



Filed by:

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

November 10, 2020

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

RE: Notice of Exempt Modification
393 Jackson Hill Road, Middlefield, CT 06455
Latitude: 41.517360
Longitude: -72.714167
T-Mobile Site #: CTHA512A_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 88-foot level of the existing 146-foot Monopole Tower at 339 Jackson Hill Rd., Middlefield, CT. The 146-foot tower is owned by SBA 2012 TC Assets, LLC. The property is owned by the Town of Middlefield. T-Mobile now intends to install three (3) new 1900/2100 MHz antennas and replace three (3) 600/700MHz antennas with three (3) new 600/700/2100 MHz antennas. The new antennas would be installed at the 88-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:

- Flush Mount

Remove and Replace:

- (3) RFS APXV18-206517S-C (remove) – (3) RFS APXVAARR24_43-U-NA20 (replace)

Install New:

- (3) Ericsson AIR 32 KRD901146-1_B66A_B2A - antenna
- (3) 1-5/8" Fiber
- (3) Ericsson KRY 112 144/1 – TMAs
- (3) Ericsson Radio 4449 B71+B12 –RRUs
- Platform w/Handrail (Site Pro RMQP-4096-HK)

Existing Equipment to Remain:

- (6) 1-5/8" coax

Entitlements:

- N/A

GROUND

Remove and Replace:

- (1) RBS 6201 Equipment Cabinet (remove) – (1) RBS6102 Equipment cabinet (replace)
- (1) 6201 battery cabinet (remove) – (1) 6102 battery cabinet (replace)

Install New:

- Equipment inside proposed 6102 equipment cabinet

This facility was approved by the Town of Middlefield's Planning and Zoning Commission on February 17, 1999. Special Permit approval was given with the condition that the applicant meet with town agencies, including 911 services, to determine their communications needs as related to the tower and that the applicant would further use best efforts to reserve a location which would meet such needs. No post construction stipulations were set. Please see attached.

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

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Site Development Specialist
 SBA COMMUNICATIONS CORPORATION
 134 Flanders Rd., Suite 125
 Westborough, MA 01581
 508.251.0720 x3804 + T
 508.366.2610 + F
 508.868.6000 + C
GShepherd@sbsite.com

Attachments

- cc: Edward P. Bailey, First Selectman / with attachments
Town of Middlefield, 393 Jackson Hill Road, Middlefield, CT 06455
 Jerry Russ, Zoning Enforcement Officer / with attachments
Town of Middlefield, 393 Jackson Hill Road, Middlefield, CT 06455

Exhibit List

Exhibit 1	Check Copy	To be invoiced at a later date per Covid guidelines
Exhibit 2	Notification Receipts	X
Exhibit 3	Property Card	X
Exhibit 4	Property Map	X
Exhibit 5	Original Zoning Approval	Town of Middlefield P&Z Commission 2/17/99
Exhibit 6	Construction Drawings	Chappell Engineering 9/17/19
Exhibit 7	Structural Analysis	TES 7/22/19
Exhibit 8	EME Report	Transcom Eginneering 6/4/19

EXHIBIT 1

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

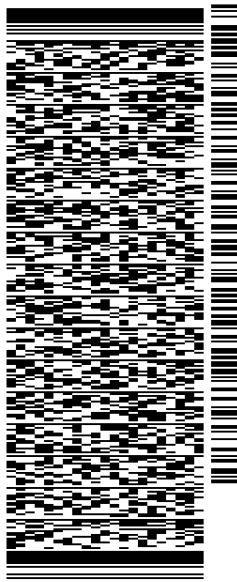
EXHIBIT 2

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

SHIP DATE: 10NOV20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280
BILL SENDER

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

NEW BRITAIN CT 06051
(508) 251-0720 X.3807 REF: 105692009-6089
INV# DEPT:



TRK# 7720 4062 8479
0201
WED - 11 NOV 10:30A
PRIORITY OVERNIGHT

EBBDLA
06051
CT:US BDL

56B,J5/BAB9/B766

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.
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.

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.

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

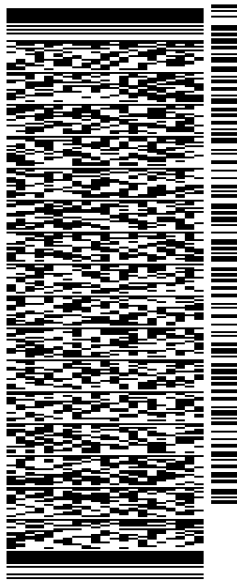
SHIP DATE: 10NOV20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280

BILL SENDER

TO EDWARD P. BAILEY, FIRST SELECTMAN
TOWN OF MIDDLEFIELD
393 JACKSON HILL RD.

MIDDLEFIELD CT 06455

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

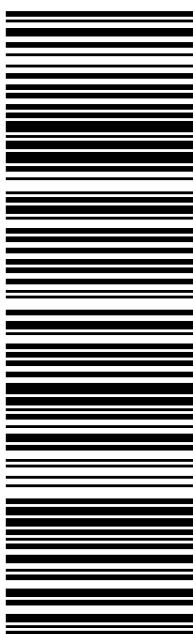


TRK# 7720 4066 4812
0201

WED - 11 NOV 10:30A
PRIORITY OVERNIGHT

EB RSPA

06455
CT:US BDL



56B,J5/BAB9/B766

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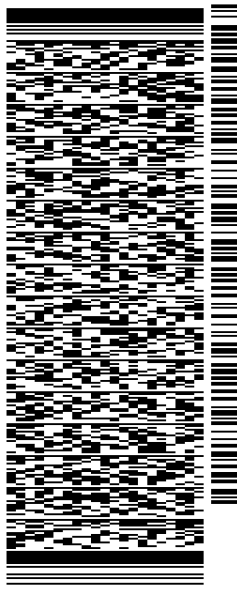
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SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 10NOV20
ACTWGT: 1.00 LB
CAD: 105843304/NET4280
BILL SENDER

TO JERRY RUSS, ZONE ENF. OFFICER
TOWN OF MIDDLEFIELD
393 JACKSON HILL RD.

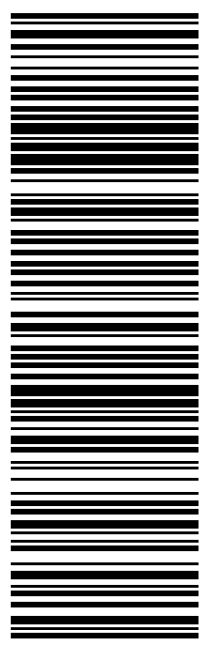
MIDDLEFIELD CT 06455
(508) 251-0720 X 3807 REF: 105692009-6089
INV. PO. DEPT:

56B,J5/BAB9/B766



TRK# 7720 4068 2270
0201
WED - 11 NOV 10:30A
PRIORITY OVERNIGHT

EB RSPA
06455
CT:US BDL



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EXHIBIT 3

393 JACKSON HILL RD

Location 393 JACKSON HILL RD

Mblu 11 / 242 /

Acct# 00069300

Owner MIDDLEFIELD TOWN OF

Assessment \$659,300

PID 676

Building Count 4

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$472,000	\$187,300	\$659,300

Owner of Record

Owner MIDDLEFIELD TOWN OF

Sale Price \$0

Co-Owner

Certificate

Address 393 JACKSON HILL RD
MIDDLEFIELD, CT 06455

Book & Page /

Sale Date 01/01/1900

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
MIDDLEFIELD TOWN OF	\$0		/	01/01/1900

Building Information

Building 1 : Section 1

Year Built: 1963

Living Area: 2,916

Replacement Cost: \$494,484

Building Percent Good: 72

Replacement Cost

Less Depreciation: \$356,000

Building Attributes	
Field	Description
STYLE	City/Town Hall
MODEL	Comm/Ind
Grade	Average

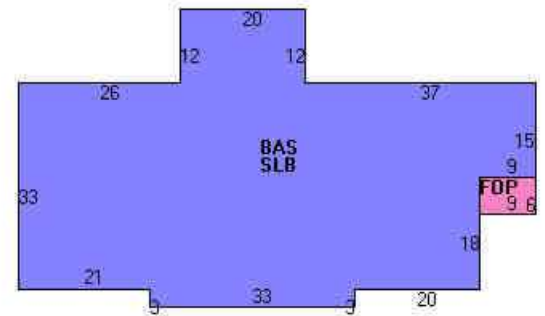
Stories:	1
Occupancy	1
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	Central
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	903C
Heat/AC	HEAT/AC SPLIT
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	9
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//\01\00\17/>)

Building Layout



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//Sketches/6>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,916	2,916
FOP	Porch, Open	54	0
SLB	Slab	2,916	0
		5,886	2,916

Building 2 : Section 1

Year Built:	1978
Living Area:	4,000
Replacement Cost:	\$168,916
Building Percent Good:	84
Replacement Cost Less Depreciation:	\$141,900

Building Attributes : Bldg 2 of 4	
Field	Description
STYLE	Service Shop

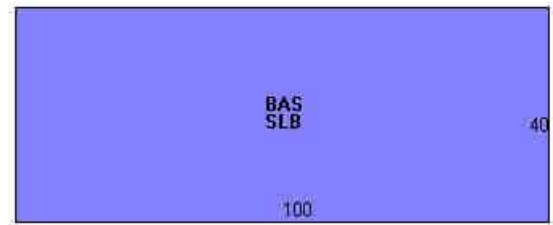
MODEL	Ind/Comm
Grade	Average +
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Vinyl Siding
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil/Gas
Heating Type	Hot Air-no Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	NONE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	LIGHT
Wall Height	15
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//\01\00\17/>)

Building Layout



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//Sketches/6>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	4,000	4,000
SLB	Slab	4,000	0
		8,000	4,000

Building 3 : Section 1

Year Built: 1941
Living Area: 3,527
Replacement Cost: \$181,842
Building Percent Good: 68
Replacement Cost Less Depreciation: \$123,700

Building Attributes : Bldg 3 of 4	
Field	Description
STYLE	Service Shop
MODEL	Ind/Comm

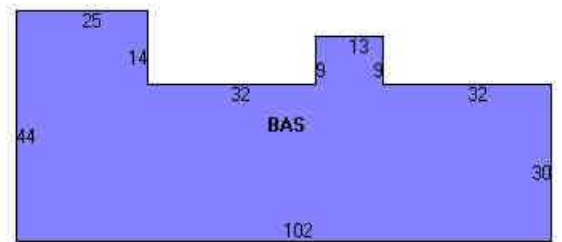
Grade	Average +
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Brick
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil/Gas
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	18
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//\01\00\17/>)

Building Layout



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//Sketches/6>)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	3,527	3,527
		3,527	3,527

Building 4 : Section 1

Year Built: 2000
Living Area: 374
Replacement Cost: \$16,698
Building Percent Good: 88
Replacement Cost Less Depreciation: \$14,700

Building Attributes : Bldg 4 of 4	
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade	Average

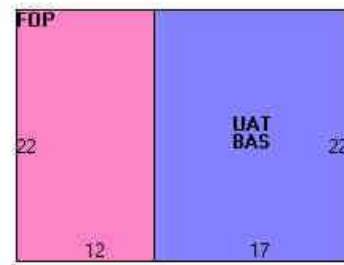
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Wall Brd/Wood
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Coal or Wood
Heating Type	None
AC Type	None
Bldg Use	MUNICIPAL MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	NONE
Frame Type	WOOD FRAME
Baths/Plumbing	NONE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	9
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//\01\00\17/>)

Building Layout



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos//Sketches/6>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	374	374
FOP	Porch, Open	264	0
UAT	Attic, Unfinished	374	0
		1,012	374

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 903C

Land Line Valuation

Size (Acres) 5.47

Description MUNICIPAL MDL-94
Zone HD2
Neighborhood 0500
Alt Land Appr No
Category

Frontage
Depth
Assessed Value \$187,300

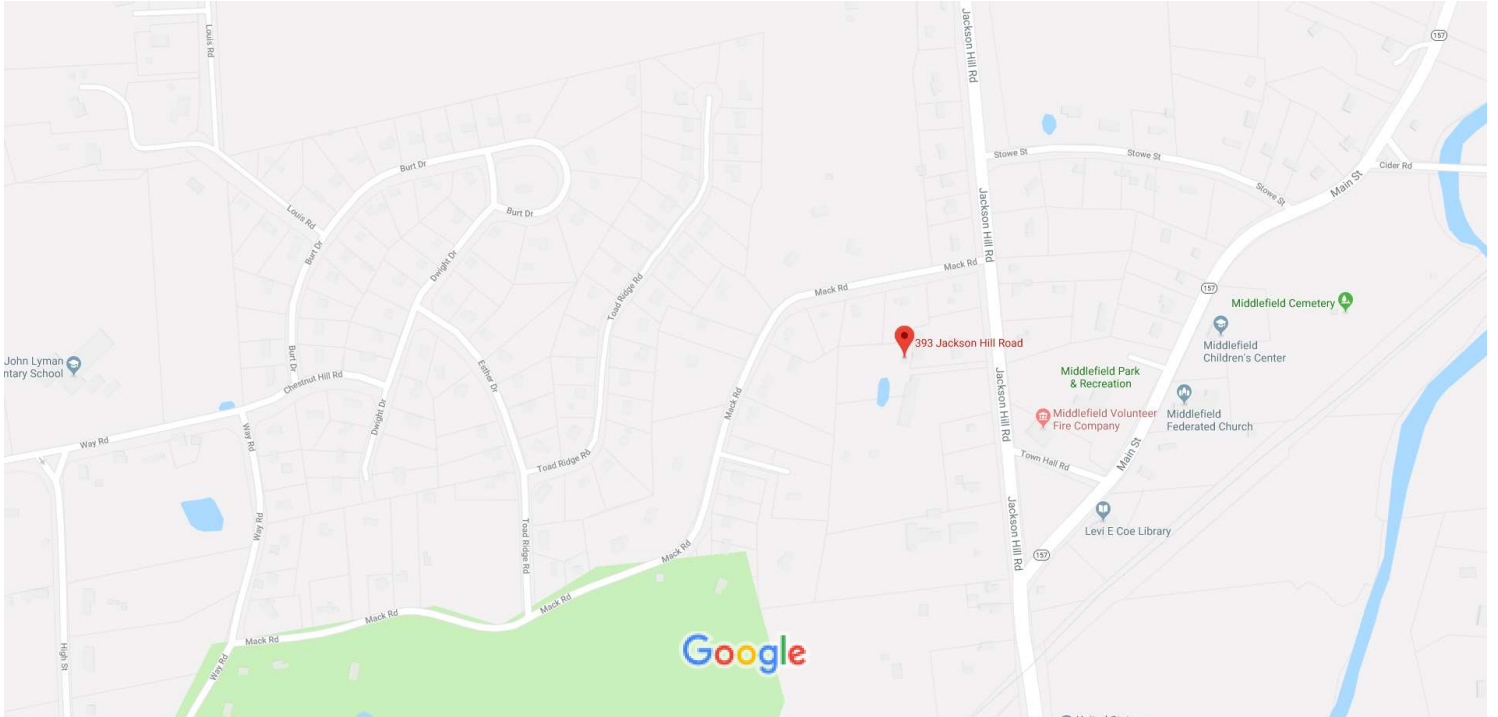
Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
KEN1	KENNEL-AVG			100 S.F.	\$600	1
FN3	FENCE-6' CHAIN			71 L.F.	\$500	1
BRN8	POLE BARN			2760 S.F.	\$14,500	1
BRN8	POLE BARN			648 S.F.	\$3,400	1
SHD7	COM MAS			140 S.F.	\$3,000	1
PAV1	PAVING-ASPHALT			30000 S.F.	\$15,800	1

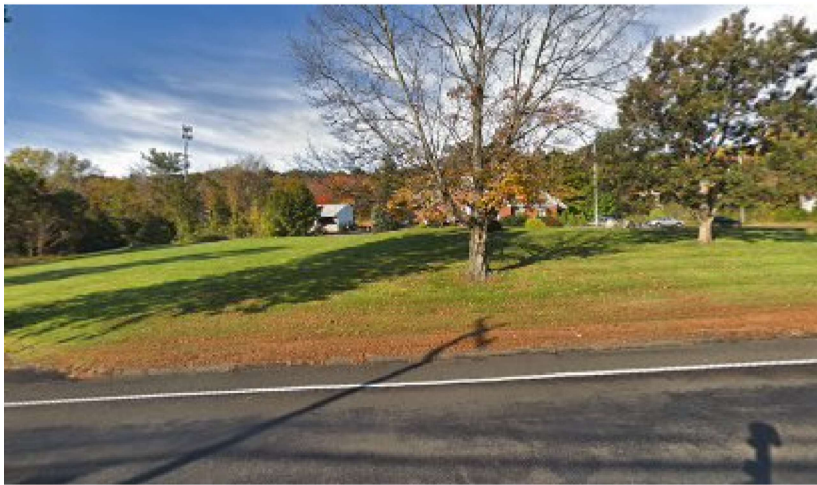
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EXHIBIT 4

Google Maps 393 Jackson Hill Rd



Map data ©2019 Google 200 ft



393 Jackson Hill Rd

Middlefield, CT 06455



Directions



Save



Nearby

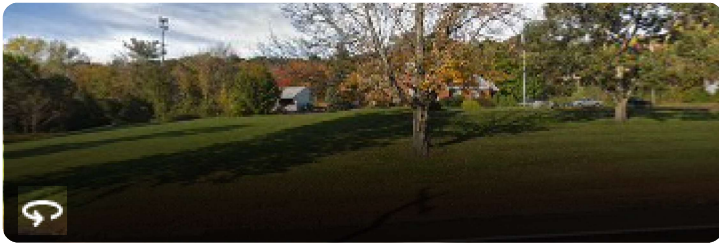


Send to your phone



Share

Photos



At this location

Assessors Office

Tax assessor · 393 Jackson Hill Rd



Highway Department

Paving contractor · 393 Jackson Hill Rd



Middlefield First Selectman

City government office · 393 Jackson Hill Rd



Middlefield Town Hall

City government office · 393 Jackson Hill Rd
Open until 4:00 PM



Tax Collector

City tax office · 393 Jackson Hill Rd



Town Clerk

City clerk's office · 393 Jackson Hill Rd



EXHIBIT 5

TOWN OF MIDDLEFIELD**PLANNING AND ZONING COMMISSION
MIDDLEFIELD, CONNECTICUT**

February 17, 1999

David Bass, Esq.
Cuddy & Feder & Worby
90 Maple Ave.
White Plains, NY 10601

Re: Nextel Communications

Dear Mr. Bass:


This is to inform you that at its regular meeting on February 10, 1999 the Middlefield Planning and Zoning Commission voted to approve, with conditions, your application for a special permit to install wireless communication towers, antennas and facilities at 393 Jackson Hill Road. A legal notice to that effect will be published in the Middletown Press on February 18, 1999.

This approval was conditional upon the following:

1. provided that within 90 days of approval the applicant meets with the various town agencies, including its 911 service, to determine their communications needs as related to the tower and that the applicant uses its best efforts to reserve a location which will meet such needs.

If you have any questions or comments please free feel to contact me at 347-7214.

Very truly yours,


Geoffrey L. Colegrove
Middlefield Town Planner

GLC/jes

EXHIBIT 6

SBA MIDDLEFIELD MONOPOLE

421 JACKSON HILL ROAD
MIDDLEFIELD, CT 06455
MIDDLESEX COUNTY

SITE NO.: CTHA512A

SITE TYPE: 146'± MONOPOLE

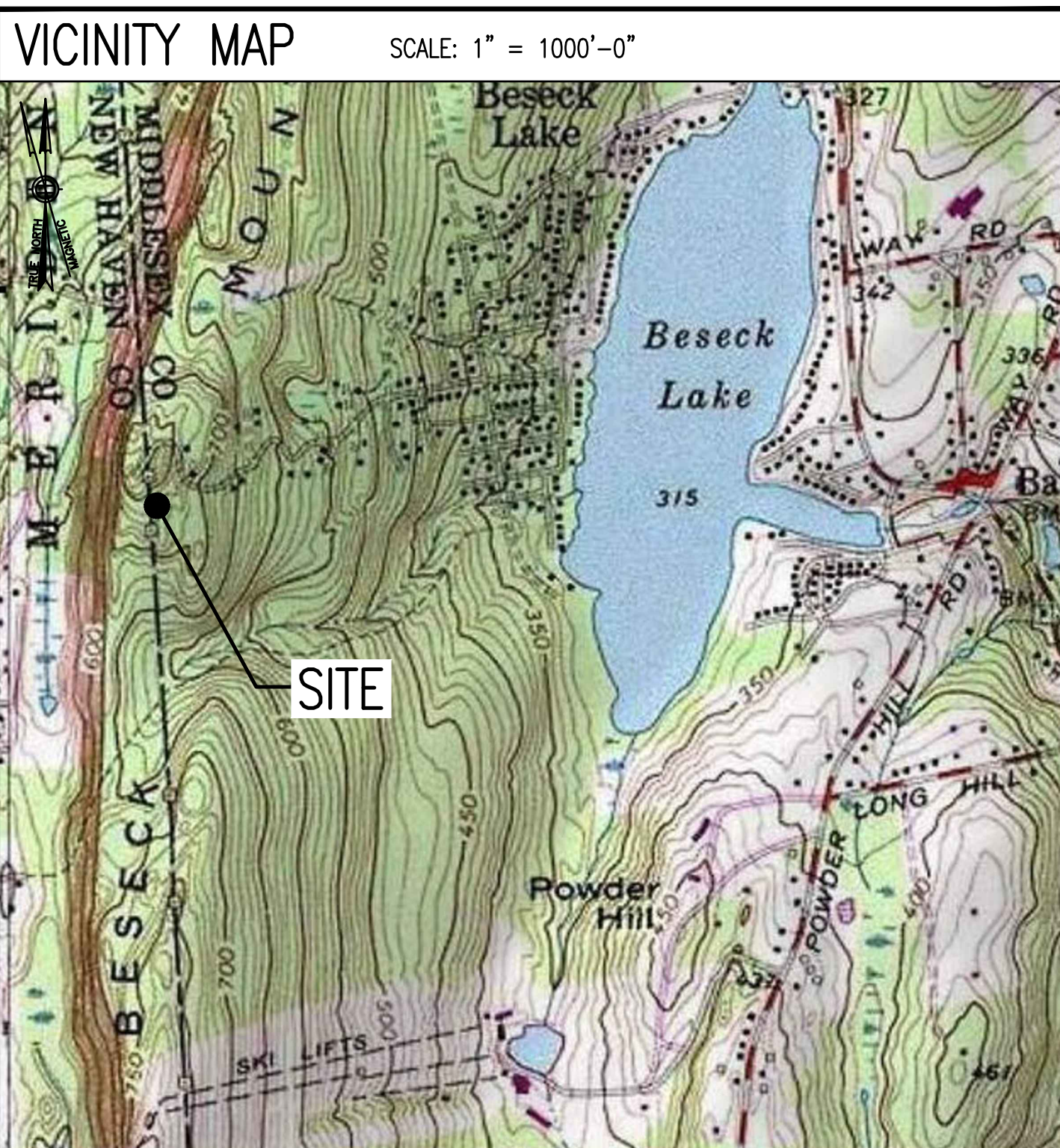
RF DESIGN GUIDELINE: 67D95FDB

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

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

GENERAL NOTES	
1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.	11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.	12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOTENT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.	13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.	14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.	15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.	16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.	17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.	
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.	
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.	

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



DO NOT SCALE DRAWINGS

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

SHEET INDEX		
SHEET NO.	DESCRIPTION	REV. NO.
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A-2	TOWER ELEVATIONS & ANTENNA PLAN	1
A-3	SITE DETAILS	1
E-1	ELECTRIC & GROUNDING DETAILS	1

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

SITE NOTES	
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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE • ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE • STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

PROJECT SUMMARY	
SITE NUMBER:	CTHA512A
SBA SITE NUMBER:	CT46135-A
SBA SITE NAME:	MIDDLEFIELD-JACKSON HILL ROAD
SITE ADDRESS:	421 JACKSON HILL ROAD MIDDLEFIELD, CT 06455
PROPERTY OWNER:	TOWN OF MIDDLEFIELD 393 JACKSON HILL ROAD MIDDLEFIELD, CT 06455
TOWER OWNER:	SBA 2012C ASSETS, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	MIDDLESEX COUNTY
ZONING DISTRICT:	HD2, HIGH DENSITY ROCKFALL RESIDENTIAL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	146'
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SROth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.517360° (41°-31'-02.50") LONGITUDE W.-72.714167° (72°-42'-51.00")

T-MOBILE NORTHEAST LLC

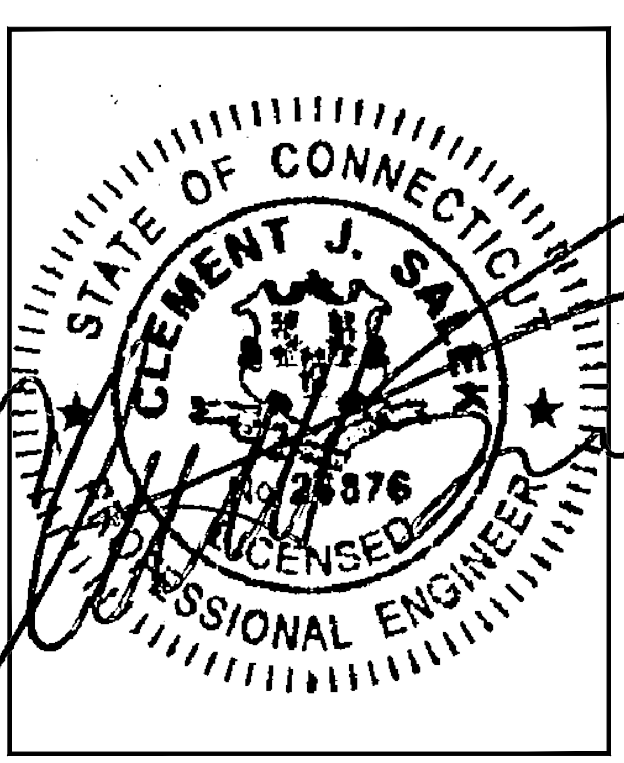
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

SBA

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

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying

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	08/17/19	ISSUED FOR CONSTRUCTION	BDJ
0	07/22/19	ISSUED FOR REVIEW	BDJ

SITE NUMBER:
CTHA512A

SITE ADDRESS:
421 JACKSON HILL ROAD
MIDDLEFIELD, CT 06455

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 COLUMNS1½ 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 SUPPLIERS 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:

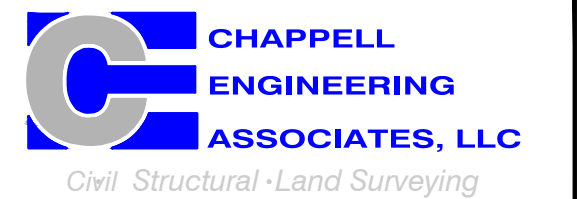
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR 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 RATINGS, 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.
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- 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, ANSI/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, ANSI/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**

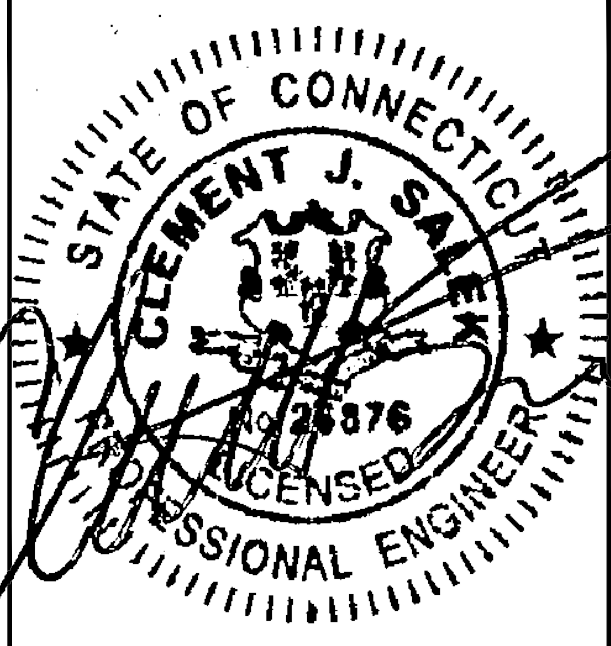
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SUBMITTALS			
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1	08/17/19	ISSUED FOR CONSTRUCTION	BDJ
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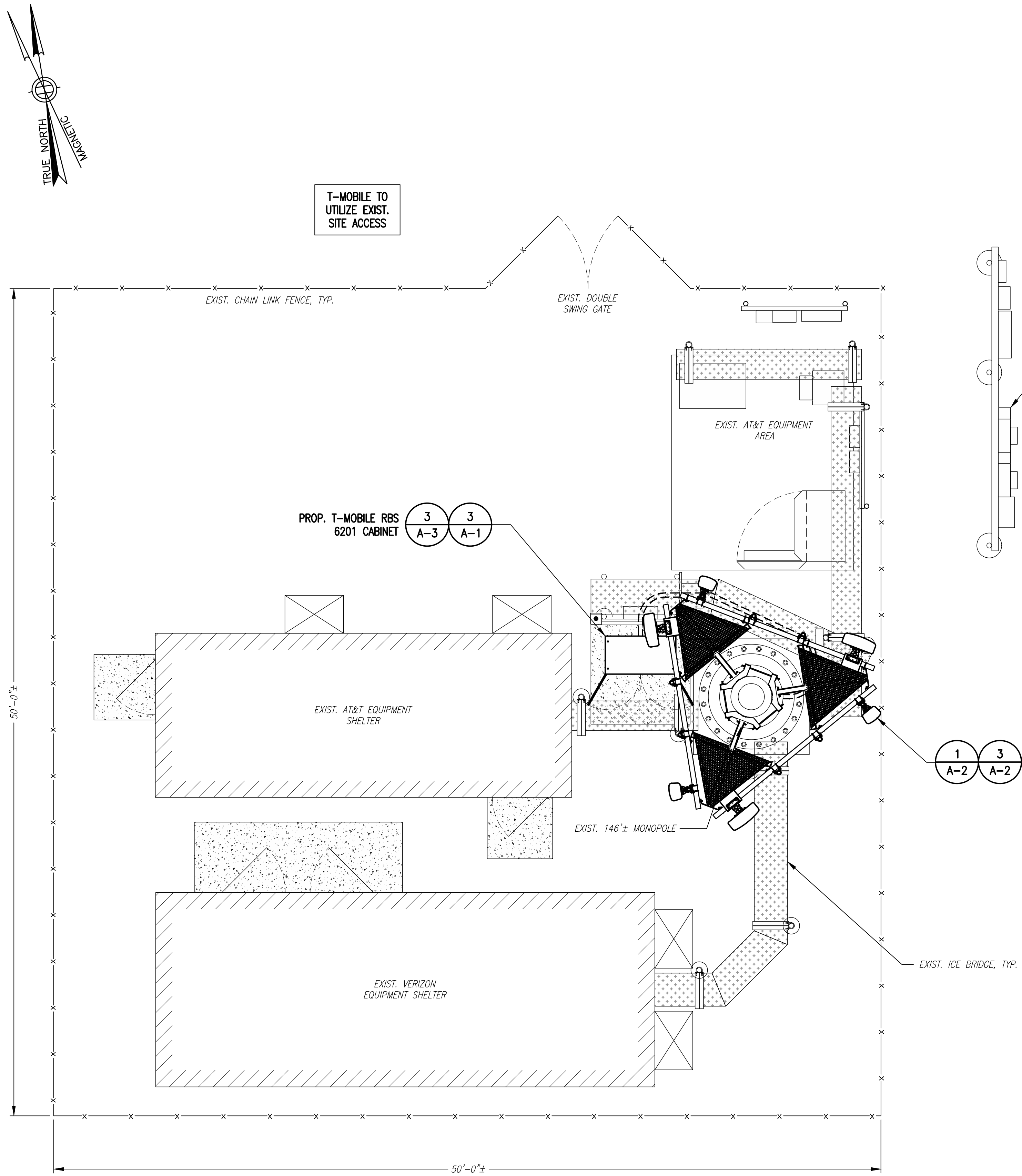
SHEET TITLE

GENERAL NOTES

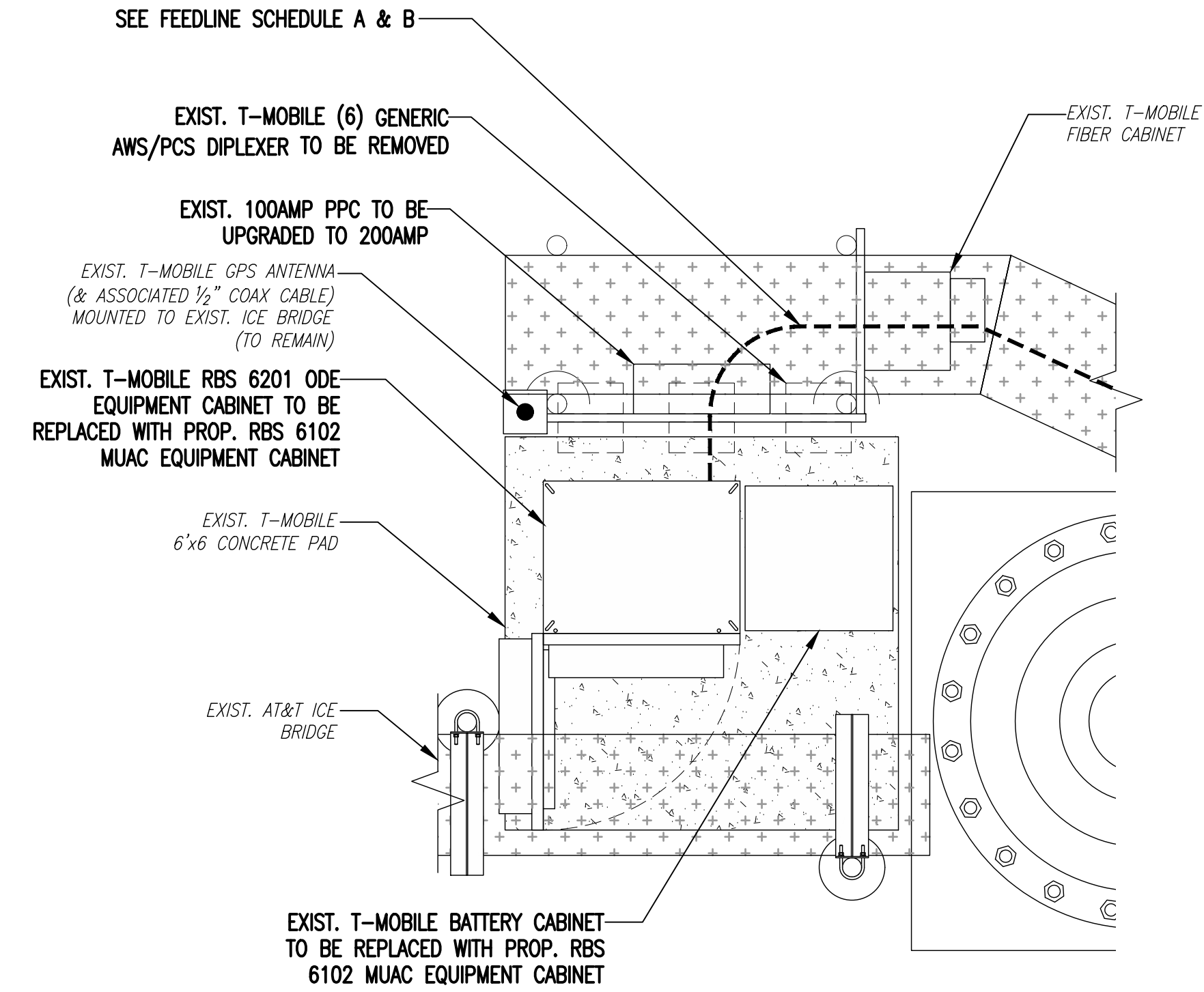
SHEET NUMBER

GN-1

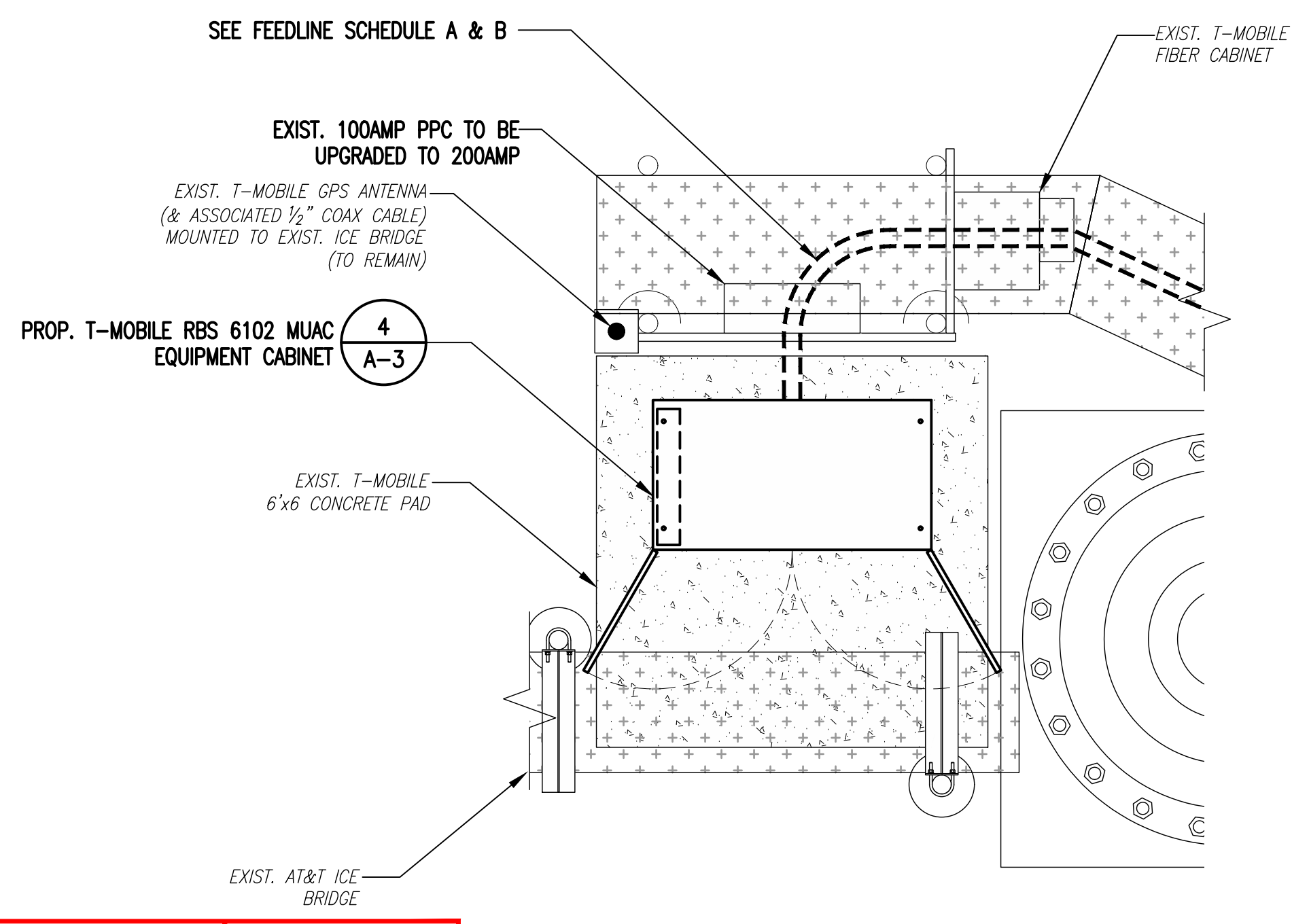
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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



COMPOUND PLAN (1 A-1)
 SCALE: 1" = 4'-0"
 0 4'-0" 8'-0" 16'-0"



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



PROPOSED EQUIPMENT PLAN (3 A-1)
 SCALE: 1/2" = 1'-0"
 0 2'-0" 4'-0" 6'-0"

FEEDLINE SCHEDULE	FEEDLINES	LOCATION
A	EXISTING TO REMAIN: (6) 1-5/8" COAX	ROUTED PER TOWER STRUCTURAL ANALYSIS
B	PROPOSED: (3) 1-5/8" HCS FIBER	ROUTED PER TOWER STRUCTURAL ANALYSIS

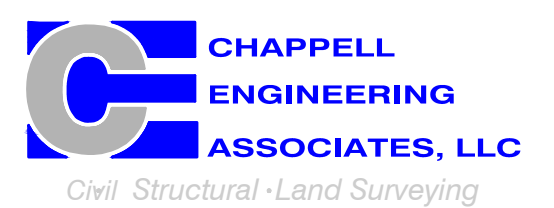
NOTE:
 EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS, RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

T-MOBILE NORTHEAST LLC

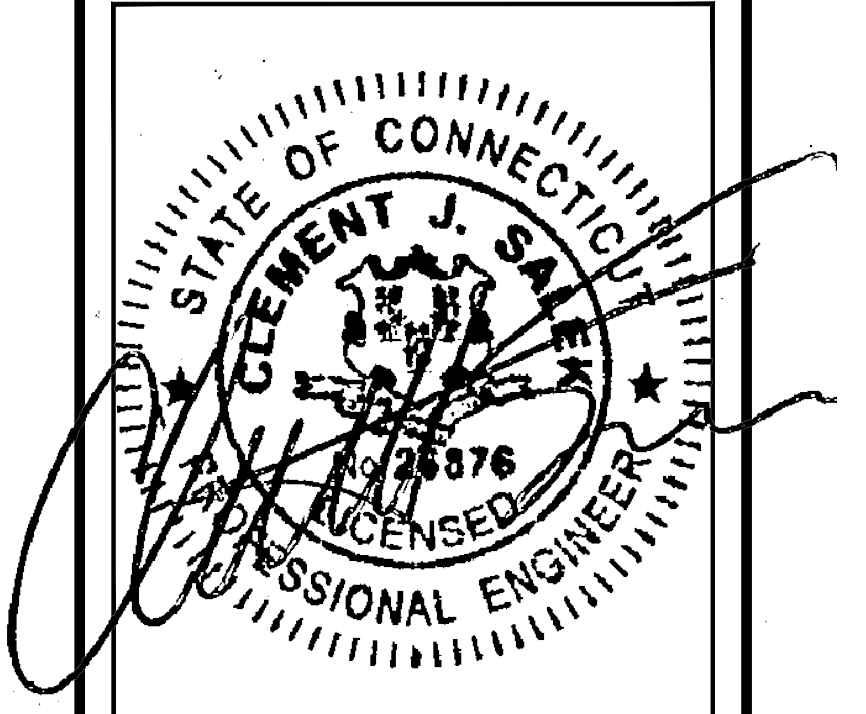
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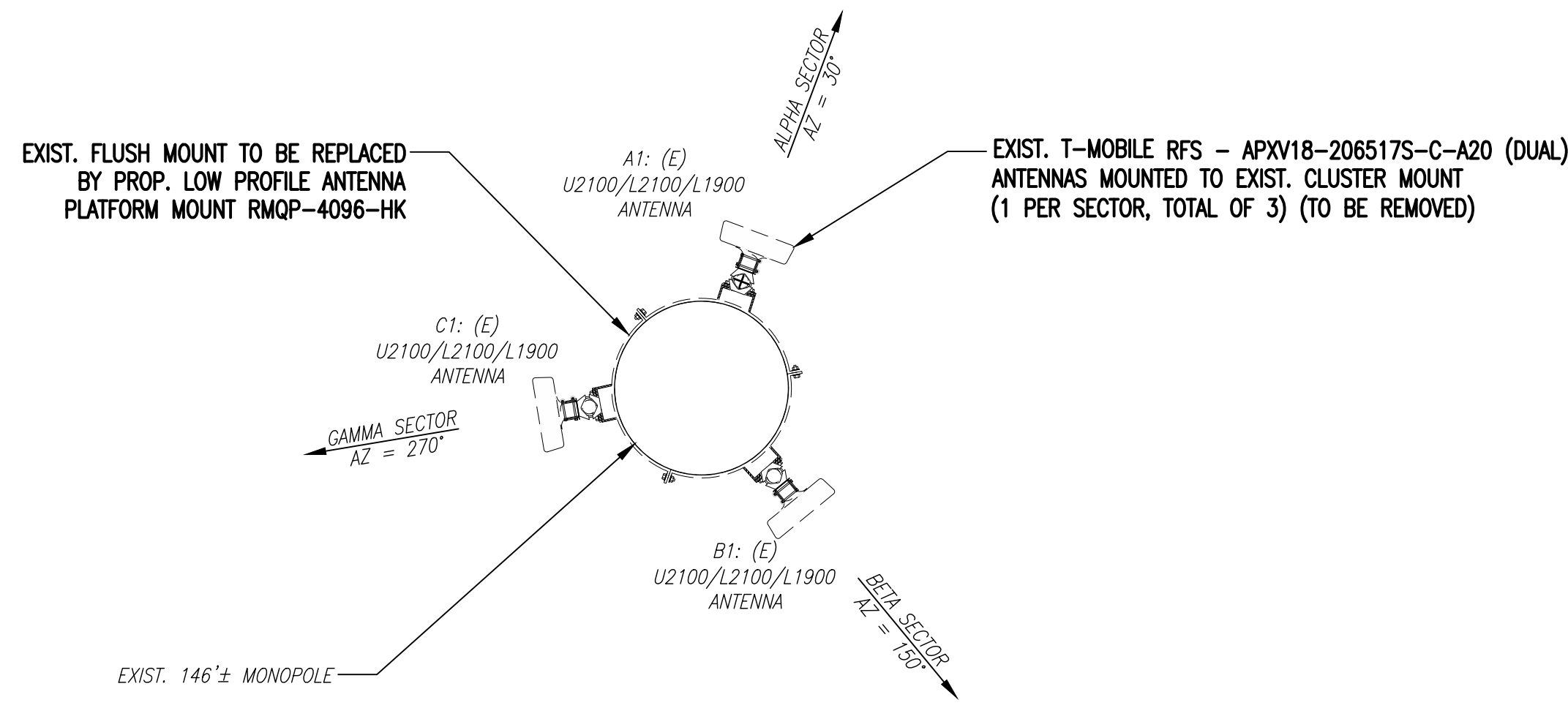
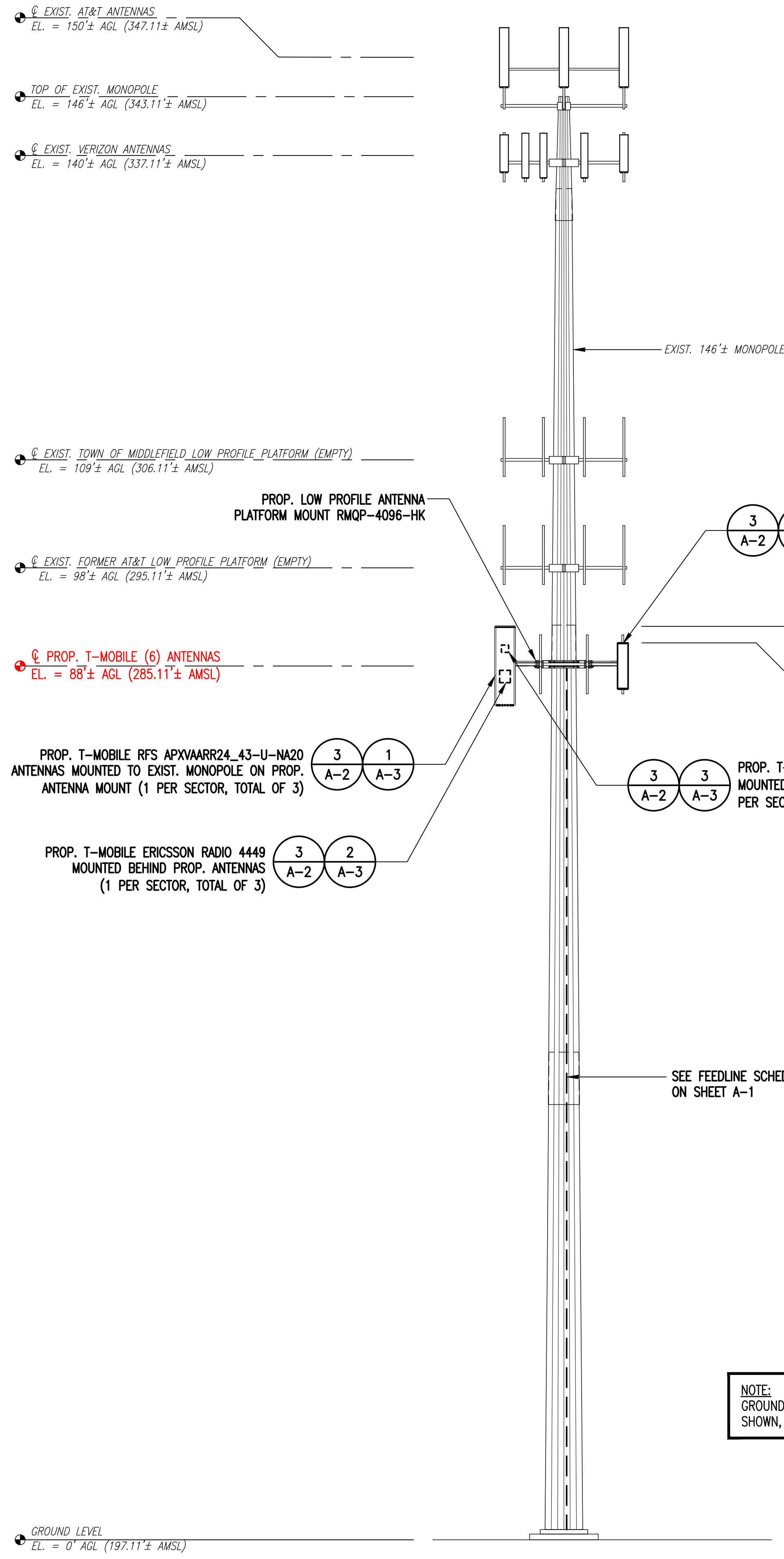
SITE ADDRESS:
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 MIDDLEFIELD, CT 06455

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

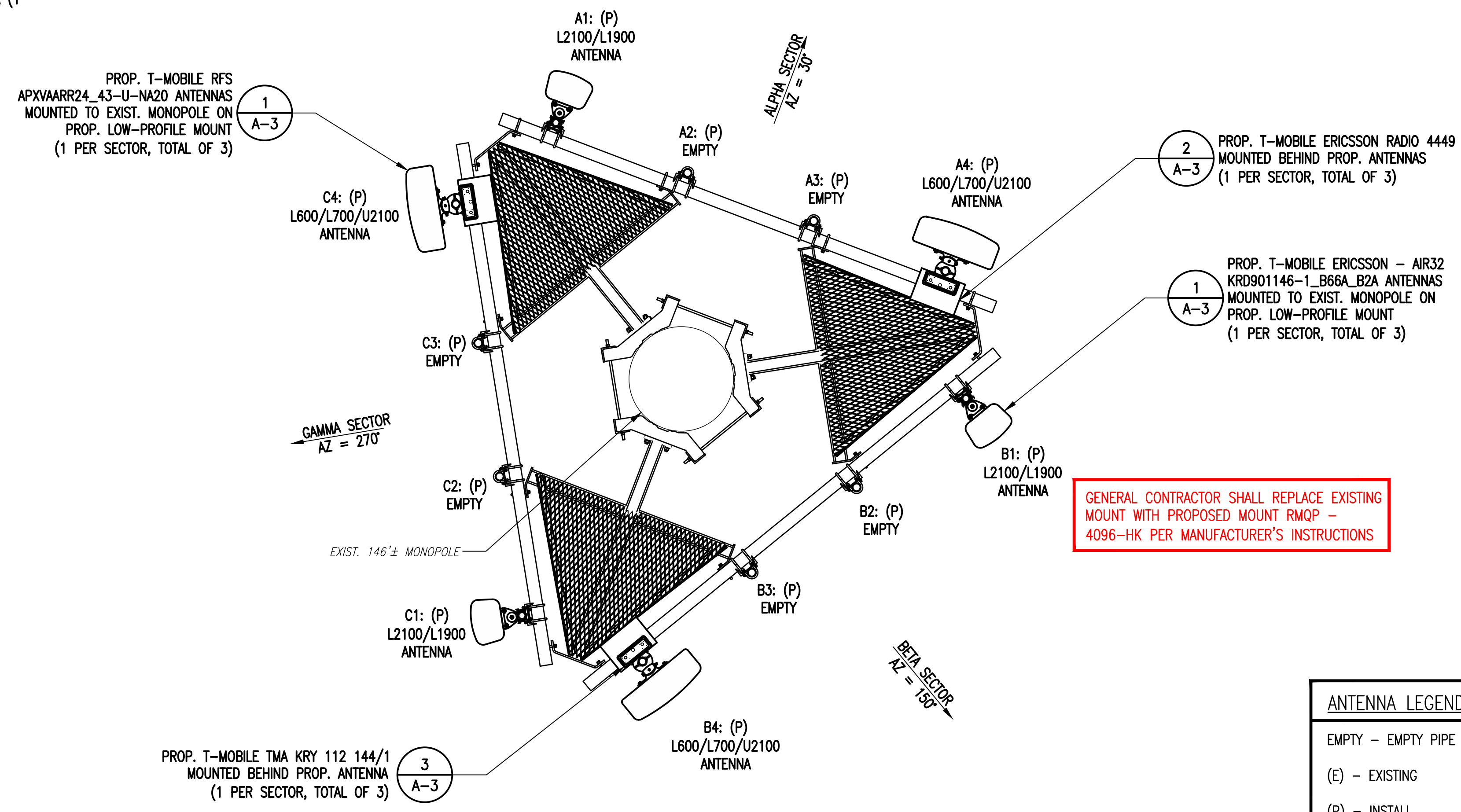
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SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
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RAD CENTER NOTE:
 T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED 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: N.T.S.



PROPOSED ANTENNA PLAN
 SCALE: N.T.S.

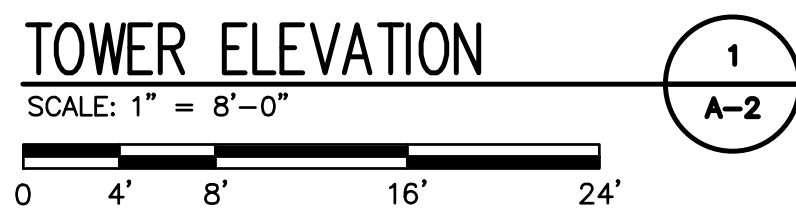
NOTE:
 GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

GENERAL CONTRACTOR SHALL REPLACE EXISTING MOUNT WITH PROPOSED MOUNT RMQP - 4096-HK PER MANUFACTURER'S INSTRUCTIONS

ANTENNA LEGEND:

EMPTY	- EMPTY PIPE
(E)	- EXISTING
(P)	- INSTALL

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

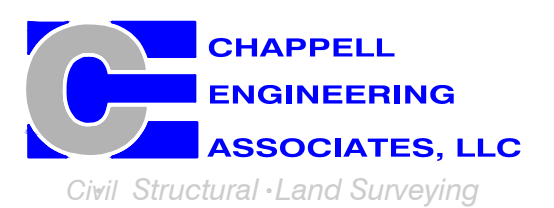


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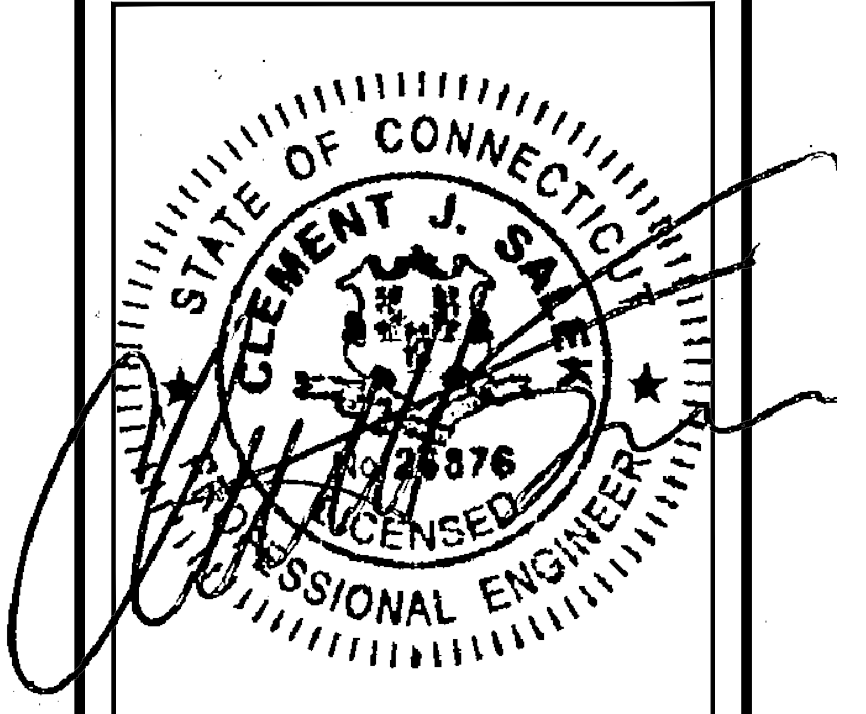
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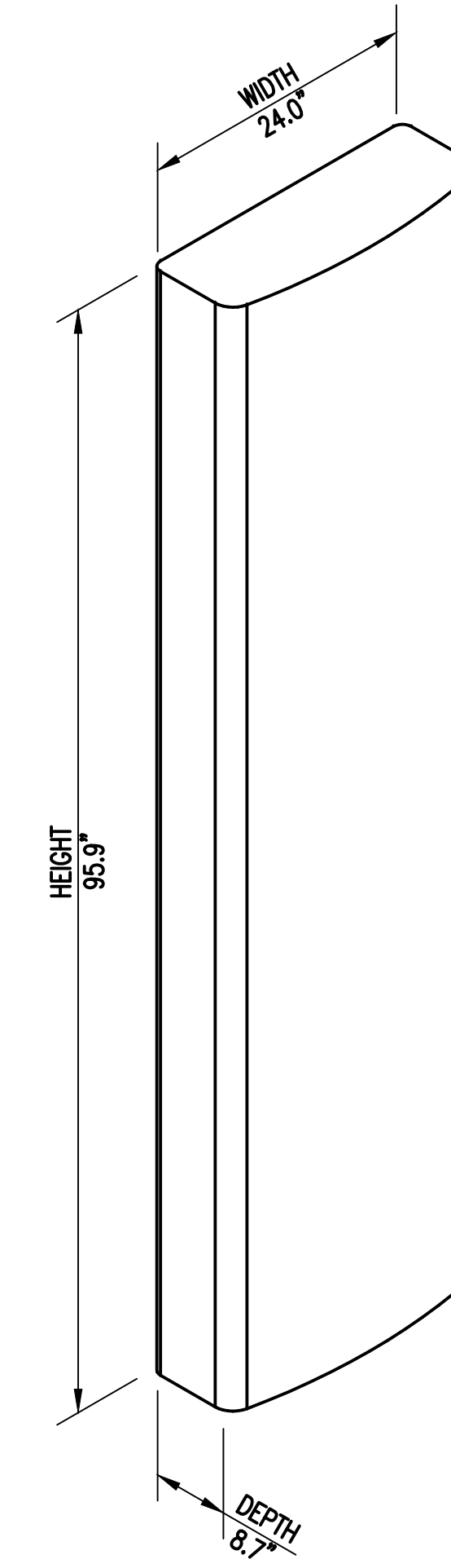
SHEET TITLE:
TOWER ELEVATIONS & ANTENNA PLAN

SHEET NUMBER:
A-2

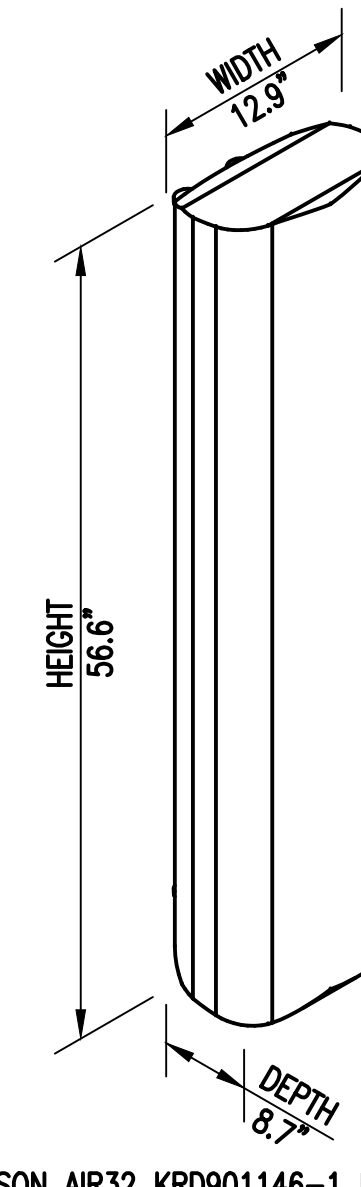
FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	ERICSSON AIR32 KRD901146-1_B66A_B2A	88'± AGL	30°	0°	2°	L2100/L1900	-	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	RFS APXVAARR24_43-U-NA20	88'± AGL	30°	0°	2°	L600/L700 U2100	RADIO 4449 B71+B12 TMA KRY 112 144/1	
BETA	ERICSSON AIR32 KRD901146-1_B66A_B2A	88'± AGL	150°	0°	2°	L2100/L1900	-	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	RFS APXVAARR24_43-U-NA20	88'± AGL	150°	0°	2°	L600/L700 U2100	RADIO 4449 B71+B12 TMA KRY 112 144/1	
GAMMA	ERICSSON AIR32 KRD901146-1_B66A_B2A	88'± AGL	270°	0°	2°	L2100/L1900	-	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	EMPTY	N/A	N/A	N/A	N/A	N/A	N/A	
	RFS APXVAARR24_43-U-NA20	88'± AGL	270°	0°	2°	L600/L700 U2100	RADIO 4449 B71+B12 TMA KRY 112 144/1	

(E) (6) 1-5/8" COAXIAL CABLES
(P) (3) 1-5/8" HCS FIBER CABLES



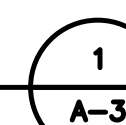
RFS APXVAARR24_43-U-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3



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

ANTENNA DETAILS

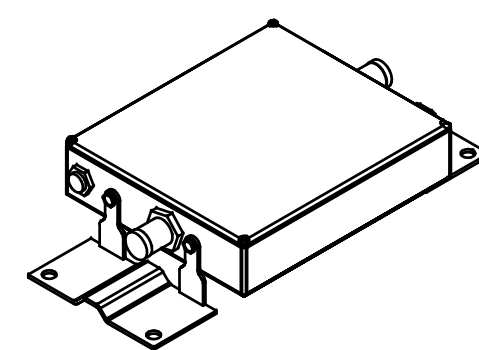
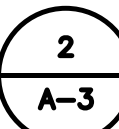
SCALE: N.T.S.



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

RRU DETAIL

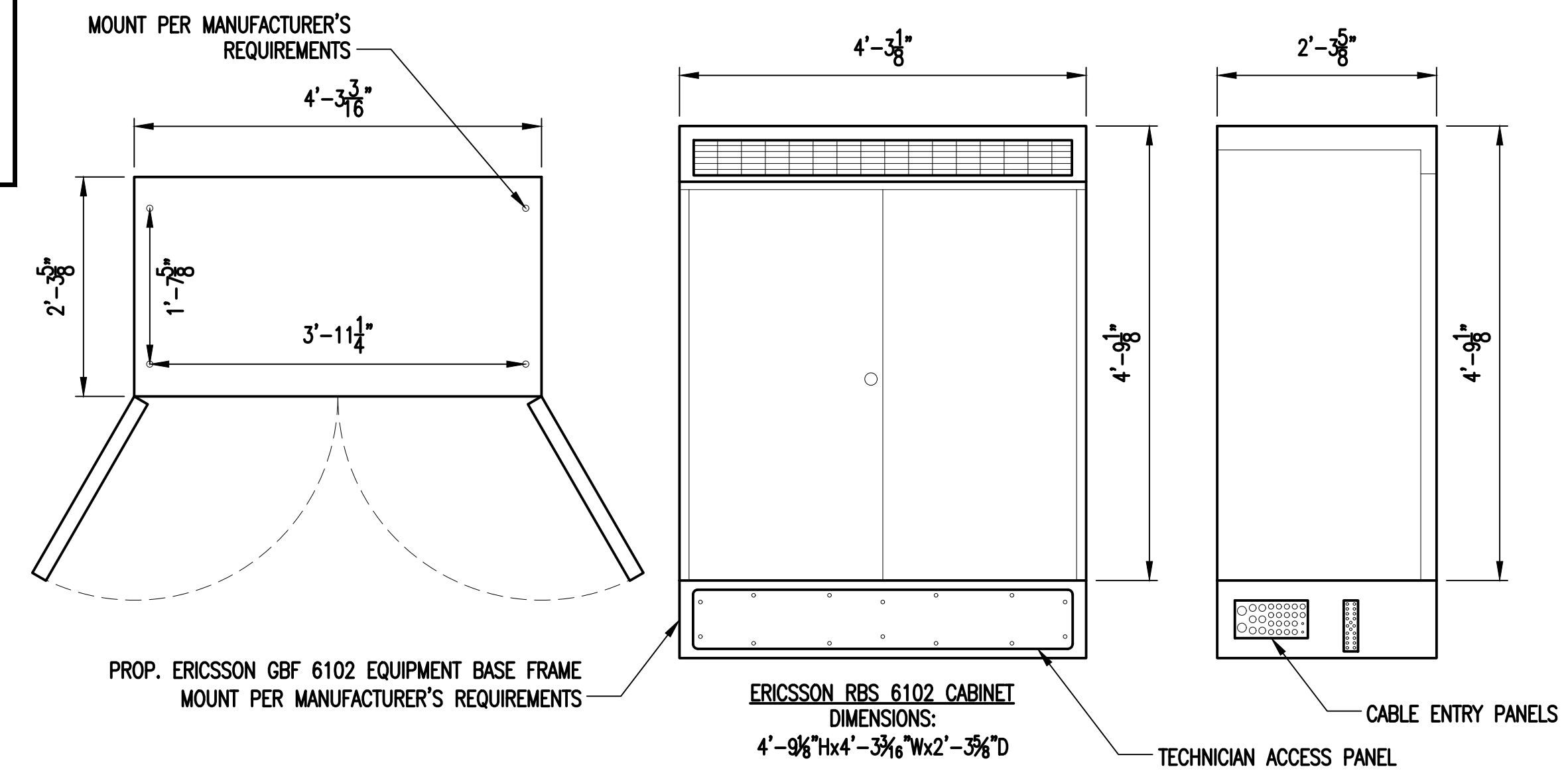
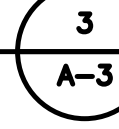
SCALE: N.T.S.



TMA 17/21
DIMENSIONS: 7.7"H x 7.5"W x 3.4"D
WEIGHT: 11.0 LBS
2 PER SECTOR, TOTAL OF 6

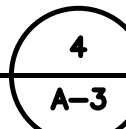
TMA DETAIL

SCALE: N.T.S.



RBS6102 DETAILS

SCALE: N.T.S.

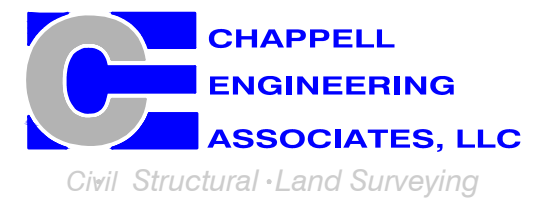


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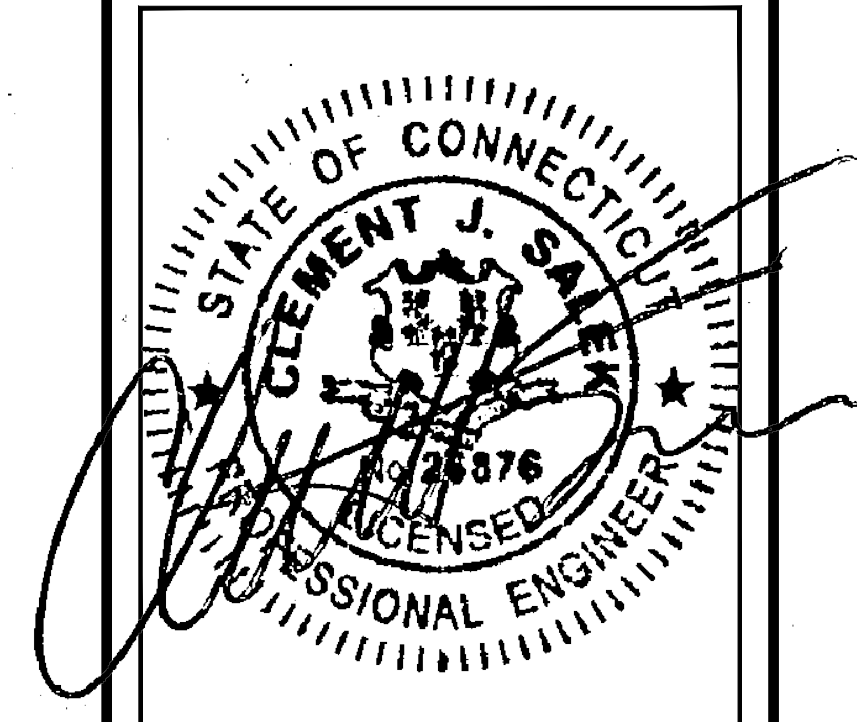
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SITE ADDRESS:
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SHEET TITLE

SITE DETAILS

SHEET NUMBER

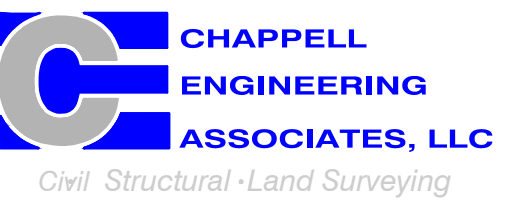
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T-MOBILE NORTHEAST LLC

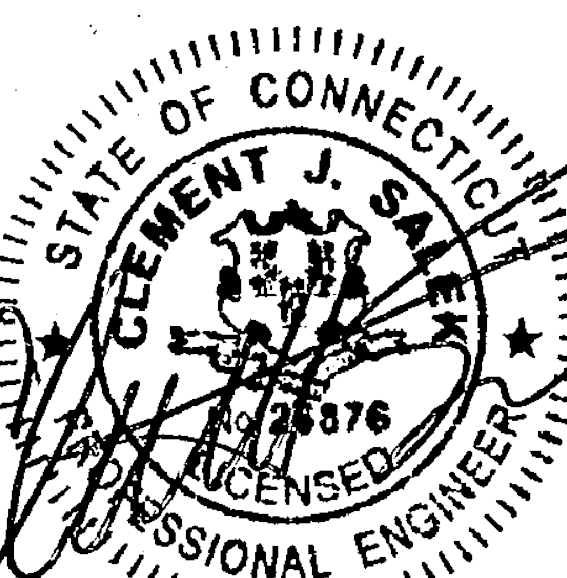
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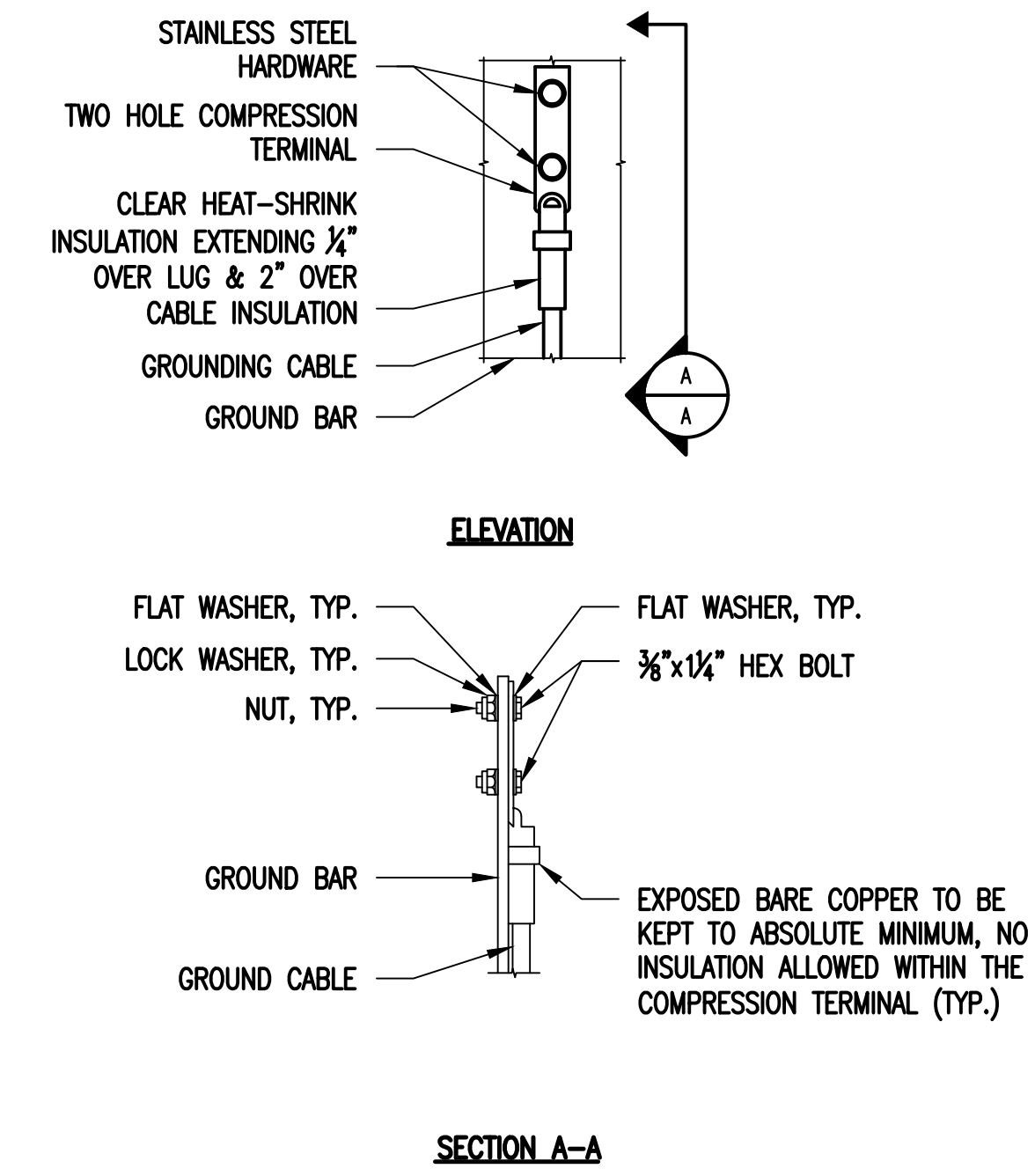
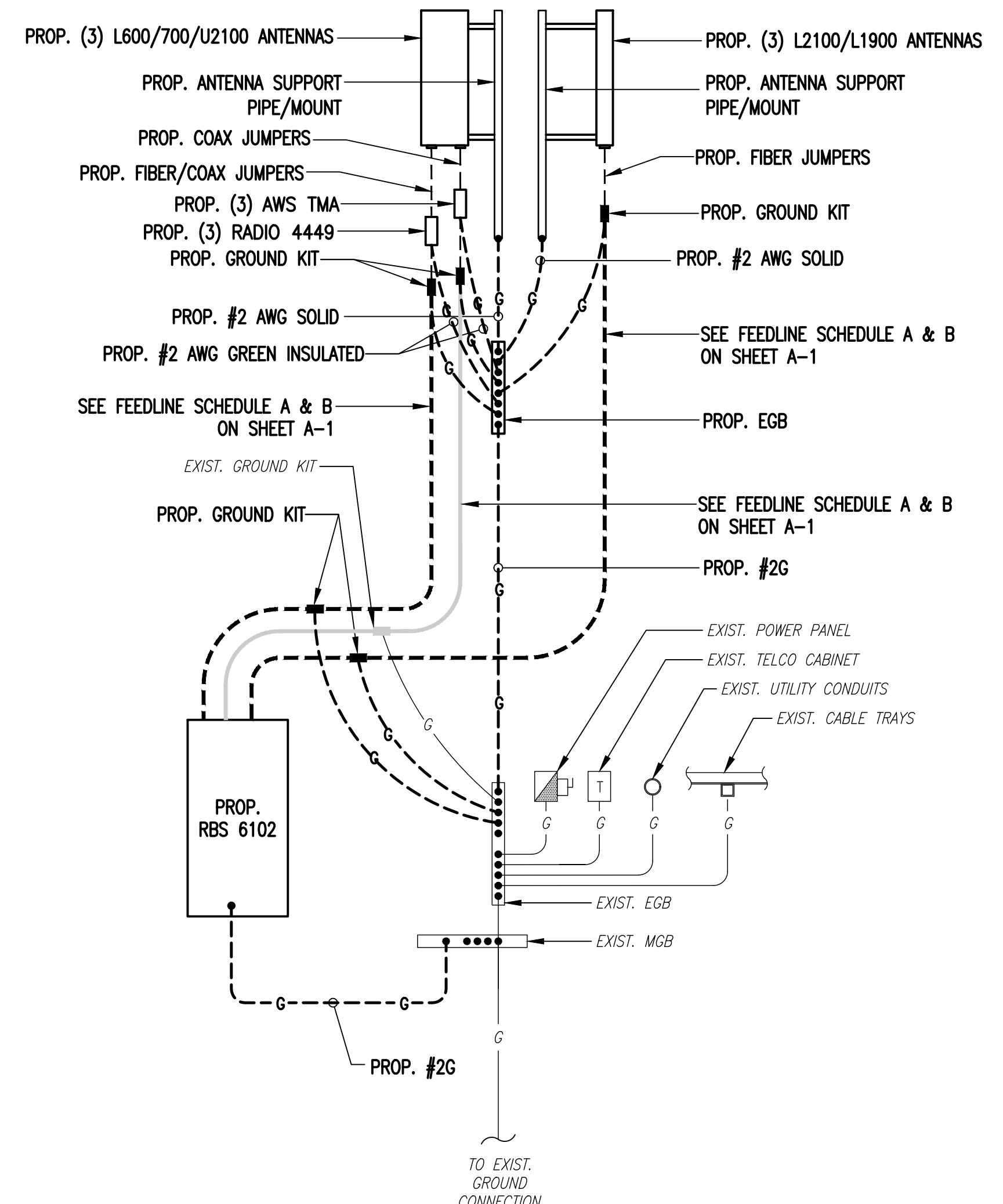
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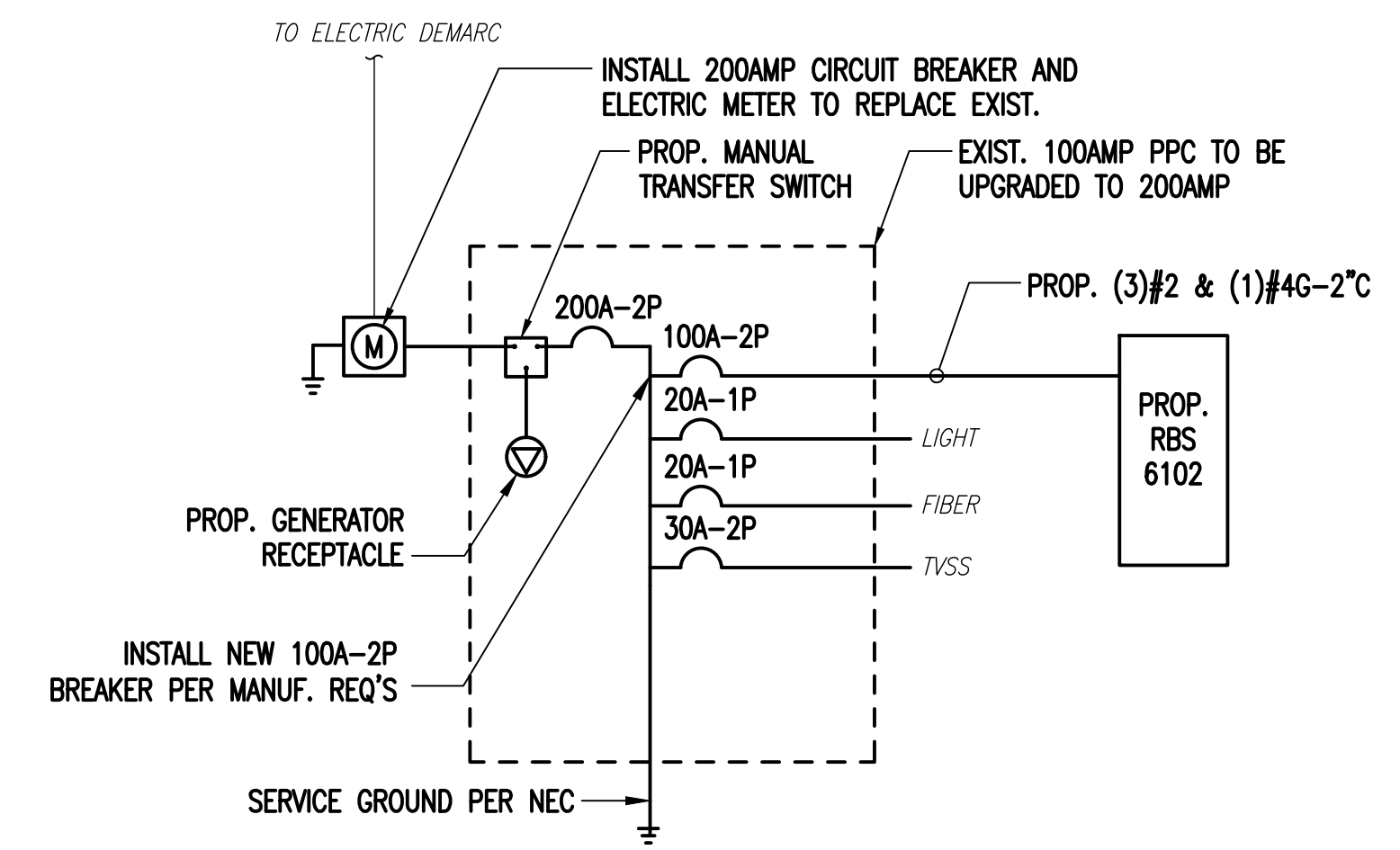
SHEET TITLE
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER
E-1

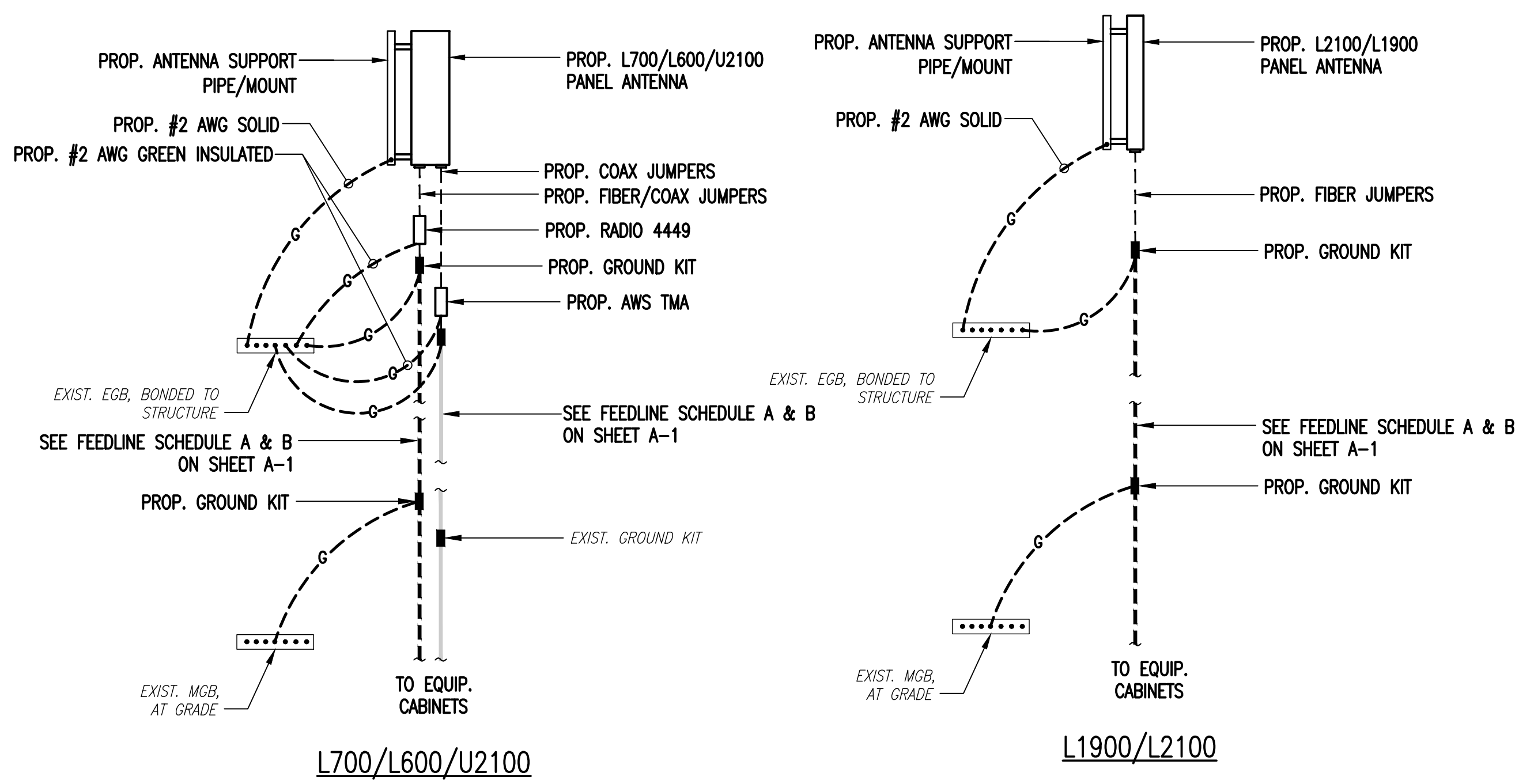


- NOTES:
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

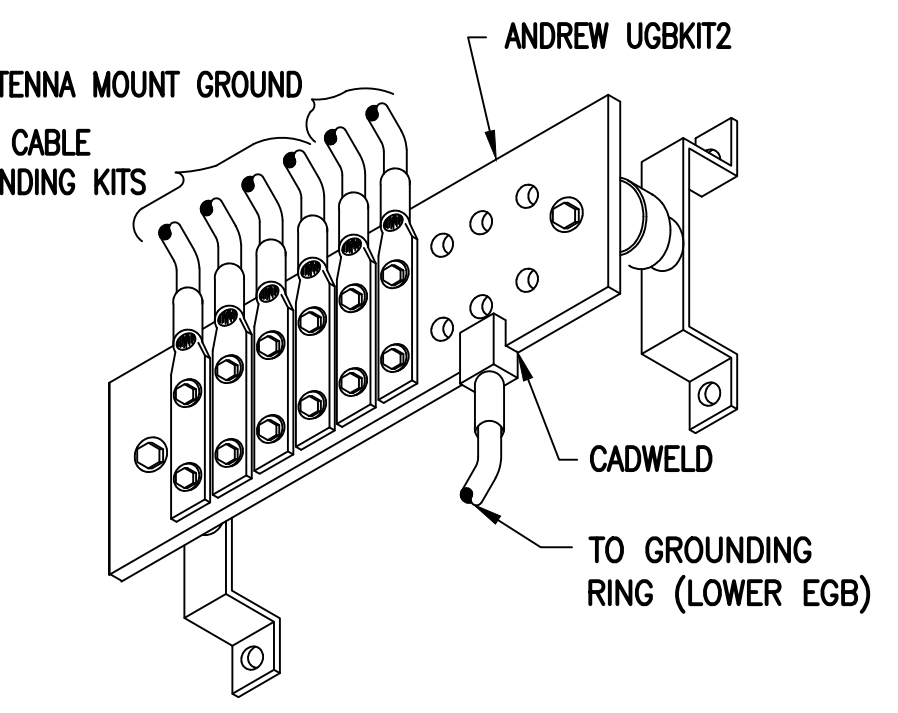
TYPICAL GROUND BAR CONNECTIONS DETAIL (3)
SCALE: NOT TO SCALE



ONE LINE DIAGRAM (1)
SCALE: NOT TO SCALE



COAX CABLE CONNECTION AND GROUNDING DETAIL (4)
SCALE: NOT TO SCALE



GROUND BAR (EGB) (5)
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, THIN, 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 BITS 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 BITS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BITS 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 BITS SITE GROUNDING STANDARDS".
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXIST. TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

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 146 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46135-A

Customer Site Name: Middlefield-jacson Hill Rd

Carrier Name: T-Mobile (App#: 116803, v1)

Carrier Site ID / Name: CTHA512A / Middlefield

Site Location: 393 Jackson Hill Road

Middlefield, Connecticut

Middlesex County

Latitude: 41.517360

Longitude: -72.714167

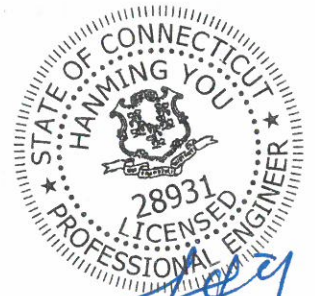
Analysis Result:

Max Structural Usage: 89.3% [Pass]

Max Foundation Usage: 94.2% [Pass]

Additional Usage Caused by New Mount: +8.0%

Report Prepared By: Walter Velez



Introduction

The purpose of this report is to summarize the analysis results on the 146 ft EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Original structural design report & design drawings prepared by Engineered Endeavors Incorporated, Inc. Dated 05-28-1999. Drawing No GS51482. Job No 5072. Previous structural report prepared by Tower Engineering Solutions. Dated 04-04-2019. TES Project No 72724 Rev1.
Foundation Drawing	Original foundation design & drawings prepared by Engineered Endeavors Incorporated, Inc. Dated 05-28-1999. Drawing No 5072SPRD. Job No 5072.
Geotechnical Report	Geotechnical report prepared by Tectonic Engineering Consultants, P.C. Dated 05-20-1999. Project No W.O.1170.C942.
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis: (Based on IBC 2015)	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
Operational Wind Speed:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Standard/Codes:	60 mph + 0" Radial ice
Exposure Category:	ANSI/TIA/EIA 222-G, 2015 IBC & 2018 Connecticut State Building Code
Structure Class:	C
Topographic Category:	II
Crest Height:	1
Seismic Parameters:	0 ft.
	$S_5 = 0.181, S_1 = 0.063$

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	150.0	9	Cci Antennas HPA-65R-BUU-H8-Panel	Platform w/ Hand Rails	(6) 1 5/8" Coax; (2) 1/2" RET Line; (4) 3" DC Power; (1) 3" Fiber	AT&T
2		6	Powerwave LGP21401 TMA's			
3		6	Powerwave LGP219003 Diplexer			
4		6	Powerwave 7020.00 RET's			
5		3	Ericsson RRUS-11 RRU's			
6		3	Ericsson RRUS-32 RRU's			
7		3	Ericsson RRUS 32 B2 RRU's			
8		2	Raycap DC-6-48-60-18-8F Surge			
9	140.0	6	Commscope SBNHH-1D65B - Panel	Low Profile Platform	(10) 1 5/8"; (2) 1 5/8" Hybriflex	Verizon
10		6	Antel LPA-80063/4CF - Panel			
11	138.0	3	ALU B13 RRH4X30-4R RRU's			
12		3	ALU B25 RRH4x30-4R RRU's			
13		3	ALU B66 RRH4x45 RRU's			
14		2	Raycap RC2DC-3315-PF-48 Surge			
15	124.0	1	dbSpectra DS4C06F36D-N Omni	Pipe Mount	(4) 7/8"	Town of Middlefield
16	119.0	1	Telewave ANT450F6 Omni	Pipe Mount		
17		1	Celwave PD1142-66 Omni			
18	109.0	1	Airmux 400/ODU/F49F/100M - Dish	(1) Pipe Mount (Airmux 400/ODU/F49F/100M) (3) Standard Existing Antenna Pipe Mount (au_andrew ATJB200-A01-004)	(1) 1/2"	Town of Middlefield
19	98.0	-	-	Empty Low Profile Platform	-	AT&T
20	88.0	3	RFS APXV18-206517S-C - Panel	Flush Mount	(6) 1 5/8"	T-Mobile

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
21	88.0	3	RFS APXVAARR24_43-U-NA20 - Panel	Platform w/ Handrail (SitePro RMQP-4096-HK)	(6) 1 5/8" Coax; (3) 1 5/8" Fiber	T-Mobile
22		3	Ericsson Air 32 KRD901146-1_B66A_B2A - Panel			
23		3	Ericsson KRY 112 144/1 TMA's			
24		3	Ericsson Radio 4449 B71+B12 RRU's			

Please see the attached coax layout for the line placement considered in the analysis.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	89.3%	64.9%	87.0%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	2626.9	23.1	29.6
Analysis Reactions	3714.8	32.8	43.8
Factored Reactions*	3546.4	31.2	39.9

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.5241 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 89.26% at 48.7ft

Structure: CT46135-A-SBA
Site Name: Middlefield-jacson Hill Rd
Height: 146.00 (ft)
Base Elev: 0.000 (ft)

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

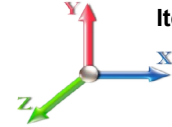
7/22/2019



Page: 1

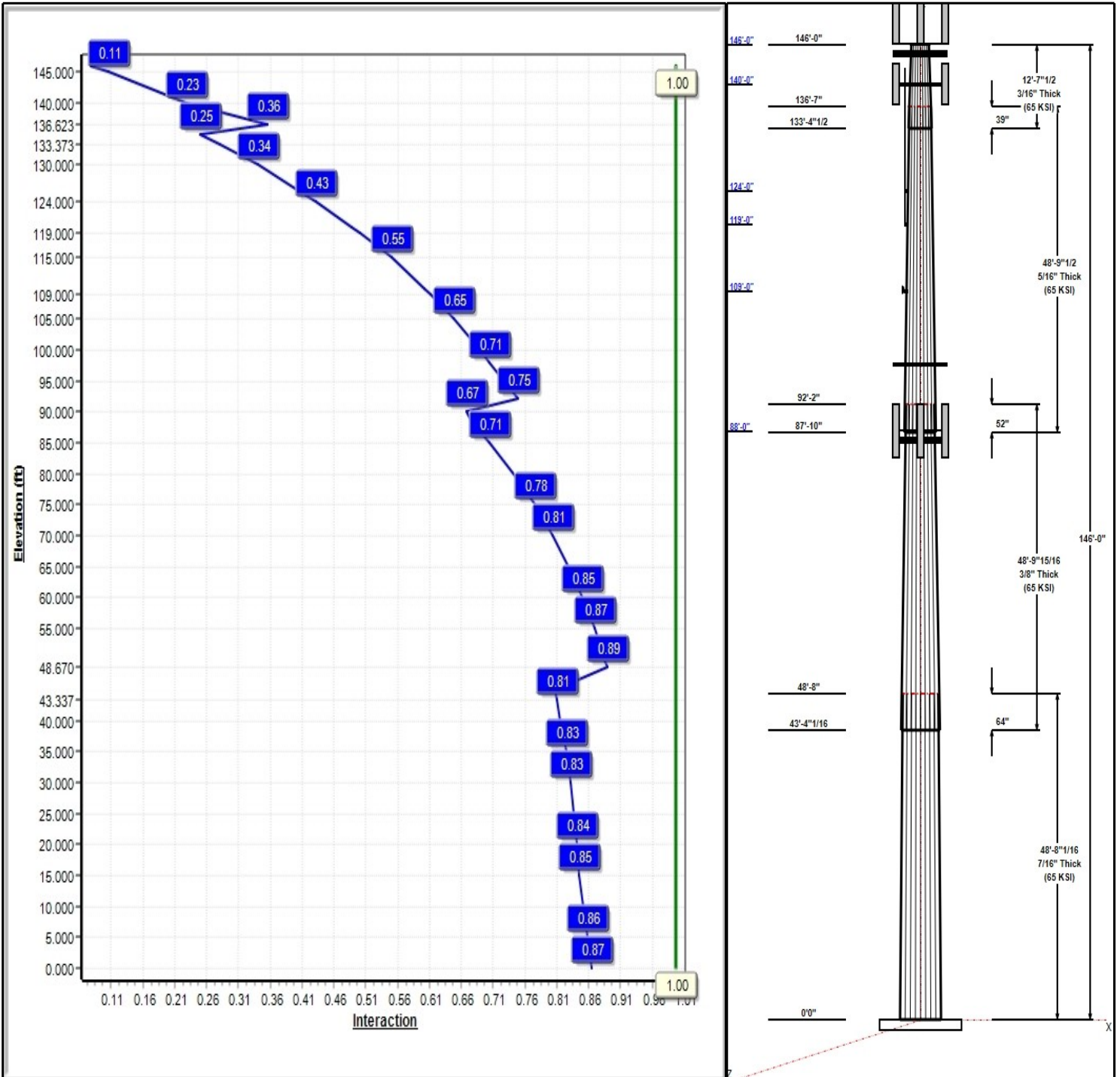
Dead Load Factor: 1.20
 Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 97 mph Wind



Iterations: 27

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Structure: CT46135-A-SBA

Type: Tapered
Site Name: Middlefield-jacson Hill Rd
Height: 146.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.19692

7/22/2019

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Shaft Properties

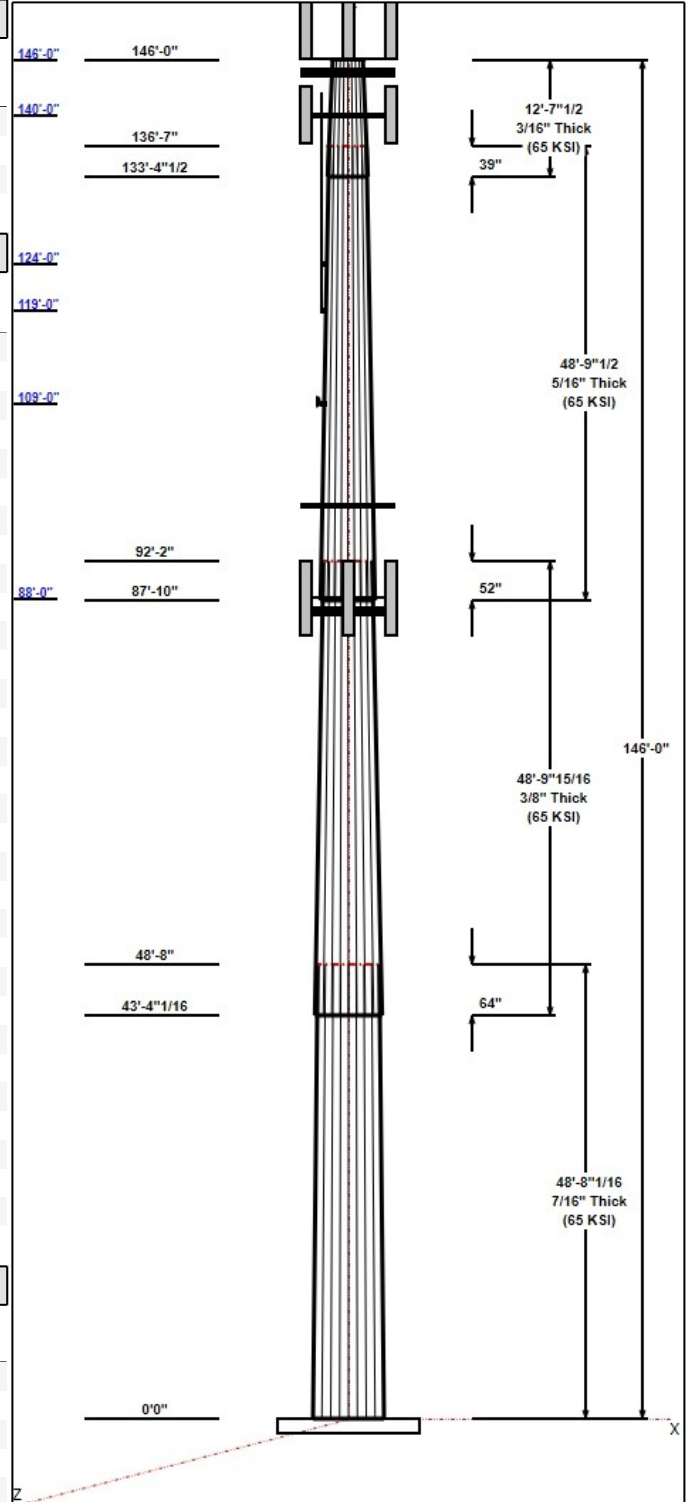
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.67	36.42	46.00	0.438		0.19692	65
2	48.83	28.60	38.22	0.375	Slip	0.19692	65
3	48.79	20.47	30.08	0.313	Slip	0.19692	65
4	12.63	19.00	21.49	0.188	Slip	0.19692	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
146.00	146.00	1	Beacon	---
146.00	149.50	1	Lightning Rod	---
146.00	150.00	9	Cci HPA-65R-BUU-H8	AT&T
146.00	150.00	6	Powerwave LGP21401	AT&T
146.00	150.00	6	Powerwave LGP219003	AT&T
146.00	150.00	6	Powerwave 7020.00 RET's	AT&T
146.00	150.00	3	Ericsson RRUS-11 RRU's	AT&T
146.00	150.00	3	Ericsson RRUS-32 RRU's	AT&T
146.00	150.00	3	Ericsson RRUS 32 B2	AT&T
146.00	150.00	2	Raycap DC-6-48-60-18-8F	AT&T
146.00	146.00	1	Platform w/ Hand Rails	AT&T
140.00	140.00	6	Commscope	Verizon
140.00	140.00	6	Antel LPA-80063/4CF	Verizon
140.00	138.00	3	ALU B13 RRH4X30-4R	Verizon
140.00	138.00	3	ALU B25 RRH4x30-4R	Verizon
140.00	138.00	3	ALU B66 RRH4x45 RRU's	Verizon
140.00	138.00	2	Raycap	Verizon
140.00	140.00	1	Low Profile Platform	Verizon
124.00	133.17	1	dbSpectra DS4C06F36D-N	Town of Middlefield CT
124.00	124.00	1	Pipe Mount	Town of Middlefield CT
119.00	119.00	1	Pipe Mount	Town of Middlefield CT
119.00	122.92	1	Telewave ANT450F6 Omni	Town of Middlefield CT
119.00	128.40	1	Celwave PD1142-66	Town of Middlefield CT
109.00	109.00	1	Airmux	Town of Middlefield CT
109.00	109.00	3	Pipe Mount (au_andrew)	Town of Middlefield CT
109.00	109.00	1	Airmux	Town of Middlefield CT
98.00	98.00	1	Empty Low Profile Platform	AT&T
88.00	88.00	3	RFS	T-Mobile
88.00	88.00	3	Ericsson Air 32	T-Mobile
88.00	88.00	3	Ericsson KRY 112 144/1	T-Mobile
88.00	88.00	3	Ericsson Radio 4449	T-Mobile
88.00	88.00	1	Platform w/ Handrail	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	146.00	Inside	1 5/8" Coax	AT&T
3.00	146.00	Inside	1/2" RET Line	AT&T
3.00	146.00	Inside	3" DC Power	AT&T
3.00	146.00	Inside	3" Fiber	AT&T
3.00	140.00	Inside	1 5/8" Coax	Verizon
3.00	140.00	Inside	1 5/8" Hybriflex	Verizon
3.00	109.00	Inside	1/2" MW	Town of Middlefield
3.00	109.00	Inside	7/8" Coax	Town of Middlefield
3.00	88.00	Inside	1 5/8" Coax	T-Mobile
3.00	88.00	Inside	1 5/8" Fiber	T-Mobile



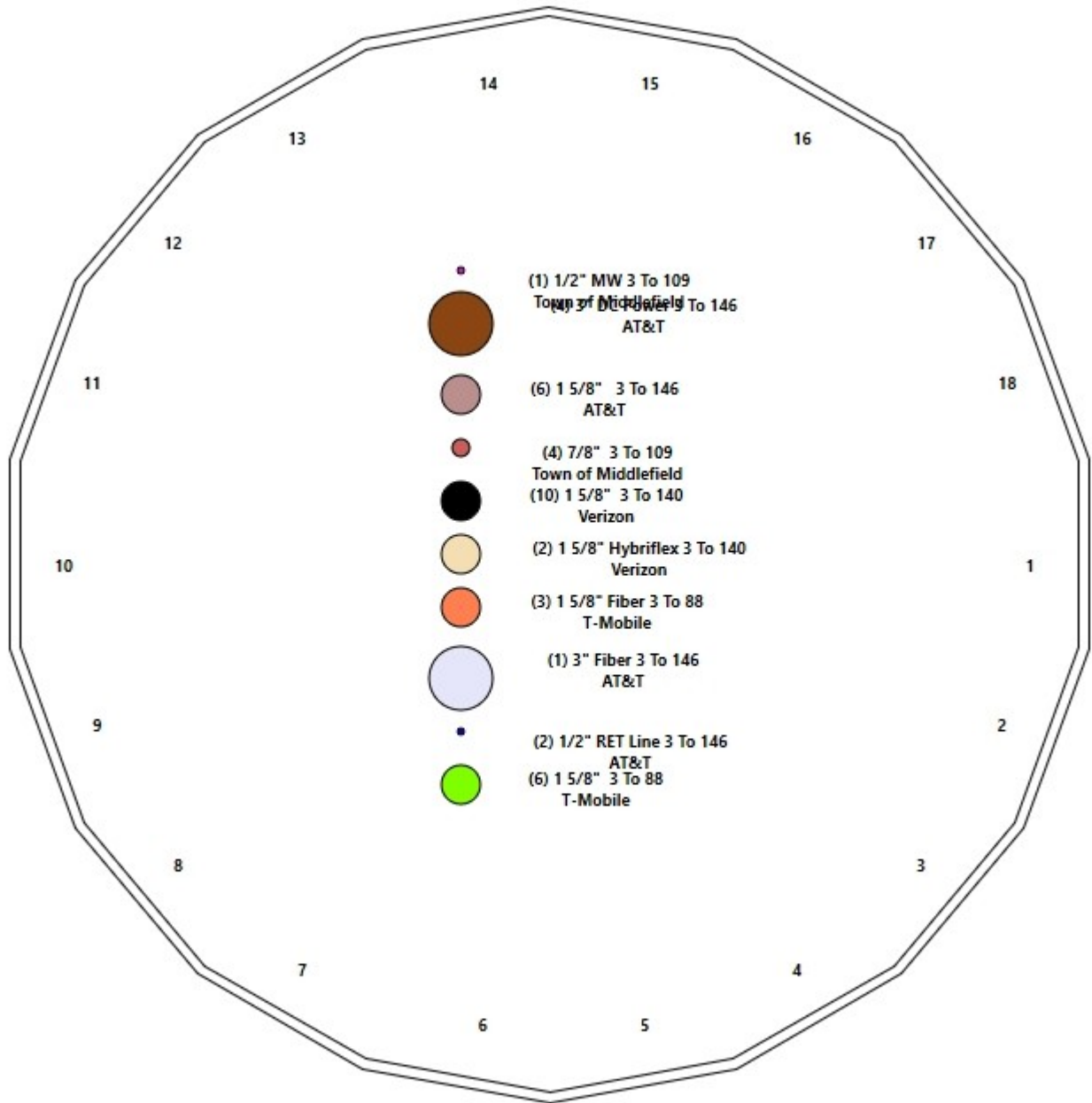
Structure: CT46135-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Middlefield-jacson Hill Rd
Height: 146.00 (ft)

7/22/2019



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Shaft Properties

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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	48.670	0.4375	65		0.00	9,376
2	18	48.830	0.3750	65	Slip	64.00	6,533
3	18	48.790	0.3125	65	Slip	52.00	4,111
4	18	12.627	0.1875	65	Slip	39.00	513
Total Shaft Weight:							20,532

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	46.00	0.00	63.27	16593.77	17.13	105.14	36.42	48.67	49.96	8170.56	13.27	83.24	0.196918
2	38.22	43.34	45.04	8148.39	16.56	101.91	28.60	92.17	33.59	3381.52	12.04	76.27	0.196918
3	30.08	87.83	29.52	3305.07	15.56	96.25	20.47	136.62	19.99	1026.59	10.14	65.51	0.196918
4	21.49	133.3	12.68	726.47	18.80	114.59	19.00	146.00	11.20	500.59	16.46	101.3	0.196918

Load Summary

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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	146.00	Beacon	1	15.00	2.40	1.00	32.41	2.400	1.00	0.00	0.00
2	146.00	Lightning Rod	1	35.00	1.05	1.00	66.33	3.417	1.00	0.00	3.50
3	146.00	Cci HPA-65R-BUU-H8	9	68.00	12.98	0.79	358.13	14.591	0.79	0.00	4.00
4	146.00	Powerwave LGP21401 TMA's	6	19.00	1.08	0.60	52.36	1.535	0.60	0.00	4.00
5	146.00	Powerwave LGP219003 Diplexer	6	6.50	0.37	0.60	18.12	0.863	0.60	0.00	4.00
6	146.00	Powerwave 7020.00 RET's	6	1.16	0.14	0.60	6.54	0.309	0.60	0.00	4.00
7	146.00	Ericsson RRUS-11 RRU's	3	50.00	2.57	0.67	131.23	3.219	0.67	0.00	4.00
8	146.00	Ericsson RRUS-32 RRU's	3	77.00	3.31	0.67	190.22	4.104	0.67	0.00	4.00
9	146.00	Ericsson RRUS 32 B2 RRU's	3	53.00	2.74	0.67	140.71	3.467	0.67	0.00	4.00
10	146.00	Raycap DC-6-48-60-18-8F Surge	2	20.00	1.90	0.67	58.78	2.802	0.67	0.00	4.00
11	146.00	Platform w/ Hand Rails	1	1600.00	32.00	1.00	3694.18	59.848	1.00	0.00	0.00
12	140.00	Commscope SBNHH-1D65B	6	50.71	8.05	0.83	250.20	9.334	0.83	0.00	0.00
13	140.00	Antel LPA-80063/4CF RRU's	6	20.00	6.15	0.94	224.70	7.182	0.94	0.00	0.00
14	140.00	ALU B13 RRH4X30-4R RRU's	3	57.20	2.16	0.67	119.06	2.767	0.67	0.00	-2.00
15	140.00	ALU B25 RRH4x30-4R RRU's	3	51.00	2.14	0.67	108.35	2.744	0.67	0.00	-2.00
16	140.00	ALU B66 RRH4x45 RRU's	3	56.80	2.54	0.67	140.21	3.229	0.67	0.00	-2.00
17	140.00	Raycap RC2DC-3315-PF-48 Surge	2	42.00	2.52	0.67	191.52	3.151	0.67	0.00	-2.00
18	140.00	Low Profile Platform	1	1500.00	22.00	1.00	2799.91	39.540	1.00	0.00	0.00
19	124.00	dbSpectra DS4C06F36D-N	1	70.00	5.50	1.00	205.64	11.893	1.00	0.10	9.17
20	124.00	Pipe Mount	1	87.00	4.31	1.00	218.09	9.594	1.00	0.00	0.00
21	119.00	Pipe Mount	1	87.00	4.31	1.00	217.56	9.572	1.00	0.00	0.00
22	119.00	Telewave ANT450F6 Omni	1	21.00	1.86	1.00	68.91	4.627	1.00	0.00	3.92
23	119.00	Celwave PD1142-66	1	16.00	1.57	1.00	152.35	4.834	1.00	0.00	9.40
24	109.00	Airmux 400/ODU/F49F/100M	1	35.00	1.80	1.00	55.92	2.365	1.00	0.00	0.00
25	109.00	Pipe Mount (au_andrew)	3	20.00	1.60	0.75	108.40	5.416	0.75	0.00	0.00
26	109.00	Airmux 400/ODU/F49F/100M	1	7.00	1.83	1.00	55.92	2.365	1.00	0.00	0.00
27	98.00	Empty Low Profile Platform	1	1500.00	22.00	1.00	2754.36	38.926	1.00	0.00	0.00
28	88.00	RFS APXVAARR24_43-U-NA20	3	128.00	20.24	0.72	533.51	22.038	0.72	0.00	0.00
29	88.00	Ericsson Air 32	3	132.20	6.51	0.86	304.27	7.570	0.86	0.00	0.00
30	88.00	Ericsson KRY 112 144/1 TMA's	3	11.02	0.35	0.60	21.26	0.735	0.60	0.00	0.00
31	88.00	Ericsson Radio 4449 B71+B12	3	74.00	1.63	0.67	136.93	2.130	0.67	0.00	0.00
32	88.00	Platform w/ Handrail (SitePro	1	2645.00	51.70	1.00	5270.82	87.970	1.00	0.00	0.00
Totals:			89	11,068.88			28,430.17				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	146.00	(6) 1 5/8" Coax	0.00	Inside
3.00	146.00	(2) 1/2" RET Line	0.00	Inside
3.00	146.00	(4) 3" DC Power	0.00	Inside
3.00	146.00	(1) 3" Fiber	0.00	Inside
3.00	140.00	(10) 1 5/8" Coax	0.00	Inside
3.00	140.00	(2) 1 5/8" Hybriflex	0.00	Inside
3.00	109.00	(1) 1/2" MW	0.00	Inside
3.00	109.00	(4) 7/8" Coax	0.00	Inside
3.00	88.00	(6) 1 5/8" Coax	0.00	Inside

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		
3.00	88.00	(3) 1 5/8" Fiber		0.00		Inside					

Shaft Section Properties

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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		0.4375	46.000	63.267	16593.8	17.13	105.14	81.3	710.5	0.0
5.00		0.4375	45.015	61.900	15541.1	16.73	102.89	81.7	680.0	1064.8
10.00		0.4375	44.031	60.533	14533.9	16.34	100.64	82.2	650.1	1041.5
15.00		0.4375	43.046	59.165	13571.2	15.94	98.39	82.5	621.0	1018.3
20.00		0.4375	42.062	57.798	12652.0	15.54	96.14	82.5	592.5	995.0
25.00		0.4375	41.077	56.431	11775.2	15.14	93.89	82.5	564.6	971.7
30.00		0.4375	40.092	55.064	10939.9	14.75	91.64	82.5	537.4	948.5
35.00		0.4375	39.108	53.697	10145.1	14.35	89.39	82.5	510.9	925.2
40.00		0.4375	38.123	52.330	9389.8	13.95	87.14	82.5	485.1	902.0
43.34	Bot - Section 2	0.4375	37.466	51.417	8907.2	13.69	85.64	82.5	468.3	589.0
45.00		0.4375	37.139	50.962	8672.9	13.56	84.89	82.5	460.0	543.5
48.67	Top - Section 1	0.3750	37.166	43.789	7488.6	16.07	99.11	0.0	0.0	1182.4
50.00		0.3750	36.904	43.477	7329.8	15.94	98.41	82.5	391.2	197.5
55.00		0.3750	35.920	42.305	6753.0	15.48	95.79	82.5	370.3	729.7
60.00		0.3750	34.935	41.133	6207.2	15.02	93.16	82.5	350.0	709.8
65.00		0.3750	33.950	39.962	5691.6	14.55	90.53	82.5	330.2	689.9
70.00		0.3750	32.966	38.790	5205.5	14.09	87.91	82.5	311.0	669.9
75.00		0.3750	31.981	37.618	4747.8	13.63	85.28	82.5	292.4	650.0
80.00		0.3750	30.997	36.446	4317.8	13.16	82.66	82.5	274.4	630.1
85.00		0.3750	30.012	35.274	3914.5	12.70	80.03	82.5	256.9	610.1
87.83	Bot - Section 3	0.3750	29.454	34.610	3697.6	12.44	78.54	82.5	247.3	336.9
88.00		0.3750	29.421	34.571	3685.1	12.42	78.46	82.5	246.7	36.4
90.00		0.3750	29.027	34.102	3537.2	12.24	77.41	82.5	240.0	433.1
92.17	Top - Section 2	0.3125	29.226	28.677	3028.9	15.08	93.52	0.0	0.0	462.5
95.00		0.3125	28.668	28.124	2856.9	14.77	91.74	82.5	196.3	273.8
98.00		0.3125	28.077	27.538	2682.0	14.43	89.85	82.5	188.1	284.1
100.00		0.3125	27.683	27.147	2569.5	14.21	88.59	82.5	182.8	186.1
105.00		0.3125	26.699	26.171	2302.1	13.65	85.44	82.5	169.8	453.6
109.00		0.3125	25.911	25.390	2102.0	13.21	82.92	82.5	159.8	350.9
110.00		0.3125	25.714	25.194	2053.9	13.10	82.28	82.5	157.3	86.1
115.00		0.3125	24.729	24.218	1824.2	12.54	79.13	82.5	145.3	420.3
119.00		0.3125	23.942	23.436	1653.3	12.10	76.61	82.5	136.0	324.3
120.00		0.3125	23.745	23.241	1612.3	11.99	75.98	82.5	133.7	79.4
124.00		0.3125	22.957	22.460	1455.1	11.54	73.46	82.5	124.8	311.0
125.00		0.3125	22.760	22.265	1417.5	11.43	72.83	82.5	122.7	76.1
130.00		0.3125	21.776	21.288	1239.0	10.88	69.68	82.5	112.1	370.5
133.37	Bot - Section 4	0.3125	21.111	20.629	1127.5	10.50	67.56	82.5	105.2	240.6
135.00		0.3125	20.791	20.311	1076.2	10.32	66.53	82.5	102.0	182.9
136.62	Top - Section 3	0.1875	20.846	12.294	662.9	18.19	111.18	0.0	0.0	179.8
140.00		0.1875	20.182	11.899	601.0	17.57	107.63	80.7	58.7	139.0
145.00		0.1875	19.197	11.313	516.5	16.64	102.38	81.8	53.0	197.5
146.00		0.1875	19.000	11.195	500.6	16.46	101.33	82.0	51.9	38.3

20532.0

Wind Loading - Shaft

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	348.10	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	340.65	0.650	0.000	5.00	19.254	12.52	428.4	0.0	1277.7
10.00		1.00	0.85	19.450	21.40	333.20	0.650	0.000	5.00	18.837	12.24	419.2	0.0	1249.8
15.00		1.00	0.85	19.450	21.40	325.75	0.650	0.000	5.00	18.421	11.97	409.9	0.0	1221.9
20.00		1.00	0.90	20.638	22.70	327.87	0.650	0.000	5.00	18.004	11.70	425.1	0.0	1194.0
25.00		1.00	0.95	21.630	23.79	327.80	0.650	0.000	5.00	17.588	11.43	435.2	0.0	1166.1
30.00		1.00	0.98	22.477	24.72	326.15	0.650	0.000	5.00	17.171	11.16	441.5	0.0	1138.2
35.00		1.00	1.01	23.218	25.54	323.34	0.650	0.000	5.00	16.755	10.89	445.0	0.0	1110.3
40.00		1.00	1.04	23.880	26.27	319.66	0.650	0.000	5.00	16.338	10.62	446.3	0.0	1082.4
43.34	Bot - Section 2	1.00	1.06	24.286	26.71	316.81	0.650	0.000	3.34	10.671	6.94	296.5	0.0	706.8
45.00		1.00	1.07	24.479	26.93	315.29	0.650	0.000	1.66	5.356	3.48	150.0	0.0	652.3
48.67	Top - Section 1	1.00	1.09	24.887	27.38	311.72	0.650	0.000	3.67	11.654	7.58	331.8	0.0	1418.9
50.00		1.00	1.09	25.029	27.53	316.79	0.650	0.000	1.33	4.168	2.71	119.3	0.0	237.0
55.00		1.00	1.12	25.536	28.09	311.45	0.650	0.000	5.00	15.406	10.01	450.0	0.0	875.7
60.00		1.00	1.14	26.008	28.61	305.70	0.650	0.000	5.00	14.989	9.74	446.0	0.0	851.8
65.00		1.00	1.16	26.450	29.09	299.60	0.650	0.000	5.00	14.572	9.47	440.9	0.0	827.8
70.00		1.00	1.17	26.866	29.55	293.19	0.650	0.000	5.00	14.156	9.20	435.1	0.0	803.9
75.00		1.00	1.19	27.259	29.98	286.51	0.650	0.000	5.00	13.739	8.93	428.4	0.0	780.0
80.00		1.00	1.21	27.632	30.39	279.58	0.650	0.000	5.00	13.323	8.66	421.1	0.0	756.1
85.00		1.00	1.22	27.987	30.79	272.43	0.650	0.000	5.00	12.906	8.39	413.2	0.0	732.1
87.83	Bot - Section 3	1.00	1.23	28.181	31.00	268.29	0.650	0.000	2.83	7.129	4.63	229.8	0.0	404.3
88.00	Appurtenance(s)	1.00	1.23	28.192	31.01	268.04	0.650	0.000	0.17	0.424	0.28	13.7	0.0	43.6
90.00		1.00	1.24	28.325	31.16	265.08	0.650	0.000	2.00	5.052	3.28	163.7	0.0	519.7
92.17	Top - Section 2	1.00	1.24	28.468	31.31	261.84	0.650	0.000	2.17	5.397	3.51	175.8	0.0	555.1
95.00		1.00	1.25	28.650	31.51	263.29	0.650	0.000	2.83	6.940	4.51	227.5	0.0	328.6
98.00	Appurtenance(s)	1.00	1.26	28.838	31.72	258.71	0.650	0.000	3.00	7.203	4.68	237.6	0.0	340.9
100.00		1.00	1.27	28.961	31.86	255.63	0.650	0.000	2.00	4.718	3.07	156.3	0.0	223.3
105.00		1.00	1.28	29.260	32.19	247.80	0.650	0.000	5.00	11.504	7.48	385.1	0.0	544.3
109.00	Appurtenance(s)	1.00	1.29	29.491	32.44	241.44	0.650	0.000	4.00	8.904	5.79	300.4	0.0	421.1
110.00		1.00	1.29	29.548	32.50	239.84	0.650	0.000	1.00	2.184	1.42	73.8	0.0	103.3
115.00		1.00	1.30	29.826	32.81	231.74	0.650	0.000	5.00	10.671	6.94	364.1	0.0	504.4
119.00	Appurtenance(s)	1.00	1.31	30.041	33.05	225.16	0.650	0.000	4.00	8.237	5.35	283.1	0.0	389.2
120.00		1.00	1.32	30.094	33.10	223.51	0.650	0.000	1.00	2.018	1.31	69.5	0.0	95.3
124.00	Appurtenance(s)	1.00	1.32	30.302	33.33	216.84	0.650	0.000	4.00	7.904	5.14	274.0	0.0	373.2
125.00		1.00	1.33	30.354	33.39	215.16	0.650	0.000	1.00	1.934	1.26	67.2	0.0	91.3
130.00		1.00	1.34	30.605	33.67	206.71	0.650	0.000	5.00	9.421	6.12	329.9	0.0	444.6
133.37	Bot - Section 4	1.00	1.34	30.771	33.85	200.94	0.650	0.000	3.37	6.121	3.98	215.5	0.0	288.7
135.00		1.00	1.35	30.850	33.93	198.15	0.650	0.000	1.63	2.935	1.91	103.6	0.0	219.5
136.62	Top - Section 3	1.00	1.35	30.927	34.02	195.35	0.650	0.000	1.62	2.886	1.88	102.1	0.0	215.7
140.00	Appurtenance(s)	1.00	1.36	31.087	34.20	193.07	0.650	0.000	3.38	5.861	3.81	208.5	0.0	166.8
145.00		1.00	1.37	31.317	34.45	184.34	0.650	0.000	5.00	8.330	5.41	298.5	0.0	236.9
146.00	Appurtenance(s)	1.00	1.37	31.362	34.50	182.58	0.650	0.000	1.00	1.616	1.05	58.0	0.0	46.0
Totals:									146.00			11,720.5		24,638.3

Discrete Appurtenance Forces

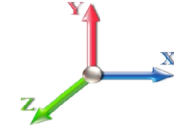
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 27

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	146.00	Powerwave LGP219003	6	31.541	34.696	0.54	0.90	1.20	46.80	0.000	4.000	66.55	0.00	266.20	
2	146.00	Beacon	1	31.362	34.499	1.00	1.00	2.40	18.00	0.000	0.000	132.48	0.00	0.00	
3	146.00	Lightning Rod	1	31.519	34.671	1.00	1.00	1.05	42.00	0.000	3.500	58.25	0.00	203.87	
4	146.00	Cci HPA-65R-BUU-H8	9	31.541	34.696	0.79	1.00	92.29	734.40	0.000	4.000	5123.17	0.00	20492.68	
5	146.00	Powerwave LGP21401	6	31.541	34.696	0.54	0.90	3.50	136.80	0.000	4.000	194.25	0.00	777.00	
6	146.00	Platform w/ Hand Rails	1	31.362	34.499	1.00	1.00	32.00	1920.00	0.000	0.000	1766.34	0.00	0.00	
7	146.00	Powerwave 7020.00	6	31.541	34.696	0.54	0.90	0.45	8.35	0.000	4.000	25.18	0.00	100.72	
8	146.00	Ericsson RRUS-11 RRU's	3	31.541	34.696	0.60	0.90	4.65	180.00	0.000	4.000	258.09	0.00	1032.35	
9	146.00	Ericsson RRUS-32 RRU's	3	31.541	34.696	0.60	0.90	5.99	277.20	0.000	4.000	332.40	0.00	1329.60	
10	146.00	Ericsson RRUS 32 B2	3	31.541	34.696	0.60	0.90	4.96	190.80	0.000	4.000	275.16	0.00	1100.64	
11	146.00	Raycap DC-6-48-60-18-8F	2	31.541	34.696	0.60	0.90	2.29	48.00	0.000	4.000	127.20	0.00	508.81	
12	140.00	Low Profile Platform	1	31.087	34.195	1.00	1.00	22.00	1800.00	0.000	0.000	1203.67	0.00	0.00	
13	140.00	Raycap	2	30.993	34.092	0.54	0.80	2.70	100.80	0.000	-2.000	147.36	0.00	-294.71	
14	140.00	ALU B66 RRH4x45 RRU's	3	30.993	34.092	0.54	0.80	4.08	204.48	0.000	-2.000	222.79	0.00	-445.57	
15	140.00	ALU B25 RRH4x30-4R	3	30.993	34.092	0.54	0.80	3.44	183.60	0.000	-2.000	187.70	0.00	-375.41	
16	140.00	ALU B13 RRH4X30-4R	3	30.993	34.092	0.54	0.80	3.47	205.92	0.000	-2.000	189.46	0.00	-378.91	
17	140.00	Antel LPA-80063/4CF	6	31.087	34.195	0.75	0.80	27.75	144.00	0.000	0.000	1518.21	0.00	0.00	
18	140.00	Commscope	6	31.087	34.195	0.66	0.80	32.07	365.11	0.000	0.000	1754.69	0.00	0.00	
19	124.00	Pipe Mount	1	30.302	33.333	1.00	1.00	4.31	104.40	0.000	0.000	229.86	0.00	0.00	
20	124.00	dbSpectra	1	30.761	33.837	1.00	1.00	5.50	84.00	1.071	9.170	297.77	199.37	2730.52	
21	119.00	Celwave PD1142-66	1	30.526	33.578	1.00	1.00	1.57	19.20	0.000	9.400	84.35	0.00	792.88	
22	119.00	Telewave ANT450F6	1	30.247	33.271	1.00	1.00	1.86	25.20	0.000	3.917	99.01	0.00	387.81	
23	119.00	Pipe Mount	1	30.041	33.045	1.00	1.00	4.31	104.40	0.000	0.000	227.88	0.00	0.00	
24	109.00	Airmux	1	29.491	32.440	1.00	1.00	1.80	42.00	0.000	0.000	93.43	0.00	0.00	
25	109.00	Pipe Mount (au_andrew)	3	29.491	32.440	0.56	0.75	2.70	72.00	0.000	0.000	140.14	0.00	0.00	
26	109.00	Airmux	1	29.491	32.440	1.00	1.00	1.83	8.40	0.000	0.000	94.98	0.00	0.00	
27	98.00	Empty Low Profile	1	28.838	31.722	1.00	1.00	22.00	1800.00	0.000	0.000	1116.60	0.00	0.00	
28	88.00	Platform w/ Handrail	1	28.192	31.011	1.00	1.00	51.70	3174.00	0.000	0.000	2565.22	0.00	0.00	
29	88.00	Ericsson Radio 4449	3	28.192	31.011	0.50	0.75	2.46	266.40	0.000	0.000	121.92	0.00	0.00	
30	88.00	Ericsson KRY 112 144/1	3	28.192	31.011	0.45	0.75	0.47	39.67	0.000	0.000	23.44	0.00	0.00	
31	88.00	Ericsson Air 32	3	28.192	31.011	0.65	0.75	12.60	475.92	0.000	0.000	625.02	0.00	0.00	
32	88.00	RFS	3	28.192	31.011	0.54	0.75	32.79	460.80	0.000	0.000	1626.90	0.00	0.00	
Totals:									13,282.66						20,929.47

Total Applied Force Summary

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

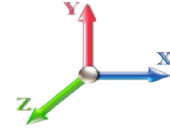


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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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		428.42	1372.93	0.00	0.00
10.00		419.16	1487.79	0.00	0.00
15.00		409.89	1459.88	0.00	0.00
20.00		425.07	1431.96	0.00	0.00
25.00		435.21	1404.05	0.00	0.00
30.00		441.53	1376.14	0.00	0.00
35.00		445.03	1348.22	0.00	0.00
40.00		446.33	1320.31	0.00	0.00
43.34		296.48	865.56	0.00	0.00
45.00		149.99	731.42	0.00	0.00
48.67		331.80	1593.52	0.00	0.00
50.00		119.34	300.26	0.00	0.00
55.00		450.04	1113.66	0.00	0.00
60.00		445.97	1089.73	0.00	0.00
65.00		440.94	1065.81	0.00	0.00
70.00		435.07	1041.88	0.00	0.00
75.00		428.45	1017.95	0.00	0.00
80.00		421.14	994.03	0.00	0.00
85.00		413.21	970.10	0.00	0.00
87.83		229.82	539.10	0.00	0.00
88.00	(13) attachments	4976.19	4468.35	0.00	0.00
90.00		163.69	592.38	0.00	0.00
92.17		175.78	633.83	0.00	0.00
95.00		227.46	431.60	0.00	0.00
98.00	(1) attachments	1354.22	2250.01	0.00	0.00
100.00		156.32	296.02	0.00	0.00
105.00		385.09	726.09	0.00	0.00
109.00	(5) attachments	628.94	688.92	0.00	0.00
110.00		73.83	136.95	0.00	0.00
115.00		364.11	672.77	0.00	0.00
119.00	(3) attachments	694.32	672.66	0.00	1180.69
120.00		69.46	128.97	0.00	0.00
124.00	(2) attachments	801.62	696.31	199.37	2730.52
125.00		67.17	124.98	0.00	0.00
130.00		329.87	612.96	0.00	0.00
133.37		215.47	402.28	0.00	0.00
135.00		103.60	274.30	0.00	0.00
136.62		102.09	270.37	0.00	0.00
140.00	(24) attachments	5432.33	3284.40	0.00	-1494.61
145.00		298.45	329.71	0.00	0.00
146.00	(41) attachments	8417.04	3666.86	0.00	25811.86
	Totals:	32,649.94	43,885.02	199.37	28,228.46

Calculated Forces

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



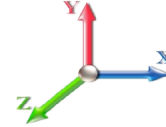
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Load Case: 1.2D + 1.6W 97 mph Wind

Iterations 27

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	-43.79	-32.77	-0.19	-3714.7	-0.01	3714.78	4626.62	2313.31	8646.87	4329.86	0.00	0.000	0.000	0.868
5.00	-42.24	-32.57	-0.19	-3550.9	-0.01	3550.93	4552.64	2276.32	8322.99	4167.68	0.17	-0.311	0.000	0.862
10.00	-40.58	-32.37	-0.19	-3388.0	-0.01	3388.08	4477.51	2238.76	8003.10	4007.50	0.66	-0.629	0.000	0.855
15.00	-38.94	-32.16	-0.19	-3226.2	-0.01	3226.25	4395.69	2197.85	7677.64	3844.53	1.49	-0.953	0.000	0.848
20.00	-37.33	-31.92	-0.19	-3065.4	-0.01	3065.45	4294.12	2147.06	7325.16	3668.02	2.67	-1.282	0.000	0.845
25.00	-35.76	-31.67	-0.19	-2905.8	-0.01	2905.83	4192.55	2096.27	6980.95	3495.66	4.19	-1.618	0.000	0.840
30.00	-34.21	-31.39	-0.19	-2747.5	-0.01	2747.51	4090.97	2045.49	6645.03	3327.46	6.07	-1.960	0.000	0.834
35.00	-32.69	-31.09	-0.19	-2590.5	-0.01	2590.57	3989.40	1994.70	6317.40	3163.39	8.30	-2.307	0.000	0.827
40.00	-31.23	-30.75	-0.19	-2435.1	-0.01	2435.11	3887.82	1943.91	5998.04	3003.48	10.91	-2.659	0.000	0.819
43.34	-30.28	-30.51	-0.19	-2332.5	-0.01	2332.51	3820.04	1910.02	5789.54	2899.07	12.85	-2.900	0.000	0.813
45.00	-29.45	-30.42	-0.19	-2281.7	-0.01	2281.76	3786.25	1893.12	5686.97	2847.71	13.88	-3.023	0.000	0.809
48.67	-27.79	-30.09	-0.19	-2170.1	-0.01	2170.12	3251.53	1625.77	4904.15	2455.72	16.31	-3.291	0.000	0.893
50.00	-27.36	-30.08	-0.19	-2130.1	-0.01	2130.10	3230.14	1615.07	4836.85	2422.02	17.24	-3.390	0.000	0.888
55.00	-26.07	-29.74	-0.19	-1979.7	-0.01	1979.72	3143.08	1571.54	4578.34	2292.57	21.00	-3.789	0.000	0.872
60.00	-24.81	-29.39	-0.19	-1831.0	-0.01	1831.02	3056.01	1528.01	4326.92	2166.68	25.18	-4.190	0.000	0.854
65.00	-23.58	-29.04	-0.19	-1684.0	-0.01	1684.06	2968.95	1484.47	4082.61	2044.34	29.78	-4.593	0.000	0.832
70.00	-22.37	-28.68	-0.19	-1538.8	-0.01	1538.87	2881.88	1440.94	3845.39	1925.55	34.81	-4.996	0.000	0.807
75.00	-21.20	-28.31	-0.19	-1395.4	-0.01	1395.49	2794.82	1397.41	3615.28	1810.32	40.25	-5.397	0.000	0.779
80.00	-20.06	-27.93	-0.19	-1253.9	-0.01	1253.96	2707.76	1353.88	3392.26	1698.65	46.10	-5.794	-0.001	0.746
85.00	-19.00	-27.52	-0.19	-1114.3	-0.01	1114.33	2620.69	1310.35	3176.35	1590.53	52.37	-6.184	-0.001	0.708
87.83	-18.43	-27.27	-0.19	-1036.3	-0.01	1036.37	2571.36	1285.68	3057.15	1530.84	56.10	-6.405	-0.001	0.685
88.00	-14.51	-21.84	-0.19	-1031.8	-0.01	1031.82	2568.45	1284.23	3050.20	1527.37	56.32	-6.419	-0.001	0.681
90.00	-13.88	-21.65	-0.19	-988.13	-0.02	988.13	2533.63	1266.81	2967.53	1485.97	59.04	-6.574	-0.001	0.671
92.17	-13.20	-21.45	-0.19	-941.22	-0.02	941.22	2130.58	1065.29	2523.85	1263.80	62.06	-6.743	-0.001	0.751
95.00	-12.71	-21.23	-0.20	-880.45	-0.02	880.45	2089.47	1044.73	2426.88	1215.24	66.11	-6.960	-0.001	0.731
98.00	-10.57	-19.64	-0.20	-816.77	-0.02	816.77	2045.93	1022.97	2326.27	1164.86	70.56	-7.213	-0.001	0.707
100.00	-10.20	-19.50	-0.20	-777.49	-0.02	777.49	2016.91	1008.46	2260.38	1131.87	73.61	-7.382	-0.001	0.692
105.00	-9.41	-19.08	-0.20	-679.98	-0.02	679.98	1944.36	972.18	2099.80	1051.46	81.53	-7.786	-0.001	0.652
109.00	-8.76	-18.40	-0.20	-603.65	-0.02	603.65	1886.32	943.16	1975.59	989.26	88.17	-8.103	-0.001	0.615
110.00	-8.56	-18.34	-0.20	-585.25	-0.02	585.25	1871.81	935.90	1945.13	974.01	89.87	-8.184	-0.001	0.606
115.00	-7.84	-17.92	-0.20	-493.57	-0.02	493.57	1799.25	899.63	1796.38	899.53	98.62	-8.557	-0.001	0.553
119.00	-7.23	-17.16	-0.20	-420.69	-0.02	420.69	1741.21	870.61	1681.64	842.07	105.88	-8.843	-0.001	0.504
120.00	-7.06	-17.09	-0.20	-403.53	-0.02	403.53	1726.70	863.35	1653.55	828.00	107.73	-8.914	-0.001	0.492
124.00	-6.46	-16.21	0.00	-332.44	0.01	332.44	1668.66	834.33	1543.55	772.92	115.29	-9.174	-0.002	0.434
125.00	-6.29	-16.14	0.00	-316.23	0.01	316.23	1654.15	827.07	1516.64	759.45	117.21	-9.238	-0.002	0.421
130.00	-5.68	-15.74	0.00	-235.53	0.01	235.53	1581.59	790.80	1385.64	693.85	126.99	-9.515	-0.002	0.343
133.37	-5.29	-15.47	0.00	-182.44	0.00	182.44	1532.65	766.32	1300.60	651.27	133.74	-9.676	-0.002	0.284
135.00	-5.02	-15.33	0.00	-157.28	0.00	157.28	1509.04	754.52	1260.56	631.22	137.04	-9.746	-0.001	0.253
136.62	-4.75	-15.19	0.00	-132.40	0.00	132.40	885.20	442.60	750.52	375.82	140.35	-9.808	-0.001	0.359
140.00	-2.42	-9.28	0.00	-81.12	0.00	81.12	864.59	432.29	709.24	355.15	147.29	-9.908	-0.001	0.232
145.00	-2.14	-8.93	0.00	-34.74	0.00	34.74	833.10	416.55	649.44	325.20	157.70	-10.045	-0.001	0.110
146.00	0.00	-8.42	0.00	-25.81	0.00	25.81	826.66	413.33	637.68	319.32	159.79	-10.062	-0.001	0.081

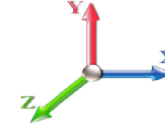
Wind Loading - Shaft

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	348.10	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	340.65	0.650	0.000	5.00	19.254	12.52	428.4	0.0	958.3
10.00		1.00	0.85	19.450	21.40	333.20	0.650	0.000	5.00	18.837	12.24	419.2	0.0	937.4
15.00		1.00	0.85	19.450	21.40	325.75	0.650	0.000	5.00	18.421	11.97	409.9	0.0	916.4
20.00		1.00	0.90	20.638	22.70	327.87	0.650	0.000	5.00	18.004	11.70	425.1	0.0	895.5
25.00		1.00	0.95	21.630	23.79	327.80	0.650	0.000	5.00	17.588	11.43	435.2	0.0	874.6
30.00		1.00	0.98	22.477	24.72	326.15	0.650	0.000	5.00	17.171	11.16	441.5	0.0	853.6
35.00		1.00	1.01	23.218	25.54	323.34	0.650	0.000	5.00	16.755	10.89	445.0	0.0	832.7
40.00		1.00	1.04	23.880	26.27	319.66	0.650	0.000	5.00	16.338	10.62	446.3	0.0	811.8
43.34	Bot - Section 2	1.00	1.06	24.286	26.71	316.81	0.650	0.000	3.34	10.671	6.94	296.5	0.0	530.1
45.00		1.00	1.07	24.479	26.93	315.29	0.650	0.000	1.66	5.356	3.48	150.0	0.0	489.2
48.67	Top - Section 1	1.00	1.09	24.887	27.38	311.72	0.650	0.000	3.67	11.654	7.58	331.8	0.0	1064.1
50.00		1.00	1.09	25.029	27.53	316.79	0.650	0.000	1.33	4.168	2.71	119.3	0.0	177.7
55.00		1.00	1.12	25.536	28.09	311.45	0.650	0.000	5.00	15.406	10.01	450.0	0.0	656.8
60.00		1.00	1.14	26.008	28.61	305.70	0.650	0.000	5.00	14.989	9.74	446.0	0.0	638.8
65.00		1.00	1.16	26.450	29.09	299.60	0.650	0.000	5.00	14.572	9.47	440.9	0.0	620.9
70.00		1.00	1.17	26.866	29.55	293.19	0.650	0.000	5.00	14.156	9.20	435.1	0.0	602.9
75.00		1.00	1.19	27.259	29.98	286.51	0.650	0.000	5.00	13.739	8.93	428.4	0.0	585.0
80.00		1.00	1.21	27.632	30.39	279.58	0.650	0.000	5.00	13.323	8.66	421.1	0.0	567.1
85.00		1.00	1.22	27.987	30.79	272.43	0.650	0.000	5.00	12.906	8.39	413.2	0.0	549.1
87.83	Bot - Section 3	1.00	1.23	28.181	31.00	268.29	0.650	0.000	2.83	7.129	4.63	229.8	0.0	303.2
88.00	Appurtenance(s)	1.00	1.23	28.192	31.01	268.04	0.650	0.000	0.17	0.424	0.28	13.7	0.0	32.7
90.00		1.00	1.24	28.325	31.16	265.08	0.650	0.000	2.00	5.052	3.28	163.7	0.0	389.7
92.17	Top - Section 2	1.00	1.24	28.468	31.31	261.84	0.650	0.000	2.17	5.397	3.51	175.8	0.0	416.3
95.00		1.00	1.25	28.650	31.51	263.29	0.650	0.000	2.83	6.940	4.51	227.5	0.0	246.4
98.00	Appurtenance(s)	1.00	1.26	28.838	31.72	258.71	0.650	0.000	3.00	7.203	4.68	237.6	0.0	255.7
100.00		1.00	1.27	28.961	31.86	255.63	0.650	0.000	2.00	4.718	3.07	156.3	0.0	167.5
105.00		1.00	1.28	29.260	32.19	247.80	0.650	0.000	5.00	11.504	7.48	385.1	0.0	408.2
109.00	Appurtenance(s)	1.00	1.29	29.491	32.44	241.44	0.650	0.000	4.00	8.904	5.79	300.4	0.0	315.8
110.00		1.00	1.29	29.548	32.50	239.84	0.650	0.000	1.00	2.184	1.42	73.8	0.0	77.5
115.00		1.00	1.30	29.826	32.81	231.74	0.650	0.000	5.00	10.671	6.94	364.1	0.0	378.3
119.00	Appurtenance(s)	1.00	1.31	30.041	33.05	225.16	0.650	0.000	4.00	8.237	5.35	283.1	0.0	291.9
120.00		1.00	1.32	30.094	33.10	223.51	0.650	0.000	1.00	2.018	1.31	69.5	0.0	71.5
124.00	Appurtenance(s)	1.00	1.32	30.302	33.33	216.84	0.650	0.000	4.00	7.904	5.14	274.0	0.0	279.9
125.00		1.00	1.33	30.354	33.39	215.16	0.650	0.000	1.00	1.934	1.26	67.2	0.0	68.5
130.00		1.00	1.34	30.605	33.67	206.71	0.650	0.000	5.00	9.421	6.12	329.9	0.0	333.4
133.37	Bot - Section 4	1.00	1.34	30.771	33.85	200.94	0.650	0.000	3.37	6.121	3.98	215.5	0.0	216.5
135.00		1.00	1.35	30.850	33.93	198.15	0.650	0.000	1.63	2.935	1.91	103.6	0.0	164.6
136.62	Top - Section 3	1.00	1.35	30.927	34.02	195.35	0.650	0.000	1.62	2.886	1.88	102.1	0.0	161.8
140.00	Appurtenance(s)	1.00	1.36	31.087	34.20	193.07	0.650	0.000	3.38	5.861	3.81	208.5	0.0	125.1
145.00		1.00	1.37	31.317	34.45	184.34	0.650	0.000	5.00	8.330	5.41	298.5	0.0	177.7
146.00	Appurtenance(s)	1.00	1.37	31.362	34.50	182.58	0.650	0.000	1.00	1.616	1.05	58.0	0.0	34.5
Totals:									146.00			11,720.5		18,478.8

Discrete Appurtenance Forces

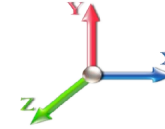
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

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	146.00	Powerwave LGP219003	6	31.541	34.696	0.54	0.90	1.20	35.10	0.000	4.000	66.55	0.00	266.20	
2	146.00	Beacon	1	31.362	34.499	1.00	1.00	2.40	13.50	0.000	0.000	132.48	0.00	0.00	
3	146.00	Lightning Rod	1	31.519	34.671	1.00	1.00	1.05	31.50	0.000	3.500	58.25	0.00	203.87	
4	146.00	Cci HPA-65R-BUU-H8	9	31.541	34.696	0.79	1.00	92.29	550.80	0.000	4.000	5123.17	0.00	20492.68	
5	146.00	Powerwave LGP21401	6	31.541	34.696	0.54	0.90	3.50	102.60	0.000	4.000	194.25	0.00	777.00	
6	146.00	Platform w/ Hand Rails	1	31.362	34.499	1.00	1.00	32.00	1440.00	0.000	0.000	1766.34	0.00	0.00	
7	146.00	Powerwave 7020.00	6	31.541	34.696	0.54	0.90	0.45	6.26	0.000	4.000	25.18	0.00	100.72	
8	146.00	Ericsson RRUS-11 RRU's	3	31.541	34.696	0.60	0.90	4.65	135.00	0.000	4.000	258.09	0.00	1032.35	
9	146.00	Ericsson RRUS-32 RRU's	3	31.541	34.696	0.60	0.90	5.99	207.90	0.000	4.000	332.40	0.00	1329.60	
10	146.00	Ericsson RRUS 32 B2	3	31.541	34.696	0.60	0.90	4.96	143.10	0.000	4.000	275.16	0.00	1100.64	
11	146.00	Raycap DC-6-48-60-18-8F	2	31.541	34.696	0.60	0.90	2.29	36.00	0.000	4.000	127.20	0.00	508.81	
12	140.00	Low Profile Platform	1	31.087	34.195	1.00	1.00	22.00	1350.00	0.000	0.000	1203.67	0.00	0.00	
13	140.00	Raycap	2	30.993	34.092	0.54	0.80	2.70	75.60	0.000	-2.000	147.36	0.00	-294.71	
14	140.00	ALU B66 RRH4x45 RRU's	3	30.993	34.092	0.54	0.80	4.08	153.36	0.000	-2.000	222.79	0.00	-445.57	
15	140.00	ALU B25 RRH4x30-4R	3	30.993	34.092	0.54	0.80	3.44	137.70	0.000	-2.000	187.70	0.00	-375.41	
16	140.00	ALU B13 RRH4X30-4R	3	30.993	34.092	0.54	0.80	3.47	154.44	0.000	-2.000	189.46	0.00	-378.91	
17	140.00	Antel LPA-80063/4CF	6	31.087	34.195	0.75	0.80	27.75	108.00	0.000	0.000	1518.21	0.00	0.00	
18	140.00	Commscope	6	31.087	34.195	0.66	0.80	32.07	273.83	0.000	0.000	1754.69	0.00	0.00	
19	124.00	Pipe Mount	1	30.302	33.333	1.00	1.00	4.31	78.30	0.000	0.000	229.86	0.00	0.00	
20	124.00	dbSpectra	1	30.761	33.837	1.00	1.00	5.50	63.00	1.071	9.170	297.77	199.37	2730.52	
21	119.00	Celwave PD1142-66	1	30.526	33.578	1.00	1.00	1.57	14.40	0.000	9.400	84.35	0.00	792.88	
22	119.00	Telewave ANT450F6	1	30.247	33.271	1.00	1.00	1.86	18.90	0.000	3.917	99.01	0.00	387.81	
23	119.00	Pipe Mount	1	30.041	33.045	1.00	1.00	4.31	78.30	0.000	0.000	227.88	0.00	0.00	
24	109.00	Airmux	1	29.491	32.440	1.00	1.00	1.80	31.50	0.000	0.000	93.43	0.00	0.00	
25	109.00	Pipe Mount (au_andrew)	3	29.491	32.440	0.56	0.75	2.70	54.00	0.000	0.000	140.14	0.00	0.00	
26	109.00	Airmux	1	29.491	32.440	1.00	1.00	1.83	6.30	0.000	0.000	94.98	0.00	0.00	
27	98.00	Empty Low Profile	1	28.838	31.722	1.00	1.00	22.00	1350.00	0.000	0.000	1116.60	0.00	0.00	
28	88.00	Platform w/ Handrail	1	28.192	31.011	1.00	1.00	51.70	2380.50	0.000	0.000	2565.22	0.00	0.00	
29	88.00	Ericsson Radio 4449	3	28.192	31.011	0.50	0.75	2.46	199.80	0.000	0.000	121.92	0.00	0.00	
30	88.00	Ericsson KRY 112 144/1	3	28.192	31.011	0.45	0.75	0.47	29.75	0.000	0.000	23.44	0.00	0.00	
31	88.00	Ericsson Air 32	3	28.192	31.011	0.65	0.75	12.60	356.94	0.000	0.000	625.02	0.00	0.00	
32	88.00	RFS	3	28.192	31.011	0.54	0.75	32.79	345.60	0.000	0.000	1626.90	0.00	0.00	
Totals:									9,961.99						20,929.47

Total Applied Force Summary

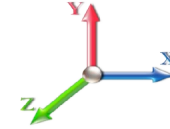
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

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		428.42	1029.70	0.00	0.00
10.00		419.16	1115.84	0.00	0.00
15.00		409.89	1094.91	0.00	0.00
20.00		425.07	1073.97	0.00	0.00
25.00		435.21	1053.04	0.00	0.00
30.00		441.53	1032.10	0.00	0.00
35.00		445.03	1011.17	0.00	0.00
40.00		446.33	990.23	0.00	0.00
43.34		296.48	649.17	0.00	0.00
45.00		149.99	548.56	0.00	0.00
48.67		331.80	1195.14	0.00	0.00
50.00		119.34	225.20	0.00	0.00
55.00		450.04	835.24	0.00	0.00
60.00		445.97	817.30	0.00	0.00
65.00		440.94	799.35	0.00	0.00
70.00		435.07	781.41	0.00	0.00
75.00		428.45	763.47	0.00	0.00
80.00		421.14	745.52	0.00	0.00
85.00		413.21	727.58	0.00	0.00
87.83		229.82	404.33	0.00	0.00
88.00	(13) attachments	4976.19	3351.26	0.00	0.00
90.00		163.69	444.29	0.00	0.00
92.17		175.78	475.37	0.00	0.00
95.00		227.46	323.70	0.00	0.00
98.00	(1) attachments	1354.22	1687.51	0.00	0.00
100.00		156.32	222.01	0.00	0.00
105.00		385.09	544.57	0.00	0.00
109.00	(5) attachments	628.94	516.69	0.00	0.00
110.00		73.83	102.71	0.00	0.00
115.00		364.11	504.58	0.00	0.00
119.00	(3) attachments	694.32	504.50	0.00	1180.69
120.00		69.46	96.73	0.00	0.00
124.00	(2) attachments	801.62	522.23	199.37	2730.52
125.00		67.17	93.74	0.00	0.00
130.00		329.87	459.72	0.00	0.00
133.37		215.47	301.71	0.00	0.00
135.00		103.60	205.72	0.00	0.00
136.62		102.09	202.78	0.00	0.00
140.00	(24) attachments	5432.33	2463.30	0.00	-1494.61
145.00		298.45	247.28	0.00	0.00
146.00	(41) attachments	8417.04	2750.14	0.00	25811.86
	Totals:	32,649.94	32,913.77	199.37	28,228.46

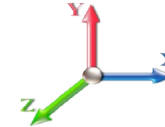
Calculated Forces

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

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	-32.82	-32.74	-0.19	-3657.4	-0.01	3657.47	4626.62	2313.31	8646.87	4329.86	0.00	0.000	0.000	0.852
5.00	-31.62	-32.48	-0.19	-3493.7	-0.01	3493.78	4552.64	2276.32	8322.99	4167.68	0.16	-0.307	0.000	0.845
10.00	-30.33	-32.22	-0.19	-3331.3	-0.01	3331.39	4477.51	2238.76	8003.10	4007.50	0.65	-0.619	0.000	0.838
15.00	-29.06	-31.96	-0.19	-3170.3	-0.01	3170.30	4395.69	2197.85	7677.64	3844.53	1.47	-0.937	0.000	0.831
20.00	-27.82	-31.67	-0.19	-3010.5	-0.01	3010.52	4294.12	2147.06	7325.16	3668.02	2.62	-1.261	0.000	0.827
25.00	-26.59	-31.36	-0.19	-2852.1	-0.01	2852.16	4192.55	2096.27	6980.95	3495.66	4.12	-1.591	0.000	0.822
30.00	-25.39	-31.04	-0.19	-2695.3	-0.01	2695.35	4090.97	2045.49	6645.03	3327.46	5.97	-1.926	0.000	0.816
35.00	-24.22	-30.71	-0.19	-2540.1	-0.01	2540.14	3989.40	1994.70	6317.40	3163.39	8.16	-2.266	0.000	0.809
40.00	-23.09	-30.33	-0.19	-2386.6	-0.01	2386.62	3887.82	1943.91	5998.04	3003.48	10.72	-2.611	0.000	0.801
43.34	-22.37	-30.08	-0.19	-2285.4	-0.01	2285.40	3820.04	1910.02	5789.54	2899.07	12.63	-2.848	0.000	0.794
45.00	-21.72	-29.97	-0.19	-2235.3	-0.01	2235.38	3786.25	1893.12	5686.97	2847.71	13.64	-2.968	0.000	0.791
48.67	-20.46	-29.64	-0.19	-2125.3	-0.01	2125.38	3251.53	1625.77	4904.15	2455.72	16.03	-3.230	0.000	0.872
50.00	-20.11	-29.59	-0.19	-2085.9	-0.01	2085.96	3230.14	1615.07	4836.85	2422.02	16.94	-3.328	0.000	0.868
55.00	-19.11	-29.23	-0.19	-1937.9	-0.01	1937.99	3143.08	1571.54	4578.34	2292.57	20.63	-3.718	0.000	0.852
60.00	-18.12	-28.85	-0.19	-1791.8	-0.01	1791.86	3056.01	1528.01	4326.92	2166.68	24.73	-4.111	0.000	0.833
65.00	-17.16	-28.47	-0.19	-1647.6	-0.01	1647.61	2968.95	1484.47	4082.61	2044.34	29.25	-4.505	0.000	0.812
70.00	-16.23	-28.08	-0.19	-1505.2	-0.01	1505.27	2881.88	1440.94	3845.39	1925.55	34.17	-4.899	0.000	0.788
75.00	-15.32	-27.69	-0.19	-1364.8	-0.01	1364.86	2794.82	1397.41	3615.28	1810.32	39.51	-5.291	0.000	0.760
80.00	-14.43	-27.30	-0.19	-1226.3	-0.01	1226.39	2707.76	1353.88	3392.26	1698.65	45.25	-5.680	-0.001	0.728
85.00	-13.61	-26.89	-0.19	-1089.8	-0.01	1089.89	2620.69	1310.35	3176.35	1590.53	51.39	-6.061	-0.001	0.691
87.83	-13.18	-26.64	-0.19	-1013.7	-0.01	1013.71	2571.36	1285.68	3057.15	1530.84	55.05	-6.278	-0.001	0.668
88.00	-10.37	-21.34	-0.19	-1009.2	-0.01	1009.27	2568.45	1284.23	3050.20	1527.37	55.27	-6.291	-0.001	0.665
90.00	-9.88	-21.16	-0.19	-966.58	-0.01	966.58	2533.63	1266.81	2967.53	1485.97	57.93	-6.443	-0.001	0.655
92.17	-9.36	-20.96	-0.20	-920.74	-0.01	920.74	2130.58	1065.29	2523.85	1263.80	60.89	-6.608	-0.001	0.733
95.00	-8.98	-20.73	-0.20	-861.36	-0.01	861.36	2089.47	1044.73	2426.88	1215.24	64.86	-6.820	-0.001	0.713
98.00	-7.40	-19.21	-0.20	-799.16	-0.02	799.16	2045.93	1022.97	2326.27	1164.86	69.22	-7.068	-0.001	0.690
100.00	-7.11	-19.06	-0.20	-760.74	-0.02	760.74	2016.91	1008.46	2260.38	1131.87	72.21	-7.234	-0.001	0.676
105.00	-6.50	-18.65	-0.20	-665.42	-0.02	665.42	1944.36	972.18	2099.80	1051.46	79.98	-7.628	-0.001	0.637
109.00	-6.02	-17.98	-0.20	-590.82	-0.02	590.82	1886.32	943.16	1975.59	989.26	86.48	-7.939	-0.001	0.601
110.00	-5.85	-17.91	-0.20	-572.84	-0.02	572.84	1871.81	935.90	1945.13	974.01	88.15	-8.018	-0.001	0.592
115.00	-5.31	-17.51	-0.20	-483.26	-0.02	483.26	1799.25	899.63	1796.38	899.53	96.71	-8.383	-0.001	0.541
119.00	-4.86	-16.77	-0.20	-412.03	-0.02	412.03	1741.21	870.61	1681.64	842.07	103.83	-8.663	-0.001	0.492
120.00	-4.73	-16.70	-0.20	-395.27	-0.02	395.27	1726.70	863.35	1653.55	828.00	105.65	-8.732	-0.001	0.480
124.00	-4.29	-15.84	0.00	-325.76	0.01	325.76	1668.66	834.33	1543.55	772.92	113.05	-8.988	-0.002	0.424
125.00	-4.16	-15.77	0.00	-309.92	0.01	309.92	1654.15	827.07	1516.64	759.45	114.93	-9.050	-0.002	0.411
130.00	-3.71	-15.38	0.00	-231.09	0.01	231.09	1581.59	790.80	1385.64	693.85	124.52	-9.321	-0.002	0.336
133.37	-3.41	-15.13	0.00	-179.20	0.00	179.20	1532.65	766.32	1300.60	651.27	131.13	-9.480	-0.002	0.278
135.00	-3.21	-14.99	0.00	-154.60	0.00	154.60	1509.04	754.52	1260.56	631.22	134.36	-9.549	-0.002	0.247
136.62	-3.01	-14.86	0.00	-130.26	0.00	130.26	885.20	442.60	750.52	375.82	137.60	-9.610	-0.002	0.351
140.00	-1.47	-9.10	0.00	-80.07	0.00	80.07	864.59	432.29	709.24	355.15	144.41	-9.708	-0.001	0.228
145.00	-1.27	-8.76	0.00	-34.58	0.00	34.58	833.10	416.55	649.44	325.20	154.61	-9.844	-0.001	0.108
146.00	0.00	-8.42	0.00	-25.81	0.00	25.81	826.66	413.33	637.68	319.32	156.66	-9.861	-0.001	0.081

Wind Loading - Shaft

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	20.289	24.35	138.4	359.9	1637.6
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	19.947	23.94	136.1	378.2	1628.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	19.576	23.49	133.5	385.8	1607.7
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	19.193	23.03	138.9	388.6	1582.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	18.804	22.56	142.6	388.7	1554.8
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	18.409	22.09	145.1	386.9	1525.1
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	18.012	21.61	146.7	383.8	1494.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	17.612	21.13	147.5	379.7	1462.1
43.34	Bot - Section 2	1.00	1.06	6.453	7.10	0.00	1.200	1.541	3.34	11.528	13.83	98.2	251.3	958.1
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	1.66	5.785	6.94	49.7	127.1	779.4
48.67	Top - Section 1	1.00	1.09	6.613	7.27	0.00	1.200	1.559	3.67	12.608	15.13	110.0	277.6	1696.5
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	1.33	4.515	5.42	39.6	100.2	337.2
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	16.721	20.07	149.8	370.7	1246.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	16.316	19.58	148.8	364.3	1216.0
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	15.910	19.09	147.6	357.4	1185.3
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	15.504	18.60	146.1	350.2	1154.1
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	15.096	18.12	144.3	342.7	1122.7
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	14.689	17.63	142.3	334.9	1091.0
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	14.280	17.14	140.2	326.9	1059.0
87.83	Bot - Section 3	1.00	1.23	7.488	8.24	0.00	1.200	1.654	2.83	7.910	9.49	78.2	182.6	586.9
88.00	Appurtenance(s)	1.00	1.23	7.491	8.24	0.00	1.200	1.655	0.17	0.470	0.56	4.6	10.9	54.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	2.00	5.604	6.73	55.7	130.0	649.7
92.17	Top - Section 2	1.00	1.24	7.564	8.32	0.00	1.200	1.662	2.17	5.998	7.20	59.9	139.3	694.4
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	2.83	7.727	9.27	77.6	179.5	508.0
98.00	Appurtenance(s)	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	8.039	9.65	81.3	186.9	527.9
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	2.00	5.277	6.33	53.6	123.2	346.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	12.908	15.49	132.5	299.3	843.6
109.00	Appurtenance(s)	1.00	1.29	7.836	8.62	0.00	1.200	1.690	4.00	10.030	12.04	103.7	233.7	654.8
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	1.00	2.466	2.96	25.6	58.1	161.3
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	12.087	14.50	126.4	281.2	785.6
119.00	Appurtenance(s)	1.00	1.31	7.982	8.78	0.00	1.200	1.705	4.00	9.374	11.25	98.8	219.0	608.2
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	1.00	2.302	2.76	24.3	54.4	149.7
124.00	Appurtenance(s)	1.00	1.32	8.051	8.86	0.00	1.200	1.712	4.00	9.045	10.85	96.1	211.5	584.8
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	1.00	2.220	2.66	23.6	52.5	143.8
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	10.855	13.03	116.5	253.0	697.6
133.37	Bot - Section 4	1.00	1.34	8.176	8.99	0.00	1.200	1.725	3.37	7.091	8.51	76.5	166.3	455.0
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	1.63	3.404	4.08	36.8	80.5	300.0
136.62	Top - Section 3	1.00	1.35	8.217	9.04	0.00	1.200	1.729	1.62	3.353	4.02	36.4	79.3	295.0
140.00	Appurtenance(s)	1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.38	6.837	8.20	74.5	160.6	327.3
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	9.780	11.74	107.4	227.9	464.9
146.00	Appurtenance(s)	1.00	1.37	8.333	9.17	0.00	1.200	1.741	1.00	1.906	2.29	21.0	45.2	91.1
Totals:									146.00			3,956.7	34,268.5	

Discrete Appurtenance Forces

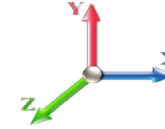
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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 26

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	146.00	Powerwave LGP219003	6	8.381	9.219	0.54	0.90	2.80	107.50	0.000	4.000	25.77	0.00	103.08
2	146.00	Beacon	1	8.333	9.166	1.00	1.00	2.40	30.41	0.000	0.000	22.00	0.00	0.00
3	146.00	Lightning Rod	1	8.375	9.212	1.00	1.00	3.42	64.33	0.000	3.500	31.48	0.00	110.18
4	146.00	Cci HPA-65R-BUU-H8	9	8.381	9.219	0.79	1.00	103.74	3345.58	0.000	4.000	956.34	0.00	3825.38
5	146.00	Powerwave LGP21401	6	8.381	9.219	0.54	0.90	4.97	336.98	0.000	4.000	45.84	0.00	183.38
6	146.00	Platform w/ Hand Rails	1	8.333	9.166	1.00	1.00	59.85	3414.18	0.000	0.000	548.59	0.00	0.00
7	146.00	Powerwave 7020.00	6	8.381	9.219	0.54	0.90	1.00	17.01	0.000	4.000	9.23	0.00	36.91
8	146.00	Ericsson RRUS-11 RRU's	3	8.381	9.219	0.60	0.90	5.82	423.68	0.000	4.000	53.68	0.00	214.73
9	146.00	Ericsson RRUS-32 RRU's	3	8.381	9.219	0.60	0.90	7.42	616.86	0.000	4.000	68.44	0.00	273.75
10	146.00	Ericsson RRUS 32 B2	3	8.381	9.219	0.60	0.90	6.27	453.93	0.000	4.000	57.81	0.00	231.24
11	146.00	Raycap DC-6-48-60-18-8F	2	8.381	9.219	0.60	0.90	3.38	66.56	0.000	4.000	31.15	0.00	124.61
12	140.00	Low Profile Platform	1	8.260	9.086	1.00	1.00	39.54	2799.91	0.000	0.000	359.25	0.00	0.00
13	140.00	Raycap	2	8.235	9.058	0.54	0.80	3.38	369.84	0.000	-2.000	30.59	0.00	-61.19
14	140.00	ALU B66 RRH4x45 RRU's	3	8.235	9.058	0.54	0.80	5.19	454.70	0.000	-2.000	47.03	0.00	-94.07
15	140.00	ALU B25 RRH4x30-4R	3	8.235	9.058	0.54	0.80	4.41	313.95	0.000	-2.000	39.97	0.00	-79.93
16	140.00	ALU B13 RRH4X30-4R	3	8.235	9.058	0.54	0.80	4.45	345.61	0.000	-2.000	40.30	0.00	-80.59
17	140.00	Antel LPA-80063/4CF	6	8.260	9.086	0.75	0.80	32.40	1372.20	0.000	0.000	294.41	0.00	0.00
18	140.00	Commscope	6	8.260	9.086	0.66	0.80	37.19	1562.07	0.000	0.000	337.87	0.00	0.00
19	124.00	Pipe Mount	1	8.051	8.857	1.00	1.00	9.59	204.49	0.000	0.000	84.97	0.00	0.00
20	124.00	dbSpectra	1	8.173	8.991	1.00	1.00	11.89	180.04	1.071	9.170	106.92	114.55	980.49
21	119.00	Celwave PD1142-66	1	8.111	8.922	1.00	1.00	4.83	136.65	0.000	9.400	43.13	0.00	405.42
22	119.00	Telewave ANT450F6	1	8.037	8.840	1.00	1.00	4.63	59.11	0.000	3.917	40.90	0.00	160.21
23	119.00	Pipe Mount	1	7.982	8.780	1.00	1.00	9.57	203.96	0.000	0.000	84.05	0.00	0.00
24	109.00	Airmux	1	7.836	8.619	1.00	1.00	2.33	287.80	0.000	0.000	20.05	0.00	0.00
25	109.00	Pipe Mount (au_andrew)	3	7.836	8.619	0.56	0.75	9.14	382.20	0.000	0.000	78.77	0.00	0.00
26	109.00	Airmux	1	7.836	8.619	1.00	1.00	2.36	30.52	0.000	0.000	20.38	0.00	0.00
27	98.00	Empty Low Profile	1	7.662	8.429	1.00	1.00	38.93	2754.36	0.000	0.000	328.09	0.00	0.00
28	88.00	Platform w/ Handrail	1	7.491	8.240	1.00	1.00	87.97	5044.82	0.000	0.000	724.84	0.00	0.00
29	88.00	Ericsson Radio 4449	3	7.491	8.240	0.50	0.75	3.21	455.20	0.000	0.000	26.46	0.00	0.00
30	88.00	Ericsson KRY 112 144/1	3	7.491	8.240	0.45	0.75	0.99	61.15	0.000	0.000	8.17	0.00	0.00
31	88.00	Ericsson Air 32	3	7.491	8.240	0.65	0.75	14.65	992.13	0.000	0.000	120.69	0.00	0.00
32	88.00	RFS	3	7.491	8.240	0.54	0.75	35.70	1677.32	0.000	0.000	294.17	0.00	0.00
Totals:									28,565.05			4,981.36		

Total Applied Force Summary

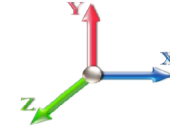
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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 26

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		138.41	1732.82	0.00	0.00
10.00		136.07	1866.04	0.00	0.00
15.00		133.54	1845.69	0.00	0.00
20.00		138.92	1820.59	0.00	0.00
25.00		142.65	1792.74	0.00	0.00
30.00		145.12	1763.05	0.00	0.00
35.00		146.68	1732.06	0.00	0.00
40.00		147.51	1700.06	0.00	0.00
43.34		98.20	1116.86	0.00	0.00
45.00		49.67	858.54	0.00	0.00
48.67		110.05	1871.12	0.00	0.00
50.00		39.63	400.46	0.00	0.00
55.00		149.76	1484.37	0.00	0.00
60.00		148.83	1454.00	0.00	0.00
65.00		147.59	1423.22	0.00	0.00
70.00		146.08	1392.10	0.00	0.00
75.00		144.33	1360.66	0.00	0.00
80.00		142.35	1328.95	0.00	0.00
85.00		140.17	1296.99	0.00	0.00
87.83		78.18	721.70	0.00	0.00
88.00	(13) attachments	1178.98	8293.12	0.00	0.00
90.00		55.68	722.43	0.00	0.00
92.17		59.88	773.14	0.00	0.00
95.00		77.65	611.06	0.00	0.00
98.00	(1) attachments	409.39	3391.29	0.00	0.00
100.00		53.60	419.24	0.00	0.00
105.00		132.46	1025.35	0.00	0.00
109.00	(5) attachments	222.95	1500.73	0.00	0.00
110.00		25.56	195.01	0.00	0.00
115.00		126.44	953.96	0.00	0.00
119.00	(3) attachments	266.85	1142.62	0.00	565.63
120.00		24.30	183.36	0.00	0.00
124.00	(2) attachments	288.03	1103.99	114.55	980.49
125.00		23.63	177.49	0.00	0.00
130.00		116.52	866.00	0.00	0.00
133.37		76.52	568.62	0.00	0.00
135.00		36.83	354.81	0.00	0.00
136.62		36.37	349.69	0.00	0.00
140.00	(24) attachments	1223.96	7659.33	0.00	-315.78
145.00		107.42	557.62	0.00	0.00
146.00	(41) attachments	1871.31	8986.70	0.00	5103.26
	Totals:	8,938.07	68,797.60	114.55	6,333.60

Calculated Forces

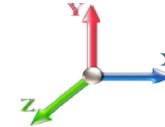
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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 26

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	-68.79	-8.99	-0.11	-1029.0	0.00	1029.06	4626.62	2313.31	8646.87	4329.86	0.00	0.000	0.000	0.253
5.00	-67.04	-8.95	-0.11	-984.11	0.00	984.11	4552.64	2276.32	8322.99	4167.68	0.05	-0.086	0.000	0.251
10.00	-65.16	-8.91	-0.11	-939.35	0.00	939.35	4477.51	2238.76	8003.10	4007.50	0.18	-0.174	0.000	0.249
15.00	-63.31	-8.87	-0.11	-894.79	0.00	894.79	4395.69	2197.85	7677.64	3844.53	0.41	-0.264	0.000	0.247
20.00	-61.47	-8.82	-0.11	-850.42	0.00	850.42	4294.12	2147.06	7325.16	3668.02	0.74	-0.356	0.000	0.246
25.00	-59.67	-8.77	-0.11	-806.31	0.00	806.31	4192.55	2096.27	6980.95	3495.66	1.16	-0.449	0.000	0.245
30.00	-57.89	-8.70	-0.11	-762.48	0.00	762.48	4090.97	2045.49	6645.03	3327.46	1.68	-0.543	0.000	0.243
35.00	-56.14	-8.63	-0.11	-718.97	0.00	718.97	3989.40	1994.70	6317.40	3163.39	2.30	-0.640	0.000	0.241
40.00	-54.43	-8.54	-0.11	-675.81	0.00	675.81	3887.82	1943.91	5998.04	3003.48	3.03	-0.738	0.000	0.239
43.34	-53.31	-8.48	-0.11	-647.31	0.00	647.31	3820.04	1910.02	5789.54	2899.07	3.56	-0.804	0.000	0.237
45.00	-52.45	-8.46	-0.11	-633.21	0.00	633.21	3786.25	1893.12	5686.97	2847.71	3.85	-0.838	0.000	0.236
48.67	-50.57	-8.37	-0.11	-602.15	0.00	602.15	3251.53	1625.77	4904.15	2455.72	4.52	-0.913	0.000	0.261
50.00	-50.16	-8.39	-0.11	-591.02	0.00	591.02	3230.14	1615.07	4836.85	2422.02	4.78	-0.940	0.000	0.260
55.00	-48.66	-8.30	-0.11	-549.10	0.00	549.10	3143.08	1571.54	4578.34	2292.57	5.83	-1.051	0.000	0.255
60.00	-47.19	-8.22	-0.11	-507.58	0.00	507.58	3056.01	1528.01	4326.92	2166.68	6.99	-1.162	0.000	0.250
65.00	-45.76	-8.13	-0.11	-466.49	0.00	466.49	2968.95	1484.47	4082.61	2044.34	8.26	-1.274	0.000	0.244
70.00	-44.36	-8.04	-0.11	-425.84	0.00	425.84	2881.88	1440.94	3845.39	1925.55	9.66	-1.385	0.000	0.237
75.00	-42.98	-7.94	-0.11	-385.65	0.00	385.65	2794.82	1397.41	3615.28	1810.32	11.17	-1.496	0.000	0.228
80.00	-41.64	-7.84	-0.11	-345.94	0.00	345.94	2707.76	1353.88	3392.26	1698.65	12.80	-1.606	0.000	0.219
85.00	-40.34	-7.72	-0.11	-306.73	0.00	306.73	2620.69	1310.35	3176.35	1590.53	14.53	-1.713	0.000	0.208
87.83	-39.62	-7.65	-0.11	-284.84	0.00	284.84	2571.36	1285.68	3057.15	1530.84	15.57	-1.774	0.000	0.202
88.00	-31.36	-6.22	-0.11	-283.57	0.00	283.57	2568.45	1284.23	3050.20	1527.37	15.63	-1.778	0.000	0.198
90.00	-30.64	-6.17	-0.11	-271.12	0.00	271.12	2533.63	1266.81	2967.53	1485.97	16.39	-1.821	0.000	0.195
92.17	-29.86	-6.11	-0.11	-257.76	0.00	257.76	2130.58	1065.29	2523.85	1263.80	17.22	-1.867	0.000	0.218
95.00	-29.25	-6.05	-0.11	-240.44	0.00	240.44	2089.47	1044.73	2426.88	1215.24	18.35	-1.926	0.000	0.212
98.00	-25.87	-5.55	-0.11	-222.30	0.00	222.30	2045.93	1022.97	2326.27	1164.86	19.58	-1.995	0.000	0.204
100.00	-25.44	-5.51	-0.11	-211.21	0.00	211.21	2016.91	1008.46	2260.38	1131.87	20.43	-2.041	0.000	0.199
105.00	-24.41	-5.39	-0.11	-183.64	0.00	183.64	1944.36	972.18	2099.80	1051.46	22.62	-2.151	-0.001	0.187
109.00	-22.92	-5.13	-0.11	-162.10	0.00	162.10	1886.32	943.16	1975.59	989.26	24.46	-2.236	-0.001	0.176
110.00	-22.72	-5.12	-0.11	-156.98	0.00	156.98	1871.81	935.90	1945.13	974.01	24.93	-2.258	-0.001	0.173
115.00	-21.76	-4.99	-0.11	-131.39	0.00	131.39	1799.25	899.63	1796.38	899.53	27.35	-2.358	-0.001	0.158
119.00	-20.63	-4.69	-0.11	-110.88	0.00	110.88	1741.21	870.61	1681.64	842.07	29.36	-2.433	-0.001	0.144
120.00	-20.44	-4.67	-0.11	-106.19	0.00	106.19	1726.70	863.35	1653.55	828.00	29.87	-2.452	-0.001	0.140
124.00	-19.35	-4.35	0.00	-86.52	0.00	86.52	1668.66	834.33	1543.55	772.92	31.95	-2.520	-0.001	0.124
125.00	-19.17	-4.33	0.00	-82.17	0.00	82.17	1654.15	827.07	1516.64	759.45	32.48	-2.537	-0.001	0.120
130.00	-18.30	-4.20	0.00	-60.50	0.00	60.50	1581.59	790.80	1385.64	693.85	35.18	-2.608	-0.001	0.099
133.37	-17.74	-4.10	0.00	-46.35	0.00	46.35	1532.65	766.32	1300.60	651.27	37.04	-2.650	-0.001	0.083
135.00	-17.38	-4.06	0.00	-39.67	0.00	39.67	1509.04	754.52	1260.56	631.22	37.94	-2.668	-0.001	0.074
136.62	-17.03	-4.01	0.00	-33.09	0.00	33.09	885.20	442.60	750.52	375.82	38.85	-2.683	-0.001	0.107
140.00	-9.44	-2.43	0.00	-19.55	0.00	19.55	864.59	432.29	709.24	355.15	40.76	-2.708	-0.001	0.066
145.00	-8.89	-2.30	0.00	-7.40	0.00	7.40	833.10	416.55	649.44	325.20	43.61	-2.740	-0.001	0.033
146.00	0.00	-1.87	0.00	-5.10	0.00	5.10	826.66	413.33	637.68	319.32	44.19	-2.743	-0.001	0.016

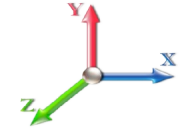
Seismic Segment Forces (Factored)

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 24
Gust Response Factor 1.10	Sds 0.19	Ss 0.18
Dead Load Factor 1.20	Seismic Load Factor 1.00	S1 0.06
Wind Load Factor 0.00	Structure Frequency (f1) 0.32	SA 0.03
		Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1064.7	0.00	0.03	0.02	21.21	
10.00		1041.5	0.01	0.05	0.03	29.56	
15.00		1018.2	0.02	0.06	0.04	33.00	
20.00		995.00	0.04	0.07	0.04	34.26	
25.00		971.74	0.06	0.07	0.04	34.61	
30.00		948.48	0.08	0.07	0.04	34.66	
35.00		925.22	0.11	0.07	0.04	34.66	
40.00		901.96	0.14	0.07	0.03	34.57	
43.34	Bot - Section 2	588.97	0.17	0.07	0.03	22.83	
45.00		543.55	0.18	0.07	0.03	21.14	
48.67	Top - Section 1	1182.3	0.21	0.06	0.02	45.90	
50.00		197.47	0.22	0.06	0.02	7.63	
55.00		729.75	0.27	0.05	0.02	26.87	
60.00		709.81	0.32	0.04	0.01	23.09	
65.00		689.87	0.37	0.03	0.01	17.13	
70.00		669.93	0.43	0.01	0.01	8.92	
75.00		650.00	0.50	-0.02	0.01	-0.77	
80.00		630.06	0.57	-0.04	0.01	-10.28	
85.00		610.12	0.64	-0.07	0.02	-17.78	
87.83	Bot - Section 3	336.88	0.68	-0.08	0.03	-11.62	
88.00	Appurtenance(s)	3717.0	0.69	-0.08	0.03	-129.21	
90.00		433.05	0.72	-0.09	0.03	-16.22	
92.17	Top - Section 2	462.54	0.75	-0.10	0.04	-18.22	
95.00		273.82	0.80	-0.11	0.05	-11.03	
98.00	Appurtenance(s)	1784.1	0.85	-0.12	0.07	-70.09	
100.00		186.08	0.89	-0.12	0.08	-6.98	
105.00		453.57	0.98	-0.11	0.12	-13.25	
109.00	Appurtenance(s)	452.90	1.05	-0.09	0.16	-8.48	
110.00		86.06	1.07	-0.08	0.17	-1.34	
115.00		420.34	1.17	-0.02	0.23	1.40	
119.00	Appurtenance(s)	448.31	1.26	0.06	0.30	9.97	
120.00		79.42	1.28	0.09	0.32	2.18	
124.00	Appurtenance(s)	468.02	1.36	0.22	0.39	23.73	
125.00		76.09	1.39	0.26	0.42	4.34	
130.00		370.50	1.50	0.50	0.54	34.09	
133.37	Bot - Section 4	240.58	1.58	0.71	0.64	28.57	
135.00		182.94	1.62	0.83	0.69	24.25	
136.62	Top - Section 3	179.76	1.66	0.96	0.75	26.42	
140.00	Appurtenance(s)	2642.2	1.74	1.27	0.87	472.53	
145.00		197.46	1.86	1.85	1.09	45.61	
146.00	Appurtenance(s)	3040.2	1.89	1.98	1.14	736.07	
Totals:		31,600.8				1,523.9	Total Wind: 32,649.9

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

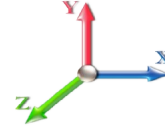
Calculated Forces

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 22

Load Case: 1.2D + 1.0E		Iterations 24
Gust Response Factor 1.10	Sds 0.19	Ss 0.18
Dead Load Factor 1.20	Seismic Load Factor 1.00	S1 0.06
Wind Load Factor 0.00	Structure Frequency (f1) 0.32	SA 0.03
		Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-43.88	-1.85	0.00	-230.31	0.00	230.31	4626.62	2313.31	8646.87	4329.86	0.00	0.00	0.00	0.063
5.00	-42.51	-1.84	0.00	-221.08	0.00	221.08	4552.64	2276.32	8322.99	4167.68	0.01	-0.02	0.062	
10.00	-41.02	-1.82	0.00	-211.88	0.00	211.88	4477.51	2238.76	8003.10	4007.50	0.04	-0.04	0.062	
15.00	-39.56	-1.80	0.00	-202.77	0.00	202.77	4395.69	2197.85	7677.64	3844.53	0.09	-0.06	0.062	
20.00	-38.13	-1.78	0.00	-193.76	0.00	193.76	4294.12	2147.06	7325.16	3668.02	0.17	-0.08	0.062	
25.00	-36.73	-1.76	0.00	-184.85	0.00	184.85	4192.55	2096.27	6980.95	3495.66	0.26	-0.10	0.062	
30.00	-35.35	-1.73	0.00	-176.06	0.00	176.06	4090.97	2045.49	6645.03	3327.46	0.38	-0.12	0.062	
35.00	-34.00	-1.71	0.00	-167.40	0.00	167.40	3989.40	1994.70	6317.40	3163.39	0.52	-0.15	0.061	
40.00	-32.68	-1.68	0.00	-158.85	0.00	158.85	3887.82	1943.91	5998.04	3003.48	0.69	-0.17	0.061	
43.34	-31.81	-1.66	0.00	-153.23	0.00	153.23	3820.04	1910.02	5789.54	2899.07	0.81	-0.18	0.061	
45.00	-31.08	-1.65	0.00	-150.47	0.00	150.47	3786.25	1893.12	5686.97	2847.71	0.87	-0.19	0.061	
48.67	-29.49	-1.60	0.00	-144.42	0.00	144.42	3251.53	1625.77	4904.15	2455.72	1.03	-0.21	0.068	
50.00	-29.19	-1.60	0.00	-142.29	0.00	142.29	3230.14	1615.07	4836.85	2422.02	1.09	-0.22	0.068	
55.00	-28.07	-1.58	0.00	-134.29	0.00	134.29	3143.08	1571.54	4578.34	2292.57	1.33	-0.24	0.068	
60.00	-26.98	-1.57	0.00	-126.37	0.00	126.37	3056.01	1528.01	4326.92	2166.68	1.60	-0.27	0.067	
65.00	-25.92	-1.56	0.00	-118.53	0.00	118.53	2968.95	1484.47	4082.61	2044.34	1.90	-0.30	0.067	
70.00	-24.87	-1.56	0.00	-110.73	0.00	110.73	2881.88	1440.94	3845.39	1925.55	2.23	-0.33	0.066	
75.00	-23.85	-1.56	0.00	-102.95	0.00	102.95	2794.82	1397.41	3615.28	1810.32	2.59	-0.36	0.065	
80.00	-22.86	-1.57	0.00	-95.13	0.00	95.13	2707.76	1353.88	3392.26	1698.65	2.98	-0.39	0.064	
85.00	-21.89	-1.57	0.00	-87.29	0.00	87.29	2620.69	1310.35	3176.35	1590.53	3.40	-0.42	0.063	
87.83	-21.35	-1.57	0.00	-82.84	0.00	82.84	2571.36	1285.68	3057.15	1530.84	3.65	-0.43	0.062	
88.00	-16.88	-1.54	0.00	-82.57	0.00	82.57	2568.45	1284.23	3050.20	1527.37	3.66	-0.44	0.061	
90.00	-16.29	-1.54	0.00	-79.50	0.00	79.50	2533.63	1266.81	2967.53	1485.97	3.85	-0.45	0.060	
92.17	-15.65	-1.54	0.00	-76.17	0.00	76.17	2130.58	1065.29	2523.85	1263.80	4.06	-0.46	0.068	
95.00	-15.22	-1.54	0.00	-71.81	0.00	71.81	2089.47	1044.73	2426.88	1215.24	4.34	-0.48	0.066	
98.00	-12.97	-1.52	0.00	-67.20	0.00	67.20	2045.93	1022.97	2326.27	1164.86	4.64	-0.50	0.064	
100.00	-12.67	-1.53	0.00	-64.15	0.00	64.15	2016.91	1008.46	2260.38	1131.87	4.86	-0.51	0.063	
105.00	-11.95	-1.53	0.00	-56.52	0.00	56.52	1944.36	972.18	2099.80	1051.46	5.41	-0.55	0.060	
109.00	-11.26	-1.52	0.00	-50.42	0.00	50.42	1886.32	943.16	1975.59	989.26	5.88	-0.57	0.057	
110.00	-11.12	-1.52	0.00	-48.90	0.00	48.90	1871.81	935.90	1945.13	974.01	6.00	-0.58	0.056	
115.00	-10.45	-1.52	0.00	-41.27	0.00	41.27	1799.25	899.63	1796.38	899.53	6.63	-0.61	0.052	
119.00	-9.77	-1.51	0.00	-35.19	0.00	35.19	1741.21	870.61	1681.64	842.07	7.15	-0.64	0.047	
120.00	-9.65	-1.51	0.00	-33.68	0.00	33.68	1726.70	863.35	1653.55	828.00	7.28	-0.64	0.046	
124.00	-8.95	-1.48	0.00	-27.66	0.00	27.66	1668.66	834.33	1543.55	772.92	7.83	-0.66	0.041	
125.00	-8.82	-1.47	0.00	-26.19	0.00	26.19	1654.15	827.07	1516.64	759.45	7.97	-0.67	0.040	
130.00	-8.21	-1.43	0.00	-18.83	0.00	18.83	1581.59	790.80	1385.64	693.85	8.68	-0.69	0.032	
133.37	-7.81	-1.40	0.00	-13.99	0.00	13.99	1532.65	766.32	1300.60	651.27	9.17	-0.70	0.027	
135.00	-7.53	-1.37	0.00	-11.71	0.00	11.71	1509.04	754.52	1260.56	631.22	9.42	-0.71	0.024	
136.62	-7.26	-1.35	0.00	-9.48	0.00	9.48	885.20	442.60	750.52	375.82	9.66	-0.71	0.033	
140.00	-3.99	-0.83	0.00	-4.94	0.00	4.94	864.59	432.29	709.24	355.15	10.16	-0.72	0.019	
145.00	-3.66	-0.78	0.00	-0.78	0.00	0.78	833.10	416.55	649.44	325.20	10.92	-0.73	0.007	
146.00	0.00	-0.74	0.00	0.00	0.00	0.00	826.66	413.33	637.68	319.32	11.08	-0.73	0.000	

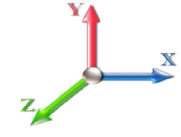
Seismic Segment Forces (Factored)

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 24
Gust Response Factor	1.10	Sds	0.19	Ss 0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.32	SA 0.03
				Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1064.7	0.00	0.03	0.02	21.21	
10.00		1041.5	0.01	0.05	0.03	29.56	
15.00		1018.2	0.02	0.06	0.04	33.00	
20.00		995.00	0.04	0.07	0.04	34.26	
25.00		971.74	0.06	0.07	0.04	34.61	
30.00		948.48	0.08	0.07	0.04	34.66	
35.00		925.22	0.11	0.07	0.04	34.66	
40.00		901.96	0.14	0.07	0.03	34.57	
43.34	Bot - Section 2	588.97	0.17	0.07	0.03	22.83	
45.00		543.55	0.18	0.07	0.03	21.14	
48.67	Top - Section 1	1182.3	0.21	0.06	0.02	45.90	
50.00		197.47	0.22	0.06	0.02	7.63	
55.00		729.75	0.27	0.05	0.02	26.87	
60.00		709.81	0.32	0.04	0.01	23.09	
65.00		689.87	0.37	0.03	0.01	17.13	
70.00		669.93	0.43	0.01	0.01	8.92	
75.00		650.00	0.50	-0.02	0.01	-0.77	
80.00		630.06	0.57	-0.04	0.01	-10.28	
85.00		610.12	0.64	-0.07	0.02	-17.78	
87.83	Bot - Section 3	336.88	0.68	-0.08	0.03	-11.62	
88.00	Appurtenance(s)	3717.0	0.69	-0.08	0.03	-129.21	
90.00		433.05	0.72	-0.09	0.03	-16.22	
92.17	Top - Section 2	462.54	0.75	-0.10	0.04	-18.22	
95.00		273.82	0.80	-0.11	0.05	-11.03	
98.00	Appurtenance(s)	1784.1	0.85	-0.12	0.07	-70.09	
100.00		186.08	0.89	-0.12	0.08	-6.98	
105.00		453.57	0.98	-0.11	0.12	-13.25	
109.00	Appurtenance(s)	452.90	1.05	-0.09	0.16	-8.48	
110.00		86.06	1.07	-0.08	0.17	-1.34	
115.00		420.34	1.17	-0.02	0.23	1.40	
119.00	Appurtenance(s)	448.31	1.26	0.06	0.30	9.97	
120.00		79.42	1.28	0.09	0.32	2.18	
124.00	Appurtenance(s)	468.02	1.36	0.22	0.39	23.73	
125.00		76.09	1.39	0.26	0.42	4.34	
130.00		370.50	1.50	0.50	0.54	34.09	
133.37	Bot - Section 4	240.58	1.58	0.71	0.64	28.57	
135.00		182.94	1.62	0.83	0.69	24.25	
136.62	Top - Section 3	179.76	1.66	0.96	0.75	26.42	
140.00	Appurtenance(s)	2642.2	1.74	1.27	0.87	472.53	
145.00		197.46	1.86	1.85	1.09	45.61	
146.00	Appurtenance(s)	3040.2	1.89	1.98	1.14	736.07	
Totals:		31,600.8				1,523.9	Total Wind: 32,649.9

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

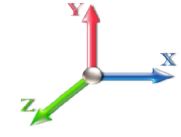
Calculated Forces

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 24
Gust Response Factor 1.10	Sds 0.19	Ss 0.18
Dead Load Factor 0.90	Seismic Load Factor 1.00	S1 0.06
Wind Load Factor 0.00	Structure Frequency (f1) 0.32	SA 0.03
	Seismic Importance Factor 1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-32.91	-1.84	0.00	-226.41	0.00	226.41	4626.62	2313.31	8646.87	4329.86	0.00	0.00	0.00	0.059
5.00	-31.88	-1.83	0.00	-217.20	0.00	217.20	4552.64	2276.32	8322.99	4167.68	0.01	-0.02	-0.02	0.059
10.00	-30.77	-1.81	0.00	-208.03	0.00	208.03	4477.51	2238.76	8003.10	4007.50	0.04	-0.04	-0.04	0.059
15.00	-29.67	-1.79	0.00	-198.96	0.00	198.96	4395.69	2197.85	7677.64	3844.53	0.09	-0.06	-0.06	0.059
20.00	-28.60	-1.76	0.00	-190.01	0.00	190.01	4294.12	2147.06	7325.16	3668.02	0.16	-0.08	-0.08	0.058
25.00	-27.54	-1.74	0.00	-181.19	0.00	181.19	4192.55	2096.27	6980.95	3495.66	0.26	-0.10	-0.10	0.058
30.00	-26.51	-1.71	0.00	-172.49	0.00	172.49	4090.97	2045.49	6645.03	3327.46	0.37	-0.12	-0.12	0.058
35.00	-25.50	-1.68	0.00	-163.93	0.00	163.93	3989.40	1994.70	6317.40	3163.39	0.51	-0.14	-0.14	0.058
40.00	-24.51	-1.66	0.00	-155.51	0.00	155.51	3887.82	1943.91	5998.04	3003.48	0.67	-0.17	-0.17	0.058
43.34	-23.86	-1.64	0.00	-149.98	0.00	149.98	3820.04	1910.02	5789.54	2899.07	0.79	-0.18	-0.18	0.058
45.00	-23.31	-1.62	0.00	-147.26	0.00	147.26	3786.25	1893.12	5686.97	2847.71	0.86	-0.19	-0.19	0.058
48.67	-22.11	-1.57	0.00	-141.32	0.00	141.32	3251.53	1625.77	4904.15	2455.72	1.01	-0.21	-0.21	0.064
50.00	-21.89	-1.57	0.00	-139.23	0.00	139.23	3230.14	1615.07	4836.85	2422.02	1.07	-0.21	-0.21	0.064
55.00	-21.05	-1.55	0.00	-131.38	0.00	131.38	3143.08	1571.54	4578.34	2292.57	1.30	-0.24	-0.24	0.064
60.00	-20.23	-1.53	0.00	-123.63	0.00	123.63	3056.01	1528.01	4326.92	2166.68	1.57	-0.27	-0.27	0.064
65.00	-19.43	-1.52	0.00	-115.96	0.00	115.96	2968.95	1484.47	4082.61	2044.34	1.86	-0.29	-0.29	0.063
70.00	-18.65	-1.52	0.00	-108.36	0.00	108.36	2881.88	1440.94	3845.39	1925.55	2.18	-0.32	-0.32	0.063
75.00	-17.89	-1.52	0.00	-100.77	0.00	100.77	2794.82	1397.41	3615.28	1810.32	2.54	-0.35	-0.35	0.062
80.00	-17.14	-1.53	0.00	-93.16	0.00	93.16	2707.76	1353.88	3392.26	1698.65	2.92	-0.38	-0.38	0.061
85.00	-16.41	-1.53	0.00	-85.53	0.00	85.53	2620.69	1310.35	3176.35	1590.53	3.33	-0.41	-0.41	0.060
87.83	-16.01	-1.53	0.00	-81.20	0.00	81.20	2571.36	1285.68	3057.15	1530.84	3.58	-0.43	-0.43	0.059
88.00	-12.66	-1.50	0.00	-80.94	0.00	80.94	2568.45	1284.23	3050.20	1527.37	3.59	-0.43	-0.43	0.058
90.00	-12.21	-1.50	0.00	-77.94	0.00	77.94	2533.63	1266.81	2967.53	1485.97	3.77	-0.44	-0.44	0.057
92.17	-11.74	-1.50	0.00	-74.68	0.00	74.68	2130.58	1065.29	2523.85	1263.80	3.98	-0.45	-0.45	0.065
95.00	-11.41	-1.50	0.00	-70.42	0.00	70.42	2089.47	1044.73	2426.88	1215.24	4.25	-0.47	-0.47	0.063
98.00	-9.73	-1.49	0.00	-65.91	0.00	65.91	2045.93	1022.97	2326.27	1164.86	4.55	-0.49	-0.49	0.061
100.00	-9.50	-1.49	0.00	-62.92	0.00	62.92	2016.91	1008.46	2260.38	1131.87	4.76	-0.50	-0.50	0.060
105.00	-8.96	-1.49	0.00	-55.45	0.00	55.45	1944.36	972.18	2099.80	1051.46	5.30	-0.54	-0.54	0.057
109.00	-8.44	-1.49	0.00	-49.47	0.00	49.47	1886.32	943.16	1975.59	989.26	5.76	-0.56	-0.56	0.054
110.00	-8.34	-1.49	0.00	-47.98	0.00	47.98	1871.81	935.90	1945.13	974.01	5.88	-0.57	-0.57	0.054
115.00	-7.83	-1.49	0.00	-40.51	0.00	40.51	1799.25	899.63	1796.38	899.53	6.49	-0.60	-0.60	0.049
119.00	-7.33	-1.48	0.00	-34.55	0.00	34.55	1741.21	870.61	1681.64	842.07	7.01	-0.62	-0.62	0.045
120.00	-7.23	-1.48	0.00	-33.07	0.00	33.07	1726.70	863.35	1653.55	828.00	7.14	-0.63	-0.63	0.044
124.00	-6.71	-1.45	0.00	-27.17	0.00	27.17	1668.66	834.33	1543.55	772.92	7.67	-0.65	-0.65	0.039
125.00	-6.61	-1.44	0.00	-25.72	0.00	25.72	1654.15	827.07	1516.64	759.45	7.81	-0.65	-0.65	0.038
130.00	-6.15	-1.41	0.00	-18.50	0.00	18.50	1581.59	790.80	1385.64	693.85	8.51	-0.68	-0.68	0.031
133.37	-5.85	-1.38	0.00	-13.75	0.00	13.75	1532.65	766.32	1300.60	651.27	8.99	-0.69	-0.69	0.025
135.00	-5.65	-1.35	0.00	-11.51	0.00	11.51	1509.04	754.52	1260.56	631.22	9.23	-0.69	-0.69	0.022
136.62	-5.44	-1.32	0.00	-9.32	0.00	9.32	885.20	442.60	750.52	375.82	9.46	-0.70	-0.70	0.031
140.00	-2.99	-0.82	0.00	-4.86	0.00	4.86	864.59	432.29	709.24	355.15	9.96	-0.71	-0.71	0.017
145.00	-2.74	-0.77	0.00	-0.77	0.00	0.77	833.10	416.55	649.44	325.20	10.70	-0.71	-0.71	0.006
146.00	0.00	-0.74	0.00	0.00	0.00	0.00	826.66	413.33	637.68	319.32	10.85	-0.71	-0.71	0.000

Wind Loading - Shaft

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	215.32	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	210.71	0.650	0.000	5.00	19.254	12.52	102.5	0.0	1064.8
10.00		1.00	0.85	7.442	8.19	206.10	0.650	0.000	5.00	18.837	12.24	100.2	0.0	1041.5
15.00		1.00	0.85	7.442	8.19	201.49	0.650	0.000	5.00	18.421	11.97	98.0	0.0	1018.3
20.00		1.00	0.90	7.896	8.69	202.81	0.650	0.000	5.00	18.004	11.70	101.6	0.0	995.0
25.00		1.00	0.95	8.276	9.10	202.77	0.650	0.000	5.00	17.588	11.43	104.1	0.0	971.7
30.00		1.00	0.98	8.600	9.46	201.74	0.650	0.000	5.00	17.171	11.16	105.6	0.0	948.5
35.00		1.00	1.01	8.883	9.77	200.01	0.650	0.000	5.00	16.755	10.89	106.4	0.0	925.2
40.00		1.00	1.04	9.137	10.05	197.73	0.650	0.000	5.00	16.338	10.62	106.7	0.0	902.0
43.34	Bot - Section 2	1.00	1.06	9.292	10.22	195.97	0.650	0.000	3.34	10.671	6.94	70.9	0.0	589.0
45.00		1.00	1.07	9.366	10.30	195.03	0.650	0.000	1.66	5.356	3.48	35.9	0.0	543.5
48.67	Top - Section 1	1.00	1.09	9.522	10.47	192.82	0.650	0.000	3.67	11.654	7.58	79.3	0.0	1182.4
50.00		1.00	1.09	9.576	10.53	195.96	0.650	0.000	1.33	4.168	2.71	28.5	0.0	197.5
55.00		1.00	1.12	9.770	10.75	192.65	0.650	0.000	5.00	15.406	10.01	107.6	0.0	729.7
60.00		1.00	1.14	9.951	10.95	189.09	0.650	0.000	5.00	14.989	9.74	106.6	0.0	709.8
65.00		1.00	1.16	10.120	11.13	185.32	0.650	0.000	5.00	14.572	9.47	105.4	0.0	689.9
70.00		1.00	1.17	10.279	11.31	181.35	0.650	0.000	5.00	14.156	9.20	104.0	0.0	669.9
75.00		1.00	1.19	10.430	11.47	177.22	0.650	0.000	5.00	13.739	8.93	102.5	0.0	650.0
80.00		1.00	1.21	10.572	11.63	172.93	0.650	0.000	5.00	13.323	8.66	100.7	0.0	630.1
85.00		1.00	1.22	10.708	11.78	168.51	0.650	0.000	5.00	12.906	8.39	98.8	0.0	610.1
87.83	Bot - Section 3	1.00	1.23	10.782	11.86	165.95	0.650	0.000	2.83	7.129	4.63	55.0	0.0	336.9
88.00	Appurtenance(s)	1.00	1.23	10.787	11.87	165.80	0.650	0.000	0.17	0.424	0.28	3.3	0.0	36.4
90.00		1.00	1.24	10.838	11.92	163.97	0.650	0.000	2.00	5.052	3.28	39.1	0.0	433.1
92.17	Top - Section 2	1.00	1.24	10.892	11.98	161.96	0.650	0.000	2.17	5.397	3.51	42.0	0.0	462.5
95.00		1.00	1.25	10.962	12.06	162.86	0.650	0.000	2.83	6.940	4.51	54.4	0.0	273.8
98.00	Appurtenance(s)	1.00	1.26	11.034	12.14	160.03	0.650	0.000	3.00	7.203	4.68	56.8	0.0	284.1
100.00		1.00	1.27	11.081	12.19	158.12	0.650	0.000	2.00	4.718	3.07	37.4	0.0	186.1
105.00		1.00	1.28	11.195	12.31	153.28	0.650	0.000	5.00	11.504	7.48	92.1	0.0	453.6
109.00	Appurtenance(s)	1.00	1.29	11.284	12.41	149.35	0.650	0.000	4.00	8.904	5.79	71.8	0.0	350.9
110.00		1.00	1.29	11.305	12.44	148.35	0.650	0.000	1.00	2.184	1.42	17.7	0.0	86.1
115.00		1.00	1.30	11.412	12.55	143.34	0.650	0.000	5.00	10.671	6.94	87.1	0.0	420.3
119.00	Appurtenance(s)	1.00	1.31	11.494	12.64	139.28	0.650	0.000	4.00	8.237	5.35	67.7	0.0	324.3
120.00		1.00	1.32	11.514	12.67	138.25	0.650	0.000	1.00	2.018	1.31	16.6	0.0	79.4
124.00	Appurtenance(s)	1.00	1.32	11.594	12.75	134.13	0.650	0.000	4.00	7.904	5.14	65.5	0.0	311.0
125.00		1.00	1.33	11.614	12.78	133.09	0.650	0.000	1.00	1.934	1.26	16.1	0.0	76.1
130.00		1.00	1.34	11.710	12.88	127.86	0.650	0.000	5.00	9.421	6.12	78.9	0.0	370.5
133.37	Bot - Section 4	1.00	1.34	11.773	12.95	124.29	0.650	0.000	3.37	6.121	3.98	51.5	0.0	240.6
135.00		1.00	1.35	11.803	12.98	122.57	0.650	0.000	1.63	2.935	1.91	24.8	0.0	182.9
136.62	Top - Section 3	1.00	1.35	11.833	13.02	120.83	0.650	0.000	1.62	2.886	1.88	24.4	0.0	179.8
140.00	Appurtenance(s)	1.00	1.36	11.894	13.08	119.43	0.650	0.000	3.38	5.861	3.81	49.8	0.0	139.0
145.00		1.00	1.37	11.982	13.18	114.02	0.650	0.000	5.00	8.330	5.41	71.4	0.0	197.5
146.00	Appurtenance(s)	1.00	1.37	12.000	13.20	112.93	0.650	0.000	1.00	1.616	1.05	13.9	0.0	38.3
Totals:									146.00			2,802.7		20,532.0

Discrete Appurtenance Forces

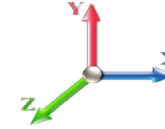
Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 25

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	146.00	Powerwave LGP219003	6	12.068	13.275	0.54	0.90	1.20	39.00	0.000	4.000	15.91	0.00	63.66	
2	146.00	Beacon	1	12.000	13.200	1.00	1.00	2.40	15.00	0.000	0.000	31.68	0.00	0.00	
3	146.00	Lightning Rod	1	12.060	13.266	1.00	1.00	1.05	35.00	0.000	3.500	13.93	0.00	48.75	
4	146.00	Cci HPA-65R-BUU-H8	9	12.068	13.275	0.79	1.00	92.29	612.00	0.000	4.000	1225.12	0.00	4900.47	
5	146.00	Powerwave LGP21401	6	12.068	13.275	0.54	0.90	3.50	114.00	0.000	4.000	46.45	0.00	185.81	
6	146.00	Platform w/ Hand Rails	1	12.000	13.200	1.00	1.00	32.00	1600.00	0.000	0.000	422.39	0.00	0.00	
7	146.00	Powerwave 7020.00	6	12.068	13.275	0.54	0.90	0.45	6.96	0.000	4.000	6.02	0.00	24.09	
8	146.00	Ericsson RRUS-11 RRU's	3	12.068	13.275	0.60	0.90	4.65	150.00	0.000	4.000	61.72	0.00	246.87	
9	146.00	Ericsson RRUS-32 RRU's	3	12.068	13.275	0.60	0.90	5.99	231.00	0.000	4.000	79.49	0.00	317.95	
10	146.00	Ericsson RRUS 32 B2	3	12.068	13.275	0.60	0.90	4.96	159.00	0.000	4.000	65.80	0.00	263.20	
11	146.00	Raycap DC-6-48-60-18-8F	2	12.068	13.275	0.60	0.90	2.29	40.00	0.000	4.000	30.42	0.00	121.67	
12	140.00	Low Profile Platform	1	11.894	13.084	1.00	1.00	22.00	1500.00	0.000	0.000	287.84	0.00	0.00	
13	140.00	Raycap	2	11.858	13.044	0.54	0.80	2.70	84.00	0.000	-2.000	35.24	0.00	-70.48	
14	140.00	ALU B66 RRH4x45 RRU's	3	11.858	13.044	0.54	0.80	4.08	170.40	0.000	-2.000	53.28	0.00	-106.55	
15	140.00	ALU B25 RRH4x30-4R	3	11.858	13.044	0.54	0.80	3.44	153.00	0.000	-2.000	44.89	0.00	-89.77	
16	140.00	ALU B13 RRH4X30-4R	3	11.858	13.044	0.54	0.80	3.47	171.60	0.000	-2.000	45.31	0.00	-90.61	
17	140.00	Antel LPA-80063/4CF	6	11.894	13.084	0.75	0.80	27.75	120.00	0.000	0.000	363.05	0.00	0.00	
18	140.00	Commscope	6	11.894	13.084	0.66	0.80	32.07	304.26	0.000	0.000	419.61	0.00	0.00	
19	124.00	Pipe Mount	1	11.594	12.753	1.00	1.00	4.31	87.00	0.000	0.000	54.97	0.00	0.00	
20	124.00	dbSpectra	1	11.770	12.947	1.00	1.00	5.50	70.00	1.071	9.170	71.21	76.28	652.96	
21	119.00	Celwave PD1142-66	1	11.680	12.847	1.00	1.00	1.57	16.00	0.000	9.400	20.17	0.00	189.60	
22	119.00	Telewave ANT450F6	1	11.573	12.730	1.00	1.00	1.86	21.00	0.000	3.917	23.68	0.00	92.74	
23	119.00	Pipe Mount	1	11.494	12.643	1.00	1.00	4.31	87.00	0.000	0.000	54.49	0.00	0.00	
24	109.00	Airmux	1	11.284	12.412	1.00	1.00	1.80	35.00	0.000	0.000	22.34	0.00	0.00	
25	109.00	Pipe Mount (au_andrew)	3	11.284	12.412	0.56	0.75	2.70	60.00	0.000	0.000	33.51	0.00	0.00	
26	109.00	Airmux	1	11.284	12.412	1.00	1.00	1.83	7.00	0.000	0.000	22.71	0.00	0.00	
27	98.00	Empty Low Profile	1	11.034	12.137	1.00	1.00	22.00	1500.00	0.000	0.000	267.02	0.00	0.00	
28	88.00	Platform w/ Handrail	1	10.787	11.865	1.00	1.00	51.70	2645.00	0.000	0.000	613.43	0.00	0.00	
29	88.00	Ericsson Radio 4449	3	10.787	11.865	0.50	0.75	2.46	222.00	0.000	0.000	29.16	0.00	0.00	
30	88.00	Ericsson KRY 112 144/1	3	10.787	11.865	0.45	0.75	0.47	33.06	0.000	0.000	5.61	0.00	0.00	
31	88.00	Ericsson Air 32	3	10.787	11.865	0.65	0.75	12.60	396.60	0.000	0.000	149.46	0.00	0.00	
32	88.00	RFS	3	10.787	11.865	0.54	0.75	32.79	384.00	0.000	0.000	389.04	0.00	0.00	
Totals:									11,068.88						5,004.92

Total Applied Force Summary

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

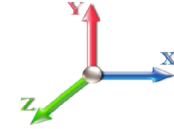


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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		102.45	1144.11	0.00	0.00
10.00		100.23	1239.83	0.00	0.00
15.00		98.02	1216.56	0.00	0.00
20.00		101.65	1193.30	0.00	0.00
25.00		104.07	1170.04	0.00	0.00
30.00		105.58	1146.78	0.00	0.00
35.00		106.42	1123.52	0.00	0.00
40.00		106.73	1100.26	0.00	0.00
43.34		70.90	721.30	0.00	0.00
45.00		35.87	609.51	0.00	0.00
48.67		79.34	1327.93	0.00	0.00
50.00		28.54	250.22	0.00	0.00
55.00		107.62	928.05	0.00	0.00
60.00		106.65	908.11	0.00	0.00
65.00		105.44	888.17	0.00	0.00
70.00		104.04	868.23	0.00	0.00
75.00		102.46	848.30	0.00	0.00
80.00		100.71	828.36	0.00	0.00
85.00		98.81	808.42	0.00	0.00
87.83		54.96	449.25	0.00	0.00
88.00	(13) attachments	1189.97	3723.62	0.00	0.00
90.00		39.14	493.65	0.00	0.00
92.17		42.03	528.19	0.00	0.00
95.00		54.39	359.67	0.00	0.00
98.00	(1) attachments	323.84	1875.01	0.00	0.00
100.00		37.38	246.68	0.00	0.00
105.00		92.09	605.07	0.00	0.00
109.00	(5) attachments	150.40	574.10	0.00	0.00
110.00		17.66	114.12	0.00	0.00
115.00		87.07	560.64	0.00	0.00
119.00	(3) attachments	166.04	560.55	0.00	282.34
120.00		16.61	107.48	0.00	0.00
124.00	(2) attachments	191.69	580.26	76.28	652.96
125.00		16.06	104.15	0.00	0.00
130.00		78.88	510.80	0.00	0.00
133.37		51.53	335.23	0.00	0.00
135.00		24.77	228.58	0.00	0.00
136.62		24.41	225.31	0.00	0.00
140.00	(24) attachments	1299.05	2737.00	0.00	-357.41
145.00		71.37	274.76	0.00	0.00
146.00	(41) attachments	2012.79	3055.71	0.00	6172.46
	Totals:	7,807.67	36,570.85	76.28	6,750.35

Calculated Forces

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

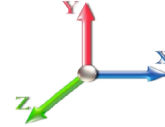


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 25

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	-36.57	-7.83	-0.08	-882.57	0.00	882.57	4626.62	2313.31	8646.87	4329.86	0.00	0.000	0.000	0.212
5.00	-35.41	-7.77	-0.08	-843.41	0.00	843.41	4552.64	2276.32	8322.99	4167.68	0.04	-0.074	0.000	0.210
10.00	-34.16	-7.72	-0.08	-804.55	0.00	804.55	4477.51	2238.76	8003.10	4007.50	0.16	-0.149	0.000	0.208
15.00	-32.94	-7.66	-0.08	-765.97	0.00	765.97	4395.69	2197.85	7677.64	3844.53	0.35	-0.226	0.000	0.207
20.00	-31.73	-7.60	-0.08	-727.67	0.00	727.67	4294.12	2147.06	7325.16	3668.02	0.63	-0.305	0.000	0.206
25.00	-30.55	-7.53	-0.08	-689.70	0.00	689.70	4192.55	2096.27	6980.95	3495.66	1.00	-0.384	0.000	0.205
30.00	-29.40	-7.46	-0.08	-652.06	0.00	652.06	4090.97	2045.49	6645.03	3327.46	1.44	-0.465	0.000	0.203
35.00	-28.26	-7.38	-0.08	-614.79	0.00	614.79	3989.40	1994.70	6317.40	3163.39	1.97	-0.548	0.000	0.201
40.00	-27.15	-7.29	-0.08	-577.89	0.00	577.89	3887.82	1943.91	5998.04	3003.48	2.59	-0.631	0.000	0.199
43.34	-26.43	-7.24	-0.08	-553.55	0.00	553.55	3820.04	1910.02	5789.54	2899.07	3.05	-0.688	0.000	0.198
45.00	-25.81	-7.21	-0.08	-541.51	0.00	541.51	3786.25	1893.12	5686.97	2847.71	3.30	-0.718	0.000	0.197
48.67	-24.48	-7.14	-0.08	-515.04	0.00	515.04	3251.53	1625.77	4904.15	2455.72	3.87	-0.781	0.000	0.217
50.00	-24.22	-7.13	-0.08	-505.55	0.00	505.55	3230.14	1615.07	4836.85	2422.02	4.09	-0.805	0.000	0.216
55.00	-23.29	-7.05	-0.08	-469.91	0.00	469.91	3143.08	1571.54	4578.34	2292.57	4.99	-0.899	0.000	0.212
60.00	-22.37	-6.96	-0.08	-434.68	0.00	434.68	3056.01	1528.01	4326.92	2166.68	5.98	-0.995	0.000	0.208
65.00	-21.47	-6.88	-0.08	-399.88	0.00	399.88	2968.95	1484.47	4082.61	2044.34	7.07	-1.090	0.000	0.203
70.00	-20.59	-6.79	-0.08	-365.50	0.00	365.50	2881.88	1440.94	3845.39	1925.55	8.27	-1.186	0.000	0.197
75.00	-19.74	-6.70	-0.08	-331.56	0.00	331.56	2794.82	1397.41	3615.28	1810.32	9.56	-1.281	0.000	0.190
80.00	-18.90	-6.61	-0.08	-298.06	0.00	298.06	2707.76	1353.88	3392.26	1698.65	10.95	-1.376	0.000	0.182
85.00	-18.09	-6.52	-0.08	-265.00	0.00	265.00	2620.69	1310.35	3176.35	1590.53	12.44	-1.468	0.000	0.174
87.83	-17.64	-6.46	-0.08	-246.54	0.00	246.54	2571.36	1285.68	3057.15	1530.84	13.33	-1.521	0.000	0.168
88.00	-13.94	-5.17	-0.08	-245.47	0.00	245.47	2568.45	1284.23	3050.20	1527.37	13.38	-1.524	0.000	0.166
90.00	-13.45	-5.13	-0.08	-235.12	0.00	235.12	2533.63	1266.81	2967.53	1485.97	14.03	-1.561	0.000	0.164
92.17	-12.92	-5.08	-0.08	-224.00	0.00	224.00	2130.58	1065.29	2523.85	1263.80	14.75	-1.601	0.000	0.183
95.00	-12.55	-5.03	-0.08	-209.60	0.00	209.60	2089.47	1044.73	2426.88	1215.24	15.71	-1.653	0.000	0.179
98.00	-10.68	-4.66	-0.08	-194.50	0.00	194.50	2045.93	1022.97	2326.27	1164.86	16.77	-1.713	0.000	0.172
100.00	-10.43	-4.63	-0.08	-185.18	0.00	185.18	2016.91	1008.46	2260.38	1131.87	17.50	-1.754	0.000	0.169
105.00	-9.82	-4.53	-0.08	-162.03	0.00	162.03	1944.36	972.18	2099.80	1051.46	19.39	-1.850	0.000	0.159
109.00	-9.25	-4.37	-0.08	-143.89	0.00	143.89	1886.32	943.16	1975.59	989.26	20.97	-1.925	0.000	0.150
110.00	-9.13	-4.36	-0.08	-139.52	0.00	139.52	1871.81	935.90	1945.13	974.01	21.37	-1.944	0.000	0.148
115.00	-8.57	-4.26	-0.08	-117.72	0.00	117.72	1799.25	899.63	1796.38	899.53	23.46	-2.034	0.000	0.136
119.00	-8.01	-4.08	-0.08	-100.38	0.00	100.38	1741.21	870.61	1681.64	842.07	25.19	-2.102	-0.001	0.124
120.00	-7.90	-4.07	-0.08	-96.30	0.00	96.30	1726.70	863.35	1653.55	828.00	25.63	-2.119	-0.001	0.121
124.00	-7.33	-3.86	0.00	-79.37	0.00	79.37	1668.66	834.33	1543.55	772.92	27.44	-2.181	-0.001	0.107
125.00	-7.22	-3.85	0.00	-75.51	0.00	75.51	1654.15	827.07	1516.64	759.45	27.89	-2.196	-0.001	0.104
130.00	-6.71	-3.75	0.00	-56.27	0.00	56.27	1581.59	790.80	1385.64	693.85	30.23	-2.262	-0.001	0.085
133.37	-6.38	-3.69	0.00	-43.61	0.00	43.61	1532.65	766.32	1300.60	651.27	31.84	-2.301	-0.001	0.071
135.00	-6.15	-3.66	0.00	-37.61	0.00	37.61	1509.04	754.52	1260.56	631.22	32.63	-2.317	-0.001	0.064
136.62	-5.92	-3.63	0.00	-31.66	0.00	31.66	885.20	442.60	750.52	375.82	33.42	-2.332	-0.001	0.091
140.00	-3.24	-2.22	0.00	-19.41	0.00	19.41	864.59	432.29	709.24	355.15	35.08	-2.356	-0.001	0.058
145.00	-2.97	-2.14	0.00	-8.31	0.00	8.31	833.10	416.55	649.44	325.20	37.57	-2.389	-0.001	0.029
146.00	0.00	-2.01	0.00	-6.17	0.00	6.17	826.66	413.33	637.68	319.32	38.07	-2.393	-0.001	0.019

Final Analysis Summary

Structure: CT46135-A-SBA	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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 97 mph Wind	32.8	0.00	43.79	0.01	0.19	3714.78
0.9D + 1.6W 97 mph Wind	32.7	0.00	32.82	0.01	0.19	3657.47
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.0	0.00	68.79	0.00	0.11	1029.06
1.2D + 1.0E	1.8	0.00	43.88	0.00	0.00	230.31
0.9D + 1.0E	1.8	0.00	32.91	0.00	0.00	226.41
1.0D + 1.0W 60 mph Wind	7.8	0.00	36.57	0.00	0.08	882.57

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 97 mph Wind	-27.79	-30.09	-0.19	-2170.1	-0.01	-2170.1	3251.53	1625.7	4904.15	2455.72	48.67	0.893
0.9D + 1.6W 97 mph Wind	-20.46	-29.64	-0.19	-2125.3	-0.01	-2125.3	3251.53	1625.7	4904.15	2455.72	48.67	0.872
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-50.57	-8.37	-0.11	-602.15	0.00	-602.15	3251.53	1625.7	4904.15	2455.72	48.67	0.261
1.2D + 1.0E	-29.49	-1.60	0.00	-144.42	0.00	-144.42	3251.53	1625.7	4904.15	2455.72	48.67	0.068
0.9D + 1.0E	-11.74	-1.50	0.00	-74.68	0.00	-74.68	2130.58	1065.2	2523.85	1263.80	92.17	0.065
1.0D + 1.0W 60 mph Wind	-24.48	-7.14	-0.08	-515.04	0.00	-515.04	3251.53	1625.7	4904.15	2455.72	48.67	0.217

Base Plate Summary

Structure: CT46135-A-SB	Code: EIA/TIA-222-G	7/22/2019
Site Name: Middlefield-jacson Hill Rd	Exposure: C	
Height: 146.00 (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	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 60.00	Bolt Circle: 55.00
Moment (kip-ft): 2626.95	Width (in): 61.00	Number Bolts: 20.00
Axial (kip): 29.58	Style: Round	Bolt Type: 2.25" 18J
Shear (kip): 23.10	Polygon Sides: 0.00	Bolt Diameter (in): 2.25
Analysis	Clip Length (in): 0.00	Yield (ksi): 75.00
Moment (kip-ft): 3714.78	Effective Len (in): 12.52	Ultimate (ksi): 100.00
Axial (kip): 68.79	Moment (kip-in): 744.93	Arrangement: Radial
Shear (kip): 32.77	Allow Stress (ksi): 81.00	Cluster Dist (in): 0.00
	Applied Stress (ksi): 0.00	Start Angle (deg): 0.00
Moment Design %: 141.41	Stress Ratio: 0.87	Compression
		Force (kip): 165.54
		Allowable (kip): 260.00
		Ratio: 0.65
		Tension
		Force (kip): 158.66
		Allowable (kip): 260.00
		Ratio: 0.62



Monopole Mat Foundation Design

Date

7/22/2019

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:	Middlefield-jacson Hill Rd	Structure Height (Ft.):	146
Site Number:	CT46135-A-SBA	Engineer Name:	W. Velez
Engr. Number:	78519	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	43.8	Shear Force (Kips):	32.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3714.8

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	6.0	Mods required -Yes/No ?:	No
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft.):	3.00		
Length of Pad (ft.):	21.5	Width of Pad (ft.):	21.5		
Final Length of pad (ft)	21.5	Final width of pad (ft):	21.5		

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	39	Tie Spacing (in):	10.5	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
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):	25	Qty. of Rebar in Pad (W):	25
Rebar at the top of the concrete pad:			
Qty. of Rebar in Pad (L):	20	Qty. of Rebar in Pad (W):	20

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

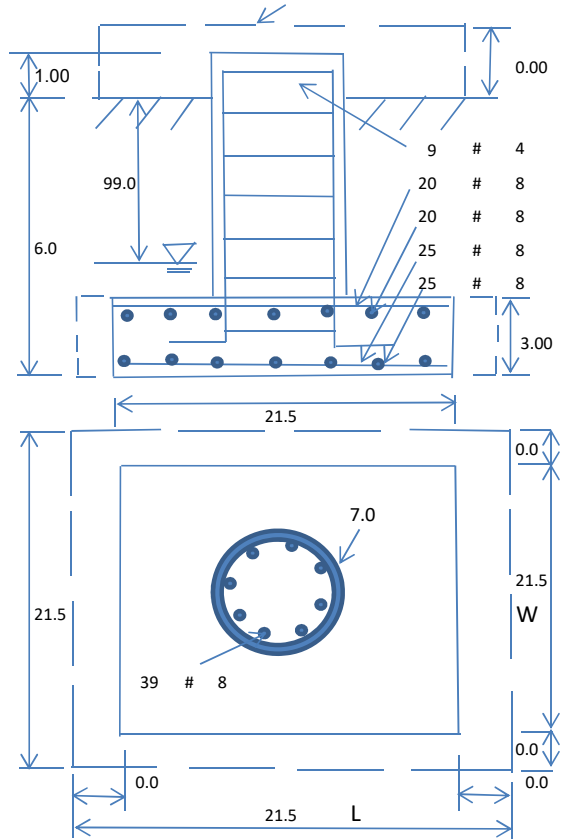
Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	47.6	Pcf	
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad: 30
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad: 25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad: 25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00		

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1271.30	Total Dry Soil Weight (Kips):	139.84
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	139.84	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1540.69	Total Dry Concrete Weight (Kips):	231.10
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	231.10	Total Vertical Load on Base (Kips):	414.74

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	5118	< Allowable Factored Soil Bearing (psf):	30000	0.17	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4059.6	> Design Factored Momont (kips-ft):	3822	0.94	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.06				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

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	5049.6	> Design Factored Moment (Mu, Kips-F	3846.0	0.76	OK!
Calculated Shear Capacity (Kips):	679.3	> Design Factored Shear (Kips):	32.8	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	1663.7	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9743.4	> Design Factored Axial Load (Pu Kips):	43.8	0.00	OK!
Moment & Axial Strength Combination:	0.76	OK! Check Tie Spacing (Design/Required):		0.875	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	795.5	> One-Way Factored Shear (L-D. Kips):	253.1	0.32	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	795.5	> One-Way Factored Shear (W-D., Kips)	253.1	0.32	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	665.6	> One-Way Factored Shear (C-C, Kips):	249.7	0.38	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0024		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2828.4	> Moment at Bottom (L-Dir. K-Ft):	1083.7	0.38	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2828.4	> Moment at Bottom (W-Dir. K-Ft):	1083.7	0.38	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3974.6	> Moment at Bottom (C-C Dir. K-Ft):	1532.6	0.39	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0019	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0019		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2272.3	> Moment at the top (L-Dir K-Ft):	497.9	0.22	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2272.3	> Moment at the top (W-Dir K-Ft):	497.9	0.22	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3197.3	> Moment at the top (C-C Dir. K-Ft):	470.8	0.15	OK!

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

Moment transferred by punching shear:	1485.9	k-ft.	Max. factored shear stress v_{u_CD} :	4.3	Psi
Max. factored shear stress v_{u_AB} :	10.0	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	10.0	Psi	Check Usage of Punching Shear Capacity:	0.05	OK!

EXHIBIT 8

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTHA512A

SBA Middlefield Monopole
421 Jackson Hill Rd
Middlefield, CT 06455

June 4, 2019

Transcom Engineering Project Number: 737001-0138

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	18.86 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 4, 2019

T-MOBILE

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

Emissions Analysis for Site: **CTHA512A – SBA Middlefield Monopole**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **421 Jackson Hill Rd, Middlefield, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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Wireless Network Design and Deployment

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

Additional details can be found in FCC OET 65.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **421 Jackson Hill Rd, Middlefield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
UMTS	2100 MHz (AWS)	1	40

Table 1: Channel Data Table

Transcom Engineering, Inc.

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

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR32 B66A / B2A	88
A	2	RFS APXVAARR24_43-U-NA20	88
B	1	Ericsson AIR32 B66A / B2A	88
B	2	RFS APXVAARR24_43-U-NA20	88
C	1	Ericsson AIR32 B66A / B2A	88
C	2	RFS APXVAARR24_43-U-NA20	88

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **2100 MHz (AWS) UMTS** radios are ground mounted the following cable loss values were used. For each ground mounted **2100 MHz (AWS) UMTS** radio there was **2.08 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **120 feet** of **7/8"** coax.

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RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	5.76
Antenna A2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	5	160	3,512.23	3.67
Sector A Composite MPE%							9.43
Antenna B1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	5.76
Antenna B2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	5	160	3,512.23	3.67
Sector B Composite MPE%							9.43
Antenna C1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	5.76
Antenna C2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	5	160	3,512.23	3.67
Sector C Composite MPE%							9.43

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	9.43 %
AT&T	2.87 %
MetroPCS	1.01 %
Verizon Wireless	4.86 %
Nextel	0.00 %
Town of Middlefield	0.69 %
Site Total MPE %:	18.86 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	9.43 %
T-MOBILE Sector B Total:	9.43 %
T-MOBILE Sector C Total:	9.43 %
Site Total:	18.86 %

Table 5: Site MPE Summary

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Wireless Network Design and Deployment

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,538.37	88	32.90	1900 MHz (PCS)	1000	3.29%
T-Mobile 2100 MHz (AWS) LTE	2	2,307.55	88	24.68	2100 MHz (AWS)	1000	2.47%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	88	8.44	600 MHz	400	2.11%
T-Mobile 700 MHz LTE	2	432.54	88	4.63	700 MHz	467	0.99%
T-Mobile 2100 MHz (AWS) UMTS	1	1,069.20	88	5.72	2100 MHz (AWS)	1000	0.57%
						Total:	9.43%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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Wireless Network Design and Deployment

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	9.43 %
Sector B:	9.43 %
Sector C:	9.43 %
T-MOBILE Maximum Total (per sector):	9.43 %
Site Total:	18.86 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **18.86 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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