



Filed by:

Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbsite.com

July 19, 2019

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

Notice of Exempt Modification

151 Sand Hill Road, South Windsor, CT 06074
41.836000 N
-72.552000 W
T-Mobile #: CT11497A_L600

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 160-foot level of the existing 187-foot Monopole Tower at 151 Sand Hill Road. The tower is owned by SBA Properties, Inc. The property is owned by the Town of South Windsor. T-Mobile plans to replace six (6) existing antennas with (six (6) new 600/700/1900/2100 MHz antennas. The new antennas would be installed at the 160-foot level of the tower.

Planned Modifications:

TOWER

Remove:

- (3) 1-5/8" lines

Remove and Replace:

- (3) Ericsson - AIR 21 B4A B2P – Panel (Remove) / (3) Ericsson Air32 KRD901146-1_B66A_B2A 1900/2100 MHz (Replace)
- (3) Commscope - LNX-6515DS – Panel (Remove) / (3) RFS APXVAARR24_43-U-NA20 600/700 MHz (Replace)
- (3) Ericsson - S11B12 – RRU (Remove) / Ericsson Radio 4449 B71+B12 (Replace)

Install New:

- (3) 1-5/8" fiber

Existing Equipment to Remain (including Entitlements):

- (3) Ericsson - AIR 21 B2A B4P – Panel 1900/2100 MHz
- (3) Twin TMA
- (1) platform with hand rail
- (9) 1-5/8" lines
- (1) 1-5/8" fiber



GROUND

Install New:

- Equipment inside existing 6131 cabinet

Remove and Replace:

- (1) 60A-2P Breaker (Remove) / (1) 125A-2P Breaker (Replace)

This facility was approved on October 3, 2000, by the Town of South Windsor's Planning and Zoning Commission under Application #00-30P for Site Plan and Special Exception. Prior approval for Variance from the Zoning Board of Appeals was given on February 3, 2000. The P&Z approved a 199.9' tower to accommodate at least two additional users, as well as to serve the police and fire departments. All utilities were to be installed underground. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of South Windsor's Mayor, Andrew Paterna, and Zoning Enforcement Officer, Pamela Zarambo. (Separate notice is not being sent to a property owner as it belongs to the Town, or to the 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,


Kri Pelletier

Property Specialist

SBA COMMUNICATIONS CORPORATION

134 Flanders Rd., Suite 125

Westborough, MA 01581

508.251.0720 x3804 + T / 508.366.2610 + F

kpelletier@sbsite.com

Attachments



cc: Andrew Paterna, Mayor of the Town of South Windsor / with attachments
Town of South Windsor, Town Hall, 1540 Sullivan Ave, South Windsor, CT 06074
Pamela Zarambo, Zoning Enforcement Officer / with attachments
Town of South Windsor, Town Hall, 1540 Sullivan Avenue, South Windsor, CT 06074



EXHIBIT LIST

Exhibit 1	Check Copy	
Exhibit 2	Notification Receipts	
Exhibit 3	Property Card	
Exhibit 4	Property Map	
Exhibit 5	Original Zoning Approval	Town of South Windsor P&Z Commission 10/3/2000
Exhibit 6	Construction Drawings	Chappell Engineering dated 7/18/19
Exhibit 7	Structural Analysis	TES dated 7/3/19
Exhibit 8	Mount Analysis	TES dated 6/21/19
Exhibit 9	EME Report	Transcom dated 6/14/19

EXHIBIT 1

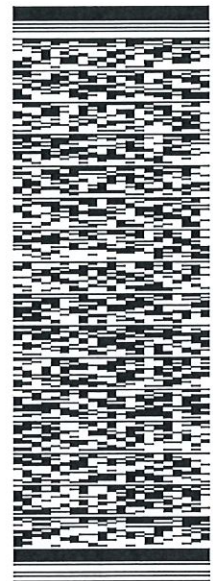
EXHIBIT 2

ORIGIN ID: 98FA (508) 614-0399
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH MA 01581
UNITED STATES US

SHIP DATE: 19 JUL 19
ACT WGT: 1.00 LB
CAD: 10584304/NET/4/60
BILL SENDER

TO ANDREW PATERNA, MAYOR
TOWN OF SOUTH WINDSOR
TOWN HALL
1540 SULLIVAN AVE.
SOUTH WINDSOR CT 06074
(508) 251-0720 X 3804
REF: 10-56-92009-6099
PO. INV. DEPT.

567J2IA6F9J05A2



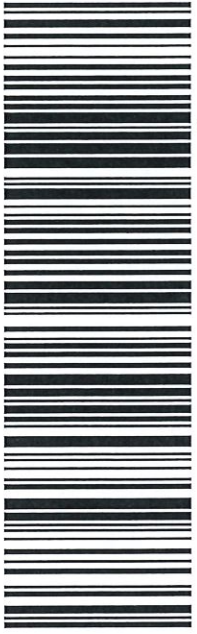
J192018062401uv

TRK# 7757 8734 7704
#0201

MON - 22 JUL 10:30A
PRIORITY OVERNIGHT

SE QCWA

06074
CT-US BDL



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

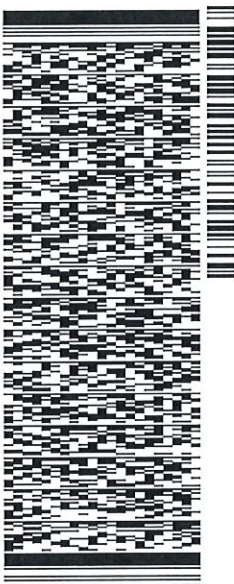
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless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

ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 19 JUL 19
ACTWGT: 1.00 LB
CAD: 105843304/NET/4/60
BILL SENDER

TO **PAMELA ZARAMBO, ZONING ENF. OFFICER**
TOWN OF SOUTH WINDSOR
TOWN HALL
1540 SULLIVAN AVE.
SOUTH WINDSOR CT 06074
DEPT:
PO:
INV: (508) 251-0720 X 3804 REF: 10-56-92009-6089
DEPT:

567.J2/A6F9.05A2



J192019062401uv

TRK# 0201 7757 8737 2197
MON - 22 JUL 10:30A
PRIORITY OVERNIGHT

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CT-US 06074
BDL



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

EXHIBIT 3



Property Information

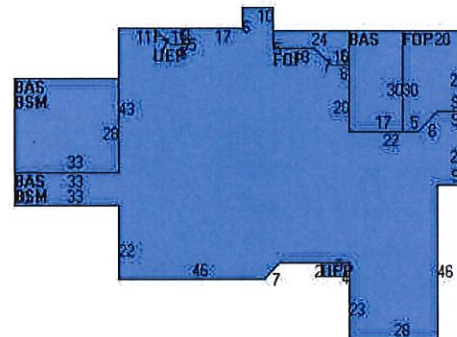
Property Location	151 SAND HILL ROAD
Owner	SOUTH WINDSOR TOWN OF 56
Co-Owner	
Mailing Address	
Land Use	920 Exempt Comm
Land Class	E
Zoning Code	RR
Census Tract	4871

Neighborhood	C400
Acreage	5.31
Utilities	
Lot Setting/Desc	
Water Information	CONNECTICUT WATER 860.623.3355
Trash Day	THURSDAY

Photo



Sketch



Primary Construction Details

Year Built	1984
Stories	1.00
Building Style	Jail
Building Use	Comm/Ind
Building Condition	B
Floors	Quarry Tile
Total Rooms	0

Bedrooms	
Full Bathrooms	58
Half Bathrooms	
Bath Style	n/a
Kitchen Style	n/a
Roof Style	Flat
Roof Cover	Tar & Gravel

Exterior Walls	Brick Veneer
Interior Walls	Minimum
Heating Type	Forced Hot Air
Heating Fuel	Oil
AC Type	
Gross Bldg Area	19300
Total Living Area	10142



Town of South Windsor, CT

Property Listing Report

Map Block Lot **76-8**

Account

79800151

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	2613100	1829200
Extras	44000	30800
Improvements	2695500	1886900
Outbuildings	38400	26900
Land	316600	221600
Total	3012100	2108500

Outbuilding and Extra Items

Type	Description
Paving	42000.00 S.F.
Sprinklers-Wet	9632.00 S.F.
Lights	10.00 UNITS
Elevator Pass	2.00 STOPS

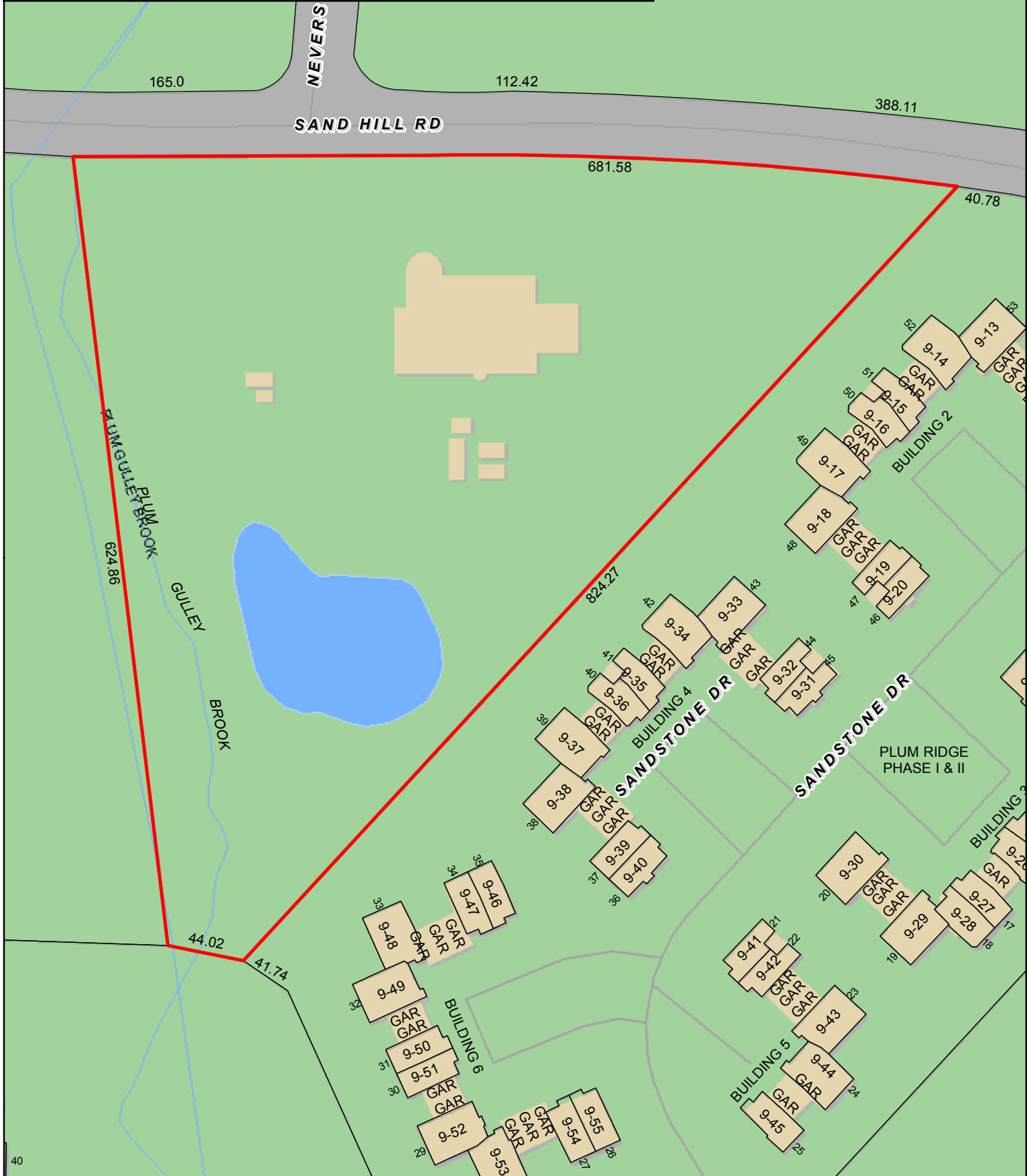
Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	19300	10142

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price

EXHIBIT 4



Approximate Scale:
 1 inch = 100 feet



Map Produced:
 July 2012

Disclaimer:
 This map is for informational purposes only.
 All information is subject to verification by any user.
 The Town of South Windsor and its mapping contractors
 assume no legal responsibility for the
 information contained herein.



EXHIBIT 5



Town of South Windsor

1540 SULLIVAN AVENUE • SOUTH WINDSOR, CONN. 06074
AREA CODE 860 / 644-2511

HAND DELIVERED

October 16, 2000

Town of South Windsor
c/o Matthew Galligan, Town Manager
1540 Sullivan Avenue
South Windsor, CT 06074

Dear Mr. Galligan:

Re: Appl #00-30P, Town of South Windsor Site Plan and Special Exception

We are pleased to advise you that the Planning & Zoning Commission voted on October 3, 2000, to approve the above referenced application for a Site Plan of Development and Special Exception to Section 16.0-16.8.

This approval is for the construction of a telecommunications tower on property located 151 Sand Hill Rd., RR zone as shown on plans prepared by Design Professionals, Inc., Job No. 1297, dated 5/10/00, as revised. This approval is subject to the following modifications:

1. Prior to commencement of any site work, a meeting must be held with Town Staff.
1. No building permit will be issued until the final mylars have been filed in the Town Clerk's office.
2. An as-built plan is required prior to issuance of a Certificate of Occupancy per Section 8.1.10 of the Zoning Regulations.
3. All plans used in the field by the developer must bear the stamp and authorized signature of the Town of South Windsor.
4. This approval will expire in 5 years on October 3, 2005. Permit renewals can be granted upon submittal of a request by the owner; renewal does not require a new application or public hearing.

Black and white transparent mylars of Sheet #2 with the above modifications, together with three blueprint copies of the entire set of plans must be submitted to this Commission within 30 days to be stamped and signed. The letters of approval of this Commission as well as the Inland Wetlands Agency/Conservation Commission must be reproduced on the mylars.

After the mylars have been signed by the Commission, they will be returned to you for filing in the Office of the Town Clerk. After filing these plans, a copy of the receipt must be submitted to the Planning Department.

The attached Special Exception form must be completed and filed in the Town Clerk's office. The special exception will take effect upon filing.

Sincerely,

Walter J. Mealy

Walter J. Mealy, Chairman
Planning and Zoning Commission

cc: Town Engineer
Chief Building Official
Assessor
Superintendent of Pollution Control
Fire Marshal
Design Professionals, Inc.

Town of South Windsor Telecommunications Tower PH 9/12/00

1. Request for site plan modification and Special Exception for additional parking and to construct monopole telecommunications facility (replacing the existing tower) at the South Windsor Police facility at 151 Sand Hill Road, RR zone.
2. The site improvements include the expansion of on-site parking with a gain of 23 spaces along the southerly boundary of the site. They are also proposing the addition of a canopy to cover 10 spaces directly behind the building and a dumpster enclosure area. Proposed impervious coverage is 29.9%; 50% allowed.
3. There are some regulated wetlands on site, however all the construction activities are located out of the wetland buffer area.
4. Proposed tower height is 199.9 feet; 175 feet allowed. The applicant received a variance from the ZBA on February 3, 2000, for the following: variances to section 16.3 a, c, d & e to allow a commercial wireless telecommunication tower: The sections refer to (a) application for this facility by the Town rather than by a licensed carrier; (c) to allow a tower up to 199.00'; (d) to allow such a site within 1,000' of a playground or school; and (e) to allow a site within 500' of residences

is there
& (b)?

The Zoning Board of appeals concluded the hardship to be as follows:

1. The existing telecommunications system and tower are inadequate and must be replaced to ensure quality town-wide emergency communications.
 2. The proposed replacement facility must be located at the subject site, and there are no reasonable alternatives.
 3. Characteristics of the coverage area, including topographic features of the Town, necessitate erecting a tower to the proposed height.
5. The Architectural and Design Review Committee reviewed this plan. They concurred with additional evergreen plantings along the northerly boundary (facing Plum Ridge Condo) to address gaps that currently exist in the buffer.
 6. Special Exception criteria to consider for the construction of a tower include:
 - ◆ There will be minimal adverse effects on uses in the area;
 - ◆ Surrounding property values will be conserved and the character of the neighborhood will not be unduly disrupted;

- ◆ The land is physically suited for such use and minimal adverse environmental and aesthetic impacts are created, including but not limited to whether alternate sites were exhausted; what lies within the fall zone of the tower; existence of endangered species; whether other development is being proposed or considered at or near the site; effect on bird habitats; and length of access road; and,
 - ◆ Public health and safety will not be adversely affected.
7. Location preferences in the TCC regulation are (1) on existing structures such as buildings, water towers and utility poles, or existing/previously-approved towers; (2) on new towers with visual mitigation in commercial and industrial districts; and (3) on new towers located in commercial or industrial zones. There are three lower-priority categories also, including residential zones.
 8. This tower will serve the police department, fire department as well as spots for co-locators.
 9. General site requirements include:
 - Towers must be painted non-contrasting blue, gray or black;
 - Towers shall be designed to collapse upon themselves;
 - Any pole over 150 feet must accommodate at least two additional users; and
 - All utilities must be installed underground;
 10. ????????Submittal requirements include a report from a licensed engineer indicating that the proposed wireless site will comply with the emission standards of the FCC for non-ionizing electromagnetic emissions; this report was submitted with the application.
 11. A Special Exception for a telecommunications facility is granted for an initial five-year period. (Permit renewals can be granted upon submittal of a request by the owner; renewal does not require a new application or public hearing.) The regulations require that tower construction commence within one year from the date of approval. There is also an abandonment clause in the zoning regulations that requires removal of the facility within 90 days from the date of abandonment and restoration of the area to its previous appearance.

If this application is approved, the Planning Dept. has no additional modifications.

I, Walter J. Mealy, Chairman of the South Windsor Planning & Zoning Commission, hereby certify that on October 3, 2000, the Planning and Zoning Commission granted to The Town of South Windsor a Special Exception to Article 16.0-16.8 of the Zoning Regulations and Resubdivision to install a telecommunications tower on property located at 151 Sand Hill Rd. as shown on plans prepared by Design Professionals, Inc., Project No.1297.

Assessor's Map and Parcel Number: Map # 76 Parcel # 8
More particularly bounded and described as follows: See Attached

All that certain piece or parcel of land, situated on the southerly side of Sand Hill Road, in the Town of South Windsor, County of Hartford and State of Connecticut, containing 5.31 acres, bounded and described as follows:

Beginning at a point in the southerly line of Sand Hill Road, which point represents the northwesterly corner of the herein described premises and the northeasterly corner of land now or formerly of the Missionary Society of the Diocese of Connecticut; thence running S 6° 54' 21" E, 624.86 feet, along the easterly line of said land now or formerly of the Missionary Society of the Diocese of Connecticut, to a point marked by an iron pipe; thence running S 81° 27' 34" E, 44.02 feet, along land now or formerly of Norman P. Priest, to a point which represents the southeasterly corner of the herein described premises; thence running N 42° 56' 12" E, 824.29 feet, along the westerly line of other land of Allerton Construction Corporation, to a point in the southerly line of Sand Hill Road, which point represents the northeasterly corner of the herein described premises and the northwesterly corner of said other land of Allerton Construction Corporation; thence running in a generally westerly direction, along the southerly line of Sand Hill Road, a total distance of 681.58 feet to the point or place of beginning.

OWNER OF RECORD: Town of South Windsor

Dated at South Windsor, Connecticut this 16th day of October.

In accordance with CGS Section 8-3d

Walter J. Mealy
Walter J. Mealy, Chairman
Planning & Zoning Commission

Received for record this _____ day of _____, 19____, at

South Windsor, Connecticut ATTEST:

Received for record this _____ day of _____, 19____, at

South Windsor, Connecticut ATTEST:

EXHIBIT 6

CT497/SBA SOUTH WINDSOR

151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074
HARTFORD COUNTY

SITE NO.: CT11497A

SITE TYPE: 187'± MONOPOLE

RF DESIGN GUIDELINE: 67D92DB OUTDOOR

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

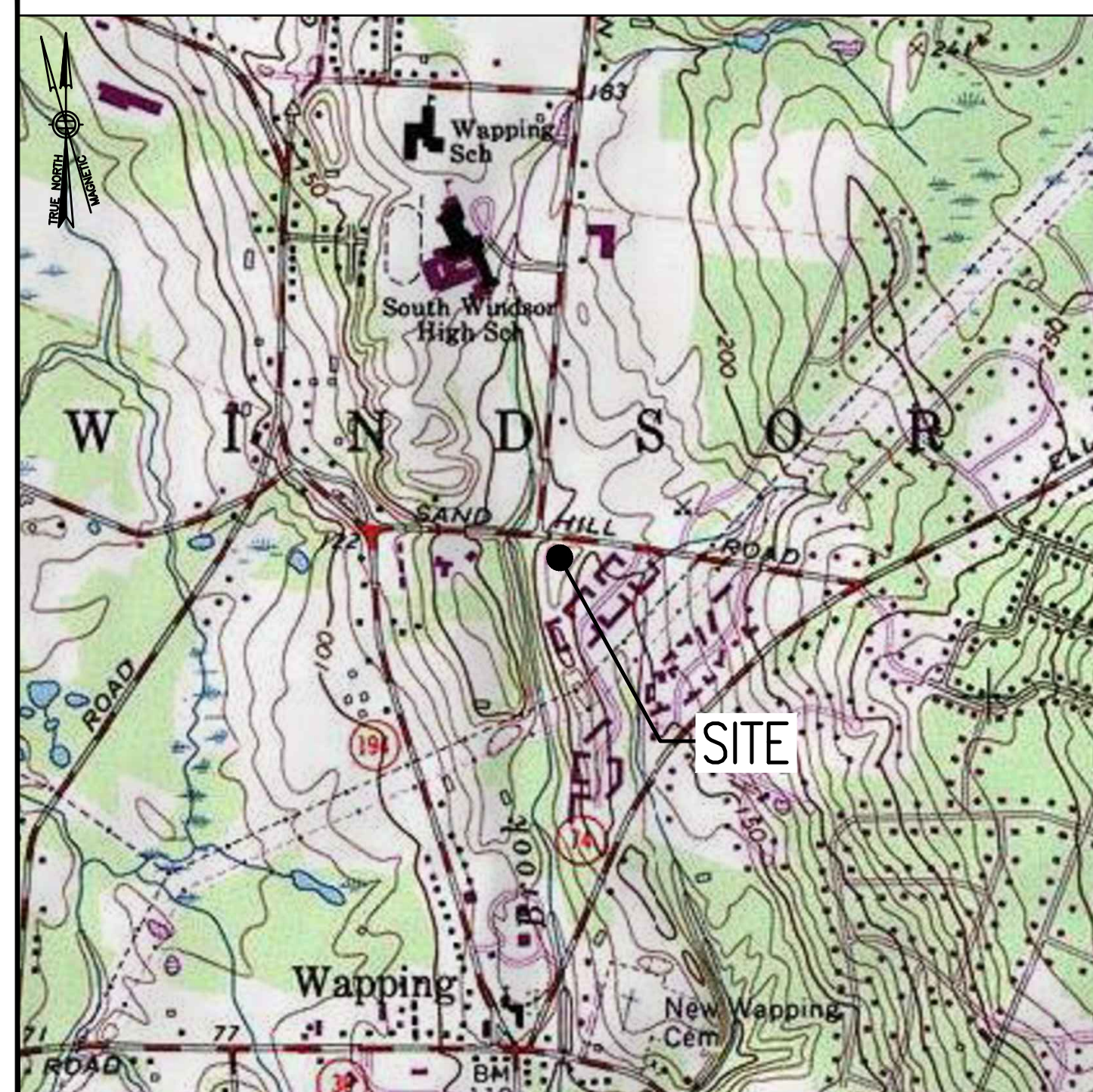
GENERAL NOTES

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

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



VICINITY MAP SCALE: 1" = 1000'-0"



DO NOT SCALE DRAWINGS

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

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
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

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

PROJECT SUMMARY

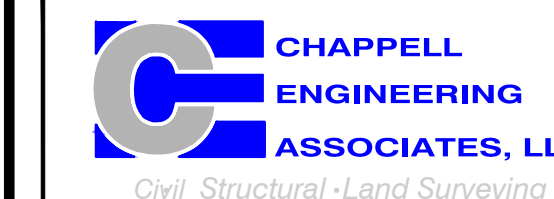
SITE NUMBER:	CT11497A
SBA SITE NUMBER:	CT07824-S
SBA SITE NAME:	SOUTH WINDSOR
SITE ADDRESS:	151 SAND HILL ROAD SOUTH WINDSOR, CT 06074
PROPERTY OWNER:	TOWN OF SOUTH WINDSOR 56 C/O POLICE FACILITY 1540 SULLIVAN AVENUE SOUTH WINDSOR, 06074
TOWER OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	HARTFORD
ZONING DISTRICT:	RURAL RESIDENTIAL
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	187'±
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: 41.835900° N41°50'09.24" LONGITUDE: -72.552100° W72°33'07.56"

T-MOBILE NORTHEAST LLC

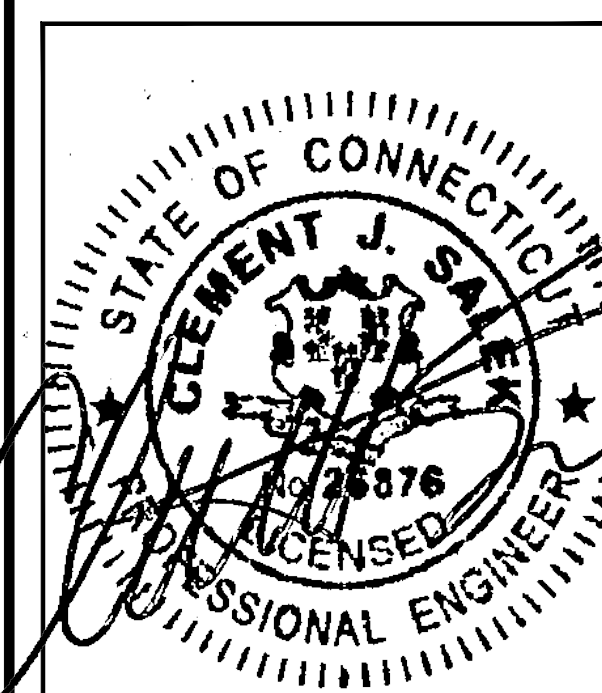
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CHECKED BY: JMT

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SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	07/18/19	ISSUED FOR CONSTRUCTION	CMC
0	05/13/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11497A

SITE ADDRESS:
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (400PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF1½ IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL¾ IN.
BEAMS AND COLUMNS½ IN.
- A CHAMFER ¼" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.
- CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (BC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIER'S PLANT.
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

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

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

ELECTRICAL INSTALLATION NOTES:

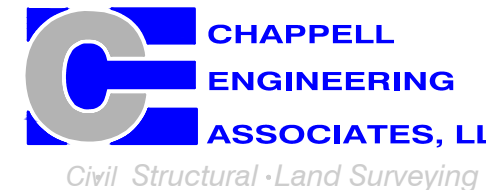
- WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR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

**T-MOBILE
NORTHEAST LLC**

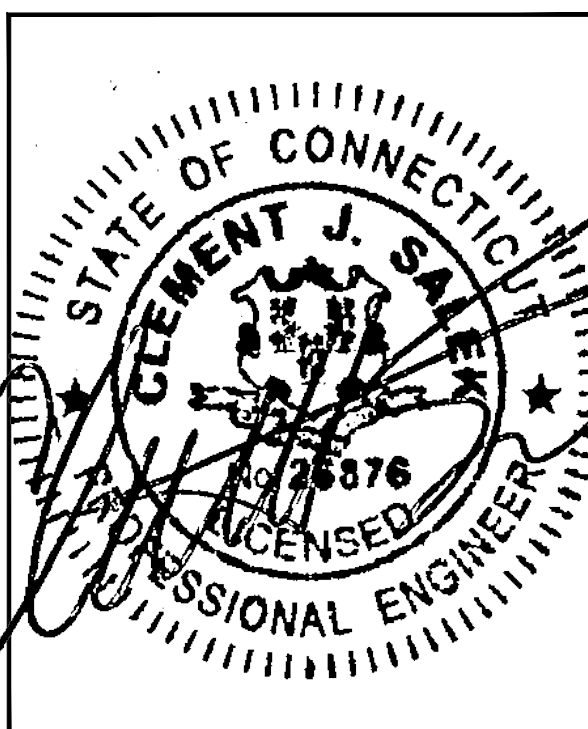
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SITE ADDRESS:
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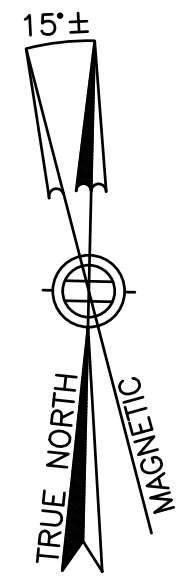
SHEET TITLE

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.



EXIST. (9) 1-5/8" COAX CABLES & (1) 1-5/8" HYBRID CABLE ROUTED ALONG EXIST. OVERHEAD CABLE ICE BRIDGE (TO REMAIN) (REFER TO FINAL ANTENNA CONFIGURATION CHART ON SHEET A-3 FOR FEEDLINE COUNTS)

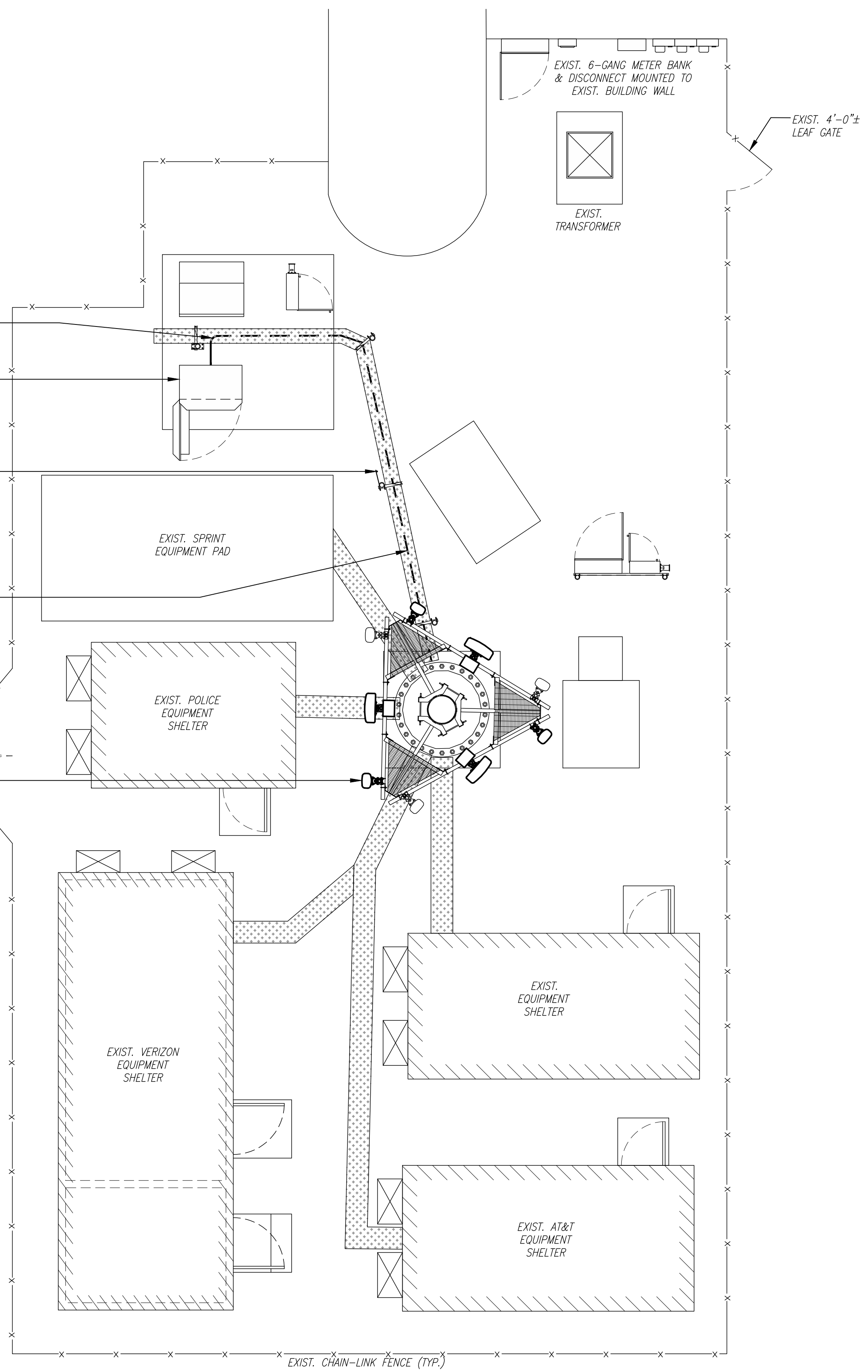
PROP. T-MOBILE EQUIPMENT MOUNTED WITHIN EXIST. CABINET ON EXIST. CONCRETE PAD

EXIST. GPS ANTENNA MOUNTED TO EXIST. ICE BRIDGE (TO REMAIN)

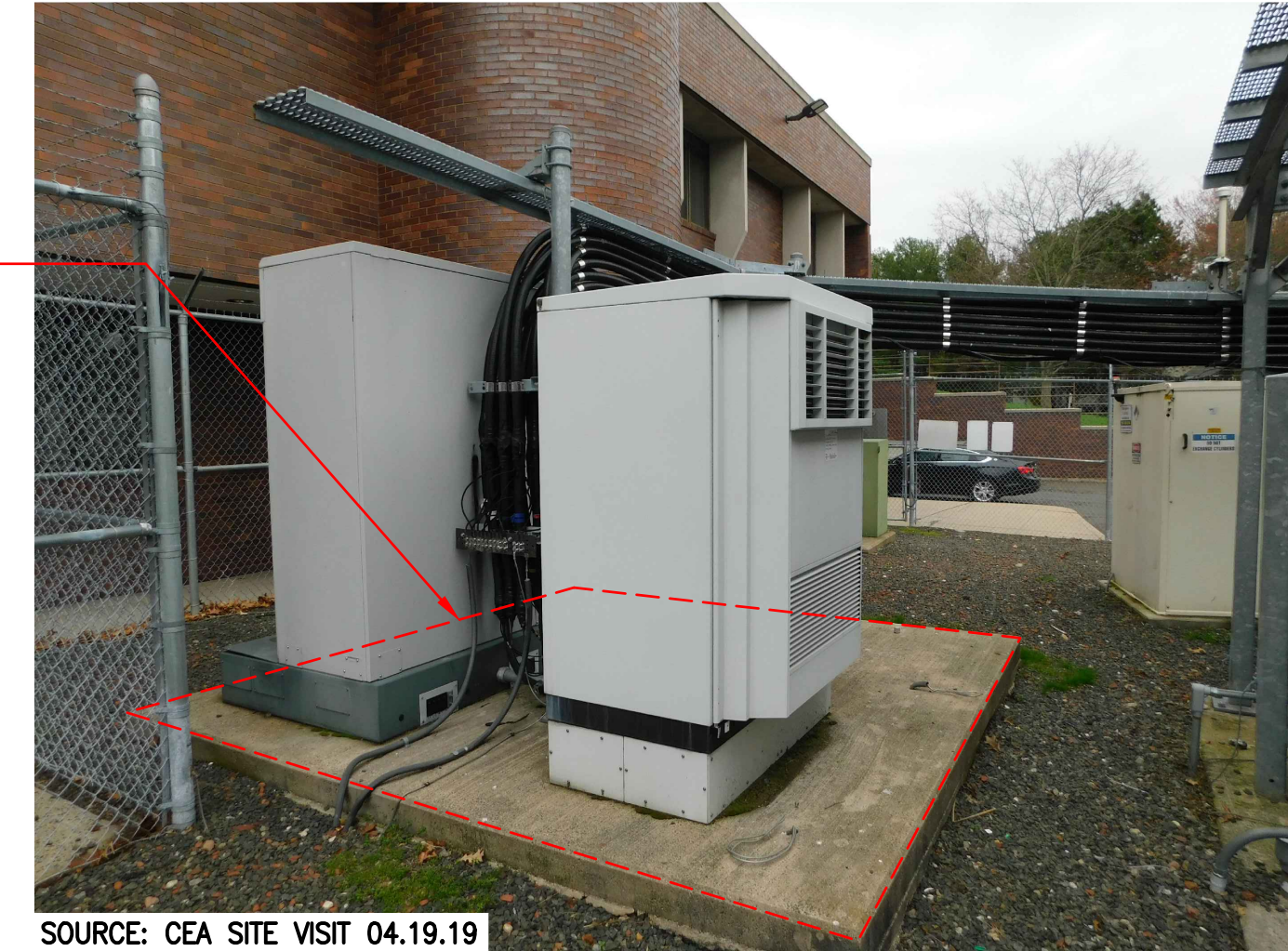
PROP. T-MOBILE (3) 1-5/8" HYBRID CABLE ROUTED ALONG EXIST. OVERHEAD CABLE ICE BRIDGE TO REPLACE EXIST. (3) 1-5/8" COAX CABLES (REFER TO FINAL ANTENNA CONFIGURATION CHART ON SHEET A-3 FOR FEEDLINE COUNTS)

EXIST. 12'-0"± DOUBLE LEAF GATE

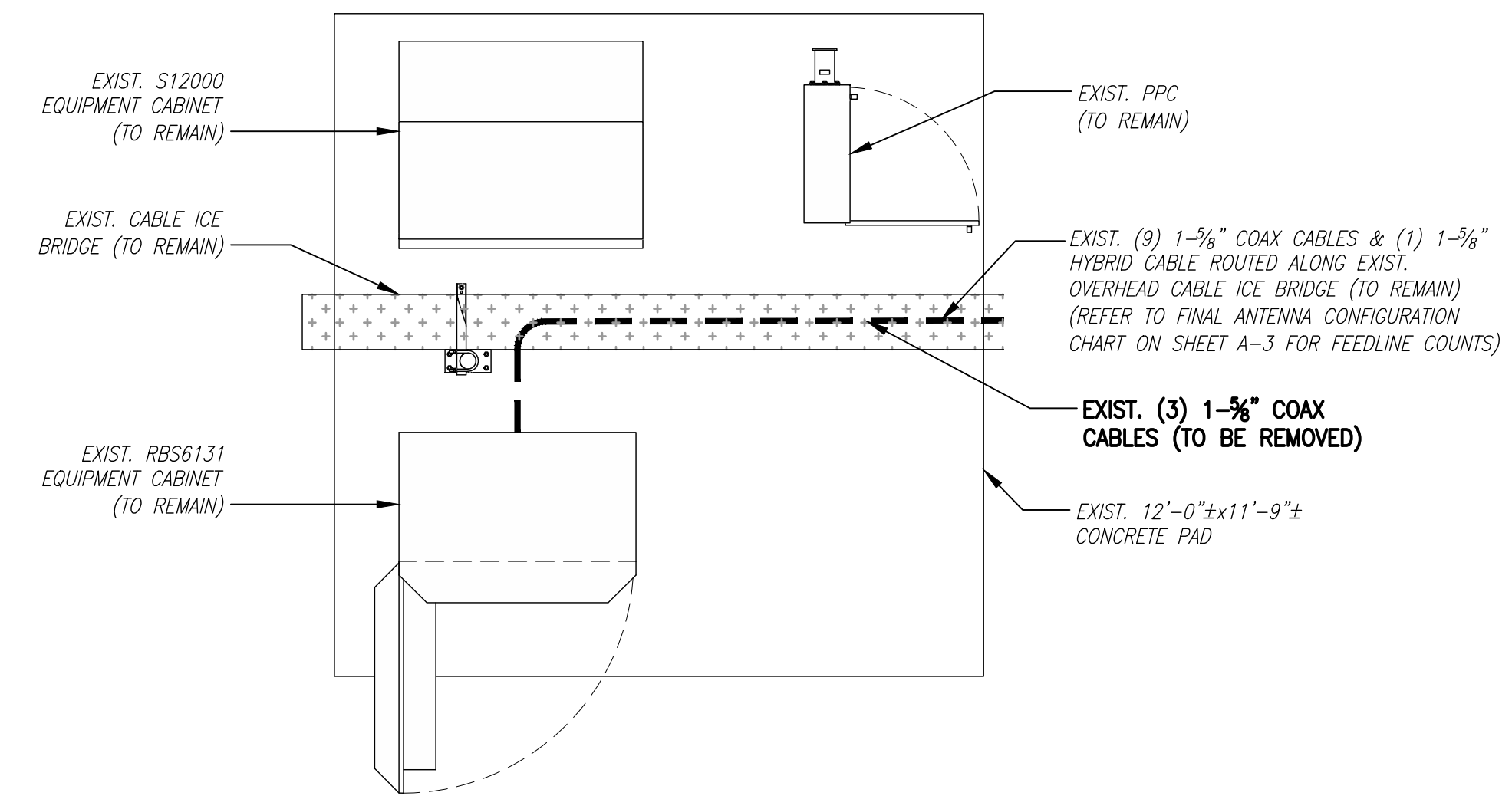
PROP. T-MOBILE TOWER TOP EQUIPMENT



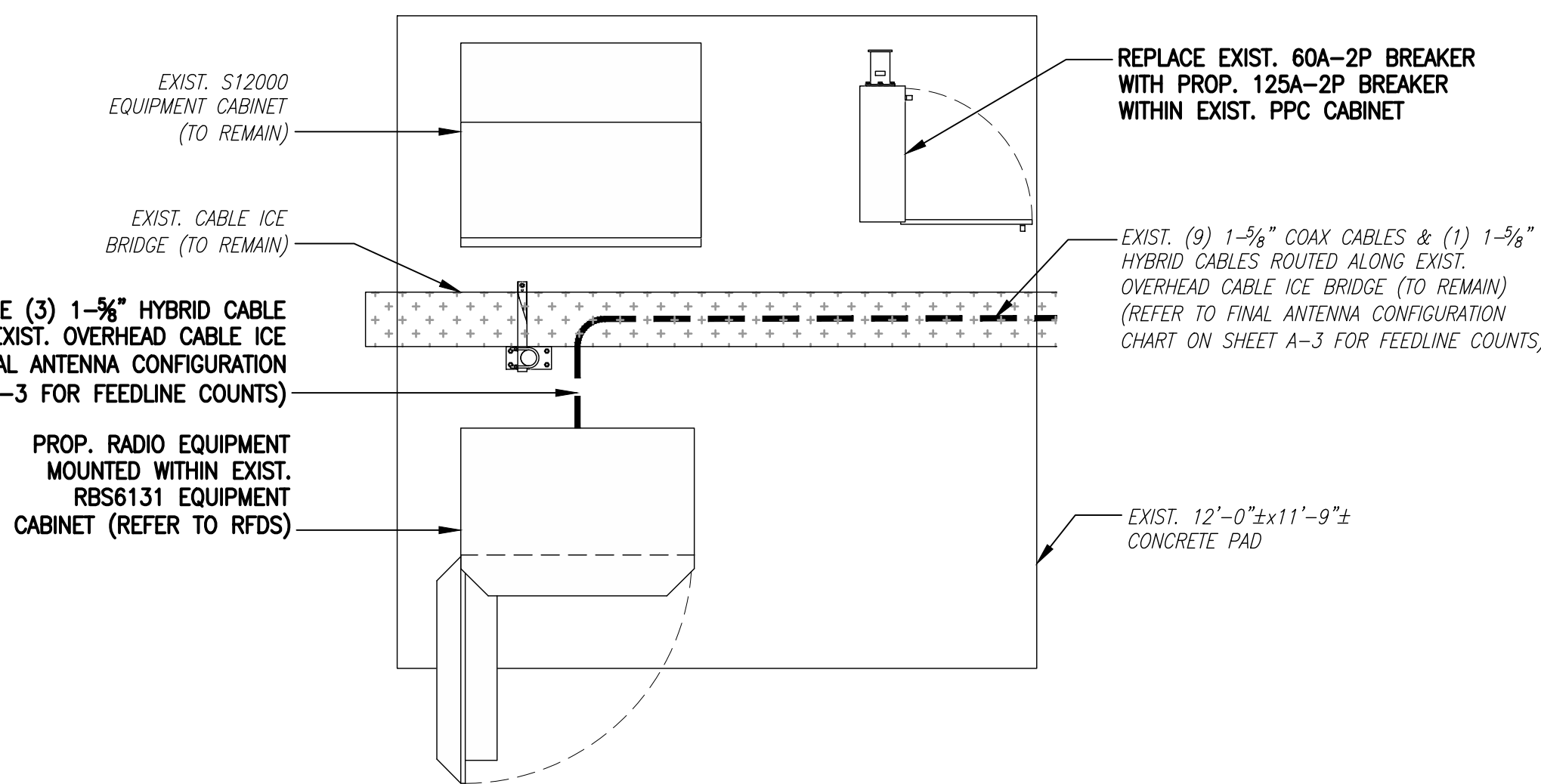
COMPOUND PLAN 1
 SCALE: 3/16" = 1'-0"
 0 5'-4" 10'-8" 16'-0"



EQUIPMENT AREA PHOTO 2
 SCALE: N.T.S.



EXISTING EQUIPMENT PLAN 3
 SCALE: 3/8" = 1'-0"
 0 2'-8" 5'-4" 8'-0"



PROPOSED EQUIPMENT PLAN 4
 SCALE: 3/8" = 1'-0"
 0 2'-8" 5'-4" 8'-0"

T-MOBILE NORTHEAST LLC

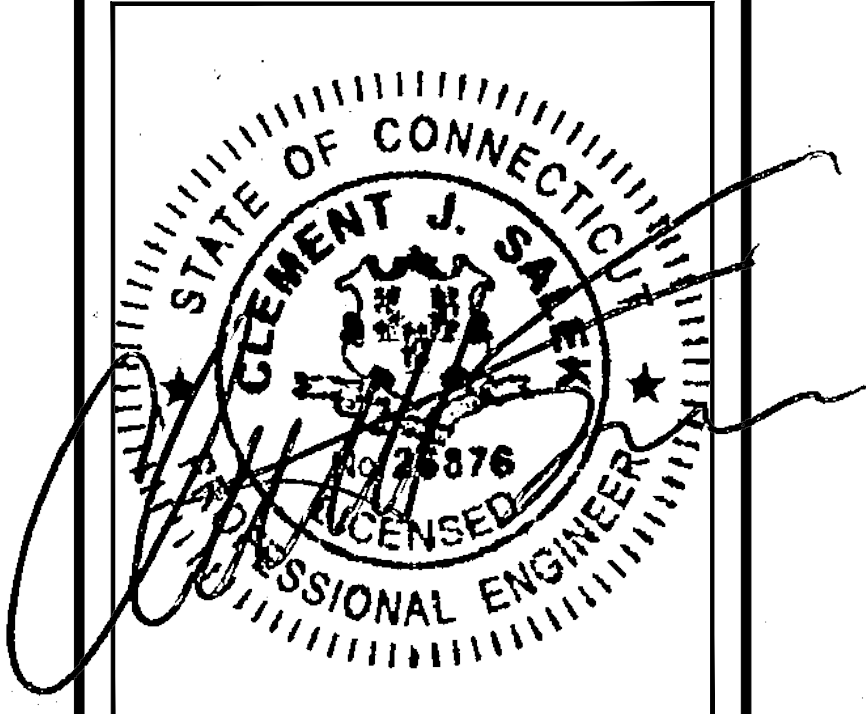
15 COMMERCE WAY, SUITE B
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 (508) 286-2700



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



R.K. EXECUTIVE CENTRE
 201 BOSTON POST ROAD WEST, SUITE 101
 MARLBOROUGH, MA 01752
 (508) 481-7400
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CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	07/18/19	ISSUED FOR CONSTRUCTION	CMC
0	05/13/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11497A

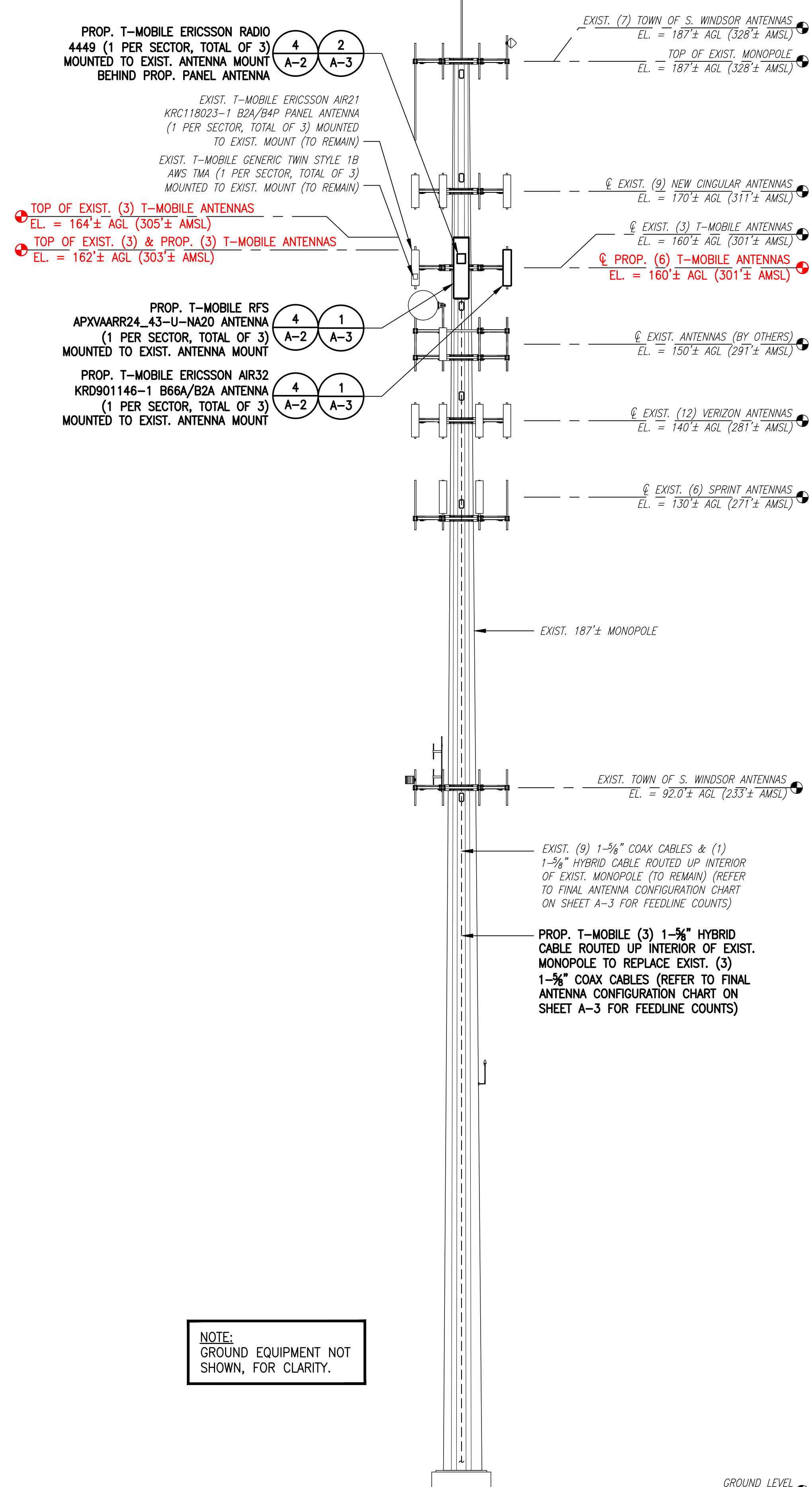
SITE ADDRESS:
 151 SAND HILL ROAD
 SOUTH WINDSOR, CT 06074

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

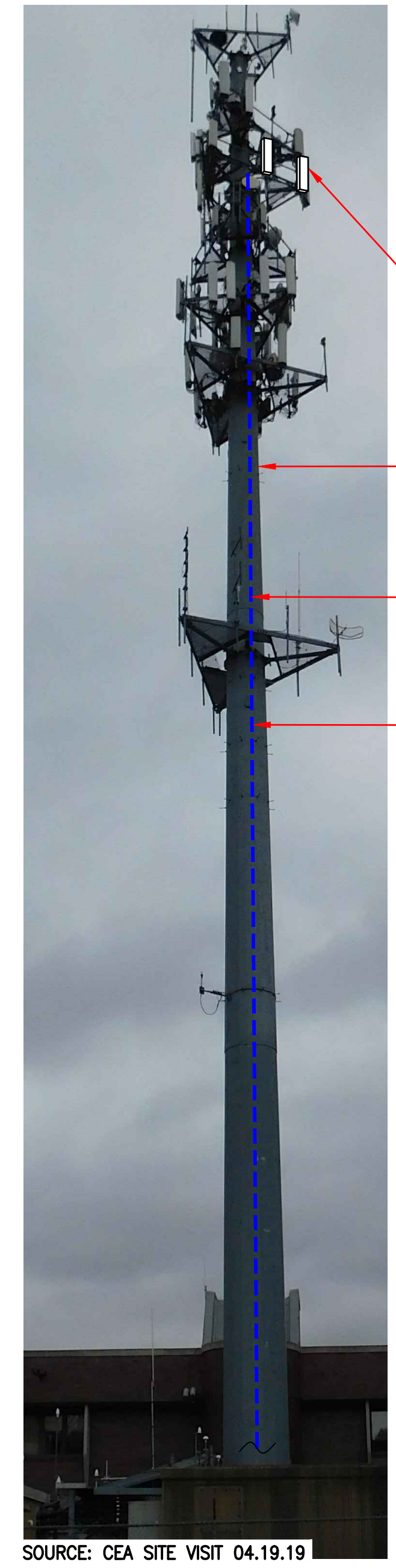
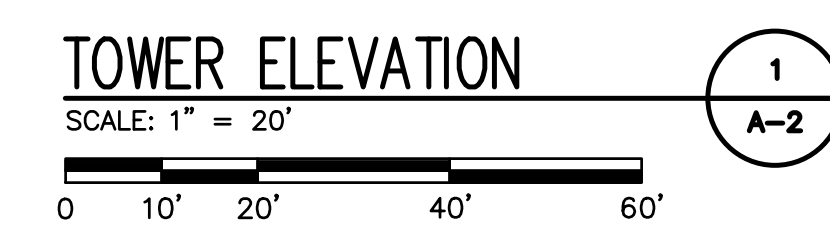
SHEET NUMBER
A-1

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

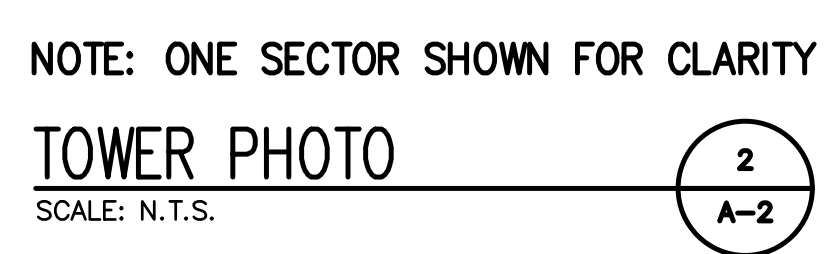
RAD CENTER NOTE:
 T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.



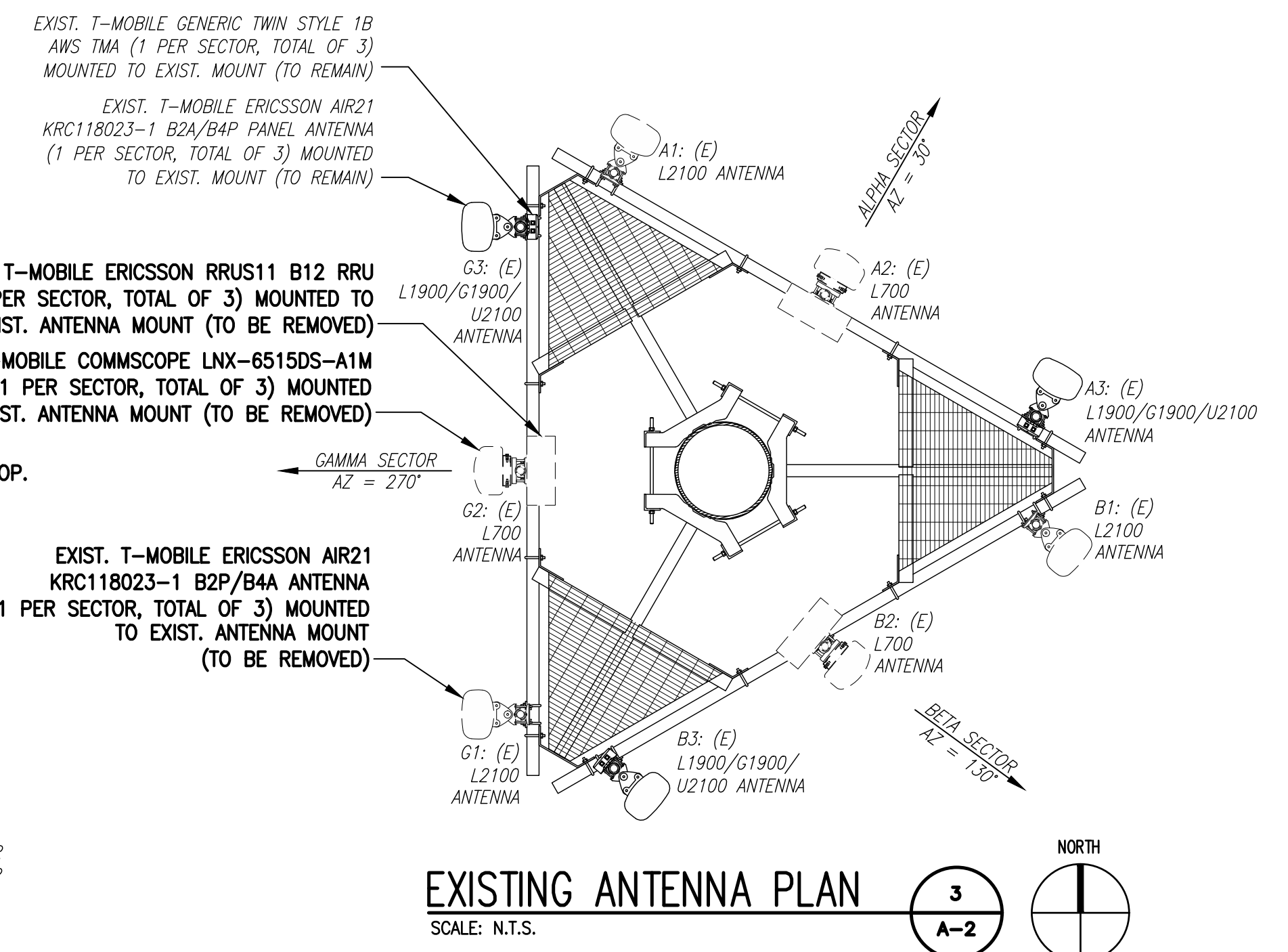
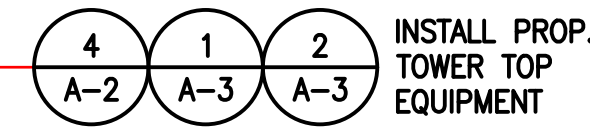
NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.



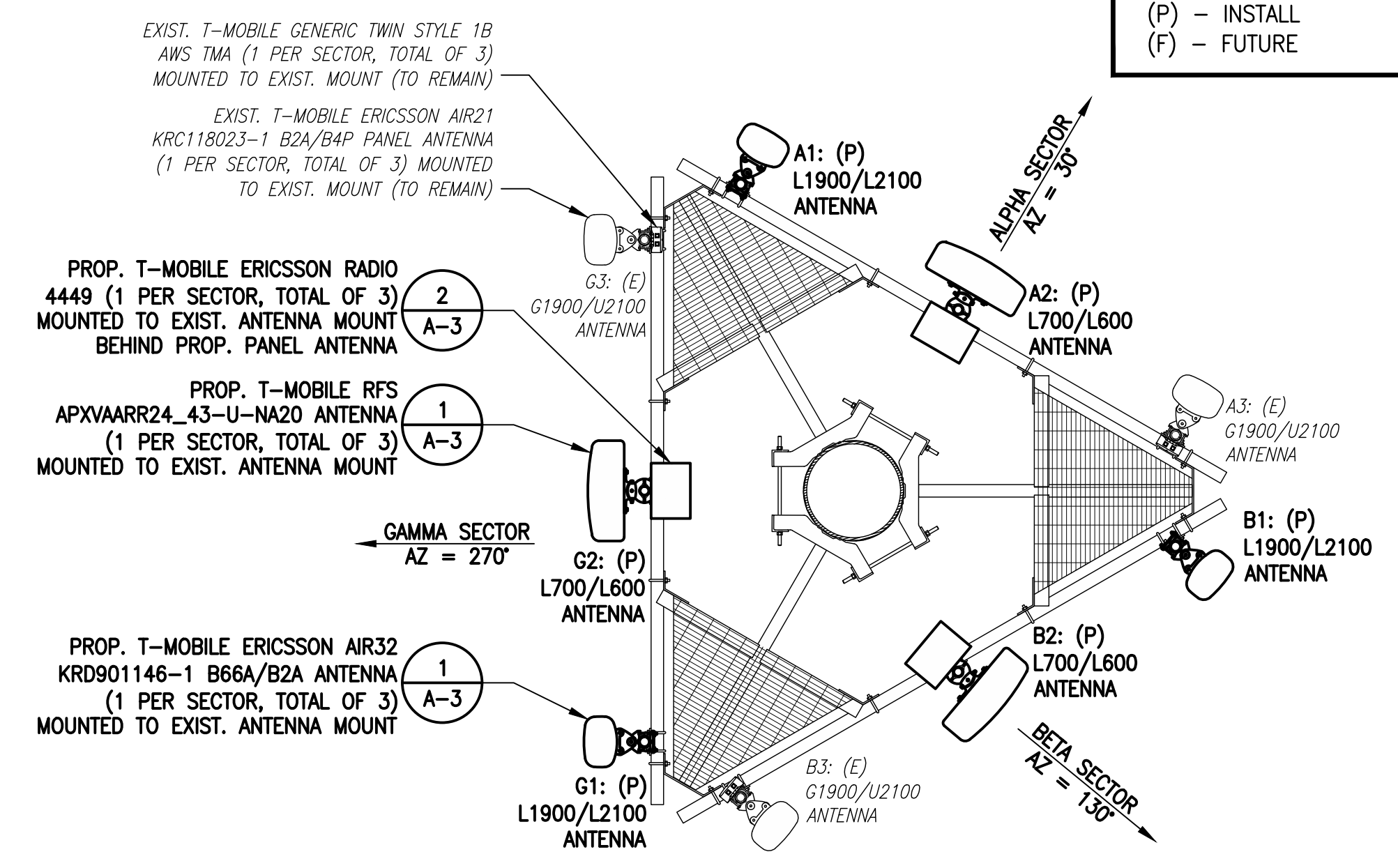
NOTE:
PROPOSED T-MOBILE RRH'S NOT SHOWN, FOR CLARITY.



NOTE: ONE SECTOR SHOWN FOR CLARITY



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



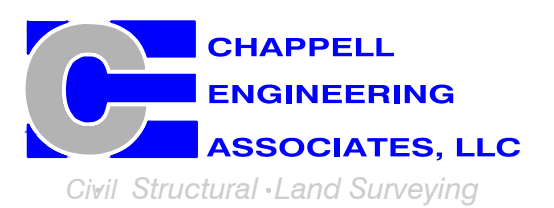
NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

T-MOBILE NORTHEAST LLC

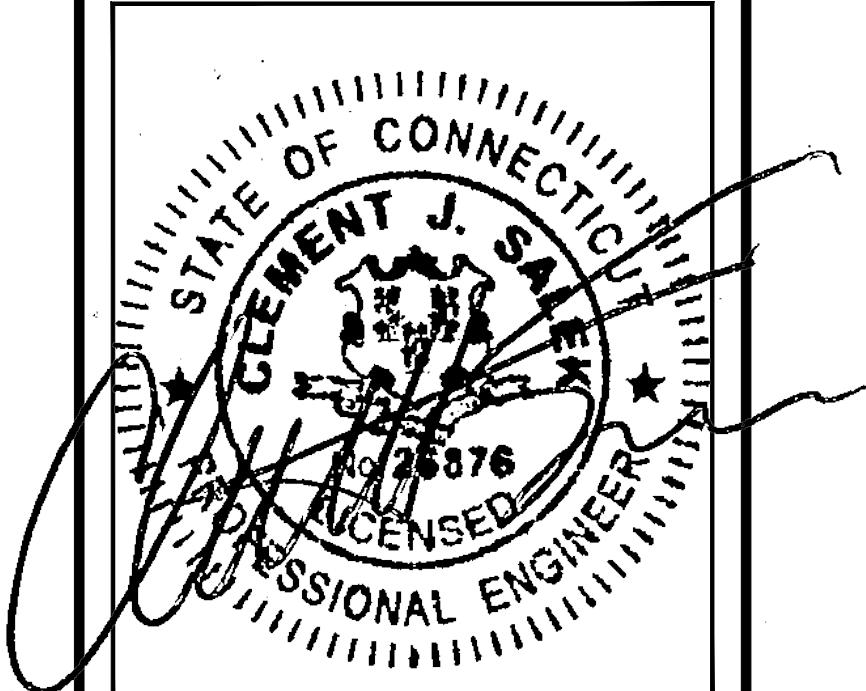
15 COMMERCE WAY, SUITE B
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0	05/13/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11497A

SITE ADDRESS:
 151 SAND HILL ROAD
 SOUTH WINDSOR, CT 06074

SHEET TITLE:
TOWER ELEVATIONS & ANTENNA PLAN

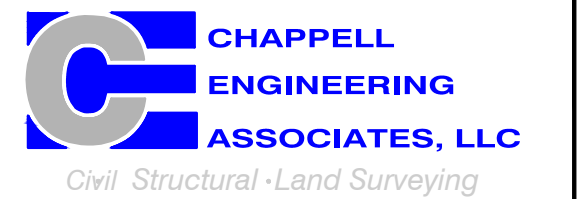
SHEET NUMBER:
A-2

**T-MOBILE
NORTHEAST LLC**

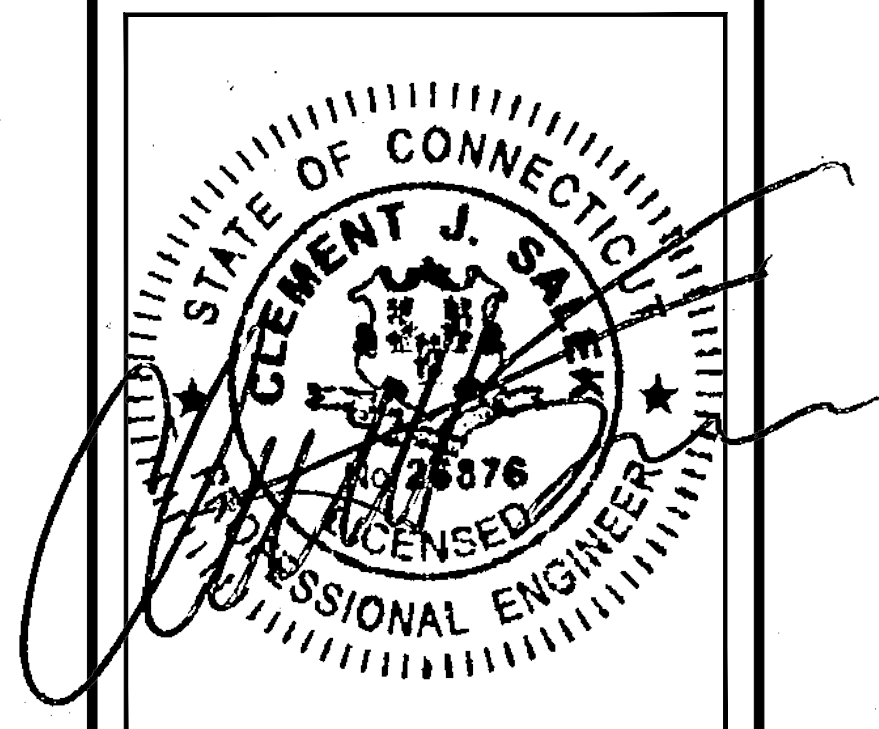
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SITE NUMBER:
CT11497A

SITE ADDRESS:
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

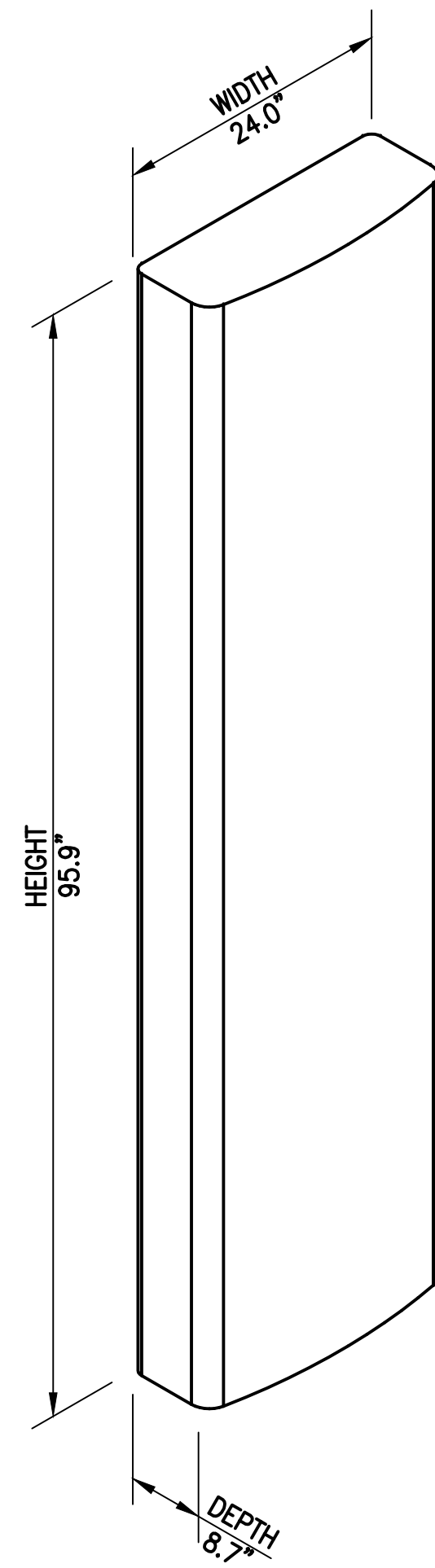
SITE DETAILS

SHEET NUMBER

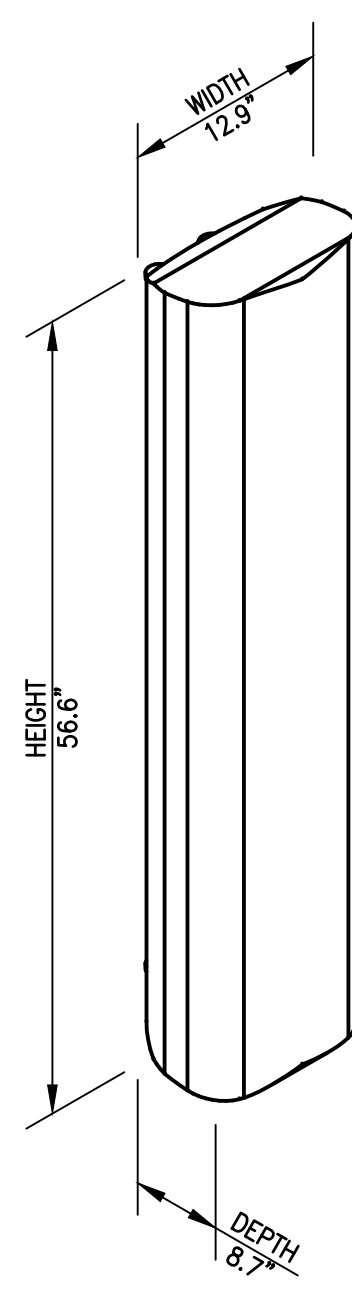
A-3

FINAL ANTENNA CONFIGURATION								
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	ERICSSON AIR32 KRD901146-1 B66A/B2A	160'± AGL	30°	0°	2'	L1900/L2100	-	(1) 1-5/8" HYBRID CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	160'± AGL	30°	0°	2'	L600/L700	ERICSSON RADIO 4449 B71+B12	(1) 1-5/8" HYBRID CABLE
	ERICSSON AIR21 KRC118023-1 B2A/B4P	160'± AGL	30°	0°	2'	G1900 U2100	- GENERIC TWIN STYLE TB AWS TMA	(1) 1-5/8" HYBRID CABLE (SHARED) (2) 1-5/8" COAX CABLES
BETA	ERICSSON AIR32 KRD901146-1 B66A/B2A	160'± AGL	130°	0°	2'	L1900/L2100	-	(1) 1-5/8" HYBRID CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	160'± AGL	130°	0°	2'	L600/L700	ERICSSON RADIO 4449 B71+B12	(1) 1-5/8" HYBRID CABLE
	ERICSSON AIR21 KRC118023-1 B2A/B4P	160'± AGL	130°	0°	2'	G1900 U2100	- GENERIC TWIN STYLE TB AWS TMA	(1) 1-5/8" HYBRID CABLE (SHARED) (2) 1-5/8" COAX CABLES
GAMMA	ERICSSON AIR32 KRD901146-1 B66A/B2A	160'± AGL	270°	0°	2'	L1900/L2100	-	(1) 1-5/8" HYBRID CABLE (SHARED)
	RFS APXVAARR24_43-U-NA20	160'± AGL	270°	0°	2'	L600/L700	ERICSSON RADIO 4449 B71+B12	(1) 1-5/8" HYBRID CABLE
	ERICSSON AIR21 KRC118023-1 B2A/B4P	160'± AGL	270°	0°	2'	G1900 U2100	- GENERIC TWIN STYLE TB AWS TMA	(1) 1-5/8" HYBRID CABLE (SHARED) (2) 1-5/8" COAX CABLES

NOTE: EXISTING (3) 1-5/8" COAX CABLES TO BE REMOVED & EXISTING (3) 1-5/8" COAX CABLES TO REMAIN DISCONNECTED.



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



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



ERICSSON 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.

ANTENNA DETAILS

SCALE: N.T.S.

1
A-3

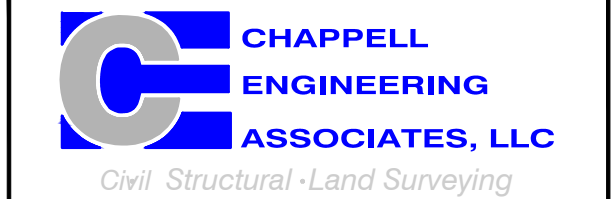
2
A-3

**T-MOBILE
NORTHEAST LLC**

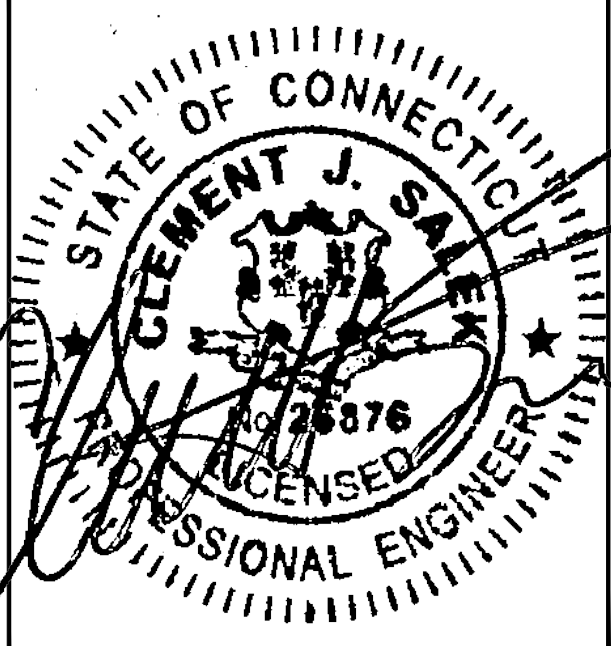
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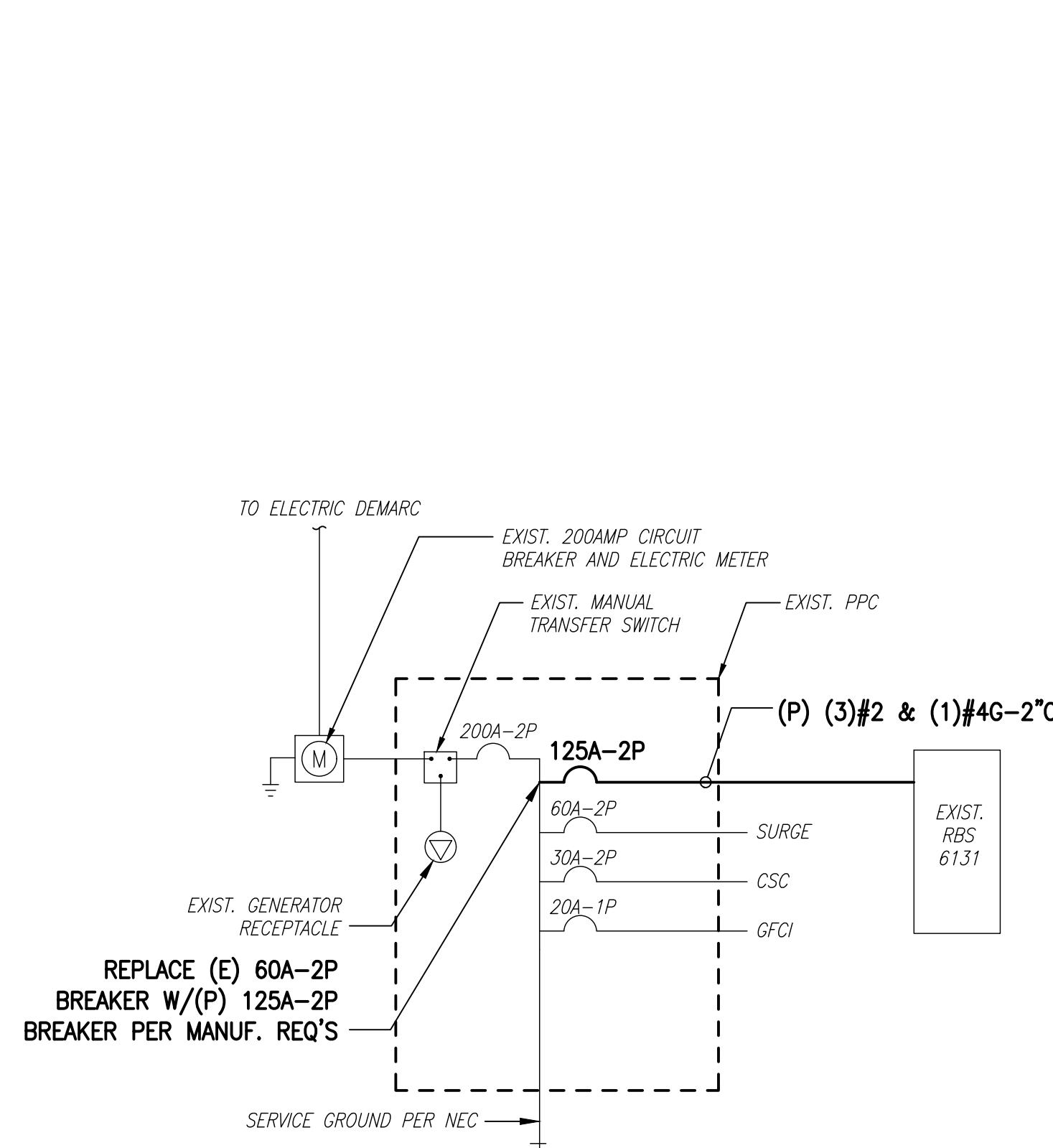
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
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0	05/13/19	ISSUED FOR REVIEW	JRV

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CT11497A

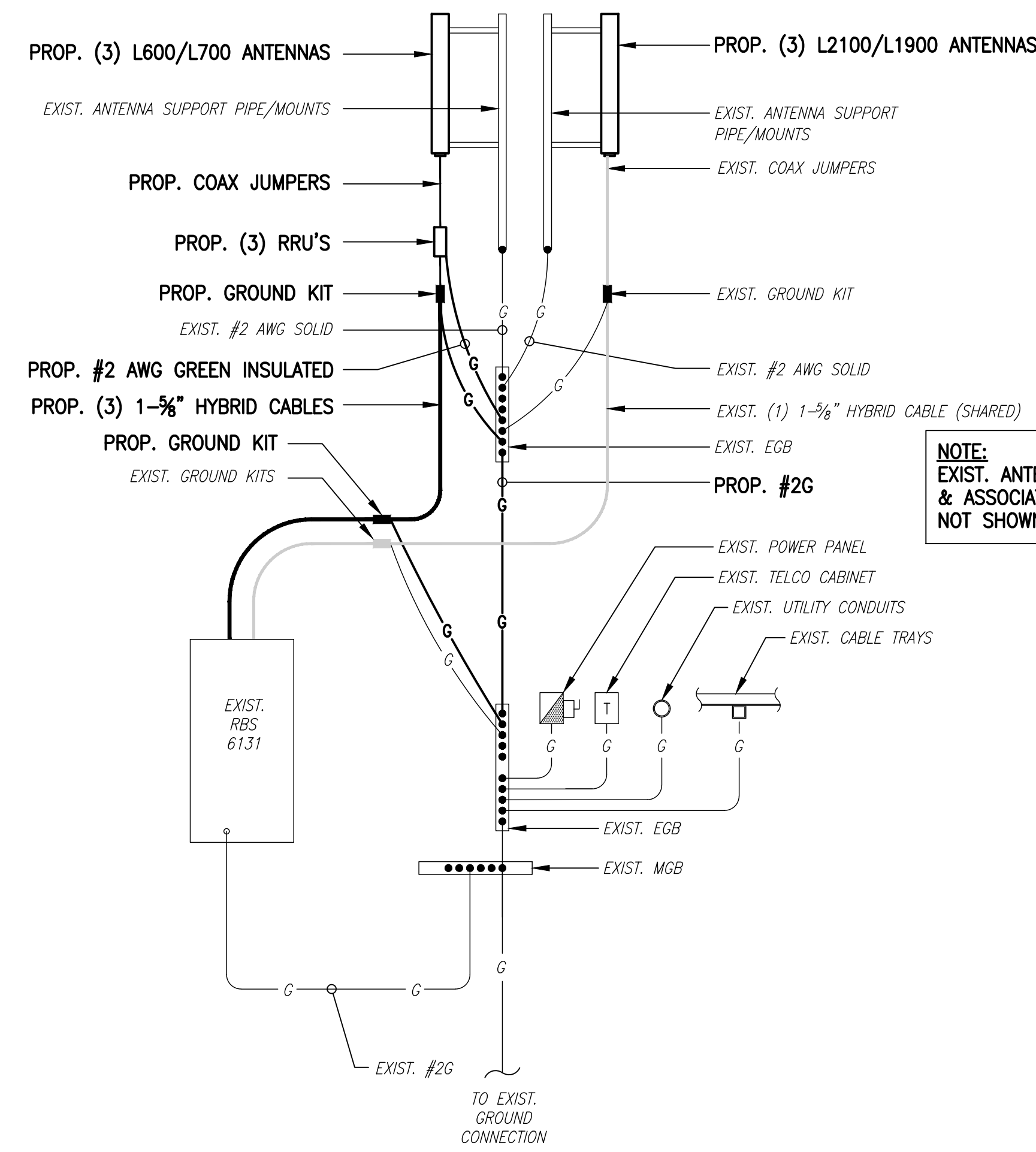
SITE ADDRESS:
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE
**ELECTRIC & GROUNDING
DETAILS**

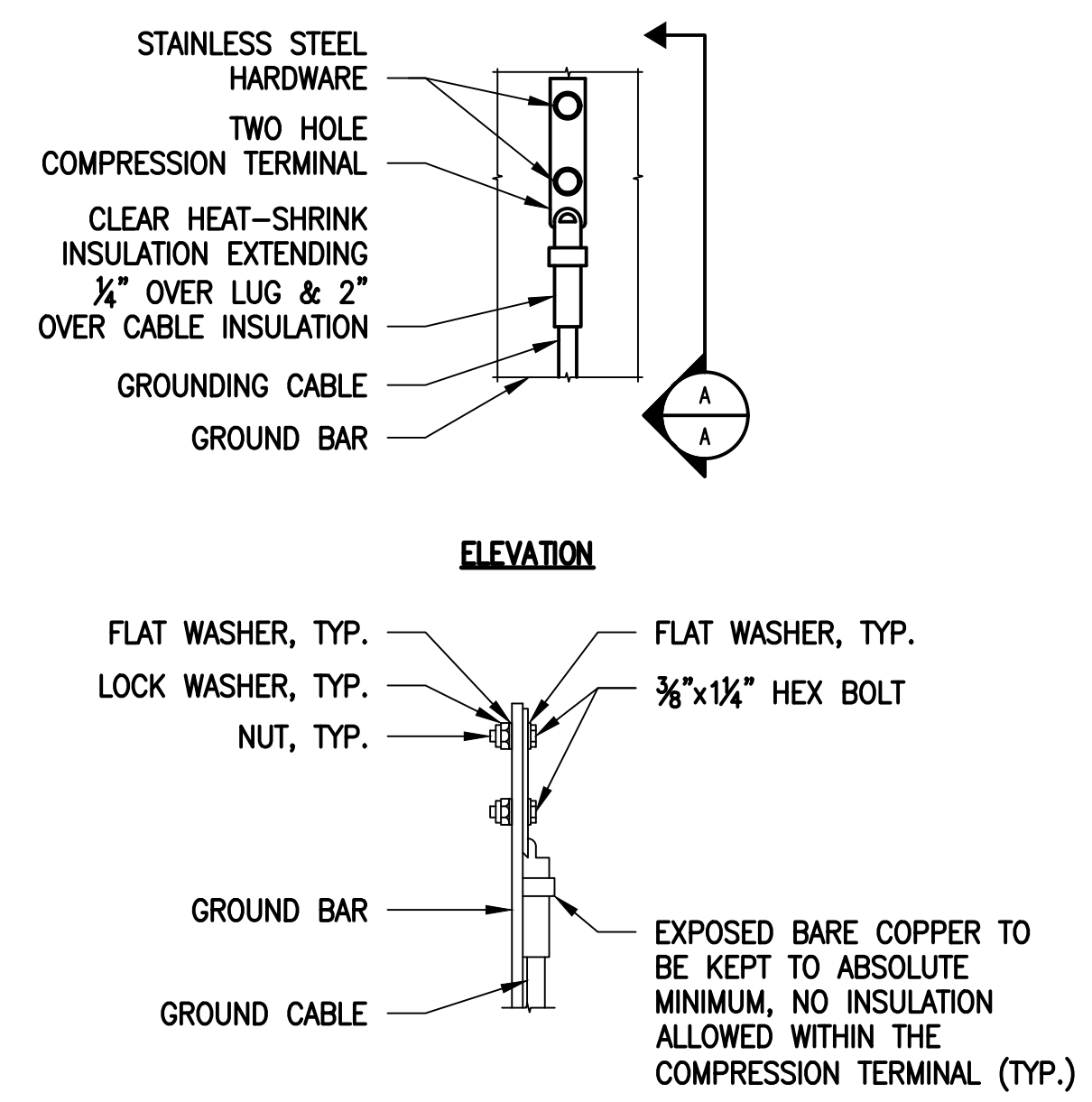
SHEET NUMBER
E-1



ONE LINE DIAGRAM
SCALE: NOT TO SCALE

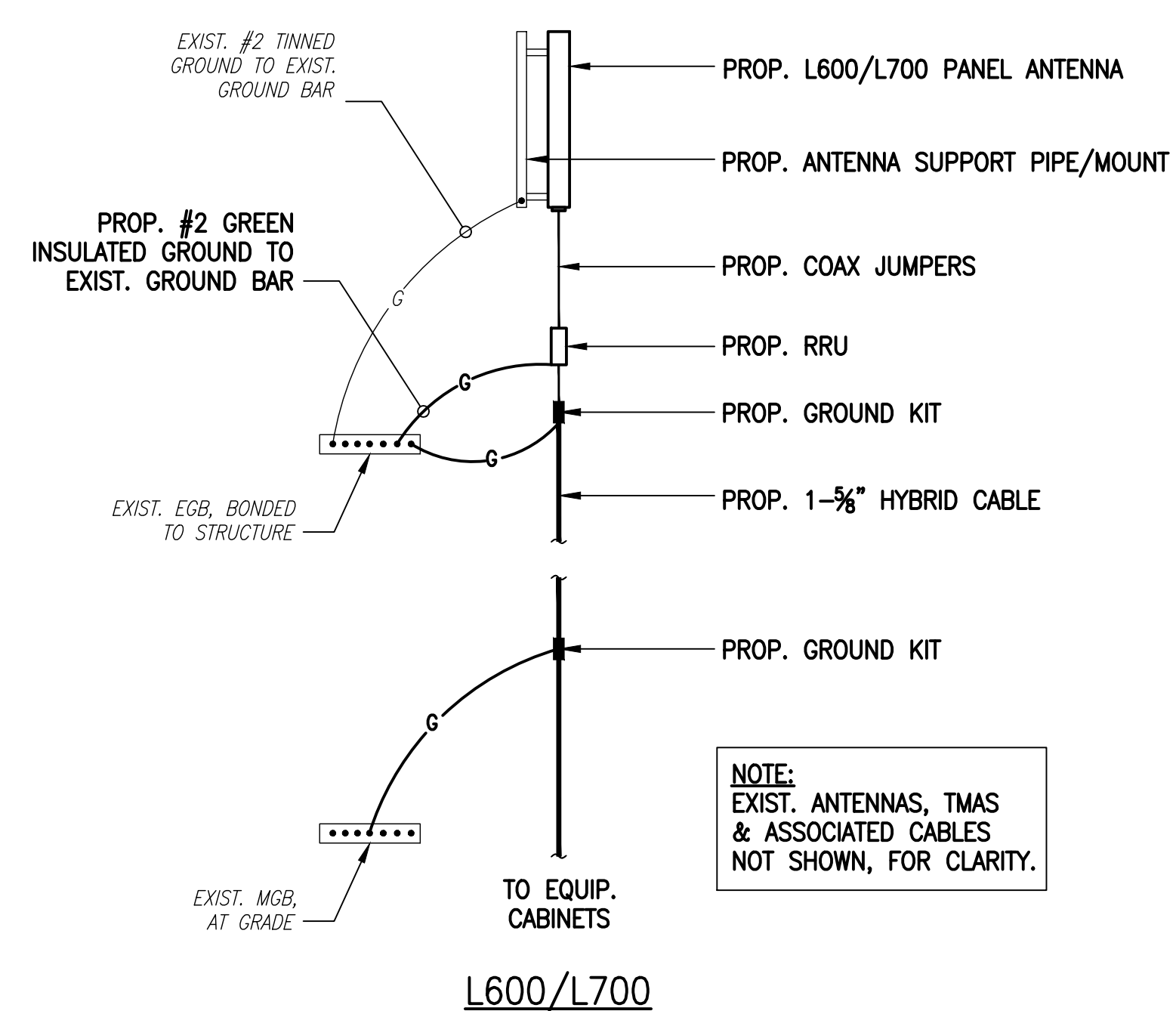


GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE

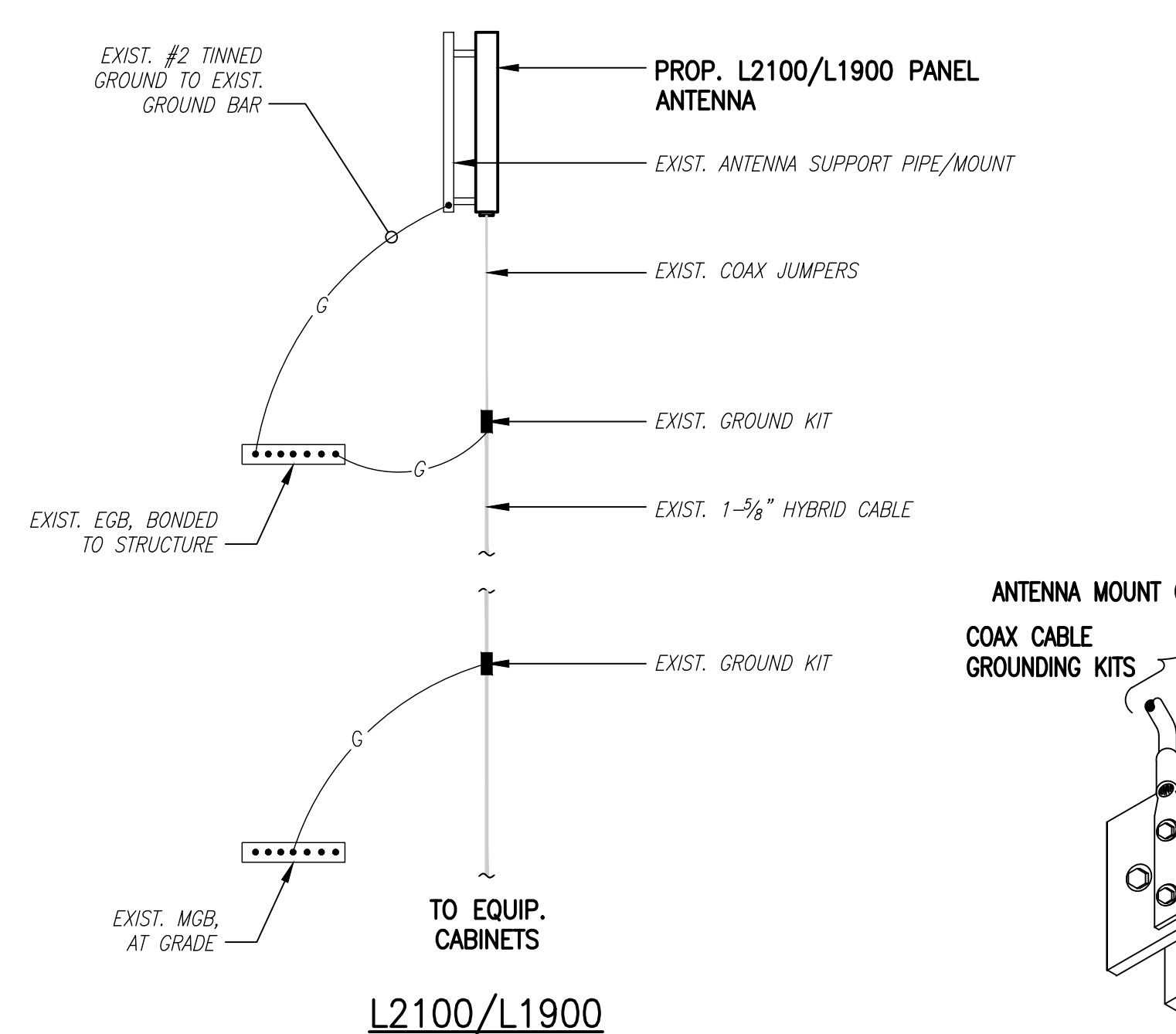


- NOTES:
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

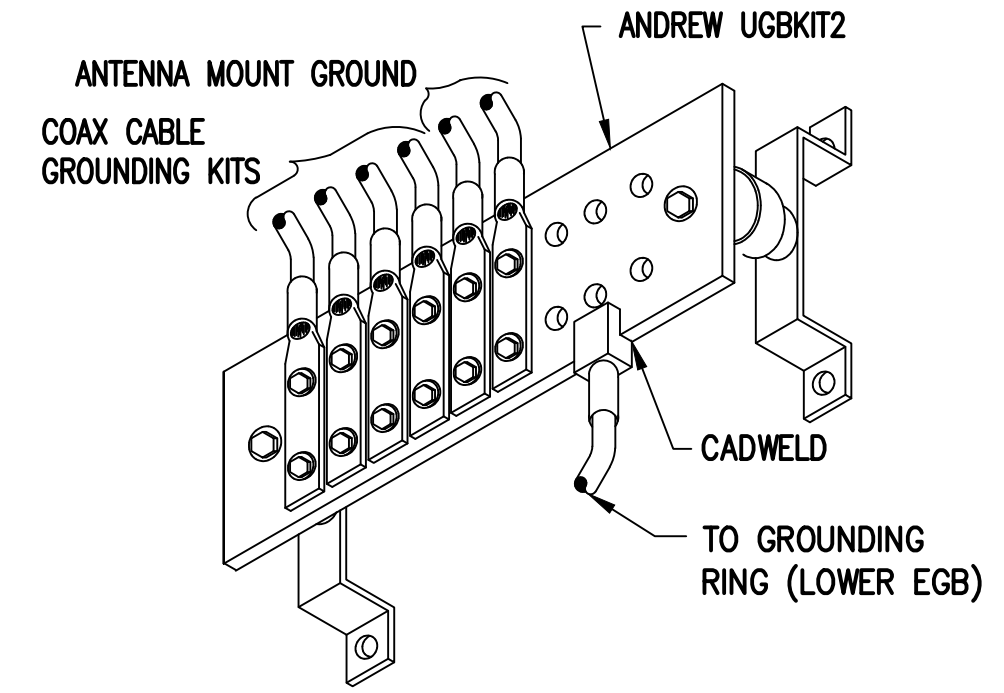
TYPICAL GROUND BAR CONNECTIONS DETAIL
SCALE: NOT TO SCALE



COAX CABLE CONNECTION AND GROUNDING DETAIL
SCALE: NOT TO SCALE



GROUND BAR (EGB)
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, THHN, OR THHN/INSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURIED HYDRON 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 187 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT07824-S

Customer Site Name: South Windsor

Carrier Name: T-Mobile (App#: 116784, V1)

Carrier Site ID / Name: CT11497A / South Windsor

Site Location: 151 Sand Hill Road

South Windsor, Connecticut

Hartford County

Latitude: 41.836000

Longitude: -72.552000

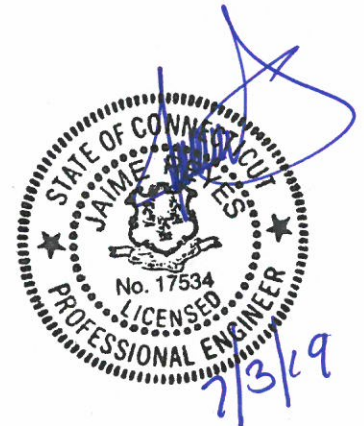
Analysis Result:

Max Structural Usage: 66.0% [Pass]

Max Foundation Usage: 80.0% [Pass]

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

Report Prepared By: Sital Shrestha



Introduction

The purpose of this report is to summarize the analysis results on the 187 ft SABRE 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	Tower Drawing prepared by Sabre, Job #02-10062 dated 11/1/01
Foundation Drawing	Foundation Drawing prepared by Sabre, Job #02-10062 dated 10/11/01
Geotechnical Report	Geotechnical Report prepared by Dr. Clarence Welti, dated 9/29/00
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:	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.178$, $S_1 = 0.064$

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	187.0	1	Telewave - ANT450F6 - Whip	Low Profile Platform	(4) 1/2" (3) 7/8"	Town of South Windsor
2		2	Telewave - ANT900D6-9 - Whip			
3		2	Decibel - DB201 - Whip			
4		2	Scala - MF-900B - Dish			
5	170.0	3	Powerwave - 7770 - Panel	Low Profile Platform w/ HRK12	(12) 1 5/8" Coax (4) 3/4" DC Power (2) 1/2" Fiber (2) 3" Conduit	AT&T
6		3	Cci - HPA-65R-BUU-H6 - Panel			
7		3	Quintel - QS66512-2 - Panel			
8		1	Nokia - CS72188.01 LMU - Omni			
9		3	Cci - DTMABP7819VG12A TMA			
10		6	Kaelus - DBC0061F1V51-2 - Diplexer			
11		3	Ericsson - RRUS-11			
12		3	Ericsson - RRUS-32 B2			
13		3	Ericsson - RRUS-32			
14		3	Css - DBC-750 - Combiner			
15		2	Raycap - DC6-48-60-18-8F - DC SS			
16	3	Commscope - ABT-DFDM-ADBH -BIAS-T				
-	160.0	3	Ericsson - AIR 21 B2A B4P - Panel	Platform w/ Hand Rail	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson - AIR 21 B4A B2P - Panel			
-		3	Commscope - LNX-6515DS - Panel			
-		3	Ericsson - Double TMA 17/21 - TMA/TTA			
-		3	Ericsson - S11B12 - RRU			
22	150.0	3	Comba ODI2-065R18K-GQ Panel	(3) Commscope P-200 Stand-off	(1) 1.25" HFC	Dish Network
23		2	Ericsson 4415 RRU			
24		3	Ericsson 0208 RRU			
25	140.0	1	RFS - DB-T1-6Z-8AB-OZ - Surge Suppressor	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid (1) 1/2"	Verizon
26		6	RFS - FD9R6004/2C-3L - Diplexer			
27		6	Commscope - HBXX-6517DS-A2M - Panel			
28		6	Alcatel Lucent - KS24019 - GPS			
29		3	Commscope - LNX-6514DS-A1M - Panel			
30		3	Commscope - LNX-6514DS-VTM - Panel			
31		3	Alcatel Lucent - RRH2x40-07-U - RRU			
32		3	Alcatel Lucent - RRH2x60-1900 - RRU			
33	130.0	3	Alcatel Lucent - 1900MHz - RRH	Low Profile Platform	(1) 0.7" Fiber (3) 1-1/4"	Sprint
34		3	Alcatel Lucent - 800 MHz - RRH			
35		3	Alcatel Lucent - 800MHz - Filter			
36		4	RFS - ACU-A20-N - RET			
37		3	RFS - APXVSP18-C-A20 - Panel			
38		3	RFS - APXVTM14-C-120 - Panel			
39		3	RF Filters			
40	3	Alcatel Lucent - TD-RRH8x20-25 - RRU				

41	92.0	1	Telewave - ANT150D3 - Whip	Low Profile Platform	(6) 1/2"	Town of South Windsor
42		1	Telewave - ANT4506-9 - Whip			
43		1	Telewave - ANT450Y10-WR - Yagi			
44		1	Decibel - DB205 - Whip			
45		2	Scala - MF-900B - Dish			

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
17	160.0	3	Ericsson Air 21 B2A/B4P	Low profile Platform w/ Hand Rail	(9) 1-5/8" Coax (4) 1-5/8" Fiber	T-Mobile
18		3	Ericsson Air32 KRD901146-1_B66A_B2A			
19		3	RFS APXVAARR24_43-U-NA20			
20		3	Ericsson KRY 112 144/1			
21		3	Ericsson Radio 4449 B71+B12			

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:	66.0%	62.6%	56.3%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	6015.1	47.1	124.8

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):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
187.0	MF-900B - Dish	Town of South Windso	0.002	1.291
92.0	MF-900B - Dish	Town of South Windso	0.000	0.754

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 65.96% at 0.0ft

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)

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

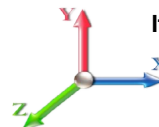
7/3/2019



Page: 1

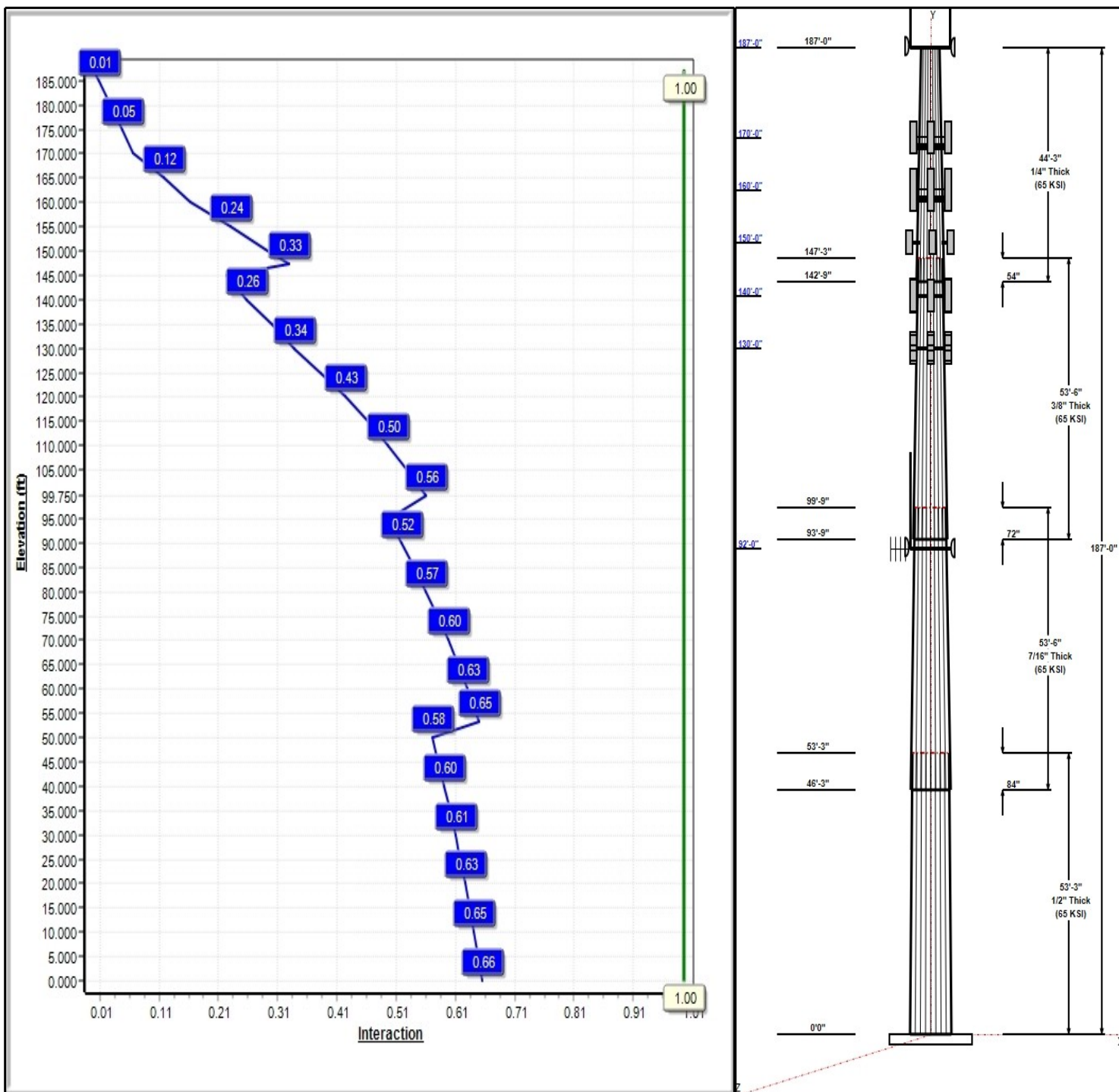
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 97 mph Wind



Iterations: 25

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Structure: CT07824-S-SBA

Type: Tapered
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.22997

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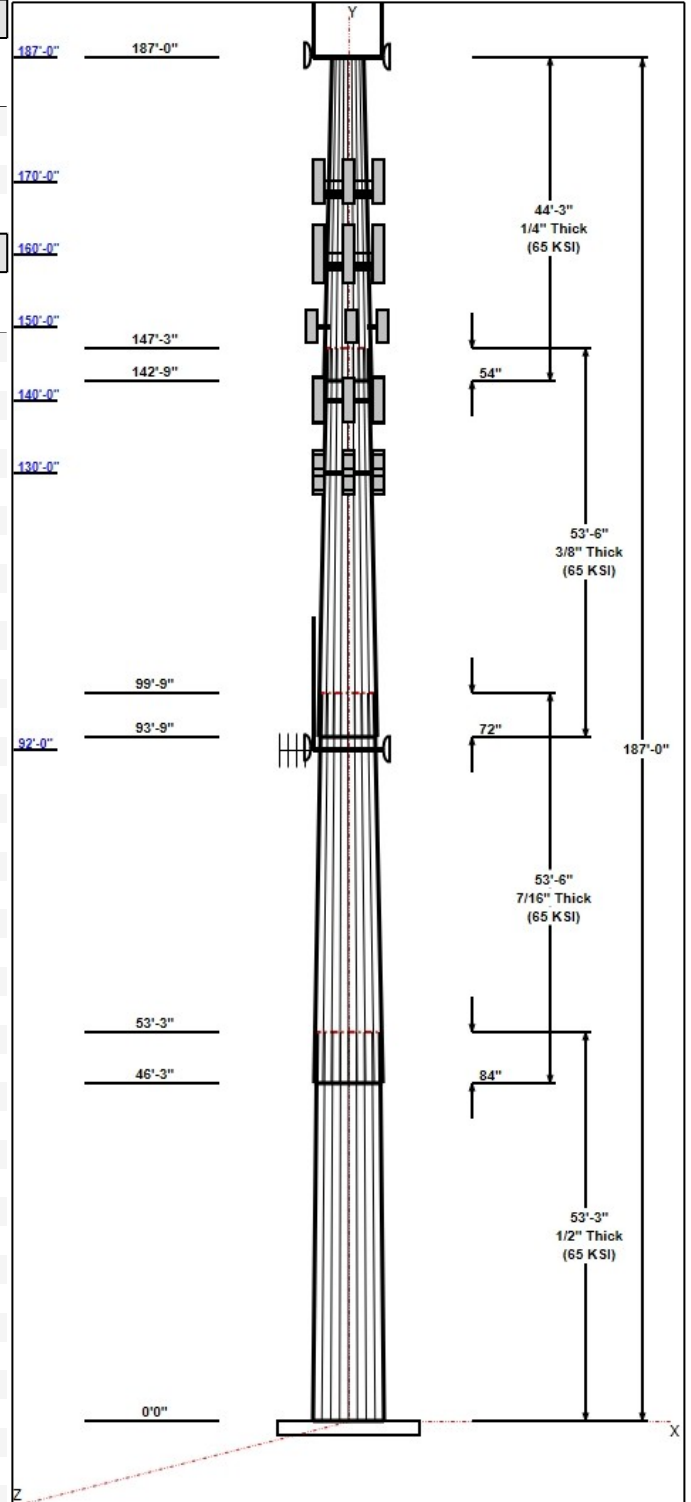


Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	52.63	64.88	0.500		0.22997	65
2	53.50	42.82	55.12	0.438	Slip	0.22997	65
3	53.50	32.64	44.95	0.375	Slip	0.22997	65
4	44.25	24.00	34.18	0.250	Slip	0.22997	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
187.00	187.00	2	MF-900B	Town of South
187.00	189.04	2	ANT900D6-9	Town of South
187.00	190.92	1	ANT450F6	Town of South
187.00	191.75	2	DB201	Town of South
187.00	187.00	1	Low Profile Platform	Town of South
187.00	187.00	1	6' Lightning rod	
170.00	170.00	3	Ericsson - RRUS-32 B2	AT&T
170.00	170.00	1	Low Profile Platform w/	AT&T
170.00	170.00	3	Cci - HPA-65R-BUU-H6	AT&T
170.00	170.00	1	Nokia - CS72188.01 LMU -	AT&T
170.00	170.00	3	Quintel - QS66512-2	AT&T
170.00	170.00	6	Kaelus - DBC0061F1V51-2	AT&T
170.00	170.00	3	Ericsson - RRUS-32	AT&T
170.00	170.00	3	Powerwave - 7770	AT&T
170.00	170.00	3	Cci - DTMABP7819VG12A	AT&T
170.00	170.00	3	Ericsson - RRUS-11	AT&T
170.00	170.00	3	Css - DBC-750 - Combiner	AT&T
170.00	170.00	2	Raycap - DC6-48-60-18-8F	AT&T
170.00	170.00	3	Commscope -	AT&T
160.00	160.00	3	Air32	T-Mobile
160.00	160.00	3	APXVAARR24_43-U-NA20	T-Mobile
160.00	160.00	3	Radio 4449 B71+B12	T-Mobile
160.00	160.00	3	AIR 21 B2A B4P	T-Mobile
160.00	160.00	3	Double TMA 17/21	T-Mobile
160.00	160.00	1	Platform w/ Hand Rail	T-Mobile
150.00	150.00	3	ODI2-065R18K-GQ	Dish Network
150.00	150.00	3	P-200 Stand-off	Dish Network
150.00	150.00	2	4415	Dish Network
150.00	150.00	3	0208	Dish Network
140.00	140.00	3	LNx-6514DS-VTM	Verizon
140.00	140.00	6	FD9R6004/2C-3L	Verizon
140.00	140.00	1	DB-T1-6Z-8AB-OZ	Verizon
140.00	140.00	6	KS-24019	Verizon
140.00	140.00	1	Low Profile Platform	Verizon
140.00	140.00	6	HBXX-6517DS-A2M	Verizon
140.00	140.00	3	LNx-6514DS-A1M	Verizon
140.00	140.00	3	RRH2x40-07-U	Verizon
140.00	140.00	3	RRH2x60-1900	Verizon
130.00	130.00	3	APXVSP18-C-A20	Sprint
130.00	130.00	3	APXVTM14-C-120	Sprint
130.00	130.00	3	TD-RRH8x20-25	Sprint
130.00	130.00	3	1900MHz RRH	Sprint
130.00	130.00	3	800 MHz RRH	Sprint
130.00	130.00	3	800MHz Filter	Sprint
130.00	130.00	3	RF Filters	Sprint



Structure: CT07824-S-SBA

Type: Tapered
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.22997

7/3/2019

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130.00	130.00	4	ACU-A20-N	Sprint
130.00	130.00	1	Low Profile Platform	Sprint
92.00	92.00	2	MF-900B	Town of South
92.00	95.00	1	ANT4506-9	Town of South
92.00	97.00	1	ANT150D3	Town of South
92.00	92.00	1	ANT450Y10-WR	Town of South
92.00	101.00	1	DB205	Town of South
92.00	92.00	1	Low Profile Platform	Town of South

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	187.00	Inside	1/2" Coax	Town of South
0.00	187.00	Inside	7/8" Coax	Town of South
0.00	170.00	Inside	1 5/8" Coax	AT&T
0.00	170.00	Inside	1/2" Fiber	AT&T
0.00	170.00	Inside	3" Conduit	AT&T
0.00	170.00	Inside	3/4" DC Power	AT&T
0.00	160.00	Inside	1 5/8" Coax	T-Mobile
0.00	160.00	Inside	1 5/8" Fiber	T-Mobile
0.00	150.00	Inside	1.25" HFC	Dish Network
0.00	140.00	Inside	1 5/8" Coax	Verizon
0.00	140.00	Inside	1 5/8" Hybrid	Verizon
0.00	140.00	Inside	1/2" Coax	Verizon
0.00	130.00	Inside	0.7" Fiber	Sprint
0.00	130.00	Inside	1-1/4" Hybrid	Sprint
0.00	92.00	Inside	1/2" Coax	Town of South

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
26	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	78.0	60.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	6015.1	47.1	76.4
0.9D + 1.6W 97 mph Wind	5947.7	47.1	57.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	2135.7	15.9	124.8
1.2D + 1.0E	270.3	2.1	76.5
0.9D + 1.0E	266.9	2.1	57.4
1.0D + 1.0W 60 mph Wind	1429.3	11.3	63.7

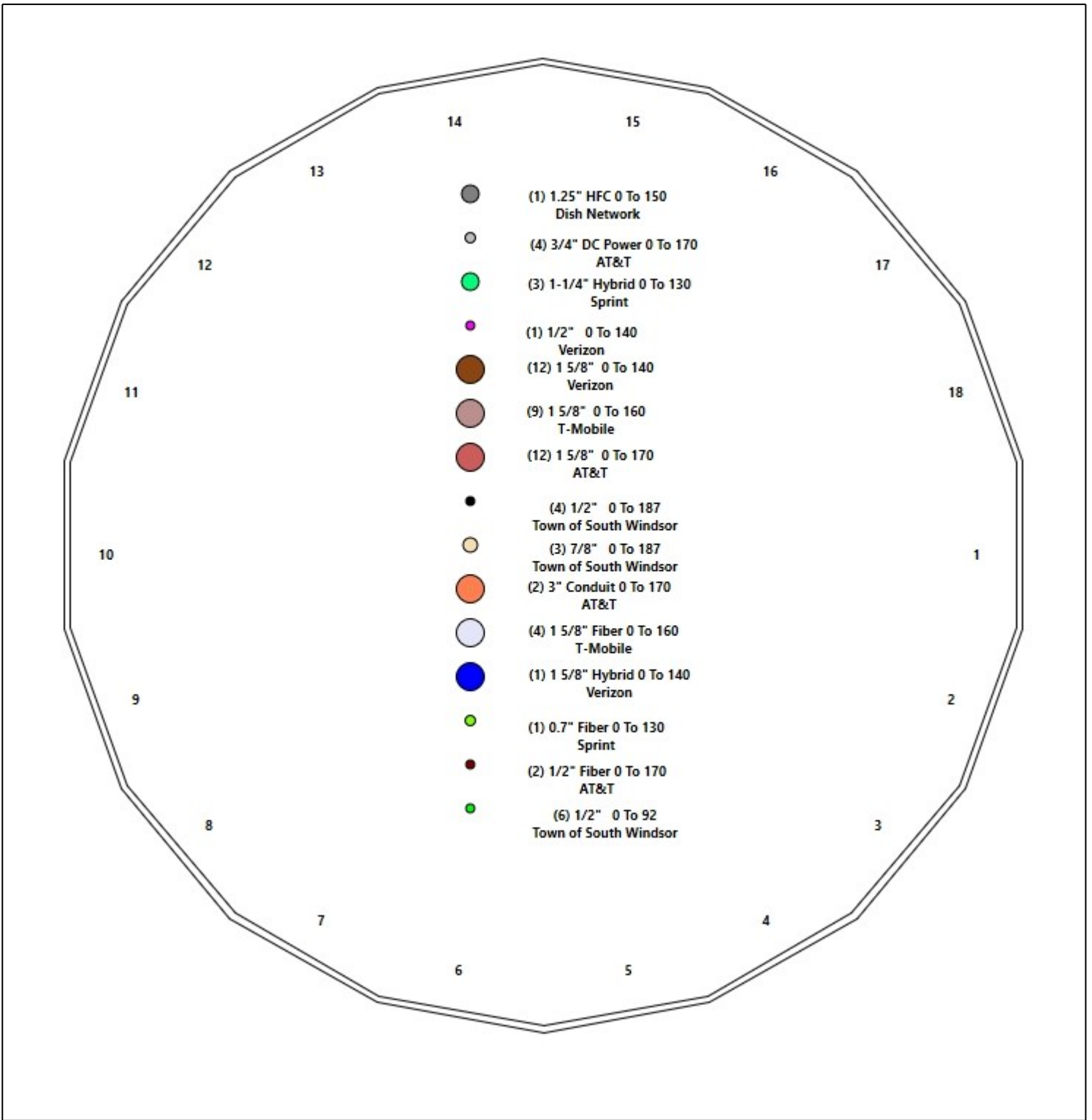
Structure: CT07824-S-SBA - Coax Line Placement

Type: Monopole
Site Name: South Windsor
Height: 187.00 (ft)

7/3/2019



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Shaft Properties

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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	53.250	0.5000	65		0.00	16,752
2	18	53.500	0.4375	65	Slip	84.00	12,268
3	18	53.500	0.3750	65	Slip	72.00	8,324
4	18	44.250	0.2500	65	Slip	54.00	3,445
Total Shaft Weight:							40,789

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	64.88	0.00	102.1	53501.66	21.47	129.76	52.63	53.25	82.73	28410.2	17.15	105.2	0.229973
2	55.12	46.25	75.93	28683.85	20.80	125.99	42.82	99.75	58.84	13351.6	15.85	97.86	0.229973
3	44.95	93.75	53.05	13313.85	19.72	119.85	32.64	147.25	38.40	5051.60	13.94	87.04	0.229973
4	34.18	142.7	26.92	3914.66	22.69	136.71	24.00	187.00	18.84	1343.00	15.52	96.00	0.229973

Load Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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	187.00	MF-900B	2	13.00	3.45	1.00	166.21	36.699	1.00	1.00	0.00
2	187.00	ANT900D6-9	2	11.00	0.98	1.00	62.89	4.260	1.00	0.00	2.04
3	187.00	ANT450F6	1	21.00	1.86	1.00	87.88	5.722	1.00	0.00	3.92
4	187.00	DB201	2	25.00	3.54	1.00	174.30	18.389	1.00	0.00	4.75
5	187.00	Low Profile Platform	1	1500.00	22.00	1.00	3285.07	46.087	1.00	0.00	0.00
6	187.00	6' Lightning rod	1	6.50	0.38	1.00	56.01	1.863	1.00	0.00	0.00
7	170.00	Ericsson - RRUS-32 B2	3	60.00	3.01	0.81	213.50	4.051	0.83	0.00	0.00
8	170.00	Low Profile Platform w/ HRK12	1	1700.00	27.70	1.00	3704.00	57.741	1.00	0.00	0.00
9	170.00	Cci - HPA-65R-BUU-H6	3	51.00	9.66	0.85	405.64	11.544	0.85	0.00	0.00
10	170.00	Nokia - CS72188.01 LMU - Omni	1	0.32	0.12	1.00	2.86	0.393	1.00	0.00	0.00
11	170.00	Quintel - QS66512-2	3	111.00	8.13	0.92	437.09	9.926	0.92	0.00	0.00
12	170.00	Kaelus - DBC0061F1V51-2 -	6	25.40	0.43	0.67	45.04	0.815	0.67	0.00	0.00
13	170.00	Ericsson - RRUS-32	3	53.00	2.74	0.67	182.09	3.752	0.67	0.00	0.00
14	170.00	Powerwave - 7770	3	35.00	5.50	0.73	232.43	6.972	0.75	0.00	0.00
15	170.00	Cci - DTMABP7819VG12A - TMA	3	19.18	1.14	0.67	53.62	2.180	0.67	0.00	0.00
16	170.00	Ericsson - RRUS-11	3	55.00	2.52	0.76	185.27	3.427	0.75	0.00	0.00
17	170.00	Css - DBC-750 - Combiner	3	4.88	0.51	0.67	18.16	1.225	0.67	0.00	0.00
18	170.00	Raycap - DC6-48-60-18-8F - DC SS	2	32.80	1.47	1.00	118.95	2.416	1.00	0.00	0.00
19	170.00	Commscope - ABT-DFDM-ADBH -	3	1.14	0.05	0.98	4.26	0.310	0.98	0.00	0.00
20	160.00	Air32 KRD901146-1_B66A_B2A	3	132.20	6.51	0.87	395.55	8.110	0.87	0.00	0.00
21	160.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	713.90	22.824	0.70	0.00	0.00
22	160.00	Radio 4449 B71+B12	3	71.00	1.97	0.67	142.68	2.705	0.67	0.00	0.00
23	160.00	AIR 21 B2A B4P	3	91.50	6.09	0.83	333.58	7.597	0.83	0.00	0.00
24	160.00	Double TMA 17/21	3	11.00	0.41	0.72	25.48	1.048	0.75	0.00	0.00
25	160.00	Platform w/ Hand Rail	1	1600.00	32.00	1.00	4419.67	69.496	1.00	0.00	0.00
26	150.00	ODI2-065R18K-GQ	3	25.10	4.85	0.70	167.24	6.160	1.00	0.00	0.00
27	150.00	P-200 Stand-off	3	242.00	8.19	0.75	516.76	21.882	0.75	0.00	0.00
28	150.00	4415	2	44.10	1.86	0.75	107.40	2.624	0.75	0.00	0.00
29	150.00	0208	3	19.80	1.37	0.67	66.42	2.035	0.67	0.00	0.00
30	140.00	LNx-6514DS-VTM	3	33.10	8.09	0.80	264.61	11.794	0.82	0.00	0.00
31	140.00	FD9R6004/2C-3L	6	3.10	0.36	0.75	13.74	0.947	0.77	0.00	0.00
32	140.00	DB-T1-6Z-8AB-OZ	1	21.40	4.10	1.00	178.58	5.162	1.00	0.00	0.00
33	140.00	KS-24019	6	0.50	0.12	1.00	9.31	0.392	1.00	0.00	0.00
34	140.00	Low Profile Platform	1	1500.00	22.00	1.00	3234.45	45.404	1.00	0.00	0.00
35	140.00	HBXX-6517DS-A2M	6	40.80	8.55	0.77	274.35	12.418	0.79	0.00	0.00
36	140.00	LNx-6514DS-A1M	3	38.40	8.17	0.83	271.99	11.911	0.85	0.00	0.00
37	140.00	RRH2x40-07-U	3	50.70	2.23	0.78	128.60	3.637	0.80	0.00	0.00
38	140.00	RRH2x60-1900	3	19.50	1.51	0.90	106.39	2.266	0.91	0.00	0.00
39	130.00	APXVSP18-C-A20	3	57.00	8.02	0.83	284.37	11.695	0.85	0.00	0.00
40	130.00	APXVTM14-C-120	3	56.00	6.34	0.79	280.65	7.834	0.81	0.00	0.00
41	130.00	TD-RRH8x20-25	3	70.00	4.05	0.69	225.04	5.146	0.71	0.00	0.00
42	130.00	1900MHz RRH	3	44.00	3.80	0.88	187.59	5.628	0.89	0.00	0.00
43	130.00	800 MHz RRH	3	53.00	2.49	0.92	150.29	3.994	0.93	0.00	0.00
44	130.00	800MHz Filter	3	8.80	0.78	0.69	32.01	1.631	0.71	0.00	0.00
45	130.00	RF Filters	3	15.50	0.93	0.67	61.42	1.512	0.69	0.00	0.00
46	130.00	ACU-A20-N	4	1.00	0.14	0.79	6.65	0.530	0.81	0.00	0.00
47	130.00	Low Profile Platform	1	1500.00	22.00	1.00	3221.74	45.232	1.00	0.00	0.00
48	92.00	MF-900B	2	13.00	3.45	1.00	155.80	34.440	1.00	1.00	0.00
49	92.00	ANT4506-9	1	18.00	2.77	1.00	122.90	6.622	1.00	0.00	3.00
50	92.00	ANT150D3	1	18.00	2.18	1.00	110.97	12.978	1.00	0.00	5.00

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		
51	92.00	ANT450Y10-WR	1	5.00	0.49	1.00	30.77	1.927	1.00	0.00	0.00
52	92.00	DB205	1	38.00	1.80	1.00	111.64	9.860	1.00	0.00	9.00
53	92.00	Low Profile Platform	1	1500.00	22.00	1.00	3163.75	44.450	1.00	0.00	0.00
Totals:			138	14,799.22			43,642.47				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	187.00	(4) 1/2" Coax	0.00	Inside
0.00	187.00	(3) 7/8" Coax	0.00	Inside
0.00	170.00	(12) 1 5/8" Coax	0.00	Inside
0.00	170.00	(2) 1/2" Fiber	0.00	Inside
0.00	170.00	(2) 3" Conduit	0.00	Inside
0.00	170.00	(4) 3/4" DC Power	0.00	Inside
0.00	160.00	(9) 1 5/8" Coax	0.00	Inside
0.00	160.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	150.00	(1) 1.25" HFC	0.00	Inside
0.00	140.00	(12) 1 5/8" Coax	0.00	Inside
0.00	140.00	(1) 1 5/8" Hybrid	0.00	Inside
0.00	140.00	(1) 1/2" Coax	0.00	Inside
0.00	130.00	(1) 0.7" Fiber	0.00	Inside
0.00	130.00	(3) 1-1/4" Hybrid	0.00	Inside
0.00	92.00	(6) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
0.00		0.5000	64.880	102.167	53501.7	21.47	129.76	76.1	1624.	0.0
5.00		0.5000	63.730	100.343	50685.8	21.06	127.46	76.6	1566.	1722.7
10.00		0.5000	62.580	98.518	47970.6	20.66	125.16	77.1	1509.	1691.7
15.00		0.5000	61.430	96.693	45354.1	20.25	122.86	77.6	1454.	1660.6
20.00		0.5000	60.281	94.868	42834.5	19.85	120.56	78.1	1399.	1629.6
25.00		0.5000	59.131	93.044	40410.0	19.44	118.26	78.5	1346.	1598.6
30.00		0.5000	57.981	91.219	38078.8	19.04	115.96	79.0	1293.	1567.5
35.00		0.5000	56.831	89.394	35839.0	18.63	113.66	79.5	1242.	1536.5
40.00		0.5000	55.681	87.569	33688.7	18.23	111.36	80.0	1191.	1505.4
45.00		0.5000	54.531	85.744	31626.3	17.82	109.06	80.4	1142.	1474.4
46.25	Bot - Section 2	0.5000	54.244	85.288	31124.2	17.72	108.49	80.6	1130.	363.7
50.00		0.5000	53.381	83.920	29649.8	17.41	106.76	80.9	1094.	2040.8
53.25	Top - Section 1	0.4375	53.509	73.694	26224.3	20.16	122.31	0.0	0.0	1742.2
55.00		0.4375	53.106	73.135	25632.3	19.99	121.39	77.9	950.7	437.2
60.00		0.4375	51.957	71.538	23989.8	19.53	118.76	78.4	909.4	1230.7
65.00		0.4375	50.807	69.941	22419.1	19.07	116.13	79.0	869.1	1203.6
70.00		0.4375	49.657	68.345	20918.5	18.60	113.50	79.5	829.7	1176.4
75.00		0.4375	48.507	66.748	19486.4	18.14	110.87	80.1	791.2	1149.2
80.00		0.4375	47.357	65.151	18121.2	17.68	108.24	80.6	753.7	1122.1
85.00		0.4375	46.207	63.555	16821.3	17.21	105.62	81.2	717.0	1094.9
90.00		0.4375	45.057	61.958	15585.1	16.75	102.99	81.7	681.3	1067.7
92.00		0.4375	44.597	61.319	15108.1	16.56	101.94	81.9	667.2	419.5
93.75	Bot - Section 3	0.4375	44.195	60.761	14698.7	16.40	101.02	82.1	655.1	363.5
95.00		0.4375	43.908	60.361	14410.9	16.29	100.36	82.2	646.4	482.5
99.75	Top - Section 2	0.3750	43.565	51.405	12115.2	19.07	116.17	0.0	0.0	1804.8
100.00		0.3750	43.508	51.337	12066.9	19.05	116.02	79.0	546.3	43.7
105.00		0.3750	42.358	49.968	11127.3	18.51	112.95	79.6	517.4	861.8
110.00		0.3750	41.208	48.600	10237.8	17.97	109.89	80.3	489.3	838.5
115.00		0.3750	40.058	47.231	9397.1	17.42	106.82	80.9	462.0	815.2
120.00		0.3750	38.908	45.862	8603.6	16.88	103.76	81.5	435.5	791.9
125.00		0.3750	37.758	44.494	7856.2	16.34	100.69	82.2	409.8	768.7
130.00		0.3750	36.608	43.125	7153.3	15.80	97.62	82.5	384.9	745.4
135.00		0.3750	35.459	41.757	6493.6	15.26	94.56	82.5	360.7	722.1
140.00		0.3750	34.309	40.388	5875.9	14.72	91.49	82.5	337.3	698.8
142.75	Bot - Section 4	0.3750	33.676	39.635	5553.4	14.42	89.80	82.5	324.8	374.4
145.00		0.3750	33.159	39.020	5298.5	14.18	88.42	82.5	314.7	505.6
147.25	Top - Section 3	0.2500	33.141	26.098	3567.2	21.96	132.57	0.0	0.0	497.8
150.00		0.2500	32.509	25.597	3365.4	21.52	130.04	76.1	203.9	241.9
155.00		0.2500	31.359	24.684	3018.2	20.71	125.44	77.0	189.6	427.7
160.00		0.2500	30.209	23.772	2695.7	19.90	120.84	78.0	175.8	412.2
165.00		0.2500	29.059	22.859	2397.1	19.09	116.24	79.0	162.5	396.7
170.00		0.2500	27.910	21.947	2121.4	18.27	111.64	79.9	149.7	381.2
175.00		0.2500	26.760	21.035	1867.7	17.46	107.04	80.9	137.5	365.6
180.00		0.2500	25.610	20.122	1635.0	16.65	102.44	81.8	125.7	350.1
185.00		0.2500	24.460	19.210	1422.5	15.84	97.84	82.5	114.5	334.6
187.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	129.5

40789.2

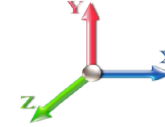
Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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 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	19.450	21.40	490.97	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	482.27	0.650	0.000	5.00	27.207	17.68	605.4	0.0	2067.3
10.00		1.00	0.85	19.450	21.40	473.57	0.650	0.000	5.00	26.721	17.37	594.6	0.0	2030.0
15.00		1.00	0.86	19.690	21.66	467.73	0.650	0.000	5.00	26.234	17.05	590.9	0.0	1992.8
20.00		1.00	0.91	20.851	22.94	472.30	0.650	0.000	5.00	25.748	16.74	614.2	0.0	1955.5
25.00		1.00	0.95	21.810	23.99	473.83	0.650	0.000	5.00	25.261	16.42	630.3	0.0	1918.3
30.00		1.00	0.99	22.632	24.90	473.30	0.650	0.000	5.00	24.775	16.10	641.4	0.0	1881.0
35.00		1.00	1.02	23.356	25.69	471.27	0.650	0.000	5.00	24.288	15.79	649.0	0.0	1843.8
40.00		1.00	1.05	24.004	26.40	468.10	0.650	0.000	5.00	23.802	15.47	653.6	0.0	1806.5
45.00		1.00	1.07	24.593	27.05	464.02	0.650	0.000	5.00	23.315	15.15	656.0	0.0	1769.2
46.25	Bot - Section 2	1.00	1.08	24.732	27.21	462.88	0.650	0.000	1.25	5.753	3.74	162.8	0.0	436.5
50.00		1.00	1.10	25.133	27.65	459.20	0.650	0.000	3.75	17.353	11.28	499.0	0.0	2449.0
53.25	Top - Section 1	1.00	1.11	25.462	28.01	455.72	0.650	0.000	3.25	14.818	9.63	431.6	0.0	2090.7
55.00		1.00	1.12	25.633	28.20	461.35	0.650	0.000	1.75	7.894	5.13	231.5	0.0	524.6
60.00		1.00	1.14	26.099	28.71	455.44	0.650	0.000	5.00	22.226	14.45	663.6	0.0	1476.9
65.00		1.00	1.16	26.535	29.19	449.07	0.650	0.000	5.00	21.739	14.13	659.9	0.0	1444.3
70.00		1.00	1.18	26.946	29.64	442.30	0.650	0.000	5.00	21.253	13.81	655.1	0.0	1411.7
75.00		1.00	1.19	27.335	30.07	435.16	0.650	0.000	5.00	20.766	13.50	649.4	0.0	1379.1
80.00		1.00	1.21	27.704	30.47	427.70	0.650	0.000	5.00	20.280	13.18	642.7	0.0	1346.5
85.00		1.00	1.23	28.056	30.86	419.96	0.650	0.000	5.00	19.793	12.87	635.3	0.0	1313.9
90.00		1.00	1.24	28.391	31.23	411.95	0.650	0.000	5.00	19.307	12.55	627.1	0.0	1281.3
92.00	Appurtenance(s)	1.00	1.25	28.522	31.37	408.68	0.650	0.000	2.00	7.586	4.93	247.5	0.0	503.4
93.75	Bot - Section 3	1.00	1.25	28.634	31.50	405.79	0.650	0.000	1.75	6.574	4.27	215.4	0.0	436.2
95.00		1.00	1.25	28.713	31.58	403.70	0.650	0.000	1.25	4.739	3.08	155.7	0.0	579.0
99.75	Top - Section 2	1.00	1.27	29.006	31.91	395.67	0.650	0.000	4.75	17.730	11.52	588.3	0.0	2165.7
100.00		1.00	1.27	29.021	31.92	402.17	0.650	0.000	0.25	0.921	0.60	30.6	0.0	52.4
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	5.00	18.165	11.81	609.2	0.0	1034.2
110.00		1.00	1.29	29.604	32.56	384.72	0.650	0.000	5.00	17.678	11.49	598.7	0.0	1006.2
115.00		1.00	1.31	29.880	32.87	375.72	0.650	0.000	5.00	17.192	11.17	587.7	0.0	978.3
120.00		1.00	1.32	30.147	33.16	366.56	0.650	0.000	5.00	16.705	10.86	576.1	0.0	950.3
125.00		1.00	1.33	30.405	33.45	357.25	0.650	0.000	5.00	16.219	10.54	564.1	0.0	922.4
130.00	Appurtenance(s)	1.00	1.34	30.655	33.72	347.79	0.650	0.000	5.00	15.732	10.23	551.7	0.0	894.4
135.00		1.00	1.35	30.898	33.99	338.20	0.650	0.000	5.00	15.246	9.91	538.9	0.0	866.5
140.00	Appurtenance(s)	1.00	1.36	31.133	34.25	328.48	0.650	0.000	5.00	14.759	9.59	525.7	0.0	838.6
142.75	Bot - Section 4	1.00	1.37	31.260	34.39	323.08	0.650	0.000	2.75	7.910	5.14	282.9	0.0	449.3
145.00		1.00	1.37	31.362	34.50	318.63	0.650	0.000	2.25	6.458	4.20	231.7	0.0	606.8
147.25	Top - Section 3	1.00	1.37	31.464	34.61	314.17	0.650	0.000	2.25	6.359	4.13	228.9	0.0	597.3
150.00	Appurtenance(s)	1.00	1.38	31.586	34.74	313.50	0.650	0.000	2.75	7.638	4.97	276.0	0.0	290.2
155.00		1.00	1.39	31.803	34.98	303.45	0.650	0.000	5.00	13.511	8.78	491.6	0.0	513.3
160.00	Appurtenance(s)	1.00	1.40	32.015	35.22	293.29	0.650	0.000	5.00	13.025	8.47	477.0	0.0	494.7
165.00		1.00	1.41	32.222	35.44	283.04	0.650	0.000	5.00	12.538	8.15	462.2	0.0	476.0
170.00	Appurtenance(s)	1.00	1.42	32.424	35.67	272.69	0.650	0.000	5.00	12.052	7.83	447.0	0.0	457.4
175.00		1.00	1.43	32.621	35.88	262.25	0.650	0.000	5.00	11.565	7.52	431.6	0.0	438.8
180.00		1.00	1.43	32.814	36.10	251.72	0.650	0.000	5.00	11.079	7.20	415.9	0.0	420.1
185.00		1.00	1.44	33.003	36.30	241.11	0.650	0.000	5.00	10.592	6.88	399.9	0.0	401.5
187.00	Appurtenance(s)	1.00	1.45	33.077	36.38	236.84	0.650	0.000	2.00	4.101	2.67	155.2	0.0	155.4

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 10



Totals:	187.00	21,582.7	48,947.1
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Discrete Appurtenance Forces

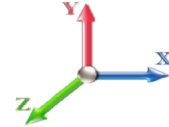
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 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	187.00	ANT450F6	1	33.221	36.543	1.00	1.00	1.86	25.20	0.000	3.917	108.75	0.00	425.95
2	187.00	MF-900B	2	33.077	36.385	1.00	1.00	6.90	31.20	2.015	0.000	401.69	505.98	0.00
3	187.00	ANT900D6-9	2	33.152	36.468	1.00	1.00	1.96	26.40	0.000	2.042	114.36	0.00	233.49
4	187.00	6' Lightning rod	1	33.077	36.385	1.00	1.00	0.38	7.80	0.000	0.000	22.12	0.00	0.00
5	187.00	DB201	2	33.251	36.576	1.00	1.00	7.08	60.00	0.000	4.750	414.34	0.00	1968.11
6	187.00	Low Profile Platform	1	33.077	36.385	1.00	1.00	22.00	1800.00	0.000	0.000	1280.75	0.00	0.00
7	170.00	Ericsson - RRUS-32 B2	3	32.424	35.666	0.61	0.75	5.49	216.00	0.000	0.000	313.05	0.00	0.00
8	170.00	Low Profile Platform w/	1	32.424	35.666	1.00	1.00	27.70	2040.00	0.000	0.000	1580.72	0.00	0.00
9	170.00	Cci - HPA-65R-BUU-H6	3	32.424	35.666	0.64	0.75	18.47	183.60	0.000	0.000	1054.27	0.00	0.00
10	170.00	Nokia - CS72188.01 LMU	1	32.424	35.666	1.00	1.00	0.12	0.38	0.000	0.000	6.85	0.00	0.00
11	170.00	Quintel - QS66512-2	3	32.424	35.666	0.69	0.75	16.83	399.60	0.000	0.000	960.36	0.00	0.00
12	170.00	Kaelus -	6	32.424	35.666	0.50	0.75	1.30	182.88	0.000	0.000	73.98	0.00	0.00
13	170.00	Ericsson - RRUS-32	3	32.424	35.666	0.50	0.75	4.13	190.80	0.000	0.000	235.71	0.00	0.00
14	170.00	Cci - DTMABP7819VG12A	3	32.424	35.666	0.50	0.75	1.72	69.05	0.000	0.000	98.07	0.00	0.00
15	170.00	Ericsson - RRUS-11	3	32.424	35.666	0.57	0.75	4.31	198.00	0.000	0.000	245.91	0.00	0.00
16	170.00	Css - DBC-750 - Combiner	3	32.424	35.666	0.50	0.75	0.77	17.57	0.000	0.000	43.87	0.00	0.00
17	170.00	Raycap -	2	32.424	35.666	1.00	1.00	2.94	78.72	0.000	0.000	167.77	0.00	0.00
18	170.00	Commscope -	3	32.424	35.666	0.73	0.75	0.11	4.10	0.000	0.000	6.29	0.00	0.00
19	170.00	Powerwave - 7770	3	32.424	35.666	0.55	0.75	9.03	126.00	0.000	0.000	515.52	0.00	0.00
20	160.00	Radio 4449 B71+B12	3	32.015	35.216	0.54	0.80	3.17	255.60	0.000	0.000	178.49	0.00	0.00
21	160.00	Air32	3	32.015	35.216	0.70	0.80	13.59	475.92	0.000	0.000	765.91	0.00	0.00
22	160.00	APXVAARR24 43-U-NA2	3	32.015	35.216	0.56	0.80	34.00	460.80	0.000	0.000	1915.95	0.00	0.00
23	160.00	Platform w/ Hand Rail	1	32.015	35.216	1.00	1.00	32.00	1920.00	0.000	0.000	1803.08	0.00	0.00
24	160.00	AIR 21 B2A B4P	3	32.015	35.216	0.62	0.75	11.32	329.40	0.000	0.000	637.74	0.00	0.00
25	160.00	Double TMA 17/21	3	32.015	35.216	0.54	0.75	0.67	39.60	0.000	0.000	37.48	0.00	0.00
26	150.00	0208	3	31.586	34.744	0.54	0.80	2.20	71.28	0.000	0.000	122.46	0.00	0.00
27	150.00	4415	2	31.586	34.744	0.68	0.90	2.51	105.84	0.000	0.000	139.59	0.00	0.00
28	150.00	P-200 Stand-off	3	31.586	34.744	0.56	0.75	13.82	871.20	0.000	0.000	768.30	0.00	0.00
29	150.00	ODI2-065R18K-GQ	3	31.586	34.744	0.56	0.80	8.15	90.36	0.000	0.000	452.95	0.00	0.00
30	140.00	LNx-6514DS-VTM	3	31.133	34.247	0.60	0.75	14.56	119.16	0.000	0.000	797.92	0.00	0.00
31	140.00	FD9R6004/2C-3L	6	31.133	34.247	0.56	0.75	1.22	22.32	0.000	0.000	66.58	0.00	0.00
32	140.00	DB-T1-6Z-8AB-OZ	1	31.133	34.247	0.75	0.75	3.07	25.68	0.000	0.000	168.49	0.00	0.00
33	140.00	KS-24019	6	31.133	34.247	0.75	0.75	0.54	3.60	0.000	0.000	29.59	0.00	0.00
34	140.00	Low Profile Platform	1	31.133	34.247	1.00	1.00	22.00	1800.00	0.000	0.000	1205.48	0.00	0.00
35	140.00	HBXX-6517DS-A2M	6	31.133	34.247	0.62	0.80	31.60	293.76	0.000	0.000	1731.55	0.00	0.00
36	140.00	LNx-6514DS-A1M	3	31.133	34.247	0.66	0.80	16.27	138.24	0.000	0.000	891.76	0.00	0.00
37	140.00	RRH2x40-07-U	3	31.133	34.247	0.62	0.80	4.17	182.52	0.000	0.000	228.74	0.00	0.00
38	140.00	RRH2x60-1900	3	31.133	34.247	0.72	0.80	3.26	70.20	0.000	0.000	178.72	0.00	0.00
39	130.00	TD-RRH8x20-25	3	30.655	33.720	0.55	0.80	6.71	252.00	0.000	0.000	361.85	0.00	0.00
40	130.00	APXVTM14-C-120	3	30.655	33.720	0.63	0.80	12.02	201.60	0.000	0.000	648.54	0.00	0.00
41	130.00	1900MHz RRH	3	30.655	33.720	0.70	0.80	8.03	158.40	0.000	0.000	433.00	0.00	0.00
42	130.00	APXVSP18-C-A20	3	30.655	33.720	0.66	0.80	15.98	205.20	0.000	0.000	861.94	0.00	0.00
43	130.00	ACU-A20-N	4	30.655	33.720	0.63	0.80	0.35	4.80	0.000	0.000	19.09	0.00	0.00
44	130.00	800 MHz RRH	3	30.655	33.720	0.74	0.80	5.50	190.80	0.000	0.000	296.63	0.00	0.00
45	130.00	800MHz Filter	3	30.655	33.720	0.55	0.80	1.29	31.68	0.000	0.000	69.69	0.00	0.00
46	130.00	RF Filters	3	30.655	33.720	0.54	0.80	1.50	55.80	0.000	0.000	80.68	0.00	0.00
47	130.00	Low Profile Platform	1	30.655	33.720	1.00	1.00	22.00	1800.00	0.000	0.000	1186.95	0.00	0.00

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 12



48	92.00	Low Profile Platform	1	28.522	31.374	1.00	1.00	22.00	1800.00	0.000	0.000	1104.36	0.00	0.00
49	92.00	DB205	1	29.082	31.990	0.80	0.80	1.44	45.60	0.000	9.000	73.70	0.00	663.34
50	92.00	ANT450Y10-WR	1	28.522	31.374	0.80	0.80	0.39	6.00	0.000	0.000	19.68	0.00	0.00
51	92.00	ANT150D3	1	28.838	31.722	0.80	0.80	1.74	21.60	0.000	5.000	88.52	0.00	442.58
52	92.00	ANT4506-9	1	28.713	31.584	0.80	0.80	2.22	21.60	0.000	3.000	111.99	0.00	335.96
53	92.00	MF-900B	2	28.522	31.374	0.80	0.80	5.52	31.20	2.887	0.000	277.09	499.96	0.00

Totals:	17,759.06	25,398.87
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Total Applied Force Summary

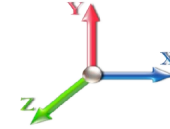
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 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		605.39	2381.34	0.00	0.00
10.00		594.56	2344.09	0.00	0.00
15.00		590.95	2306.83	0.00	0.00
20.00		614.16	2269.57	0.00	0.00
25.00		630.27	2232.32	0.00	0.00
30.00		641.45	2195.06	0.00	0.00
35.00		648.96	2157.81	0.00	0.00
40.00		653.62	2120.55	0.00	0.00
45.00		655.96	2083.30	0.00	0.00
46.25		162.77	515.00	0.00	0.00
50.00		498.95	2684.53	0.00	0.00
53.25		431.64	2294.81	0.00	0.00
55.00		231.48	634.52	0.00	0.00
60.00		663.59	1790.92	0.00	0.00
65.00		659.92	1758.32	0.00	0.00
70.00		655.15	1725.72	0.00	0.00
75.00		649.39	1693.13	0.00	0.00
80.00		642.74	1660.53	0.00	0.00
85.00		635.28	1627.93	0.00	0.00
90.00		627.08	1595.33	0.00	0.00
92.00	(7) attachments	1922.87	2555.00	499.96	1441.88
93.75		215.36	544.08	0.00	0.00
95.00		155.66	656.08	0.00	0.00
99.75		588.34	2458.58	0.00	0.00
100.00		30.58	67.86	0.00	0.00
105.00		609.24	1342.45	0.00	0.00
110.00		598.71	1314.51	0.00	0.00
115.00		587.65	1286.56	0.00	0.00
120.00		576.12	1258.62	0.00	0.00
125.00		564.13	1230.68	0.00	0.00
130.00	(26) attachments	4510.09	4103.02	0.00	0.00
135.00		538.88	1155.22	0.00	0.00
140.00	(32) attachments	5824.49	3782.76	0.00	0.00
142.75		282.88	562.75	0.00	0.00
145.00		231.69	699.59	0.00	0.00
147.25		228.89	690.15	0.00	0.00
150.00	(11) attachments	1759.31	1542.38	0.00	0.00
155.00		491.57	714.76	0.00	0.00
160.00	(16) attachments	5815.68	4177.46	0.00	0.00
165.00		462.18	594.95	0.00	0.00
170.00	(37) attachments	5749.40	4283.02	0.00	0.00
175.00		431.59	451.97	0.00	0.00
180.00		415.88	433.34	0.00	0.00
185.00		399.91	414.72	0.00	0.00
187.00	(9) attachments	2497.18	2111.27	505.98	2627.55

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	46,981.56	76,503.41	1,005.95	4,069.43
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Calculated Forces

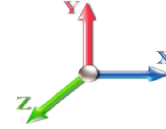
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.6W 97 mph Wind

Iterations 25

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	-76.44	-47.09	-0.99	-6015.0	-0.01	6015.08	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.660
5.00	-73.93	-46.68	-0.99	-5779.6	-0.01	5779.64	6919.93	3459.96	17978.0	9002.40	0.08	-0.157	0.000	0.653
10.00	-71.46	-46.28	-0.99	-5546.2	-0.01	5546.22	6836.37	3418.19	17435.4	8730.69	0.33	-0.316	0.000	0.646
15.00	-69.03	-45.87	-0.99	-5314.8	-0.01	5314.83	6751.25	3375.63	16896.9	8461.01	0.75	-0.477	0.000	0.639
20.00	-66.63	-45.42	-0.99	-5085.4	-0.02	5085.49	6664.57	3332.28	16362.6	8193.47	1.34	-0.640	0.000	0.631
25.00	-64.28	-44.95	-0.99	-4858.3	-0.02	4858.38	6576.31	3288.16	15832.7	7928.16	2.10	-0.805	0.000	0.623
30.00	-61.96	-44.46	-0.99	-4633.6	-0.02	4633.63	6486.49	3243.25	15307.6	7665.22	3.03	-0.972	0.000	0.614
35.00	-59.69	-43.95	-0.99	-4411.3	-0.02	4411.35	6395.11	3197.55	14787.5	7404.75	4.14	-1.141	0.000	0.605
40.00	-57.45	-43.42	-0.99	-4191.6	-0.02	4191.63	6302.15	3151.08	14272.4	7146.85	5.43	-1.312	0.000	0.596
45.00	-55.30	-42.82	-0.99	-3974.5	-0.02	3974.53	6207.63	3103.82	13762.8	6891.65	6.89	-1.484	0.000	0.586
46.25	-54.73	-42.72	-0.99	-3921.0	-0.02	3921.01	6183.76	3091.88	13636.3	6828.29	7.29	-1.529	0.000	0.583
50.00	-51.97	-42.26	-0.99	-3760.8	-0.02	3760.80	6111.55	3055.77	13258.8	6639.26	8.54	-1.660	0.000	0.575
53.25	-49.62	-41.84	-0.99	-3623.4	-0.02	3623.45	5153.03	2576.51	11233.0	5624.85	9.71	-1.775	0.000	0.654
55.00	-48.90	-41.70	-0.99	-3550.2	-0.02	3550.23	5126.51	2563.25	11089.7	5553.12	10.38	-1.838	0.000	0.649
60.00	-47.00	-41.13	-0.99	-3341.7	-0.02	3341.74	5049.68	2524.84	10683.1	5349.50	12.40	-2.029	0.000	0.634
65.00	-45.13	-40.56	-0.99	-3136.0	-0.02	3136.09	4971.29	2485.64	10280.5	5147.92	14.63	-2.221	-0.001	0.619
70.00	-43.30	-39.98	-0.99	-2933.3	-0.03	2933.30	4891.33	2445.66	9882.29	4948.49	17.06	-2.414	-0.001	0.602
75.00	-41.50	-39.40	-1.00	-2733.4	-0.03	2733.40	4809.80	2404.90	9488.55	4751.33	19.69	-2.607	-0.001	0.584
80.00	-39.74	-38.81	-1.00	-2536.4	-0.03	2536.42	4726.70	2363.35	9099.56	4556.54	22.53	-2.799	-0.001	0.565
85.00	-38.02	-38.22	-1.00	-2342.3	-0.03	2342.38	4642.04	2321.02	8715.55	4364.25	25.56	-2.991	-0.001	0.545
90.00	-36.38	-37.59	-1.00	-2151.2	-0.03	2151.29	4555.82	2277.91	8336.73	4174.56	28.79	-3.181	-0.001	0.524
92.00	-33.89	-35.57	-0.50	-2074.6	-0.01	2074.66	4520.89	2260.44	8186.70	4099.44	30.14	-3.258	-0.001	0.514
93.75	-33.32	-35.36	-0.50	-2012.4	-0.01	2012.41	4490.12	2245.06	8056.16	4034.07	31.35	-3.325	-0.001	0.507
95.00	-32.61	-35.23	-0.50	-1968.2	-0.01	1968.22	4468.02	2234.01	7963.33	3987.58	32.23	-3.373	-0.001	0.501
99.75	-30.13	-34.54	-0.50	-1800.8	-0.01	1800.88	3653.35	1826.67	6478.28	3243.96	35.67	-3.550	-0.001	0.564
100.00	-30.00	-34.56	-0.50	-1792.2	-0.01	1792.24	3649.96	1824.98	6463.57	3236.59	35.86	-3.560	-0.001	0.562
105.00	-28.58	-33.97	-0.50	-1619.4	-0.01	1619.43	3581.25	1790.63	6171.38	3090.28	39.69	-3.761	-0.001	0.532
110.00	-27.20	-33.38	-0.50	-1449.5	-0.02	1449.59	3510.98	1755.49	5883.11	2945.93	43.74	-3.957	-0.001	0.500
115.00	-25.85	-32.78	-0.50	-1282.7	-0.02	1282.72	3439.14	1719.57	5598.97	2803.65	47.98	-4.147	-0.001	0.465
120.00	-24.54	-32.19	-0.50	-1118.8	-0.02	1118.81	3365.73	1682.87	5319.21	2663.56	52.42	-4.328	-0.001	0.428
125.00	-23.27	-31.60	-0.50	-957.86	-0.02	957.86	3290.76	1645.38	5044.03	2525.77	57.04	-4.500	-0.001	0.387
130.00	-19.47	-26.83	-0.50	-799.86	-0.03	799.86	3204.00	1602.00	4758.48	2382.78	61.84	-4.659	-0.001	0.342
135.00	-18.30	-26.24	-0.50	-665.72	-0.03	665.72	3102.32	1551.16	4459.76	2233.19	66.79	-4.805	-0.002	0.304
140.00	-14.99	-20.14	-0.50	-534.52	-0.03	534.52	3000.64	1500.32	4170.72	2088.46	71.89	-4.936	-0.002	0.261
142.75	-14.43	-19.83	-0.50	-479.14	-0.03	479.14	2944.72	1472.36	4015.87	2010.92	74.75	-5.004	-0.002	0.243
145.00	-13.74	-19.55	-0.50	-434.53	-0.04	434.53	2898.96	1449.48	3891.36	1948.57	77.12	-5.057	-0.002	0.228
147.25	-13.05	-19.27	-0.50	-390.55	-0.04	390.55	1774.96	887.48	2399.50	1201.53	79.51	-5.106	-0.002	0.333
150.00	-11.64	-17.40	-0.50	-337.56	-0.04	337.56	1752.91	876.46	2323.79	1163.62	82.47	-5.163	-0.002	0.297
155.00	-10.94	-16.86	-0.50	-250.58	-0.04	250.58	1711.62	855.81	2187.55	1095.40	87.94	-5.287	-0.002	0.236
160.00	-7.31	-10.70	-0.50	-166.26	-0.04	166.26	1668.76	834.38	2053.31	1028.18	93.52	-5.385	-0.002	0.166
165.00	-6.75	-10.19	-0.50	-112.78	-0.04	112.78	1624.34	812.17	1921.31	962.08	99.20	-5.459	-0.003	0.122
170.00	-3.03	-4.06	-0.50	-61.85	-0.05	61.85	1578.35	789.17	1791.75	897.21	104.94	-5.511	-0.003	0.071
175.00	-2.62	-3.58	-0.50	-41.57	-0.05	41.57	1530.79	765.40	1664.88	833.68	110.72	-5.545	-0.003	0.052
180.00	-2.23	-3.13	-0.50	-23.65	-0.05	23.65	1481.67	740.83	1540.90	771.60	116.53	-5.570	-0.004	0.032
185.00	-1.86	-2.69	-0.50	-8.01	-0.05	8.01	1427.20	713.60	1416.30	709.20	122.36	-5.584	-0.004	0.013
187.00	0.00	-2.50	-0.51	-2.63	0.00	2.63	1400.09	700.04	1362.73	682.38	124.70	-5.586	-0.004	0.004

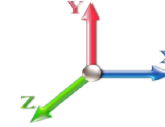
Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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 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	19.450	21.40	490.97	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	482.27	0.650	0.000	5.00	27.207	17.68	605.4	0.0	1550.5
10.00		1.00	0.85	19.450	21.40	473.57	0.650	0.000	5.00	26.721	17.37	594.6	0.0	1522.5
15.00		1.00	0.86	19.690	21.66	467.73	0.650	0.000	5.00	26.234	17.05	590.9	0.0	1494.6
20.00		1.00	0.91	20.851	22.94	472.30	0.650	0.000	5.00	25.748	16.74	614.2	0.0	1466.6
25.00		1.00	0.95	21.810	23.99	473.83	0.650	0.000	5.00	25.261	16.42	630.3	0.0	1438.7
30.00		1.00	0.99	22.632	24.90	473.30	0.650	0.000	5.00	24.775	16.10	641.4	0.0	1410.8
35.00		1.00	1.02	23.356	25.69	471.27	0.650	0.000	5.00	24.288	15.79	649.0	0.0	1382.8
40.00		1.00	1.05	24.004	26.40	468.10	0.650	0.000	5.00	23.802	15.47	653.6	0.0	1354.9
45.00		1.00	1.07	24.593	27.05	464.02	0.650	0.000	5.00	23.315	15.15	656.0	0.0	1326.9
46.25	Bot - Section 2	1.00	1.08	24.732	27.21	462.88	0.650	0.000	1.25	5.753	3.74	162.8	0.0	327.4
50.00		1.00	1.10	25.133	27.65	459.20	0.650	0.000	3.75	17.353	11.28	499.0	0.0	1836.7
53.25	Top - Section 1	1.00	1.11	25.462	28.01	455.72	0.650	0.000	3.25	14.818	9.63	431.6	0.0	1568.0
55.00		1.00	1.12	25.633	28.20	461.35	0.650	0.000	1.75	7.894	5.13	231.5	0.0	393.5
60.00		1.00	1.14	26.099	28.71	455.44	0.650	0.000	5.00	22.226	14.45	663.6	0.0	1107.7
65.00		1.00	1.16	26.535	29.19	449.07	0.650	0.000	5.00	21.739	14.13	659.9	0.0	1083.2
70.00		1.00	1.18	26.946	29.64	442.30	0.650	0.000	5.00	21.253	13.81	655.1	0.0	1058.8
75.00		1.00	1.19	27.335	30.07	435.16	0.650	0.000	5.00	20.766	13.50	649.4	0.0	1034.3
80.00		1.00	1.21	27.704	30.47	427.70	0.650	0.000	5.00	20.280	13.18	642.7	0.0	1009.9
85.00		1.00	1.23	28.056	30.86	419.96	0.650	0.000	5.00	19.793	12.87	635.3	0.0	985.4
90.00		1.00	1.24	28.391	31.23	411.95	0.650	0.000	5.00	19.307	12.55	627.1	0.0	961.0
92.00	Appurtenance(s)	1.00	1.25	28.522	31.37	408.68	0.650	0.000	2.00	7.586	4.93	247.5	0.0	377.5
93.75	Bot - Section 3	1.00	1.25	28.634	31.50	405.79	0.650	0.000	1.75	6.574	4.27	215.4	0.0	327.1
95.00		1.00	1.25	28.713	31.58	403.70	0.650	0.000	1.25	4.739	3.08	155.7	0.0	434.3
99.75	Top - Section 2	1.00	1.27	29.006	31.91	395.67	0.650	0.000	4.75	17.730	11.52	588.3	0.0	1624.3
100.00		1.00	1.27	29.021	31.92	402.17	0.650	0.000	0.25	0.921	0.60	30.6	0.0	39.3
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	5.00	18.165	11.81	609.2	0.0	775.6
110.00		1.00	1.29	29.604	32.56	384.72	0.650	0.000	5.00	17.678	11.49	598.7	0.0	754.7
115.00		1.00	1.31	29.880	32.87	375.72	0.650	0.000	5.00	17.192	11.17	587.7	0.0	733.7
120.00		1.00	1.32	30.147	33.16	366.56	0.650	0.000	5.00	16.705	10.86	576.1	0.0	712.7
125.00		1.00	1.33	30.405	33.45	357.25	0.650	0.000	5.00	16.219	10.54	564.1	0.0	691.8
130.00	Appurtenance(s)	1.00	1.34	30.655	33.72	347.79	0.650	0.000	5.00	15.732	10.23	551.7	0.0	670.8
135.00		1.00	1.35	30.898	33.99	338.20	0.650	0.000	5.00	15.246	9.91	538.9	0.0	649.9
140.00	Appurtenance(s)	1.00	1.36	31.133	34.25	328.48	0.650	0.000	5.00	14.759	9.59	525.7	0.0	628.9
142.75	Bot - Section 4	1.00	1.37	31.260	34.39	323.08	0.650	0.000	2.75	7.910	5.14	282.9	0.0	337.0
145.00		1.00	1.37	31.362	34.50	318.63	0.650	0.000	2.25	6.458	4.20	231.7	0.0	455.1
147.25	Top - Section 3	1.00	1.37	31.464	34.61	314.17	0.650	0.000	2.25	6.359	4.13	228.9	0.0	448.0
150.00	Appurtenance(s)	1.00	1.38	31.586	34.74	313.50	0.650	0.000	2.75	7.638	4.97	276.0	0.0	217.7
155.00		1.00	1.39	31.803	34.98	303.45	0.650	0.000	5.00	13.511	8.78	491.6	0.0	385.0
160.00	Appurtenance(s)	1.00	1.40	32.015	35.22	293.29	0.650	0.000	5.00	13.025	8.47	477.0	0.0	371.0
165.00		1.00	1.41	32.222	35.44	283.04	0.650	0.000	5.00	12.538	8.15	462.2	0.0	357.0
170.00	Appurtenance(s)	1.00	1.42	32.424	35.67	272.69	0.650	0.000	5.00	12.052	7.83	447.0	0.0	343.0
175.00		1.00	1.43	32.621	35.88	262.25	0.650	0.000	5.00	11.565	7.52	431.6	0.0	329.1
180.00		1.00	1.43	32.814	36.10	251.72	0.650	0.000	5.00	11.079	7.20	415.9	0.0	315.1
185.00		1.00	1.44	33.003	36.30	241.11	0.650	0.000	5.00	10.592	6.88	399.9	0.0	301.1
187.00	Appurtenance(s)	1.00	1.45	33.077	36.38	236.84	0.650	0.000	2.00	4.101	2.67	155.2	0.0	116.5

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 17



Totals:	187.00	21,582.7	36,710.3
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Discrete Appurtenance Forces

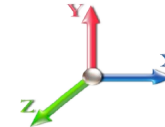
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 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	187.00	ANT450F6	1	33.221	36.543	1.00	1.00	1.86	18.90	0.000	3.917	108.75	0.00	425.95
2	187.00	MF-900B	2	33.077	36.385	1.00	1.00	6.90	23.40	2.015	0.000	401.69	505.98	0.00
3	187.00	ANT900D6-9	2	33.152	36.468	1.00	1.00	1.96	19.80	0.000	2.042	114.36	0.00	233.49
4	187.00	6' Lightning rod	1	33.077	36.385	1.00	1.00	0.38	5.85	0.000	0.000	22.12	0.00	0.00
5	187.00	DB201	2	33.251	36.576	1.00	1.00	7.08	45.00	0.000	4.750	414.34	0.00	1968.11
6	187.00	Low Profile Platform	1	33.077	36.385	1.00	1.00	22.00	1350.00	0.000	0.000	1280.75	0.00	0.00
7	170.00	Ericsson - RRUS-32 B2	3	32.424	35.666	0.61	0.75	5.49	162.00	0.000	0.000	313.05	0.00	0.00
8	170.00	Low Profile Platform w/	1	32.424	35.666	1.00	1.00	27.70	1530.00	0.000	0.000	1580.72	0.00	0.00
9	170.00	Cci - HPA-65R-BUU-H6	3	32.424	35.666	0.64	0.75	18.47	137.70	0.000	0.000	1054.27	0.00	0.00
10	170.00	Nokia - CS72188.01 LMU	1	32.424	35.666	1.00	1.00	0.12	0.29	0.000	0.000	6.85	0.00	0.00
11	170.00	Quintel - QS66512-2	3	32.424	35.666	0.69	0.75	16.83	299.70	0.000	0.000	960.36	0.00	0.00
12	170.00	Kaelus -	6	32.424	35.666	0.50	0.75	1.30	137.16	0.000	0.000	73.98	0.00	0.00
13	170.00	Ericsson - RRUS-32	3	32.424	35.666	0.50	0.75	4.13	143.10	0.000	0.000	235.71	0.00	0.00
14	170.00	Cci - DTMABP7819VG12A	3	32.424	35.666	0.50	0.75	1.72	51.79	0.000	0.000	98.07	0.00	0.00
15	170.00	Ericsson - RRUS-11	3	32.424	35.666	0.57	0.75	4.31	148.50	0.000	0.000	245.91	0.00	0.00
16	170.00	Css - DBC-750 - Combiner	3	32.424	35.666	0.50	0.75	0.77	13.18	0.000	0.000	43.87	0.00	0.00
17	170.00	Raycap -	2	32.424	35.666	1.00	1.00	2.94	59.04	0.000	0.000	167.77	0.00	0.00
18	170.00	Commscope -	3	32.424	35.666	0.73	0.75	0.11	3.08	0.000	0.000	6.29	0.00	0.00
19	170.00	Powerwave - 7770	3	32.424	35.666	0.55	0.75	9.03	94.50	0.000	0.000	515.52	0.00	0.00
20	160.00	Radio 4449 B71+B12	3	32.015	35.216	0.54	0.80	3.17	191.70	0.000	0.000	178.49	0.00	0.00
21	160.00	Air32	3	32.015	35.216	0.70	0.80	13.59	356.94	0.000	0.000	765.91	0.00	0.00
22	160.00	APXVAARR24 43-U-NA2	3	32.015	35.216	0.56	0.80	34.00	345.60	0.000	0.000	1915.95	0.00	0.00
23	160.00	Platform w/ Hand Rail	1	32.015	35.216	1.00	1.00	32.00	1440.00	0.000	0.000	1803.08	0.00	0.00
24	160.00	AIR 21 B2A B4P	3	32.015	35.216	0.62	0.75	11.32	247.05	0.000	0.000	637.74	0.00	0.00
25	160.00	Double TMA 17/21	3	32.015	35.216	0.54	0.75	0.67	29.70	0.000	0.000	37.48	0.00	0.00
26	150.00	0208	3	31.586	34.744	0.54	0.80	2.20	53.46	0.000	0.000	122.46	0.00	0.00
27	150.00	4415	2	31.586	34.744	0.68	0.90	2.51	79.38	0.000	0.000	139.59	0.00	0.00
28	150.00	P-200 Stand-off	3	31.586	34.744	0.56	0.75	13.82	653.40	0.000	0.000	768.30	0.00	0.00
29	150.00	ODI2-065R18K-GQ	3	31.586	34.744	0.56	0.80	8.15	67.77	0.000	0.000	452.95	0.00	0.00
30	140.00	LNx-6514DS-VTM	3	31.133	34.247	0.60	0.75	14.56	89.37	0.000	0.000	797.92	0.00	0.00
31	140.00	FD9R6004/2C-3L	6	31.133	34.247	0.56	0.75	1.22	16.74	0.000	0.000	66.58	0.00	0.00
32	140.00	DB-T1-6Z-8AB-OZ	1	31.133	34.247	0.75	0.75	3.07	19.26	0.000	0.000	168.49	0.00	0.00
33	140.00	KS-24019	6	31.133	34.247	0.75	0.75	0.54	2.70	0.000	0.000	29.59	0.00	0.00
34	140.00	Low Profile Platform	1	31.133	34.247	1.00	1.00	22.00	1350.00	0.000	0.000	1205.48	0.00	0.00
35	140.00	HBXX-6517DS-A2M	6	31.133	34.247	0.62	0.80	31.60	220.32	0.000	0.000	1731.55	0.00	0.00
36	140.00	LNx-6514DS-A1M	3	31.133	34.247	0.66	0.80	16.27	103.68	0.000	0.000	891.76	0.00	0.00
37	140.00	RRH2x40-07-U	3	31.133	34.247	0.62	0.80	4.17	136.89	0.000	0.000	228.74	0.00	0.00
38	140.00	RRH2x60-1900	3	31.133	34.247	0.72	0.80	3.26	52.65	0.000	0.000	178.72	0.00	0.00
39	130.00	TD-RRH8x20-25	3	30.655	33.720	0.55	0.80	6.71	189.00	0.000	0.000	361.85	0.00	0.00
40	130.00	APXVTM14-C-120	3	30.655	33.720	0.63	0.80	12.02	151.20	0.000	0.000	648.54	0.00	0.00
41	130.00	1900MHz RRH	3	30.655	33.720	0.70	0.80	8.03	118.80	0.000	0.000	433.00	0.00	0.00
42	130.00	APXVSPP18-C-A20	3	30.655	33.720	0.66	0.80	15.98	153.90	0.000	0.000	861.94	0.00	0.00
43	130.00	ACU-A20-N	4	30.655	33.720	0.63	0.80	0.35	3.60	0.000	0.000	19.09	0.00	0.00
44	130.00	800 MHz RRH	3	30.655	33.720	0.74	0.80	5.50	143.10	0.000	0.000	296.63	0.00	0.00
45	130.00	800MHz Filter	3	30.655	33.720	0.55	0.80	1.29	23.76	0.000	0.000	69.69	0.00	0.00
46	130.00	RF Filters	3	30.655	33.720	0.54	0.80	1.50	41.85	0.000	0.000	80.68	0.00	0.00
47	130.00	Low Profile Platform	1	30.655	33.720	1.00	1.00	22.00	1350.00	0.000	0.000	1186.95	0.00	0.00

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 19



48	92.00	Low Profile Platform	1	28.522	31.374	1.00	1.00	22.00	1350.00	0.000	0.000	1104.36	0.00	0.00
49	92.00	DB205	1	29.082	31.990	0.80	0.80	1.44	34.20	0.000	9.000	73.70	0.00	663.34
50	92.00	ANT450Y10-WR	1	28.522	31.374	0.80	0.80	0.39	4.50	0.000	0.000	19.68	0.00	0.00
51	92.00	ANT150D3	1	28.838	31.722	0.80	0.80	1.74	16.20	0.000	5.000	88.52	0.00	442.58
52	92.00	ANT4506-9	1	28.713	31.584	0.80	0.80	2.22	16.20	0.000	3.000	111.99	0.00	335.96
53	92.00	MF-900B	2	28.522	31.374	0.80	0.80	5.52	23.40	2.887	0.000	277.09	499.96	0.00

Totals:	13,319.30	25,398.87
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Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

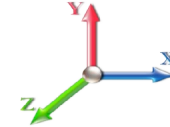


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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 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		605.39	1786.01	0.00	0.00
10.00		594.56	1758.06	0.00	0.00
15.00		590.95	1730.12	0.00	0.00
20.00		614.16	1702.18	0.00	0.00
25.00		630.27	1674.24	0.00	0.00
30.00		641.45	1646.30	0.00	0.00
35.00		648.96	1618.36	0.00	0.00
40.00		653.62	1590.41	0.00	0.00
45.00		655.96	1562.47	0.00	0.00
46.25		162.77	386.25	0.00	0.00
50.00		498.95	2013.40	0.00	0.00
53.25		431.64	1721.11	0.00	0.00
55.00		231.48	475.89	0.00	0.00
60.00		663.59	1343.19	0.00	0.00
65.00		659.92	1318.74	0.00	0.00
70.00		655.15	1294.29	0.00	0.00
75.00		649.39	1269.84	0.00	0.00
80.00		642.74	1245.39	0.00	0.00
85.00		635.28	1220.95	0.00	0.00
90.00		627.08	1196.50	0.00	0.00
92.00	(7) attachments	1922.87	1916.25	499.96	1441.88
93.75		215.36	408.06	0.00	0.00
95.00		155.66	492.06	0.00	0.00
99.75		588.34	1843.94	0.00	0.00
100.00		30.58	50.89	0.00	0.00
105.00		609.24	1006.84	0.00	0.00
110.00		598.71	985.88	0.00	0.00
115.00		587.65	964.92	0.00	0.00
120.00		576.12	943.97	0.00	0.00
125.00		564.13	923.01	0.00	0.00
130.00	(26) attachments	4510.09	3077.26	0.00	0.00
135.00		538.88	866.42	0.00	0.00
140.00	(32) attachments	5824.49	2837.07	0.00	0.00
142.75		282.88	422.07	0.00	0.00
145.00		231.69	524.69	0.00	0.00
147.25		228.89	517.62	0.00	0.00
150.00	(11) attachments	1759.31	1156.78	0.00	0.00
155.00		491.57	536.07	0.00	0.00
160.00	(16) attachments	5815.68	3133.09	0.00	0.00
165.00		462.18	446.21	0.00	0.00
170.00	(37) attachments	5749.40	3212.27	0.00	0.00
175.00		431.59	338.98	0.00	0.00
180.00		415.88	325.01	0.00	0.00
185.00		399.91	311.04	0.00	0.00
187.00	(9) attachments	2497.18	1583.45	505.98	2627.55

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	46,981.56	57,377.56	1,005.95	4,069.43
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Wind Loading - Shaft

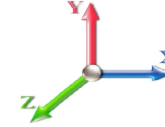
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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 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	5.168	5.68	0.00	1.200	1.410	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	1.687	5.00	28.613	34.34	195.2	691.1	2758.4
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.792	5.00	28.214	33.86	192.5	722.5	2752.6
15.00		1.00	0.86	5.232	5.76	0.00	1.200	1.860	5.00	27.784	33.34	191.9	737.5	2730.3
20.00		1.00	0.91	5.540	6.09	0.00	1.200	1.912	5.00	27.341	32.81	199.9	744.7	2700.2
25.00		1.00	0.95	5.795	6.37	0.00	1.200	1.953	5.00	26.889	32.27	205.7	747.2	2665.4
30.00		1.00	0.99	6.013	6.61	0.00	1.200	1.988	5.00	26.431	31.72	209.8	746.5	2627.6
35.00		1.00	1.02	6.206	6.83	0.00	1.200	2.017	5.00	25.969	31.16	212.7	743.6	2587.4
40.00		1.00	1.05	6.378	7.02	0.00	1.200	2.044	5.00	25.505	30.61	214.7	739.0	2545.5
45.00		1.00	1.07	6.534	7.19	0.00	1.200	2.068	5.00	25.038	30.05	216.0	732.9	2502.2
46.25	Bot - Section 2	1.00	1.08	6.571	7.23	0.00	1.200	2.073	1.25	6.185	7.42	53.6	182.8	619.3
50.00		1.00	1.10	6.678	7.35	0.00	1.200	2.089	3.75	18.659	22.39	164.5	552.9	3001.9
53.25	Top - Section 1	1.00	1.11	6.765	7.44	0.00	1.200	2.102	3.25	15.957	19.15	142.5	475.9	2566.5
55.00		1.00	1.12	6.811	7.49	0.00	1.200	2.109	1.75	8.509	10.21	76.5	255.2	779.8
60.00		1.00	1.14	6.934	7.63	0.00	1.200	2.127	5.00	23.998	28.80	219.7	720.4	2197.2
65.00		1.00	1.16	7.050	7.76	0.00	1.200	2.144	5.00	23.526	28.23	218.9	710.8	2155.1
70.00		1.00	1.18	7.160	7.88	0.00	1.200	2.159	5.00	23.052	27.66	217.9	700.7	2112.4
75.00		1.00	1.19	7.263	7.99	0.00	1.200	2.174	5.00	22.578	27.09	216.5	690.0	2069.1
80.00		1.00	1.21	7.361	8.10	0.00	1.200	2.188	5.00	22.103	26.52	214.8	678.8	2025.3
85.00		1.00	1.23	7.454	8.20	0.00	1.200	2.201	5.00	21.627	25.95	212.8	667.2	1981.1
90.00		1.00	1.24	7.544	8.30	0.00	1.200	2.214	5.00	21.151	25.38	210.6	655.2	1936.5
92.00	Appurtenance(s)	1.00	1.25	7.578	8.34	0.00	1.200	2.218	2.00	8.326	9.99	83.3	260.1	763.5
93.75	Bot - Section 3	1.00	1.25	7.608	8.37	0.00	1.200	2.222	1.75	7.223	8.67	72.5	226.1	662.3
95.00		1.00	1.25	7.629	8.39	0.00	1.200	2.225	1.25	5.202	6.24	52.4	163.3	742.3
99.75	Top - Section 2	1.00	1.27	7.707	8.48	0.00	1.200	2.236	4.75	19.500	23.40	198.4	609.3	2775.0
100.00		1.00	1.27	7.711	8.48	0.00	1.200	2.237	0.25	1.014	1.22	10.3	32.0	84.5
105.00		1.00	1.28	7.790	8.57	0.00	1.200	2.248	5.00	20.038	24.05	206.0	627.8	1661.9
110.00		1.00	1.29	7.866	8.65	0.00	1.200	2.258	5.00	19.560	23.47	203.1	614.5	1620.8
115.00		1.00	1.31	7.939	8.73	0.00	1.200	2.268	5.00	19.082	22.90	200.0	601.1	1579.3
120.00		1.00	1.32	8.010	8.81	0.00	1.200	2.277	5.00	18.603	22.32	196.7	587.3	1537.6
125.00		1.00	1.33	8.079	8.89	0.00	1.200	2.287	5.00	18.124	21.75	193.3	573.4	1495.7
130.00	Appurtenance(s)	1.00	1.34	8.145	8.96	0.00	1.200	2.296	5.00	17.645	21.17	189.7	559.2	1453.6
135.00		1.00	1.35	8.210	9.03	0.00	1.200	2.304	5.00	17.166	20.60	186.0	544.8	1411.3
140.00	Appurtenance(s)	1.00	1.36	8.272	9.10	0.00	1.200	2.313	5.00	16.686	20.02	182.2	530.2	1368.8
142.75	Bot - Section 4	1.00	1.37	8.306	9.14	0.00	1.200	2.317	2.75	8.972	10.77	98.4	287.2	736.5
145.00		1.00	1.37	8.333	9.17	0.00	1.200	2.321	2.25	7.328	8.79	80.6	235.2	842.0
147.25	Top - Section 3	1.00	1.37	8.360	9.20	0.00	1.200	2.324	2.25	7.231	8.68	79.8	232.2	829.5
150.00	Appurtenance(s)	1.00	1.38	8.392	9.23	0.00	1.200	2.329	2.75	8.706	10.45	96.4	279.3	569.6
155.00		1.00	1.39	8.450	9.30	0.00	1.200	2.336	5.00	15.458	18.55	172.4	492.8	1006.0
160.00	Appurtenance(s)	1.00	1.40	8.506	9.36	0.00	1.200	2.343	5.00	14.978	17.97	168.2	477.5	972.2
165.00		1.00	1.41	8.561	9.42	0.00	1.200	2.351	5.00	14.497	17.40	163.8	462.2	938.2
170.00	Appurtenance(s)	1.00	1.42	8.615	9.48	0.00	1.200	2.358	5.00	14.016	16.82	159.4	446.7	904.1
175.00		1.00	1.43	8.667	9.53	0.00	1.200	2.364	5.00	13.535	16.24	154.9	431.0	869.8
180.00		1.00	1.43	8.719	9.59	0.00	1.200	2.371	5.00	13.055	15.67	150.2	415.2	835.4
185.00		1.00	1.44	8.769	9.65	0.00	1.200	2.378	5.00	12.573	15.09	145.5	399.3	800.8
187.00	Appurtenance(s)	1.00	1.45	8.789	9.67	0.00	1.200	2.380	2.00	4.894	5.87	56.8	157.2	312.6

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 24



Totals:	187.00	7,287.0	72,087.1
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Discrete Appurtenance Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

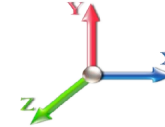
Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

7/3/2019
 Page: 25



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

Dead Load Factor 1.20
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	187.00	ANT450F6	1	8.827	9.710	1.00	1.00	5.72	78.08	0.000	3.917	55.56	0.00	217.61
2	187.00	MF-900B	2	8.789	9.668	1.00	1.00	73.40	273.22	2.015	0.000	709.59	1430.1	0.00
3	187.00	ANT900D6-9	2	8.809	9.690	1.00	1.00	8.52	108.38	0.000	2.042	82.55	0.00	168.53
4	187.00	6' Lightning rod	1	8.789	9.668	1.00	1.00	1.86	52.01	0.000	0.000	18.01	0.00	0.00
5	187.00	DB201	2	8.835	9.718	1.00	1.00	36.78	295.81	0.000	4.750	357.43	0.00	1697.79
6	187.00	Low Profile Platform	1	8.789	9.668	1.00	1.00	46.09	3285.07	0.000	0.000	445.54	0.00	0.00
7	170.00	Ericsson - RRUS-32 B2	3	8.615	9.477	0.62	0.75	7.57	676.50	0.000	0.000	71.69	0.00	0.00
8	170.00	Low Profile Platform w/	1	8.615	9.477	1.00	1.00	57.74	3944.00	0.000	0.000	547.19	0.00	0.00
9	170.00	Cci - HPA-65R-BUU-H6	3	8.615	9.477	0.64	0.75	22.08	1247.51	0.000	0.000	209.22	0.00	0.00
10	170.00	Nokia - CS72188.01 LMU	1	8.615	9.477	1.00	1.00	0.39	1.50	0.000	0.000	3.72	0.00	0.00
11	170.00	Quintel - QS66512-2	3	8.615	9.477	0.69	0.75	20.55	1377.88	0.000	0.000	194.71	0.00	0.00
12	170.00	Kaelus -	6	8.615	9.477	0.50	0.75	2.46	279.73	0.000	0.000	23.29	0.00	0.00
13	170.00	Ericsson - RRUS-32	3	8.615	9.477	0.50	0.75	5.66	578.07	0.000	0.000	53.59	0.00	0.00
14	170.00	Cci - DTMABP7819VG12A	3	8.615	9.477	0.50	0.75	3.29	149.63	0.000	0.000	31.14	0.00	0.00
15	170.00	Ericsson - RRUS-11	3	8.615	9.477	0.56	0.75	5.78	588.80	0.000	0.000	54.81	0.00	0.00
16	170.00	Css - DBC-750 - Combiner	3	8.615	9.477	0.50	0.75	1.85	50.80	0.000	0.000	17.50	0.00	0.00
17	170.00	Raycap -	2	8.615	9.477	1.00	1.00	4.83	203.89	0.000	0.000	45.78	0.00	0.00
18	170.00	Commscope -	3	8.615	9.477	0.74	0.75	0.69	12.21	0.000	0.000	6.50	0.00	0.00
19	170.00	Powerwave - 7770	3	8.615	9.477	0.56	0.75	11.77	718.30	0.000	0.000	111.50	0.00	0.00
20	160.00	Radio 4449 B71+B12	3	8.506	9.357	0.54	0.80	4.35	429.84	0.000	0.000	40.70	0.00	0.00
21	160.00	Air32	3	8.506	9.357	0.70	0.80	16.93	1265.97	0.000	0.000	158.45	0.00	0.00
22	160.00	APXVAARR24 43-U-NA2	3	8.506	9.357	0.56	0.80	38.34	2218.49	0.000	0.000	358.79	0.00	0.00
23	160.00	Platform w/ Hand Rail	1	8.506	9.357	1.00	1.00	69.50	4139.67	0.000	0.000	650.28	0.00	0.00
24	160.00	AIR 21 B2A B4P	3	8.506	9.357	0.62	0.75	14.24	1055.64	0.000	0.000	133.23	0.00	0.00
25	160.00	Double TMA 17/21	3	8.506	9.357	0.56	0.75	1.76	76.61	0.000	0.000	16.46	0.00	0.00
26	150.00	0208	3	8.392	9.232	0.54	0.80	3.27	189.24	0.000	0.000	30.21	0.00	0.00
27	150.00	4415	2	8.392	9.232	0.68	0.90	3.54	212.03	0.000	0.000	32.70	0.00	0.00
28	150.00	P-200 Stand-off	3	8.392	9.232	0.56	0.75	36.93	1518.49	0.000	0.000	340.88	0.00	0.00
29	150.00	ODI2-065R18K-GQ	3	8.392	9.232	0.80	0.80	14.78	450.78	0.000	0.000	136.48	0.00	0.00
30	140.00	LNx-6514DS-VTM	3	8.272	9.099	0.61	0.75	21.76	663.69	0.000	0.000	198.01	0.00	0.00
31	140.00	FD9R6004/2C-3L	6	8.272	9.099	0.58	0.75	3.28	72.34	0.000	0.000	29.87	0.00	0.00
32	140.00	DB-T1-6Z-8AB-OZ	1	8.272	9.099	0.75	0.75	3.87	153.16	0.000	0.000	35.23	0.00	0.00
33	140.00	KS-24019	6	8.272	9.099	0.75	0.75	1.77	45.67	0.000	0.000	16.07	0.00	0.00
34	140.00	Low Profile Platform	1	8.272	9.099	1.00	1.00	45.40	3234.45	0.000	0.000	413.15	0.00	0.00
35	140.00	HBXX-6517DS-A2M	6	8.272	9.099	0.63	0.80	47.09	1392.63	0.000	0.000	428.47	0.00	0.00
36	140.00	LNx-6514DS-A1M	3	8.272	9.099	0.68	0.80	24.30	687.51	0.000	0.000	221.10	0.00	0.00
37	140.00	RRH2x40-07-U	3	8.272	9.099	0.64	0.80	6.98	365.82	0.000	0.000	63.54	0.00	0.00
38	140.00	RRH2x60-1900	3	8.272	9.099	0.73	0.80	4.95	330.88	0.000	0.000	45.03	0.00	0.00
39	130.00	TD-RRH8x20-25	3	8.145	8.960	0.57	0.80	8.77	717.13	0.000	0.000	78.56	0.00	0.00
40	130.00	APXVTM14-C-120	3	8.145	8.960	0.65	0.80	15.23	875.54	0.000	0.000	136.45	0.00	0.00
41	130.00	1900MHz RRH	3	8.145	8.960	0.71	0.80	12.02	495.58	0.000	0.000	107.72	0.00	0.00
42	130.00	APXVSP18-C-A20	3	8.145	8.960	0.68	0.80	23.86	738.81	0.000	0.000	213.75	0.00	0.00
43	130.00	ACU-A20-N	4	8.145	8.960	0.65	0.80	1.37	22.20	0.000	0.000	12.32	0.00	0.00
44	130.00	800 MHz RRH	3	8.145	8.960	0.74	0.80	8.92	419.36	0.000	0.000	79.88	0.00	0.00
45	130.00	800MHz Filter	3	8.145	8.960	0.57	0.80	2.78	86.30	0.000	0.000	24.90	0.00	0.00
46	130.00	RF Filters	3	8.145	8.960	0.55	0.80	2.50	193.57	0.000	0.000	22.43	0.00	0.00
47	130.00	Low Profile Platform	1	8.145	8.960	1.00	1.00	45.23	3221.74	0.000	0.000	405.26	0.00	0.00

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 26



48	92.00	Low Profile Platform	1	7.578	8.336	1.00	1.00	44.45	3163.75	0.000	0.000	370.54	0.00	0.00
49	92.00	DB205	1	7.727	8.500	0.80	0.80	7.89	102.64	0.000	9.000	67.04	0.00	603.39
50	92.00	ANT450Y10-WR	1	7.578	8.336	0.80	0.80	1.54	25.97	0.000	0.000	12.85	0.00	0.00
51	92.00	ANT150D3	1	7.662	8.429	0.80	0.80	10.38	93.67	0.000	5.000	87.51	0.00	437.53
52	92.00	ANT4506-9	1	7.629	8.392	0.80	0.80	5.30	102.90	0.000	3.000	44.45	0.00	133.36
53	92.00	MF-900B	2	7.578	8.336	0.80	0.80	55.10	252.39	2.887	0.000	459.35	1326.0	0.00

Totals:	42,935.85	8,510.96
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Total Applied Force Summary

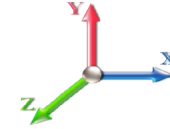
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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 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		195.19	3072.45	0.00	0.00
10.00		192.47	3066.64	0.00	0.00
15.00		191.88	3044.35	0.00	0.00
20.00		199.94	3014.25	0.00	0.00
25.00		205.68	2979.50	0.00	0.00
30.00		209.80	2941.60	0.00	0.00
35.00		212.73	2901.43	0.00	0.00
40.00		214.73	2859.51	0.00	0.00
45.00		215.96	2816.21	0.00	0.00
46.25		53.65	697.81	0.00	0.00
50.00		164.48	3237.43	0.00	0.00
53.25		142.50	2770.67	0.00	0.00
55.00		76.50	889.74	0.00	0.00
60.00		219.67	2511.28	0.00	0.00
65.00		218.94	2469.16	0.00	0.00
70.00		217.86	2426.42	0.00	0.00
75.00		216.46	2383.14	0.00	0.00
80.00		214.77	2339.37	0.00	0.00
85.00		212.81	2295.17	0.00	0.00
90.00		210.62	2250.57	0.00	0.00
92.00	(7) attachments	1125.02	4630.47	1326.09	1174.28
93.75		72.53	770.19	0.00	0.00
95.00		52.39	819.41	0.00	0.00
99.75		198.38	3067.86	0.00	0.00
100.00		10.32	99.89	0.00	0.00
105.00		206.04	1970.22	0.00	0.00
110.00		203.09	1929.05	0.00	0.00
115.00		199.97	1887.62	0.00	0.00
120.00		196.69	1845.94	0.00	0.00
125.00		193.27	1804.03	0.00	0.00
130.00	(26) attachments	1270.98	8532.15	0.00	0.00
135.00		186.02	1700.02	0.00	0.00
140.00	(32) attachments	1632.66	8603.64	0.00	0.00
142.75		98.37	849.92	0.00	0.00
145.00		80.60	934.81	0.00	0.00
147.25		79.79	922.38	0.00	0.00
150.00	(11) attachments	636.71	3053.55	0.00	0.00
155.00		172.42	1207.53	0.00	0.00
160.00	(16) attachments	1526.09	10359.90	0.00	0.00
165.00		163.83	1057.12	0.00	0.00
170.00	(37) attachments	1530.03	10851.79	0.00	0.00
175.00		154.86	882.98	0.00	0.00
180.00		150.24	848.57	0.00	0.00
185.00		145.54	814.04	0.00	0.00
187.00	(9) attachments	1725.45	4410.40	1430.12	2083.93

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Struct Class: II	Page: 28



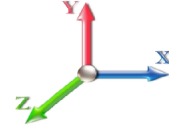
Totals:	15,797.94	124,820.1 7	2,756.20	3,258.21
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Calculated Forces

Structure: CT07824-S-SBA **Code:** EIA/TIA-222-G **7/3/2019**
Site Name: South Windsor **Exposure:** C
Height: 187.00 (ft) **Crest Height:** 0.00
Base Elev: 1.000 (ft) **Site Class:** D - Stiff Soil
Gh: 1.1 **Topography:** 1 **Struct Class:** II **Page:** 29



Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind	Iterations 25
Dead Load Factor 1.20	
Wind Load Factor 1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-124.8	-15.86	-2.75	-2135.6	-0.03	2135.65	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.248
5.00	-121.7	-15.78	-2.75	-2056.3	-0.03	2056.36	6919.93	3459.96	17978.0	9002.40	0.03	-0.056	0.000	0.246
10.00	-118.6	-15.70	-2.75	-1977.4	-0.03	1977.44	6836.37	3418.19	17435.4	8730.69	0.12	-0.112	0.000	0.244
15.00	-115.5	-15.62	-2.75	-1898.9	-0.03	1898.93	6751.25	3375.63	16896.9	8461.01	0.27	-0.170	0.000	0.242
20.00	-112.5	-15.53	-2.75	-1820.8	-0.03	1820.82	6664.57	3332.28	16362.6	8193.47	0.48	-0.228	0.000	0.239
25.00	-109.5	-15.42	-2.75	-1743.1	-0.03	1743.19	6576.31	3288.16	15832.7	7928.16	0.75	-0.287	0.000	0.237
30.00	-106.6	-15.31	-2.75	-1666.0	-0.03	1666.09	6486.49	3243.25	15307.6	7665.22	1.08	-0.347	-0.001	0.234
35.00	-103.6	-15.19	-2.75	-1589.5	-0.03	1589.56	6395.11	3197.55	14787.5	7404.75	1.48	-0.408	-0.001	0.231
40.00	-100.8	-15.06	-2.75	-1513.6	-0.03	1513.63	6302.15	3151.08	14272.4	7146.85	1.94	-0.470	-0.001	0.228
45.00	-97.99	-14.88	-2.75	-1438.3	-0.03	1438.33	6207.63	3103.82	13762.8	6891.65	2.46	-0.532	-0.001	0.225
46.25	-97.28	-14.88	-2.75	-1419.7	-0.04	1419.73	6183.76	3091.88	13636.3	6828.29	2.60	-0.548	-0.001	0.224
50.00	-94.04	-14.76	-2.75	-1363.9	-0.04	1363.93	6111.55	3055.77	13258.8	6639.26	3.05	-0.596	-0.001	0.221
53.25	-91.26	-14.63	-2.75	-1315.9	-0.04	1315.98	5153.03	2576.51	11233.0	5624.85	3.48	-0.638	-0.001	0.252
55.00	-90.36	-14.62	-2.75	-1290.3	-0.04	1290.37	5126.51	2563.25	11089.7	5553.12	3.71	-0.660	-0.001	0.250
60.00	-87.83	-14.48	-2.75	-1217.2	-0.04	1217.27	5049.68	2524.84	10683.1	5349.50	4.44	-0.730	-0.001	0.245
65.00	-85.35	-14.33	-2.75	-1144.8	-0.04	1144.88	4971.29	2485.64	10280.5	5147.92	5.24	-0.800	-0.001	0.240
70.00	-82.91	-14.18	-2.75	-1073.2	-0.04	1073.22	4891.33	2445.66	9882.29	4948.49	6.12	-0.870	-0.002	0.234
75.00	-80.51	-14.03	-2.75	-1002.3	-0.04	1002.33	4809.80	2404.90	9488.55	4751.33	7.07	-0.941	-0.002	0.228
80.00	-78.16	-13.87	-2.75	-932.21	-0.04	932.21	4726.70	2363.35	9099.56	4556.54	8.09	-1.012	-0.002	0.221
85.00	-75.85	-13.70	-2.75	-862.88	-0.05	862.88	4642.04	2321.02	8715.55	4364.25	9.19	-1.082	-0.002	0.214
90.00	-73.59	-13.51	-2.75	-794.35	-0.05	794.35	4555.82	2277.91	8336.73	4174.56	10.36	-1.152	-0.002	0.206
92.00	-68.98	-12.33	-1.43	-766.15	-0.02	766.15	4520.89	2260.44	8186.70	4099.44	10.85	-1.181	-0.003	0.202
93.75	-68.21	-12.26	-1.43	-744.58	-0.02	744.58	4490.12	2245.06	8056.16	4034.07	11.29	-1.206	-0.003	0.200
95.00	-67.38	-12.24	-1.43	-729.26	-0.02	729.26	4468.02	2234.01	7963.33	3987.58	11.61	-1.223	-0.003	0.198
99.75	-64.31	-12.02	-1.43	-671.10	-0.02	671.10	3653.35	1826.67	6478.28	3243.96	12.86	-1.289	-0.003	0.225
100.00	-64.20	-12.05	-1.43	-668.10	-0.02	668.10	3649.96	1824.98	6463.57	3236.59	12.93	-1.293	-0.003	0.224
105.00	-62.22	-11.88	-1.43	-607.86	-0.03	607.86	3581.25	1790.63	6171.38	3090.28	14.32	-1.368	-0.003	0.214
110.00	-60.28	-11.70	-1.43	-548.48	-0.03	548.48	3510.98	1755.49	5883.11	2945.93	15.79	-1.442	-0.003	0.203
115.00	-58.39	-11.53	-1.43	-489.96	-0.03	489.96	3439.14	1719.57	5598.97	2803.65	17.34	-1.514	-0.003	0.192
120.00	-56.53	-11.35	-1.43	-432.33	-0.03	432.33	3365.73	1682.87	5319.21	2663.56	18.96	-1.584	-0.004	0.179
125.00	-54.72	-11.17	-1.43	-375.59	-0.03	375.59	3290.76	1645.38	5044.03	2525.77	20.66	-1.650	-0.004	0.165
130.00	-46.22	-9.69	-1.43	-319.76	-0.04	319.76	3204.00	1602.00	4758.48	2382.78	22.42	-1.713	-0.004	0.149
135.00	-44.52	-9.50	-1.43	-271.29	-0.04	271.29	3102.32	1551.16	4459.76	2233.19	24.25	-1.772	-0.004	0.136
140.00	-35.97	-7.62	-1.43	-223.79	-0.04	223.79	3000.64	1500.32	4170.72	2088.46	26.13	-1.826	-0.005	0.119
142.75	-35.12	-7.51	-1.43	-202.82	-0.04	202.82	2944.72	1472.36	4015.87	2010.92	27.20	-1.855	-0.005	0.113
145.00	-34.18	-7.42	-1.43	-185.92	-0.04	185.92	2898.96	1449.48	3891.36	1948.57	28.07	-1.877	-0.005	0.107
147.25	-33.26	-7.32	-1.43	-169.24	-0.04	169.24	1774.96	887.48	2399.50	1201.53	28.96	-1.899	-0.005	0.160
150.00	-30.22	-6.60	-1.43	-149.11	-0.04	149.11	1752.91	876.46	2323.79	1163.62	30.07	-1.923	-0.005	0.145
155.00	-29.02	-6.42	-1.43	-116.10	-0.05	116.10	1711.62	855.81	2187.55	1095.40	32.11	-1.979	-0.006	0.123
160.00	-18.71	-4.54	-1.43	-84.02	-0.05	84.02	1668.76	834.38	2053.31	1028.18	34.21	-2.027	-0.007	0.093
165.00	-17.66	-4.35	-1.43	-61.32	-0.05	61.32	1624.34	812.17	1921.31	962.08	36.35	-2.065	-0.007	0.075
170.00	-6.87	-2.43	-1.43	-39.56	-0.05	39.56	1578.35	789.17	1791.75	897.21	38.53	-2.095	-0.008	0.048
175.00	-5.99	-2.25	-1.43	-27.41	-0.05	27.41	1530.79	765.40	1664.88	833.68	40.74	-2.117	-0.009	0.037
180.00	-5.15	-2.06	-1.43	-16.19	-0.05	16.19	1481.67	740.83	1540.90	771.60	42.97	-2.134	-0.010	0.024
185.00	-4.34	-1.89	-1.43	-5.86	-0.05	5.86	1427.20	713.60	1416.30	709.20	45.21	-2.143	-0.012	0.011
187.00	0.00	-1.73	-1.43	-2.08	0.00	2.08	1400.09	700.04	1362.73	682.38	46.10	-2.145	-0.012	0.003

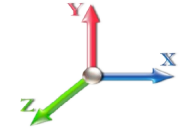
Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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 22
Gust Response Factor	1.10			Sds	0.19	Ss 0.18
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.10	S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.30	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	0.01	0.00	0.00	
5.00		1722.7	0.00	0.03	0.02	33.12	
10.00		1691.6	0.01	0.05	0.03	45.05	
15.00		1660.6	0.01	0.06	0.03	51.01	
20.00		1629.6	0.02	0.07	0.04	53.86	
25.00		1598.5	0.04	0.07	0.04	55.05	
30.00		1567.5	0.05	0.07	0.04	55.42	
35.00		1536.4	0.07	0.07	0.04	55.45	
40.00		1505.4	0.09	0.07	0.04	55.39	
45.00		1474.3	0.11	0.07	0.04	55.30	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	13.71	
50.00		2040.8	0.14	0.07	0.03	77.94	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	67.19	
55.00		437.17	0.17	0.07	0.03	16.93	
60.00		1230.7	0.20	0.06	0.02	47.84	
65.00		1203.5	0.23	0.06	0.02	46.15	
70.00		1176.3	0.27	0.05	0.02	43.21	
75.00		1149.2	0.31	0.04	0.01	38.59	
80.00		1122.0	0.35	0.03	0.01	31.87	
85.00		1094.9	0.40	0.02	0.01	22.85	
90.00		1067.7	0.44	0.00	0.01	11.75	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	13.19	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	0.88	
95.00		482.50	0.49	-0.01	0.01	-0.28	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-21.82	
100.00		43.70	0.55	-0.03	0.01	-0.55	
105.00		861.80	0.60	-0.05	0.01	-20.51	
110.00		838.51	0.66	-0.07	0.02	-27.37	
115.00		815.23	0.72	-0.09	0.03	-31.35	
120.00		791.94	0.78	-0.11	0.05	-32.39	
125.00		768.66	0.85	-0.12	0.07	-30.72	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-112.95	
135.00		722.09	0.99	-0.11	0.13	-20.41	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-51.46	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-3.94	
145.00		505.63	1.14	-0.04	0.21	-2.01	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	1.59	
150.00	Appurtenance(s)	1190.7	1.22	0.02	0.27	15.27	
155.00		427.74	1.30	0.12	0.34	14.01	
160.00	Appurtenance(s)	3313.3	1.39	0.26	0.42	185.04	
165.00		396.69	1.47	0.44	0.51	32.59	
170.00	Appurtenance(s)	3470.0	1.56	0.67	0.62	387.83	
175.00		365.64	1.66	0.96	0.75	52.91	
180.00		350.12	1.75	1.33	0.90	63.40	
185.00		334.60	1.85	1.78	1.07	73.91	
187.00	Appurtenance(s)	1754.9	1.89	1.98	1.14	417.39	

Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	55,588.5	1,779.9	Total Wind:	46,981.6
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Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

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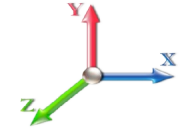
Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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 21
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)	0.30	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	0.01	0.00	0.00	
5.00		1722.7	0.00	0.03	0.02	33.12	
10.00		1691.6	0.01	0.05	0.03	45.05	
15.00		1660.6	0.01	0.06	0.03	51.01	
20.00		1629.6	0.02	0.07	0.04	53.86	
25.00		1598.5	0.04	0.07	0.04	55.05	
30.00		1567.5	0.05	0.07	0.04	55.42	
35.00		1536.4	0.07	0.07	0.04	55.45	
40.00		1505.4	0.09	0.07	0.04	55.39	
45.00		1474.3	0.11	0.07	0.04	55.30	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	13.71	
50.00		2040.8	0.14	0.07	0.03	77.94	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	67.19	
55.00		437.17	0.17	0.07	0.03	16.93	
60.00		1230.7	0.20	0.06	0.02	47.84	
65.00		1203.5	0.23	0.06	0.02	46.15	
70.00		1176.3	0.27	0.05	0.02	43.21	
75.00		1149.2	0.31	0.04	0.01	38.59	
80.00		1122.0	0.35	0.03	0.01	31.87	
85.00		1094.9	0.40	0.02	0.01	22.85	
90.00		1067.7	0.44	0.00	0.01	11.75	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	13.19	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	0.88	
95.00		482.50	0.49	-0.01	0.01	-0.28	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-21.82	
100.00		43.70	0.55	-0.03	0.01	-0.55	
105.00		861.80	0.60	-0.05	0.01	-20.51	
110.00		838.51	0.66	-0.07	0.02	-27.37	
115.00		815.23	0.72	-0.09	0.03	-31.35	
120.00		791.94	0.78	-0.11	0.05	-32.39	
125.00		768.66	0.85	-0.12	0.07	-30.72	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-112.95	
135.00		722.09	0.99	-0.11	0.13	-20.41	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-51.46	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-3.94	
145.00		505.63	1.14	-0.04	0.21	-2.01	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	1.59	
150.00	Appurtenance(s)	1190.7	1.22	0.02	0.27	15.27	
155.00		427.74	1.30	0.12	0.34	14.01	
160.00	Appurtenance(s)	3313.3	1.39	0.26	0.42	185.04	
165.00		396.69	1.47	0.44	0.51	32.59	
170.00	Appurtenance(s)	3470.0	1.56	0.67	0.62	387.83	
175.00		365.64	1.66	0.96	0.75	52.91	
180.00		350.12	1.75	1.33	0.90	63.40	
185.00		334.60	1.85	1.78	1.07	73.91	
187.00	Appurtenance(s)	1754.9	1.89	1.98	1.14	417.39	

Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Struct Class: II	Page: 35



Totals: 55,588.5	1,779.9	Total Wind: 46,981.6
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Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

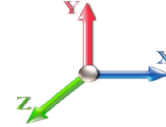
Structure: CT07824-S-SBA Code: EIA/TIA-222-G 7/3/2019
Site Name: South Windsor Exposure: C
Height: 187.00 (ft) Crest Height: 0.00
Base Elev: 1.000 (ft) Site Class: D - Stiff Soil
Gh: 1.1 Topography: 1 Struct Class: II Page: 36



Load Case: 0.9D + 1.0E

Iterations 21

Gust Response Factor 1.10 Sds 0.19 Ss 0.18
Dead Load Factor 0.90 Seismic Load Factor 1.00 Sd1 0.10 S1 0.06
Wind Load Factor 0.00 Structure Frequency (f1) 0.30 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	-57.38	-2.14	0.00	-266.88	0.00	266.88	7001.91	3500.96	18524.4	9276.01	0.00	0.00	0.00	0.037
5.00	-55.59	-2.11	0.00	-256.19	0.00	256.19	6919.93	3459.96	17978.0	9002.40	0.00	0.00	-0.01	0.036
10.00	-53.83	-2.07	0.00	-245.64	0.00	245.64	6836.37	3418.19	17435.4	8730.69	0.01	0.01	-0.01	0.036
15.00	-52.10	-2.03	0.00	-235.27	0.00	235.27	6751.25	3375.63	16896.9	8461.01	0.03	0.03	-0.02	0.036
20.00	-50.40	-1.98	0.00	-225.14	0.00	225.14	6664.57	3332.28	16362.6	8193.47	0.06	0.06	-0.03	0.035
25.00	-48.73	-1.93	0.00	-215.24	0.00	215.24	6576.31	3288.16	15832.7	7928.16	0.09	0.09	-0.04	0.035
30.00	-47.08	-1.88	0.00	-205.59	0.00	205.59	6486.49	3243.25	15307.6	7665.22	0.13	0.13	-0.04	0.034
35.00	-45.46	-1.83	0.00	-196.20	0.00	196.20	6395.11	3197.55	14787.5	7404.75	0.18	0.18	-0.05	0.034
40.00	-43.87	-1.78	0.00	-187.05	0.00	187.05	6302.15	3151.08	14272.4	7146.85	0.24	0.24	-0.06	0.033
45.00	-42.31	-1.72	0.00	-178.17	0.00	178.17	6207.63	3103.82	13762.8	6891.65	0.31	0.31	-0.07	0.033
46.25	-41.92	-1.71	0.00	-176.01	0.00	176.01	6183.76	3091.88	13636.3	6828.29	0.32	0.32	-0.07	0.033
50.00	-39.91	-1.64	0.00	-169.59	0.00	169.59	6111.55	3055.77	13258.8	6639.26	0.38	0.38	-0.07	0.032
53.25	-38.19	-1.57	0.00	-164.27	0.00	164.27	5153.03	2576.51	11233.0	5624.85	0.43	0.43	-0.08	0.037
55.00	-37.71	-1.56	0.00	-161.53	0.00	161.53	5126.51	2563.25	11089.7	5553.12	0.46	0.46	-0.08	0.036
60.00	-36.37	-1.51	0.00	-153.75	0.00	153.75	5049.68	2524.84	10683.1	5349.50	0.55	0.55	-0.09	0.036
65.00	-35.05	-1.47	0.00	-146.19	0.00	146.19	4971.29	2485.64	10280.5	5147.92	0.65	0.65	-0.10	0.035
70.00	-33.75	-1.43	0.00	-138.85	0.00	138.85	4891.33	2445.66	9882.29	4948.49	0.76	0.76	-0.11	0.035
75.00	-32.48	-1.39	0.00	-131.71	0.00	131.71	4809.80	2404.90	9488.55	4751.33	0.88	0.88	-0.12	0.034
80.00	-31.24	-1.36	0.00	-124.75	0.00	124.75	4726.70	2363.35	9099.56	4556.54	1.01	1.01	-0.13	0.034
85.00	-30.02	-1.34	0.00	-117.93	0.00	117.93	4642.04	2321.02	8715.55	4364.25	1.14	1.14	-0.14	0.033
90.00	-28.82	-1.33	0.00	-111.22	0.00	111.22	4555.82	2277.91	8336.73	4174.56	1.29	1.29	-0.15	0.033
92.00	-26.90	-1.31	0.00	-108.55	0.00	108.55	4520.89	2260.44	8186.70	4099.44	1.36	1.36	-0.15	0.032
93.75	-26.50	-1.31	0.00	-106.25	0.00	106.25	4490.12	2245.06	8056.16	4034.07	1.41	1.41	-0.15	0.032
95.00	-26.00	-1.32	0.00	-104.61	0.00	104.61	4468.02	2234.01	7963.33	3987.58	1.45	1.45	-0.16	0.032
99.75	-24.16	-1.31	0.00	-98.36	0.00	98.36	3653.35	1826.67	6478.28	3243.96	1.61	1.61	-0.17	0.037
100.00	-24.11	-1.32	0.00	-98.03	0.00	98.03	3649.96	1824.98	6463.57	3236.59	1.62	1.62	-0.17	0.037
105.00	-23.10	-1.32	0.00	-91.46	0.00	91.46	3581.25	1790.63	6171.38	3090.28	1.80	1.80	-0.18	0.036
110.00	-22.12	-1.32	0.00	-84.87	0.00	84.87	3510.98	1755.49	5883.11	2945.93	1.99	1.99	-0.19	0.035
115.00	-21.15	-1.32	0.00	-78.28	0.00	78.28	3439.14	1719.57	5598.97	2803.65	2.20	2.20	-0.20	0.034
120.00	-20.21	-1.32	0.00	-71.69	0.00	71.69	3365.73	1682.87	5319.21	2663.56	2.41	2.41	-0.21	0.033
125.00	-19.28	-1.32	0.00	-65.09	0.00	65.09	3290.76	1645.38	5044.03	2525.77	2.64	2.64	-0.22	0.032
130.00	-16.21	-1.31	0.00	-58.49	0.00	58.49	3204.00	1602.00	4758.48	2382.78	2.88	2.88	-0.23	0.030
135.00	-15.34	-1.31	0.00	-51.94	0.00	51.94	3102.32	1551.16	4459.76	2233.19	3.13	3.13	-0.25	0.028
140.00	-12.50	-1.30	0.00	-45.39	0.00	45.39	3000.64	1500.32	4170.72	2088.46	3.39	3.39	-0.26	0.026
142.75	-12.08	-1.30	0.00	-41.82	0.00	41.82	2944.72	1472.36	4015.87	2010.92	3.54	3.54	-0.26	0.025
145.00	-11.55	-1.30	0.00	-38.89	0.00	38.89	2898.96	1449.48	3891.36	1948.57	3.67	3.67	-0.27	0.024
147.25	-11.04	-1.29	0.00	-35.97	0.00	35.97	1774.96	887.48	2399.50	1201.53	3.79	3.79	-0.27	0.036
150.00	-9.88	-1.28	0.00	-32.42	0.00	32.42	1752.91	876.46	2323.79	1163.62	3.95	3.95	-0.28	0.033
155.00	-9.34	-1.26	0.00	-26.04	0.00	26.04	1711.62	855.81	2187.55	1095.40	4.25	4.25	-0.29	0.029
160.00	-6.21	-1.06	0.00	-19.74	0.00	19.74	1668.76	834.38	2053.31	1028.18	4.56	4.56	-0.30	0.023
165.00	-5.77	-1.03	0.00	-14.44	0.00	14.44	1624.34	812.17	1921.31	962.08	4.87	4.87	-0.31	0.019
170.00	-2.56	-0.62	0.00	-9.30	0.00	9.30	1578.35	789.17	1791.75	897.21	5.20	5.20	-0.32	0.012
175.00	-2.22	-0.57	0.00	-6.20	0.00	6.20	1530.79	765.40	1664.88	833.68	5.53	5.53	-0.32	0.009
180.00	-1.89	-0.50	0.00	-3.36	0.00	3.36	1481.67	740.83	1540.90	771.60	5.87	5.87	-0.32	0.006
185.00	-1.58	-0.43	0.00	-0.85	0.00	0.85	1427.20	713.60	1416.30	709.20	6.21	6.21	-0.33	0.002
187.00	0.00	-0.42	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	6.35	6.35	-0.33	0.000

Calculated Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

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Wind Loading - Shaft

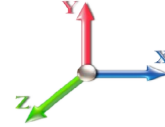
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 23

Dead Load Factor 1.00
Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	303.70	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	298.31	0.650	0.000	5.00	27.207	17.68	144.8	0.0	1722.7
10.00		1.00	0.85	7.442	8.19	292.93	0.650	0.000	5.00	26.721	17.37	142.2	0.0	1691.7
15.00		1.00	0.86	7.534	8.29	289.32	0.650	0.000	5.00	26.234	17.05	141.3	0.0	1660.6
20.00		1.00	0.91	7.978	8.78	292.15	0.650	0.000	5.00	25.748	16.74	146.9	0.0	1629.6
25.00		1.00	0.95	8.345	9.18	293.09	0.650	0.000	5.00	25.261	16.42	150.7	0.0	1598.6
30.00		1.00	0.99	8.659	9.53	292.76	0.650	0.000	5.00	24.775	16.10	153.4	0.0	1567.5
35.00		1.00	1.02	8.936	9.83	291.51	0.650	0.000	5.00	24.288	15.79	155.2	0.0	1536.5
40.00		1.00	1.05	9.184	10.10	289.55	0.650	0.000	5.00	23.802	15.47	156.3	0.0	1505.4
45.00		1.00	1.07	9.410	10.35	287.02	0.650	0.000	5.00	23.315	15.15	156.9	0.0	1474.4
46.25	Bot - Section 2	1.00	1.08	9.463	10.41	286.32	0.650	0.000	1.25	5.753	3.74	38.9	0.0	363.7
50.00		1.00	1.10	9.616	10.58	284.04	0.650	0.000	3.75	17.353	11.28	119.3	0.0	2040.8
53.25	Top - Section 1	1.00	1.11	9.742	10.72	281.89	0.650	0.000	3.25	14.818	9.63	103.2	0.0	1742.2
55.00		1.00	1.12	9.807	10.79	285.37	0.650	0.000	1.75	7.894	5.13	55.4	0.0	437.2
60.00		1.00	1.14	9.986	10.98	281.72	0.650	0.000	5.00	22.226	14.45	158.7	0.0	1230.7
65.00		1.00	1.16	10.153	11.17	277.78	0.650	0.000	5.00	21.739	14.13	157.8	0.0	1203.6
70.00		1.00	1.18	10.310	11.34	273.59	0.650	0.000	5.00	21.253	13.81	156.7	0.0	1176.4
75.00		1.00	1.19	10.459	11.50	269.17	0.650	0.000	5.00	20.766	13.50	155.3	0.0	1149.2
80.00		1.00	1.21	10.600	11.66	264.56	0.650	0.000	5.00	20.280	13.18	153.7	0.0	1122.1
85.00		1.00	1.23	10.734	11.81	259.77	0.650	0.000	5.00	19.793	12.87	151.9	0.0	1094.9
90.00		1.00	1.24	10.863	11.95	254.81	0.650	0.000	5.00	19.307	12.55	150.0	0.0	1067.7
92.00	Appurtenance(s)	1.00	1.25	10.913	12.00	252.79	0.650	0.000	2.00	7.586	4.93	59.2	0.0	419.5
93.75	Bot - Section 3	1.00	1.25	10.956	12.05	251.00	0.650	0.000	1.75	6.574	4.27	51.5	0.0	363.5
95.00		1.00	1.25	10.986	12.08	249.71	0.650	0.000	1.25	4.739	3.08	37.2	0.0	482.5
99.75	Top - Section 2	1.00	1.27	11.098	12.21	244.74	0.650	0.000	4.75	17.730	11.52	140.7	0.0	1804.8
100.00		1.00	1.27	11.104	12.21	248.77	0.650	0.000	0.25	0.921	0.60	7.3	0.0	43.7
105.00		1.00	1.28	11.218	12.34	243.43	0.650	0.000	5.00	18.165	11.81	145.7	0.0	861.8
110.00		1.00	1.29	11.327	12.46	237.97	0.650	0.000	5.00	17.678	11.49	143.2	0.0	838.5
115.00		1.00	1.31	11.432	12.58	232.40	0.650	0.000	5.00	17.192	11.17	140.5	0.0	815.2
120.00		1.00	1.32	11.534	12.69	226.74	0.650	0.000	5.00	16.705	10.86	137.8	0.0	791.9
125.00		1.00	1.33	11.633	12.80	220.98	0.650	0.000	5.00	16.219	10.54	134.9	0.0	768.7
130.00	Appurtenance(s)	1.00	1.34	11.729	12.90	215.13	0.650	0.000	5.00	15.732	10.23	131.9	0.0	745.4
135.00		1.00	1.35	11.822	13.00	209.19	0.650	0.000	5.00	15.246	9.91	128.9	0.0	722.1
140.00	Appurtenance(s)	1.00	1.36	11.912	13.10	203.18	0.650	0.000	5.00	14.759	9.59	125.7	0.0	698.8
142.75	Bot - Section 4	1.00	1.37	11.961	13.16	199.84	0.650	0.000	2.75	7.910	5.14	67.6	0.0	374.4
145.00		1.00	1.37	12.000	13.20	197.09	0.650	0.000	2.25	6.458	4.20	55.4	0.0	505.6
147.25	Top - Section 3	1.00	1.37	12.038	13.24	194.33	0.650	0.000	2.25	6.359	4.13	54.7	0.0	497.8
150.00	Appurtenance(s)	1.00	1.38	12.085	13.29	193.92	0.650	0.000	2.75	7.638	4.97	66.0	0.0	241.9
155.00		1.00	1.39	12.168	13.39	187.70	0.650	0.000	5.00	13.511	8.78	117.6	0.0	427.7
160.00	Appurtenance(s)	1.00	1.40	12.249	13.47	181.42	0.650	0.000	5.00	13.025	8.47	114.1	0.0	412.2
165.00		1.00	1.41	12.328	13.56	175.08	0.650	0.000	5.00	12.538	8.15	110.5	0.0	396.7
170.00	Appurtenance(s)	1.00	1.42	12.406	13.65	168.67	0.650	0.000	5.00	12.052	7.83	106.9	0.0	381.2
175.00		1.00	1.43	12.481	13.73	162.22	0.650	0.000	5.00	11.565	7.52	103.2	0.0	365.6
180.00		1.00	1.43	12.555	13.81	155.70	0.650	0.000	5.00	11.079	7.20	99.5	0.0	350.1
185.00		1.00	1.44	12.627	13.89	149.14	0.650	0.000	5.00	10.592	6.88	95.6	0.0	334.6
187.00	Appurtenance(s)	1.00	1.45	12.656	13.92	146.50	0.650	0.000	2.00	4.101	2.67	37.1	0.0	129.5

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 39



Totals:	187.00	5,161.1	40,789.2
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Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Page: 41
	Struct Class: II	



48	92.00	Low Profile Platform	1	10.913	12.004	1.00	1.00	22.00	1500.00	0.000	0.000	264.09	0.00	0.00
49	92.00	DB205	1	11.127	12.240	0.80	0.80	1.44	38.00	0.000	9.000	17.63	0.00	158.63
50	92.00	ANT450Y10-WR	1	10.913	12.004	0.80	0.80	0.39	5.00	0.000	0.000	4.71	0.00	0.00
51	92.00	ANT150D3	1	11.034	12.137	0.80	0.80	1.74	18.00	0.000	5.000	21.17	0.00	105.84
52	92.00	ANT4506-9	1	10.986	12.085	0.80	0.80	2.22	18.00	0.000	3.000	26.78	0.00	80.34
53	92.00	MF-900B	2	10.913	12.004	0.80	0.80	5.52	26.00	2.887	0.000	66.26	191.29	0.00

Totals:	14,799.22	6,073.70
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Total Applied Force Summary

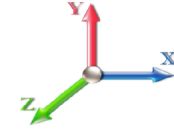
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 23

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		144.77	1984.45	0.00	0.00
10.00		142.18	1953.40	0.00	0.00
15.00		141.31	1922.36	0.00	0.00
20.00		146.87	1891.31	0.00	0.00
25.00		150.72	1860.27	0.00	0.00
30.00		153.39	1829.22	0.00	0.00
35.00		155.19	1798.17	0.00	0.00
40.00		156.30	1767.13	0.00	0.00
45.00		156.86	1736.08	0.00	0.00
46.25		38.92	429.17	0.00	0.00
50.00		119.32	2237.11	0.00	0.00
53.25		103.22	1912.34	0.00	0.00
55.00		55.36	528.77	0.00	0.00
60.00		158.69	1492.43	0.00	0.00
65.00		157.81	1465.27	0.00	0.00
70.00		156.67	1438.10	0.00	0.00
75.00		155.29	1410.94	0.00	0.00
80.00		153.70	1383.77	0.00	0.00
85.00		151.92	1356.61	0.00	0.00
90.00		149.96	1329.44	0.00	0.00
92.00	(7) attachments	459.82	2129.17	191.29	344.80
93.75		51.50	453.40	0.00	0.00
95.00		37.22	546.73	0.00	0.00
99.75		140.69	2048.82	0.00	0.00
100.00		7.31	56.55	0.00	0.00
105.00		145.69	1118.71	0.00	0.00
110.00		143.17	1095.42	0.00	0.00
115.00		140.53	1072.14	0.00	0.00
120.00		137.77	1048.85	0.00	0.00
125.00		134.90	1025.57	0.00	0.00
130.00	(26) attachments	1078.51	3419.18	0.00	0.00
135.00		128.86	962.69	0.00	0.00
140.00	(32) attachments	1392.83	3152.30	0.00	0.00
142.75		67.65	468.96	0.00	0.00
145.00		55.41	582.99	0.00	0.00
147.25		54.74	575.13	0.00	0.00
150.00	(11) attachments	420.71	1285.32	0.00	0.00
155.00		117.55	595.64	0.00	0.00
160.00	(16) attachments	1390.72	3481.21	0.00	0.00
165.00		110.52	495.79	0.00	0.00
170.00	(37) attachments	1374.87	3569.19	0.00	0.00
175.00		103.21	376.64	0.00	0.00
180.00		99.45	361.12	0.00	0.00
185.00		95.63	345.60	0.00	0.00
187.00	(9) attachments	597.16	1759.39	193.60	628.33

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	11,234.83	63,752.84	384.89	973.13
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Final Analysis Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (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	47.1	0.00	76.44	0.01	0.99	6015.08
0.9D + 1.6W 97 mph Wind	47.1	0.00	57.31	0.01	0.99	5947.65
1.2D + 1.0Di + 1.0Wi 50 mph Wind	15.9	0.00	124.81	0.03	2.75	2135.65
1.2D + 1.0E	2.1	0.00	76.50	0.00	0.00	270.31
0.9D + 1.0E	2.1	0.00	57.38	0.00	0.00	266.88
1.0D + 1.0W 60 mph Wind	11.3	0.00	63.75	0.00	0.38	1429.33

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	-76.44	-47.09	-0.99	-6015.0	-0.01	-6015.0	7001.91	3500.9	18524.4	9276.01	0.00	0.660
0.9D + 1.6W 97 mph Wind	-57.31	-47.06	-0.99	-5947.6	-0.01	-5947.6	7001.91	3500.9	18524.4	9276.01	0.00	0.650
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-91.26	-14.63	-2.75	-1315.9	-0.04	-1315.9	5153.03	2576.5	11233.0	5624.85	53.25	0.252
1.2D + 1.0E	-76.50	-2.14	0.00	-270.31	0.00	-270.31	7001.91	3500.9	18524.4	9276.01	0.00	0.040
0.9D + 1.0E	-57.38	-2.14	0.00	-266.88	0.00	-266.88	7001.91	3500.9	18524.4	9276.01	0.00	0.037
1.0D + 1.0W 60 mph Wind	-63.75	-11.26	-0.38	-1429.3	0.00	-1429.3	7001.91	3500.9	18524.4	9276.01	0.00	0.163

Base Plate Summary

Structure: CT07824-S-SB	Code: EIA/TIA-222-G	7/3/2019
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 46



Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 60.00	Bolt Circle: 72.00
Moment (kip-ft): 6540.46	Width (in): 78.00	Number Bolts: 26.00
Axial (kip): 82.75	Style: Round	Bolt Type: 2.25" 18J
Shear (kip): 47.90	Polygon Sides: 0.00	Bolt Diameter (in): 2.25
Analysis	Clip Length (in): 0.00	Yield (ksi): 75.00
Moment (kip-ft): 6015.08	Effective Len (in): 11.93	Ultimate (ksi): 100.00
Axial (kip): 124.81	Moment (kip-in): 566.16	Arrangement: Radial
Shear (kip): 47.09	Allow Stress (ksi): 81.00	Cluster Dist (in): 0.00
	Applied Stress (ksi): 0.00	Start Angle (deg): 0.00
Moment Design %: 91.97	Stress Ratio: 0.56	Compression
		Force (kip): 159.03
		Allowable (kip): 260.00
		Ratio: 0.63
		Tension
		Force (kip): 149.43
		Allowable (kip): 260.00
		Ratio: 0.59



Monopole Mat Foundation Design

Date

7/3/2019

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	187
Site Number:	CT07824-S-SBA	Engineer Name:	J. Tibbetts
Engr. Number:	78522	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	124.8	Shear Force (Kips):	47.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	6015.1

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	8.0	Mods required -Yes/No ?:	No
Pier Height A. G. (ft.):	1.00	Depth of Base BG (ft.):	12.0
Length of Pad (ft.):	24.5	Thickness of Pad (ft.):	2.50
Final Length of pad (ft)	24.5	Width of Pad (ft.):	24.5
Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5

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 #:	10	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	10	
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):	42	Qty. of Rebar in Pad (W):	42
---------------------------	----	---------------------------	----

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	42	Qty. of Rebar in Pad (W):	42
---------------------------	----	---------------------------	----

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

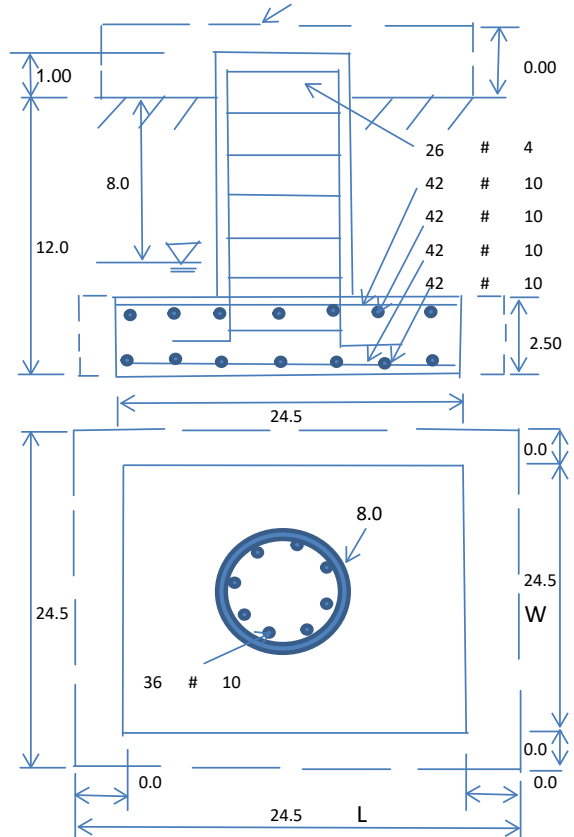
Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf	Angle from Top of Pad:	30
Water Table B.G.S. (ft):	8.0	Unit Weight of Water:	62.4	pcf	Angle from Bottm of Pad:	25
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Reduction factor on the maximum soil bearing pressure:	1.00
Consider soil hor. resist. for OTM.:	Yes					

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	4399.88	Total Dry Soil Weight (Kips):	527.99
Total Buoyant Soil Volume (cu. Ft.):	889.38	Total Buoyant Soil Weight (Kips):	44.47
Total Effective Soil Weight (Kips):	572.45	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	452.39	Total Dry Concrete Weight (Kips):	67.86
Total Buoyant Concrete Volume (cu. Ft.):	1576.02	Total Buoyant Concrete Weight (Kips):	138.06
Total Effective Concrete Weight (Kips):	205.92	Total Vertical Load on Base (Kips):	903.17

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	4787	< Allowable Factored Soil Bearing (psf):	6000	0.80	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	10074.9	> Design Factored Momont (kips-ft):	5942	0.59	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.70				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:

				Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	8888.9	> Design Factored Moment (Mu, Kips-F	6509.7	0.73	OK!
Calculated Shear Capacity (Kips):	993.9	> Design Factored Shear (Kips):	47.1	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	2468.9	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	12716.4	> Design Factored Axial Load (Pu Kips):	124.8	0.01	OK!
Moment & Axial Strength Combination:	0.73	OK! Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	735.6	> One-Way Factored Shear (L-D. Kips):	406.4	0.55	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	735.6	> One-Way Factored Shear (W-D., Kips)	406.4	0.55	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	668.1	> One-Way Factored Shear (C-C, Kips):	396.6	0.59	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0069	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0069		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	5946.5	> Moment at Bottom (L-Dir. K-Ft):	2040.4	0.34	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	5946.5	> Moment at Bottom (W-Dir. K-Ft):	2040.4	0.34	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	8246.5	> Moment at Bottom (C-C Dir. K-Ft):	2885.5	0.35	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0069	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0069		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	5946.5	> Moment at the top (L-Dir K-Ft):	684.5	0.12	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5946.5	> Moment at the top (W-Dir K-Ft):	684.5	0.12	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	8246.5	> Moment at the top (C-C Dir. K-Ft):	647.3	0.08	OK!

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

Moment transferred by punching shear:	2406.0	k-ft.	Max. factored shear stress $v_{u,CD}$:	0.0	Psi
Max. factored shear stress $v_{u,AB}$:	20.3	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	20.3	Psi	Check Usage of Punching Shear Capacity:	0.11	OK!

EXHIBIT 8



Tower Engineering Solutions

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

Antenna Mount Analysis Report

Existing 187-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT07824-S-SBA

Customer Site Name: South Windsor

Carrier Name: T-Mobile (App#: 116784, V)

Carrier Site ID / Name: CT11497A / South Windsor

Site Location: 151 Sand Hill Road

South Windsor, Connecticut

Hartford County

Latitude: 41.836000

Longitude: -72.552000

Analysis Result:

Max Structural Usage: 74.1% [Pass]

Report Prepared By: Ishwor Dhakal



6/21/19

Introduction

The purpose of this report is to summarize the analysis results on the (1) Platform w/ handrail at 160.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Mount Mapping by Full Metal Tower Services, dated 04/28/2019.
Antenna Loading	SBA, Application #: 116784, v1.
Modification Drawings	N/A.

Analysis Criteria

Wind Speed Used in the Analysis: $V_{ULT} = 125$ mph (3-Sec. Gust) / Equivalent to
 $V_{ASD} = 97$ mph (3-Sec. Gust)

Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent

Operational Wind Speed: 60 mph +0" Radial ice

Standard/Codes: ANSI/TIA-222-G

Exposure Category: C

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

The site is a Risk Category II structure per table 1604.5 of the 2015 IBC. This site does not support emergency communication equipment for first responders such as fire departments, police, hospitals, ambulance services or any of the facilities listed for Risk Categories III and IV. The scope of work detailed in this structural analysis does not include items that are a part of emergency service as the 911 or essential facility service of an emergency response system.

Mount Information

(1) Platform w/ handrail at 160.00' elevation.

Final Antenna Configuration

- 3 Ericsson Air 21 B2A/B4P
- 3 Ericsson Air32 KRD901146-1_B66A_B2A
- 3 RFS APXVAARR24_43-U-NA20
- 3 Ericsson KRY 112 144/1
- 3 Ericsson Radio 4449 B71+B12

Any proposed antennas not currently installed should be mounted such that the centers of the antennas do not exceed 0.5 ft vertically from the center of the Platform w/ handrail.

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

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration. The maximum structural usage is 74.1%, which occurs in the mount pipe. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

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

Standard Conditions

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



Structure: CT07824-S-SBA - South Windsor

Sector: A

6/21/2019

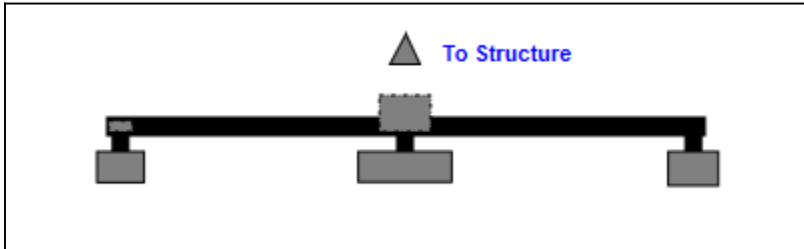
Structure Type: Monopole

Mount Elev: 160.00

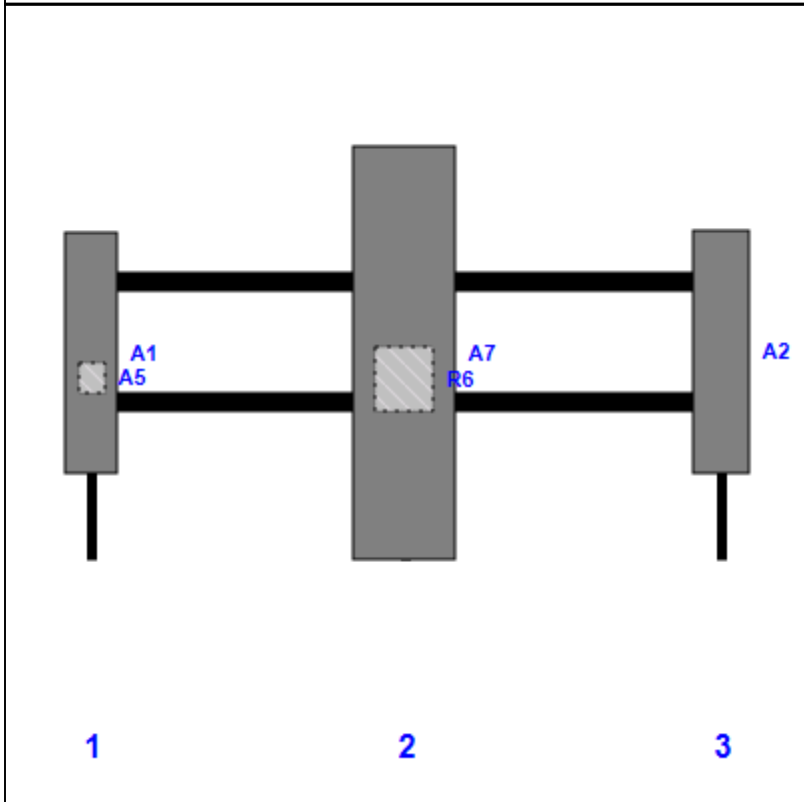
Page: 1



Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	4.00	1	a	Front	24.00	0.00
A5	KRY 112 144/1	6.90	6.10	4.00	1	a	Behind	30.00	0.00
A7	APXVAARR24_43-U-NA20	95.90	24.00	77.00	2	a	Front	24.00	0.00
R6	Radio 4449 B71+B12	15.00	13.20	77.00	2	a	Behind	30.00	0.00
A2	Air32	56.60	12.90	151.00	3	a	Front	24.00	0.00

Structure: CT07824-S-SBA - South Windsor

Sector: B

6/21/2019

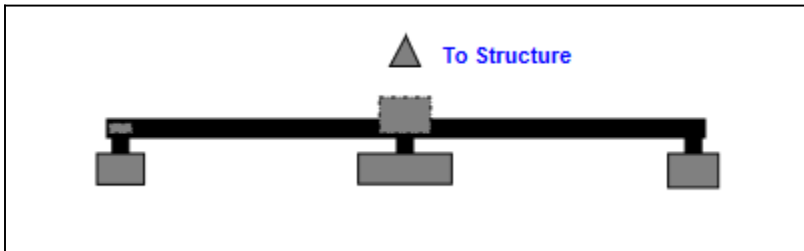
Structure Type: Monopole



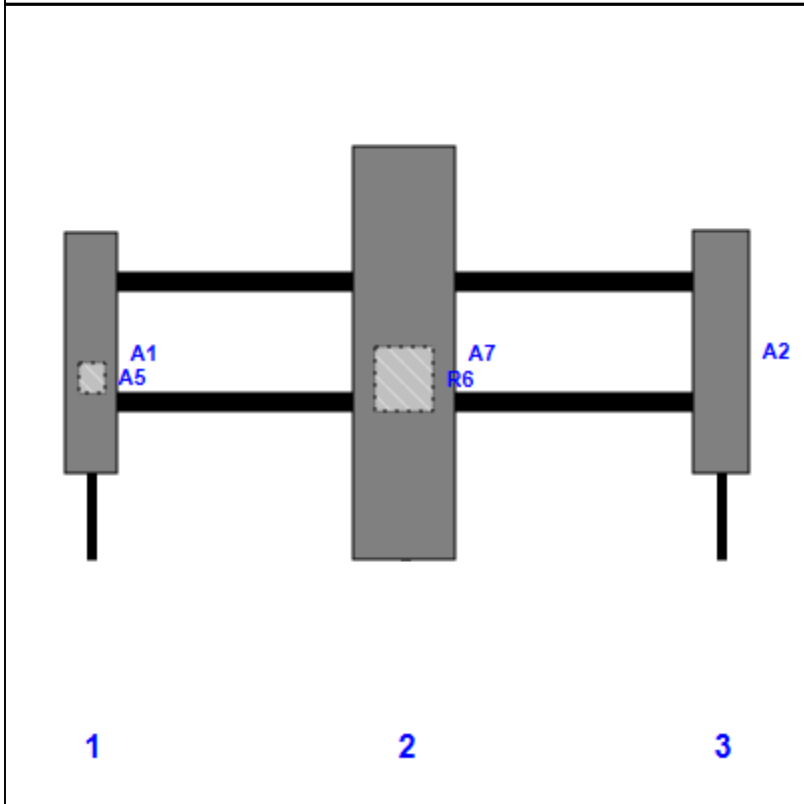
Mount Elev: 160.00

Page: 2

Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	4.00	1	a	Front	24.00	0.00
A5	KRY 112 144/1	6.90	6.10	4.00	1	a	Behind	30.00	0.00
A7	APXVAARR24_43-U-NA20	95.90	24.00	77.00	2	a	Front	24.00	0.00
R6	Radio 4449 B71+B12	15.00	13.20	77.00	2	a	Behind	30.00	0.00
A2	Air32	56.60	12.90	151.00	3	a	Front	24.00	0.00

Sector: C

6/21/2019

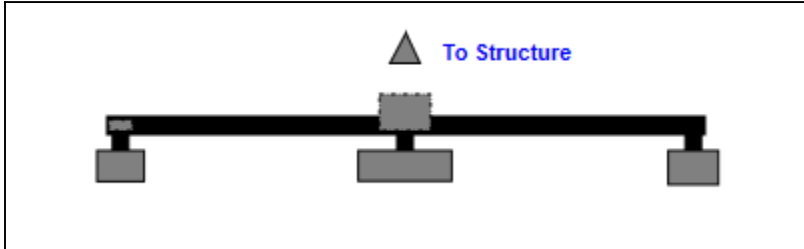
Structure Type: Monopole

Mount Elev: 160.00

Page: 3

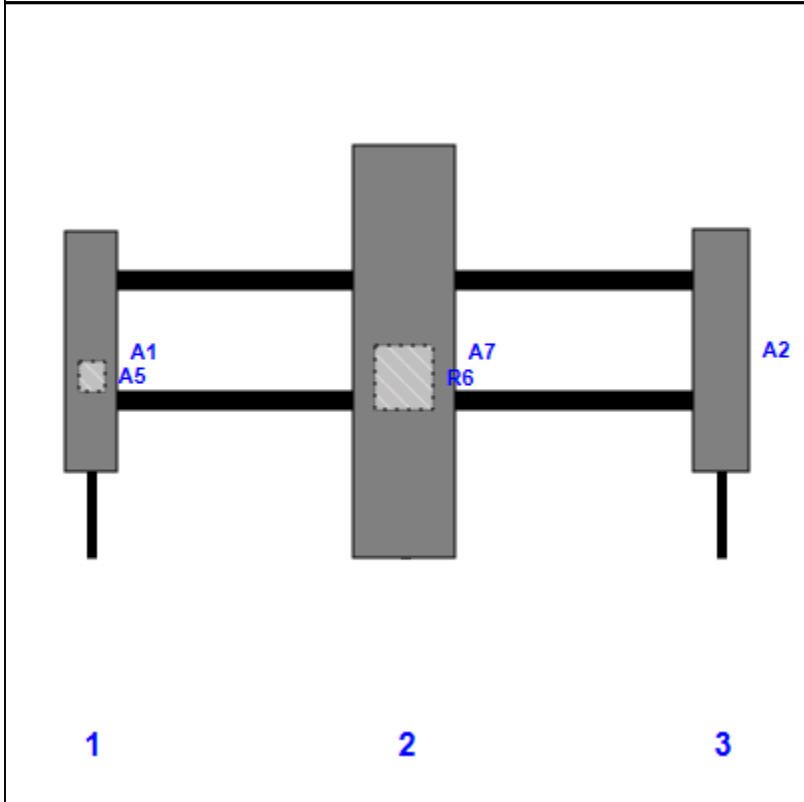


Plan View




Front View

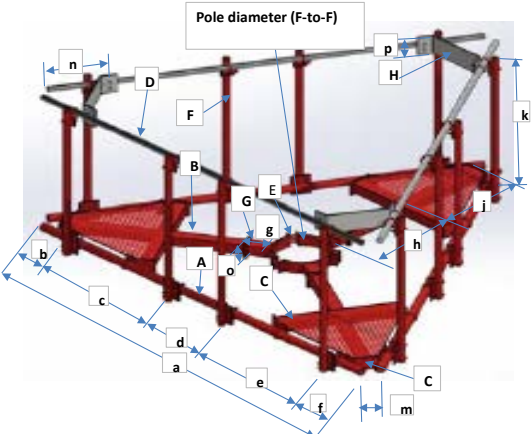
Looking Toward Structure



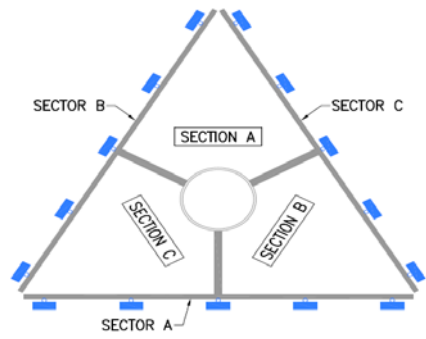
Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	4.00	1	a	Front	24.00	0.00
A5	KRY 112 144/1	6.90	6.10	4.00	1	a	Behind	30.00	0.00
A7	APXVAARR24_43-U-NA20	95.90	24.00	77.00	2	a	Front	24.00	0.00
R6	Radio 4449 B71+B12	15.00	13.20	77.00	2	a	Behind	30.00	0.00
A2	Air32	56.60	12.90	151.00	3	a	Front	24.00	0.00

	Antenna Mount Type "MT-X" Mapping Form (PATENT PENDING)			FCC #
				1236056
	Tower Owner:	SBA Communications	Mapping Date:	4/28/19
	Site Name:	South Windsor	Structure Type:	Monopole
Site Number or ID:	CT07824-S-SBA	Structure Height (Ft.):	199	
Mapping Contractor:	Full Metal Tower Services	Mount Height (Ft.):	160.7	

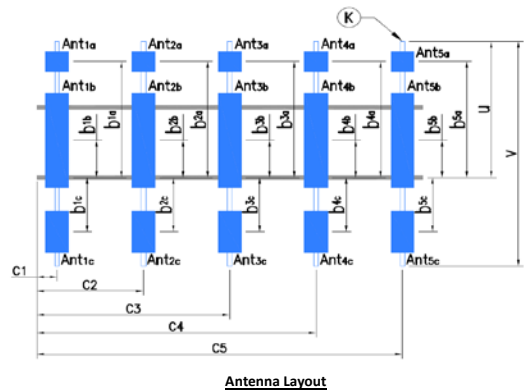
This antenna mapping form is the property of TES and under **PATENT PENDING**. The information contained herein is considered confidential in nature and is to be used only for the specific customer it was intended for. Reproduction, transmission, publication, modification or disclosure by any method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



Geometries (Unit: inches)									
a	154	e	45	j	45	o	10	s	N/A
b	9	f	9	k	28	p	2.5	t	21
c	45	g	5.5	m	15	q	N/A	u*	35
d	46	h	18.5	n	16	r	N/A	v*	72
Members/Bolts (Unit: inches) * - See Ant. Layout for "u", "v" and member "K" (pipe)									
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	F	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
B	Tubing 4x4x1/4	4	4	0.25	G	1/2" Thick. Plate	0	0	0.5
C	Tubing 4x4x1/4	4	4	0.25	H	L2 1/2x2 1/2x1/4	2.5	2.5	0.25
D	2.375 OD x 0.154 Pipe	2.375	2.067	0.154	J				
E	3/4" Bolt			24	K* (pipe)	2.375 OD x 0.154 Pipe	2.375	2.067	0.154
Distance from top of main platform member to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)									1.5'
Distance from top of main platform member to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)									5.5'
Please enter the information below if members can't be found from the drop down lists									




Climbing ladder is Located at Section A, at 0° Degree Azimuth



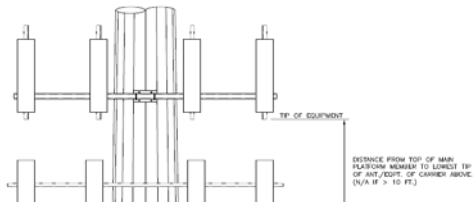
Antenna Layout

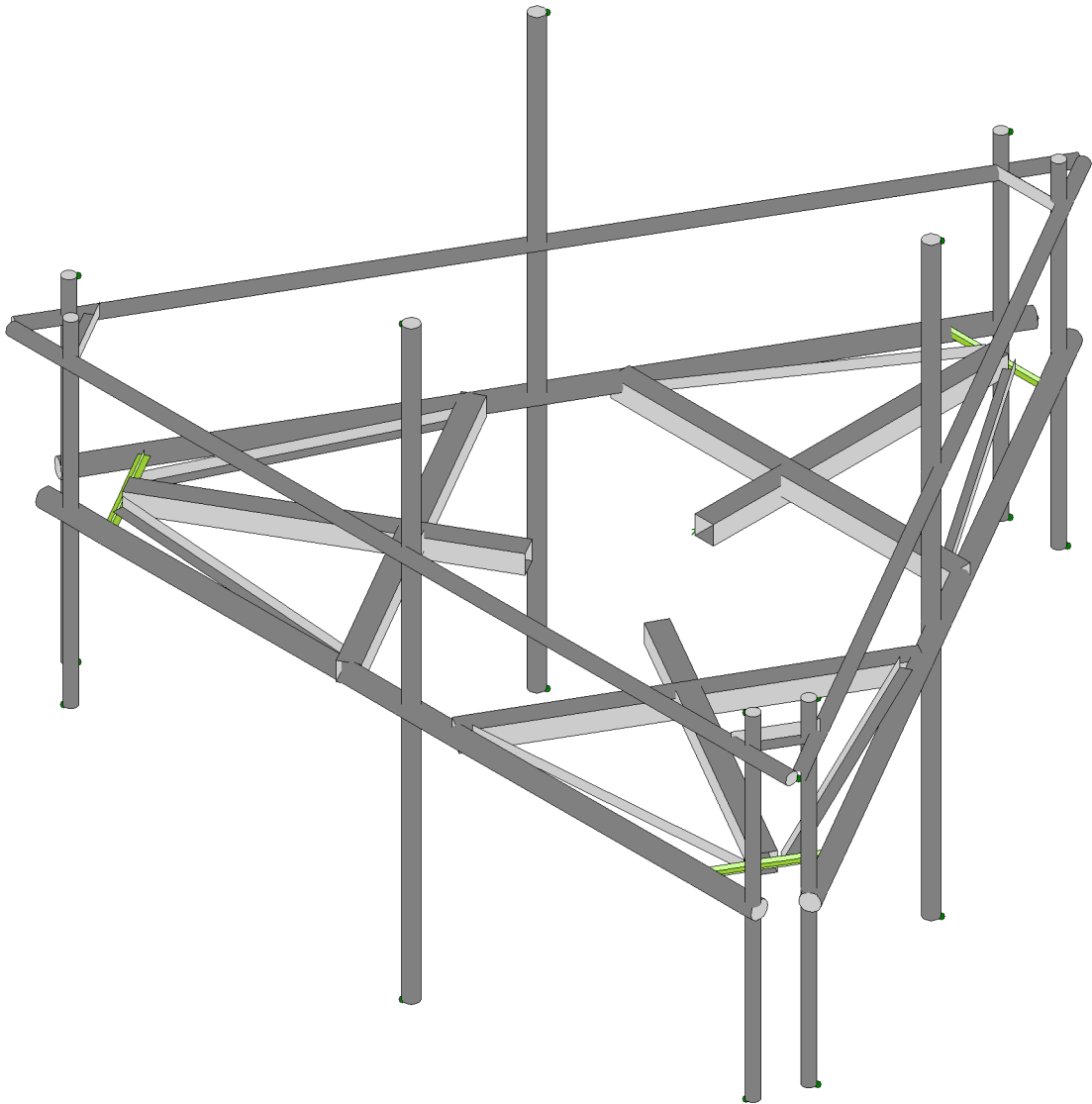
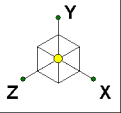
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Mounting Locations (Unit: inches)			Photos of antennas
						Vertical Distances "b _{1a} ", "b _{2a} ", "b _{3a} ", "b _{1b} "... (in.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C ₁ ", "C ₂ ", "C ₃ ", "C ₄ ", "C ₅ " (in.)	
Sector A									
Ant _{1a}									
Ant _{1b}	Antenna A	12	8	56	1/2" (1)	+16"	7	3	
Ant _{1c}									
Ant _{2a}									
Ant _{2b}	Antenna B	12	7.5	96.5	1/2" (2)	+28"	7	77	
Ant _{2c}	RRH A	17	7	20	1/2" (2)	+20"	N/A	77	
Ant _{3a}									
Ant _{3b}	Antenna C	13	9	56	1/2" (2)	+16"	8	150	
Ant _{3c}	TMA A	6	3	8	1/2" (2)	+16"	N/A	150	
Ant _{4a}									
Ant _{4b}									
Ant _{4c}									
Ant _{5a}									
Ant _{5b}									
Ant _{5c}									
Are Ant same as sector A?		Yes		Antennas on Sector B are the same as Sector A					

Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	15°		Deg	
Sector B:	175°		Deg	
Sector C:	280°		Deg	
Climbing	0°		Deg	Located at Section A
Climbing Facility	Corrosion Type:	No corrosion observed		
	Access:	Climbing path was unobstructed.		
	Condition:	N/A		

Are Ant same as sector A/B? **Same As A** **Antennas on Sector C are the same as Sector A**





Tower Engineering Solutio...

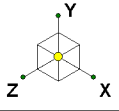
CT07824-S-SBA_MT-X_Loads Only_G

SK - 1

June 21, 2019 at 3:37 PM

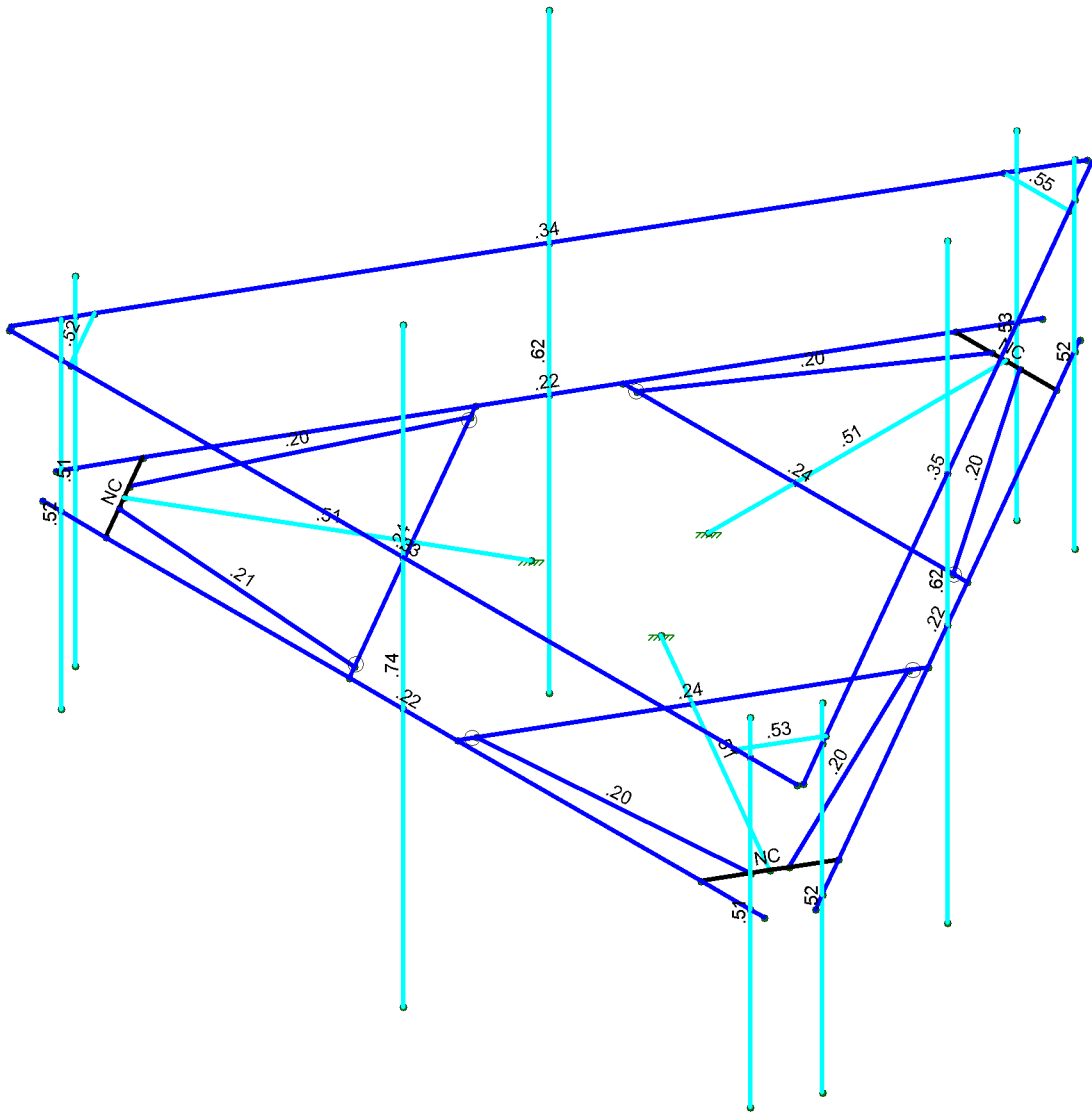
TES Project No. 78337

CT07824-S-SBA_78337_G_RISA_L...



Code Check (Env)

Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



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

Tower Engineering Solutio...		SK - 2
	CT07824-S-SBA_MT-X_Loads Only_G	June 21, 2019 at 3:38 PM
TES Project No. 78337		CT07824-S-SBA_78337_G_RISA_L...



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 HÆŨÁŨT
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>c|b|7ccfX|j|b|U|Y|g'UbX'HYa dYU|fYg'f| c|b|j|bi YXL

	Šǵǵ^	Ỹǵǵǵ	Ỹǵǵǵ	Zǵǵǵ	V^ } Åǵǵ	Ö•ǵǵ}&ǵ {} Åǵǵ Æ̃
I I	PII	GÈ J GH	€	FÈ H I	€	
I I	PII	È ^ È I	€	È G È I	€	
I I	PII	È È H H H	GÈ H H H H	È J I I	€	
I I	PII	È È	GÈ H H H H	È J I I	€	
I J	PIJ	I È I I I I I	GÈ H H H H	È J I I	€	
I €	PI€	I È H H H H	GÈ H H H H	HÈ G H I H J	€	
I F	PIF	H È F I I I	GÈ H H H H	È G È I I I G	€	
I G	PIG	È È I I H H	GÈ H H H H	È È I I G I G	€	
I H	PIH	È È	GÈ H H H H	È È F H F H	€	
I I	PII	È È F I I I	GÈ H H H H	È G È I I I G	€	
I I	PII	È È G	GÈ H H H H	HÈ J I I È	€	
I I	PII	È È	€	È È G	€	
I I	PII	GÈ F G H	€	È G È I	€	
I I	PII	È È	€	È È G	€	
I J	PIJ	È G È F G H	€	È G È I	€	
I €	PI€	È È F G F I	€	HÈ G J È È	€	
I F	PIF	È È J I J H	€	È È J I È I	€	
I G	PIG	È È I G F I	€	HÈ J I J I	€	
I H	PIH	È È H I H	€	HÈ I H È I	€	
I I	PII	I È I G F I	€	HÈ J I J I	€	
I I	PII	F È H I H	€	HÈ I H È I	€	
I I	PII	I È F G F I	€	HÈ G J È È	€	
I I	PII	HÈ J I J H	€	È È J I È I	€	

<chFc`YX'GhYY'GYW|cb'GYlg

	Šǵǵ^	Ù@ǵ ^	V } ^	Ö•ǵ } Åǵǵ c	Tǵǵ ǵǵ	Ö•ǵ } Å Æ̃ Øǵǵ Gǵ	Q' Åǵǵ a	Q: Åǵǵ a	Rǵǵǵ a	
F	T U G	U Q U O' G È	Ø ^ ǵ	U ǵ ^	Ø È H O: È O	V ǵǵǵ	F È F	F È I	F È I	G È J
G	P U Å) a Å {}	S G È Ø G È Ø	Ø ^ ǵ	U ǵ * ^ Å) * ^	Ø È I Å: È I	V ǵǵǵ	F È J	È J G	È J G	È G
H	Ø:ǵV Ø	S Q G:ǵ	Ø ^ ǵ	U ǵ * ^ Å) * ^	Ø È I Å: È I	V ǵǵǵ	È I I	È I I	È I I	È G F

<chFc`YX'GhYY'DfcdYf|Yg

	Šǵǵ^	Ø ǵ • ǵ	Ø ǵ • ǵ	Ø ^	V@ {} Å F Ø È ǵ • ǵ Æ̃ Ø ǵ } Å a Æ̃	Ù	Ø ǵ • ǵ	Ù c		
F	Ø È J G	G J È È È	F F F I I	È H	È I	È J	I €	F È	I I	F È
G	Ø È I Å: È I	G J È È È	F F F I I	È H	È I	È J	H I	F È	I I	F È
H	Ø È I G O: È È €	G J È È È	F F F I I	È H	È I	È J	I €	F È	I I	F È
I	Ø È È Å: È O U p Ø	G J È È È	F F F I I	È H	È I	È G	I G	F È	I I	F È H
I	Ø È È Å: È O U ^ & c	G J È È È	F F F I I	È H	È I	È G	I I	F È	I I	F È H
I	Ø È H O: È O	G J È È È	F F F I I	È H	È I	È J	H I	F È	I €	F È
I	Ø È I	G J È È È	F F F I I	È H	È I	È J	I €	F È	I I	F È

A Ya Vyf Dfja Ufm8 UU

	Šǵǵ^	Ø Rǵǵ c	Rǵǵ c	S Rǵǵ c	Ù cǵǵ G ^ D U ^ & cǵ } Ø U @ǵ ^	V } ^	Ö•ǵ } Åǵǵ c	Tǵǵ ǵǵ	Ö•ǵ } Å ^	
F	TF	PI	PI			U Q U O' H È	Ø ^ ǵ	U ǵ ^	Ø È H O: È O	Ø U F
G	TG	PI	PI			U Q U O' H È	Ø ^ ǵ	U ǵ ^	Ø È H O: È O	Ø U F
H	TH	PI	PJ			U Q U O' H È	Ø ^ ǵ	U ǵ ^	Ø È H O: È O	Ø U F
I	TI	PF	PFÈ			PUUI Ø I Ø I	Ø ^ ǵ	P [} ^	Ø È È Å: È O È È	Ø U F
I	TI	PG	PGF			PUUI Ø I Ø I	Ø ^ ǵ	P [} ^	Ø È È Å: È O È È	Ø U F



Ô{ }æ^ K V[, ^!Á) *ã^!ã *ÁÚ{r ç} •ÊËÏÓ
 Ô•ã) ^! K
 R áÁ { ^! K VÒÙÁÚ{ } & á { È } HÍ
 T [á^! Áæ ^ K ÔVÉi G ÈÛÈÓË T VÉY' Ñ æá ÁÚ } r' Ô

R } ^! G È Ó F J
 H K U Á T
 Ô @ & ^! á Ó K ' ' ' '

A Ya Vyf Dfja Ufm8 UU'f7 cbh7bi YXL

Sæ^!	Qá c	Rá c	SÁ c	Ü[æ^Q^*D Ü^ç] ÆÇ^	V]^	Ô•ã) Á c	Tæ:æ	Ô•ã) ÁÚ]^•	
Î	TÎ	PH	PHG		PÛÛ çl çl	Ôæ	P ^	œ œ Á: È Ë	ÛF
Ï	TÏ	BH	PH		PÛÛ çl çl	Ôæ	P ^	œ œ Á: È Ë	ÛF
Ì	TÌ	PH	PH		PÛÛ çl çl	Ôæ	P ^	œ œ Á: È Ë	ÛF
J	TJ	PHJ	PHG		PÛÛ çl çl	Ôæ	P ^	œ œ Á: È Ë	ÛF
F€	TF€	BG	PH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FF	TF€	PH	PH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FG	TFG	BG	PH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FH	TFH	BG	BG		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FI	TFI	BG	BG		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FÍ	TFÍ	BG	PH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
FÎ	TFÎ	BH	PH		PÛÛ çl çl	Ôæ	P ^	ÛÛ	ÛF
FÏ	TFÏ	BHG	PH		PÛÛ çl çl	Ôæ	P ^	ÛÛ	ÛF
FÌ	TFÌ	BH	PH		PÛÛ çl çl	Ôæ	P ^	ÛÛ	ÛF
FJ	TFJ	BHJ	PHG		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
G€	TG€	BH	BH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GF	TGF	BH	BH		ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GG	TGG	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GH	TGH	BHG	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
G	TG	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GÍ	TGÍ	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GÎ	TGÎ	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GÏ	TGÏ	BHG	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GÌ	TGÌ	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
GJ	TGJ	BHJ	BHG	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
H€	TH€	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
HF	THF	BHG	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
HG	THG	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF
HH	THH	BH	BH	HE	ÛÛ	Ôæ	P ^	ÛÛ	ÛF

A Ya Vyf 5 Xj Ub WX 8 UH

Sæ^!	Qá c	Rá c	SÁ c	Ü[æ^Q^*D Ü^ç] ÆÇ^	V]^	Ô•ã) Á c	Tæ:æ	Ô•ã) ÁÚ]^•
F	TF					Û		P ^
G	TG					Û		P ^
H	TH					Û		P ^
I	TI					Û		P ^
Í	TÍ					Û		P ^
Ì	TÌ					Û		P ^
Ï	TÏ	Ô}Û	Ô}Û			Û		P ^
Î	TÎ	Ô}Û	Ô}Û			Û		P ^
J	TJ	Ô}Û	Ô}Û			Û		P ^
F€	TF€					Û		P ^
FF	TF€					Û		P ^
FG	TFG					Û		P ^
FH	TFH					Û		P ^
FI	TFI					Û		P ^
FÍ	TFÍ					Û		P ^
FÎ	TFÎ					Û		P ^
FÏ	TFÏ					Û		P ^
FÌ	TFÌ					Û		P ^
FJ	TFJ					Û	È	P ^



Ö{ }]æ^ K V[, ^!Ä) * ä^!ä * ÄU[r'ä } • ÆSSÖ
 Ö^ ä } ^! K
 R ä Ä^ { ä^! K VÖÜÄU! [b&äp [ä] HÍ
 T [ä^! Äæ ^ K Övéi i G ÆÜÖÖE T VÉY' Š ää^ ÄU } r' Ö

R } ^ÄGÆGJ
 HÆUÄT
 Ö@&^äÄÖK''''

A Ya Vyf'Dc]bhi@UXg'f6 @ '&: '5 bhYbbU8 jkif' c bhi YXL

	T^ { ä^! Äæ^ }	Öä^&ä }	T æ } ä ä^ ää Æ Eä	Š ää } Žä Ä á
FJ	T ÚFÖE	ÿ	ÆG ÆGF	GÆ
GE	T ÚFÓ	ÿ	ÆG ÆGF	GÆ
GF	T ÚFÔ	ÿ	ÆG ÆGF	GÆ
GG	T ÚGÖE	ÿ	ÆJÆÍ	GÆ
GH	T ÚGÓ	ÿ	ÆJÆÍ	GÆ
G	T ÚGÔ	ÿ	ÆJÆÍ	GÆ

A Ya Vyf'Dc]bhi@UXg'f6 @ ' ' : '5 bhYbbUK]: fcbkL

	T^ { ä^! Äæ^ }	Öä^&ä }	T æ } ä ä^ ää Æ Eä	Š ää } Žä Ä á
F	T ÚFÖE	Z	ÆÉ ÆJH	€
G	T ÚFÖE	Z	ÆÉ ÆJH	I
H	T ÚFÓ	Z	ÆHÆG	€
I	T ÚFÓ	Z	ÆHÆG	I
Í	T ÚFÔ	Z	ÆHÆG	€
Î	T ÚFÔ	Z	ÆHÆG	I
Ï	T ÚHÖE	Z	ÆFÆÍJ	€
Ï	T ÚHÖE	Z	ÆFÆÍJ	I
J	T ÚHÓ	Z	ÆÆÍ	€
F€	T ÚHÓ	Z	ÆÆÍ	I
FF	T ÚHÔ	Z	ÆÆÍ	€
FG	T ÚHÔ	Z	ÆÆÍ	I
FH	T ÚGÖE	Z	ÆÍÆGH	Æ
FI	T ÚGÖE	Z	ÆÍÆGH	ÎÆ
FÍ	T ÚGÓ	Z	ÆJÍÆÍ	Æ
FÌ	T ÚGÓ	Z	ÆJÍÆÍ	ÎÆ
FÏ	T ÚGÔ	Z	ÆJÍÆÍ	Æ
FÌ	T ÚGÔ	Z	ÆJÍÆÍ	ÎÆ
FJ	T ÚFÖE	Z	ÆÆF	GÆ
GE	T ÚFÓ	Z	ÆÆÍ	GÆ
GF	T ÚFÔ	Z	ÆÆÍ	GÆ
GG	T ÚGÖE	Z	ÆHÆGH	GÆ
GH	T ÚGÓ	Z	ÆHÆÍJ	GÆ
G	T ÚGÔ	Z	ÆHÆÍJ	GÆ

A Ya Vyf'Dc]bhi@UXg'f6 @ ' (: '5 bhYbbUK]: fcbkL

	T^ { ä^! Äæ^ }	Öä^&ä }	T æ } ä ä^ ää Æ Eä	Š ää } Žä Ä á
F	T ÚFÖE	Z	ÆÍÆJF	€
G	T ÚFÖE	Z	ÆÍÆJF	I
H	T ÚFÓ	Z	ÆGÆÍJ	€
I	T ÚFÓ	Z	ÆGÆÍJ	I
Í	T ÚFÔ	Z	ÆGÆÍJ	€
Î	T ÚFÔ	Z	ÆGÆÍJ	I
Ï	T ÚHÖE	Z	ÆHÆÆ	€
Ï	T ÚHÖE	Z	ÆHÆÆ	I
J	T ÚHÓ	Z	ÆÆÍF	€
F€	T ÚHÓ	Z	ÆÆÍF	I
FF	T ÚHÔ	Z	ÆÆÍF	€
FG	T ÚHÔ	Z	ÆÆÍF	I
FH	T ÚGÖE	Z	ÆÆÆHÍ	Æ
FI	T ÚGÖE	Z	ÆÆÆHÍ	ÎÆ
FÍ	T ÚGÓ	Z	ÆGÍJ	Æ



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 R a ^ { a ^
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K V [, ^ / Ô) * a ^ a i a * Á [r ç } • ÉŠŠÓ
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 K VÒÙÁÚ[b & a b [È] H I
 K ÔVÉÌ G ÈÙÈÚÓÈ T VÉY' Š æ æ Á } r ' Ô

R } ^ G F É G F J
 H K U Á Ú T
 Ô @ & ^ a Á Ô K ' ' ' '

A Ya Vyf'8 JgfljVi hYX' @ UXg'f6 @ '%: 'Gfi Wñ fy'K]: fcbHfT cbljbi YXL

	T \ { a ^ / a æ ^	Öä^&çj	ÚcæóÁ æ } æ á ^ ŽaDçÈÈ) áÁ æ } æ á ^ ŽaDçÈÈ ÚcæóÁ Š &æj } ŽcÁ á	ÚcæóÁ Š &æj } ŽcÁ á	Ò) á Á Š &æj } ŽcÁ á	
FG	T FÍ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
FH	T FÎ	ÚZ	È È J F	È È J F	€	Ä FEE
FI	T FÏ	ÚZ	È È J F	È È J F	€	Ä FEE
FÍ	T FÌ	ÚZ	È È J F	È È J F	€	Ä FEE
FÎ	T ÚFOE	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
FÏ	T ÚGOE	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
FÌ	T ÚHOE	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
FJ	T ÚFÓ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
G€	T ÚGÓ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
GF	T ÚHÓ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
GG	T ÚFÔ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
GH	T ÚGÔ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
G	T ÚHÔ	ÚZ	È È JÌ	È È JÌ	€	Ä FEE
Ĝ	T Ĝ	ÚZ	È È JG	È È JG	€	Ä FEE
G̃	T G̃	ÚZ	È È JG	È È JG	€	Ä FEE
Ḡ	T H̄	ÚZ	È È JG	È È JG	€	Ä FEE
G̅	T H̅	ÚZ	È È JG	È È JG	€	Ä FEE
Ğ	T H̆	ÚZ	È È JG	È È JG	€	Ä FEE
Ġ	T Ḣ	ÚZ	È È JG	È È JG	€	Ä FEE
H€	T HH	ÚZ	È È JG	È È JG	€	Ä FEE

A Ya Vyf'8 JgfljVi hYX' @ UXg'f6 @ '% : 'Gfi Wñ fy'K 'GjYXL

	T \ { a ^ / a æ ^	Öä^&çj	ÚcæóÁ æ } æ á ^ ŽaDçÈÈ) áÁ æ } æ á ^ ŽaDçÈÈ ÚcæóÁ Š &æj } ŽcÁ á	ÚcæóÁ Š &æj } ŽcÁ á	Ò) á Á Š &æj } ŽcÁ á	
F	T F	ÚY	F G H F	F G H F	€	Ä FEE
G	T G	ÚY	F G H F	F G H F	€	Ä FEE
H	T H	ÚY	F G H F	F G H F	€	Ä FEE
I	T I	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
Í	T Í	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
Î	T Î	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
Ï	T Ï	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
Ì	T Ì	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
J	T J	ÚY	G H Ì Ì	G H Ì Ì	€	Ä FEE
F€	T FH	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FF	T FI	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FG	T FÍ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FH	T FÎ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FI	T FÏ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FÍ	T FÌ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FÎ	T ÚFOE	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FÏ	T ÚGOE	ÚY	F G H F F	F G H F F	€	Ä FEE
FÌ	T ÚHOE	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
FJ	T ÚFÓ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
G€	T ÚGÓ	ÚY	F G H F F	F G H F F	€	Ä FEE
GF	T ÚHÓ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
GG	T ÚFÔ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
GH	T ÚGÔ	ÚY	F G H F F	F G H F F	€	Ä FEE
G	T ÚHÔ	ÚY	Ì È Í H	Ì È Í H	€	Ä FEE
Ĝ	T Ĝ	ÚY	FF È GH	FF È GH	€	Ä FEE
G̃	T G̃	ÚY	FF È GH	FF È GH	€	Ä FEE
Ḡ	T H̄	ÚY	FF È GH	FF È GH	€	Ä FEE
G̅	T H̅	ÚY	FF È GH	FF È GH	€	Ä FEE
Ğ	T H̆	ÚY	FF È GH	FF È GH	€	Ä FEE
Ġ	T Ḣ	ÚY	FF È GH	FF È GH	€	Ä FEE



Ô{ }] æ ^ K V [, ^ / Ô) * ä ^ ^ i ä * Ä U [r ç } • Æ S Ó
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 R ä Ä ^ { a ^ K V Ò Ü Ä U [b & ä p [Æ] H I
 T [ä ^ / ä æ ^ K Ò V È i G È Æ Ü Ö C E T V È Y ' Š æ æ Ä U } r ' Ö

R ^ ^ G F È C E F J
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 Ô @ & ^ ä Ä Ö K ' ' ' '

A Ya VYf'8]g|f]Vi hYX' @ UXg'f6 @ '% : 'Gfi Wñ fY'K 'G]XYL'f7 cb]bi YXL

	T ^ { ä ^ / ä æ ^ }	Ö ä ^ & ç }	Ü c æ Ö Ä æ } æ ä ^ ä p ç Æ Ö) ä Ä æ } æ ä ^ ä p ç Æ Ü c æ Ö Š & æ }	Ž ä Ä á	Ò) ä Š & æ }	Ž ä Ä á
HE	THH	UY	FFË GH	FFË GH	€	Ä FEE

A Ya VYf'8]g|f]Vi hYX' @ UXg'f6 @ '% : 'Gfi Wñ fY'K]G]XYL

	T ^ { ä ^ / ä æ ^ }	Ö ä ^ & ç }	Ü c æ Ö Ä æ } æ ä ^ ä p ç Æ Ö) ä Ä æ } æ ä ^ ä p ç Æ Ü c æ Ö Š & æ }	Ž ä Ä á	Ò) ä Š & æ }	Ž ä Ä á
F	TF	UY	Ï È Ì	Ï È Ì	€	Ä FEE
G	TG	UY	Ï È Ì	Ï È Ì	€	Ä FEE
H	TH	UY	Ï È Ì	Ï È Ì	€	Ä FEE
I	TI	UY	F È Ì È	F È Ì È	€	Ä FEE
Í	TÍ	UY	F È Ì È	F È Ì È	€	Ä FEE
Î	TÎ	UY	F È Ì È	F È Ì È	€	Ä FEE
Ì	TÌ	UY	F È Ì È	F È Ì È	€	Ä FEE
J	TJ	UY	F È Ì È	F È Ì È	€	Ä FEE
F€	TFH	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
FF	TFI	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
FG	TFÍ	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
FH	TFÏ	UY	Ï È F	Ï È F	€	Ä FEE
FI	TFÌ	UY	Ï È F	Ï È F	€	Ä FEE
FÍ	TFÍ	UY	Ï È F	Ï È F	€	Ä FEE
FÎ	TUFÖE	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
FÏ	TUÇÖE	UY	Ï È Ì	Ï È Ì	€	Ä FEE
FÌ	TUHÖE	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
FJ	TUFÓ	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
G€	TUGÓ	UY	Ï È Ì	Ï È Ì	€	Ä FEE
GF	TUHÓ	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
GG	TUFÓ	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
GH	TUGÓ	UY	Ï È Ì	Ï È Ì	€	Ä FEE
G	TUHÓ	UY	Ï È JÌ	Ï È JÌ	€	Ä FEE
GÌ	TGÌ	UY	Ï È JG	Ï È JG	€	Ä FEE
GÍ	TGÍ	UY	Ï È JG	Ï È JG	€	Ä FEE
GÎ	THE	UY	Ï È JG	Ï È JG	€	Ä FEE
GÏ	THF	UY	Ï È JG	Ï È JG	€	Ä FEE
GJ	THG	UY	Ï È JG	Ï È JG	€	Ä FEE
HE	THH	UY	Ï È JG	Ï È JG	€	Ä FEE

A Ya VYf'8]g|f]Vi hYX' @ UXg'f6 @ '% : '6 @ ' - 'HfUbg]Ybh5 fYU' @ UXgk

	T ^ { ä ^ / ä æ ^ }	Ö ä ^ & ç }	Ü c æ Ö Ä æ } æ ä ^ ä p ç Æ Ö) ä Ä æ } æ ä ^ ä p ç Æ Ü c æ Ö Š & æ }	Ž ä Ä á	Ò) ä Š & æ }	Ž ä Ä á
F	TF	ÿ	È È H	È È FJ	€	F È G H
G	TF	ÿ	È È FJ	È È FF	F È G H	G È Ì
H	TF	ÿ	È È FF	È È JG	G È Ì	H È Í
I	TF	ÿ	È È JG	È È Í G	H È Í	Í È H H
Í	TF	ÿ	È È Í G	È È H	Í È H H	Ï È FÌ
Î	TH	ÿ	È È H	È È Í G	Ï È FÌ	Ï È
Ì	TH	ÿ	È È Í G	È È GF	Ï È	Ì È Ì H
Ì	TH	ÿ	È È GF	È È FF	Ì È Ì H	F È G Ì
J	TH	ÿ	È È FF	È È G	F È G Ì	F È Ì
F€	TH	ÿ	È È G	È È H	F È Ì	F È H H
FF	TI	ÿ	È È Ì	È È Ì	F È Ì	G È G
FG	TI	ÿ	È È Ì	È È FÌ	G È G	H È J
FH	TI	ÿ	È È FÌ	È È Ì G	H È J	H È F
FI	TI	ÿ	È È Ì G	È È Ì	H È F	Ì È F



Ô{ }a^ K V[, ^/A) * a^i a * ÁU[r a) • ÉSSÔ
 Ô• a} ^ K
 R a A^ { a^ K VÔUÁU[b & a b [É] H I
 T [a^ / a a ^ K ÔVÉi G ÉUÉJÓE T VÉY' Š @ a • ÁU} r' Ô

R } ^ A G É G E F J
 H K U Á T
 Ô @ & ^ a Á O K ' ' ' '

9bj YcdYA Ya Vyf GYWJcb: cfWg f7 cbh7bi YXL

T^ { a^	U^ &	Or a a a	SÔ	^ ÁU @ a a a	SÔ	: ÁU @ a a a	SÔ	V [' ' ^ Z É É SÔ	^ É Á [{ ^ É É SÔ	: É Á [{ ^ É É SÔ							
G€		{ a	€	H	É	Í	É F	Ì	€	Í	€	I	€	H			
GF	TÚFÔ	F { a	FÍÉÍ	Í	FÍÉÍ	F	FHÉÍ	F	H	ÉFG	F	ÉÉÍ	H	€	F		
GG		{ a	ÍÉ	H	ÉFÍ	G	ÉFHÉJH	I	ÉFG	G	ÉÉÍ	Í	€	F			
GH		G { a	ÍÍÉÍ	F	ÍÍÉÍ	JH	Í	GÉÍÍ	F	ÉGG	F	ÉGH	H	ÉG	F		
GI		{ a	ÉÍÉÍ	G	ÉÉÍ	JF	G	ÉHGÉÍ	G	ÉÉÍ	G	ÉÉÍ	Í	ÉÉG	Í		
GÍ		H { a	ÉÍÉÍ	H	FÍÉÍ	GG	G	FÍÉÍ	I	€	Í	ÉJ	H	ÉÍ	G		
GÍ		{ a	ÉGGÉ	H	ÉÉÍ	ÉH	F	ÉÍÉJF	H	€	F	ÉJ	I	ÉÍ	F		
Gİ		I { a	ÉÉÍ	H	FÍÉÍ	JH	G	FÍÉÍ	HG	I	€	Í	ÉFH	H	ÉFH	G	
Gì		{ a	ÉÉÍ	JG	Í	ÉÉÍ	ÉÍ	F	ÉÍÉÍ	J	H	€	F	ÉFH	I	ÉFH	F
GJ		Í { a	€	Í	ÉH	Í	ÉÍ	F	I	€	Í	€	I	€	H		
G€		{ a	€	I	ÉÉÍ	F	ÉÉÍ	I	€	F	€	H	€	I			
GF	TÚGÔ	F { a	€	F	ÉFÍ	F	GÉÍ	F	Í	€	F	€	F	€	F		
GG		{ a	€	F	ÉFÍ	G	ÉGÍ	I	€	G	€	F	€	F			
GH		G { a	ÍÉÉÍ	Í	HÍÉÍ	J	F	ÍHÉÍ	H	€	F	ÉÍ	H	ÉH	G		
GI		{ a	FÍÉÍ	F	ÉÍÉÍ	J	G	ÉHÉÍ	I	€	G	ÉÍ	I	ÉH	F		
GÍ		H { a	FÉÍ	F	ÍFÉÍ	F	I	GÉÍ	H	€	H	FÉÍ	H	É	G		
GÍ		{ a	GÉÍ	H	ÉGÉÍ	G	ÉÍÉÍ	H	I	€	I	ÉÉÍ	I	ÉJG	F		
Gİ		I { a	ÉÉÍ	I	HÉÍ	G	HÉÍ	I	€	G	€	H	€	I	G		
Gì		{ a	ÉÉÍ	G	Í	ÉÉÍ	F	ÉÉÍ	J	H	€	F	ÉJ	I	ÉÉÍ	F	
GJ		Í { a	€	I	ÉJ	G	ÉH	I	€	G	€	I	€	H			
G€		{ a	€	I	ÉÉÍ	F	ÉÉÍ	G	I	€	F	€	H	€	I		
GF	TÚHÔ	F { a	GÉÍ	Í	FÉÍ	F	FÍÉÍ	H	ÉFH	F	ÉÉÍ	F	€	F			
GG		{ a	ÍÉHG	J	ÉGÉÍ	G	ÉÍÉÍ	I	ÉFH	G	ÉÉÍ	Í	€	F			
GH		G { a	ÍJÉÍ	H	ÍÉÍ	I	GÉÍ	H	H	€	I	ÉFF	F	ÉJ	I		
GI		{ a	ÉÍÉÍ	I	ÉÍÉÍ	Í	ÉÍÉÍ	J	I	€	H	ÉJ	Í	ÉÉÍ	H		
GÍ		H { a	ÉFÉÍ	F	FÍÉÍ	H	G	FÍÉÍ	I	€	G	É	H	ÉÍ	G		
GÍ		{ a	ÉGÉÍ	Í	ÉÉÍ	Í	F	ÉÉÍ	J	H	€	Í	ÉG	I	ÉÉÍ	F	
Gİ		I { a	ÉÉÍ	F	FÍÉÍ	G	FÍÉÍ	J	I	€	G	ÉFH	H	ÉFH	G		
Gì		{ a	ÉÉÍ	JG	Í	ÉÉÍ	G	F	ÉÉÍ	F	H	€	Í	ÉFH	I	ÉFH	F
GJ		Í { a	€	Í	ÉÍ	G	ÉH	I	€	G	€	G	€	I			
G€		{ a	€	G	ÉÉÍ	Í	ÉH	I	€	Í	€	Í	€	H			
GF	TG	F { a	ÍJÉÍ	I	ÍJÉÍ	Í	HÉÍ	H	€	G	ÉÉÍ	I	€	J	F		
GG		{ a	ÉÍÉÍ	H	ÍÉÍ	G	ÉGÉÍ	I	€	Í	ÉÉÍ	I	€	F	G		
GH		G { a	ÍÉÉÍ	I	FÍÉÍ	F	Í	FÍÉÍ	I	€	G	ÉÉÍ	G	€	I	H	
GI		{ a	ÉÍÉÍ	H	ÉÉÍ	G	ÉÉÍ	I	€	Í	ÉÉÍ	F	€	H	I		
GÍ		H { a	ÍFÉÍ	I	ÉÉÍ	F	FÉÍ	H	I	€	G	ÉF	G	€	I	H	
GÍ		{ a	ÉÍÉÍ	F	ÉGÉÍ	Í	FÉÍ	H	€	Í	ÉÉÍ	F	€	Í	I		
Gİ		I { a	ÍGÉÍ	I	ÉFÉÍ	H	F	GÉÍ	I	€	G	ÉFF	I	€	G	Í	
Gì		{ a	ÉÍÉÍ	H	ÉJÉÍ	Í	ÉHÉÍ	I	H	€	Í	ÉG	H	ÉG	I		
GJ		Í { a	ÍHÉÍ	J	ÍJÉÍ	H	F	HÉÍ	JH	I	€	G	ÉFJ	I	ÉÍ	Í	
G€		{ a	ÉJÉÍ	H	ÉÍÉÍ	H	Í	ÉÉÍ	H	H	€	Í	ÉÉÍ	I	€	I	
GF	TG	F { a	ÍFÉÍ	G	ÍFÉÍ	H	Í	GÉÍ	H	€	Í	ÉÉÍ	G	€	Í	I	
GG		{ a	ÉÍÉÍ	F	ÉG	I	ÉÍÉÍ	I	€	G	ÉÉÍ	G	Í	ÉÉÍ	G		
GH		G { a	ÍGÉÍ	H	FJÉÍ	Í	Í	FÍÉÍ	JG	Í	€	Í	ÉFH	H	€	F	
GI		{ a	ÉÍÉÍ	I	ÉÉÍ	J	I	ÉÍ	J	I	€	G	ÉÉÍ	I	ÉÉÍ	G	
GÍ		H { a	ÍHÉÍ	F	ÍÉÍ	H	FÍÉÍ	I	€	Í	ÉG	H	€	J	I		
GÍ		{ a	ÉÍÉÍ	F	ÉGÉÍ	Í	ÉÉÍ	F	H	€	G	ÉÉÍ	I	€	H		
Gİ		I { a	ÍGÉÍ	H	ÉÉÍ	H	GJÉÍ	I	€	Í	ÉÉÍ	H	€	Í	Í		
Gì		{ a	ÉJÉÍ	F	ÉFÉÍ	H	Í	ÉFÉÍ	H	€	G	ÉÉÍ	I	€	G	H	
GJ		Í { a	ÍGÉÍ	H	ÉGÉÍ	JF	H	Í	€	Í	ÉÉÍ	G	€	Í	Í		
G€		{ a	ÉÉÍ	G	ÉJÉÍ	H	Í	ÉÉÍ	I	H	€	G	ÉÉÍ	J	Í	€	H
GF	THE	F { a	ÍJÉÍ	G	ÍFÉÍ	Í	ÍÉÍ	J	F	€	H	ÉÉÍ	G	€	Í	I	



Ô[{]æ ^ K V[, ^]À) * ā^iā * Û[]c} • ÆSÔ
 Ô• a) ^i K
 Rā^ { a^i K VÒÙÀU[] & a[] Æi H
 T [a^/æ ^ K ÔVéi G ÆÛÛÛÛ T VËY' § æ• Û}] r' Ô

R } ^GÆGJ
 HËUÁT
 Ô@&^áÀ'K''''

9bj YcdY>c]bh8]gd`UWw Ybly f' cbi]bi YXL

	Rāc	Yāá	SÔ	Yāá	SÔ	Zāá	SÔ	YÁU[]c}) ÆSÔ	YÁU[]c}) ÆSÔ	ZÁU[]c}) ÆSÔ		
J	pí	{ æ	ÆFG	I	ÆI	I	ÆFJ	H	I ÆI ^ ÆH	G I ÆG ^ ÆH	I GÆ I I ^ ÆH	I
F€		{ ā	ÆFG	H	ÆG	I	ÆEG	I	ÆÛJ ^ ÆH	F ÆEG ^ ÆH	H ÆÛ I ^ ÆH	H
FF	pí	{ æ	ÆE	I	ÆJF	I	ÆGF	H	I ÆI ^ ÆH	G I ÆG ^ ÆH	I HÆ I I ^ ÆH	I
FG		{ ā	ÆE	H	ÆHG	I	ÆGF	I	ÆE I ^ ÆH	F ÆE H ^ ÆH	H ÆE I ^ ÆH	H
FH	pí	{ æ	ÆH	H	ÆE	G	ÆEH	G	GÆ J I ^ ÆH	G HÆ F G ^ ÆH	I I Æ I ^ ÆH	I
FI		{ ā	ÆH	I	ÆH	I	ÆEG	F	ÆE I I ^ ÆH	I ÆE I ^ ÆH	H ÆE I ^ ÆH	H
Fí	pí	{ æ	ÆH	H	ÆE	G	ÆEH	G	GÆ I J ^ ÆH	G HÆ G ^ ÆH	I I Æ I I ^ ÆH	I
Fì		{ ā	ÆH	I	ÆH	I	ÆEG	F	ÆE I I ^ ÆH	I ÆE I I ^ ÆH	H ÆE I I ^ ÆH	H
Fî	pJ	{ æ	ÆE	I	ÆJH	H	ÆGF	I	I ÆI I ^ ÆH	G I ÆH ^ ÆH	I I Æ I I ^ ÆH	I
Fì		{ ā	ÆE	H	ÆHG	I	ÆGF	H	ÆE I I ^ ÆH	F ÆE G ^ ÆH	H ÆE G ^ ÆH	H
FJ	pF€	{ æ	ÆE	I	ÆI	H	ÆFí	I	I ÆJ I ^ ÆH	G I ÆI I ^ ÆH	I I Æ I I ^ ÆH	I
G€		{ ā	ÆE	H	ÆH	I	ÆFí	H	ÆE F I ^ ÆH	F ÆE F ^ ÆH	H ÆE F ^ ÆH	H
GF	pFF	{ æ	ÆE	I	ÆJ	I	ÆFí	H	I ÆI I ^ ÆH	G I ÆI F ^ ÆH	I GÆ H ^ ÆH	I
GG		{ ā	ÆE	H	ÆH	I	ÆFí	I	ÆE H I ^ ÆH	F ÆE I I ^ ÆH	H ÆE I ^ ÆH	I
GH	pFG	{ æ	ÆH	H	ÆI	G	ÆEG	G	GÆ H	G FÆ I I ^ ÆH	I I Æ I I ^ ÆH	I
G		{ ā	ÆH	I	ÆI	I	ÆEG	F	ÆE I I ^ ÆH	I ÆE I I ^ ÆH	H ÆE I I ^ ÆH	H
G	pFH	{ æ	ÆFG	I	ÆU	H	ÆFG	I	I ÆJ I ^ ÆH	G I ÆI I ^ ÆH	I I Æ I I ^ ÆH	I
G		{ ā	ÆFG	H	ÆI	I	ÆFG	H	ÆE F I ^ ÆH	F ÆE F ^ ÆH	H ÆE F ^ ÆH	H
G	pFI	{ æ	ÆFF	I	ÆI	F	ÆE	G	FÆ I G ^ ÆG	G GÆ I G ^ ÆH	H GÆ I F ^ ÆH	J
G		{ ā	ÆFF	H	ÆI	I	ÆE	F	ÆE I I ^ ÆH	F ÆE F I ^ ÆH	I ÆE G ^ ÆH	H
GJ	pFí	{ æ	ÆFF	I	ÆI	F	ÆE	G	FÆ I G ^ ÆG	G GÆ F I ^ ÆH	H FÆ G ^ ÆH	I
H€		{ ā	ÆFF	H	ÆI	I	ÆE	F	ÆE I G ^ ÆH	F ÆE I G ^ ÆH	I ÆE F ^ ÆH	H
HF	pFì	{ æ	ÆFG	I	ÆH	I	ÆFG	H	I ÆI I ^ ÆH	G I ÆI F ^ ÆH	I GÆ H ^ ÆH	I
HG		{ ā	ÆFG	H	ÆI	I	ÆFG	I	ÆE H I ^ ÆH	F ÆE I I ^ ÆH	H ÆE I ^ ÆH	I
HH	pFî	{ æ	ÆE	F	ÆI	I	ÆFí	H	I ÆI I ^ ÆH	G I ÆI F ^ ÆH	I GÆ H ^ ÆH	I
HI		{ ā	ÆE	G	ÆI	I	ÆFí	I	ÆE H I ^ ÆH	F ÆE I I ^ ÆH	H ÆE I ^ ÆH	I
Hí	pFí	{ æ	ÆFí	H	ÆF	I	ÆF	H	HÆ I ^ ÆH	I FÆ U ^ ÆH	I I Æ F I ^ ÆH	I
Hì		{ ā	ÆFí	I	ÆFí	I	ÆF	I	ÆE I G ^ ÆH	H ÆE I H ^ ÆH	H ÆE I J ^ ÆH	H
Hî	pFJ	{ æ	ÆFH	H	ÆH	I	ÆFF	H	FÆ I I ^ ÆH	G GÆ I ^ ÆH	F I Æ H ^ ÆH	I
Hì		{ ā	ÆFH	I	ÆH	I	ÆFF	I	ÆE H I ^ ÆH	I ÆE F I ^ ÆH	G ÆE I I ^ ÆH	H
HJ	pG€	{ æ	ÆH	H	ÆI	G	ÆEG	G	GÆ H	G FÆ I I ^ ÆH	I I Æ I I ^ ÆH	I
I€		{ ā	ÆH	I	ÆI	I	ÆEG	F	ÆE I I ^ ÆH	I ÆE I I ^ ÆH	H ÆE I I ^ ÆH	H
IF	pG	{ æ	ÆH	H	ÆI	G	ÆEG	G	GÆ H	G FÆ I I ^ ÆH	I I Æ I I ^ ÆH	I
IG		{ ā	ÆH	I	ÆI	I	ÆEG	F	ÆE I I ^ ÆH	I ÆE I I ^ ÆH	H ÆE I I ^ ÆH	H
IH	pGG	{ æ	ÆFH	H	ÆH	H	ÆFF	I	FÆ I I ^ ÆH	G GÆ J I ^ ÆH	G I Æ I F ^ ÆH	I
Iì		{ ā	ÆFH	I	ÆH	I	ÆFF	H	ÆE H I ^ ÆH	I ÆE I I ^ ÆH	F ÆE H I ^ ÆH	H
Ií	pGH	{ æ	ÆFI	H	ÆF	H	ÆF	I	HÆ G ^ ÆH	H FÆ G ^ ÆH	I I Æ I I ^ ÆH	I
Iì		{ ā	ÆFI	I	ÆFí	I	ÆF	H	ÆE I H ^ ÆH	I ÆE I I ^ ÆH	H ÆE I ^ ÆH	H
Iî	pG	{ æ	ÆE	G	ÆF	H	ÆFí	I	I ÆJ I ^ ÆH	G I ÆI I ^ ÆH	I I Æ I I ^ ÆH	I
Iì		{ ā	ÆE	F	ÆI	I	ÆFí	H	ÆE F I ^ ÆH	F ÆE F ^ ÆH	H ÆE F ^ ÆH	H
IJ	pG	{ æ	ÆH	H	ÆF	H	ÆI	G	I ÆI G ^ ÆH	G HÆ G ^ ÆH	F I Æ H ^ ÆH	I
I€		{ ā	ÆHG	I	ÆG	I	ÆI	H	F ÆE I I ^ ÆH	F ÆE J ^ ÆH	G ÆE I G ^ ÆH	H
I F	pG	{ æ	ÆHF	H	ÆE	I	ÆI	G	I ÆI I ^ ÆH	G HÆ J I ^ ÆH	G I Æ J I ^ ÆH	I
I G		{ ā	ÆHF	I	ÆG	I	ÆI	H	F ÆE I I ^ ÆH	F ÆE J G ^ ÆH	F ÆE I I ^ ÆH	H
I H	pG	{ æ	ÆHG	H	ÆG	I	ÆI	G	I ÆI I ^ ÆH	G GÆ I ^ ÆH	I I Æ I G ^ ÆH	I
Iì		{ ā	ÆH	I	ÆG	I	ÆI	F	ÆE H I ^ ÆH	F ÆE H I ^ ÆH	H ÆE I I ^ ÆH	H
Ií	pG	{ æ	ÆEJ	H	ÆI G	G	ÆI	G	I ÆI G ^ ÆH	G HÆ I H ^ ÆH	H I Æ I H ^ ÆH	I
Iì		{ ā	ÆFG	I	ÆH	I	ÆI	G	F ÆE H I ^ ÆH	F ÆE H I ^ ÆH	I ÆE I G ^ ÆH	H
Iì	pGJ	{ æ	ÆFI	H	ÆH	G	ÆI	G	I ÆI G ^ ÆH	G HÆ J I ^ ÆH	H I Æ E ^ ÆH	I
Iì		{ ā	ÆE	I	ÆHG	I	ÆI	G	F ÆE G ^ ÆH	F ÆE F I ^ ÆH	I ÆE I J ^ ÆH	H
I J	pH€	{ æ	ÆH	H	ÆFJ	H	ÆI	G	I ÆI H ^ ÆH	G HÆ I ^ ÆH	I I Æ E ^ ÆH	I
I€		{ ā	ÆH	I	ÆG	I	ÆI	G	F ÆE I I ^ ÆH	F ÆE I I ^ ÆH	H ÆE F I ^ ÆH	H



Ō[{]ə̃^ K V[, ^i/Ō) *ā^iā *Ā[{ cā } •ĒŠŌ
 Ō^•ā) ^i K
 RāĀ^ { a: K VŌUĀ[{ b&ā } Ēi H
 T[a^/ā^ ^ K ŌVēi G ĒĒŌCE T VĒY' Š āā^Ā[{ r' Ō

R' } ^GĒGēJ
 HKUĀT
 Ō@&^āĀ'K''''

9bj YcdY>c]bh8]gd'UWā Ybly f'Y cb]bi YXL

	R ā c	Ÿā á	SŌ	Ÿā á	SŌ	Zā á	SŌ	ŸĀ[{ cā }] ĀĒŠŌ	ŸĀ[{ cā }] ĀĒŠŌ	ZĀ[{ cā }] ĀĒŠŌ				
FFH	pīi	{ aē	ĒFG	I	ĒI H	I	ĒFI	H	I ĒI Ā ĒH	G	I ĒG Ā ĒH	I	GĒ I Ā ĒH	I
FFI		{ ā	ĒFG	H	Ē FG	I	ĒFI	I	ĒĒJ Ā ĒH	F	Ē ĒG Ā ĒH	H	Ē Ē I Ā ĒH	H
FFĪ	pīi	{ aē	ĒĒI	I	Ē I	I	ĒEG	H	I Ē Ā ĒH	G	I ĒG Ā ĒH	I	HĒ I Ā ĒH	I
FFĪ		{ ā	ĒĒI	H	Ē FI	I	ĒEG	I	ĒĒI Ā ĒH	F	Ē ĒH Ā ĒH	H	Ē Ē Ā ĒH	H
FFĪ	pīJ	{ aē	ĒFI	H	Ē I	I	ĒEJ	H	HĒJ Ā ĒH	I	GĒ I Ā ĒH	F	I ĒFI Ā ĒH	I
FFĪ		{ ā	ĒFI	I	Ē J	I	ĒEJ	I	Ē ĒI Ā ĒH	H	ĒĒFI Ā ĒH	G	Ē ĒHĀ ĒH	H
FFJ	pī€	{ aē	ĒHH	H	ĒJ	G	ĒEH	G	GĒJ Ā ĒH	G	HĒFF Ā ĒH	I	I ĒI Ā ĒH	I
FOē		{ ā	ĒHI	I	Ē GG	I	ĒEG	F	Ē ĒI Ā ĒH	I	ĒĒG Ā ĒH	H	Ē ĒĀ ĒH	H
FGF	pīF	{ aē	ĒHH	H	ĒJ	G	ĒEH	G	GĒ Ā ĒH	G	HĒ ĒH	I	I ĒI Ā ĒH	I
FGG		{ ā	ĒHH	I	Ē FI	I	ĒEG	F	Ē ĒI Ā ĒH	I	ĒĒI Ā ĒH	H	Ē ĒI Ā ĒH	H
FGH	pīG	{ aē	ĒFI	H	Ē I	H	ĒEJ	I	HĒI Ā ĒH	H	GĒ Ā ĒH	G	JĒ FI Ā ĒH	I
FG		{ ā	ĒFI	I	Ē J	I	ĒEJ	H	Ē ĒI Ā ĒH	I	ĒĒFI Ā ĒH	F	Ē ĒĀ ĒH	H
FGĪ	pīH	{ aē	ĒĒI	I	ĒJ	H	ĒGF	I	I ĒI Ā ĒH	G	I ĒH Ā ĒH	I	I ĒI Ā ĒH	I
FGĪ		{ ā	ĒĒI	H	Ē J	I	ĒEG	H	Ē ĒI Ā ĒH	F	Ē ĒG Ā ĒH	H	ĒĒG Ā ĒH	H
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EXHIBIT 9

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11497A

CT497_SBA South Windsor
151 Sand Hill Rd
South Windsor, CT 06074

June 14, 2019

Transcom Engineering Project Number: 737001-0134

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.59 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 14, 2019

T-MOBILE

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

Emissions Analysis for Site: **CT11497A – CT497_SBA South Windsor**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **151 Sand Hill Rd, South Windsor, 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 MHz & 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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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.

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CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **151 Sand Hill Rd, South Windsor, 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
GSM	1900 MHz (PCS)	1	15
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

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The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 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	160
A	2	Ericsson AIR21 B2A/B4P	160
A	3	RFS APXVAARR24_43-U-NA20	160
B	1	Ericsson AIR32 B66A / B2A	160
B	2	Ericsson AIR21 B2A/B4P	160
B	3	RFS APXVAARR24_43-U-NA20	160
C	1	Ericsson AIR32 B66A / B2A	160
C	2	Ericsson AIR21 B2A/B4P	160
C	3	RFS APXVAARR24_43-U-NA20	160

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 **2.12 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **200 feet of 1-5/8” 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 (dBi)	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	1.63
Antenna A2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	2	55	1,538.69	0.23
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.88
Sector A Composite MPE%							2.74
Antenna B1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	1.63
Antenna B2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	2	55	1,538.69	0.23
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.88
Sector B Composite MPE%							2.74
Antenna C1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	1.63
Antenna C2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	2	55	1,538.69	0.23
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.88
Sector C Composite MPE%							2.74

Table 3: T-MOBILE Emissions Levels

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

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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	2.74 %
Town	0.77 %
Sprint	0.83 %
AT&T	1.79 %
MetroPCS	0.22 %
Clearwire	0.09 %
Nextel	0.28 %
Verizon Wireless	2.87 %
Site Total MPE %:	9.59 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.74 %
T-MOBILE Sector B Total:	2.74 %
T-MOBILE Sector C Total:	2.74 %
Site Total:	9.59 %

Table 5: Site MPE Summary

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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	160	9.33	1900 MHz (PCS)	1000	0.93%
T-Mobile 2100 MHz (AWS) LTE	2	2,307.55	160	7.00	2100 MHz (AWS)	1000	0.70%
T-Mobile 1900 MHz (PCS) GSM	1	583.57	160	0.88	1900 MHz (PCS)	1000	0.09%
T-Mobile 2100 MHz (AWS) UMTS	1	955.12	160	1.45	2100 MHz (AWS)	1000	0.14%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	160	2.39	600 MHz	400	0.60%
T-Mobile 700 MHz LTE	2	432.54	160	1.31	700 MHz	467	0.28%
						Total:	2.74%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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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:	2.74 %
Sector B:	2.74 %
Sector C:	2.74 %
T-MOBILE Maximum Total (per sector):	2.74 %
Site Total:	9.59 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.59 %** 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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