platform	1	1500.00	22.00	1.00	2808.04	39.650	1.00	0.00	0.00
9	139.00	RMQP-4096-HK	1	2645.00	51.70	1.00	5393.64	89.666	1.00	0.00	0.00
10	139.00	Air 3246 B66	3	180.00	7.94	0.83	380.02	9.112	0.85	0.00	0.00
11	139.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	542.36	22.125	0.72	0.00	0.00
12	139.00	AIR6449 B41	3	103.00	5.65	0.71	239.08	6.593	0.73	0.00	0.00
13	139.00	4449 B71 + B85	3	73.20	1.97	0.67	130.50	2.535	0.67	0.00	0.00
14	139.00	4424	3	88.00	2.05	0.67	173.59	2.641	0.67	0.00	0.00
15	139.00	RRUS 4415 B25	4	46.00	1.64	0.67	86.79	2.151	0.67	0.00	0.00
16	128.00	Low Profile Platform	1	1600.00	22.00	1.00	2974.20	39.384	1.00	0.00	0.00
17	128.00	HPA-65R-BU4AA	1	28.70	4.92	0.94	122.01	5.853	0.96	0.00	0.00
18	128.00	DMP65R-BU4DA	1	69.70	8.28	0.99	307.93	9.177	0.99	0.00	0.00
19	128.00	HPA-65R-BU8AA	2	54.00	11.23	0.86	315.60	12.867	0.88	0.00	0.00
20	128.00	DMP65R-BU8DA	2	95.70	17.87	0.72	445.13	19.896	0.74	0.00	0.00
21	128.00	4449	3	70.00	1.65	0.67	136.90	2.178	0.67	0.00	0.00
22	128.00	B2 B66A 8843	3	70.00	1.64	0.67	115.26	2.148	0.67	0.00	0.00
23	128.00	DC6-48-60-18-8F	2	31.80	0.92	1.00	92.65	1.351	1.00	0.00	0.00
24	128.00	7770.00A	3	27.00	5.54	0.72	139.50	7.641	0.74	0.00	0.00
Totals:			61	9,159.40			21,921.40				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	149.00	(13) 1 5/8" Coax	0.00	Inside
0.00	139.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	128.00	(6) 1 5/8" Coax	0.00	Inside
0.00	128.00	(4) 3/4" DC	0.00	Inside
0.00	128.00	(2) 5/16" Fiber	0.00	Inside

Shaft Section Properties

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
0.00		0.5000	60.000	94.423	42234.3	19.75	120.00	78.2	1386.	0.0
5.00		0.5000	58.952	92.759	40041.0	19.38	117.90	78.6	1337.	1592.4
10.00		0.5000	57.903	91.096	37925.0	19.01	115.81	79.0	1290.	1564.0
15.00		0.5000	56.855	89.432	35884.8	18.64	113.71	79.5	1243.	1535.7
20.00		0.5000	55.807	87.768	33919.2	18.27	111.61	79.9	1197.	1507.4
25.00		0.5000	54.758	86.105	32026.7	17.90	109.52	80.3	1152.	1479.1
30.00		0.5000	53.710	84.441	30205.9	17.53	107.42	80.8	1107.	1450.8
35.00		0.5000	52.662	82.777	28455.5	17.16	105.32	81.2	1064.	1422.5
40.00		0.5000	51.613	81.114	26774.1	16.79	103.23	81.7	1021.	1394.2
41.50	Bot - Section 2	0.5000	51.299	80.615	26282.9	16.68	102.60	81.8	1009.	412.7
45.00		0.5000	50.565	79.450	25160.2	16.42	101.13	82.1	980.0	1802.7
48.00	Top - Section 1	0.4375	50.811	69.947	22424.6	19.07	116.14	0.0	0.0	1524.5
50.00		0.4375	50.392	69.365	21869.3	18.90	115.18	79.2	854.8	474.0
55.00		0.4375	49.343	67.909	20521.1	18.48	112.78	79.7	819.1	1167.8
60.00		0.4375	48.295	66.454	19229.5	18.05	110.39	80.2	784.2	1143.0
65.00		0.4375	47.247	64.998	17993.3	17.63	107.99	80.7	750.1	1118.2
70.00		0.4375	46.198	63.542	16811.2	17.21	105.60	81.2	716.7	1093.5
75.00		0.4375	45.150	62.086	15682.1	16.79	103.20	81.7	684.1	1068.7
80.00		0.4375	44.101	60.631	14604.7	16.36	100.80	82.2	652.3	1043.9
84.00	Bot - Section 3	0.4375	43.263	59.466	13779.2	16.03	98.89	82.6	627.3	817.3
85.00		0.4375	43.053	59.175	13577.8	15.94	98.41	82.6	621.2	348.6
89.50	Top - Section 2	0.3125	42.735	42.076	9566.9	22.70	136.75	0.0	0.0	1547.5
90.00		0.3125	42.630	41.972	9496.1	22.64	136.42	74.8	438.7	71.5
95.00		0.3125	41.581	40.932	8807.7	22.05	133.06	75.5	417.2	705.3
100.00		0.3125	40.533	39.892	8153.4	21.46	129.71	76.2	396.2	687.6
105.00		0.3125	39.485	38.853	7532.3	20.87	126.35	76.9	375.7	669.9
110.00		0.3125	38.436	37.813	6943.6	20.28	123.00	77.6	355.8	652.2
115.00		0.3125	37.388	36.773	6386.4	19.69	119.64	78.2	336.4	634.5
120.00		0.3125	36.340	35.733	5859.8	19.09	116.29	78.9	317.6	616.8
125.00		0.3125	35.291	34.693	5363.0	18.50	112.93	79.6	299.3	599.1
128.00		0.3125	34.662	34.070	5078.9	18.15	110.92	80.1	288.6	351.0
130.00	Top - Section 3	0.3125	34.243	33.654	4895.1	17.91	109.58	80.3	281.6	230.4
130.00	Bot - Section 4	0.1875	34.243	20.267	2969.7	29.85	182.63	65.2	170.8	
135.00		0.1875	33.182	19.635	2700.7	29.79	176.97	66.4	160.3	339.4
139.00		0.1875	32.334	19.130	2497.7	29.00	172.45	67.3	152.1	263.8
140.00		0.1875	32.122	19.004	2448.5	28.80	171.31	67.5	150.1	64.9
145.00		0.1875	31.061	18.373	2212.5	27.80	165.66	68.7	140.3	318.0
149.00		0.1875	30.212	17.868	2035.1	27.00	161.13	69.6	132.7	246.6
150.00		0.1875	30.000	17.742	1992.2	26.80	160.00	69.9	130.8	60.6

32020.4

Wind Loading - Shaft

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

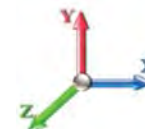


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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	18.769	20.65	446.02	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	18.769	20.65	438.23	0.650	0.000	5.00	25.164	16.36	540.3	0.0	1910.8
10.00		1.00	0.70	18.769	20.65	430.44	0.650	0.000	5.00	24.720	16.07	530.8	0.0	1876.9
15.00		1.00	0.70	18.769	20.65	422.64	0.650	0.000	5.00	24.277	15.78	521.3	0.0	1842.9
20.00		1.00	0.70	18.769	20.65	414.85	0.650	0.000	5.00	23.833	15.49	511.7	0.0	1808.9
25.00		1.00	0.70	18.769	20.65	407.06	0.650	0.000	5.00	23.390	15.20	502.2	0.0	1775.0
30.00		1.00	0.70	18.785	20.66	399.43	0.650	0.000	5.00	22.946	14.91	493.1	0.0	1741.0
35.00		1.00	0.73	19.631	21.59	400.36	0.650	0.000	5.00	22.503	14.63	505.4	0.0	1707.0
40.00		1.00	0.76	20.394	22.43	399.94	0.650	0.000	5.00	22.059	14.34	514.7	0.0	1673.1
41.50	Bot - Section 2	1.00	0.77	20.610	22.67	399.60	0.650	0.000	1.50	6.531	4.25	154.0	0.0	495.3
45.00		1.00	0.79	21.092	23.20	398.47	0.650	0.000	3.50	15.343	9.97	370.2	0.0	2163.2
48.00	Top - Section 1	1.00	0.80	21.485	23.63	397.16	0.650	0.000	3.00	12.979	8.44	319.0	0.0	1829.4
50.00		1.00	0.81	21.737	23.91	403.12	0.650	0.000	2.00	8.564	5.57	212.9	0.0	568.9
55.00		1.00	0.83	22.337	24.57	400.15	0.650	0.000	5.00	21.099	13.71	539.1	0.0	1401.3
60.00		1.00	0.85	22.899	25.19	396.55	0.650	0.000	5.00	20.655	13.43	541.1	0.0	1371.6
65.00		1.00	0.87	23.429	25.77	392.40	0.650	0.000	5.00	20.212	13.14	541.7	0.0	1341.9
70.00		1.00	0.89	23.930	26.32	387.78	0.650	0.000	5.00	19.768	12.85	541.2	0.0	1312.2
75.00		1.00	0.91	24.406	26.85	382.73	0.650	0.000	5.00	19.324	12.56	539.6	0.0	1282.5
80.00		1.00	0.93	24.861	27.35	377.31	0.650	0.000	5.00	18.881	12.27	537.0	0.0	1252.7
84.00	Bot - Section 3	1.00	0.94	25.210	27.73	372.72	0.650	0.000	4.00	14.785	9.61	426.4	0.0	980.8
85.00		1.00	0.94	25.295	27.82	371.54	0.650	0.000	1.00	3.705	2.41	107.2	0.0	418.3
89.50	Top - Section 2	1.00	0.96	25.671	28.24	366.09	0.650	0.000	4.50	16.452	10.69	483.2	0.0	1857.0
90.00		1.00	0.96	25.711	28.28	370.90	0.650	0.000	0.50	1.806	1.17	53.1	0.0	85.8
95.00		1.00	0.97	26.112	28.72	364.59	0.650	0.000	5.00	17.815	11.58	532.2	0.0	846.3
100.00		1.00	0.99	26.497	29.15	358.01	0.650	0.000	5.00	17.371	11.29	526.6	0.0	825.1
105.00		1.00	1.00	26.869	29.56	351.19	0.650	0.000	5.00	16.928	11.00	520.3	0.0	803.9
110.00		1.00	1.02	27.229	29.95	344.15	0.650	0.000	5.00	16.484	10.71	513.5	0.0	782.6
115.00		1.00	1.03	27.577	30.33	336.89	0.650	0.000	5.00	16.040	10.43	506.0	0.0	761.4
120.00		1.00	1.04	27.914	30.71	329.44	0.650	0.000	5.00	15.597	10.14	498.1	0.0	740.2
125.00		1.00	1.05	28.242	31.07	321.81	0.650	0.000	5.00	15.153	9.85	489.6	0.0	718.9
128.00	Appurtenance(s)	1.00	1.06	28.434	31.28	317.15	0.650	0.000	3.00	8.879	5.77	288.8	0.0	421.2
130.00	Top - Section 3	1.00	1.07	28.560	31.42	314.00	0.650	0.000	2.00	5.831	3.79	190.5	0.0	276.5
135.00		1.00	1.08	28.869	31.76	305.92	0.650	0.000	5.00	14.264	9.27	471.1	0.0	407.3
139.00	Appurtenance(s)	1.00	1.09	29.111	32.02	299.34	0.650	0.000	4.00	11.088	7.21	369.3	0.0	316.6
140.00		1.00	1.09	29.171	32.09	297.69	0.650	0.000	1.00	2.727	1.77	91.0	0.0	77.9
145.00		1.00	1.10	29.465	32.41	289.30	0.650	0.000	5.00	13.366	8.69	450.5	0.0	381.6
149.00	Appurtenance(s)	1.00	1.11	29.695	32.66	282.49	0.650	0.000	4.00	10.370	6.74	352.3	0.0	296.0
150.00		1.00	1.11	29.752	32.73	280.78	0.650	0.000	1.00	2.548	1.66	86.7	0.0	72.7
Totals:									150.00			15,371.5		38,424.5

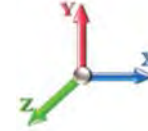
Discrete Appurtenance Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.00	LNx-6512DS-A1M	3	29.695	32.664	0.64	0.80	9.77	100.80	0.000	0.000	510.76	0.00	0.00
2	149.00	BxA-70063-6CF	3	29.695	32.664	0.58	0.80	13.26	61.20	0.000	0.000	693.15	0.00	0.00
3	149.00	HBXX-6517DS-VTM	3	29.695	32.664	0.62	0.80	15.80	146.52	0.000	0.000	825.78	0.00	0.00
4	149.00	HBXX-6516DS-VTM	3	29.695	32.664	0.62	0.80	10.03	110.16	0.000	0.000	524.44	0.00	0.00
5	149.00	Low Profile Platform	1	29.695	32.664	1.00	1.00	22.00	1800.00	0.000	0.000	1149.79	0.00	0.00
6	149.00	DB-T1-6Z-8AB-OZ	1	29.695	32.664	0.80	0.80	3.84	22.68	0.000	0.000	200.69	0.00	0.00
7	149.00	ALU RRR 2x60 AWS	3	29.695	32.664	0.54	0.80	5.63	198.00	0.000	0.000	294.14	0.00	0.00
8	149.00	RFS FD9R6004/2C-3L	6	29.695	32.664	0.80	0.80	1.73	22.32	0.000	0.000	90.31	0.00	0.00
9	139.00	RMQP-4096-HK	1	29.111	32.022	1.00	1.00	51.70	3174.00	0.000	0.000	2648.90	0.00	0.00
10	139.00	RRUS 4415 B25	4	29.111	32.022	0.54	0.80	3.52	220.80	0.000	0.000	180.15	0.00	0.00
11	139.00	4424	3	29.111	32.022	0.50	0.75	3.09	316.80	0.000	0.000	158.34	0.00	0.00
12	139.00	4449 B71 + B85	3	29.111	32.022	0.50	0.75	2.97	263.52	0.000	0.000	152.16	0.00	0.00
13	139.00	AIR6449 B41	3	29.111	32.022	0.53	0.75	9.03	370.80	0.000	0.000	462.45	0.00	0.00
14	139.00	Air 3246 B66	3	29.111	32.022	0.62	0.75	14.83	648.00	0.000	0.000	759.72	0.00	0.00
15	139.00	APXVAARR24_43-U-NA2	3	29.111	32.022	0.52	0.75	31.88	460.80	0.000	0.000	1633.30	0.00	0.00
16	128.00	HPA-65R-BU8AA	2	28.434	31.277	0.69	0.80	15.45	129.60	0.000	0.000	773.29	0.00	0.00
17	128.00	Low Profile Platform	1	28.434	31.277	1.00	1.00	22.00	1920.00	0.000	0.000	1100.95	0.00	0.00
18	128.00	HPA-65R-BU4AA	1	28.434	31.277	0.75	0.80	3.70	34.44	0.000	0.000	185.15	0.00	0.00
19	128.00	DMP65R-BU4DA	1	28.434	31.277	0.79	0.80	6.56	83.64	0.000	0.000	328.17	0.00	0.00
20	128.00	4449	3	28.434	31.277	0.54	0.80	2.65	252.00	0.000	0.000	132.77	0.00	0.00
21	128.00	DMP65R-BU8DA	2	28.434	31.277	0.58	0.80	20.59	229.68	0.000	0.000	1030.20	0.00	0.00
22	128.00	B2 B66A 8843	3	28.434	31.277	0.54	0.80	2.64	252.00	0.000	0.000	131.97	0.00	0.00
23	128.00	DC6-48-60-18-8F	2	28.434	31.277	0.80	0.80	1.47	76.32	0.000	0.000	73.66	0.00	0.00
24	128.00	7770.00A	3	28.434	31.277	0.58	0.80	9.57	97.20	0.000	0.000	479.07	0.00	0.00
Totals:									10,991.28			14,519.31		

Total Applied Force Summary

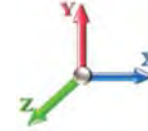
Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		540.31	2058.66	0.00	0.00
10.00		530.79	2024.70	0.00	0.00
15.00		521.26	1990.73	0.00	0.00
20.00		511.74	1956.76	0.00	0.00
25.00		502.22	1922.80	0.00	0.00
30.00		493.11	1888.83	0.00	0.00
35.00		505.35	1854.86	0.00	0.00
40.00		514.66	1820.90	0.00	0.00
41.50		153.99	539.65	0.00	0.00
45.00		370.23	2266.71	0.00	0.00
48.00		318.99	1918.06	0.00	0.00
50.00		212.95	627.99	0.00	0.00
55.00		539.14	1549.18	0.00	0.00
60.00		541.09	1519.46	0.00	0.00
65.00		541.72	1489.74	0.00	0.00
70.00		541.17	1460.02	0.00	0.00
75.00		539.56	1430.30	0.00	0.00
80.00		536.98	1400.58	0.00	0.00
84.00		426.41	1099.06	0.00	0.00
85.00		107.21	447.85	0.00	0.00
89.50		483.16	1990.10	0.00	0.00
90.00		53.12	100.58	0.00	0.00
95.00		532.16	994.15	0.00	0.00
100.00		526.57	972.92	0.00	0.00
105.00		520.33	951.69	0.00	0.00
110.00		513.47	930.47	0.00	0.00
115.00		506.04	909.24	0.00	0.00
120.00		498.07	888.01	0.00	0.00
125.00		489.58	866.78	0.00	0.00
128.00	(18) attachments	4524.06	3584.76	0.00	0.00
130.00		190.50	316.47	0.00	0.00
135.00		471.08	507.17	0.00	0.00
139.00	(20) attachments	6364.28	5851.18	0.00	0.00
140.00		91.01	94.08	0.00	0.00
145.00		450.54	462.68	0.00	0.00
149.00	(23) attachments	4641.32	2822.54	0.00	0.00
150.00		86.71	72.70	0.00	0.00
	Totals:	29,890.83	53,582.34	0.00	0.00

Calculated Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

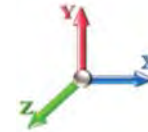


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Load Case: 1.2D + 1.6W 105 mph Wind

Iterations 21

Dead Load Factor 1.20
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-53.55	-29.94	0.00	-3261.6	0.00	3261.60	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.409
5.00	-51.44	-29.50	0.00	-3111.8	0.00	3111.89	6562.43	3281.22	15750.7	7887.07	0.06	-0.107	0.000	0.402
10.00	-49.36	-29.05	0.00	-2964.4	0.00	2964.41	6480.38	3240.19	15272.4	7647.59	0.23	-0.215	0.000	0.395
15.00	-47.32	-28.61	0.00	-2819.1	0.00	2819.14	6397.03	3198.52	14798.3	7410.16	0.51	-0.324	0.000	0.388
20.00	-45.31	-28.17	0.00	-2676.0	0.00	2676.08	6312.38	3156.19	14328.4	7174.88	0.91	-0.433	0.000	0.380
25.00	-43.34	-27.74	0.00	-2535.2	0.00	2535.22	6226.42	3113.21	13863.0	6941.83	1.42	-0.542	0.000	0.372
30.00	-41.41	-27.30	0.00	-2396.5	0.00	2396.53	6139.16	3069.58	13402.2	6711.09	2.05	-0.651	0.000	0.364
35.00	-39.51	-26.85	0.00	-2260.0	0.00	2260.01	6050.60	3025.30	12946.2	6482.75	2.79	-0.761	0.000	0.355
40.00	-37.66	-26.36	0.00	-2125.7	0.00	2125.75	5960.74	2980.37	12495.2	6256.90	3.65	-0.871	0.000	0.346
41.50	-37.10	-26.23	0.00	-2086.2	0.00	2086.21	5933.53	2966.76	12360.9	6189.64	3.93	-0.904	0.000	0.343
45.00	-34.80	-25.87	0.00	-1994.4	0.00	1994.40	5869.58	2934.79	12049.3	6033.61	4.62	-0.982	0.000	0.337
48.00	-32.87	-25.55	0.00	-1916.8	0.00	1916.80	4971.57	2485.79	10282.0	5148.64	5.26	-1.048	0.000	0.379
50.00	-32.21	-25.37	0.00	-1865.7	0.00	1865.70	4942.60	2471.30	10136.2	5075.65	5.71	-1.092	0.000	0.374
55.00	-30.62	-24.86	0.00	-1738.8	0.00	1738.86	4869.24	2434.62	9774.42	4894.48	6.91	-1.210	0.000	0.362
60.00	-29.06	-24.34	0.00	-1614.5	0.00	1614.56	4794.58	2397.29	9416.42	4715.21	8.24	-1.326	0.000	0.349
65.00	-27.54	-23.82	0.00	-1492.8	0.00	1492.84	4718.63	2359.31	9062.39	4537.93	9.69	-1.441	0.000	0.335
70.00	-26.05	-23.29	0.00	-1373.7	0.00	1373.74	4641.37	2320.68	8712.52	4362.74	11.26	-1.554	0.000	0.321
75.00	-24.59	-22.76	0.00	-1257.2	0.00	1257.27	4562.80	2281.40	8366.97	4189.70	12.95	-1.665	0.000	0.306
80.00	-23.17	-22.22	0.00	-1143.4	0.00	1143.46	4482.94	2241.47	8025.91	4018.92	14.75	-1.774	0.000	0.290
84.00	-22.06	-21.78	0.00	-1054.5	0.00	1054.58	4418.04	2209.02	7756.28	3883.90	16.28	-1.860	0.000	0.277
85.00	-21.60	-21.68	0.00	-1032.7	0.00	1032.79	4396.40	2198.20	7680.13	3845.78	16.67	-1.881	0.000	0.274
89.50	-19.61	-21.15	0.00	-935.23	0.00	935.23	2828.72	1414.36	4933.25	2470.29	18.49	-1.974	0.000	0.386
90.00	-19.48	-21.12	0.00	-924.66	0.00	924.66	2824.36	1412.18	4913.38	2460.34	18.70	-1.985	0.000	0.383
95.00	-18.46	-20.59	0.00	-819.07	0.00	819.07	2780.02	1390.01	4715.55	2361.28	20.85	-2.115	0.000	0.354
100.00	-17.47	-20.06	0.00	-716.12	0.00	716.12	2734.38	1367.19	4519.43	2263.07	23.13	-2.239	0.000	0.323
105.00	-16.50	-19.54	0.00	-615.80	0.00	615.80	2687.43	1343.72	4325.17	2165.80	25.54	-2.355	0.000	0.291
110.00	-15.56	-19.01	0.00	-518.11	0.00	518.11	2639.19	1319.59	4132.95	2069.55	28.06	-2.462	0.000	0.256
115.00	-14.64	-18.49	0.00	-423.05	0.00	423.05	2589.64	1294.82	3942.93	1974.40	30.70	-2.559	0.000	0.220
120.00	-13.75	-17.97	0.00	-330.59	0.00	330.59	2538.79	1269.39	3755.30	1880.44	33.42	-2.643	0.000	0.181
125.00	-12.89	-17.45	0.00	-240.73	0.00	240.73	2486.64	1243.32	3570.20	1787.76	36.23	-2.712	0.000	0.140
128.00	-9.52	-12.77	0.00	-188.37	0.00	188.37	2454.72	1227.36	3460.44	1732.79	37.94	-2.746	0.000	0.113
130.00	-9.21	-12.57	0.00	-162.84	0.00	162.84	2433.18	1216.59	3387.83	1696.43	39.10	-2.766	0.000	0.100
130.00	-9.21	-12.57	0.00	-162.84	0.00	162.84	1188.95	594.48	1667.65	835.07	39.10	-2.766	0.000	0.203
135.00	-8.72	-12.08	0.00	-100.00	0.00	100.00	1172.65	586.33	1593.28	797.82	42.02	-2.804	0.000	0.133
139.00	-3.19	-5.43	0.00	-51.69	0.00	51.69	1158.65	579.33	1533.54	767.91	44.38	-2.836	0.000	0.070
140.00	-3.10	-5.34	0.00	-46.25	0.00	46.25	1155.02	577.51	1518.58	760.42	44.98	-2.842	0.000	0.064
145.00	-2.66	-4.87	0.00	-19.56	0.00	19.56	1136.06	568.03	1443.74	722.95	47.97	-2.861	0.000	0.029
149.00	-0.07	-0.09	0.00	-0.09	0.00	0.09	1119.92	559.96	1383.89	692.97	50.36	-2.866	0.000	0.000
150.00	0.00	-0.09	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	50.96	-2.866	0.000	0.000

Wind Loading - Shaft

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



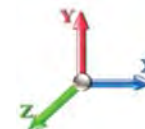
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Load Case: 0.9D + 1.6W 105 mph Wind

Iterations 21

Dead Load Factor 0.90

Wind Load Factor 1.60



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	18.769	20.65	446.02	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	18.769	20.65	438.23	0.650	0.000	5.00	25.164	16.36	540.3	0.0	1433.1
10.00		1.00	0.70	18.769	20.65	430.44	0.650	0.000	5.00	24.720	16.07	530.8	0.0	1407.6
15.00		1.00	0.70	18.769	20.65	422.64	0.650	0.000	5.00	24.277	15.78	521.3	0.0	1382.2
20.00		1.00	0.70	18.769	20.65	414.85	0.650	0.000	5.00	23.833	15.49	511.7	0.0	1356.7
25.00		1.00	0.70	18.769	20.65	407.06	0.650	0.000	5.00	23.390	15.20	502.2	0.0	1331.2
30.00		1.00	0.70	18.785	20.66	399.43	0.650	0.000	5.00	22.946	14.91	493.1	0.0	1305.7
35.00		1.00	0.73	19.631	21.59	400.36	0.650	0.000	5.00	22.503	14.63	505.4	0.0	1280.3
40.00		1.00	0.76	20.394	22.43	399.94	0.650	0.000	5.00	22.059	14.34	514.7	0.0	1254.8
41.50	Bot - Section 2	1.00	0.77	20.610	22.67	399.60	0.650	0.000	1.50	6.531	4.25	154.0	0.0	371.5
45.00		1.00	0.79	21.092	23.20	398.47	0.650	0.000	3.50	15.343	9.97	370.2	0.0	1622.4
48.00	Top - Section 1	1.00	0.80	21.485	23.63	397.16	0.650	0.000	3.00	12.979	8.44	319.0	0.0	1372.0
50.00		1.00	0.81	21.737	23.91	403.12	0.650	0.000	2.00	8.564	5.57	212.9	0.0	426.6
55.00		1.00	0.83	22.337	24.57	400.15	0.650	0.000	5.00	21.099	13.71	539.1	0.0	1051.0
60.00		1.00	0.85	22.899	25.19	396.55	0.650	0.000	5.00	20.655	13.43	541.1	0.0	1028.7
65.00		1.00	0.87	23.429	25.77	392.40	0.650	0.000	5.00	20.212	13.14	541.7	0.0	1006.4
70.00		1.00	0.89	23.930	26.32	387.78	0.650	0.000	5.00	19.768	12.85	541.2	0.0	984.1
75.00		1.00	0.91	24.406	26.85	382.73	0.650	0.000	5.00	19.324	12.56	539.6	0.0	961.8
80.00		1.00	0.93	24.861	27.35	377.31	0.650	0.000	5.00	18.881	12.27	537.0	0.0	939.6
84.00	Bot - Section 3	1.00	0.94	25.210	27.73	372.72	0.650	0.000	4.00	14.785	9.61	426.4	0.0	735.6
85.00		1.00	0.94	25.295	27.82	371.54	0.650	0.000	1.00	3.705	2.41	107.2	0.0	313.7
89.50	Top - Section 2	1.00	0.96	25.671	28.24	366.09	0.650	0.000	4.50	16.452	10.69	483.2	0.0	1392.8
90.00		1.00	0.96	25.711	28.28	370.90	0.650	0.000	0.50	1.806	1.17	53.1	0.0	64.3
95.00		1.00	0.97	26.112	28.72	364.59	0.650	0.000	5.00	17.815	11.58	532.2	0.0	634.7
100.00		1.00	0.99	26.497	29.15	358.01	0.650	0.000	5.00	17.371	11.29	526.6	0.0	618.8
105.00		1.00	1.00	26.869	29.56	351.19	0.650	0.000	5.00	16.928	11.00	520.3	0.0	602.9
110.00		1.00	1.02	27.229	29.95	344.15	0.650	0.000	5.00	16.484	10.71	513.5	0.0	587.0
115.00		1.00	1.03	27.577	30.33	336.89	0.650	0.000	5.00	16.040	10.43	506.0	0.0	571.0
120.00		1.00	1.04	27.914	30.71	329.44	0.650	0.000	5.00	15.597	10.14	498.1	0.0	555.1
125.00		1.00	1.05	28.242	31.07	321.81	0.650	0.000	5.00	15.153	9.85	489.6	0.0	539.2
128.00	Appurtenance(s)	1.00	1.06	28.434	31.28	317.15	0.650	0.000	3.00	8.879	5.77	288.8	0.0	315.9
130.00	Top - Section 3	1.00	1.07	28.560	31.42	314.00	0.650	0.000	2.00	5.831	3.79	190.5	0.0	207.4
135.00		1.00	1.08	28.869	31.76	305.92	0.650	0.000	5.00	14.264	9.27	471.1	0.0	305.5
139.00	Appurtenance(s)	1.00	1.09	29.111	32.02	299.34	0.650	0.000	4.00	11.088	7.21	369.3	0.0	237.4
140.00		1.00	1.09	29.171	32.09	297.69	0.650	0.000	1.00	2.727	1.77	91.0	0.0	58.4
145.00		1.00	1.10	29.465	32.41	289.30	0.650	0.000	5.00	13.366	8.69	450.5	0.0	286.2
149.00	Appurtenance(s)	1.00	1.11	29.695	32.66	282.49	0.650	0.000	4.00	10.370	6.74	352.3	0.0	222.0
150.00		1.00	1.11	29.752	32.73	280.78	0.650	0.000	1.00	2.548	1.66	86.7	0.0	54.5
Totals:									150.00			15,371.5		28,818.4

Discrete Appurtenance Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

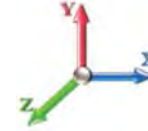


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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	149.00	LNx-6512DS-A1M	3	29.695	32.664	0.64	0.80	9.77	75.60	0.000	0.000	510.76	0.00	0.00	
2	149.00	BXA-70063-6CF	3	29.695	32.664	0.58	0.80	13.26	45.90	0.000	0.000	693.15	0.00	0.00	
3	149.00	HBXX-6517DS-VTM	3	29.695	32.664	0.62	0.80	15.80	109.89	0.000	0.000	825.78	0.00	0.00	
4	149.00	HBXX-6516DS-VTM	3	29.695	32.664	0.62	0.80	10.03	82.62	0.000	0.000	524.44	0.00	0.00	
5	149.00	Low Profile Platform	1	29.695	32.664	1.00	1.00	22.00	1350.00	0.000	0.000	1149.79	0.00	0.00	
6	149.00	DB-T1-6Z-8AB-OZ	1	29.695	32.664	0.80	0.80	3.84	17.01	0.000	0.000	200.69	0.00	0.00	
7	149.00	ALU RRR 2x60 AWS	3	29.695	32.664	0.54	0.80	5.63	148.50	0.000	0.000	294.14	0.00	0.00	
8	149.00	RFS FD9R6004/2C-3L	6	29.695	32.664	0.80	0.80	1.73	16.74	0.000	0.000	90.31	0.00	0.00	
9	139.00	RMQP-4096-HK	1	29.111	32.022	1.00	1.00	51.70	2380.50	0.000	0.000	2648.90	0.00	0.00	
10	139.00	RRUS 4415 B25	4	29.111	32.022	0.54	0.80	3.52	165.60	0.000	0.000	180.15	0.00	0.00	
11	139.00	4424	3	29.111	32.022	0.50	0.75	3.09	237.60	0.000	0.000	158.34	0.00	0.00	
12	139.00	4449 B71 + B85	3	29.111	32.022	0.50	0.75	2.97	197.64	0.000	0.000	152.16	0.00	0.00	
13	139.00	AIR6449 B41	3	29.111	32.022	0.53	0.75	9.03	278.10	0.000	0.000	462.45	0.00	0.00	
14	139.00	Air 3246 B66	3	29.111	32.022	0.62	0.75	14.83	486.00	0.000	0.000	759.72	0.00	0.00	
15	139.00	APXVAARR24_43-U-NA2	3	29.111	32.022	0.52	0.75	31.88	345.60	0.000	0.000	1633.30	0.00	0.00	
16	128.00	HPA-65R-BU8AA	2	28.434	31.277	0.69	0.80	15.45	97.20	0.000	0.000	773.29	0.00	0.00	
17	128.00	Low Profile Platform	1	28.434	31.277	1.00	1.00	22.00	1440.00	0.000	0.000	1100.95	0.00	0.00	
18	128.00	HPA-65R-BU4AA	1	28.434	31.277	0.75	0.80	3.70	25.83	0.000	0.000	185.15	0.00	0.00	
19	128.00	DMP65R-BU4DA	1	28.434	31.277	0.79	0.80	6.56	62.73	0.000	0.000	328.17	0.00	0.00	
20	128.00	4449	3	28.434	31.277	0.54	0.80	2.65	189.00	0.000	0.000	132.77	0.00	0.00	
21	128.00	DMP65R-BU8DA	2	28.434	31.277	0.58	0.80	20.59	172.26	0.000	0.000	1030.20	0.00	0.00	
22	128.00	B2 B66A 8843	3	28.434	31.277	0.54	0.80	2.64	189.00	0.000	0.000	131.97	0.00	0.00	
23	128.00	DC6-48-60-18-8F	2	28.434	31.277	0.80	0.80	1.47	57.24	0.000	0.000	73.66	0.00	0.00	
24	128.00	7770.00A	3	28.434	31.277	0.58	0.80	9.57	72.90	0.000	0.000	479.07	0.00	0.00	
Totals:									8,243.46						14,519.31

Total Applied Force Summary

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

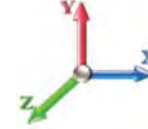


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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		540.31	1544.00	0.00	0.00
10.00		530.79	1518.52	0.00	0.00
15.00		521.26	1493.05	0.00	0.00
20.00		511.74	1467.57	0.00	0.00
25.00		502.22	1442.10	0.00	0.00
30.00		493.11	1416.62	0.00	0.00
35.00		505.35	1391.15	0.00	0.00
40.00		514.66	1365.67	0.00	0.00
41.50		153.99	404.73	0.00	0.00
45.00		370.23	1700.03	0.00	0.00
48.00		318.99	1438.54	0.00	0.00
50.00		212.95	471.00	0.00	0.00
55.00		539.14	1161.89	0.00	0.00
60.00		541.09	1139.59	0.00	0.00
65.00		541.72	1117.30	0.00	0.00
70.00		541.17	1095.01	0.00	0.00
75.00		539.56	1072.72	0.00	0.00
80.00		536.98	1050.43	0.00	0.00
84.00		426.41	824.30	0.00	0.00
85.00		107.21	335.89	0.00	0.00
89.50		483.16	1492.58	0.00	0.00
90.00		53.12	75.44	0.00	0.00
95.00		532.16	745.61	0.00	0.00
100.00		526.57	729.69	0.00	0.00
105.00		520.33	713.77	0.00	0.00
110.00		513.47	697.85	0.00	0.00
115.00		506.04	681.93	0.00	0.00
120.00		498.07	666.01	0.00	0.00
125.00		489.58	650.08	0.00	0.00
128.00	(18) attachments	4524.06	2688.57	0.00	0.00
130.00		190.50	237.35	0.00	0.00
135.00		471.08	380.38	0.00	0.00
139.00	(20) attachments	6364.28	4388.38	0.00	0.00
140.00		91.01	70.56	0.00	0.00
145.00		450.54	347.01	0.00	0.00
149.00	(23) attachments	4641.32	2116.91	0.00	0.00
150.00		86.71	54.53	0.00	0.00
Totals:		29,890.83	40,186.75	0.00	0.00

Calculated Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

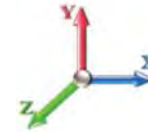


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Load Case: 0.9D + 1.6W 105 mph Wind

Iterations 21

Dead Load Factor 0.90
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.16	-29.93	0.00	-3240.5	0.00	3240.52	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.405
5.00	-38.56	-29.46	0.00	-3090.8	0.00	3090.87	6562.43	3281.22	15750.7	7887.07	0.06	-0.107	0.000	0.398
10.00	-36.99	-28.99	0.00	-2943.5	0.00	2943.58	6480.38	3240.19	15272.4	7647.59	0.23	-0.214	0.000	0.391
15.00	-35.44	-28.53	0.00	-2798.6	0.00	2798.61	6397.03	3198.52	14798.3	7410.16	0.51	-0.322	0.000	0.383
20.00	-33.93	-28.07	0.00	-2655.9	0.00	2655.95	6312.38	3156.19	14328.4	7174.88	0.90	-0.430	0.000	0.376
25.00	-32.44	-27.62	0.00	-2515.5	0.00	2515.58	6226.42	3113.21	13863.0	6941.83	1.41	-0.538	0.000	0.368
30.00	-30.97	-27.17	0.00	-2377.4	0.00	2377.47	6139.16	3069.58	13402.2	6711.09	2.04	-0.647	0.000	0.359
35.00	-29.54	-26.71	0.00	-2241.6	0.00	2241.61	6050.60	3025.30	12946.2	6482.75	2.77	-0.755	0.000	0.351
40.00	-28.15	-26.21	0.00	-2108.0	0.00	2108.08	5960.74	2980.37	12495.2	6256.90	3.62	-0.864	0.000	0.342
41.50	-27.72	-26.07	0.00	-2068.7	0.00	2068.77	5933.53	2966.76	12360.9	6189.64	3.90	-0.898	0.000	0.339
45.00	-25.99	-25.71	0.00	-1977.5	0.00	1977.51	5869.58	2934.79	12049.3	6033.61	4.59	-0.974	0.000	0.332
48.00	-24.54	-25.39	0.00	-1900.3	0.00	1900.38	4971.57	2485.79	10282.0	5148.64	5.22	-1.040	0.000	0.374
50.00	-24.04	-25.20	0.00	-1849.6	0.00	1849.61	4942.60	2471.30	10136.2	5075.65	5.66	-1.084	0.000	0.369
55.00	-22.83	-24.68	0.00	-1723.6	0.00	1723.61	4869.24	2434.62	9774.42	4894.48	6.86	-1.200	0.000	0.357
60.00	-21.66	-24.16	0.00	-1600.1	0.00	1600.19	4794.58	2397.29	9416.42	4715.21	8.18	-1.315	0.000	0.344
65.00	-20.51	-23.63	0.00	-1479.3	0.00	1479.39	4718.63	2359.31	9062.39	4537.93	9.62	-1.429	0.000	0.330
70.00	-19.38	-23.10	0.00	-1361.2	0.00	1361.22	4641.37	2320.68	8712.52	4362.74	11.18	-1.542	0.000	0.316
75.00	-18.28	-22.57	0.00	-1245.7	0.00	1245.72	4562.80	2281.40	8366.97	4189.70	12.85	-1.652	0.000	0.301
80.00	-17.21	-22.03	0.00	-1132.8	0.00	1132.88	4482.94	2241.47	8025.91	4018.92	14.64	-1.760	0.000	0.286
84.00	-16.38	-21.59	0.00	-1044.7	0.00	1044.77	4418.04	2209.02	7756.28	3883.90	16.15	-1.845	0.000	0.273
85.00	-16.03	-21.49	0.00	-1023.1	0.00	1023.18	4396.40	2198.20	7680.13	3845.78	16.54	-1.866	0.000	0.270
89.50	-14.53	-20.97	0.00	-926.48	0.00	926.48	2828.72	1414.36	4933.25	2470.29	18.34	-1.958	0.000	0.380
90.00	-14.43	-20.93	0.00	-916.00	0.00	916.00	2824.36	1412.18	4913.38	2460.34	18.55	-1.968	0.000	0.378
95.00	-13.66	-20.40	0.00	-811.34	0.00	811.34	2780.02	1390.01	4715.55	2361.28	20.68	-2.098	0.000	0.349
100.00	-12.91	-19.88	0.00	-709.32	0.00	709.32	2734.38	1367.19	4519.43	2263.07	22.95	-2.220	0.000	0.318
105.00	-12.18	-19.35	0.00	-609.94	0.00	609.94	2687.43	1343.72	4325.17	2165.80	25.33	-2.335	0.000	0.286
110.00	-11.47	-18.83	0.00	-513.19	0.00	513.19	2639.19	1319.59	4132.95	2069.55	27.84	-2.442	0.000	0.253
115.00	-10.79	-18.31	0.00	-419.04	0.00	419.04	2589.64	1294.82	3942.93	1974.40	30.45	-2.537	0.000	0.217
120.00	-10.12	-17.80	0.00	-327.48	0.00	327.48	2538.79	1269.39	3755.30	1880.44	33.15	-2.620	0.000	0.178
125.00	-9.48	-17.29	0.00	-238.50	0.00	238.50	2486.64	1243.32	3570.20	1787.76	35.93	-2.689	0.000	0.137
128.00	-7.00	-12.64	0.00	-186.64	0.00	186.64	2454.72	1227.36	3460.44	1732.79	37.64	-2.723	0.000	0.111
130.00	-6.77	-12.45	0.00	-161.35	0.00	161.35	2433.18	1216.59	3387.83	1696.43	38.78	-2.742	0.000	0.098
130.00	-6.77	-12.45	0.00	-161.35	0.00	161.35	1188.95	594.48	1667.65	835.07	38.78	-2.742	0.000	0.199
135.00	-6.40	-11.96	0.00	-99.12	0.00	99.12	1172.65	586.33	1593.28	797.82	41.67	-2.780	0.000	0.130
139.00	-2.33	-5.39	0.00	-51.28	0.00	51.28	1158.65	579.33	1533.54	767.91	44.02	-2.812	0.000	0.069
140.00	-2.26	-5.30	0.00	-45.89	0.00	45.89	1155.02	577.51	1518.58	760.42	44.61	-2.817	0.000	0.062
145.00	-1.93	-4.83	0.00	-19.41	0.00	19.41	1136.06	568.03	1443.74	722.95	47.57	-2.836	0.000	0.029
149.00	-0.05	-0.09	0.00	-0.09	0.00	0.09	1119.92	559.96	1383.89	692.97	49.95	-2.841	0.000	0.000
150.00	0.00	-0.09	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	50.54	-2.841	0.000	0.000

Wind Loading - Shaft

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



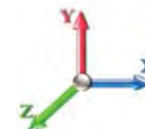
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 20

Dead Load Factor 1.20

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	26.199	31.44	147.2	468.4	2379.2
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	25.830	31.00	145.1	494.0	2370.8
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	25.432	30.52	142.9	505.8	2348.7
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	25.022	30.03	140.6	511.5	2320.4
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	24.605	29.53	138.2	513.8	2288.7
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	24.184	29.02	136.0	513.7	2254.7
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	23.760	28.51	139.6	512.0	2219.0
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	23.333	28.00	142.4	509.0	2182.1
41.50	Bot - Section 2	1.00	0.77	4.673	5.14	0.00	1.200	1.535	1.50	6.915	8.30	42.7	152.4	647.7
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	3.50	16.246	19.50	102.6	359.5	2522.7
48.00	Top - Section 1	1.00	0.80	4.872	5.36	0.00	1.200	1.557	3.00	13.757	16.51	88.5	306.5	2135.8
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	2.00	9.085	10.90	59.1	203.5	772.4
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	5.00	22.414	26.90	149.9	503.5	1904.9
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	21.982	26.38	150.7	497.6	1869.2
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	21.549	25.86	151.1	491.2	1833.1
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	21.116	25.34	151.2	484.3	1796.5
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	5.00	20.681	24.82	151.1	477.1	1759.5
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	20.247	24.30	150.7	469.5	1722.2
84.00	Bot - Section 3	1.00	0.94	5.716	6.29	0.00	1.200	1.647	4.00	15.883	19.06	119.9	370.6	1351.4
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	1.00	3.980	4.78	30.1	93.6	511.9
89.50	Top - Section 2	1.00	0.96	5.821	6.40	0.00	1.200	1.657	4.50	17.695	21.23	136.0	414.7	2271.8
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	0.50	1.944	2.33	15.0	46.0	131.8
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	5.00	19.204	23.04	150.1	451.6	1297.9
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	5.00	18.768	22.52	148.8	443.0	1268.1
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	5.00	18.331	22.00	147.4	434.2	1238.1
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	17.894	21.47	145.8	425.2	1207.8
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	17.457	20.95	144.1	416.0	1177.4
120.00		1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	17.019	20.42	142.2	406.6	1146.8
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	16.581	19.90	140.2	397.1	1116.1
128.00	Appurtenance(s)	1.00	1.06	6.448	7.09	0.00	1.200	1.718	3.00	9.738	11.69	82.9	234.8	656.0
130.00	Top - Section 3	1.00	1.07	6.476	7.12	0.00	1.200	1.720	2.00	6.404	7.68	54.7	155.0	431.5
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	5.00	15.703	18.84	135.7	377.5	784.8
139.00	Appurtenance(s)	1.00	1.09	6.601	7.26	0.00	1.200	1.732	4.00	12.242	14.69	106.7	295.6	612.1
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	1.00	3.016	3.62	26.3	73.5	151.3
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	14.815	17.78	130.7	357.2	738.8
149.00	Appurtenance(s)	1.00	1.11	6.734	7.41	0.00	1.200	1.744	4.00	11.532	13.84	102.5	279.2	575.1
150.00		1.00	1.11	6.746	7.42	0.00	1.200	1.745	1.00	2.838	3.41	25.3	69.4	142.1
Totals:									150.00			4,313.8	52,138.5	

Discrete Appurtenance Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



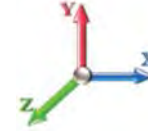
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 20

Dead Load Factor 1.20

Wind Load Factor 1.00



No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	149.00	LNx-6512DS-A1M	3	6.734	7.407	0.64	0.80	13.40	360.77	0.000	0.000	99.25	0.00	0.00	
2	149.00	BXA-70063-6CF	3	6.734	7.407	0.58	0.80	18.10	378.29	0.000	0.000	134.08	0.00	0.00	
3	149.00	HBXX-6517DS-VTM	3	6.734	7.407	0.62	0.80	21.19	521.29	0.000	0.000	156.96	0.00	0.00	
4	149.00	HBXX-6516DS-VTM	3	6.734	7.407	0.62	0.80	13.70	373.91	0.000	0.000	101.44	0.00	0.00	
5	149.00	Low Profile Platform	1	6.734	7.407	1.00	1.00	39.65	2808.04	0.000	0.000	293.68	0.00	0.00	
6	149.00	DB-T1-6Z-8AB-OZ	1	6.734	7.407	0.80	0.80	4.54	166.29	0.000	0.000	33.62	0.00	0.00	
7	149.00	ALU RRH 2x60 AWS	3	6.734	7.407	0.54	0.80	6.90	377.58	0.000	0.000	51.08	0.00	0.00	
8	149.00	RFS FD9R6004/2C-3L	6	6.734	7.407	0.80	0.80	3.85	56.65	0.000	0.000	28.55	0.00	0.00	
9	139.00	RMQP-4096-HK	1	6.601	7.261	1.00	1.00	89.67	5167.64	0.000	0.000	651.10	0.00	0.00	
10	139.00	RRUS 4415 B25	4	6.601	7.261	0.54	0.80	4.61	346.37	0.000	0.000	33.49	0.00	0.00	
11	139.00	4424	3	6.601	7.261	0.50	0.75	3.98	573.57	0.000	0.000	28.91	0.00	0.00	
12	139.00	4449 B71 + B85	3	6.601	7.261	0.50	0.75	3.82	260.23	0.000	0.000	27.75	0.00	0.00	
13	139.00	AIR6449 B41	3	6.601	7.261	0.55	0.75	10.83	683.94	0.000	0.000	78.64	0.00	0.00	
14	139.00	Air 3246 B66	3	6.601	7.261	0.64	0.75	17.43	1101.97	0.000	0.000	126.54	0.00	0.00	
15	139.00	APXVAARR24_43-U-NA2	3	6.601	7.261	0.54	0.75	35.84	1703.88	0.000	0.000	260.27	0.00	0.00	
16	128.00	HPA-65R-BU8AA	2	6.448	7.092	0.70	0.80	18.12	652.80	0.000	0.000	128.49	0.00	0.00	
17	128.00	Low Profile Platform	1	6.448	7.092	1.00	1.00	39.38	3094.20	0.000	0.000	279.32	0.00	0.00	
18	128.00	HPA-65R-BU4AA	1	6.448	7.092	0.77	0.80	4.50	111.35	0.000	0.000	31.88	0.00	0.00	
19	128.00	DMP65R-BU4DA	1	6.448	7.092	0.79	0.80	7.27	321.87	0.000	0.000	51.55	0.00	0.00	
20	128.00	4449	3	6.448	7.092	0.54	0.80	3.50	452.70	0.000	0.000	24.84	0.00	0.00	
21	128.00	DMP65R-BU8DA	2	6.448	7.092	0.59	0.80	23.56	826.53	0.000	0.000	167.07	0.00	0.00	
22	128.00	B2 B66A 8843	3	6.448	7.092	0.54	0.80	3.45	353.88	0.000	0.000	24.50	0.00	0.00	
23	128.00	DC6-48-60-18-8F	2	6.448	7.092	0.80	0.80	2.16	162.62	0.000	0.000	15.33	0.00	0.00	
24	128.00	7770.00A	3	6.448	7.092	0.59	0.80	13.57	336.59	0.000	0.000	96.25	0.00	0.00	
Totals:									21,192.98						2,924.56

Total Applied Force Summary

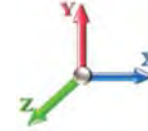
Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		147.18	2527.03	0.00	0.00
10.00		145.11	2518.67	0.00	0.00
15.00		142.88	2496.50	0.00	0.00
20.00		140.57	2468.28	0.00	0.00
25.00		138.23	2436.56	0.00	0.00
30.00		135.98	2402.54	0.00	0.00
35.00		139.61	2366.85	0.00	0.00
40.00		142.43	2329.91	0.00	0.00
41.50		42.66	692.02	0.00	0.00
45.00		102.57	2626.19	0.00	0.00
48.00		88.47	2224.55	0.00	0.00
50.00		59.11	831.54	0.00	0.00
55.00		149.86	2052.69	0.00	0.00
60.00		150.67	2017.05	0.00	0.00
65.00		151.12	1980.91	0.00	0.00
70.00		151.25	1944.33	0.00	0.00
75.00		151.08	1907.38	0.00	0.00
80.00		150.66	1870.09	0.00	0.00
84.00		119.85	1469.65	0.00	0.00
85.00		30.13	541.47	0.00	0.00
89.50		135.97	2404.82	0.00	0.00
90.00		14.96	146.58	0.00	0.00
95.00		150.09	1445.77	0.00	0.00
100.00		148.85	1415.94	0.00	0.00
105.00		147.43	1385.90	0.00	0.00
110.00		145.84	1355.66	0.00	0.00
115.00		144.09	1325.24	0.00	0.00
120.00		142.20	1294.65	0.00	0.00
125.00		140.17	1263.90	0.00	0.00
128.00	(18) attachments	902.10	7057.23	0.00	0.00
130.00		54.75	471.45	0.00	0.00
135.00		135.69	884.68	0.00	0.00
139.00	(20) attachments	1313.36	10529.62	0.00	0.00
140.00		26.33	167.57	0.00	0.00
145.00		130.66	819.90	0.00	0.00
149.00	(23) attachments	1001.16	5682.86	0.00	0.00
150.00		25.28	142.08	0.00	0.00
	Totals:	7,238.33	77,498.05	0.00	0.00

Calculated Forces

Structure: CT13073-A-SBA

Code: EIA/TIA-222-G

6/2/2021

Site Name: Groton North

Exposure: B

Height: 150.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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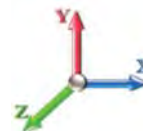


Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 20

Dead Load Factor 1.20

Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-77.50	-7.26	0.00	-769.03	0.00	769.03	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.106
5.00	-74.97	-7.14	0.00	-732.75	0.00	732.75	6562.43	3281.22	15750.7	7887.07	0.01	-0.025	0.000	0.104
10.00	-72.44	-7.03	0.00	-697.05	0.00	697.05	6480.38	3240.19	15272.4	7647.59	0.05	-0.051	0.000	0.102
15.00	-69.95	-6.91	0.00	-661.92	0.00	661.92	6397.03	3198.52	14798.3	7410.16	0.12	-0.076	0.000	0.100
20.00	-67.47	-6.80	0.00	-627.36	0.00	627.36	6312.38	3156.19	14328.4	7174.88	0.21	-0.102	0.000	0.098
25.00	-65.03	-6.68	0.00	-593.37	0.00	593.37	6226.42	3113.21	13863.0	6941.83	0.33	-0.127	0.000	0.096
30.00	-62.63	-6.57	0.00	-559.95	0.00	559.95	6139.16	3069.58	13402.2	6711.09	0.48	-0.153	0.000	0.094
35.00	-60.26	-6.45	0.00	-527.11	0.00	527.11	6050.60	3025.30	12946.2	6482.75	0.66	-0.179	0.000	0.091
40.00	-57.93	-6.32	0.00	-494.86	0.00	494.86	5960.74	2980.37	12495.2	6256.90	0.86	-0.204	0.000	0.089
41.50	-57.24	-6.28	0.00	-485.38	0.00	485.38	5933.53	2966.76	12360.9	6189.64	0.92	-0.212	0.000	0.088
45.00	-54.61	-6.19	0.00	-463.39	0.00	463.39	5869.58	2934.79	12049.3	6033.61	1.08	-0.230	0.000	0.086
48.00	-52.38	-6.10	0.00	-444.83	0.00	444.83	4971.57	2485.79	10282.0	5148.64	1.23	-0.245	0.000	0.097
50.00	-51.55	-6.06	0.00	-432.62	0.00	432.62	4942.60	2471.30	10136.2	5075.65	1.34	-0.256	0.000	0.096
55.00	-49.49	-5.92	0.00	-402.35	0.00	402.35	4869.24	2434.62	9774.42	4894.48	1.62	-0.283	0.000	0.092
60.00	-47.48	-5.78	0.00	-372.75	0.00	372.75	4794.58	2397.29	9416.42	4715.21	1.93	-0.310	0.000	0.089
65.00	-45.49	-5.64	0.00	-343.85	0.00	343.85	4718.63	2359.31	9062.39	4537.93	2.27	-0.336	0.000	0.085
70.00	-43.55	-5.50	0.00	-315.65	0.00	315.65	4641.37	2320.68	8712.52	4362.74	2.64	-0.362	0.000	0.082
75.00	-41.64	-5.35	0.00	-288.17	0.00	288.17	4562.80	2281.40	8366.97	4189.70	3.03	-0.388	0.000	0.078
80.00	-39.77	-5.20	0.00	-261.42	0.00	261.42	4482.94	2241.47	8025.91	4018.92	3.45	-0.413	0.000	0.074
84.00	-38.30	-5.08	0.00	-240.61	0.00	240.61	4418.04	2209.02	7756.28	3883.90	3.80	-0.432	0.000	0.071
85.00	-37.76	-5.05	0.00	-235.53	0.00	235.53	4396.40	2198.20	7680.13	3845.78	3.89	-0.437	0.000	0.070
89.50	-35.35	-4.91	0.00	-212.79	0.00	212.79	2828.72	1414.36	4933.25	2470.29	4.32	-0.458	0.000	0.099
90.00	-35.20	-4.90	0.00	-210.34	0.00	210.34	2824.36	1412.18	4913.38	2460.34	4.37	-0.461	0.000	0.098
95.00	-33.76	-4.76	0.00	-185.84	0.00	185.84	2780.02	1390.01	4715.55	2361.28	4.86	-0.490	0.000	0.091
100.00	-32.34	-4.61	0.00	-162.06	0.00	162.06	2734.38	1367.19	4519.43	2263.07	5.39	-0.518	0.000	0.083
105.00	-30.95	-4.46	0.00	-139.02	0.00	139.02	2687.43	1343.72	4325.17	2165.80	5.95	-0.545	0.000	0.076
110.00	-29.60	-4.32	0.00	-116.70	0.00	116.70	2639.19	1319.59	4132.95	2069.55	6.53	-0.569	0.000	0.068
115.00	-28.27	-4.17	0.00	-95.13	0.00	95.13	2589.64	1294.82	3942.93	1974.40	7.14	-0.591	0.000	0.059
120.00	-26.98	-4.02	0.00	-74.29	0.00	74.29	2538.79	1269.39	3755.30	1880.44	7.77	-0.609	0.000	0.050
125.00	-25.71	-3.87	0.00	-54.18	0.00	54.18	2486.64	1243.32	3570.20	1787.76	8.42	-0.625	0.000	0.041
128.00	-18.67	-2.89	0.00	-42.57	0.00	42.57	2454.72	1227.36	3460.44	1732.79	8.81	-0.633	0.000	0.032
130.00	-18.20	-2.84	0.00	-36.78	0.00	36.78	2433.18	1216.59	3387.83	1696.43	9.08	-0.637	0.000	0.029
130.00	-18.20	-2.84	0.00	-36.78	0.00	36.78	1188.95	594.48	1667.65	835.07	9.08	-0.637	0.000	0.059
135.00	-17.31	-2.69	0.00	-22.60	0.00	22.60	1172.65	586.33	1593.28	797.82	9.75	-0.646	0.000	0.043
139.00	-6.80	-1.26	0.00	-11.83	0.00	11.83	1158.65	579.33	1533.54	767.91	10.30	-0.653	0.000	0.021
140.00	-6.63	-1.23	0.00	-10.57	0.00	10.57	1155.02	577.51	1518.58	760.42	10.43	-0.654	0.000	0.020
145.00	-5.81	-1.09	0.00	-4.40	0.00	4.40	1136.06	568.03	1443.74	722.95	11.12	-0.659	0.000	0.011
149.00	-0.14	-0.03	0.00	-0.03	0.00	0.03	1119.92	559.96	1383.89	692.97	11.67	-0.660	0.000	0.000
150.00	0.00	-0.03	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	11.81	-0.660	0.000	0.000

Seismic Segment Forces (Factored)

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E

Iterations 19

Gust Response Factor 1.10	Sds 0.29	Ss 0.27
Dead Load Factor 1.20	Seismic Load Factor 1.00	Sd1 0.31
Wind Load Factor 0.00	Structure Frequency (f1) 0.44	SA 0.13
		Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1592.3	0.00	0.03	0.02	20.38	
10.00		1564.0	0.01	0.05	0.03	32.03	
15.00		1535.7	0.02	0.06	0.04	38.69	
20.00		1507.4	0.03	0.07	0.04	42.67	
25.00		1479.1	0.05	0.07	0.04	45.36	
30.00		1450.8	0.08	0.07	0.04	47.60	
35.00		1422.5	0.10	0.07	0.04	49.76	
40.00		1394.2	0.13	0.07	0.03	51.94	
41.50	Bot - Section 2	412.74	0.14	0.07	0.03	15.66	
45.00		1802.6	0.17	0.07	0.03	71.26	
48.00	Top - Section 1	1524.4	0.19	0.06	0.02	62.22	
50.00		474.05	0.21	0.06	0.02	19.72	
55.00		1167.7	0.25	0.05	0.02	50.43	
60.00		1143.0	0.30	0.04	0.01	50.27	
65.00		1118.2	0.35	0.03	0.01	48.86	
70.00		1093.4	0.41	0.01	0.01	46.09	
75.00		1068.7	0.47	-0.01	0.01	42.03	
80.00		1043.9	0.54	-0.03	0.01	37.03	
84.00	Bot - Section 3	817.33	0.59	-0.05	0.01	26.12	
85.00		348.57	0.61	-0.06	0.02	10.83	
89.50	Top - Section 2	1547.5	0.67	-0.08	0.02	42.34	
90.00		71.50	0.68	-0.08	0.03	1.93	
95.00		705.26	0.76	-0.10	0.04	17.18	
100.00		687.57	0.84	-0.12	0.07	16.82	
105.00		669.88	0.93	-0.12	0.10	19.20	
110.00		652.19	1.02	-0.11	0.14	24.92	
115.00		634.50	1.11	-0.06	0.19	34.38	
120.00		616.81	1.21	0.01	0.26	47.73	
125.00		599.11	1.31	0.14	0.35	64.96	
128.00	Appurtenance(s)	2913.3	1.38	0.24	0.41	381.54	
130.00	Top - Section 3	230.45	1.42	0.32	0.45	34.03	
135.00		339.44	1.53	0.58	0.58	66.32	
139.00	Appurtenance(s)	4809.4	1.62	0.85	0.70	1153.27	
140.00		64.88	1.65	0.93	0.73	16.34	
145.00		317.96	1.77	1.39	0.92	100.77	
149.00	Appurtenance(s)	2298.0	1.86	1.85	1.09	862.77	
150.00		60.59	1.89	1.98	1.14	23.69	
Totals:		41,179.8				3,717.1	Total Wind: 29,890.8

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

Calculated Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E								Iterations 19
Gust Response Factor	1.10					Sds 0.29	Ss 0.27	
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1 0.31			S1 0.24	
Wind Load Factor	0.00	Structure Frequency (f1)	0.44	SA 0.13	Seismic Importance Factor		1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-53.58	-3.72	0.00	-450.65	0.00	450.65	6643.18	3321.59	16232.9	8128.53	0.00	0.00	0.00	0.064
5.00	-51.52	-3.72	0.00	-432.04	0.00	432.04	6562.43	3281.22	15750.7	7887.07	0.01	-0.01	0.063	
10.00	-49.50	-3.70	0.00	-413.46	0.00	413.46	6480.38	3240.19	15272.4	7647.59	0.03	-0.03	0.062	
15.00	-47.50	-3.67	0.00	-394.98	0.00	394.98	6397.03	3198.52	14798.3	7410.16	0.07	-0.05	0.061	
20.00	-45.55	-3.64	0.00	-376.63	0.00	376.63	6312.38	3156.19	14328.4	7174.88	0.13	-0.06	0.060	
25.00	-43.62	-3.60	0.00	-358.45	0.00	358.45	6226.42	3113.21	13863.0	6941.83	0.20	-0.08	0.059	
30.00	-41.73	-3.56	0.00	-340.45	0.00	340.45	6139.16	3069.58	13402.2	6711.09	0.29	-0.09	0.058	
35.00	-39.88	-3.52	0.00	-322.64	0.00	322.64	6050.60	3025.30	12946.2	6482.75	0.39	-0.11	0.056	
40.00	-38.06	-3.47	0.00	-305.04	0.00	305.04	5960.74	2980.37	12495.2	6256.90	0.51	-0.12	0.055	
41.50	-37.52	-3.46	0.00	-299.84	0.00	299.84	5933.53	2966.76	12360.9	6189.64	0.55	-0.13	0.055	
45.00	-35.25	-3.39	0.00	-287.73	0.00	287.73	5869.58	2934.79	12049.3	6033.61	0.65	-0.14	0.054	
48.00	-33.33	-3.33	0.00	-277.56	0.00	277.56	4971.57	2485.79	10282.0	5148.64	0.74	-0.15	0.061	
50.00	-32.70	-3.31	0.00	-270.91	0.00	270.91	4942.60	2471.30	10136.2	5075.65	0.80	-0.15	0.060	
55.00	-31.15	-3.27	0.00	-254.35	0.00	254.35	4869.24	2434.62	9774.42	4894.48	0.97	-0.17	0.058	
60.00	-29.63	-3.22	0.00	-238.02	0.00	238.02	4794.58	2397.29	9416.42	4715.21	1.16	-0.19	0.057	
65.00	-28.14	-3.17	0.00	-221.92	0.00	221.92	4718.63	2359.31	9062.39	4537.93	1.37	-0.21	0.055	
70.00	-26.68	-3.13	0.00	-206.04	0.00	206.04	4641.37	2320.68	8712.52	4362.74	1.59	-0.22	0.053	
75.00	-25.25	-3.09	0.00	-190.39	0.00	190.39	4562.80	2281.40	8366.97	4189.70	1.83	-0.24	0.051	
80.00	-23.85	-3.05	0.00	-174.94	0.00	174.94	4482.94	2241.47	8025.91	4018.92	2.09	-0.26	0.049	
84.00	-22.75	-3.03	0.00	-162.72	0.00	162.72	4418.04	2209.02	7756.28	3883.90	2.31	-0.27	0.047	
85.00	-22.30	-3.02	0.00	-159.70	0.00	159.70	4396.40	2198.20	7680.13	3845.78	2.37	-0.27	0.047	
89.50	-20.31	-2.97	0.00	-146.13	0.00	146.13	2828.72	1414.36	4933.25	2470.29	2.63	-0.29	0.066	
90.00	-20.21	-2.97	0.00	-144.64	0.00	144.64	2824.36	1412.18	4913.38	2460.34	2.67	-0.29	0.066	
95.00	-19.21	-2.95	0.00	-129.80	0.00	129.80	2780.02	1390.01	4715.55	2361.28	2.98	-0.31	0.062	
100.00	-18.24	-2.94	0.00	-115.03	0.00	115.03	2734.38	1367.19	4519.43	2263.07	3.31	-0.33	0.058	
105.00	-17.29	-2.92	0.00	-100.35	0.00	100.35	2687.43	1343.72	4325.17	2165.80	3.67	-0.35	0.053	
110.00	-16.36	-2.89	0.00	-85.76	0.00	85.76	2639.19	1319.59	4132.95	2069.55	4.04	-0.37	0.048	
115.00	-15.45	-2.86	0.00	-71.30	0.00	71.30	2589.64	1294.82	3942.93	1974.40	4.43	-0.38	0.042	
120.00	-14.56	-2.81	0.00	-57.02	0.00	57.02	2538.79	1269.39	3755.30	1880.44	4.84	-0.40	0.036	
125.00	-13.69	-2.74	0.00	-43.00	0.00	43.00	2486.64	1243.32	3570.20	1787.76	5.26	-0.41	0.030	
128.00	-10.11	-2.33	0.00	-34.79	0.00	34.79	2454.72	1227.36	3460.44	1732.79	5.52	-0.41	0.024	
130.00	-9.79	-2.29	0.00	-30.13	0.00	30.13	2433.18	1216.59	3387.83	1696.43	5.69	-0.42	0.022	
130.00	-9.79	-2.29	0.00	-30.13	0.00	30.13	1188.95	594.48	1667.65	835.07	5.69	-0.42	0.044	
135.00	-9.29	-2.23	0.00	-18.65	0.00	18.65	1172.65	586.33	1593.28	797.82	6.14	-0.42	0.031	
139.00	-3.44	-1.03	0.00	-9.75	0.00	9.75	1158.65	579.33	1533.54	767.91	6.49	-0.43	0.016	
140.00	-3.35	-1.01	0.00	-8.72	0.00	8.72	1155.02	577.51	1518.58	760.42	6.58	-0.43	0.014	
145.00	-2.89	-0.91	0.00	-3.66	0.00	3.66	1136.06	568.03	1443.74	722.95	7.04	-0.44	0.008	
149.00	-0.07	-0.02	0.00	-0.02	0.00	0.02	1119.92	559.96	1383.89	692.97	7.40	-0.44	0.000	
150.00	0.00	-0.02	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	7.50	-0.44	0.000	

Seismic Segment Forces (Factored)

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E

Iterations 19

Gust Response Factor 1.10	Sds 0.29	Ss 0.27
Dead Load Factor 0.90	Seismic Load Factor 1.00	Sd1 0.31
Wind Load Factor 0.00	Structure Frequency (f1) 0.44	SA 0.13
		Seismic Importance Factor 1.00



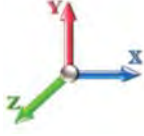
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1592.3	0.00	0.03	0.02	20.38	
10.00		1564.0	0.01	0.05	0.03	32.03	
15.00		1535.7	0.02	0.06	0.04	38.69	
20.00		1507.4	0.03	0.07	0.04	42.67	
25.00		1479.1	0.05	0.07	0.04	45.36	
30.00		1450.8	0.08	0.07	0.04	47.60	
35.00		1422.5	0.10	0.07	0.04	49.76	
40.00		1394.2	0.13	0.07	0.03	51.94	
41.50	Bot - Section 2	412.74	0.14	0.07	0.03	15.66	
45.00		1802.6	0.17	0.07	0.03	71.26	
48.00	Top - Section 1	1524.4	0.19	0.06	0.02	62.22	
50.00		474.05	0.21	0.06	0.02	19.72	
55.00		1167.7	0.25	0.05	0.02	50.43	
60.00		1143.0	0.30	0.04	0.01	50.27	
65.00		1118.2	0.35	0.03	0.01	48.86	
70.00		1093.4	0.41	0.01	0.01	46.09	
75.00		1068.7	0.47	-0.01	0.01	42.03	
80.00		1043.9	0.54	-0.03	0.01	37.03	
84.00	Bot - Section 3	817.33	0.59	-0.05	0.01	26.12	
85.00		348.57	0.61	-0.06	0.02	10.83	
89.50	Top - Section 2	1547.5	0.67	-0.08	0.02	42.34	
90.00		71.50	0.68	-0.08	0.03	1.93	
95.00		705.26	0.76	-0.10	0.04	17.18	
100.00		687.57	0.84	-0.12	0.07	16.82	
105.00		669.88	0.93	-0.12	0.10	19.20	
110.00		652.19	1.02	-0.11	0.14	24.92	
115.00		634.50	1.11	-0.06	0.19	34.38	
120.00		616.81	1.21	0.01	0.26	47.73	
125.00		599.11	1.31	0.14	0.35	64.96	
128.00	Appurtenance(s)	2913.3	1.38	0.24	0.41	381.54	
130.00	Top - Section 3	230.45	1.42	0.32	0.45	34.03	
135.00		339.44	1.53	0.58	0.58	66.32	
139.00	Appurtenance(s)	4809.4	1.62	0.85	0.70	1153.27	
140.00		64.88	1.65	0.93	0.73	16.34	
145.00		317.96	1.77	1.39	0.92	100.77	
149.00	Appurtenance(s)	2298.0	1.86	1.85	1.09	862.77	
150.00		60.59	1.89	1.98	1.14	23.69	
Totals:		41,179.8				3,717.1	Total Wind: 29,890.8

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

Calculated Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E						Iterations 19
Gust Response Factor	1.10	Sds	0.29		Ss	0.27
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.31	S1 0.24
Wind Load Factor	0.00	Structure Frequency (f1)	0.44	SA	0.13	Seismic Importance Factor 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.19	-3.72	0.00	-447.60	0.00	447.60	6643.18	3321.59	16232.9	8128.53	0.00	0.00	0.00	0.061
5.00	-38.64	-3.71	0.00	-428.99	0.00	428.99	6562.43	3281.22	15750.7	7887.07	0.01	-0.01	0.060	
10.00	-37.12	-3.69	0.00	-410.44	0.00	410.44	6480.38	3240.19	15272.4	7647.59	0.03	-0.03	0.059	
15.00	-35.63	-3.66	0.00	-392.00	0.00	392.00	6397.03	3198.52	14798.3	7410.16	0.07	-0.04	0.058	
20.00	-34.16	-3.62	0.00	-373.71	0.00	373.71	6312.38	3156.19	14328.4	7174.88	0.13	-0.06	0.057	
25.00	-32.72	-3.58	0.00	-355.60	0.00	355.60	6226.42	3113.21	13863.0	6941.83	0.20	-0.08	0.056	
30.00	-31.30	-3.54	0.00	-337.68	0.00	337.68	6139.16	3069.58	13402.2	6711.09	0.28	-0.09	0.055	
35.00	-29.91	-3.50	0.00	-319.96	0.00	319.96	6050.60	3025.30	12946.2	6482.75	0.39	-0.11	0.054	
40.00	-28.54	-3.45	0.00	-302.47	0.00	302.47	5960.74	2980.37	12495.2	6256.90	0.51	-0.12	0.053	
41.50	-28.14	-3.44	0.00	-297.29	0.00	297.29	5933.53	2966.76	12360.9	6189.64	0.55	-0.13	0.053	
45.00	-26.44	-3.37	0.00	-285.26	0.00	285.26	5869.58	2934.79	12049.3	6033.61	0.64	-0.14	0.052	
48.00	-25.00	-3.30	0.00	-275.16	0.00	275.16	4971.57	2485.79	10282.0	5148.64	0.73	-0.15	0.058	
50.00	-24.52	-3.29	0.00	-268.56	0.00	268.56	4942.60	2471.30	10136.2	5075.65	0.79	-0.15	0.058	
55.00	-23.36	-3.24	0.00	-252.12	0.00	252.12	4869.24	2434.62	9774.42	4894.48	0.96	-0.17	0.056	
60.00	-22.22	-3.19	0.00	-235.91	0.00	235.91	4794.58	2397.29	9416.42	4715.21	1.15	-0.19	0.055	
65.00	-21.10	-3.15	0.00	-219.94	0.00	219.94	4718.63	2359.31	9062.39	4537.93	1.36	-0.20	0.053	
70.00	-20.01	-3.10	0.00	-204.20	0.00	204.20	4641.37	2320.68	8712.52	4362.74	1.58	-0.22	0.051	
75.00	-18.93	-3.06	0.00	-188.68	0.00	188.68	4562.80	2281.40	8366.97	4189.70	1.82	-0.24	0.049	
80.00	-17.88	-3.03	0.00	-173.37	0.00	173.37	4482.94	2241.47	8025.91	4018.92	2.08	-0.25	0.047	
84.00	-17.06	-3.00	0.00	-161.27	0.00	161.27	4418.04	2209.02	7756.28	3883.90	2.30	-0.27	0.045	
85.00	-16.72	-2.99	0.00	-158.27	0.00	158.27	4396.40	2198.20	7680.13	3845.78	2.35	-0.27	0.045	
89.50	-15.23	-2.94	0.00	-144.82	0.00	144.82	2828.72	1414.36	4933.25	2470.29	2.61	-0.28	0.064	
90.00	-15.15	-2.94	0.00	-143.35	0.00	143.35	2824.36	1412.18	4913.38	2460.34	2.64	-0.29	0.064	
95.00	-14.41	-2.93	0.00	-128.64	0.00	128.64	2780.02	1390.01	4715.55	2361.28	2.95	-0.31	0.060	
100.00	-13.68	-2.91	0.00	-114.02	0.00	114.02	2734.38	1367.19	4519.43	2263.07	3.29	-0.33	0.055	
105.00	-12.96	-2.89	0.00	-99.47	0.00	99.47	2687.43	1343.72	4325.17	2165.80	3.64	-0.34	0.051	
110.00	-12.26	-2.86	0.00	-85.02	0.00	85.02	2639.19	1319.59	4132.95	2069.55	4.01	-0.36	0.046	
115.00	-11.58	-2.83	0.00	-70.70	0.00	70.70	2589.64	1294.82	3942.93	1974.40	4.40	-0.38	0.040	
120.00	-10.91	-2.78	0.00	-56.55	0.00	56.55	2538.79	1269.39	3755.30	1880.44	4.80	-0.39	0.034	
125.00	-10.26	-2.71	0.00	-42.66	0.00	42.66	2486.64	1243.32	3570.20	1787.76	5.22	-0.40	0.028	
128.00	-7.58	-2.31	0.00	-34.52	0.00	34.52	2454.72	1227.36	3460.44	1732.79	5.47	-0.41	0.023	
130.00	-7.34	-2.28	0.00	-29.90	0.00	29.90	2433.18	1216.59	3387.83	1696.43	5.65	-0.41	0.021	
130.00	-7.34	-2.28	0.00	-29.90	0.00	29.90	1188.95	594.48	1667.65	835.07	5.65	-0.41	0.042	
135.00	-6.96	-2.21	0.00	-18.52	0.00	18.52	1172.65	586.33	1593.28	797.82	6.09	-0.42	0.029	
139.00	-2.58	-1.02	0.00	-9.69	0.00	9.69	1158.65	579.33	1533.54	767.91	6.44	-0.43	0.015	
140.00	-2.51	-1.01	0.00	-8.66	0.00	8.66	1155.02	577.51	1518.58	760.42	6.53	-0.43	0.014	
145.00	-2.16	-0.90	0.00	-3.63	0.00	3.63	1136.06	568.03	1443.74	722.95	6.98	-0.43	0.007	
149.00	-0.05	-0.02	0.00	-0.02	0.00	0.02	1119.92	559.96	1383.89	692.97	7.34	-0.43	0.000	
150.00	0.00	-0.02	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	7.43	-0.43	0.000	

Wind Loading - Shaft

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



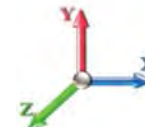
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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 20

Dead Load Factor 1.00

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	254.87	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	250.42	0.650	0.000	5.00	25.164	16.36	110.3	0.0	1592.4
10.00		1.00	0.70	6.129	6.74	245.96	0.650	0.000	5.00	24.720	16.07	108.3	0.0	1564.0
15.00		1.00	0.70	6.129	6.74	241.51	0.650	0.000	5.00	24.277	15.78	106.4	0.0	1535.7
20.00		1.00	0.70	6.129	6.74	237.06	0.650	0.000	5.00	23.833	15.49	104.4	0.0	1507.4
25.00		1.00	0.70	6.129	6.74	232.60	0.650	0.000	5.00	23.390	15.20	102.5	0.0	1479.1
30.00		1.00	0.70	6.134	6.75	228.25	0.650	0.000	5.00	22.946	14.91	100.6	0.0	1450.8
35.00		1.00	0.73	6.410	7.05	228.77	0.650	0.000	5.00	22.503	14.63	103.1	0.0	1422.5
40.00		1.00	0.76	6.659	7.33	228.54	0.650	0.000	5.00	22.059	14.34	105.0	0.0	1394.2
41.50	Bot - Section 2	1.00	0.77	6.730	7.40	228.34	0.650	0.000	1.50	6.531	4.25	31.4	0.0	412.7
45.00		1.00	0.79	6.887	7.58	227.70	0.650	0.000	3.50	15.343	9.97	75.6	0.0	1802.7
48.00	Top - Section 1	1.00	0.80	7.015	7.72	226.95	0.650	0.000	3.00	12.979	8.44	65.1	0.0	1524.5
50.00		1.00	0.81	7.098	7.81	230.36	0.650	0.000	2.00	8.564	5.57	43.5	0.0	474.0
55.00		1.00	0.83	7.294	8.02	228.66	0.650	0.000	5.00	21.099	13.71	110.0	0.0	1167.8
60.00		1.00	0.85	7.477	8.22	226.60	0.650	0.000	5.00	20.655	13.43	110.4	0.0	1143.0
65.00		1.00	0.87	7.650	8.42	224.23	0.650	0.000	5.00	20.212	13.14	110.6	0.0	1118.2
70.00		1.00	0.89	7.814	8.60	221.59	0.650	0.000	5.00	19.768	12.85	110.4	0.0	1093.5
75.00		1.00	0.91	7.969	8.77	218.70	0.650	0.000	5.00	19.324	12.56	110.1	0.0	1068.7
80.00		1.00	0.93	8.118	8.93	215.60	0.650	0.000	5.00	18.881	12.27	109.6	0.0	1043.9
84.00	Bot - Section 3	1.00	0.94	8.232	9.05	212.98	0.650	0.000	4.00	14.785	9.61	87.0	0.0	817.3
85.00		1.00	0.94	8.260	9.09	212.31	0.650	0.000	1.00	3.705	2.41	21.9	0.0	348.6
89.50	Top - Section 2	1.00	0.96	8.382	9.22	209.19	0.650	0.000	4.50	16.452	10.69	98.6	0.0	1547.5
90.00		1.00	0.96	8.396	9.24	211.95	0.650	0.000	0.50	1.806	1.17	10.8	0.0	71.5
95.00		1.00	0.97	8.526	9.38	208.34	0.650	0.000	5.00	17.815	11.58	108.6	0.0	705.3
100.00		1.00	0.99	8.652	9.52	204.58	0.650	0.000	5.00	17.371	11.29	107.5	0.0	687.6
105.00		1.00	1.00	8.774	9.65	200.68	0.650	0.000	5.00	16.928	11.00	106.2	0.0	669.9
110.00		1.00	1.02	8.891	9.78	196.65	0.650	0.000	5.00	16.484	10.71	104.8	0.0	652.2
115.00		1.00	1.03	9.005	9.91	192.51	0.650	0.000	5.00	16.040	10.43	103.3	0.0	634.5
120.00		1.00	1.04	9.115	10.03	188.25	0.650	0.000	5.00	15.597	10.14	101.6	0.0	616.8
125.00		1.00	1.05	9.222	10.14	183.89	0.650	0.000	5.00	15.153	9.85	99.9	0.0	599.1
128.00	Appurtenance(s)	1.00	1.06	9.284	10.21	181.23	0.650	0.000	3.00	8.879	5.77	58.9	0.0	351.0
130.00	Top - Section 3	1.00	1.07	9.326	10.26	179.43	0.650	0.000	2.00	5.831	3.79	38.9	0.0	230.4
135.00		1.00	1.08	9.427	10.37	174.81	0.650	0.000	5.00	14.264	9.27	96.1	0.0	339.4
139.00	Appurtenance(s)	1.00	1.09	9.506	10.46	171.05	0.650	0.000	4.00	11.088	7.21	75.4	0.0	263.8
140.00		1.00	1.09	9.525	10.48	170.11	0.650	0.000	1.00	2.727	1.77	18.6	0.0	64.9
145.00		1.00	1.10	9.621	10.58	165.32	0.650	0.000	5.00	13.366	8.69	91.9	0.0	318.0
149.00	Appurtenance(s)	1.00	1.11	9.696	10.67	161.42	0.650	0.000	4.00	10.370	6.74	71.9	0.0	246.6
150.00		1.00	1.11	9.715	10.69	160.44	0.650	0.000	1.00	2.548	1.66	17.7	0.0	60.6
Totals:									150.00			3,137.0		32,020.4

Discrete Appurtenance Forces

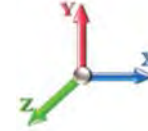
Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 20

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.00	LNx-6512DS-A1M	3	9.696	10.666	0.64	0.80	9.77	84.00	0.000	0.000	104.24	0.00	0.00
2	149.00	BXA-70063-6CF	3	9.696	10.666	0.58	0.80	13.26	51.00	0.000	0.000	141.46	0.00	0.00
3	149.00	HBXX-6517DS-VTM	3	9.696	10.666	0.62	0.80	15.80	122.10	0.000	0.000	168.53	0.00	0.00
4	149.00	HBXX-6516DS-VTM	3	9.696	10.666	0.62	0.80	10.03	91.80	0.000	0.000	107.03	0.00	0.00
5	149.00	Low Profile Platform	1	9.696	10.666	1.00	1.00	22.00	1500.00	0.000	0.000	234.65	0.00	0.00
6	149.00	DB-T1-6Z-8AB-OZ	1	9.696	10.666	0.80	0.80	3.84	18.90	0.000	0.000	40.96	0.00	0.00
7	149.00	ALU RRH 2x60 AWS	3	9.696	10.666	0.54	0.80	5.63	165.00	0.000	0.000	60.03	0.00	0.00
8	149.00	RFS FD9R6004/2C-3L	6	9.696	10.666	0.80	0.80	1.73	18.60	0.000	0.000	18.43	0.00	0.00
9	139.00	RMQP-4096-HK	1	9.506	10.456	1.00	1.00	51.70	2645.00	0.000	0.000	540.59	0.00	0.00
10	139.00	RRUS 4415 B25	4	9.506	10.456	0.54	0.80	3.52	184.00	0.000	0.000	36.77	0.00	0.00
11	139.00	4424	3	9.506	10.456	0.50	0.75	3.09	264.00	0.000	0.000	32.31	0.00	0.00
12	139.00	4449 B71 + B85	3	9.506	10.456	0.50	0.75	2.97	219.60	0.000	0.000	31.05	0.00	0.00
13	139.00	AIR6449 B41	3	9.506	10.456	0.53	0.75	9.03	309.00	0.000	0.000	94.38	0.00	0.00
14	139.00	Air 3246 B66	3	9.506	10.456	0.62	0.75	14.83	540.00	0.000	0.000	155.05	0.00	0.00
15	139.00	APXVAARR24_43-U-NA2	3	9.506	10.456	0.52	0.75	31.88	384.00	0.000	0.000	333.33	0.00	0.00
16	128.00	HPA-65R-BU8AA	2	9.284	10.213	0.69	0.80	15.45	108.00	0.000	0.000	157.81	0.00	0.00
17	128.00	Low Profile Platform	1	9.284	10.213	1.00	1.00	22.00	1600.00	0.000	0.000	224.68	0.00	0.00
18	128.00	HPA-65R-BU4AA	1	9.284	10.213	0.75	0.80	3.70	28.70	0.000	0.000	37.79	0.00	0.00
19	128.00	DMP65R-BU4DA	1	9.284	10.213	0.79	0.80	6.56	69.70	0.000	0.000	66.97	0.00	0.00
20	128.00	4449	3	9.284	10.213	0.54	0.80	2.65	210.00	0.000	0.000	27.10	0.00	0.00
21	128.00	DMP65R-BU8DA	2	9.284	10.213	0.58	0.80	20.59	191.40	0.000	0.000	210.25	0.00	0.00
22	128.00	B2 B66A 8843	3	9.284	10.213	0.54	0.80	2.64	210.00	0.000	0.000	26.93	0.00	0.00
23	128.00	DC6-48-60-18-8F	2	9.284	10.213	0.80	0.80	1.47	63.60	0.000	0.000	15.03	0.00	0.00
24	128.00	7770.00A	3	9.284	10.213	0.58	0.80	9.57	81.00	0.000	0.000	97.77	0.00	0.00
Totals:									9,159.40			2,963.13		

Total Applied Force Summary

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

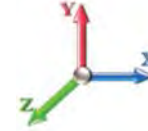


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		110.27	1715.55	0.00	0.00
10.00		108.32	1687.25	0.00	0.00
15.00		106.38	1658.94	0.00	0.00
20.00		104.44	1630.64	0.00	0.00
25.00		102.49	1602.33	0.00	0.00
30.00		100.63	1574.02	0.00	0.00
35.00		103.13	1545.72	0.00	0.00
40.00		105.03	1517.41	0.00	0.00
41.50		31.43	449.70	0.00	0.00
45.00		75.56	1888.93	0.00	0.00
48.00		65.10	1598.38	0.00	0.00
50.00		43.46	523.33	0.00	0.00
55.00		110.03	1290.98	0.00	0.00
60.00		110.43	1266.22	0.00	0.00
65.00		110.55	1241.45	0.00	0.00
70.00		110.44	1216.68	0.00	0.00
75.00		110.11	1191.91	0.00	0.00
80.00		109.59	1167.15	0.00	0.00
84.00		87.02	915.89	0.00	0.00
85.00		21.88	373.21	0.00	0.00
89.50		98.60	1658.42	0.00	0.00
90.00		10.84	83.82	0.00	0.00
95.00		108.60	828.46	0.00	0.00
100.00		107.46	810.77	0.00	0.00
105.00		106.19	793.08	0.00	0.00
110.00		104.79	775.39	0.00	0.00
115.00		103.27	757.70	0.00	0.00
120.00		101.65	740.01	0.00	0.00
125.00		99.91	722.31	0.00	0.00
128.00	(18) attachments	923.28	2987.30	0.00	0.00
130.00		38.88	263.73	0.00	0.00
135.00		96.14	422.64	0.00	0.00
139.00	(20) attachments	1298.83	4875.98	0.00	0.00
140.00		18.57	78.40	0.00	0.00
145.00		91.95	385.56	0.00	0.00
149.00	(23) attachments	947.21	2352.12	0.00	0.00
150.00		17.70	60.59	0.00	0.00
	Totals:	6,100.17	44,651.95	0.00	0.00

Calculated Forces

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

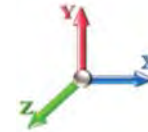


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 20

Dead Load Factor 1.00
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-44.65	-6.11	0.00	-662.98	0.00	662.98	6643.18	3321.59	16232.9	8128.53	0.00	0.000	0.000	0.088
5.00	-42.93	-6.01	0.00	-632.43	0.00	632.43	6562.43	3281.22	15750.7	7887.07	0.01	-0.022	0.000	0.087
10.00	-41.24	-5.92	0.00	-602.36	0.00	602.36	6480.38	3240.19	15272.4	7647.59	0.05	-0.044	0.000	0.085
15.00	-39.58	-5.83	0.00	-572.76	0.00	572.76	6397.03	3198.52	14798.3	7410.16	0.10	-0.066	0.000	0.083
20.00	-37.95	-5.74	0.00	-543.62	0.00	543.62	6312.38	3156.19	14328.4	7174.88	0.19	-0.088	0.000	0.082
25.00	-36.35	-5.65	0.00	-514.94	0.00	514.94	6226.42	3113.21	13863.0	6941.83	0.29	-0.110	0.000	0.080
30.00	-34.77	-5.55	0.00	-486.71	0.00	486.71	6139.16	3069.58	13402.2	6711.09	0.42	-0.132	0.000	0.078
35.00	-33.22	-5.46	0.00	-458.94	0.00	458.94	6050.60	3025.30	12946.2	6482.75	0.57	-0.155	0.000	0.076
40.00	-31.70	-5.36	0.00	-431.64	0.00	431.64	5960.74	2980.37	12495.2	6256.90	0.74	-0.177	0.000	0.074
41.50	-31.25	-5.33	0.00	-423.60	0.00	423.60	5933.53	2966.76	12360.9	6189.64	0.80	-0.184	0.000	0.074
45.00	-29.36	-5.26	0.00	-404.94	0.00	404.94	5869.58	2934.79	12049.3	6033.61	0.94	-0.199	0.000	0.072
48.00	-27.76	-5.19	0.00	-389.16	0.00	389.16	4971.57	2485.79	10282.0	5148.64	1.07	-0.213	0.000	0.081
50.00	-27.24	-5.15	0.00	-378.78	0.00	378.78	4942.60	2471.30	10136.2	5075.65	1.16	-0.222	0.000	0.080
55.00	-25.95	-5.05	0.00	-353.00	0.00	353.00	4869.24	2434.62	9774.42	4894.48	1.40	-0.246	0.000	0.077
60.00	-24.68	-4.94	0.00	-327.75	0.00	327.75	4794.58	2397.29	9416.42	4715.21	1.67	-0.269	0.000	0.075
65.00	-23.44	-4.84	0.00	-303.03	0.00	303.03	4718.63	2359.31	9062.39	4537.93	1.97	-0.293	0.000	0.072
70.00	-22.22	-4.73	0.00	-278.84	0.00	278.84	4641.37	2320.68	8712.52	4362.74	2.29	-0.316	0.000	0.069
75.00	-21.02	-4.62	0.00	-255.20	0.00	255.20	4562.80	2281.40	8366.97	4189.70	2.63	-0.338	0.000	0.066
80.00	-19.86	-4.51	0.00	-232.10	0.00	232.10	4482.94	2241.47	8025.91	4018.92	3.00	-0.360	0.000	0.062
84.00	-18.94	-4.42	0.00	-214.06	0.00	214.06	4418.04	2209.02	7756.28	3883.90	3.31	-0.378	0.000	0.059
85.00	-18.57	-4.40	0.00	-209.63	0.00	209.63	4396.40	2198.20	7680.13	3845.78	3.39	-0.382	0.000	0.059
89.50	-16.91	-4.29	0.00	-189.83	0.00	189.83	2828.72	1414.36	4933.25	2470.29	3.76	-0.401	0.000	0.083
90.00	-16.82	-4.29	0.00	-187.68	0.00	187.68	2824.36	1412.18	4913.38	2460.34	3.80	-0.403	0.000	0.082
95.00	-15.99	-4.18	0.00	-166.25	0.00	166.25	2780.02	1390.01	4715.55	2361.28	4.23	-0.430	0.000	0.076
100.00	-15.18	-4.07	0.00	-145.36	0.00	145.36	2734.38	1367.19	4519.43	2263.07	4.70	-0.455	0.000	0.070
105.00	-14.39	-3.97	0.00	-125.00	0.00	125.00	2687.43	1343.72	4325.17	2165.80	5.19	-0.478	0.000	0.063
110.00	-13.61	-3.86	0.00	-105.17	0.00	105.17	2639.19	1319.59	4132.95	2069.55	5.70	-0.500	0.000	0.056
115.00	-12.85	-3.75	0.00	-85.88	0.00	85.88	2589.64	1294.82	3942.93	1974.40	6.23	-0.520	0.000	0.048
120.00	-12.11	-3.65	0.00	-67.11	0.00	67.11	2538.79	1269.39	3755.30	1880.44	6.79	-0.537	0.000	0.040
125.00	-11.39	-3.54	0.00	-48.88	0.00	48.88	2486.64	1243.32	3570.20	1787.76	7.36	-0.551	0.000	0.032
128.00	-8.41	-2.59	0.00	-38.25	0.00	38.25	2454.72	1227.36	3460.44	1732.79	7.71	-0.558	0.000	0.026
130.00	-8.15	-2.55	0.00	-33.07	0.00	33.07	2433.18	1216.59	3387.83	1696.43	7.94	-0.562	0.000	0.023
130.00	-8.15	-2.55	0.00	-33.07	0.00	33.07	1188.95	594.48	1667.65	835.07	7.94	-0.562	0.000	0.046
135.00	-7.73	-2.45	0.00	-20.31	0.00	20.31	1172.65	586.33	1593.28	797.82	8.53	-0.569	0.000	0.032
139.00	-2.87	-1.10	0.00	-10.50	0.00	10.50	1158.65	579.33	1533.54	767.91	9.02	-0.576	0.000	0.016
140.00	-2.79	-1.09	0.00	-9.40	0.00	9.40	1155.02	577.51	1518.58	760.42	9.14	-0.577	0.000	0.015
145.00	-2.40	-0.99	0.00	-3.98	0.00	3.98	1136.06	568.03	1443.74	722.95	9.74	-0.581	0.000	0.008
149.00	-0.06	-0.02	0.00	-0.02	0.00	0.02	1119.92	559.96	1383.89	692.97	10.23	-0.582	0.000	0.000
150.00	0.00	-0.02	0.00	0.00	0.00	0.00	1115.76	557.88	1368.94	685.49	10.35	-0.582	0.000	0.000

Final Analysis Summary

Structure: CT13073-A-SBA	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	29.9	0.00	53.55	0.00	0.00	3261.60
0.9D + 1.6W 105 mph Wind	29.9	0.00	40.16	0.00	0.00	3240.52
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.3	0.00	77.50	0.00	0.00	769.03
1.2D + 1.0E	3.7	0.00	53.58	0.00	0.00	450.65
0.9D + 1.0E	3.7	0.00	40.19	0.00	0.00	447.60
1.0D + 1.0W 60 mph Wind	6.1	0.00	44.65	0.00	0.00	662.98

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 105 mph Wind	-53.55	-29.94	0.00	-3261.6	0.00	-3261.6	6643.18	3321.5	16232.9	8128.53	0.00	0.409
0.9D + 1.6W 105 mph Wind	-40.16	-29.93	0.00	-3240.5	0.00	-3240.5	6643.18	3321.5	16232.9	8128.53	0.00	0.405
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-77.50	-7.26	0.00	-769.03	0.00	-769.03	6643.18	3321.5	16232.9	8128.53	0.00	0.106
1.2D + 1.0E	-20.31	-2.97	0.00	-146.13	0.00	-146.13	2828.72	1414.3	4933.25	2470.29	89.50	0.066
0.9D + 1.0E	-15.23	-2.94	0.00	-144.82	0.00	-144.82	2828.72	1414.3	4933.25	2470.29	89.50	0.064
1.0D + 1.0W 60 mph Wind	-44.65	-6.11	0.00	-662.98	0.00	-662.98	6643.18	3321.5	16232.9	8128.53	0.00	0.088

Base Plate Summary

Structure: CT13073-A-SB	Code: EIA/TIA-222-G	6/2/2021
Site Name: Groton North	Exposure: B	
Height: 150.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 29



Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 50.00	Bolt Circle: 65.00
Moment (kip-ft): 6114.40	Width (in): 69.50	Number Bolts: 34.00
Axial (kip): 94.80	Style: Round	Bolt Type: 1.5" F1554 105
Shear (kip): 55.60	Polygon Sides: 0.00	Bolt Diameter (in): 1.50
Analysis (1.2D + 1.6W)	Clip Length (in): 0.00	Yield (ksi): 105.00
Moment (kip-ft): 3261.60	Effective Len (in): 7.86	Ultimate (ksi): 125.00
Axial (kip): 53.55	Moment (kip-in): 182.80	Arrangement: Radial
Shear (kip): 29.94	Allow Stress (ksi): 67.50	Cluster Dist (in): 0.00
	Applied Stress (ksi): 45.90	Start Angle (deg): 0.00
	Stress Ratio: 0.68	Compression
		Force (kip): 73.12
		Allowable (kip): 141.00
		Ratio: 0.53
		Tension
		Force (kip): 68.56
		Allowable (kip): 141.00
		Ratio: 0.50



Monopole Mat Foundation Design

Date
6/2/2021

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	150
Site Number:	CT13073-A-SBA	Engineer Name:	M. Baker
Engr. Number:	108889	Engineer Login ID:	

Foundation Info Obtained from:

Mapping Operation
Monopole
Analysis

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	53.6	Shear Force (Kips):	29.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3261.6

Allowable overstress %: 5.0%

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	3.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft.):	3.50
Length of Pad (ft.):	27	Width of Pad (ft.):	27

Final Length of pad (ft)	27.0	Final width of pad (ft):	27.0
--------------------------	------	--------------------------	------

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 #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	32	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):	32	Qty. of Rebar in Pad (W):	32
Rebar at the top of the concrete pad:			
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32

Apply 1.35 factor for e/w Per G: 1.00

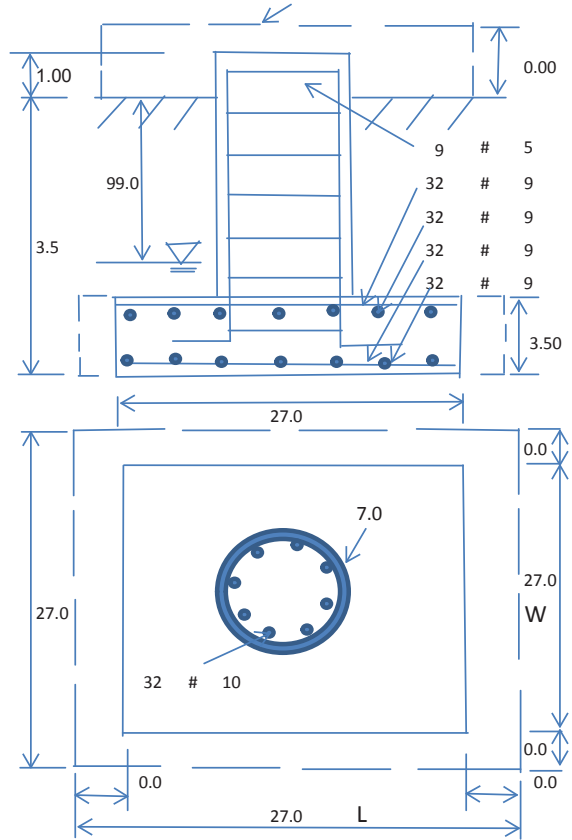
Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf	
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:
Ultimate Bearing Pressure (psf):	20000	Ultimate Skin Friction:		Psf	30
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00		25

Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):		0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):		0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):		0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):		2589.98	Total Dry Concrete Weight (Kips):	388.50
Total Buoyant Concrete Volume (cu. Ft.):		0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):		388.50	Total Vertical Load on Base (Kips):	442.10

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2161	<	Allowable Factored Soil Bearing (psf):	15000	0.14	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	5443.8	>	Design Factored Momont (kips-ft):	3396	0.62	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.60					OK!



Check the capacities of Reinforcing Concrete:

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

Load/
Capacity
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	6761.6	> Design Factored Moment (Mu, Kips-F	3291.5	0.49	OK!
Calculated Shear Capacity (Kips):	942.4	> Design Factored Shear (Kips):	29.9	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	2194.6	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9726.0	> Design Factored Axial Load (Pu Kips):	53.6	0.01	OK!
Moment & Axial Strength Combination:	0.49	OK! Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1181.5	> One-Way Factored Shear (L-D. Kips):	209.1	0.18	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1181.5	> One-Way Factored Shear (W-D., Kips)	209.1	0.18	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1084.2	> One-Way Factored Shear (C-C, Kips):	193.6	0.18	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0026		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5409.5	> Moment at Bottom (L-Dir. K-Ft):	1314.4	0.24	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5409.5	> Moment at Bottom (W-Dir. K-Ft):	1314.4	0.24	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	7610.4	> Moment at Bottom (C-C Dir. K-Ft):	1858.9	0.24	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0026		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	5409.5	> Moment at the top (L-Dir K-Ft):	530.6	0.10	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5409.5	> Moment at the top (W-Dir K-Ft):	530.6	0.10	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	7610.4	> Moment at the top (C-C Dir. K-Ft):	496.6	0.07	OK!

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

Moment transferred by punching shear:	1304.6	k-ft.	Max. factored shear stress $v_{u,CD}$:	2.6	Psi
Max. factored shear stress $v_{u,AB}$:	8.1	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	8.1	Psi	Check Usage of Punching Shear Capacity:	0.04	OK!

EXHIBIT 8



Tower Engineering Solutions

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

Antenna Mount Analysis Report

Existing 150-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT13073-A-SBA / Groton North

Customer Site Name: Groton North

Carrier Name: T-Mobile (App#: 151788-1)

Carrier Site ID / Name: CTNL011B / Groton North

Site Location: 1662 Route 184

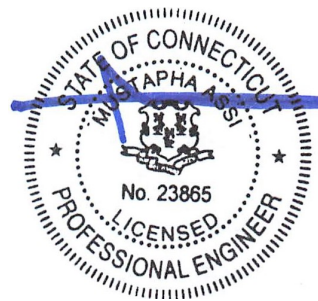
Groton, Connecticut

New London County

Latitude: 41.385666

Longitude: -72.013306

Exp.10/31/2021



Analysis Result:

Max Structural Usage: 72.9% [Pass]

04/19/2021

Report Prepared By : Noah Kessler

NOTE: The proposed mount (1) Sitepro RMQP-4096-HK is not currently installed. It is assumed that the mount will be installed according to the manufacturing drawings, and it was assumed that the mount can be installed properly on the tower. The analysis results are void if the proposed equipment is not installed in accordance with this report. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

Introduction

The purpose of this report is to summarize the analysis results on the (1) Sitepro RMQP-4096-HK at 139.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	(1) Sitepro RMQP-4096-HK
Antenna Loading	Provided by SBA #: 151788, v1
Modification Drawings	N/A

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

Exposure Category: B

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

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

Mount Information

(1) Sitepro RMQP-4096-HK at 139.00' elevation

Final Antenna Configuration

3	Ericsson AIR 3246 B66
3	RFS APXVAARR24_43-U-NA2
3	Ericsson AIR6449 B41
3	Ericsson 4449 B71 + B85
3	Ericsson 4424 B25
4	Ericsson 4415 B2

Analysis Results

Our calculations have determined that under design wind load the proposed mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 72.9%, which occurs in the standoff member. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

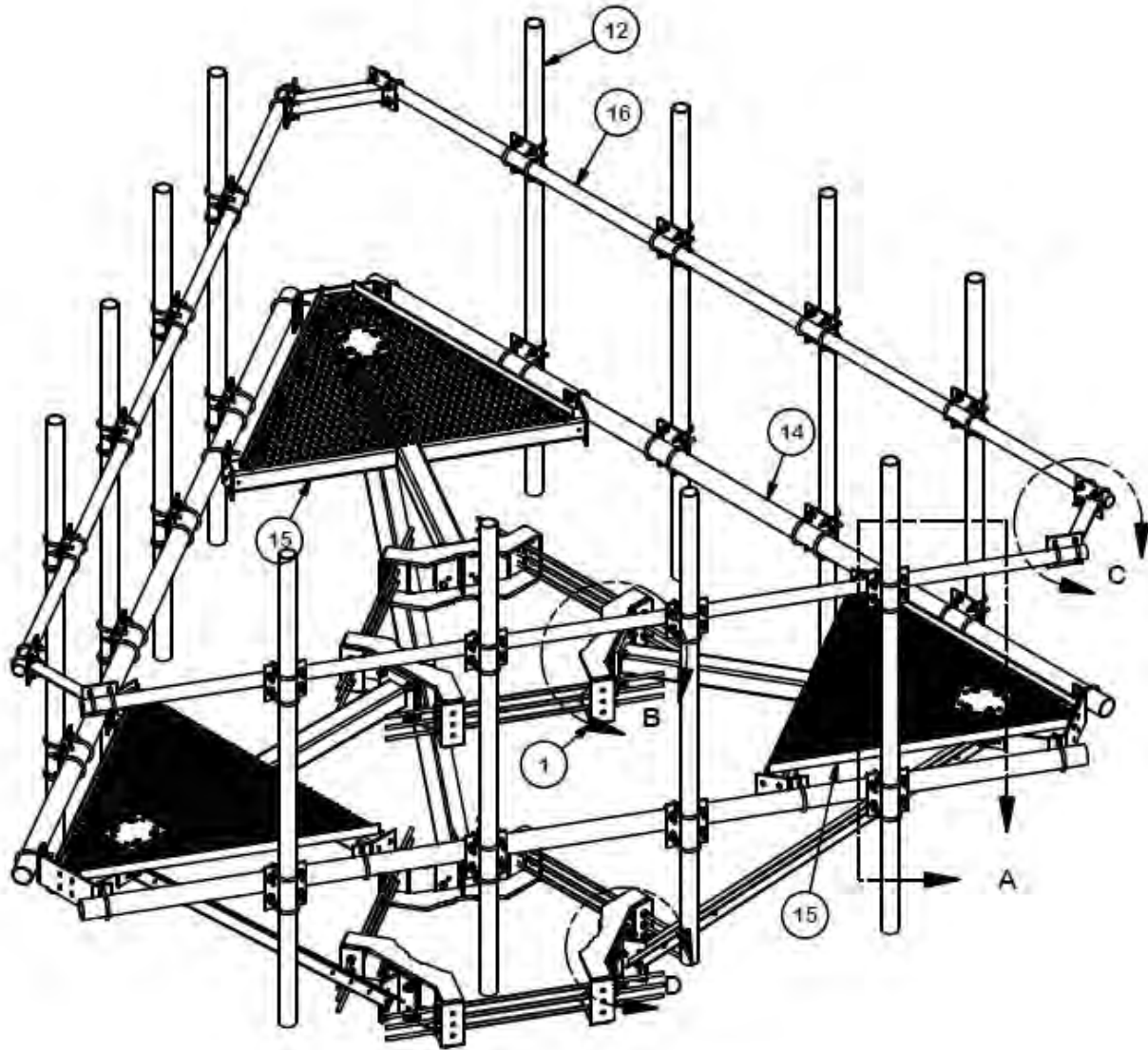
NOTE: The proposed mount (1) Sitepro RMQP-4096-HK is not currently installed. It is assumed that the mount will be installed according to the manufacturing drawings, and it was assumed that the mount can be installed properly on the tower. The analysis results are void if the proposed equipment is not installed in accordance with this report. TES cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

Attachments

1. Mount Drawing
2. Antenna Placement Diagram
3. 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**

4/19/2021

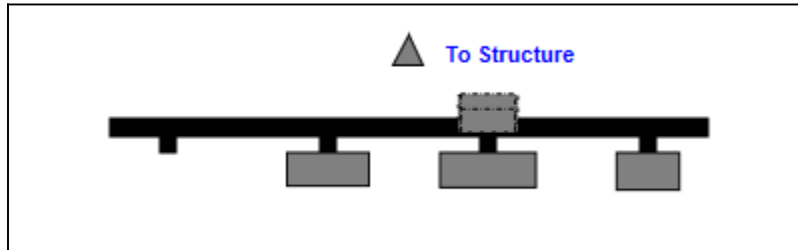
Structure Type: Monopole

Mount Elev: 139.00

Page: 1

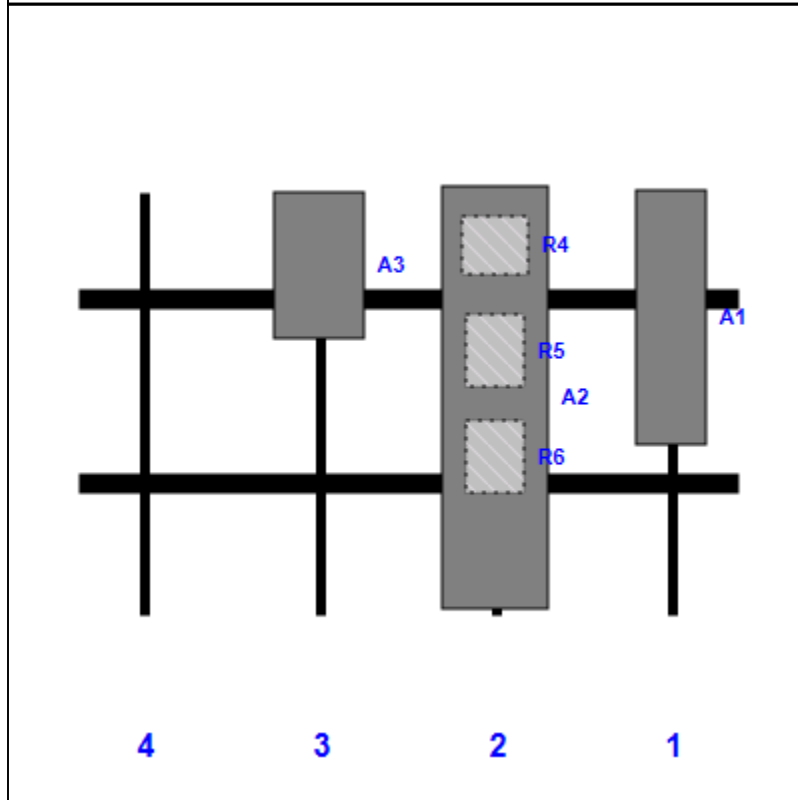


Plan View



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 3246 B66	58.00	15.70	135.00	1	a	Front	28.50			
A2	APXVAARR24_43-U-NA2	95.90	24.00	95.00	2	a	Front	46.50			
R4	4449 B71 + B85	13.10	14.90	95.00	2	a	Behind	12.00			
R5	4424 B25	16.50	13.50	95.00	2	a	Behind	36.00			
R6	4415 B2	16.50	13.40	95.00	2	a	Behind	60.00			
A3	AIR6449 B41	33.10	20.50	55.00	3	a	Front	16.50			

Sector: **B**

4/19/2021

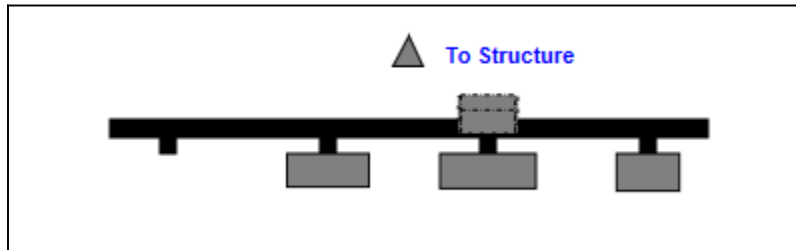
Structure Type: Monopole

Mount Elev: 139.00

Page: 2

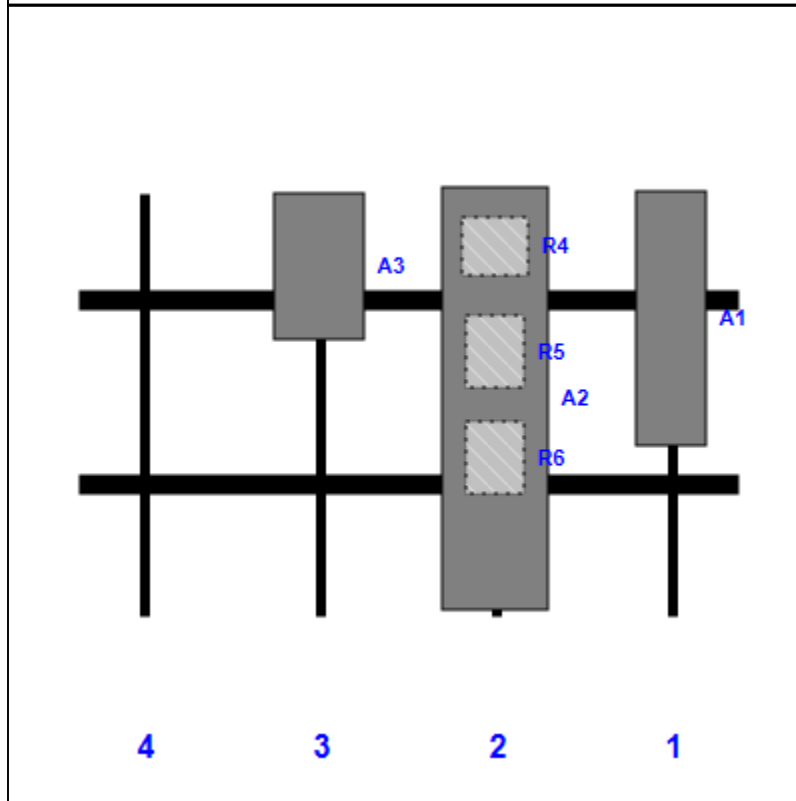


Plan View



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 3246 B66	58.00	15.70	135.00	1	a	Front	28.50			
A2	APXVAARR24_43-U-NA2	95.90	24.00	95.00	2	a	Front	46.50			
R4	4449 B71 + B85	13.10	14.90	95.00	2	a	Behind	12.00			
R5	4424 B25	16.50	13.50	95.00	2	a	Behind	36.00			
R6	4415 B2	16.50	13.40	95.00	2	a	Behind	60.00			
A3	AIR6449 B41	33.10	20.50	55.00	3	a	Front	16.50			

Structure: CT13073-A-SBA - Groton North

Sector: C

4/19/2021

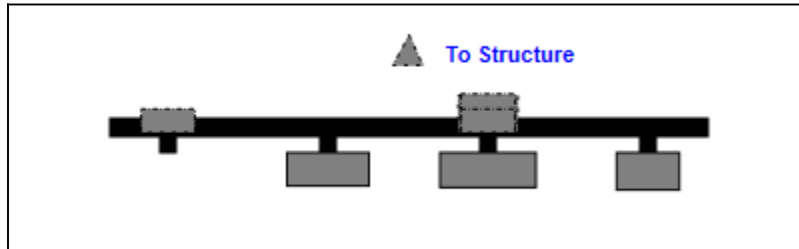


Structure Type: Monopole

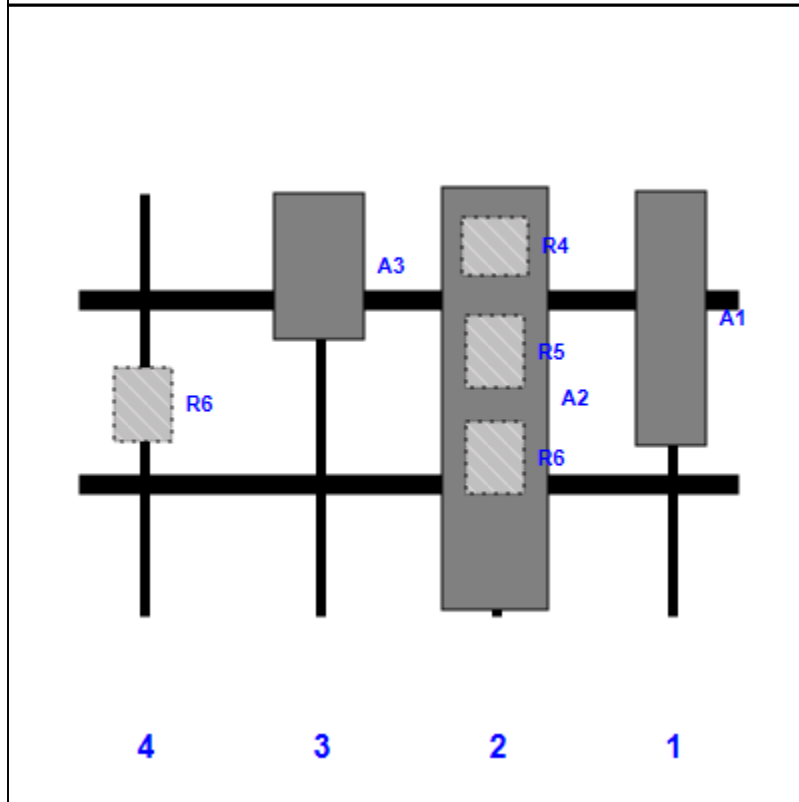
Page: 3

Mount Elev: 139.00

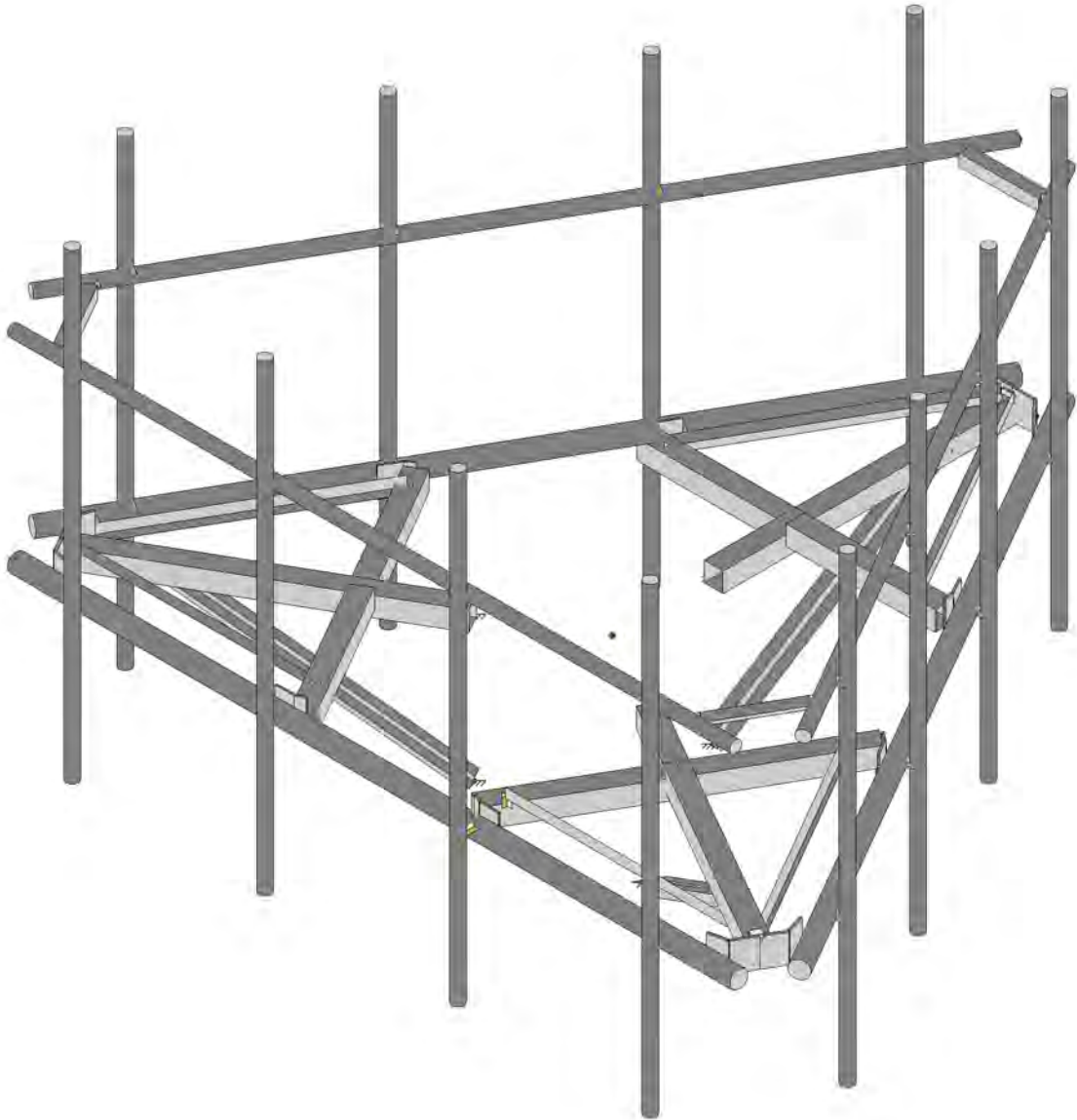
Plan View



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 3246 B66	58.00	15.70	135.00	1	a	Front	28.50			
A2	APXVAARR24_43-U-NA2	95.90	24.00	95.00	2	a	Front	46.50			
R4	4449 B71 + B85	13.10	14.90	95.00	2	a	Behind	12.00			
R5	4424 B25	16.50	13.50	95.00	2	a	Behind	36.00			
R6	4415 B2	16.50	13.40	95.00	2	a	Behind	60.00			
A3	AIR6449 B41	33.10	20.50	55.00	3	a	Front	16.50			
R6	4415 B2	16.50	13.40	15.00	4	a	Behind	48.00			



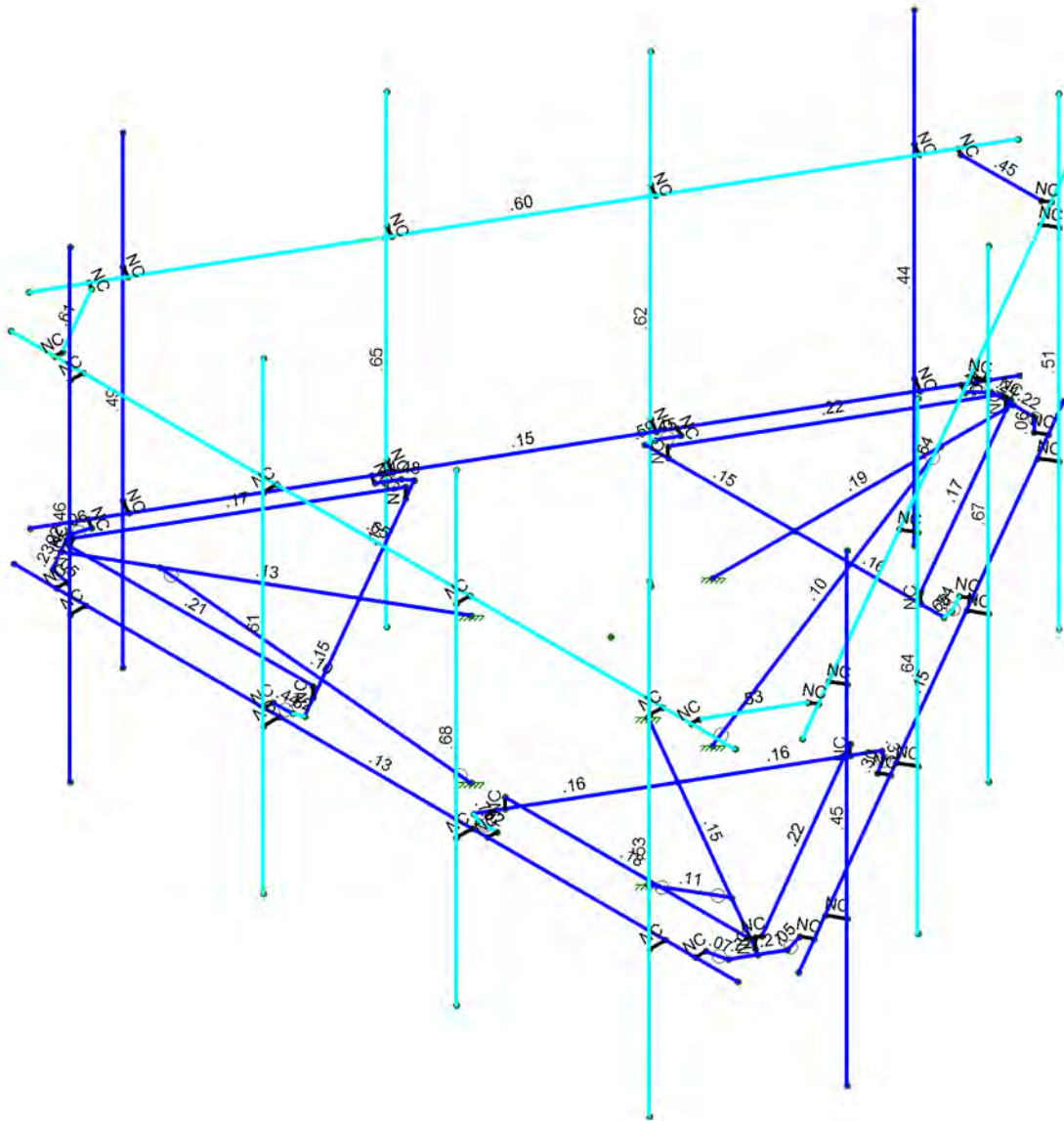
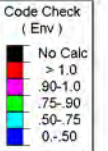
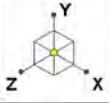
Tower Engineering Solutio...

TES Project No. 105929

SK - 1

Apr 19, 2021 at 11:35 AM

CT13073-A-SBA_105929_G_RISA_...



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

Tower Engineering Solutio...

SK - 4

Apr 19, 2021 at 12:49 PM

TES Project No. 105929

CT13073-A-SBA_105929_G_RISA_...

EXHIBIT 9

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

T-Mobile Existing Facility

Site ID: CTNL011B

Groton North
1662 Gold Star Highway
Groton, Connecticut 06340

June 17, 2021

EBI Project Number: 6221003033

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	19.42%

June 17, 2021

T-Mobile

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

Emissions Analysis for Site: CTNL011B - Groton North

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1662 Gold Star Highway** in **Groton, 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 1662 Gold Star Highway in Groton, 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 power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 6) 4 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 7) 1 LTE Traffic channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.
- 8) 1 LTE Broadcast channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.
- 9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 11) 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.
- 12) 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.
- 13) The antennas used in this modeling are the Ericsson AIR 3246 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 3246 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 3246 for the 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in

the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 14) The antenna mounting height centerline of the proposed antennas is 139 feet above ground level (AGL).
- 15) 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.
- 16) 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 3246	Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 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):	6,153.47	ERP (W):	6,153.47	ERP (W):	6,153.47
Antenna A1 MPE %:	1.25%	Antenna B1 MPE %:	1.25%	Antenna C1 MPE %:	1.25%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,873.80	ERP (W):	12,873.80	ERP (W):	12,873.80
Antenna A2 MPE %:	3.76%	Antenna B2 MPE %:	3.76%	Antenna C2 MPE %:	3.76%
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 / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 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):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A3 MPE %:	7.39%	Antenna B3 MPE %:	7.39%	Antenna C3 MPE %:	7.39%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	12.40%
AT&T	4.85%
Clearwire	0.35%
Verizon	1.82%
Site Total MPE % :	19.42%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	12.40%
T-Mobile Sector B Total:	12.40%
T-Mobile Sector C Total:	12.40%
Site Total MPE % :	19.42%

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 2100 MHz LTE	4	1538.37	139.0	12.51	2100 MHz LTE	1000	1.25%
T-Mobile 600 MHz LTE	2	591.73	139.0	2.41	600 MHz LTE	400	0.60%
T-Mobile 600 MHz NR	1	1577.94	139.0	3.21	600 MHz NR	400	0.80%
T-Mobile 700 MHz LTE	2	648.82	139.0	2.64	700 MHz LTE	467	0.56%
T-Mobile 1900 MHz GSM	4	1101.85	139.0	8.96	1900 MHz GSM	1000	0.90%
T-Mobile 1900 MHz LTE	2	2203.69	139.0	8.96	1900 MHz LTE	1000	0.90%
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	11044.63	139.0	22.45	2500 MHz LTE IC & 2C Traffic	1000	2.24%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	1074.06	139.0	2.18	2500 MHz LTE IC & 2C Broadcast	1000	0.22%
T-Mobile 2500 MHz NR Traffic	1	22089.26	139.0	44.89	2500 MHz NR Traffic	1000	4.49%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	139.0	4.37	2500 MHz NR Broadcast	1000	0.44%
						Total:	12.40%

• 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:	12.40%
Sector B:	12.40%
Sector C:	12.40%
T-Mobile Maximum MPE % (Sector A):	12.40%
Site Total:	19.42%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **19.42%** 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.