Filed by:
G. Scott Shepherd, Sr. Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbasite.com

March 22, 2022

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
151 Sand Hill Rd., South Windsor, CT 06074
Latitude: 41.836000
Longitude: -72.552000
Dish Site# BOBDL00122A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 151 Sand Hill Rd., South Windsor, CT

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antennas and six (6) RRUs, at the 102-foot level of the existing 187-foot monopole tower, one (1) 1.6" Hybrid cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7' x 5' lease area with a proposed 3' 1" x 1' 0" pad extension. Included are plans by B & T, dated Dec. 9, 2021 Exhibit 10. Also included is a structural analysis prepared by TES, dated September 2, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment and attached as Exhibit 8. This facility was approved by the Town of South Windsor under Appl#00-30P on October 16, 2000. Please see attached Exhibit 6.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to the Town of South Windor's Town Manager, Michael Maniscalco, Chief Building Official, Kenneth Rich. The Property Owner is the Town of South Windsor. Separate notice is not being sent to the tower owner as it belongs to SBA.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 187-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 102-feet.

2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 31.11% as evidenced by Exhibit 7.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit 8.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this support tower in Canton. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit 2, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 102-foot level of the existing 187-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit 7, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Intent has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading.

Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing guyed tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Westbrook.

Sincerely,

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

Attachments:

cc: Michael Maniscalco, Town Manager / with attachments
Town Hall, 1540 Sullivan, S. Windsor, CT 06074
Kenneth Rich, Chief Building Official / with attachments
Town Hall, 1540 Sullivan, S. Windsor, CT 06074

EXHIBIT LIST

Exhibit 1	Copy of Check	X
Exhibit 2	Letter of Intent to Allow Shared Use of the Existing SBA Telecommunications Site	X
Exhibit 3	Notification Receipts	x
Exhibit 4	Property Card	x
Exhibit 5	Property Map	x
Exhibit 6	Original Zoning Approval	Town of S. Windsor App# 00-30P (10/16/00)
Exhibit 7	EME Report	EBI Consulting 2/24/22
Exhibit 8	Structural Analysis	TES 9/2/21
Exhibit 9	Mount Analysis	B + T Group 3/21/22
Exhibit 10	Construction Drawings	B + T Group 12/9/21

EXHIBIT 1

Copy of check

EXHIBIT 2
Letter of Intent

March 22, 2022

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

RE: **Notice of Intent to Allow Shared Use of the Existing SBA Telecommunications Site**
Location: 151 Sand Hill Rd., South Windsor, CT 06074
Dish Wireless Site No: BOBDL00122A
Site No: CT07824-S

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish Wireless' shared use of the existing SBA telecommunications site at 151 Sand Hill Rd., South Windsor, CT.

SBA Towers, LLC ("Owner") and Dish Wireless ("Tenant") are entering into a Site Lease Agreement. Tenant will be provided ground space within the existing site compound for its base station equipment and space at the height of 102' for antennas and associated equipment.

Thank you,

Rick Woods
Site Development Manager
SBA COMMUNICATIONS CORPORATION
134 Flanders Road, Suite 125
Westboro, MA 01581

508.251.0720 x3800 + T
508.366.2610 + F
508.614.0389 + C
rwoods@sbasite.com

EXHIBIT 3

Fedex Labels

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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

FedEx

FedEx® Tracking Track Another Shipment Help

776365831283

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Theresa Mercado
49 Montclair Avenue
NUTLEY, NJ US 07110
973-766-2835

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

MANAGE DELIVERY

Travel History | Shipment Facts

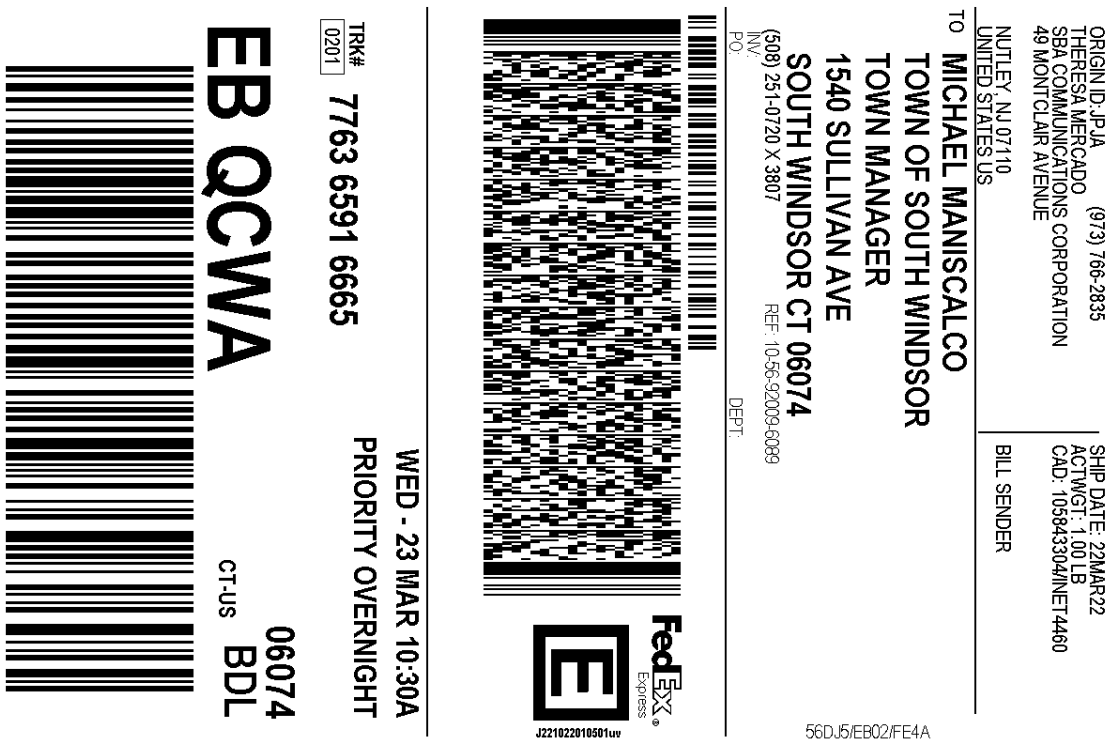
Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
1:16 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 776365831283	**SERVICE** FedEx Priority Overnight	**WEIGHT** 2 lbs / 0.91 kgs
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 2 lbs / 0.91 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Pak	**SPECIAL HANDLING SECTION** Deliver Weekday
ACTUAL PICK UP 3/22/22	**SHIPMENT-FACTS.COD-DETAIL** $0.00	**STANDARD TRANSIT** 3/23/22 before 10:30 am



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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.

FedEx

FedEx® Tracking Track Another Shipment Help

776365916665

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Theresa Mercado
49 Montclair Avenue
NUTLEY, NJ US 07110
973-766-2835

TO
Michael Maniscalco
Town of South Windsor
Town Manager
1540 Sullivan Ave
SOUTH WINDSOR, CT US 06074
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
1:20 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
776365916665

SERVICE
FedEx Priority Overnight

WEIGHT
0.5 lbs / 0.23 kgs

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

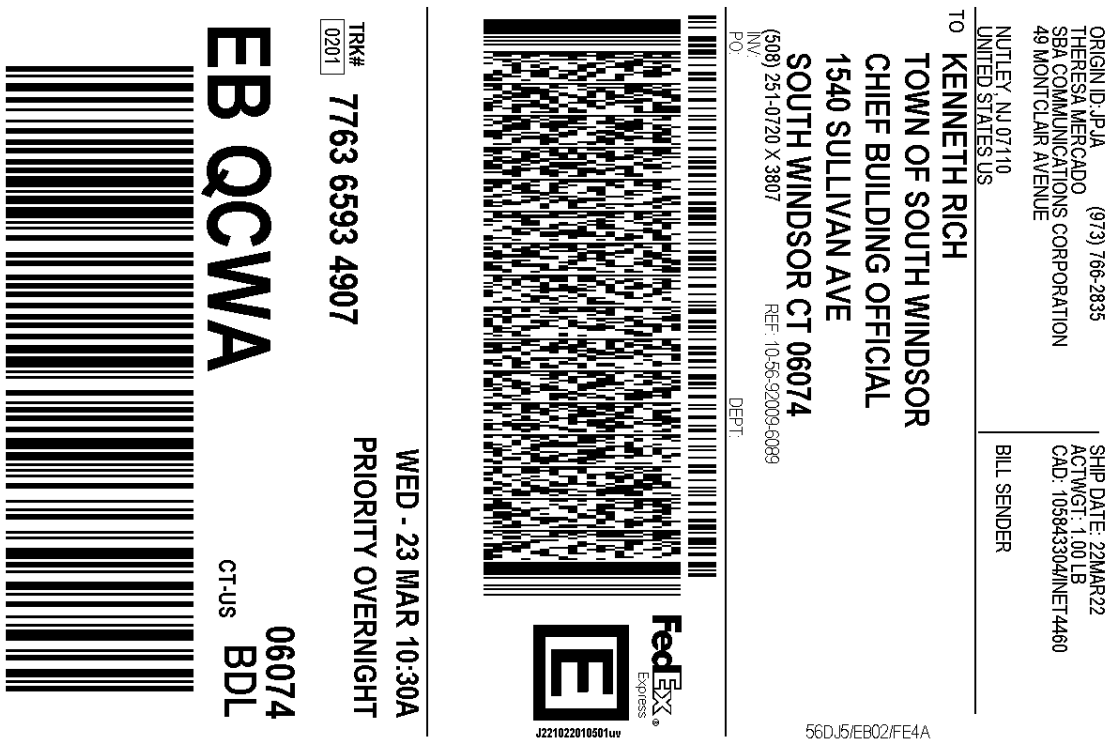
PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

ACTUAL PICK UP
3/22/22

SHIPMENT-FACTS.COD-DETAIL
$0.00

STANDARD TRANSIT
3/23/22 before 10:30 am



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776365934907

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Theresa Mercado
49 Montclair Avenue
NUTLEY, NJ US 07110
973-766-2835

TO
Kenneth Rich
Town of South Windsor
Chief Building Official
1540 Sullivan Ave
SOUTH WINDSOR, CT US 06074
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
1:21 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
776365934907

SERVICE
FedEx Priority Overnight

WEIGHT
0.5 lbs / 0.23 kgs

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

ACTUAL PICK UP
3/22/22

SHIPMENT-FACTS.COD-DETAIL
$0.00

STANDARD TRANSIT
3/23/22 before 10:30 am

EXHIBIT 4

Property Card

151 SAND HILL ROAD

Location	151 SAND HILL ROAD	**Mblu**	76/ 8/ / /
Acct#	79800151	**Owner**	SOUTH WINDSOR TOWN OF 56
Assessment	$2,108,500	**Appraisal**	$3,012,100
PID	9762	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$2,695,500	$316,600	$3,012,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$1,886,900	$221,600	$2,108,500

Owner of Record

Owner	SOUTH WINDSOR TOWN OF 56	**Sale Price**	$0
Co-Owner	POLICE FACILITY	**Certificate**	
Address	1540 SULLIVAN AVENUE SOUTH WINDSOR, CT 06074	**Book & Page**	184/ 171
		Sale Date	09/04/1974
		Instrument	15

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
SOUTH WINDSOR TOWN OF 56	$0		184/ 171	15	09/04/1974

Building Information

Building 1 : Section 1

Year Built:	1984
Living Area:	10,142
Replacement Cost:	$3,074,294
Building Percent Good:	85
Replacement Cost Less Depreciation:	$2,613,100

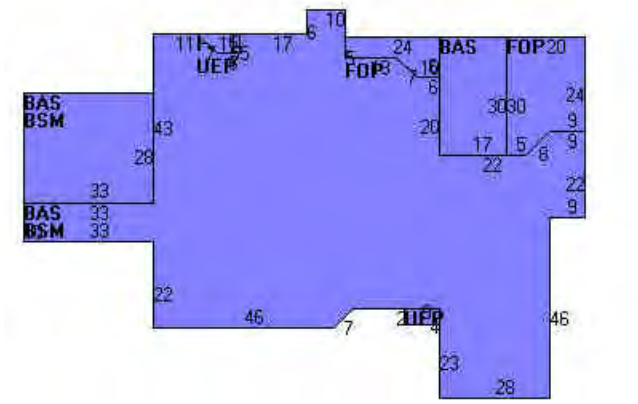
Building Attributes

Field	Description
STYLE	Jail
MODEL	Comm/Ind
Grade	B
Stories:	1.00
Occupancy	1
Exterior Wall 1	Brick Veneer
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Quarry Tile
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Forced Hot Air
% Central Air	100
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	58
% Wet Sprinkler	95
% Dry Sprinkler	
1st Floor Use	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	100
Class	C
Wall Height	9

Building Photo

(http://images.vgsi.com/photos/SouthWindsorCTPhotos//\00\00\71/25.JPG)

Building Layout



(http://images.vgsi.com/photos/SouthWindsorCTPhotos//Sketches/9762_9

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	8,900	8,900
FUS	Finished Upper Story	1,242	1,242
BSM	Basement	8,390	0
FOP	Open Porch	690	0
UEP	Unfin. Enclosed Porch	78	0
		19,300	10,142

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
ELV1	Elevator Pass	2 STOPS	$37,400	1
SPR1	Sprinklers-Wet	9632 S.F.	$6,600	1

Land

Land Use

Use Code	920
Description	Exempt Comm
Zone	RR
Neighborhood	C400
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	5.31
Frontage	0
Depth	0
Assessed Value	$221,600
Appraised Value	$316,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving	AS	Asphalt	42000 S.F.	$31,500	1
LT1	Lights			10 UNITS	$6,900	1

Valuation History

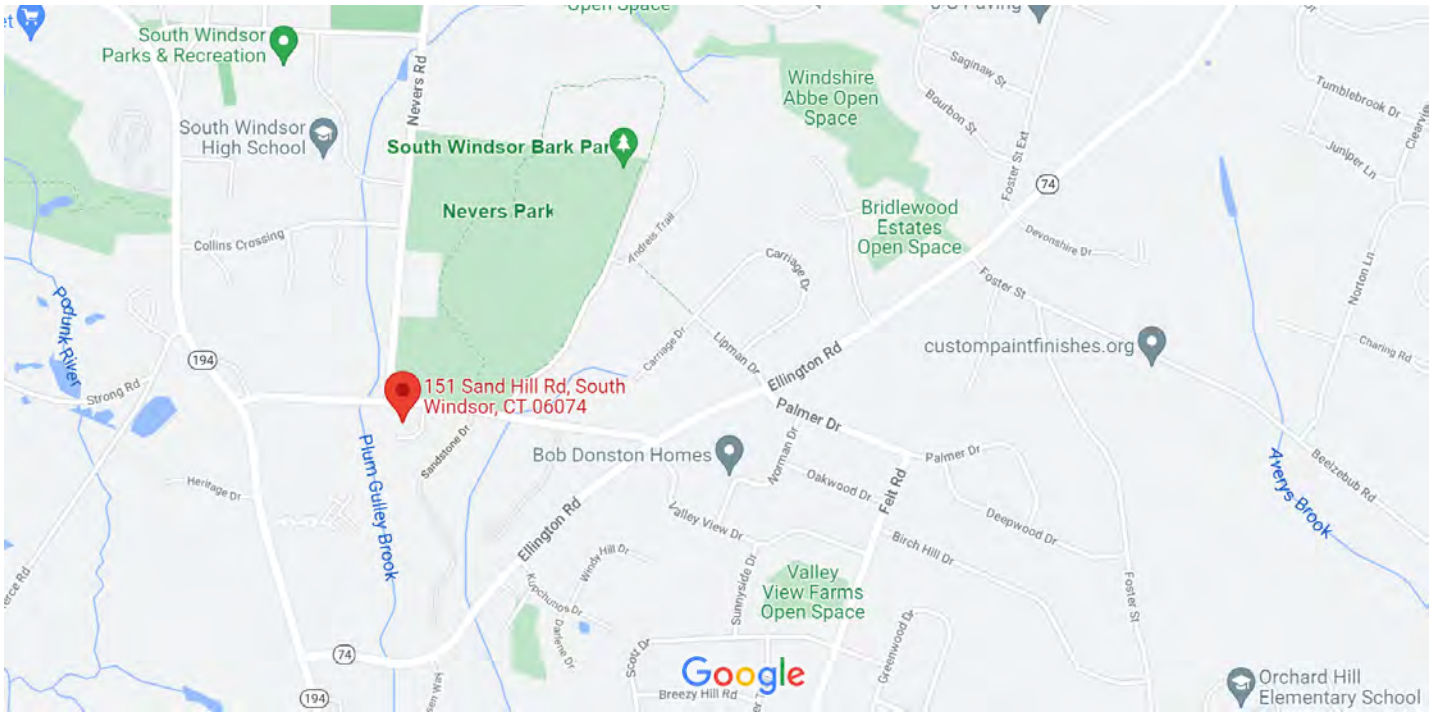
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$2,695,500	$316,600	$3,012,100
2019	$2,695,500	$316,600	$3,012,100
2018	$2,695,500	$316,600	$3,012,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$1,886,900	$221,600	$2,108,500
2019	$1,886,900	$221,600	$2,108,500
2018	$1,886,900	$221,600	$2,108,500

EXHIBIT 5

Property Map

Google Maps 151 Sand Hill Rd



Map data ©2021 1000 ft

Google Maps 151 Sand Hill Rd

Imagery ©2021 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 500 ft

EXHIBIT 6

Zoning Approval

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 199.9feet; 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 a (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.

EXHIBIT 7

EME Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00122A

BOBDL00122A
151 Sand Hill Road
South Windsor, Connecticut 06074

February 24, 2022

EBI Project Number: 6221007873

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.11%**

February 24, 2022

Dish Wireless

Emissions Analysis for Site: BOBDL00122A - BOBDL00122A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **151 Sand Hill Road** in **South Windsor, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 151 Sand Hill Road in South Windsor, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 150 feet above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.14%**	Antenna B1 MPE %:	**1.14%**	Antenna C1 MPE %:	**1.14%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.14%
Town	0.77%
Sprint	0.83%
AT&T	3.88%
Metro PCS	0.22%
Clearwire	0.09%
Nextel	0.28%
Verizon	13.59%
T-Mobile	10.31%
Site Total MPE % :	31.11%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.14%
Dish Wireless Sector B Total:	1.14%
Dish Wireless Sector C Total:	1.14%
Site Total MPE % :	31.11%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	150.0	1.55	600 MHz n71	400	0.39%
Dish Wireless 1900 MHz n70	4	542.70	150.0	3.76	1900 MHz n70	1000	0.38%
Dish Wireless 2190 MHz n66	4	542.70	150.0	3.76	2190 MHz n66	1000	0.38%
						Total:	**1.14%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

The anticipated maximum composite contributions from the Dish Wireless 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:

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.14%
Sector B:	1.14%
Sector C:	1.14%
Dish Wireless Maximum MPE % (Sector A):	1.14%
Site Total:	31.11%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.11%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

EXHIBIT 8

Structural Analysis

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: Dish Wireless (App#: 167822, V1)

Carrier Site ID / Name: BOBDL00122A / 0

Site Location: 151 Sand Hill Road

South Windsor, Connecticut

Hartford County

Latitude: 41.836000

Longitude: -72.552000

Exp.10/31/2021

09/02/2021

Analysis Result:

Max Structural Usage: 70.9% [Pass]

Max Foundation Usage: 87% [Pass]

Additional Usage Caused by New Mount: +2.3%

Report Prepared By : Mariana Franco

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
Mount Analysis	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **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} = 125.0mph (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:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.178, 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	CCI - HPA-65R-BUU-H6 - Panel	Low Profile Platform w/ HRK12	(12) 1 5/8" (2) 1/2" Fiber (2) 3" Conduit (4) 3/4" DC Power	AT&T*
6		3	CCI - DMP65R-BU6DA - Panel			
7		3	CCI - HPA65R-BU6AA-K - Panel			
8		3	CCI DTMABP7819VG12A TMA			
9		6	KAelus DBC0061F1V51-2			
10		3	Ericsson RRUS-32			
11		3	Ericsson RRUS 8843 B2 B66A			
12		3	Ericsson RRUS 4449 B5/B12			
13		3	CSS DBC-750			
14		2	Raycap DC6-48-60-18-8F			
15		3	Commscope ABT-DFDM-ADBH			
17	160.0	3	RFS APXVAARR24_43-U-NA20	Platform w/ Hand Rail + Kicker kit w/ Collar mount	(9) 1 5/8" (4) 1 5/8" Fiber	T-Mobile
18		3	Ericsson Air32 KRD901146-1_B66A_B2A			
19		3	Ericsson AIR6449 B41			
20		3	Ericsson KRY 112 144/1			
21		3	Commscope SDX1926Q-43			
22		3	Ericsson 4449 B71+B85			
23		3	Ericsson 4415 B25			
24	150.0	3	Comba ODI2-065R18K-GQ Panel	(3) Commscope P-200 Stand-off	(1) 1.25" HFC	Dish Network
25		2	Ericsson 4415 RRU			
26		3	Ericsson 0208 RRU			
27	140.0	1	RFS - DB-T1-6Z-8AB-0Z - Surge Suppressor	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid (1) 1/2"	Verizon
28		6	RFS - FD9R6004/2C-3L - Diplexer			
29		6	Commscope - HBXX-6517DS-A2M - Panel			
30		6	Alcatel Lucent - KS24019 - GPS			
31		3	Commscope - LNX-6514DS-A1M - Panel			
32		3	Commscope - LNX-6514DS-VTM - Panel			
33		3	Alcatel Lucent - RRH2x40-07-U - RRU			
34		3	Alcatel Lucent - RRH2x60-1900 - RRU			
35	130.0	3	Alcatel Lucent - 1900MHz - RRH	Low Profile Platform	(1) 0.7" Fiber (3) 1-1/4"	Sprint
36		3	Alcatel Lucent - 800 MHz - RRH			
37		3	Alcatel Lucent - 800MHz - Filter			
38		4	RFS - ACU-A20-N - RET			
39		3	RFS - APXVSPP18-C-A20 - Panel			
40		3	RFS - APXVTM14-C-120 - Panel			
41		3	RF Filters			
42		3	Alcatel Lucent - TD-RRH8x20-25 - RRU			
43	92.0	1	Telewave - ANT150D3 - Whip	Low Profile Platform	(6) 1/2"	Town of South Windsor
44		1	Telewave - ANT4506-9 - Whip			
45		1	Telewave - ANT450Y10-WR - Yagi			
46		1	Decibel - DB205 - Whip			
47		2	Scala - MF-900B - Dish			

* Existing 3” conduit. This conduit houses the above (4) DC cables and (2) Fiber cables.

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
41	102.0	3	JMA Wireless MX08FRO665-21 - Panel	Commscope Platform w/HRK [MC-PK8-DSH]	(1) 1.6" Hybrid	Dish Wireless
42		3	Fujitsu TA08025-B605			
43		3	Fujitsu TA08025-B604			
44		1	Raycap RDIDC-9181-PF-48			

The proposed transmission lines can be installed inside or outside of the pole shafts. If installed outside, the lines shall be strapped tightly to the face of the pole shafts. Stacking lines is not allowed.

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:	**70.9%**	**67.2%**	**64.2%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	6540.5	47.9
Analysis Reactions	6465.1	50.9
Factored Reactions*	8829.6	64.7
% of Design Reactions	73.2%	78.8%

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.9161 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 70.86% at 0.0ft

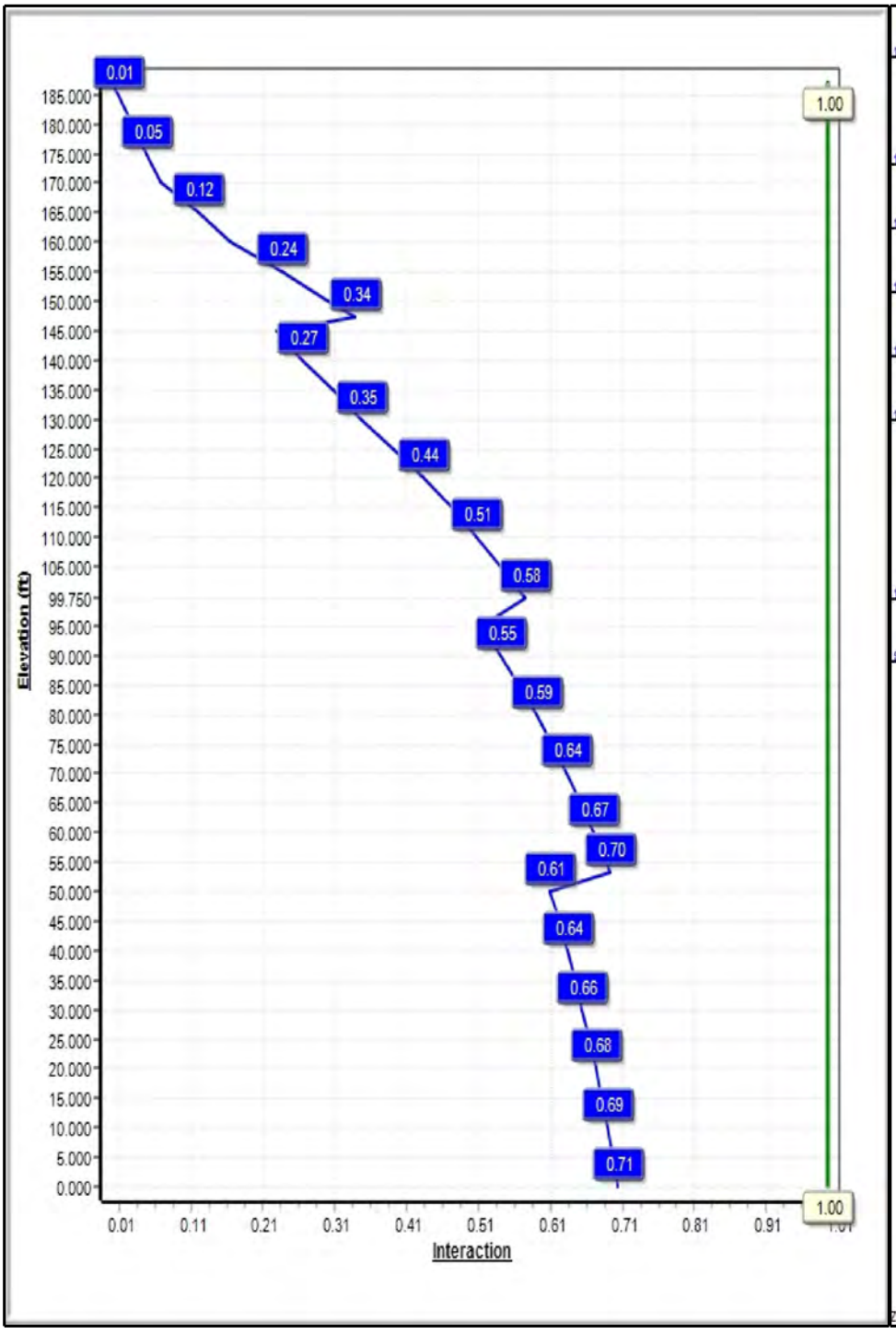
Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021
Site Name:	South Windsor	**Exposure:**	C	
Height:	187.00 (ft)	**Gh:**	1.1	
Base Elev:	1.000 (ft)			Page: 1

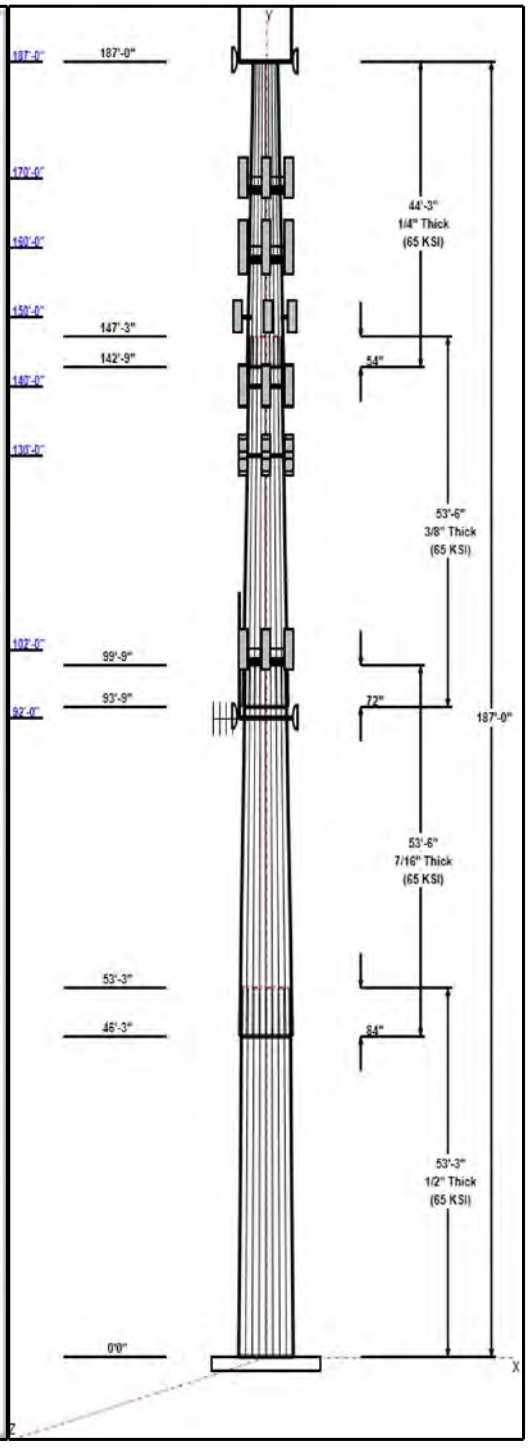
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 25





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

9/2/2021

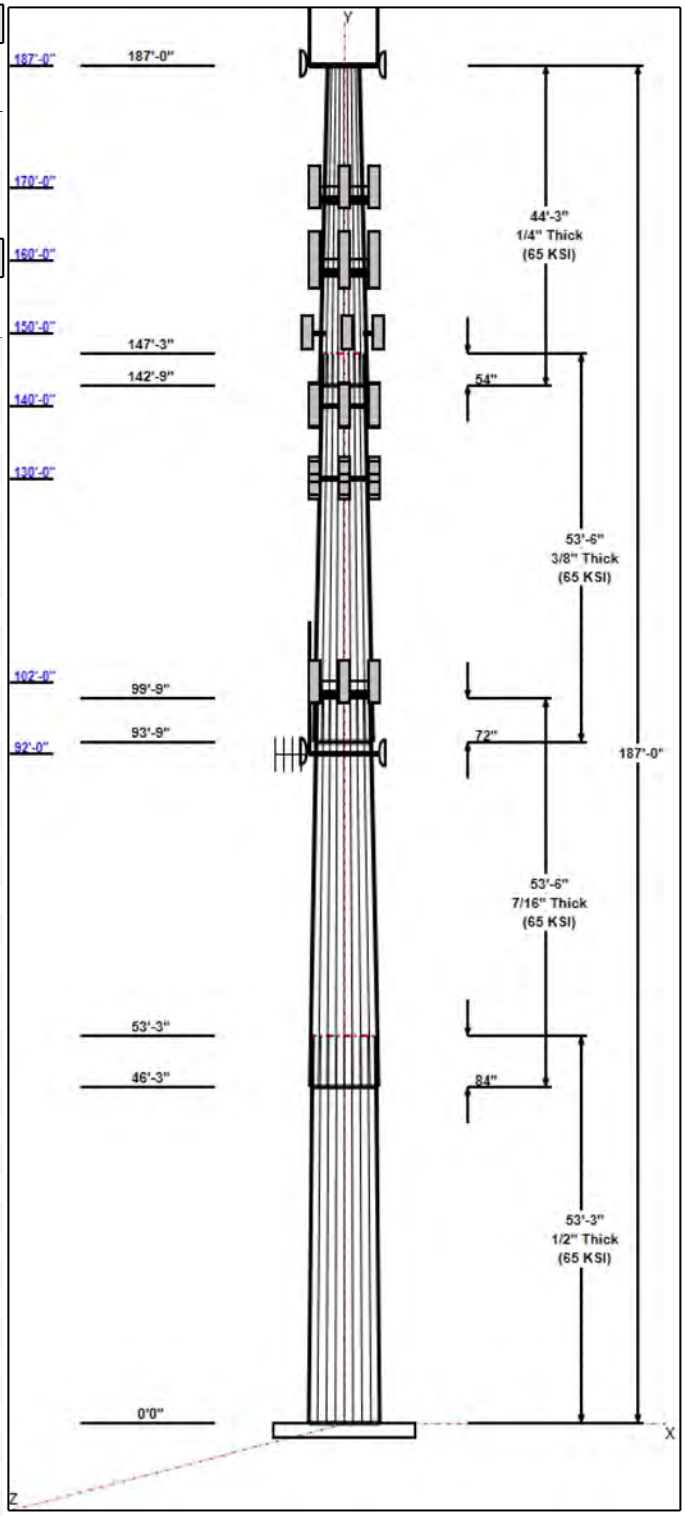
TES Tower Engineering Solutions

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	1	Low Profile Platform w/	AT&T
170.00	170.00	3	HPA-65R-BUU-H6	AT&T
170.00	170.00	3	DMP65R-BU6DA	AT&T
170.00	170.00	3	HPA65R-BU6AA-K	AT&T
170.00	170.00	3	CCI DTMABP7819VG12A	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	Ericsson RRUS 8843 B2	AT&T
170.00	170.00	3	Ericsson RRUS 4449	AT&T
170.00	170.00	3	CSS DBC-750	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	SDX1926Q-43	T-Mobile
160.00	160.00	1	Platform w/ Hand Rail	T-Mobile
160.00	160.00	3	Air32	T-Mobile
160.00	160.00	3	APXVAARR24_43-U-NA20	T-Mobile
160.00	160.00	3	KRY 112 144/1	T-Mobile
160.00	160.00	3	RRUS 4415 B25	T-Mobile
160.00	160.00	3	4449 B71+B12	T-Mobile
160.00	160.00	1	MS-KI22-5 (Kickers)	T-Mobile
160.00	160.00	1	MS-1436 (Light Collar	T-Mobile
160.00	160.00	3	AIR6449 B41	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-0Z	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	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
130.00	130.00	4	ACU-A20-N	Sprint
130.00	130.00	1	Low Profile Platform	Sprint
130.00	130.00	3	APXVSPP18-C-A20	Sprint
130.00	130.00	3	APXVTM14-C-120	Sprint
102.00	102.00	3	MX08FRO665-21	Dish Wireless
102.00	102.00	3	TA08025-B605	Dish Wireless
102.00	102.00	3	TA08025-B604	Dish Wireless
102.00	102.00	1	RDIDC-9181-OF-48	Dish Wireless
102.00	102.00	1	MC-PK8-DSH	Dish Wireless
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	102.00	Outside	1.6" Hybrid	Dish Wireless
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

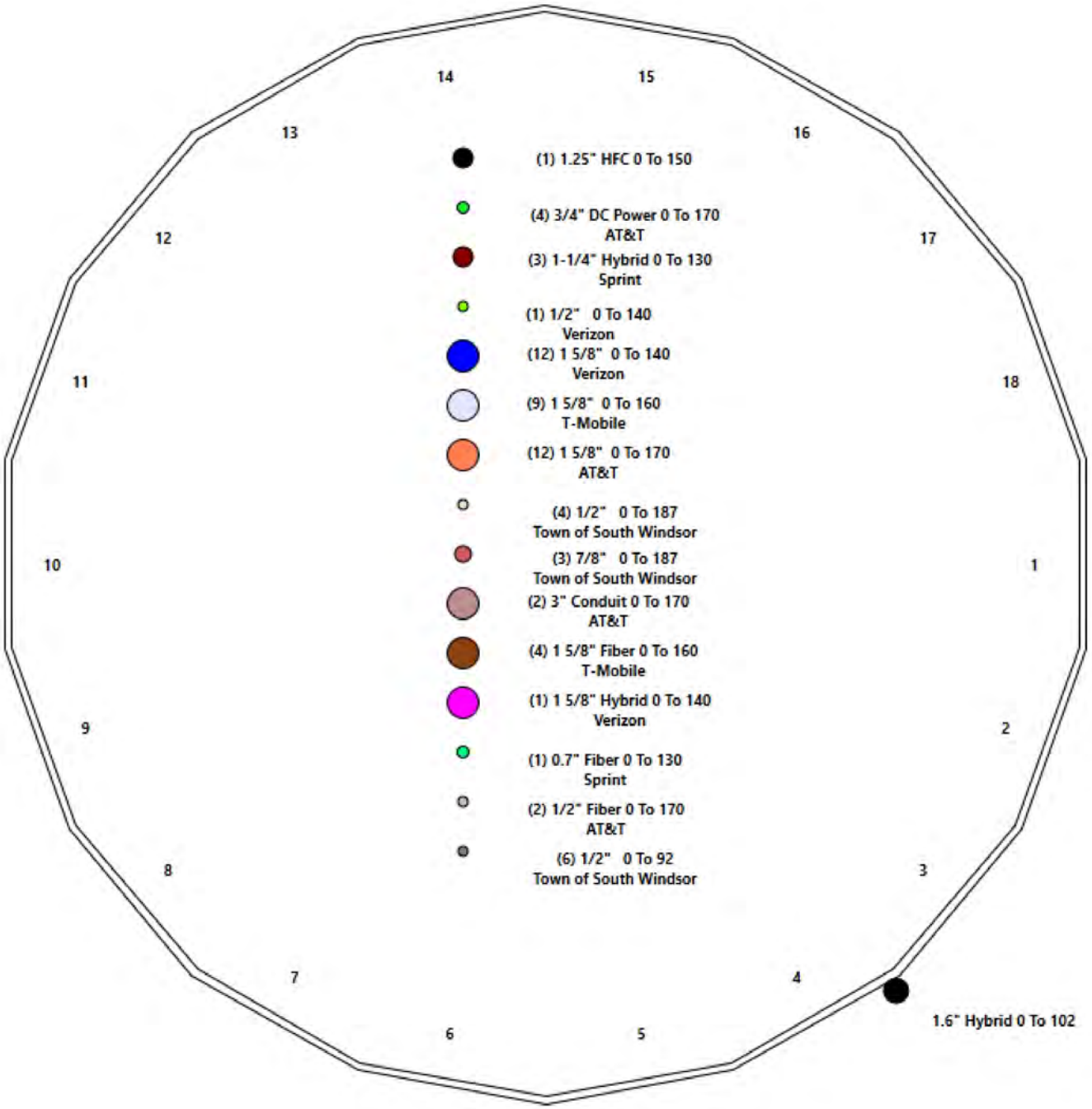
Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	6465.1	50.9	80.0
0.9D + 1.6W 97 mph Wind	6389.9	50.9	60.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	2301.4	17.2	132.3
1.2D + 1.0E	274.7	2.2	80.1
0.9D + 1.0E	271.2	2.2	60.0
1.0D + 1.0W 60 mph Wind	1536.0	12.2	66.7

Structure: CT07824-S-SBA - Coax Line Placement

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

9/2/2021



Shaft Properties

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 5

Tower Engineering Solutions

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	9/2/2021	
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: 6	

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
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	Low Profile Platform w/ HRK12	1	1700.00	27.70	1.00	3704.00	57.741	1.00	0.00	0.00
8	170.00	HPA-65R-BUU-H6	3	51.00	9.66	0.85	405.64	11.544	0.85	0.00	0.00
9	170.00	DMP65R-BU6DA	3	79.40	12.71	0.72	477.31	14.688	0.72	0.00	0.00
10	170.00	HPA65R-BU6AA-K	3	41.90	7.85	0.86	335.05	9.617	0.86	0.00	0.00
11	170.00	CCI DTMABP7819VG12A TMA	3	19.20	1.14	0.67	53.68	2.180	0.00	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	Ericsson RRUS 8843 B2 B66A	3	72.00	1.64	0.67	135.28	2.311	0.67	0.00	0.00
15	170.00	Ericsson RRUS 4449 B5/B12	3	73.20	1.97	0.67	151.21	2.739	0.67	0.00	0.00
16	170.00	CSS DBC-750	3	4.80	0.51	1.00	17.86	1.225	1.00	0.00	0.00
17	170.00	Raycap DC6-48-60-18-8F	2	31.80	0.92	1.00	115.32	1.512	1.00	0.00	0.00
18	170.00	Commscope ABT-DFDM-ADBH	3	1.10	0.05	0.98	4.11	0.310	0.98	0.00	0.00
19	160.00	SDX1926Q-43	3	4.30	0.52	0.67	19.50	1.234	0.67	0.00	0.00
20	160.00	Platform w/ Hand Rail	1	1600.00	32.00	1.00	4419.67	69.496	1.00	0.00	0.00
21	160.00	Air32 KRD901146-1_B66A_B2A	3	132.20	6.51	0.87	395.55	8.110	0.87	0.00	0.00
22	160.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	713.90	22.824	0.70	0.00	0.00
23	160.00	KRY 112 144/1	3	11.00	0.41	0.67	25.48	1.048	0.67	0.00	0.00
24	160.00	RRUS 4415 B25	3	46.00	1.64	0.67	101.19	2.332	0.67	0.00	0.00
25	160.00	4449 B71+B12	3	70.00	1.65	0.67	169.94	2.399	0.67	0.00	0.00
26	160.00	MS-KI22-5 (Kickers)	1	146.00	5.33	1.00	419.72	12.824	1.00	0.00	0.00
27	160.00	MS-1436 (Light Collar Mount)	1	65.60	1.50	1.00	188.59	3.609	1.00	0.00	0.00
28	160.00	AIR6449 B41	3	103.00	5.65	0.71	287.12	6.926	0.71	0.00	0.00
29	150.00	ODI2-065R18K-GQ	3	25.10	4.85	0.70	167.24	6.160	1.00	0.00	0.00
30	150.00	P-200 Stand-off	3	242.00	8.19	0.75	516.76	21.882	0.75	0.00	0.00
31	150.00	4415	2	44.10	1.86	0.75	107.40	2.624	0.75	0.00	0.00
32	150.00	0208	3	19.80	1.37	0.67	66.42	2.035	0.67	0.00	0.00
33	140.00	LNX-6514DS-VTM	3	33.10	8.09	0.80	264.61	11.794	0.82	0.00	0.00
34	140.00	FD9R6004/2C-3L	6	3.10	0.36	0.75	13.74	0.947	0.77	0.00	0.00
35	140.00	DB-T1-6Z-8AB-0Z	1	21.40	4.10	1.00	178.58	5.162	1.00	0.00	0.00
36	140.00	KS-24019	6	0.50	0.12	1.00	9.31	0.392	1.00	0.00	0.00
37	140.00	Low Profile Platform	1	1500.00	22.00	1.00	3234.45	45.404	1.00	0.00	0.00
38	140.00	HBXX-6517DS-A2M	6	40.80	8.55	0.77	274.35	12.418	0.79	0.00	0.00
39	140.00	LNX-6514DS-A1M	3	38.40	8.17	0.83	271.99	11.911	0.85	0.00	0.00
40	140.00	RRH2x40-07-U	3	50.70	2.23	0.78	128.60	3.637	0.80	0.00	0.00
41	140.00	RRH2x60-1900	3	19.50	1.51	0.90	106.39	2.266	0.91	0.00	0.00
42	130.00	TD-RRH8x20-25	3	70.00	4.05	0.69	225.04	5.146	0.71	0.00	0.00
43	130.00	1900MHz RRH	3	44.00	3.80	0.88	187.59	5.628	0.89	0.00	0.00
44	130.00	800 MHz RRH	3	53.00	2.49	0.92	150.29	3.994	0.93	0.00	0.00
45	130.00	800MHz Filter	3	8.80	0.78	0.69	32.01	1.631	0.71	0.00	0.00
46	130.00	RF Filters	3	15.50	0.93	0.67	61.42	1.512	0.69	0.00	0.00
47	130.00	ACU-A20-N	4	1.00	0.14	0.79	6.65	0.530	0.81	0.00	0.00
48	130.00	Low Profile Platform	1	1500.00	22.00	1.00	3221.74	45.232	1.00	0.00	0.00
49	130.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	284.37	11.695	0.85	0.00	0.00
50	130.00	APXVTM14-C-120	3	56.00	6.34	0.79	280.65	7.834	0.81	0.00	0.00

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
51	102.00	MX08FRO665-21	3	64.50	12.49	0.74	438.02	14.371	0.74	0.00	0.00
52	102.00	TA08025-B605	3	75.00	1.96	0.67	142.17	2.680	0.67	0.00	0.00
53	102.00	TA08025-B604	3	63.90	1.96	0.67	128.92	2.680	0.67	0.00	0.00
54	102.00	RDIDC-9181-OF-48	1	21.90	2.01	1.00	90.28	2.740	1.00	0.00	0.00
55	102.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3894.42	98.245	1.00	0.00	0.00
56	92.00	MF-900B	2	13.00	3.45	1.00	155.80	34.440	1.00	1.00	0.00
57	92.00	ANT4506-9	1	18.00	2.77	1.00	122.90	6.622	1.00	0.00	3.00
58	92.00	ANT150D3	1	18.00	2.18	1.00	110.97	12.978	1.00	0.00	5.00
59	92.00	ANT450Y10-WR	1	5.00	0.49	1.00	30.77	1.927	1.00	0.00	0.00
60	92.00	DB205	1	38.00	1.80	1.00	111.64	9.860	1.00	0.00	9.00
61	92.00	Low Profile Platform	1	1500.00	22.00	1.00	3163.75	44.450	1.00	0.00	0.00
		Totals:	**156**	**17,566.20**			**50,747.66**				

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	102.00	(1) 1.6" Hybrid	0.00	Outside
0.00	92.00	(6) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 8	

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
102.00		0.3750	43.048	50.789	11684.9	18.83	114.79	79.3	534.6	347.5
105.00		0.3750	42.358	49.968	11127.3	18.51	112.95	79.6	517.4	514.3
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

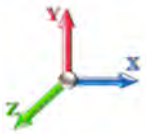
Wind Loading - Shaft

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 9	

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
102.00	Appurtenance(s)	1.00	1.27	29.142	32.06	398.74	0.650	0.000	2.00	7.324	4.76	244.2	0.0	417.0
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	3.00	10.840	7.05	363.6	0.0	617.1
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	9/2/2021
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**	**21,581.2**	**48,947.1**

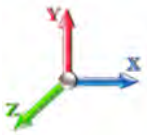
Discrete Appurtenance Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 11	

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	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
2	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
3	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
4	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
5	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
6	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
7	170.00	DMP65R-BU6DA	3	32.424	35.666	0.54	0.75	20.59	285.84	0.000	0.000	1174.99	0.00	0.00
8	170.00	CCI DTMABP7819VG12A	3	32.424	35.666	0.50	0.75	1.72	69.12	0.000	0.000	98.07	0.00	0.00
9	170.00	KAelus DBC0061F1V51-2	6	32.424	35.666	0.50	0.75	1.30	182.88	0.000	0.000	73.98	0.00	0.00
10	170.00	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
11	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
12	170.00	HPA65R-BU6AA-K	3	32.424	35.666	0.65	0.75	15.19	150.84	0.000	0.000	866.81	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	Ericsson RRUS 8843 B2	3	32.424	35.666	0.50	0.75	2.47	259.20	0.000	0.000	141.08	0.00	0.00
15	170.00	Ericsson RRUS 4449	3	32.424	35.666	0.50	0.75	2.97	263.52	0.000	0.000	169.47	0.00	0.00
16	170.00	CSS DBC-750	3	32.424	35.666	0.75	0.75	1.15	17.28	0.000	0.000	65.48	0.00	0.00
17	170.00	Raycap DC6-48-60-18-8F	2	32.424	35.666	0.75	0.75	1.38	76.32	0.000	0.000	78.75	0.00	0.00
18	170.00	Commscope	3	32.424	35.666	0.73	0.75	0.11	3.96	0.000	0.000	6.29	0.00	0.00
19	160.00	MS-1436 (Light Collar	1	32.015	35.216	1.00	1.00	1.50	78.72	0.000	0.000	84.52	0.00	0.00
20	160.00	MS-KI22-5 (Kickers)	1	32.015	35.216	1.00	1.00	5.33	175.20	0.000	0.000	300.33	0.00	0.00
21	160.00	SDX1926Q-43	3	32.015	35.216	0.50	0.75	0.78	15.48	0.000	0.000	44.17	0.00	0.00
22	160.00	4449 B71+B12	3	32.015	35.216	0.50	0.75	2.49	252.00	0.000	0.000	140.15	0.00	0.00
23	160.00	RRUS 4415 B25	3	32.015	35.216	0.50	0.75	2.47	165.60	0.000	0.000	139.30	0.00	0.00
24	160.00	APXVAARR24_43-U-NA2	3	32.015	35.216	0.52	0.75	31.88	460.80	0.000	0.000	1796.21	0.00	0.00
25	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
26	160.00	Air32	3	32.015	35.216	0.65	0.75	12.74	475.92	0.000	0.000	718.04	0.00	0.00
27	160.00	KRY 112 144/1	3	32.015	35.216	0.50	0.75	0.62	39.60	0.000	0.000	34.83	0.00	0.00
28	160.00	AIR6449 B41	3	32.015	35.216	0.53	0.75	9.03	370.80	0.000	0.000	508.57	0.00	0.00
29	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
30	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
31	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
32	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
33	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
34	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
35	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
36	140.00	DB-T1-6Z-8AB-0Z	1	31.133	34.247	0.75	0.75	3.07	25.68	0.000	0.000	168.49	0.00	0.00
37	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
38	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
39	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
40	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
41	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
42	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
43	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
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	9/2/2021	
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	130.00	APXVSPP18-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
49	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
50	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
51	102.00	TA08025-B604	3	29.142	32.056	0.50	0.75	2.95	230.04	0.000	0.000	151.54	0.00	0.00
52	102.00	MX08FRO665-21	3	29.142	32.056	0.55	0.75	20.80	232.20	0.000	0.000	1066.60	0.00	0.00
53	102.00	TA08025-B605	3	29.142	32.056	0.50	0.75	2.95	270.00	0.000	0.000	151.54	0.00	0.00
54	102.00	RDIDC-9181-OF-48	1	29.142	32.056	0.75	0.75	1.51	26.28	0.000	0.000	77.32	0.00	0.00
55	102.00	MC-PK8-DSH	1	29.142	32.056	1.00	1.00	37.59	2072.40	0.000	0.000	1927.96	0.00	0.00
56	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
57	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
58	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
59	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
60	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
61	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:		**21,079.44**			**29,247.65**		

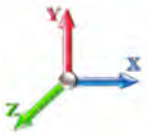
Total Applied Force Summary

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 13

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	2392.62	0.00	0.00
10.00		594.56	2355.37	0.00	0.00
15.00		590.95	2318.11	0.00	0.00
20.00		614.16	2280.85	0.00	0.00
25.00		630.27	2243.60	0.00	0.00
30.00		641.45	2206.34	0.00	0.00
35.00		648.96	2169.09	0.00	0.00
40.00		653.62	2131.83	0.00	0.00
45.00		655.96	2094.58	0.00	0.00
46.25		162.77	517.82	0.00	0.00
50.00		498.95	2692.99	0.00	0.00
53.25		431.64	2302.14	0.00	0.00
55.00		231.48	638.47	0.00	0.00
60.00		663.59	1802.20	0.00	0.00
65.00		659.92	1769.60	0.00	0.00
70.00		655.15	1737.00	0.00	0.00
75.00		649.39	1704.41	0.00	0.00
80.00		642.74	1671.81	0.00	0.00
85.00		635.28	1639.21	0.00	0.00
90.00		627.08	1606.61	0.00	0.00
92.00	(7) attachments	1922.87	2559.52	499.96	1441.88
93.75		215.36	548.03	0.00	0.00
95.00		155.66	658.90	0.00	0.00
99.75		588.34	2469.30	0.00	0.00
100.00		30.58	68.42	0.00	0.00
102.00	(11) attachments	3619.14	3375.76	0.00	0.00
105.00		363.59	802.12	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	(24) attachments	6046.22	4650.26	0.00	0.00
165.00		462.18	594.95	0.00	0.00
170.00	(36) attachments	5992.67	4299.68	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	9/2/2021
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: 14

Tower Engineering Solutions

Totals:	**50,828.86**	**80,053.90**	**1,005.95**	**4,069.43**

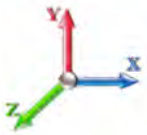
Linear Appurtenance Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 15	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	11.28
10.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	11.28
15.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.690	0.00	11.28
20.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.851	0.00	11.28
25.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.810	0.00	11.28
30.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.632	0.00	11.28
35.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.356	0.00	11.28
40.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.004	0.00	11.28
45.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.593	0.00	11.28
46.25	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	2.82
50.00	1.6" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	25.133	0.00	8.46
53.25	1.6" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.462	0.00	7.33
55.00	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.633	0.00	3.95
60.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.099	0.00	11.28
65.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.535	0.00	11.28
70.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.946	0.00	11.28
75.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.335	0.00	11.28
80.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.704	0.00	11.28
85.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.056	0.00	11.28
90.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.391	0.00	11.28
92.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.522	0.00	4.51
93.75	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	28.634	0.00	3.95
95.00	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	2.82
99.75	1.6" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	29.006	0.00	10.72
100.00	1.6" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	29.021	0.00	0.56
102.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.142	0.00	4.51
									Totals:		**0.0**	**230.1**

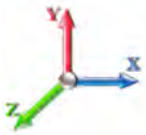
Calculated Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 16	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

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	-79.98	-50.95	-0.99	-6465.1	-0.02	6465.14	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.709
5.00	-77.44	-50.57	-0.99	-6210.3	-0.02	6210.39	6919.93	3459.96	17978.0	9002.40	0.09	-0.169	0.000	0.701
10.00	-74.93	-50.19	-0.99	-5957.5	-0.02	5957.55	6836.37	3418.19	17435.4	8730.69	0.36	-0.339	0.000	0.694
15.00	-72.47	-49.80	-0.99	-5706.6	-0.02	5706.60	6751.25	3375.63	16896.9	8461.01	0.81	-0.512	0.000	0.685
20.00	-70.04	-49.38	-0.99	-5457.6	-0.02	5457.60	6664.57	3332.28	16362.6	8193.47	1.44	-0.687	0.000	0.677
25.00	-67.66	-48.93	-0.99	-5210.7	-0.02	5210.71	6576.31	3288.16	15832.7	7928.16	2.25	-0.864	0.000	0.668
30.00	-65.31	-48.46	-0.99	-4966.0	-0.02	4966.06	6486.49	3243.25	15307.6	7665.22	3.26	-1.044	0.000	0.658
35.00	-63.00	-47.97	-0.99	-4723.7	-0.02	4723.78	6395.11	3197.55	14787.5	7404.75	4.45	-1.225	0.000	0.648
40.00	-60.73	-47.46	-0.99	-4483.9	-0.02	4483.96	6302.15	3151.08	14272.4	7146.85	5.83	-1.407	0.000	0.637
45.00	-58.56	-46.87	-0.99	-4246.6	-0.02	4246.68	6207.63	3103.82	13762.8	6891.65	7.40	-1.592	0.000	0.626
46.25	-57.97	-46.78	-0.99	-4188.1	-0.02	4188.10	6183.76	3091.88	13636.3	6828.29	7.82	-1.639	0.000	0.623
50.00	-55.19	-46.33	-0.99	-4012.6	-0.02	4012.66	6111.55	3055.77	13258.8	6639.26	9.17	-1.780	0.000	0.614
53.25	-52.83	-45.91	-0.99	-3862.0	-0.02	3862.09	5153.03	2576.51	11233.0	5624.85	10.42	-1.902	0.000	0.697
55.00	-52.09	-45.78	-0.99	-3781.7	-0.02	3781.74	5126.51	2563.25	11089.7	5553.12	11.13	-1.969	0.000	0.691
60.00	-50.15	-45.23	-0.99	-3552.8	-0.02	3552.83	5049.68	2524.84	10683.1	5349.50	13.31	-2.173	0.000	0.674
65.00	-48.25	-44.68	-0.99	-3326.6	-0.03	3326.66	4971.29	2485.64	10280.5	5147.92	15.69	-2.377	-0.001	0.656
70.00	-46.38	-44.11	-0.99	-3103.2	-0.03	3103.28	4891.33	2445.66	9882.29	4948.49	18.29	-2.581	-0.001	0.637
75.00	-44.56	-43.54	-0.99	-2882.7	-0.03	2882.73	4809.80	2404.90	9488.55	4751.33	21.10	-2.784	-0.001	0.616
80.00	-42.77	-42.97	-1.00	-2665.0	-0.03	2665.02	4726.70	2363.35	9099.56	4556.54	24.13	-2.987	-0.001	0.594
85.00	-41.02	-42.39	-1.00	-2450.2	-0.03	2450.20	4642.04	2321.02	8715.55	4364.25	27.36	-3.188	-0.001	0.571
90.00	-39.35	-41.76	-1.00	-2238.2	-0.04	2238.26	4555.82	2277.91	8336.73	4174.56	30.81	-3.386	-0.001	0.545
92.00	-36.86	-39.74	-0.50	-2153.3	-0.01	2153.30	4520.89	2260.44	8186.70	4099.44	32.24	-3.466	-0.001	0.534
93.75	-36.28	-39.53	-0.50	-2083.7	-0.01	2083.75	4490.12	2245.06	8056.16	4034.07	33.52	-3.536	-0.001	0.525
95.00	-35.56	-39.41	-0.50	-2034.3	-0.01	2034.34	4468.02	2234.01	7963.33	3987.58	34.46	-3.586	-0.001	0.518
99.75	-33.07	-38.71	-0.50	-1847.1	-0.01	1847.17	3653.35	1826.67	6478.28	3243.96	38.12	-3.768	-0.001	0.579
100.00	-32.97	-38.71	-0.50	-1837.4	-0.01	1837.49	3649.96	1824.98	6463.57	3236.59	38.31	-3.778	-0.001	0.577
102.00	-29.78	-34.93	-0.50	-1760.0	-0.01	1760.08	3622.66	1811.33	6346.24	3177.84	39.91	-3.862	-0.001	0.562
105.00	-28.90	-34.59	-0.50	-1655.3	-0.01	1655.31	3581.25	1790.63	6171.38	3090.28	42.38	-3.987	-0.001	0.544
110.00	-27.52	-33.99	-0.50	-1482.3	-0.02	1482.36	3510.98	1755.49	5883.11	2945.93	46.66	-4.188	-0.001	0.511
115.00	-26.17	-33.40	-0.50	-1312.3	-0.02	1312.39	3439.14	1719.57	5598.97	2803.65	51.15	-4.382	-0.001	0.476
120.00	-24.85	-32.81	-0.50	-1145.4	-0.02	1145.40	3365.73	1682.87	5319.21	2663.56	55.83	-4.568	-0.001	0.438
125.00	-23.58	-32.21	-0.50	-981.37	-0.03	981.37	3290.76	1645.38	5044.03	2525.77	60.71	-4.744	-0.001	0.396
130.00	-19.79	-27.43	-0.50	-820.31	-0.03	820.31	3204.00	1602.00	4758.48	2382.78	65.76	-4.907	-0.001	0.351
135.00	-18.62	-26.84	-0.50	-683.18	-0.03	683.18	3102.32	1551.16	4459.76	2233.19	70.98	-5.056	-0.002	0.312
140.00	-15.34	-20.72	-0.50	-548.99	-0.04	548.99	3000.64	1500.32	4170.72	2088.46	76.34	-5.191	-0.002	0.268
142.75	-14.78	-20.41	-0.50	-492.00	-0.04	492.00	2944.72	1472.36	4015.87	2010.92	79.35	-5.261	-0.002	0.250
145.00	-14.09	-20.12	-0.50	-446.09	-0.04	446.09	2898.96	1449.48	3891.36	1948.57	81.84	-5.315	-0.002	0.234
147.25	-13.41	-19.85	-0.50	-400.81	-0.04	400.81	1774.96	887.48	2399.50	1201.53	84.35	-5.366	-0.002	0.342
150.00	-12.01	-17.97	-0.50	-346.24	-0.04	346.24	1752.91	876.46	2323.79	1163.62	87.46	-5.424	-0.002	0.305
155.00	-11.31	-17.43	-0.50	-256.39	-0.04	256.39	1711.62	855.81	2187.55	1095.40	93.20	-5.551	-0.002	0.241
160.00	-7.25	-10.97	-0.50	-169.22	-0.05	169.22	1668.76	834.38	2053.31	1028.18	99.06	-5.651	-0.002	0.169
165.00	-6.70	-10.46	-0.50	-114.36	-0.05	114.36	1624.34	812.17	1921.31	962.08	105.01	-5.726	-0.003	0.123
170.00	-3.02	-4.07	-0.50	-62.05	-0.05	62.05	1578.35	789.17	1791.75	897.21	111.03	-5.778	-0.003	0.071
175.00	-2.61	-3.60	-0.50	-41.70	-0.05	41.70	1530.79	765.40	1664.88	833.68	117.09	-5.813	-0.003	0.052
180.00	-2.22	-3.14	-0.50	-23.72	-0.05	23.72	1481.67	740.83	1540.90	771.60	123.18	-5.838	-0.004	0.032
185.00	-1.85	-2.70	-0.50	-8.03	-0.05	8.03	1427.20	713.60	1416.30	709.20	129.30	-5.852	-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	131.74	-5.854	-0.004	0.004

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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

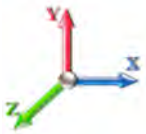
Wind Loading - Shaft

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 18	

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
102.00	Appurtenance(s)	1.00	1.27	29.142	32.06	398.74	0.650	0.000	2.00	7.324	4.76	244.2	0.0	312.8
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	3.00	10.840	7.05	363.6	0.0	462.9
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	9/2/2021
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

Totals:	**187.00**	**21,581.2**	**36,710.3**

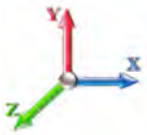
Discrete Appurtenance Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 20	

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	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
2	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
3	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
4	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
5	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
6	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
7	170.00	DMP65R-BU6DA	3	32.424	35.666	0.54	0.75	20.59	214.38	0.000	0.000	1174.99	0.00	0.00
8	170.00	CCI DTMABP7819VG12A	3	32.424	35.666	0.50	0.75	1.72	51.84	0.000	0.000	98.07	0.00	0.00
9	170.00	KAelus DBC0061F1V51-2	6	32.424	35.666	0.50	0.75	1.30	137.16	0.000	0.000	73.98	0.00	0.00
10	170.00	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
11	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
12	170.00	HPA65R-BU6AA-K	3	32.424	35.666	0.65	0.75	15.19	113.13	0.000	0.000	866.81	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	Ericsson RRUS 8843 B2	3	32.424	35.666	0.50	0.75	2.47	194.40	0.000	0.000	141.08	0.00	0.00
15	170.00	Ericsson RRUS 4449	3	32.424	35.666	0.50	0.75	2.97	197.64	0.000	0.000	169.47	0.00	0.00
16	170.00	CSS DBC-750	3	32.424	35.666	0.75	0.75	1.15	12.96	0.000	0.000	65.48	0.00	0.00
17	170.00	Raycap DC6-48-60-18-8F	2	32.424	35.666	0.75	0.75	1.38	57.24	0.000	0.000	78.75	0.00	0.00
18	170.00	Commscope	3	32.424	35.666	0.73	0.75	0.11	2.97	0.000	0.000	6.29	0.00	0.00
19	160.00	MS-1436 (Light Collar	1	32.015	35.216	1.00	1.00	1.50	59.04	0.000	0.000	84.52	0.00	0.00
20	160.00	MS-KI22-5 (Kickers)	1	32.015	35.216	1.00	1.00	5.33	131.40	0.000	0.000	300.33	0.00	0.00
21	160.00	SDX1926Q-43	3	32.015	35.216	0.50	0.75	0.78	11.61	0.000	0.000	44.17	0.00	0.00
22	160.00	4449 B71+B12	3	32.015	35.216	0.50	0.75	2.49	189.00	0.000	0.000	140.15	0.00	0.00
23	160.00	RRUS 4415 B25	3	32.015	35.216	0.50	0.75	2.47	124.20	0.000	0.000	139.30	0.00	0.00
24	160.00	APXVAARR24_43-U-NA2	3	32.015	35.216	0.52	0.75	31.88	345.60	0.000	0.000	1796.21	0.00	0.00
25	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
26	160.00	Air32	3	32.015	35.216	0.65	0.75	12.74	356.94	0.000	0.000	718.04	0.00	0.00
27	160.00	KRY 112 144/1	3	32.015	35.216	0.50	0.75	0.62	29.70	0.000	0.000	34.83	0.00	0.00
28	160.00	AIR6449 B41	3	32.015	35.216	0.53	0.75	9.03	278.10	0.000	0.000	508.57	0.00	0.00
29	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
30	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
31	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
32	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
33	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
34	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
35	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
36	140.00	DB-T1-6Z-8AB-0Z	1	31.133	34.247	0.75	0.75	3.07	19.26	0.000	0.000	168.49	0.00	0.00
37	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
38	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
39	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
40	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
41	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
42	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
43	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
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	9/2/2021
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: 21

48	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
49	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
50	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
51	102.00	TA08025-B604	3	29.142	32.056	0.50	0.75	2.95	172.53	0.000	0.000	151.54	0.00	0.00
52	102.00	MX08FRO665-21	3	29.142	32.056	0.55	0.75	20.80	174.15	0.000	0.000	1066.60	0.00	0.00
53	102.00	TA08025-B605	3	29.142	32.056	0.50	0.75	2.95	202.50	0.000	0.000	151.54	0.00	0.00
54	102.00	RDIDC-9181-OF-48	1	29.142	32.056	0.75	0.75	1.51	19.71	0.000	0.000	77.32	0.00	0.00
55	102.00	MC-PK8-DSH	1	29.142	32.056	1.00	1.00	37.59	1554.30	0.000	0.000	1927.96	0.00	0.00
56	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
57	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
58	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
59	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
60	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
61	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:		**15,809.58**			**29,247.65**		

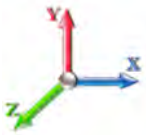
Total Applied Force Summary

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 22

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	1794.47	0.00	0.00
10.00		594.56	1766.52	0.00	0.00
15.00		590.95	1738.58	0.00	0.00
20.00		614.16	1710.64	0.00	0.00
25.00		630.27	1682.70	0.00	0.00
30.00		641.45	1654.76	0.00	0.00
35.00		648.96	1626.82	0.00	0.00
40.00		653.62	1598.87	0.00	0.00
45.00		655.96	1570.93	0.00	0.00
46.25		162.77	388.37	0.00	0.00
50.00		498.95	2019.74	0.00	0.00
53.25		431.64	1726.61	0.00	0.00
55.00		231.48	478.85	0.00	0.00
60.00		663.59	1351.65	0.00	0.00
65.00		659.92	1327.20	0.00	0.00
70.00		655.15	1302.75	0.00	0.00
75.00		649.39	1278.30	0.00	0.00
80.00		642.74	1253.85	0.00	0.00
85.00		635.28	1229.41	0.00	0.00
90.00		627.08	1204.96	0.00	0.00
92.00	(7) attachments	1922.87	1919.64	499.96	1441.88
93.75		215.36	411.02	0.00	0.00
95.00		155.66	494.17	0.00	0.00
99.75		588.34	1851.97	0.00	0.00
100.00		30.58	51.31	0.00	0.00
102.00	(11) attachments	3619.14	2531.82	0.00	0.00
105.00		363.59	601.59	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	(24) attachments	6046.22	3487.69	0.00	0.00
165.00		462.18	446.21	0.00	0.00
170.00	(36) attachments	5992.67	3224.76	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	9/2/2021
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: 23

Tower Engineering Solutions

Totals:	**50,828.86**	**60,040.42**	**1,005.95**	**4,069.43**

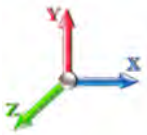
Linear Appurtenance Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	8.46
10.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.450	0.00	8.46
15.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	19.690	0.00	8.46
20.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	20.851	0.00	8.46
25.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.810	0.00	8.46
30.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.632	0.00	8.46
35.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.356	0.00	8.46
40.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.004	0.00	8.46
45.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.593	0.00	8.46
46.25	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	24.732	0.00	2.11
50.00	1.6" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	25.133	0.00	6.34
53.25	1.6" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	25.462	0.00	5.50
55.00	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	25.633	0.00	2.96
60.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.099	0.00	8.46
65.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.535	0.00	8.46
70.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.946	0.00	8.46
75.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.335	0.00	8.46
80.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	27.704	0.00	8.46
85.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.056	0.00	8.46
90.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.391	0.00	8.46
92.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	28.522	0.00	3.38
93.75	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	28.634	0.00	2.96
95.00	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	28.713	0.00	2.11
99.75	1.6" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	29.006	0.00	8.04
100.00	1.6" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	29.021	0.00	0.42
102.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.142	0.00	3.38
										Totals:	**0.0**	**172.6**

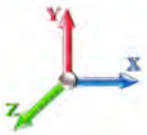
Calculated Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 25	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

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	-59.96	-50.92	-0.99	-6389.8	-0.01	6389.87	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.698
5.00	-58.02	-50.48	-0.99	-6135.2	-0.01	6135.29	6919.93	3459.96	17978.0	9002.40	0.09	-0.167	0.000	0.690
10.00	-56.11	-50.04	-0.99	-5882.8	-0.01	5882.89	6836.37	3418.19	17435.4	8730.69	0.36	-0.335	0.000	0.682
15.00	-54.23	-49.60	-0.99	-5632.6	-0.01	5632.67	6751.25	3375.63	16896.9	8461.01	0.80	-0.506	0.000	0.674
20.00	-52.38	-49.13	-0.99	-5384.6	-0.01	5384.66	6664.57	3332.28	16362.6	8193.47	1.42	-0.679	0.000	0.665
25.00	-50.55	-48.63	-0.99	-5139.0	-0.01	5139.01	6576.31	3288.16	15832.7	7928.16	2.23	-0.853	0.000	0.656
30.00	-48.76	-48.12	-0.99	-4895.8	-0.01	4895.85	6486.49	3243.25	15307.6	7665.22	3.22	-1.030	0.000	0.646
35.00	-47.00	-47.58	-0.99	-4655.2	-0.01	4655.27	6395.11	3197.55	14787.5	7404.75	4.39	-1.208	0.000	0.636
40.00	-45.27	-47.04	-0.99	-4417.3	-0.02	4417.36	6302.15	3151.08	14272.4	7146.85	5.75	-1.389	0.000	0.625
45.00	-43.62	-46.43	-0.99	-4182.1	-0.02	4182.19	6207.63	3103.82	13762.8	6891.65	7.30	-1.570	0.000	0.614
46.25	-43.16	-46.32	-0.99	-4124.1	-0.02	4124.16	6183.76	3091.88	13636.3	6828.29	7.72	-1.617	0.000	0.611
50.00	-41.05	-45.86	-0.99	-3950.4	-0.02	3950.45	6111.55	3055.77	13258.8	6639.26	9.05	-1.755	0.000	0.602
53.25	-39.27	-45.43	-0.99	-3801.4	-0.02	3801.42	5153.03	2576.51	11233.0	5624.85	10.29	-1.876	0.000	0.684
55.00	-38.69	-45.28	-0.99	-3721.9	-0.02	3721.91	5126.51	2563.25	11089.7	5553.12	10.99	-1.942	0.000	0.678
60.00	-37.21	-44.70	-0.99	-3495.5	-0.02	3495.52	5049.68	2524.84	10683.1	5349.50	13.13	-2.142	0.000	0.661
65.00	-35.75	-44.11	-0.99	-3272.0	-0.02	3272.04	4971.29	2485.64	10280.5	5147.92	15.48	-2.343	-0.001	0.643
70.00	-34.33	-43.52	-0.99	-3051.4	-0.02	3051.48	4891.33	2445.66	9882.29	4948.49	18.04	-2.543	-0.001	0.624
75.00	-32.93	-42.93	-0.99	-2833.8	-0.03	2833.88	4809.80	2404.90	9488.55	4751.33	20.81	-2.744	-0.001	0.604
80.00	-31.56	-42.33	-1.00	-2619.2	-0.03	2619.24	4726.70	2363.35	9099.56	4556.54	23.79	-2.943	-0.001	0.582
85.00	-30.23	-41.74	-1.00	-2407.5	-0.03	2407.57	4642.04	2321.02	8715.55	4364.25	26.98	-3.140	-0.001	0.558
90.00	-28.96	-41.11	-1.00	-2198.8	-0.03	2198.88	4555.82	2277.91	8336.73	4174.56	30.37	-3.335	-0.001	0.533
92.00	-27.11	-39.12	-0.50	-2115.2	0.00	2115.21	4520.89	2260.44	8186.70	4099.44	31.79	-3.413	-0.001	0.522
93.75	-26.67	-38.90	-0.50	-2046.7	0.00	2046.76	4490.12	2245.06	8056.16	4034.07	33.05	-3.482	-0.001	0.514
95.00	-26.11	-38.77	-0.50	-1998.1	-0.01	1998.14	4468.02	2234.01	7963.33	3987.58	33.97	-3.531	-0.001	0.507
99.75	-24.24	-38.10	-0.50	-1813.9	-0.01	1813.98	3653.35	1826.67	6478.28	3243.96	37.57	-3.710	-0.001	0.566
100.00	-24.16	-38.09	-0.50	-1804.4	-0.01	1804.46	3649.96	1824.98	6463.57	3236.59	37.77	-3.719	-0.001	0.565
102.00	-21.81	-34.35	-0.50	-1728.2	-0.01	1728.28	3622.66	1811.33	6346.24	3177.84	39.34	-3.803	-0.001	0.550
105.00	-21.14	-34.01	-0.50	-1625.2	-0.01	1625.22	3581.25	1790.63	6171.38	3090.28	41.77	-3.925	-0.001	0.532
110.00	-20.08	-33.41	-0.50	-1455.1	-0.01	1455.18	3510.98	1755.49	5883.11	2945.93	45.98	-4.122	-0.001	0.500
115.00	-19.06	-32.82	-0.50	-1288.1	-0.02	1288.13	3439.14	1719.57	5598.97	2803.65	50.40	-4.313	-0.001	0.465
120.00	-18.06	-32.22	-0.50	-1124.0	-0.02	1124.06	3365.73	1682.87	5319.21	2663.56	55.01	-4.495	-0.001	0.428
125.00	-17.09	-31.64	-0.50	-962.94	-0.02	962.94	3290.76	1645.38	5044.03	2525.77	59.81	-4.668	-0.001	0.387
130.00	-14.33	-26.93	-0.50	-804.75	-0.03	804.75	3204.00	1602.00	4758.48	2382.78	64.78	-4.828	-0.001	0.342
135.00	-13.45	-26.35	-0.50	-670.11	-0.03	670.11	3102.32	1551.16	4459.76	2233.19	69.91	-4.974	-0.002	0.305
140.00	-11.10	-20.32	-0.50	-538.37	-0.03	538.37	3000.64	1500.32	4170.72	2088.46	75.19	-5.107	-0.002	0.262
142.75	-10.68	-20.01	-0.50	-482.50	-0.03	482.50	2944.72	1472.36	4015.87	2010.92	78.15	-5.175	-0.002	0.244
145.00	-10.16	-19.74	-0.50	-437.48	-0.04	437.48	2898.96	1449.48	3891.36	1948.57	80.60	-5.228	-0.002	0.228
147.25	-9.65	-19.47	-0.50	-393.07	-0.04	393.07	1774.96	887.48	2399.50	1201.53	83.07	-5.278	-0.002	0.333
150.00	-8.63	-17.63	-0.50	-339.52	-0.04	339.52	1752.91	876.46	2323.79	1163.62	86.12	-5.335	-0.002	0.297
155.00	-8.11	-17.10	-0.50	-251.38	-0.04	251.38	1711.62	855.81	2187.55	1095.40	91.77	-5.460	-0.002	0.235
160.00	-5.20	-10.76	-0.50	-165.86	-0.04	165.86	1668.76	834.38	2053.31	1028.18	97.54	-5.558	-0.002	0.165
165.00	-4.79	-10.26	-0.50	-112.07	-0.05	112.07	1624.34	812.17	1921.31	962.08	103.39	-5.631	-0.003	0.120
170.00	-2.17	-3.98	-0.50	-60.77	-0.05	60.77	1578.35	789.17	1791.75	897.21	109.31	-5.683	-0.003	0.069
175.00	-1.88	-3.52	-0.50	-40.87	-0.05	40.87	1530.79	765.40	1664.88	833.68	115.27	-5.717	-0.003	0.050
180.00	-1.59	-3.07	-0.50	-23.28	-0.05	23.28	1481.67	740.83	1540.90	771.60	121.26	-5.741	-0.004	0.031
185.00	-1.33	-2.64	-0.50	-7.91	-0.05	7.91	1427.20	713.60	1416.30	709.20	127.27	-5.755	-0.004	0.012
187.00	0.00	-2.50	-0.51	-2.63	0.00	2.63	1400.09	700.04	1362.73	682.38	129.68	-5.757	-0.004	0.004

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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

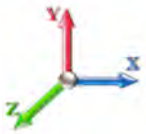
Wind Loading - Shaft

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 27	

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
102.00	Appurtenance(s)	1.00	1.27	7.743	8.52	0.00	1.200	2.241	2.00	8.071	9.69	82.5	254.2	671.2
105.00		1.00	1.28	7.790	8.57	0.00	1.200	2.248	3.00	11.964	14.36	123.0	376.7	993.8
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	9/2/2021
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: 28

Totals:	**187.00**	**7,286.5**	**72,090.2**

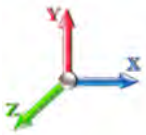
Discrete Appurtenance Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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

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	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
2	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
3	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
4	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
5	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
6	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
7	170.00	DMP65R-BU6DA	3	8.615	9.477	0.54	0.75	23.79	1277.66	0.000	0.000	225.49	0.00	0.00
8	170.00	CCI DTMABP7819VG12A	3	8.615	9.477	0.00	0.75	6.54	150.65	0.000	0.000	61.97	0.00	0.00
9	170.00	KAelus DBC0061F1V51-2	6	8.615	9.477	0.50	0.75	2.46	279.73	0.000	0.000	23.29	0.00	0.00
10	170.00	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
11	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
12	170.00	HPA65R-BU6AA-K	3	8.615	9.477	0.65	0.75	18.61	1030.29	0.000	0.000	176.35	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	Ericsson RRUS 8843 B2	3	8.615	9.477	0.50	0.75	3.48	413.05	0.000	0.000	33.02	0.00	0.00
15	170.00	Ericsson RRUS 4449	3	8.615	9.477	0.50	0.75	4.13	322.34	0.000	0.000	39.13	0.00	0.00
16	170.00	CSS DBC-750	3	8.615	9.477	0.75	0.75	2.76	47.76	0.000	0.000	26.12	0.00	0.00
17	170.00	Raycap DC6-48-60-18-8F	2	8.615	9.477	0.75	0.75	2.27	207.96	0.000	0.000	21.49	0.00	0.00
18	170.00	Commscope	3	8.615	9.477	0.73	0.75	0.68	10.90	0.000	0.000	6.48	0.00	0.00
19	160.00	MS-1436 (Light Collar	1	8.506	9.357	1.00	1.00	3.61	172.81	0.000	0.000	33.77	0.00	0.00
20	160.00	MS-KI22-5 (Kickers)	1	8.506	9.357	1.00	1.00	12.82	384.92	0.000	0.000	120.00	0.00	0.00
21	160.00	SDX1926Q-43	3	8.506	9.357	0.50	0.75	1.86	51.49	0.000	0.000	17.40	0.00	0.00
22	160.00	4449 B71+B12	3	8.506	9.357	0.50	0.75	3.62	551.83	0.000	0.000	33.84	0.00	0.00
23	160.00	RRUS 4415 B25	3	8.506	9.357	0.50	0.75	3.52	302.98	0.000	0.000	32.89	0.00	0.00
24	160.00	APXVAARR24_43-U-NA2	3	8.506	9.357	0.52	0.75	35.95	2218.49	0.000	0.000	336.37	0.00	0.00
25	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
26	160.00	Air32	3	8.506	9.357	0.65	0.75	15.88	1265.97	0.000	0.000	148.55	0.00	0.00
27	160.00	KRY 112 144/1	3	8.506	9.357	0.50	0.75	1.58	73.73	0.000	0.000	14.78	0.00	0.00
28	160.00	AIR6449 B41	3	8.506	9.357	0.53	0.75	11.06	828.07	0.000	0.000	103.54	0.00	0.00
29	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
30	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
31	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
32	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
33	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
34	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
35	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
36	140.00	DB-T1-6Z-8AB-0Z	1	8.272	9.099	0.75	0.75	3.87	153.16	0.000	0.000	35.23	0.00	0.00
37	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
38	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
39	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
40	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
41	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
42	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
43	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
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	9/2/2021
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: 30

48	130.00	APXVSPP18-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
49	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
50	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
51	102.00	TA08025-B604	3	7.743	8.517	0.50	0.75	4.04	388.79	0.000	0.000	34.42	0.00	0.00
52	102.00	MX08FRO665-21	3	7.743	8.517	0.55	0.75	23.93	1151.16	0.000	0.000	203.80	0.00	0.00
53	102.00	TA08025-B605	3	7.743	8.517	0.50	0.75	4.04	433.70	0.000	0.000	34.42	0.00	0.00
54	102.00	RDIDC-9181-OF-48	1	7.743	8.517	0.75	0.75	2.05	81.96	0.000	0.000	17.50	0.00	0.00
55	102.00	MC-PK8-DSH	1	7.743	8.517	1.00	1.00	98.25	3866.82	0.000	0.000	836.78	0.00	0.00
56	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
57	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
58	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
59	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
60	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
61	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:		**49,343.10**			**9,824.08**		

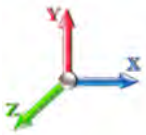
Total Applied Force Summary

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 31

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	3112.67	0.00	0.00
10.00		192.47	3109.75	0.00	0.00
15.00		191.88	3089.41	0.00	0.00
20.00		199.94	3060.82	0.00	0.00
25.00		205.68	3027.29	0.00	0.00
30.00		209.80	2990.45	0.00	0.00
35.00		212.73	2951.19	0.00	0.00
40.00		214.73	2910.10	0.00	0.00
45.00		215.96	2867.54	0.00	0.00
46.25		53.65	710.68	0.00	0.00
50.00		164.48	3276.43	0.00	0.00
53.25		142.50	2804.74	0.00	0.00
55.00		76.50	908.16	0.00	0.00
60.00		219.67	2564.49	0.00	0.00
65.00		218.94	2522.91	0.00	0.00
70.00		217.86	2480.68	0.00	0.00
75.00		216.46	2437.89	0.00	0.00
80.00		214.77	2394.58	0.00	0.00
85.00		212.81	2350.81	0.00	0.00
90.00		210.62	2306.62	0.00	0.00
92.00	(7) attachments	1125.02	4652.95	1326.09	1174.28
93.75		72.53	789.91	0.00	0.00
95.00		52.39	833.52	0.00	0.00
99.75		198.38	3121.83	0.00	0.00
100.00		10.32	102.73	0.00	0.00
102.00	(11) attachments	1209.41	6739.77	0.00	0.00
105.00		123.02	1178.78	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	(24) attachments	1659.59	11163.63	0.00	0.00
165.00		163.83	1057.12	0.00	0.00
170.00	(36) attachments	1582.73	10532.88	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	9/2/2021
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: 32

Totals:	**17,110.53**	**132,276.97**	**2,756.20**	**3,258.21**

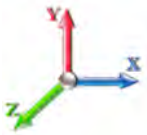
Linear Appurtenance Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 33	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	40.22
10.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	43.11
15.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.232	0.00	45.06
20.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.540	0.00	46.57
25.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.795	0.00	47.80
30.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.013	0.00	48.85
35.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.206	0.00	49.76
40.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.378	0.00	50.58
45.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.534	0.00	51.33
46.25	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	6.571	0.00	12.88
50.00	1.6" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	6.678	0.00	39.00
53.25	1.6" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	6.765	0.00	34.07
55.00	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	6.811	0.00	18.42
60.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.934	0.00	53.21
65.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.050	0.00	53.75
70.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.160	0.00	54.26
75.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.263	0.00	54.75
80.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.361	0.00	55.20
85.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.454	0.00	55.64
90.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	56.05
92.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.578	0.00	22.48
93.75	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	7.608	0.00	19.72
95.00	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	7.629	0.00	14.11
99.75	1.6" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	7.707	0.00	53.97
100.00	1.6" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	7.711	0.00	2.84
102.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.743	0.00	22.79
									Totals:		**0.0**	**1,046.4**

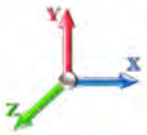
Calculated Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 34	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	-132.2	-17.18	-2.75	-2301.4	-0.03	2301.40	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.267
5.00	-129.1	-17.12	-2.75	-2215.4	-0.03	2215.49	6919.93	3459.96	17978.0	9002.40	0.03	-0.060	0.000	0.265
10.00	-126.0	-17.06	-2.75	-2129.8	-0.03	2129.89	6836.37	3418.19	17435.4	8730.69	0.13	-0.121	0.000	0.262
15.00	-122.9	-16.99	-2.75	-2044.6	-0.04	2044.60	6751.25	3375.63	16896.9	8461.01	0.29	-0.183	0.000	0.260
20.00	-119.8	-16.91	-2.75	-1959.6	-0.04	1959.64	6664.57	3332.28	16362.6	8193.47	0.51	-0.246	0.000	0.257
25.00	-116.7	-16.82	-2.75	-1875.0	-0.04	1875.07	6576.31	3288.16	15832.7	7928.16	0.81	-0.309	0.000	0.254
30.00	-113.7	-16.73	-2.75	-1790.9	-0.04	1790.96	6486.49	3243.25	15307.6	7665.22	1.16	-0.374	-0.001	0.251
35.00	-110.8	-16.62	-2.75	-1707.3	-0.04	1707.34	6395.11	3197.55	14787.5	7404.75	1.59	-0.439	-0.001	0.248
40.00	-107.8	-16.51	-2.75	-1624.2	-0.04	1624.25	6302.15	3151.08	14272.4	7146.85	2.09	-0.505	-0.001	0.244
45.00	-105.0	-16.34	-2.75	-1541.7	-0.04	1541.73	6207.63	3103.82	13762.8	6891.65	2.65	-0.572	-0.001	0.241
46.25	-104.2	-16.34	-2.75	-1521.3	-0.04	1521.30	6183.76	3091.88	13636.3	6828.29	2.80	-0.589	-0.001	0.240
50.00	-100.9	-16.22	-2.75	-1460.0	-0.04	1460.03	6111.55	3055.77	13258.8	6639.26	3.29	-0.641	-0.001	0.236
53.25	-98.18	-16.11	-2.75	-1407.3	-0.04	1407.30	5153.03	2576.51	11233.0	5624.85	3.74	-0.685	-0.001	0.269
55.00	-97.26	-16.11	-2.75	-1379.1	-0.04	1379.11	5126.51	2563.25	11089.7	5553.12	4.00	-0.710	-0.001	0.267
60.00	-94.67	-15.98	-2.75	-1298.5	-0.04	1298.59	5049.68	2524.84	10683.1	5349.50	4.78	-0.784	-0.001	0.262
65.00	-92.13	-15.84	-2.75	-1218.7	-0.04	1218.71	4971.29	2485.64	10280.5	5147.92	5.64	-0.859	-0.001	0.255
70.00	-89.64	-15.70	-2.75	-1139.5	-0.05	1139.51	4891.33	2445.66	9882.29	4948.49	6.58	-0.933	-0.002	0.249
75.00	-87.18	-15.56	-2.75	-1061.0	-0.05	1061.00	4809.80	2404.90	9488.55	4751.33	7.60	-1.008	-0.002	0.241
80.00	-84.77	-15.41	-2.75	-983.22	-0.05	983.22	4726.70	2363.35	9099.56	4556.54	8.69	-1.083	-0.002	0.234
85.00	-82.41	-15.26	-2.75	-906.18	-0.05	906.18	4642.04	2321.02	8715.55	4364.25	9.87	-1.157	-0.002	0.225
90.00	-80.09	-15.07	-2.75	-829.90	-0.05	829.90	4555.82	2277.91	8336.73	4174.56	11.12	-1.230	-0.002	0.216
92.00	-75.46	-13.88	-1.43	-798.59	-0.02	798.59	4520.89	2260.44	8186.70	4099.44	11.64	-1.260	-0.003	0.212
93.75	-74.66	-13.82	-1.43	-774.30	-0.02	774.30	4490.12	2245.06	8056.16	4034.07	12.11	-1.286	-0.003	0.209
95.00	-73.82	-13.80	-1.43	-757.02	-0.02	757.02	4468.02	2234.01	7963.33	3987.58	12.45	-1.305	-0.003	0.206
99.75	-70.70	-13.58	-1.43	-691.46	-0.03	691.46	3653.35	1826.67	6478.28	3243.96	13.78	-1.373	-0.003	0.233
100.00	-70.59	-13.59	-1.43	-688.06	-0.03	688.06	3649.96	1824.98	6463.57	3236.59	13.85	-1.376	-0.003	0.232
102.00	-63.87	-12.26	-1.43	-660.90	-0.03	660.90	3622.66	1811.33	6346.24	3177.84	14.44	-1.408	-0.003	0.226
105.00	-62.68	-12.17	-1.43	-624.13	-0.03	624.13	3581.25	1790.63	6171.38	3090.28	15.34	-1.455	-0.003	0.220
110.00	-60.75	-12.00	-1.43	-563.27	-0.03	563.27	3510.98	1755.49	5883.11	2945.93	16.90	-1.531	-0.003	0.209
115.00	-58.85	-11.82	-1.43	-503.28	-0.03	503.28	3439.14	1719.57	5598.97	2803.65	18.54	-1.605	-0.003	0.197
120.00	-57.00	-11.64	-1.43	-444.18	-0.04	444.18	3365.73	1682.87	5319.21	2663.56	20.26	-1.677	-0.004	0.184
125.00	-55.18	-11.46	-1.43	-385.97	-0.04	385.97	3290.76	1645.38	5044.03	2525.77	22.06	-1.745	-0.004	0.170
130.00	-46.68	-9.97	-1.43	-328.68	-0.04	328.68	3204.00	1602.00	4758.48	2382.78	23.92	-1.810	-0.004	0.153
135.00	-44.98	-9.78	-1.43	-278.81	-0.04	278.81	3102.32	1551.16	4459.76	2233.19	25.85	-1.870	-0.004	0.139
140.00	-36.43	-7.89	-1.43	-229.92	-0.04	229.92	3000.64	1500.32	4170.72	2088.46	27.84	-1.926	-0.005	0.122
142.75	-35.58	-7.78	-1.43	-208.22	-0.04	208.22	2944.72	1472.36	4015.87	2010.92	28.96	-1.955	-0.005	0.116
145.00	-34.65	-7.68	-1.43	-190.72	-0.04	190.72	2898.96	1449.48	3891.36	1948.57	29.88	-1.978	-0.005	0.110
147.25	-33.73	-7.58	-1.43	-173.45	-0.05	173.45	1774.96	887.48	2399.50	1201.53	30.82	-2.000	-0.005	0.163
150.00	-30.69	-6.86	-1.43	-152.60	-0.05	152.60	1752.91	876.46	2323.79	1163.62	31.98	-2.026	-0.005	0.149
155.00	-29.48	-6.67	-1.43	-118.30	-0.05	118.30	1711.62	855.81	2187.55	1095.40	34.13	-2.083	-0.006	0.125
160.00	-18.39	-4.62	-1.43	-84.94	-0.05	84.94	1668.76	834.38	2053.31	1028.18	36.34	-2.131	-0.007	0.094
165.00	-17.33	-4.42	-1.43	-61.86	-0.05	61.86	1624.34	812.17	1921.31	962.08	38.59	-2.169	-0.007	0.075
170.00	-6.87	-2.44	-1.43	-39.74	-0.05	39.74	1578.35	789.17	1791.75	897.21	40.88	-2.200	-0.008	0.049
175.00	-5.99	-2.26	-1.43	-27.53	-0.05	27.53	1530.79	765.40	1664.88	833.68	43.20	-2.222	-0.009	0.037
180.00	-5.15	-2.07	-1.43	-16.25	-0.05	16.25	1481.67	740.83	1540.90	771.60	45.54	-2.239	-0.010	0.025
185.00	-4.34	-1.90	-1.43	-5.88	-0.06	5.88	1427.20	713.60	1416.30	709.20	47.89	-2.248	-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	48.83	-2.250	-0.012	0.003

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 35

Seismic Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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	

Tower Engineering Solutions

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)**	0.29		**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	33.52	
10.00		1691.6	0.01	0.05	0.03	45.48	
15.00		1660.6	0.01	0.06	0.03	51.44	
20.00		1629.6	0.02	0.07	0.04	54.27	
25.00		1598.5	0.04	0.07	0.04	55.44	
30.00		1567.5	0.05	0.07	0.04	55.81	
35.00		1536.4	0.07	0.07	0.04	55.83	
40.00		1505.4	0.09	0.07	0.04	55.76	
45.00		1474.3	0.11	0.07	0.04	55.68	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	13.80	
50.00		2040.8	0.14	0.07	0.03	78.49	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	67.67	
55.00		437.17	0.17	0.07	0.03	17.05	
60.00		1230.7	0.20	0.06	0.02	48.21	
65.00		1203.5	0.23	0.06	0.02	46.51	
70.00		1176.3	0.27	0.05	0.02	43.56	
75.00		1149.2	0.31	0.04	0.01	38.89	
80.00		1122.0	0.35	0.03	0.01	32.08	
85.00		1094.9	0.40	0.02	0.01	22.90	
90.00		1067.7	0.44	0.00	0.01	11.59	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	12.71	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	0.76	
95.00		482.50	0.49	-0.01	0.01	-0.46	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-22.84	
100.00		43.70	0.55	-0.03	0.01	-0.58	
102.00	Appurtenance(s)	2706.6	0.57	-0.04	0.01	-48.62	
105.00		514.28	0.60	-0.05	0.01	-12.60	
110.00		838.51	0.66	-0.07	0.02	-28.00	
115.00		815.23	0.72	-0.09	0.03	-31.94	
120.00		791.94	0.78	-0.11	0.05	-32.91	
125.00		768.66	0.85	-0.12	0.07	-31.16	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-114.53	
135.00		722.09	0.99	-0.11	0.13	-20.72	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-52.53	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-4.07	
145.00		505.63	1.14	-0.04	0.21	-2.17	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	1.45	
150.00	Appurtenance(s)	1190.7	1.22	0.02	0.27	14.95	
155.00		427.74	1.30	0.12	0.34	13.91	
160.00	Appurtenance(s)	3707.3	1.39	0.26	0.42	206.28	
165.00		396.69	1.47	0.44	0.51	32.52	
170.00	Appurtenance(s)	3483.9	1.56	0.67	0.62	388.81	
175.00		365.64	1.66	0.96	0.75	52.86	
180.00		350.12	1.75	1.33	0.90	63.35	
185.00		334.60	1.85	1.78	1.07	73.87	

Seismic Segment Forces (Factored)

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 37

187.00	Appurtenance(s)		1754.9	1.89	1.98	1.14	417.17	
		Totals:	**58,355.4**				**1,759.5**	**Total Wind:** **50,828.9**

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	9/2/2021	
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: 38	

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)**	0.29	**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	-80.05	-2.17	0.00	-274.73	0.00	274.73	7001.91	3500.96	18524.4	9276.01		0.00	0.00	0.041
5.00	-77.66	-2.14	0.00	-263.89	0.00	263.89	6919.93	3459.96	17978.0	9002.40		0.00	-0.01	0.041
10.00	-75.31	-2.11	0.00	-253.17	0.00	253.17	6836.37	3418.19	17435.4	8730.69		0.02	-0.01	0.040
15.00	-72.99	-2.06	0.00	-242.64	0.00	242.64	6751.25	3375.63	16896.9	8461.01		0.03	-0.02	0.039
20.00	-70.71	-2.02	0.00	-232.32	0.00	232.32	6664.57	3332.28	16362.6	8193.47		0.06	-0.03	0.039
25.00	-68.46	-1.97	0.00	-222.23	0.00	222.23	6576.31	3288.16	15832.7	7928.16		0.10	-0.04	0.038
30.00	-66.26	-1.92	0.00	-212.38	0.00	212.38	6486.49	3243.25	15307.6	7665.22		0.14	-0.04	0.038
35.00	-64.09	-1.87	0.00	-202.77	0.00	202.77	6395.11	3197.55	14787.5	7404.75		0.19	-0.05	0.037
40.00	-61.95	-1.82	0.00	-193.40	0.00	193.40	6302.15	3151.08	14272.4	7146.85		0.25	-0.06	0.037
45.00	-59.86	-1.77	0.00	-184.28	0.00	184.28	6207.63	3103.82	13762.8	6891.65		0.32	-0.07	0.036
46.25	-59.34	-1.76	0.00	-182.07	0.00	182.07	6183.76	3091.88	13636.3	6828.29		0.33	-0.07	0.036
50.00	-56.65	-1.68	0.00	-175.46	0.00	175.46	6111.55	3055.77	13258.8	6639.26		0.39	-0.08	0.036
53.25	-54.35	-1.62	0.00	-169.99	0.00	169.99	5153.03	2576.51	11233.0	5624.85		0.44	-0.08	0.041
55.00	-53.71	-1.61	0.00	-167.16	0.00	167.16	5126.51	2563.25	11089.7	5553.12		0.47	-0.08	0.041
60.00	-51.91	-1.56	0.00	-159.13	0.00	159.13	5049.68	2524.84	10683.1	5349.50		0.57	-0.09	0.040
65.00	-50.14	-1.52	0.00	-151.32	0.00	151.32	4971.29	2485.64	10280.5	5147.92		0.67	-0.10	0.039
70.00	-48.40	-1.48	0.00	-143.71	0.00	143.71	4891.33	2445.66	9882.29	4948.49		0.78	-0.11	0.039
75.00	-46.69	-1.45	0.00	-136.30	0.00	136.30	4809.80	2404.90	9488.55	4751.33		0.91	-0.12	0.038
80.00	-45.02	-1.42	0.00	-129.06	0.00	129.06	4726.70	2363.35	9099.56	4556.54		1.04	-0.13	0.038
85.00	-43.38	-1.40	0.00	-121.96	0.00	121.96	4642.04	2321.02	8715.55	4364.25		1.18	-0.14	0.037
90.00	-41.78	-1.39	0.00	-114.96	0.00	114.96	4555.82	2277.91	8336.73	4174.56		1.34	-0.15	0.037
92.00	-39.22	-1.37	0.00	-112.18	0.00	112.18	4520.89	2260.44	8186.70	4099.44		1.40	-0.16	0.036
93.75	-38.67	-1.37	0.00	-109.78	0.00	109.78	4490.12	2245.06	8056.16	4034.07		1.46	-0.16	0.036
95.00	-38.01	-1.38	0.00	-108.06	0.00	108.06	4468.02	2234.01	7963.33	3987.58		1.50	-0.16	0.036
99.75	-35.54	-1.37	0.00	-101.53	0.00	101.53	3653.35	1826.67	6478.28	3243.96		1.67	-0.17	0.041
100.00	-35.47	-1.37	0.00	-101.19	0.00	101.19	3649.96	1824.98	6463.57	3236.59		1.67	-0.17	0.041
102.00	-32.10	-1.37	0.00	-98.44	0.00	98.44	3622.66	1811.33	6346.24	3177.84		1.75	-0.18	0.040
105.00	-31.29	-1.37	0.00	-94.34	0.00	94.34	3581.25	1790.63	6171.38	3090.28		1.86	-0.18	0.039
110.00	-29.98	-1.37	0.00	-87.50	0.00	87.50	3510.98	1755.49	5883.11	2945.93		2.06	-0.20	0.038
115.00	-28.69	-1.37	0.00	-80.65	0.00	80.65	3439.14	1719.57	5598.97	2803.65		2.27	-0.21	0.037
120.00	-27.43	-1.37	0.00	-73.79	0.00	73.79	3365.73	1682.87	5319.21	2663.56		2.49	-0.22	0.036
125.00	-26.20	-1.37	0.00	-66.93	0.00	66.93	3290.76	1645.38	5044.03	2525.77		2.73	-0.23	0.034
130.00	-22.10	-1.36	0.00	-60.07	0.00	60.07	3204.00	1602.00	4758.48	2382.78		2.98	-0.24	0.032
135.00	-20.94	-1.36	0.00	-53.27	0.00	53.27	3102.32	1551.16	4459.76	2233.19		3.24	-0.25	0.031
140.00	-17.16	-1.34	0.00	-46.47	0.00	46.47	3000.64	1500.32	4170.72	2088.46		3.51	-0.26	0.028
142.75	-16.60	-1.34	0.00	-42.77	0.00	42.77	2944.72	1472.36	4015.87	2010.92		3.66	-0.27	0.027
145.00	-15.90	-1.34	0.00	-39.75	0.00	39.75	2898.96	1449.48	3891.36	1948.57		3.79	-0.27	0.026
147.25	-15.21	-1.34	0.00	-36.73	0.00	36.73	1774.96	887.48	2399.50	1201.53		3.92	-0.28	0.039
150.00	-13.66	-1.32	0.00	-33.05	0.00	33.05	1752.91	876.46	2323.79	1163.62		4.08	-0.28	0.036
155.00	-12.95	-1.30	0.00	-26.46	0.00	26.46	1711.62	855.81	2187.55	1095.40		4.39	-0.30	0.032
160.00	-8.30	-1.07	0.00	-19.94	0.00	19.94	1668.76	834.38	2053.31	1028.18		4.71	-0.31	0.024
165.00	-7.71	-1.04	0.00	-14.57	0.00	14.57	1624.34	812.17	1921.31	962.08		5.03	-0.32	0.020
170.00	-3.41	-0.63	0.00	-9.38	0.00	9.38	1578.35	789.17	1791.75	897.21		5.37	-0.32	0.013
175.00	-2.96	-0.57	0.00	-6.24	0.00	6.24	1530.79	765.40	1664.88	833.68		5.71	-0.33	0.009
180.00	-2.52	-0.51	0.00	-3.39	0.00	3.39	1481.67	740.83	1540.90	771.60		6.06	-0.33	0.006
185.00	-2.11	-0.43	0.00	-0.86	0.00	0.86	1427.20	713.60	1416.30	709.20		6.41	-0.34	0.003
187.00	0.00	-0.42	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		6.55	-0.34	0.000

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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

Seismic Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 40	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	22
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)**	0.29		**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	33.52	
10.00		1691.6	0.01	0.05	0.03	45.48	
15.00		1660.6	0.01	0.06	0.03	51.44	
20.00		1629.6	0.02	0.07	0.04	54.27	
25.00		1598.5	0.04	0.07	0.04	55.44	
30.00		1567.5	0.05	0.07	0.04	55.81	
35.00		1536.4	0.07	0.07	0.04	55.83	
40.00		1505.4	0.09	0.07	0.04	55.76	
45.00		1474.3	0.11	0.07	0.04	55.68	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	13.80	
50.00		2040.8	0.14	0.07	0.03	78.49	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	67.67	
55.00		437.17	0.17	0.07	0.03	17.05	
60.00		1230.7	0.20	0.06	0.02	48.21	
65.00		1203.5	0.23	0.06	0.02	46.51	
70.00		1176.3	0.27	0.05	0.02	43.56	
75.00		1149.2	0.31	0.04	0.01	38.89	
80.00		1122.0	0.35	0.03	0.01	32.08	
85.00		1094.9	0.40	0.02	0.01	22.90	
90.00		1067.7	0.44	0.00	0.01	11.59	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	12.71	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	0.76	
95.00		482.50	0.49	-0.01	0.01	-0.46	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-22.84	
100.00		43.70	0.55	-0.03	0.01	-0.58	
102.00	Appurtenance(s)	2706.6	0.57	-0.04	0.01	-48.62	
105.00		514.28	0.60	-0.05	0.01	-12.60	
110.00		838.51	0.66	-0.07	0.02	-28.00	
115.00		815.23	0.72	-0.09	0.03	-31.94	
120.00		791.94	0.78	-0.11	0.05	-32.91	
125.00		768.66	0.85	-0.12	0.07	-31.16	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-114.53	
135.00		722.09	0.99	-0.11	0.13	-20.72	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-52.53	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-4.07	
145.00		505.63	1.14	-0.04	0.21	-2.17	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	1.45	
150.00	Appurtenance(s)	1190.7	1.22	0.02	0.27	14.95	
155.00		427.74	1.30	0.12	0.34	13.91	
160.00	Appurtenance(s)	3707.3	1.39	0.26	0.42	206.28	
165.00		396.69	1.47	0.44	0.51	32.52	
170.00	Appurtenance(s)	3483.9	1.56	0.67	0.62	388.81	
175.00		365.64	1.66	0.96	0.75	52.86	
180.00		350.12	1.75	1.33	0.90	63.35	
185.00		334.60	1.85	1.78	1.07	73.87	

Seismic Segment Forces (Factored)

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 41

187.00	Appurtenance(s)		1754.9	1.89	1.98	1.14	417.17	
		Totals:	**58,355.4**				**1,759.5**	**Total Wind:** **50,828.9**

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	9/2/2021
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: 42

Load Case:	0.9D + 1.0E							**Iterations**	22
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)**	0.29	**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	-60.04	-2.17	0.00	-271.23	0.00	271.23	7001.91	3500.96	18524.4	9276.01		0.00	0.00	0.038
5.00	-58.25	-2.14	0.00	-260.40	0.00	260.40	6919.93	3459.96	17978.0	9002.40		0.00	-0.01	0.037
10.00	-56.48	-2.10	0.00	-249.70	0.00	249.70	6836.37	3418.19	17435.4	8730.69		0.02	-0.01	0.037
15.00	-54.74	-2.06	0.00	-239.20	0.00	239.20	6751.25	3375.63	16896.9	8461.01		0.03	-0.02	0.036
20.00	-53.03	-2.01	0.00	-228.92	0.00	228.92	6664.57	3332.28	16362.6	8193.47		0.06	-0.03	0.036
25.00	-51.35	-1.96	0.00	-218.88	0.00	218.88	6576.31	3288.16	15832.7	7928.16		0.09	-0.04	0.035
30.00	-49.69	-1.91	0.00	-209.09	0.00	209.09	6486.49	3243.25	15307.6	7665.22		0.14	-0.04	0.035
35.00	-48.06	-1.86	0.00	-199.56	0.00	199.56	6395.11	3197.55	14787.5	7404.75		0.19	-0.05	0.034
40.00	-46.47	-1.81	0.00	-190.27	0.00	190.27	6302.15	3151.08	14272.4	7146.85		0.24	-0.06	0.034
45.00	-44.89	-1.75	0.00	-181.24	0.00	181.24	6207.63	3103.82	13762.8	6891.65		0.31	-0.07	0.034
46.25	-44.51	-1.74	0.00	-179.05	0.00	179.05	6183.76	3091.88	13636.3	6828.29		0.33	-0.07	0.033
50.00	-42.49	-1.66	0.00	-172.53	0.00	172.53	6111.55	3055.77	13258.8	6639.26		0.39	-0.08	0.033
53.25	-40.76	-1.60	0.00	-167.12	0.00	167.12	5153.03	2576.51	11233.0	5624.85		0.44	-0.08	0.038
55.00	-40.28	-1.58	0.00	-164.32	0.00	164.32	5126.51	2563.25	11089.7	5553.12		0.47	-0.08	0.037
60.00	-38.93	-1.54	0.00	-156.40	0.00	156.40	5049.68	2524.84	10683.1	5349.50		0.56	-0.09	0.037
65.00	-37.60	-1.50	0.00	-148.71	0.00	148.71	4971.29	2485.64	10280.5	5147.92		0.66	-0.10	0.036
70.00	-36.30	-1.46	0.00	-141.22	0.00	141.22	4891.33	2445.66	9882.29	4948.49		0.77	-0.11	0.036
75.00	-35.02	-1.42	0.00	-133.94	0.00	133.94	4809.80	2404.90	9488.55	4751.33		0.89	-0.12	0.035
80.00	-33.77	-1.39	0.00	-126.84	0.00	126.84	4726.70	2363.35	9099.56	4556.54		1.02	-0.13	0.035
85.00	-32.54	-1.37	0.00	-119.88	0.00	119.88	4642.04	2321.02	8715.55	4364.25		1.16	-0.14	0.034
90.00	-31.33	-1.36	0.00	-113.02	0.00	113.02	4555.82	2277.91	8336.73	4174.56		1.31	-0.15	0.034
92.00	-29.41	-1.34	0.00	-110.30	0.00	110.30	4520.89	2260.44	8186.70	4099.44		1.38	-0.15	0.033
93.75	-29.00	-1.34	0.00	-107.95	0.00	107.95	4490.12	2245.06	8056.16	4034.07		1.43	-0.16	0.033
95.00	-28.51	-1.35	0.00	-106.27	0.00	106.27	4468.02	2234.01	7963.33	3987.58		1.48	-0.16	0.033
99.75	-26.65	-1.34	0.00	-99.87	0.00	99.87	3653.35	1826.67	6478.28	3243.96		1.64	-0.17	0.038
100.00	-26.60	-1.34	0.00	-99.53	0.00	99.53	3649.96	1824.98	6463.57	3236.59		1.65	-0.17	0.038
102.00	-24.07	-1.34	0.00	-96.85	0.00	96.85	3622.66	1811.33	6346.24	3177.84		1.72	-0.17	0.037
105.00	-23.47	-1.34	0.00	-92.83	0.00	92.83	3581.25	1790.63	6171.38	3090.28		1.83	-0.18	0.037
110.00	-22.48	-1.34	0.00	-86.12	0.00	86.12	3510.98	1755.49	5883.11	2945.93		2.03	-0.19	0.036
115.00	-21.52	-1.34	0.00	-79.41	0.00	79.41	3439.14	1719.57	5598.97	2803.65		2.23	-0.20	0.035
120.00	-20.57	-1.34	0.00	-72.69	0.00	72.69	3365.73	1682.87	5319.21	2663.56		2.45	-0.22	0.033
125.00	-19.65	-1.34	0.00	-65.97	0.00	65.97	3290.76	1645.38	5044.03	2525.77		2.69	-0.23	0.032
130.00	-16.57	-1.34	0.00	-59.25	0.00	59.25	3204.00	1602.00	4758.48	2382.78		2.93	-0.24	0.030
135.00	-15.71	-1.33	0.00	-52.57	0.00	52.57	3102.32	1551.16	4459.76	2233.19		3.18	-0.25	0.029
140.00	-12.87	-1.32	0.00	-45.90	0.00	45.90	3000.64	1500.32	4170.72	2088.46		3.45	-0.26	0.026
142.75	-12.45	-1.32	0.00	-42.26	0.00	42.26	2944.72	1472.36	4015.87	2010.92		3.60	-0.27	0.025
145.00	-11.92	-1.32	0.00	-39.28	0.00	39.28	2898.96	1449.48	3891.36	1948.57		3.73	-0.27	0.024
147.25	-11.40	-1.32	0.00	-36.31	0.00	36.31	1774.96	887.48	2399.50	1201.53		3.86	-0.28	0.037
150.00	-10.25	-1.30	0.00	-32.68	0.00	32.68	1752.91	876.46	2323.79	1163.62		4.02	-0.28	0.034
155.00	-9.71	-1.29	0.00	-26.18	0.00	26.18	1711.62	855.81	2187.55	1095.40		4.32	-0.29	0.030
160.00	-6.22	-1.06	0.00	-19.75	0.00	19.75	1668.76	834.38	2053.31	1028.18		4.63	-0.30	0.023
165.00	-5.78	-1.03	0.00	-14.44	0.00	14.44	1624.34	812.17	1921.31	962.08		4.96	-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		5.29	-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		5.62	-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		5.97	-0.33	0.006
185.00	-1.58	-0.43	0.00	-0.85	0.00	0.85	1427.20	713.60	1416.30	709.20		6.31	-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		6.45	-0.33	0.000

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 43

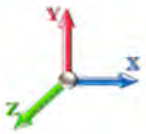
Wind Loading - Shaft

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 44	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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
102.00	Appurtenance(s)	1.00	1.27	11.150	12.26	246.64	0.650	0.000	2.00	7.324	4.76	58.4	0.0	347.5
105.00		1.00	1.28	11.218	12.34	243.43	0.650	0.000	3.00	10.840	7.05	86.9	0.0	514.3
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	9/2/2021
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: 45

Totals:	**187.00**	**5,160.8**	**40,789.2**

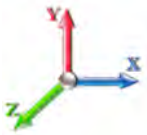
Discrete Appurtenance Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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	Low Profile Platform	1	12.656	13.921	1.00	1.00	22.00	1500.00	0.000	0.000	306.27	0.00	0.00
2	187.00	DB201	2	12.722	13.995	1.00	1.00	7.08	50.00	0.000	4.750	99.08	0.00	470.64
3	187.00	ANT450F6	1	12.711	13.982	1.00	1.00	1.86	21.00	0.000	3.917	26.01	0.00	101.86
4	187.00	ANT900D6-9	2	12.685	13.953	1.00	1.00	1.96	22.00	0.000	2.042	27.35	0.00	55.84
5	187.00	MF-900B	2	12.656	13.921	1.00	1.00	6.90	26.00	2.015	0.000	96.06	193.60	0.00
6	187.00	6' Lightning rod	1	12.656	13.921	1.00	1.00	0.38	6.50	0.000	0.000	5.29	0.00	0.00
7	170.00	DMP65R-BU6DA	3	12.406	13.646	0.54	0.75	20.59	238.20	0.000	0.000	280.98	0.00	0.00
8	170.00	CCI DTMABP7819VG12A	3	12.406	13.646	0.50	0.75	1.72	57.60	0.000	0.000	23.45	0.00	0.00
9	170.00	KAelus DBC0061F1V51-2	6	12.406	13.646	0.50	0.75	1.30	152.40	0.000	0.000	17.69	0.00	0.00
10	170.00	HPA-65R-BUU-H6	3	12.406	13.646	0.64	0.75	18.47	153.00	0.000	0.000	252.11	0.00	0.00
11	170.00	Low Profile Platform w/	1	12.406	13.646	1.00	1.00	27.70	1700.00	0.000	0.000	378.00	0.00	0.00
12	170.00	HPA65R-BU6AA-K	3	12.406	13.646	0.65	0.75	15.19	125.70	0.000	0.000	207.28	0.00	0.00
13	170.00	Ericsson RRUS-32	3	12.406	13.646	0.50	0.75	4.13	159.00	0.000	0.000	56.37	0.00	0.00
14	170.00	Ericsson RRUS 8843 B2	3	12.406	13.646	0.50	0.75	2.47	216.00	0.000	0.000	33.74	0.00	0.00
15	170.00	Ericsson RRUS 4449	3	12.406	13.646	0.50	0.75	2.97	219.60	0.000	0.000	40.53	0.00	0.00
16	170.00	CSS DBC-750	3	12.406	13.646	0.75	0.75	1.15	14.40	0.000	0.000	15.66	0.00	0.00
17	170.00	Raycap DC6-48-60-18-8F	2	12.406	13.646	0.75	0.75	1.38	63.60	0.000	0.000	18.83	0.00	0.00
18	170.00	Commscope	3	12.406	13.646	0.73	0.75	0.11	3.30	0.000	0.000	1.50	0.00	0.00
19	160.00	MS-1436 (Light Collar	1	12.249	13.474	1.00	1.00	1.50	65.60	0.000	0.000	20.21	0.00	0.00
20	160.00	MS-KI22-5 (Kickers)	1	12.249	13.474	1.00	1.00	5.33	146.00	0.000	0.000	71.82	0.00	0.00
21	160.00	SDX1926Q-43	3	12.249	13.474	0.50	0.75	0.78	12.90	0.000	0.000	10.56	0.00	0.00
22	160.00	4449 B71+B12	3	12.249	13.474	0.50	0.75	2.49	210.00	0.000	0.000	33.52	0.00	0.00
23	160.00	RRUS 4415 B25	3	12.249	13.474	0.50	0.75	2.47	138.00	0.000	0.000	33.31	0.00	0.00
24	160.00	APXVAARR24_43-U-NA2	3	12.249	13.474	0.52	0.75	31.88	384.00	0.000	0.000	429.53	0.00	0.00
25	160.00	Platform w/ Hand Rail	1	12.249	13.474	1.00	1.00	32.00	1600.00	0.000	0.000	431.18	0.00	0.00
26	160.00	Air32	3	12.249	13.474	0.65	0.75	12.74	396.60	0.000	0.000	171.71	0.00	0.00
27	160.00	KRY 112 144/1	3	12.249	13.474	0.50	0.75	0.62	33.00	0.000	0.000	8.33	0.00	0.00
28	160.00	AIR6449 B41	3	12.249	13.474	0.53	0.75	9.03	309.00	0.000	0.000	121.62	0.00	0.00
29	150.00	0208	3	12.085	13.294	0.54	0.80	2.20	59.40	0.000	0.000	29.29	0.00	0.00
30	150.00	4415	2	12.085	13.294	0.68	0.90	2.51	88.20	0.000	0.000	33.38	0.00	0.00
31	150.00	P-200 Stand-off	3	12.085	13.294	0.56	0.75	13.82	726.00	0.000	0.000	183.73	0.00	0.00
32	150.00	ODI2-065R18K-GQ	3	12.085	13.294	0.56	0.80	8.15	75.30	0.000	0.000	108.32	0.00	0.00
33	140.00	Low Profile Platform	1	11.912	13.103	1.00	1.00	22.00	1500.00	0.000	0.000	288.27	0.00	0.00
34	140.00	LNX-6514DS-VTM	3	11.912	13.103	0.60	0.75	14.56	99.30	0.000	0.000	190.81	0.00	0.00
35	140.00	FD9R6004/2C-3L	6	11.912	13.103	0.56	0.75	1.22	18.60	0.000	0.000	15.92	0.00	0.00
36	140.00	DB-T1-6Z-8AB-0Z	1	11.912	13.103	0.75	0.75	3.07	21.40	0.000	0.000	40.29	0.00	0.00
37	140.00	KS-24019	6	11.912	13.103	0.75	0.75	0.54	3.00	0.000	0.000	7.08	0.00	0.00
38	140.00	HBXX-6517DS-A2M	6	11.912	13.103	0.62	0.80	31.60	244.80	0.000	0.000	414.07	0.00	0.00
39	140.00	LNX-6514DS-A1M	3	11.912	13.103	0.66	0.80	16.27	115.20	0.000	0.000	213.25	0.00	0.00
40	140.00	RRH2x40-07-U	3	11.912	13.103	0.62	0.80	4.17	152.10	0.000	0.000	54.70	0.00	0.00
41	140.00	RRH2x60-1900	3	11.912	13.103	0.72	0.80	3.26	58.50	0.000	0.000	42.74	0.00	0.00
42	130.00	TD-RRH8x20-25	3	11.729	12.902	0.55	0.80	6.71	210.00	0.000	0.000	86.53	0.00	0.00
43	130.00	1900MHz RRH	3	11.729	12.902	0.70	0.80	8.03	132.00	0.000	0.000	103.54	0.00	0.00
44	130.00	800 MHz RRH	3	11.729	12.902	0.74	0.80	5.50	159.00	0.000	0.000	70.93	0.00	0.00
45	130.00	800MHz Filter	3	11.729	12.902	0.55	0.80	1.29	26.40	0.000	0.000	16.66	0.00	0.00
46	130.00	RF Filters	3	11.729	12.902	0.54	0.80	1.50	46.50	0.000	0.000	19.29	0.00	0.00
47	130.00	Low Profile Platform	1	11.729	12.902	1.00	1.00	22.00	1500.00	0.000	0.000	283.84	0.00	0.00

Discrete Appurtenance Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 47

48	130.00	APXVSPP18-C-A20	3	11.729	12.902	0.66	0.80	15.98	171.00	0.000	0.000	206.12	0.00	0.00
49	130.00	APXVTM14-C-120	3	11.729	12.902	0.63	0.80	12.02	168.00	0.000	0.000	155.09	0.00	0.00
50	130.00	ACU-A20-N	4	11.729	12.902	0.63	0.80	0.35	4.00	0.000	0.000	4.57	0.00	0.00
51	102.00	TA08025-B604	3	11.150	12.265	0.50	0.75	2.95	191.70	0.000	0.000	36.24	0.00	0.00
52	102.00	MX08FRO665-21	3	11.150	12.265	0.55	0.75	20.80	193.50	0.000	0.000	255.06	0.00	0.00
53	102.00	TA08025-B605	3	11.150	12.265	0.50	0.75	2.95	225.00	0.000	0.000	36.24	0.00	0.00
54	102.00	RDIDC-9181-OF-48	1	11.150	12.265	0.75	0.75	1.51	21.90	0.000	0.000	18.49	0.00	0.00
55	102.00	MC-PK8-DSH	1	11.150	12.265	1.00	1.00	37.59	1727.00	0.000	0.000	461.04	0.00	0.00
56	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
57	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
58	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
59	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
60	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
61	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:		**17,566.20**			**6,994.07**		

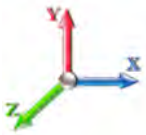
Total Applied Force Summary

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 48

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	1993.85	0.00	0.00
10.00		142.18	1962.80	0.00	0.00
15.00		141.31	1931.76	0.00	0.00
20.00		146.87	1900.71	0.00	0.00
25.00		150.72	1869.67	0.00	0.00
30.00		153.39	1838.62	0.00	0.00
35.00		155.19	1807.57	0.00	0.00
40.00		156.30	1776.53	0.00	0.00
45.00		156.86	1745.48	0.00	0.00
46.25		38.92	431.52	0.00	0.00
50.00		119.32	2244.16	0.00	0.00
53.25		103.22	1918.45	0.00	0.00
55.00		55.36	532.06	0.00	0.00
60.00		158.69	1501.83	0.00	0.00
65.00		157.81	1474.67	0.00	0.00
70.00		156.67	1447.50	0.00	0.00
75.00		155.29	1420.34	0.00	0.00
80.00		153.70	1393.17	0.00	0.00
85.00		151.92	1366.01	0.00	0.00
90.00		149.96	1338.84	0.00	0.00
92.00	(7) attachments	459.82	2132.93	191.29	344.80
93.75		51.50	456.69	0.00	0.00
95.00		37.22	549.08	0.00	0.00
99.75		140.69	2057.75	0.00	0.00
100.00		7.31	57.02	0.00	0.00
102.00	(11) attachments	865.45	2813.14	0.00	0.00
105.00		86.95	668.43	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	(24) attachments	1445.85	3875.21	0.00	0.00
165.00		110.52	495.79	0.00	0.00
170.00	(36) attachments	1433.04	3583.07	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	9/2/2021
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: 49

Tower Engineering Solutions

Totals:	**12,154.85**	**66,711.58**	**384.89**	**973.13**

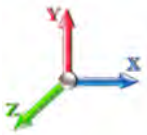
Linear Appurtenance Segment Forces (Factored)

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 50	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	9.40
10.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	9.40
15.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.534	0.00	9.40
20.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.978	0.00	9.40
25.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.345	0.00	9.40
30.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.659	0.00	9.40
35.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.936	0.00	9.40
40.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.184	0.00	9.40
45.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.410	0.00	9.40
46.25	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	9.463	0.00	2.35
50.00	1.6" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	9.616	0.00	7.05
53.25	1.6" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	9.742	0.00	6.11
55.00	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	9.807	0.00	3.29
60.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.986	0.00	9.40
65.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.153	0.00	9.40
70.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.310	0.00	9.40
75.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.459	0.00	9.40
80.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.600	0.00	9.40
85.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.734	0.00	9.40
90.00	1.6" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.863	0.00	9.40
92.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.913	0.00	3.76
93.75	1.6" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	10.956	0.00	3.29
95.00	1.6" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	10.986	0.00	2.35
99.75	1.6" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	11.098	0.00	8.93
100.00	1.6" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	11.104	0.00	0.47
102.00	1.6" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.150	0.00	3.76
									Totals:		**0.0**	**191.8**

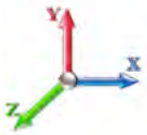
Calculated Forces

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 51	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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	-66.71	-12.18	-0.38	-1536.0	0.00	1536.00	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.175
5.00	-64.70	-12.08	-0.38	-1475.1	0.00	1475.11	6919.93	3459.96	17978.0	9002.40	0.02	-0.040	0.000	0.173
10.00	-62.73	-11.98	-0.38	-1414.7	0.00	1414.72	6836.37	3418.19	17435.4	8730.69	0.09	-0.081	0.000	0.171
15.00	-60.79	-11.88	-0.38	-1354.8	0.00	1354.83	6751.25	3375.63	16896.9	8461.01	0.19	-0.122	0.000	0.169
20.00	-58.88	-11.77	-0.38	-1295.4	0.00	1295.44	6664.57	3332.28	16362.6	8193.47	0.34	-0.163	0.000	0.167
25.00	-57.01	-11.65	-0.38	-1236.6	0.00	1236.60	6576.31	3288.16	15832.7	7928.16	0.54	-0.205	0.000	0.165
30.00	-55.16	-11.53	-0.38	-1178.3	0.00	1178.33	6486.49	3243.25	15307.6	7665.22	0.77	-0.248	0.000	0.162
35.00	-53.35	-11.41	-0.38	-1120.6	0.00	1120.66	6395.11	3197.55	14787.5	7404.75	1.06	-0.291	0.000	0.160
40.00	-51.56	-11.28	-0.38	-1063.6	0.00	1063.60	6302.15	3151.08	14272.4	7146.85	1.38	-0.334	0.000	0.157
45.00	-49.81	-11.14	-0.38	-1007.1	0.00	1007.18	6207.63	3103.82	13762.8	6891.65	1.76	-0.378	0.000	0.154
46.25	-49.38	-11.12	-0.38	-993.25	0.00	993.25	6183.76	3091.88	13636.3	6828.29	1.86	-0.389	0.000	0.153
50.00	-47.13	-11.01	-0.38	-951.56	0.00	951.56	6111.55	3055.77	13258.8	6639.26	2.18	-0.422	0.000	0.151
53.25	-45.20	-10.91	-0.38	-915.79	0.00	915.79	5153.03	2576.51	11233.0	5624.85	2.47	-0.451	0.000	0.172
55.00	-44.67	-10.87	-0.38	-896.70	0.00	896.70	5126.51	2563.25	11089.7	5553.12	2.64	-0.467	0.000	0.170
60.00	-43.16	-10.74	-0.38	-842.33	0.00	842.33	5049.68	2524.84	10683.1	5349.50	3.16	-0.516	0.000	0.166
65.00	-41.68	-10.60	-0.38	-788.64	0.00	788.64	4971.29	2485.64	10280.5	5147.92	3.72	-0.564	0.000	0.162
70.00	-40.22	-10.46	-0.38	-735.63	0.00	735.63	4891.33	2445.66	9882.29	4948.49	4.34	-0.612	0.000	0.157
75.00	-38.79	-10.33	-0.38	-683.30	0.00	683.30	4809.80	2404.90	9488.55	4751.33	5.01	-0.661	0.000	0.152
80.00	-37.39	-10.19	-0.38	-631.68	0.00	631.68	4726.70	2363.35	9099.56	4556.54	5.73	-0.709	0.000	0.147
85.00	-36.02	-10.05	-0.38	-580.74	0.00	580.74	4642.04	2321.02	8715.55	4364.25	6.49	-0.756	0.000	0.141
90.00	-34.68	-9.90	-0.38	-530.51	0.00	530.51	4555.82	2277.91	8336.73	4174.56	7.31	-0.803	0.000	0.135
92.00	-32.55	-9.42	-0.19	-510.36	0.00	510.36	4520.89	2260.44	8186.70	4099.44	7.65	-0.822	0.000	0.132
93.75	-32.09	-9.37	-0.19	-493.88	0.00	493.88	4490.12	2245.06	8056.16	4034.07	7.96	-0.839	0.000	0.130
95.00	-31.54	-9.34	-0.19	-482.17	0.00	482.17	4468.02	2234.01	7963.33	3987.58	8.18	-0.850	0.000	0.128
99.75	-29.48	-9.18	-0.19	-437.81	0.00	437.81	3653.35	1826.67	6478.28	3243.96	9.05	-0.894	0.000	0.143
100.00	-29.42	-9.18	-0.19	-435.52	0.00	435.52	3649.96	1824.98	6463.57	3236.59	9.09	-0.896	0.000	0.143
102.00	-26.62	-8.28	-0.19	-417.16	0.00	417.16	3622.66	1811.33	6346.24	3177.84	9.47	-0.916	0.000	0.139
105.00	-25.95	-8.20	-0.19	-392.33	0.00	392.33	3581.25	1790.63	6171.38	3090.28	10.06	-0.946	0.000	0.134
110.00	-24.85	-8.06	-0.19	-351.35	0.00	351.35	3510.98	1755.49	5883.11	2945.93	11.08	-0.993	0.000	0.126
115.00	-23.77	-7.92	-0.19	-311.07	0.00	311.07	3439.14	1719.57	5598.97	2803.65	12.14	-1.039	0.000	0.118
120.00	-22.72	-7.78	-0.19	-271.49	0.00	271.49	3365.73	1682.87	5319.21	2663.56	13.25	-1.083	0.000	0.109
125.00	-21.69	-7.64	-0.19	-232.62	0.00	232.62	3290.76	1645.38	5044.03	2525.77	14.41	-1.125	-0.001	0.099
130.00	-18.29	-6.50	-0.19	-194.44	0.00	194.44	3204.00	1602.00	4758.48	2382.78	15.61	-1.164	-0.001	0.087
135.00	-17.33	-6.36	-0.19	-161.93	0.00	161.93	3102.32	1551.16	4459.76	2233.19	16.85	-1.199	-0.001	0.078
140.00	-14.20	-4.91	-0.19	-130.12	0.00	130.12	3000.64	1500.32	4170.72	2088.46	18.12	-1.231	-0.001	0.067
142.75	-13.73	-4.83	-0.19	-116.62	0.00	116.62	2944.72	1472.36	4015.87	2010.92	18.84	-1.247	-0.001	0.063
145.00	-13.15	-4.77	-0.19	-105.74	0.00	105.74	2898.96	1449.48	3891.36	1948.57	19.43	-1.260	-0.001	0.059
147.25	-12.58	-4.70	-0.19	-95.01	0.00	95.01	1774.96	887.48	2399.50	1201.53	20.02	-1.272	-0.001	0.086
150.00	-11.30	-4.26	-0.19	-82.08	0.00	82.08	1752.91	876.46	2323.79	1163.62	20.76	-1.286	-0.001	0.077
155.00	-10.70	-4.13	-0.19	-60.78	0.00	60.78	1711.62	855.81	2187.55	1095.40	22.12	-1.316	-0.001	0.062
160.00	-6.86	-2.60	-0.19	-40.11	0.00	40.11	1668.76	834.38	2053.31	1028.18	23.52	-1.340	-0.001	0.043
165.00	-6.37	-2.48	-0.19	-27.10	0.00	27.10	1624.34	812.17	1921.31	962.08	24.93	-1.358	-0.001	0.032
170.00	-2.82	-0.96	-0.19	-14.70	0.00	14.70	1578.35	789.17	1791.75	897.21	26.36	-1.370	-0.001	0.018
175.00	-2.45	-0.85	-0.19	-9.88	0.00	9.88	1530.79	765.40	1664.88	833.68	27.80	-1.378	-0.001	0.013
180.00	-2.09	-0.74	-0.19	-5.62	0.00	5.62	1481.67	740.83	1540.90	771.60	29.25	-1.384	-0.001	0.009
185.00	-1.74	-0.64	-0.19	-1.91	0.00	1.91	1427.20	713.60	1416.30	709.20	30.70	-1.388	-0.002	0.004
187.00	0.00	-0.60	-0.19	-0.63	0.00	0.63	1400.09	700.04	1362.73	682.38	31.28	-1.388	-0.002	0.001

Calculated Forces

Structure:	CT07824-S-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
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: 52

Final Analysis Summary

Structure:	CT07824-S-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
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: 53	

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	50.9	0.00	79.98	0.02	0.99	6465.14
0.9D + 1.6W 97 mph Wind	50.9	0.00	59.96	0.01	0.99	6389.87
1.2D + 1.0Di + 1.0Wi 50 mph Wind	17.2	0.00	132.27	0.03	2.75	2301.40
1.2D + 1.0E	2.2	0.00	80.05	0.00	0.00	274.73
0.9D + 1.0E	2.2	0.00	60.04	0.00	0.00	271.23
1.0D + 1.0W 60 mph Wind	12.2	0.00	66.71	0.00	0.38	1536.00

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	-79.98	-50.95	-0.99	-6465.1	-0.02	-6465.1	7001.91	3500.9	18524.4	9276.01	0.00	0.709
0.9D + 1.6W 97 mph Wind	-59.96	-50.92	-0.99	-6389.8	-0.01	-6389.8	7001.91	3500.9	18524.4	9276.01	0.00	0.698
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-98.18	-16.11	-2.75	-1407.3	-0.04	-1407.3	5153.03	2576.5	11233.0	5624.85	53.25	0.269
1.2D + 1.0E	-80.05	-2.17	0.00	-274.73	0.00	-274.73	7001.91	3500.9	18524.4	9276.01	0.00	0.041
0.9D + 1.0E	-26.65	-1.34	0.00	-99.87	0.00	-99.87	3653.35	1826.6	6478.28	3243.96	99.75	0.038
1.0D + 1.0W 60 mph Wind	-66.71	-12.18	-0.38	-1536.0	0.00	-1536.0	7001.91	3500.9	18524.4	9276.01	0.00	0.175

Base Plate Summary

Structure:	CT07824-S-SB		**Code:**	EIA/TIA-222-G	9/2/2021
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: 54

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	6540.46
Axial (kip):	82.75
Shear (kip):	47.90
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	6465.14
Axial (kip):	79.98
Shear (kip):	50.95

Base Plate	
Yield (ksi):	60.00
Width (in):	78.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	11.23
Moment (kip-in):	608.26
Allow Stress (ksi):	81.00
Applied Stress (ksi):	51.84
Stress Ratio:	0.64

Anchor Bolts	
Bolt Circle:	72.00
Number Bolts:	26.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	170.86
Allowable (kip):	260.00
Ratio:	0.67
Tension	
Force (kip):	160.69
Allowable (kip):	260.00
Ratio:	0.63

Monopole Mat Foundation Design

Customer Name:	Dish Wireless	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	187
Site Number:	CT07824-S-SBA	**Engineer Name:**	M. Franco
Engr. Number:	114609	**Engineer Login ID:**	

Date 9/2/2021

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

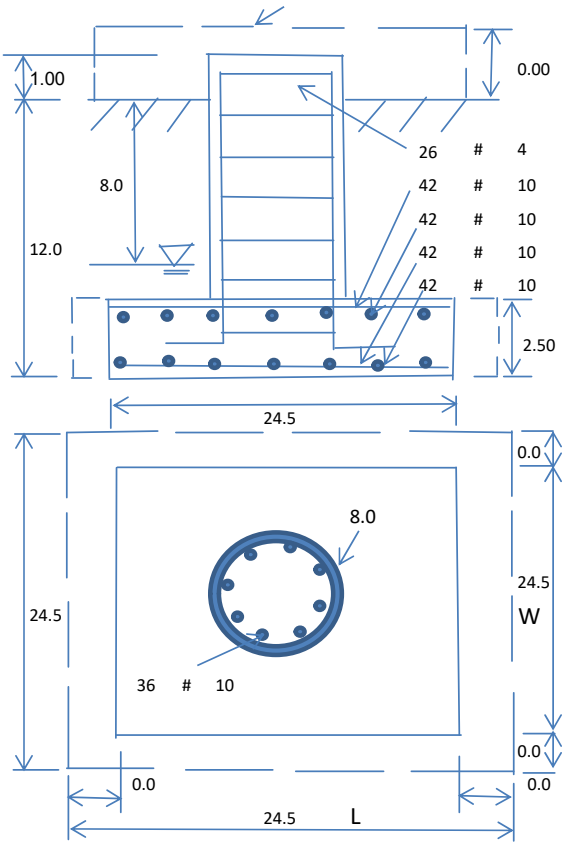
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	80.0	Shear Force (Kips):	50.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	6465.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	12.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.50
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 Reabr 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		
Water Table B.G.S. (ft):	8.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
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):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	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):	858.37

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	5198	<	Allowable Factored Soil Bearing (psf):	6000	0.87	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9526.1	>	Design Factored Momont (kips-ft):	6441	0.68	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.48	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	8888.9	>	Design Factored Moment (Mu, Kips-F	6999.6	0.79	OK!
Calculated Shear Capacity (Kips):	993.9	>	Design Factored Shear (Kips):	50.9	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):	80.0	0.01	OK!
Moment & Axial Strength Combination:	0.79	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):	421.1	0.57	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	735.6	>	One-Way Factored Shear (W-D., Kips)	421.1	0.57	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	668.1	>	One-Way Factored Shear (C-C, Kips):	415.6	0.62	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):	2082.5	0.35	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5946.5	>	Moment at Bottom (W-Dir. K-Ft):	2082.5	0.35	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8246.5	>	Moment at Bottom (C-C Dir. K-Ft):	2945.1	0.36	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):	784.8	0.13	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5946.5	>	Moment at the top (W-Dir K-Ft):	784.8	0.13	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8246.5	>	Moment at the top (C-C Dir. K-Ft):	742.1	0.09	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	2586.0	k-ft.	Max. factored shear stress v_{u_CD}:		4.4	Psi
Max. factored shear stress v_{u_AB}:	17.4	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	17.4	Psi	Check Usage of Punching Shear Capacity:		0.09	OK!

EXHIBIT 9

Antenna Mount Analysis

March 21, 2022

Sherri Knapik
SBA Network Services, LLC
134 Flanders Road, Suite 125
Westborough, MA 01581
(508) 251.0720 x3805

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
towersupport@btgrp.com

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	***Dish Wireless* Co-Locate**	
	Site Number:	BOBDL00122A
	Site Name:	N/A
SBA Network Services Designation:	**Site Number:**	CT07824-S-10
	Site Name:	South Windsor
	Application Number:	187602, v1
Engineering Firm Designation:	**B+T Group Project Number:**	149448.003.01
Site Data:	**151 Sand Hill Road, South Windsor, CT, 06074, Hartford County** **Latitude *41.83600*°, Longitude - *72.55200*°** **Monopole** **8 ft. Platform Mount**	

Dear Sherri Knapik,

B+T Group is pleased to submit this **"Appurtenance Mount Analysis Report"** to determine the structural integrity of the antenna mount on the above-mentioned structure.

The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level for the mount under the following load case to be:

Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 56.0%)**

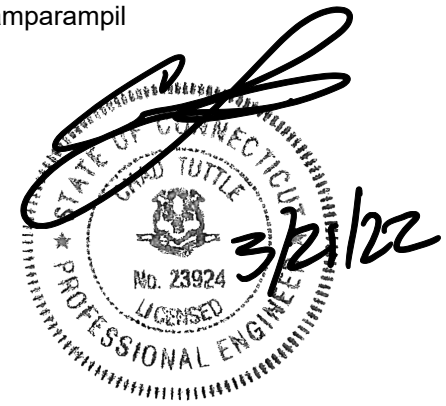
This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All the equipment proposed in this report shall be installed in accordance with the drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and *SBA Network Services, LLC*. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Joseph Variamparampil

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/01/2023



Chad E. Tuttle, P.E.

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1) INTRODUCTION

The appurtenance mount consists of **Commscope platform mount, Part# MC-PK8-DSH** at 150 ft., attached to monopole at 151 Sand Hill Road, South Windsor, CT, 06074, Hartford County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to B+T Group was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3-second gust wind speed of 118 mph with no ice and 50 mph with 1.5 inch escalated ice thickness. Exposure Category C & Topographic Category 1 and Risk Category II were used in this analysis. In addition, the platform mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust of 30 mph. The mount was analyzed under 30º increments in the wind direction. The analyzed loading is detailed in Table 1.

Table 1 – Proposed Equipment Information

Loading	RAD Center Elev. (ft.)	Position	Qty.	Description	Note
Proposed	150	1	3	JMA Wireless MX08FRO665-21	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		-	1	Raycap RDIDC-9181-PF-48	3

Note:
(1) Proposed Antenna to be installed on the Mount Pipe.
(2) Proposed Equipment to be installed directly behind the Antenna.
(3) Proposed Equipment to be installed on the mount.

Table 2 – Documents Provided

Documents	Remarks	Reference	Source
SBA Application	Proposed Loading Mount Info	Date: 03/15/2022	SBA Network Services, LLC
RFDS	Proposed Loading	Date: 07/23/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.

5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The following material grades were assumed (Unless Noted Otherwise):
   a) Connection Bolts : ASTM A325
   b) Steel Pipe : ASTM A53 (GR. 35)
   c) HSS (Round) : ASTM 500 (GR. B-42)
   d) HSS (Rectangular) : ASTM 500 (GR. B-46)
   e) Channel : ASTM A36 (GR. 36)
   f) Steel Solid Rod : ASTM A36 (GR. 36)
   g) Steel Plate : ASTM A36 (GR. 36)
   h) Steel Angle : ASTM A36 (GR. 36)
   i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	150	8.2	Pass
-	Support Rails	150	14.8	Pass
-	Support Tubes	150	56.0	Pass
-	Support Channels	150	43.4	Pass
-	Support Angels	150	39.6	Pass
-	Mount Pipes	150	16.7	Pass
-	Connection Plates	150	24.2	Pass
-	Connection Angles	150	25.5	Pass

5) RECOMMENDATIONS

The **Commscope platform mount, Part# MC-PK8-DSH** has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-H standard for the proposed loading. (Refer to the RISA output for the specific members).

APPENDIX A

(RISA-3D Output)

Envelope Only Solution

B+T Group	CT07824-S-10 - South Windsor	SK-1
MP		Mar 19, 2022
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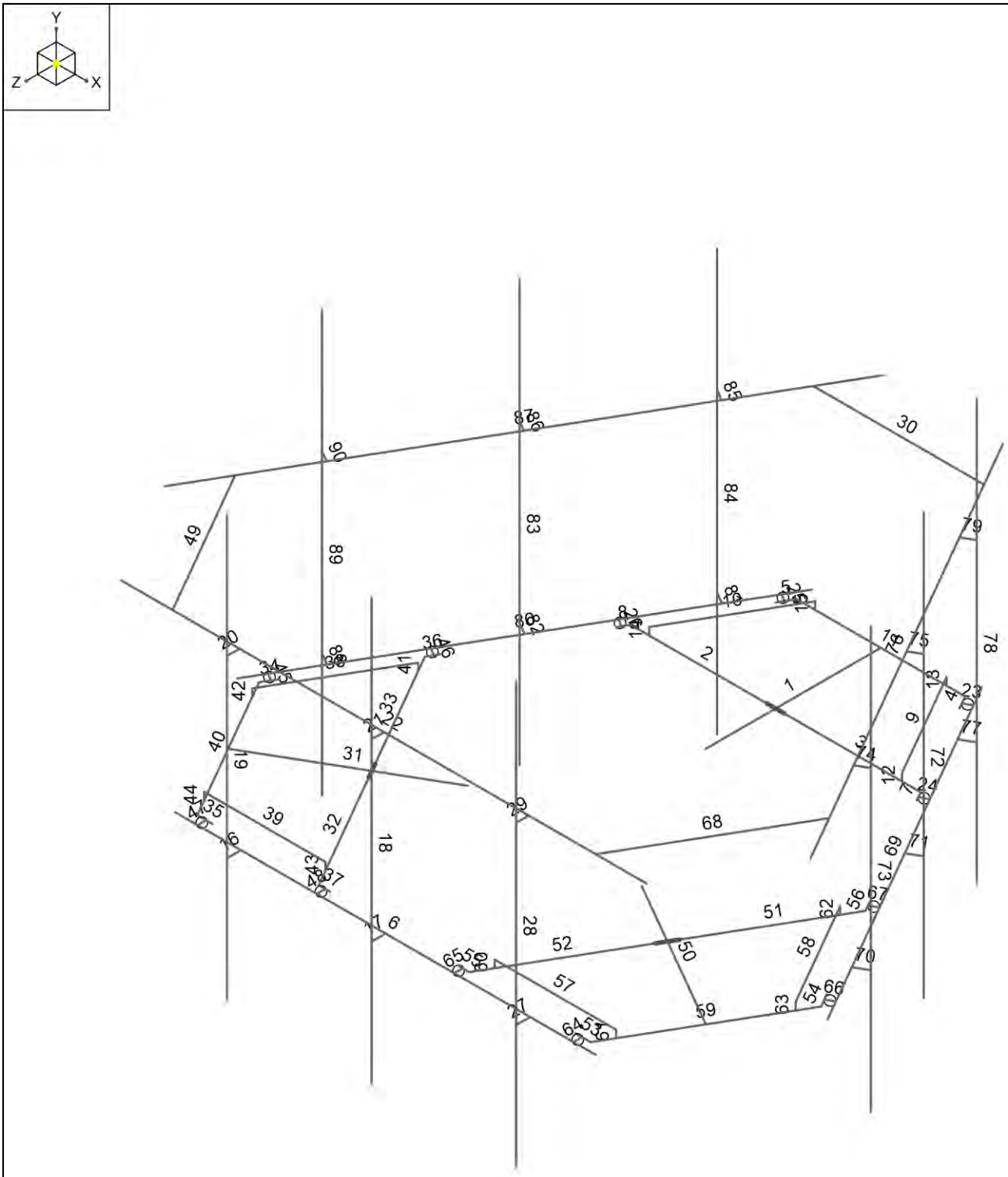

Envelope Only Solution

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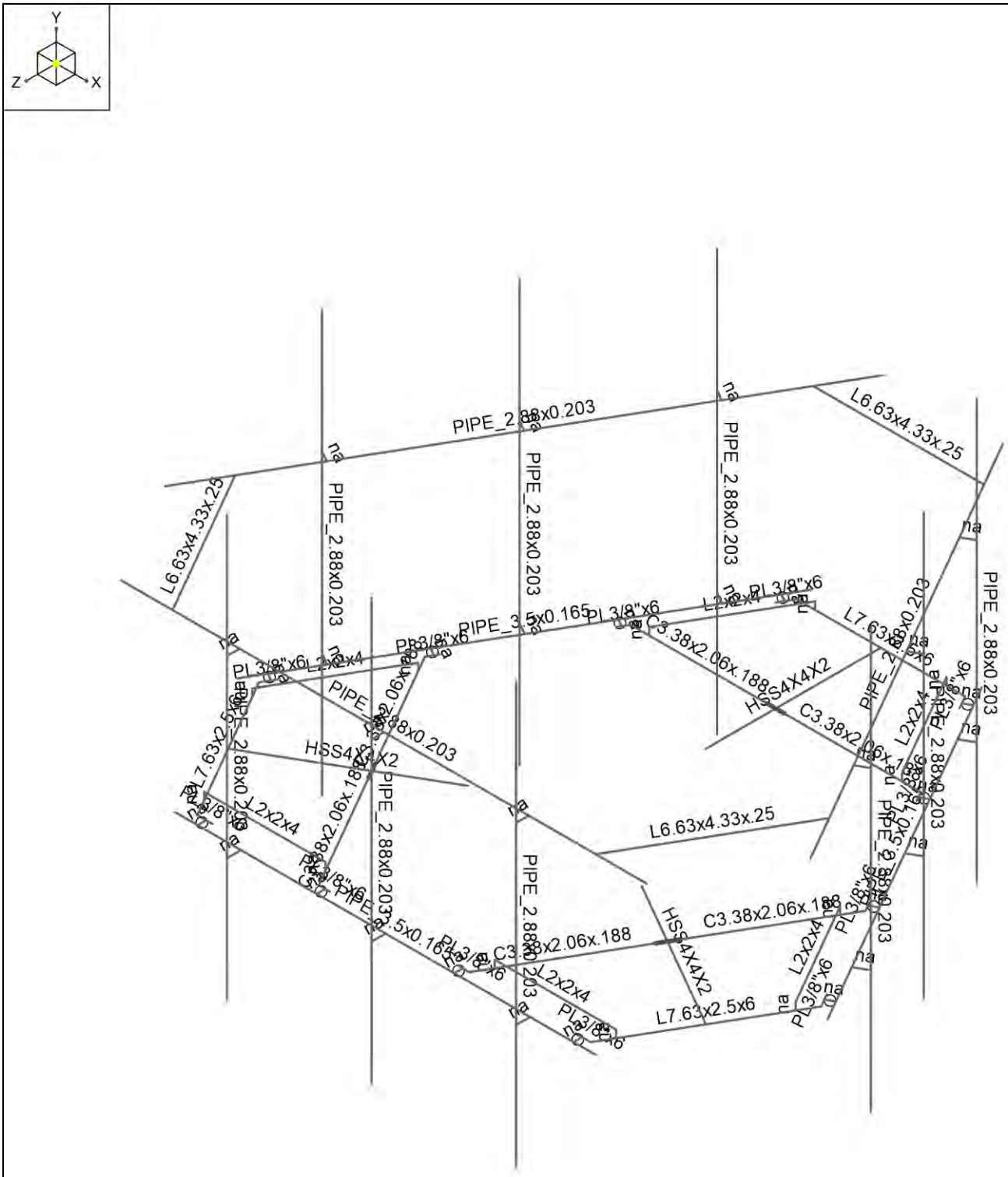

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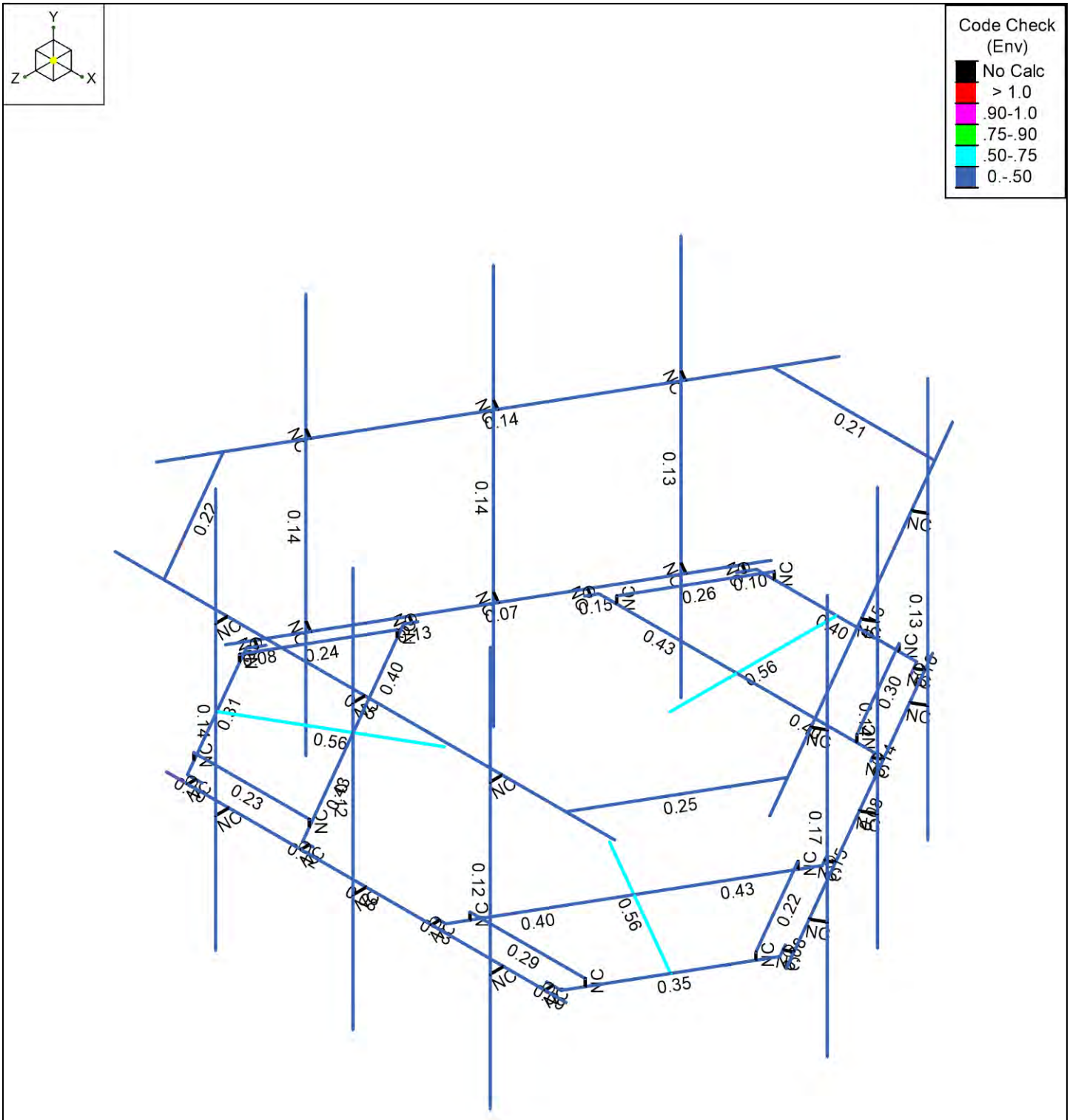

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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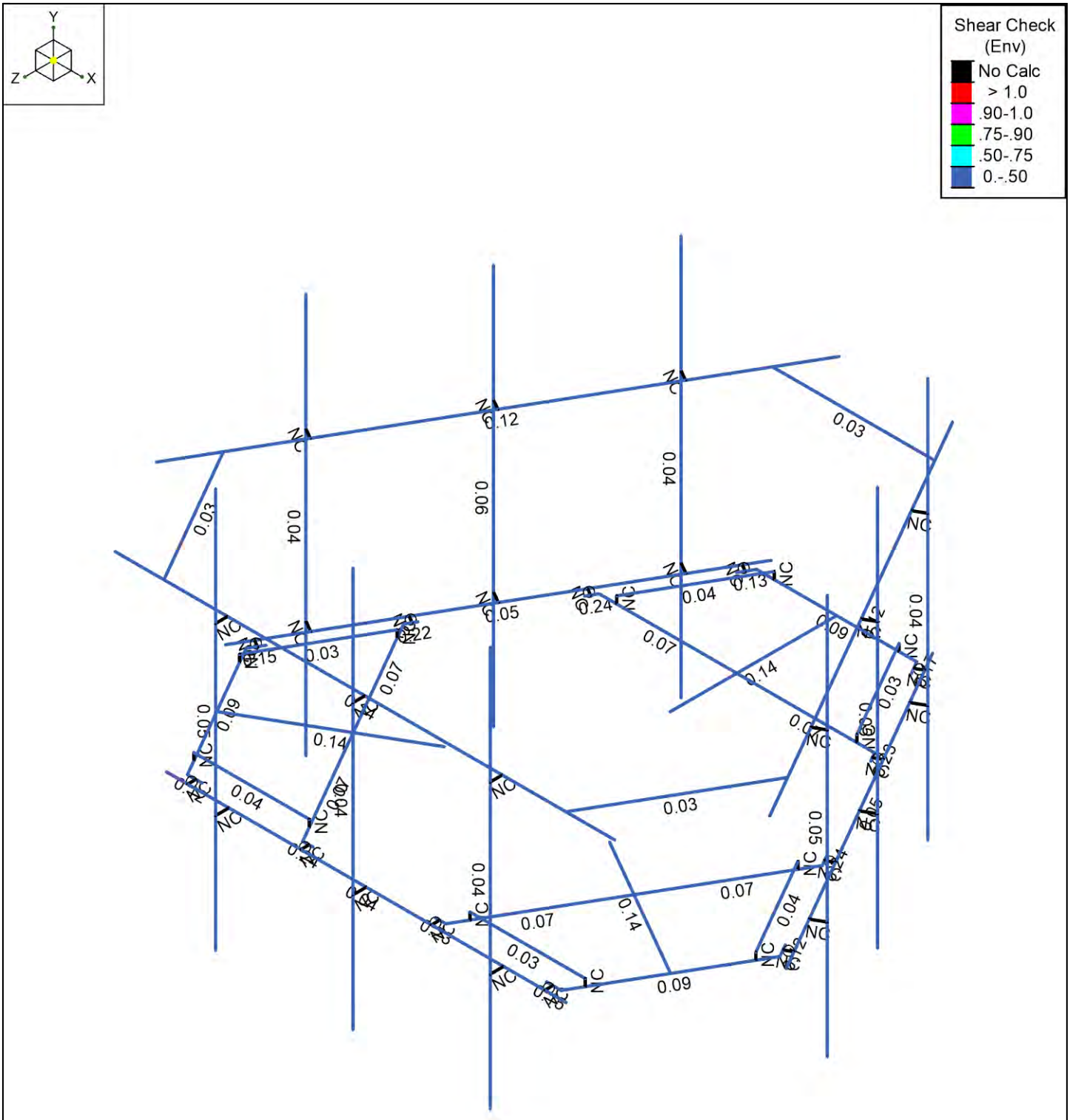

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT07824-S-10 - South Windsor	SK-5
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Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0.167	-1.913	
2	2	0	0.167	-5.246334	
3	3	0	0.167	-3.246334	
4	4	2.758333	0.167	-3.246334	
5	5	-2.758333	0.167	-3.246334	
6	6	-1.603633	0.167	-5.246334	
7	7	1.603633	0.167	-5.246334	
8	8	1.749466	0.167	-4.993743	
9	9	-1.749466	0.167	-4.993743	
10	10	1.686966	0.167	-5.101996	
11	11	1.826839	0.167	-5.182752	
12	12	-1.686966	0.167	-5.101996	
13	13	-1.826839	0.167	-5.182752	
14	14	-3.999998	0.167	4.173465	
15	15	3.999998	0.167	4.173465	
16	16	2.8625	0.167	-3.065912	
17	17	2.820833	0.167	-3.138081	
18	18	2.960706	0.167	-3.218837	
19	19	-2.8625	0.167	-3.065912	
20	20	-2.820833	0.167	-3.138081	
21	21	-2.960706	0.167	-3.218837	
22	22	-1.25	0.307833	-5.246334	
23	23	-2.404701	0.307833	-3.246334	
24	24	2.404701	0.307833	-3.246334	
25	25	1.25	0.307833	-5.246334	
26	26	-1.25	0.167	-5.246334	
27	27	-2.404701	0.167	-3.246334	
28	28	2.404701	0.167	-3.246334	
29	29	1.25	0.167	-5.246334	
30	30	-2.749998	0.167	4.173465	
31	31	0.000002	0.167	4.173465	
32	32	-2.749998	0.167	4.43909	
33	33	0.000002	0.167	4.43909	
34	34	-2.749998	-2.1667	4.43909	
35	35	0.000002	-2.1667	4.43909	
36	36	-2.749998	5.8333	4.43909	
37	37	0.000002	5.8333	4.43909	
38	38	-2.749998	3.500227	4.43909	
39	39	0.000002	3.500227	4.43909	
40	40	-2.749998	3.500227	4.199965	
41	41	0.000002	3.500227	4.199965	
42	42	-5	3.500227	4.199965	
43	43	5	3.500227	4.199965	
44	44	2.749998	0.167	4.173465	
45	45	2.749998	0.167	4.43909	
46	46	2.749998	-2.1667	4.43909	
47	47	2.749998	5.8333	4.43909	
48	48	2.749998	3.500227	4.43909	
49	49	2.749998	3.500227	4.199965	
50	50	0	0.167	0	
51	51	1.625019	3.500227	-5.585314	
52	52	-1.625019	3.500227	-5.585314	
53	53	-1.656707	0.167	0.9565	
54	54	-4.543458	0.167	2.623167	
55	55	-2.811407	0.167	1.623167	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-4.190574	0.167	-0.76562	
57	57	-1.432241	0.167	4.011954	
58	58	-3.741642	0.167	4.011954	
59	59	-5.345275	0.167	1.23438	
60	60	-5.199441	0.167	0.981789	
61	61	-3.449975	0.167	4.011954	
62	62	-5.261941	0.167	1.090043	
63	63	-5.401814	0.167	1.009287	
64	64	-3.574975	0.167	4.011954	
65	65	-3.574975	0.167	4.173465	
66	66	-4.086407	0.167	-0.946042	
67	67	-4.128075	0.167	-0.873872	
68	68	-4.267947	0.167	-0.954628	
69	69	-1.223907	0.167	4.011954	
70	70	-1.307242	0.167	4.011954	
71	71	-1.307242	0.167	4.173465	
72	72	-3.918458	0.307833	3.705699	
73	73	-1.609057	0.307833	3.705699	
74	74	-4.013758	0.307833	-0.459365	
75	75	-5.168458	0.307833	1.540635	
76	76	-3.918458	0.167	3.705699	
77	77	-1.609057	0.167	3.705699	
78	78	-4.013758	0.167	-0.459365	
79	79	-5.168458	0.167	1.540635	
80	80	-5.649533	3.500227	1.385349	
81	81	-4.024514	3.500227	4.199965	
82	82	1.656707	0.167	0.9565	
83	83	4.543458	0.167	2.623167	
84	84	2.811407	0.167	1.623167	
85	85	1.432241	0.167	4.011954	
86	86	4.190574	0.167	-0.76562	
87	87	5.345275	0.167	1.23438	
88	88	3.741642	0.167	4.011954	
89	89	3.449975	0.167	4.011954	
90	90	5.199441	0.167	0.981789	
91	91	3.574975	0.167	4.011954	
92	92	3.574975	0.167	4.173465	
93	93	5.261941	0.167	1.090043	
94	94	5.401814	0.167	1.009287	
95	95	1.223907	0.167	4.011954	
96	96	1.307242	0.167	4.011954	
97	97	1.307242	0.167	4.173465	
98	98	4.086407	0.167	-0.946042	
99	99	4.128075	0.167	-0.873872	
100	100	4.267947	0.167	-0.954628	
101	101	5.168458	0.307833	1.540635	
102	102	4.013758	0.307833	-0.459365	
103	103	1.609057	0.307833	3.705699	
104	104	3.918458	0.307833	3.705699	
105	105	5.168458	0.167	1.540635	
106	106	4.013758	0.167	-0.459365	
107	107	1.609057	0.167	3.705699	
108	108	3.918458	0.167	3.705699	
109	109	4.024514	3.500227	4.199965	
110	110	5.649533	3.500227	1.385349	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.614326	0.167	1.377368	
112	112	1.614327	0.167	-5.550832	
113	113	4.989326	0.167	0.294836	
114	114	3.614326	0.167	-2.086734	
115	115	5.219364	0.167	0.162023	
116	116	3.844364	0.167	-2.219547	
117	117	5.219364	-2.1667	0.162023	
118	118	3.844364	-2.1667	-2.219547	
119	119	5.219364	5.8333	0.162023	
120	120	3.844364	5.8333	-2.219547	
121	121	5.219364	3.500227	0.162023	
122	122	3.844364	3.500227	-2.219547	
123	123	5.012275	3.500227	0.281586	
124	124	3.637275	3.500227	-2.099984	
125	125	6.137276	3.500227	2.230145	
126	126	1.137276	3.500227	-6.43011	
127	127	2.239327	0.167	-4.468301	
128	128	2.469365	0.167	-4.601113	
129	129	2.469365	-2.1667	-4.601113	
130	130	2.469365	5.8333	-4.601113	
131	131	2.469365	3.500227	-4.601113	
132	132	2.262277	3.500227	-4.481551	
133	133	-1.614327	0.167	-5.550832	
134	134	-5.614326	0.167	1.377368	
135	135	-2.239327	0.167	-4.468301	
136	136	-3.614327	0.167	-2.086731	
137	137	-2.469365	0.167	-4.601113	
138	138	-3.844365	0.167	-2.219543	
139	139	-2.469365	-2.1667	-4.601113	
140	140	-3.844365	-2.1667	-2.219543	
141	141	-2.469365	5.8333	-4.601113	
142	142	-3.844365	5.8333	-2.219543	
143	143	-2.469365	3.500227	-4.601113	
144	144	-3.844365	3.500227	-2.219543	
145	145	-2.262277	3.500227	-4.481551	
146	146	-3.637277	3.500227	-2.099981	
147	147	-1.137276	3.500227	-6.43011	
148	148	-6.137276	3.500227	2.230145	
149	149	-4.989326	0.167	0.294836	
150	150	-5.219364	0.167	0.162023	
151	151	-5.219364	-2.1667	0.162023	
152	152	-5.219364	5.8333	0.162023	
153	153	-5.219364	3.500227	0.162023	
154	154	-5.012275	3.500227	0.281586	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	2						
3	3						
4	4						
5	5						
6	16						
7	17						
8	19						

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
9	20						
10	22						
11	25						
12	26						
13	29						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	66						
20	67						
21	69						
22	70						
23	72						
24	75						
25	76						
26	79						
27	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	83						
29	84						
30	85						
31	86						
32	95						
33	96						
34	98						
35	99						
36	101						
37	104						
38	105						
39	108						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	MF-H1	PIPE_3.5x0.165	Beam	Pipe	A500 Gr.C	Typical	1.729	2.409	2.409	4.819
2	MF-H2	PIPE_2.88x0.203	Beam	Pipe	A500 Gr.C	Typical	1.704	1.53	1.53	3.059
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38x2.06x.188	Beam	Channel	A36 Gr.36	Typical	1.339	0.562	2.4	0.015
5	SF-H3	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
6	SF-H4	L7.63x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	3.658	1.307	22.092	0.163
7	MF-P1	PIPE_2.88x0.203	Column	Pipe	A500 Gr.C	Typical	1.704	1.53	1.53	3.059
8	MF-CP1	PL3/8"x6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
9	MF-H3	L6.63x4.33x.25	Beam	Single Angle	A36 Gr.36	Typical	2.678	4.383	12.502	0.054

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	25	24		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24		RIGID	None	None	RIGID	Typical
13	13	29	25		RIGID	None	None	RIGID	Typical
14	14	27	23		RIGID	None	None	RIGID	Typical
15	15	26	22		RIGID	None	None	RIGID	Typical
16	16	32	30		RIGID	None	None	RIGID	Typical
17	17	33	31		RIGID	None	None	RIGID	Typical
18	18	37	35		MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	36	34		MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	38	40		RIGID	None	None	RIGID	Typical
21	21	39	41		RIGID	None	None	RIGID	Typical
22	22	42	43		MF-H2	Beam	Pipe	A500 Gr.C	Typical
23	23	11	10		RIGID	None	None	RIGID	Typical
24	24	18	17		RIGID	None	None	RIGID	Typical
25	25	13	12		RIGID	None	None	RIGID	Typical
26	26	21	20		RIGID	None	None	RIGID	Typical
27	27	45	44		RIGID	None	None	RIGID	Typical
28	28	47	46		MF-P1	Column	Pipe	A500 Gr.C	Typical
29	29	48	49		RIGID	None	None	RIGID	Typical
30	30	51	52	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
31	31	53	54		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74		RIGID	None	None	RIGID	Typical
42	42	79	75		RIGID	None	None	RIGID	Typical
43	43	77	73		RIGID	None	None	RIGID	Typical
44	44	76	72		RIGID	None	None	RIGID	Typical
45	45	63	62		RIGID	None	None	RIGID	Typical
46	46	68	67		RIGID	None	None	RIGID	Typical
47	47	65	64		RIGID	None	None	RIGID	Typical
48	48	71	70		RIGID	None	None	RIGID	Typical
49	49	80	81	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
50	50	82	83		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
51	51	86	84	180	SF-H2	Beam	Channel	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
53	53	88	89		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	92	91		RIGID	None	None	RIGID	Typical
65	65	97	96		RIGID	None	None	RIGID	Typical
66	66	94	93		RIGID	None	None	RIGID	Typical
67	67	100	99		RIGID	None	None	RIGID	Typical
68	68	109	110	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
69	69	111	112		MF-H1	Beam	Pipe	A500 Gr.C	Typical
70	70	115	113		RIGID	None	None	RIGID	Typical
71	71	116	114		RIGID	None	None	RIGID	Typical
72	72	120	118		MF-P1	Column	Pipe	A500 Gr.C	Typical
73	73	119	117		MF-P1	Column	Pipe	A500 Gr.C	Typical
74	74	121	123		RIGID	None	None	RIGID	Typical
75	75	122	124		RIGID	None	None	RIGID	Typical
76	76	125	126		MF-H2	Beam	Pipe	A500 Gr.C	Typical
77	77	128	127		RIGID	None	None	RIGID	Typical
78	78	130	129		MF-P1	Column	Pipe	A500 Gr.C	Typical
79	79	131	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A500 Gr.C	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	142	140		MF-P1	Column	Pipe	A500 Gr.C	Typical
84	84	141	139		MF-P1	Column	Pipe	A500 Gr.C	Typical
85	85	143	145		RIGID	None	None	RIGID	Typical
86	86	144	146		RIGID	None	None	RIGID	Typical
87	87	147	148		MF-H2	Beam	Pipe	A500 Gr.C	Typical
88	88	150	149		RIGID	None	None	RIGID	Typical
89	89	152	151		MF-P1	Column	Pipe	A500 Gr.C	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
1	1				Yes	Default	None
2	2			2	Yes	N/A	None
3	3		2		Yes	N/A	None
4	4				Yes	N/A	None
5	5				Yes	N/A	None
6	6				Yes	N/A	None
7	7				Yes	N/A	None
8	8				Yes	N/A	None
9	9				Yes	N/A	None
10	10				Yes	N/A	None
11	11				Yes	N/A	None
12	12				Yes	** NA **	None
13	13				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
14	14				Yes	** NA **	None
15	15				Yes	** NA **	None
16	16				Yes	** NA **	None
17	17				Yes	** NA **	None
18	18				Yes	** NA **	None
19	19				Yes	** NA **	None
20	20				Yes	** NA **	None
21	21				Yes	** NA **	None
22	22				Yes	N/A	None
23	23	OOOOOX			Yes	** NA **	None
24	24	OOOOOX			Yes	** NA **	None
25	25	OOOOOX			Yes	** NA **	None
26	26	OOOOOX			Yes	** NA **	None
27	27				Yes	** NA **	None
28	28				Yes	** NA **	None
29	29				Yes	** NA **	None
30	30				Yes	N/A	None
31	31				Yes	Default	None
32	32			2	Yes	N/A	None
33	33		2		Yes	N/A	None
34	34				Yes	N/A	None
35	35				Yes	N/A	None
36	36				Yes	N/A	None
37	37				Yes	N/A	None
38	38				Yes	N/A	None
39	39				Yes	N/A	None
40	40				Yes	N/A	None
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44				Yes	** NA **	None
45	45	OOOOOX			Yes	** NA **	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48	OOOOOX			Yes	** NA **	None
49	49				Yes	N/A	None
50	50				Yes	Default	None
51	51			2	Yes	N/A	None
52	52		2		Yes	N/A	None
53	53				Yes	N/A	None
54	54				Yes	N/A	None
55	55				Yes	N/A	None
56	56				Yes	N/A	None
57	57				Yes	N/A	None
58	58				Yes	N/A	None
59	59				Yes	N/A	None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62				Yes	** NA **	None
63	63				Yes	** NA **	None
64	64	OOOOOX			Yes	** NA **	None
65	65	OOOOOX			Yes	** NA **	None
66	66	OOOOOX			Yes	** NA **	None
67	67	OOOOOX			Yes	** NA **	None
68	68				Yes	N/A	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
69	69				Yes	N/A	None
70	70				Yes	** NA **	None
71	71				Yes	** NA **	None
72	72				Yes	** NA **	None
73	73				Yes	** NA **	None
74	74				Yes	** NA **	None
75	75				Yes	** NA **	None
76	76				Yes	N/A	None
77	77				Yes	** NA **	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes	N/A	None
81	81				Yes	** NA **	None
82	82				Yes	** NA **	None
83	83				Yes	** NA **	None
84	84				Yes	** NA **	None
85	85				Yes	** NA **	None
86	86				Yes	** NA **	None
87	87				Yes	N/A	None
88	88				Yes	** NA **	None
89	89				Yes	** NA **	None
90	90				Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	SF-H1	3.333	Lbyy	Lateral
2	2	SF-H2	2.758	Lbyy	Lateral
3	3	SF-H2	2.758	Lbyy	Lateral
4	4	MF-CP1	0.292	Lbyy	Lateral
5	5	MF-CP1	0.292	Lbyy	Lateral
6	6	MF-H1	8	Lbyy	Lateral
7	7	MF-CP1	0.208	Lbyy	Lateral
8	8	MF-CP1	0.208	Lbyy	Lateral
9	9	SF-H3	2.309	Lbyy	Lateral
10	10	SF-H3	2.309	Lbyy	Lateral
11	11	SF-H4	3.207	Lbyy	Lateral
12	18	MF-P1	8	Lbyy	Lateral
13	19	MF-P1	8	Lbyy	Lateral
14	22	MF-H2	10	Lbyy	Lateral
15	28	MF-P1	8	Lbyy	Lateral
16	30	MF-H3	3.25	Lbyy	Lateral
17	31	SF-H1	3.333	Lbyy	Lateral
18	32	SF-H2	2.758	Lbyy	Lateral
19	33	SF-H2	2.758	Lbyy	Lateral
20	34	MF-CP1	0.292	Lbyy	Lateral
21	35	MF-CP1	0.292	Lbyy	Lateral
22	36	MF-CP1	0.208	Lbyy	Lateral
23	37	MF-CP1	0.208	Lbyy	Lateral
24	38	SF-H3	2.309	Lbyy	Lateral
25	39	SF-H3	2.309	Lbyy	Lateral
26	40	SF-H4	3.207	Lbyy	Lateral
27	49	MF-H3	3.25	Lbyy	Lateral
28	50	SF-H1	3.333	Lbyy	Lateral
29	51	SF-H2	2.758	Lbyy	Lateral
30	52	SF-H2	2.758	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
31	53	MF-CP1	0.292	Lbyy	Lateral
32	54	MF-CP1	0.292	Lbyy	Lateral
33	55	MF-CP1	0.208	Lbyy	Lateral
34	56	MF-CP1	0.208	Lbyy	Lateral
35	57	SF-H3	2.309	Lbyy	Lateral
36	58	SF-H3	2.309	Lbyy	Lateral
37	59	SF-H4	3.207	Lbyy	Lateral
38	68	MF-H3	3.25	Lbyy	Lateral
39	69	MF-H1	8	Lbyy	Lateral
40	72	MF-P1	8	Lbyy	Lateral
41	73	MF-P1	8	Lbyy	Lateral
42	76	MF-H2	10	Lbyy	Lateral
43	78	MF-P1	8	Lbyy	Lateral
44	80	MF-H1	8	Lbyy	Lateral
45	83	MF-P1	8	Lbyy	Lateral
46	84	MF-P1	8	Lbyy	Lateral
47	87	MF-H2	10	Lbyy	Lateral
48	89	MF-P1	8	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.032	%15
2	28	Y	-0.032	%85
3	28	Y	-0.064	%20
4	28	Y	-0.075	%50
5	28	Y	0	0
6	89	Y	-0.032	%15
7	89	Y	-0.032	%85
8	89	Y	-0.064	%20
9	89	Y	-0.075	%50
10	89	Y	0	0
11	78	Y	-0.032	%15
12	78	Y	-0.032	%85
13	78	Y	-0.064	%20
14	78	Y	-0.075	%50
15	78	Y	0	0
16	31	Y	-0.022	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.186	%15
2	28	Z	-0.186	%85
3	28	Z	-0.082	%20
4	28	Z	-0.082	%50
5	28	Z	0	0
6	89	Z	-0.186	%15
7	89	Z	-0.186	%85
8	89	Z	-0.082	%20
9	89	Z	-0.082	%50

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	89	Z	0	0
11	78	Z	-0.186	%15
12	78	Z	-0.186	%85
13	78	Z	-0.082	%20
14	78	Z	-0.082	%50
15	78	Z	0	0
16	31	Z	-0.084	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.075	%15
2	28	X	-0.075	%85
3	28	X	-0.041	%20
4	28	X	-0.047	%50
5	28	X	0	0
6	89	X	-0.075	%15
7	89	X	-0.075	%85
8	89	X	-0.041	%20
9	89	X	-0.047	%50
10	89	X	0	0
11	78	X	-0.075	%15
12	78	X	-0.075	%85
13	78	X	-0.041	%20
14	78	X	-0.047	%50
15	78	X	0	0
16	31	X	-0.049	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.04	%15
2	28	Z	-0.04	%85
3	28	Z	-0.015	%20
4	28	Z	-0.015	%50
5	28	Z	0	0
6	89	Z	-0.04	%15
7	89	Z	-0.04	%85
8	89	Z	-0.015	%20
9	89	Z	-0.015	%50
10	89	Z	0	0
11	78	Z	-0.04	%15
12	78	Z	-0.04	%85
13	78	Z	-0.015	%20
14	78	Z	-0.015	%50
15	78	Z	0	0
16	31	Z	-0.015	%20

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.019	%15
2	28	X	-0.019	%85
3	28	X	-0.007	%20
4	28	X	-0.009	%50
5	28	X	0	0
6	89	X	-0.019	%15
7	89	X	-0.019	%85
8	89	X	-0.007	%20
9	89	X	-0.009	%50
10	89	X	0	0
11	78	X	-0.019	%15
12	78	X	-0.019	%85
13	78	X	-0.007	%20
14	78	X	-0.009	%50
15	78	X	0	0
16	31	X	-0.009	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.012	%15
2	28	Z	-0.012	%85
3	28	Z	-0.005	%20
4	28	Z	-0.005	%50
5	28	Z	0	0
6	89	Z	-0.012	%15
7	89	Z	-0.012	%85
8	89	Z	-0.005	%20
9	89	Z	-0.005	%50
10	89	Z	0	0
11	78	Z	-0.012	%15
12	78	Z	-0.012	%85
13	78	Z	-0.005	%20
14	78	Z	-0.005	%50
15	78	Z	0	0
16	31	Z	-0.005	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.005	%15
2	28	X	-0.005	%85
3	28	X	-0.003	%20
4	28	X	-0.003	%50
5	28	X	0	0
6	89	X	-0.005	%15
7	89	X	-0.005	%85
8	89	X	-0.003	%20
9	89	X	-0.003	%50
10	89	X	0	0
11	78	X	-0.005	%15
12	78	X	-0.005	%85
13	78	X	-0.003	%20
14	78	X	-0.003	%50
15	78	X	0	0
16	31	X	-0.003	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.164	%15
2	28	Y	-0.164	%85
3	28	Y	-0.051	%20
4	28	Y	-0.053	%50
5	28	Y	0	0
6	89	Y	-0.164	%15
7	89	Y	-0.164	%85
8	89	Y	-0.051	%20
9	89	Y	-0.053	%50
10	89	Y	0	0
11	78	Y	-0.164	%15
12	78	Y	-0.164	%85
13	78	Y	-0.051	%20
14	78	Y	-0.053	%50
15	78	Y	0	0
16	31	Y	-0.055	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.014	%15
2	28	Z	-0.014	%85
3	28	Z	-0.014	%20
4	28	Z	-0.016	%50
5	28	Z	0	0
6	89	Z	-0.014	%15

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	89	Z	-0.014	%85
8	89	Z	-0.014	%20
9	89	Z	-0.016	%50
10	89	Z	0	0
11	78	Z	-0.014	%15
12	78	Z	-0.014	%85
13	78	Z	-0.014	%20
14	78	Z	-0.016	%50
15	78	Z	0	0
16	31	Z	-0.005	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.014	%15
2	28	X	-0.014	%85
3	28	X	-0.014	%20
4	28	X	-0.016	%50
5	28	X	0	0
6	89	X	-0.014	%15
7	89	X	-0.014	%85
8	89	X	-0.014	%20
9	89	X	-0.016	%50
10	89	X	0	0
11	78	X	-0.014	%15
12	78	X	-0.014	%85
13	78	X	-0.014	%20
14	78	X	-0.016	%50
15	78	X	0	0
16	31	X	-0.005	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	Y	-0.25	%95

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%95

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	50	Y	-0.25	%95

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.02	-0.02	0	%100
2	2	Z	-0.017	-0.017	0	%100
3	3	Z	-0.017	-0.017	0	%100
4	4	Z	-0.025	-0.025	0	%100
5	5	Z	-0.025	-0.025	0	%100
6	6	Z	-0.014	-0.014	0	%100
7	7	Z	-0.025	-0.025	0	%100
8	8	Z	-0.025	-0.025	0	%100
9	9	Z	-0.011	-0.011	0	%100
10	10	Z	-0.011	-0.011	0	%100
11	11	Z	-0.034	-0.034	0	%100
12	18	Z	-0.012	-0.012	0	%100
13	19	Z	-0.012	-0.012	0	%100
14	22	Z	-0.012	-0.012	0	%100
15	28	Z	-0.012	-0.012	0	%100
16	30	Z	-0.031	-0.031	0	%100
17	31	Z	-0.02	-0.02	0	%100
18	32	Z	-0.017	-0.017	0	%100
19	33	Z	-0.017	-0.017	0	%100
20	34	Z	-0.025	-0.025	0	%100
21	35	Z	-0.025	-0.025	0	%100
22	36	Z	-0.025	-0.025	0	%100
23	37	Z	-0.025	-0.025	0	%100
24	38	Z	-0.011	-0.011	0	%100
25	39	Z	-0.011	-0.011	0	%100
26	40	Z	-0.034	-0.034	0	%100
27	49	Z	-0.031	-0.031	0	%100
28	50	Z	-0.02	-0.02	0	%100
29	51	Z	-0.017	-0.017	0	%100
30	52	Z	-0.017	-0.017	0	%100
31	53	Z	-0.025	-0.025	0	%100
32	54	Z	-0.025	-0.025	0	%100
33	55	Z	-0.025	-0.025	0	%100
34	56	Z	-0.025	-0.025	0	%100
35	57	Z	-0.011	-0.011	0	%100
36	58	Z	-0.011	-0.011	0	%100
37	59	Z	-0.034	-0.034	0	%100
38	68	Z	-0.031	-0.031	0	%100
39	69	Z	-0.014	-0.014	0	%100
40	72	Z	-0.012	-0.012	0	%100
41	73	Z	-0.012	-0.012	0	%100
42	76	Z	-0.012	-0.012	0	%100
43	78	Z	-0.012	-0.012	0	%100
44	80	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
45	83	Z	-0.012	-0.012	0	%100
46	84	Z	-0.012	-0.012	0	%100
47	87	Z	-0.012	-0.012	0	%100
48	89	Z	-0.012	-0.012	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.02	-0.02	0	%100
2	2	X	-0.017	-0.017	0	%100
3	3	X	-0.017	-0.017	0	%100
4	4	X	-0.025	-0.025	0	%100
5	5	X	-0.025	-0.025	0	%100
6	6	X	-0.014	-0.014	0	%100
7	7	X	-0.025	-0.025	0	%100
8	8	X	-0.025	-0.025	0	%100
9	9	X	-0.011	-0.011	0	%100
10	10	X	-0.011	-0.011	0	%100
11	11	X	-0.034	-0.034	0	%100
12	18	X	-0.012	-0.012	0	%100
13	19	X	-0.012	-0.012	0	%100
14	22	X	-0.012	-0.012	0	%100
15	28	X	-0.012	-0.012	0	%100
16	30	X	-0.031	-0.031	0	%100
17	31	X	-0.02	-0.02	0	%100
18	32	X	-0.017	-0.017	0	%100
19	33	X	-0.017	-0.017	0	%100
20	34	X	-0.025	-0.025	0	%100
21	35	X	-0.025	-0.025	0	%100
22	36	X	-0.025	-0.025	0	%100
23	37	X	-0.025	-0.025	0	%100
24	38	X	-0.011	-0.011	0	%100
25	39	X	-0.011	-0.011	0	%100
26	40	X	-0.034	-0.034	0	%100
27	49	X	-0.031	-0.031	0	%100
28	50	X	-0.02	-0.02	0	%100
29	51	X	-0.017	-0.017	0	%100
30	52	X	-0.017	-0.017	0	%100
31	53	X	-0.025	-0.025	0	%100
32	54	X	-0.025	-0.025	0	%100
33	55	X	-0.025	-0.025	0	%100
34	56	X	-0.025	-0.025	0	%100
35	57	X	-0.011	-0.011	0	%100
36	58	X	-0.011	-0.011	0	%100
37	59	X	-0.034	-0.034	0	%100
38	68	X	-0.031	-0.031	0	%100
39	69	X	-0.014	-0.014	0	%100
40	72	X	-0.012	-0.012	0	%100
41	73	X	-0.012	-0.012	0	%100
42	76	X	-0.012	-0.012	0	%100
43	78	X	-0.012	-0.012	0	%100
44	80	X	-0.014	-0.014	0	%100
45	83	X	-0.012	-0.012	0	%100
46	84	X	-0.012	-0.012	0	%100
47	87	X	-0.012	-0.012	0	%100
48	89	X	-0.012	-0.012	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.008	-0.008	0	%100
2	2	Z	-0.007	-0.007	0	%100
3	3	Z	-0.007	-0.007	0	%100
4	4	Z	-0.014	-0.014	0	%100
5	5	Z	-0.014	-0.014	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.017	-0.017	0	%100
8	8	Z	-0.017	-0.017	0	%100
9	9	Z	-0.006	-0.006	0	%100
10	10	Z	-0.006	-0.006	0	%100
11	11	Z	-0.01	-0.01	0	%100
12	18	Z	-0.003	-0.003	0	%100
13	19	Z	-0.003	-0.003	0	%100
14	22	Z	-0.003	-0.003	0	%100
15	28	Z	-0.003	-0.003	0	%100
16	30	Z	-0.009	-0.009	0	%100
17	31	Z	-0.008	-0.008	0	%100
18	32	Z	-0.007	-0.007	0	%100
19	33	Z	-0.007	-0.007	0	%100
20	34	Z	-0.014	-0.014	0	%100
21	35	Z	-0.014	-0.014	0	%100
22	36	Z	-0.017	-0.017	0	%100
23	37	Z	-0.017	-0.017	0	%100
24	38	Z	-0.006	-0.006	0	%100
25	39	Z	-0.006	-0.006	0	%100
26	40	Z	-0.01	-0.01	0	%100
27	49	Z	-0.009	-0.009	0	%100
28	50	Z	-0.008	-0.008	0	%100
29	51	Z	-0.007	-0.007	0	%100
30	52	Z	-0.007	-0.007	0	%100
31	53	Z	-0.014	-0.014	0	%100
32	54	Z	-0.014	-0.014	0	%100
33	55	Z	-0.017	-0.017	0	%100
34	56	Z	-0.017	-0.017	0	%100
35	57	Z	-0.006	-0.006	0	%100
36	58	Z	-0.006	-0.006	0	%100
37	59	Z	-0.01	-0.01	0	%100
38	68	Z	-0.009	-0.009	0	%100
39	69	Z	-0.003	-0.003	0	%100
40	72	Z	-0.003	-0.003	0	%100
41	73	Z	-0.003	-0.003	0	%100
42	76	Z	-0.003	-0.003	0	%100
43	78	Z	-0.003	-0.003	0	%100
44	80	Z	-0.003	-0.003	0	%100
45	83	Z	-0.003	-0.003	0	%100
46	84	Z	-0.003	-0.003	0	%100
47	87	Z	-0.003	-0.003	0	%100
48	89	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.008	-0.008	0	%100
2	2	X	-0.007	-0.007	0	%100
3	3	X	-0.007	-0.007	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	4	X	-0.014	-0.014	0	%100
5	5	X	-0.014	-0.014	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.017	-0.017	0	%100
8	8	X	-0.017	-0.017	0	%100
9	9	X	-0.006	-0.006	0	%100
10	10	X	-0.006	-0.006	0	%100
11	11	X	-0.01	-0.01	0	%100
12	18	X	-0.003	-0.003	0	%100
13	19	X	-0.003	-0.003	0	%100
14	22	X	-0.003	-0.003	0	%100
15	28	X	-0.003	-0.003	0	%100
16	30	X	-0.009	-0.009	0	%100
17	31	X	-0.008	-0.008	0	%100
18	32	X	-0.007	-0.007	0	%100
19	33	X	-0.007	-0.007	0	%100
20	34	X	-0.014	-0.014	0	%100
21	35	X	-0.014	-0.014	0	%100
22	36	X	-0.017	-0.017	0	%100
23	37	X	-0.017	-0.017	0	%100
24	38	X	-0.006	-0.006	0	%100
25	39	X	-0.006	-0.006	0	%100
26	40	X	-0.01	-0.01	0	%100
27	49	X	-0.009	-0.009	0	%100
28	50	X	-0.008	-0.008	0	%100
29	51	X	-0.007	-0.007	0	%100
30	52	X	-0.007	-0.007	0	%100
31	53	X	-0.014	-0.014	0	%100
32	54	X	-0.014	-0.014	0	%100
33	55	X	-0.017	-0.017	0	%100
34	56	X	-0.017	-0.017	0	%100
35	57	X	-0.006	-0.006	0	%100
36	58	X	-0.006	-0.006	0	%100
37	59	X	-0.01	-0.01	0	%100
38	68	X	-0.009	-0.009	0	%100
39	69	X	-0.003	-0.003	0	%100
40	72	X	-0.003	-0.003	0	%100
41	73	X	-0.003	-0.003	0	%100
42	76	X	-0.003	-0.003	0	%100
43	78	X	-0.003	-0.003	0	%100
44	80	X	-0.003	-0.003	0	%100
45	83	X	-0.003	-0.003	0	%100
46	84	X	-0.003	-0.003	0	%100
47	87	X	-0.003	-0.003	0	%100
48	89	X	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.0005	-0.0005	0	%100
7	7	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.0004	-0.0004	0	%100
13	19	Z	-0.0004	-0.0004	0	%100
14	22	Z	-0.0004	-0.0004	0	%100
15	28	Z	-0.0004	-0.0004	0	%100
16	30	Z	-0.002	-0.002	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.0007	-0.0007	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	49	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	58	Z	-0.0007	-0.0007	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	68	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0004	-0.0004	0	%100
41	73	Z	-0.0004	-0.0004	0	%100
42	76	Z	-0.0004	-0.0004	0	%100
43	78	Z	-0.0004	-0.0004	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0004	-0.0004	0	%100
46	84	Z	-0.0004	-0.0004	0	%100
47	87	Z	-0.0004	-0.0004	0	%100
48	89	Z	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.0005	-0.0005	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
12	18	X	-0.0004	-0.0004	0	%100
13	19	X	-0.0004	-0.0004	0	%100
14	22	X	-0.0004	-0.0004	0	%100
15	28	X	-0.0004	-0.0004	0	%100
16	30	X	-0.002	-0.002	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.0007	-0.0007	0	%100
26	40	X	-0.002	-0.002	0	%100
27	49	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	58	X	-0.0007	-0.0007	0	%100
37	59	X	-0.002	-0.002	0	%100
38	68	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0004	-0.0004	0	%100
41	73	X	-0.0004	-0.0004	0	%100
42	76	X	-0.0004	-0.0004	0	%100
43	78	X	-0.0004	-0.0004	0	%100
44	80	X	-0.0005	-0.0005	0	%100
45	83	X	-0.0004	-0.0004	0	%100
46	84	X	-0.0004	-0.0004	0	%100
47	87	X	-0.0004	-0.0004	0	%100
48	89	X	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.016	-0.016	0	%100
2	2	Y	-0.012	-0.012	0	%100
3	3	Y	-0.012	-0.012	0	%100
4	4	Y	-0.017	-0.017	0	%100
5	5	Y	-0.017	-0.017	0	%100
6	6	Y	-0.011	-0.011	0	%100
7	7	Y	-0.017	-0.017	0	%100
8	8	Y	-0.017	-0.017	0	%100
9	9	Y	-0.01	-0.01	0	%100
10	10	Y	-0.01	-0.01	0	%100
11	11	Y	-0.021	-0.021	0	%100
12	18	Y	-0.01	-0.01	0	%100
13	19	Y	-0.01	-0.01	0	%100
14	22	Y	-0.01	-0.01	0	%100
15	28	Y	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	30	Y	-0.021	-0.021	0	%100
17	31	Y	-0.016	-0.016	0	%100
18	32	Y	-0.012	-0.012	0	%100
19	33	Y	-0.012	-0.012	0	%100
20	34	Y	-0.017	-0.017	0	%100
21	35	Y	-0.017	-0.017	0	%100
22	36	Y	-0.017	-0.017	0	%100
23	37	Y	-0.017	-0.017	0	%100
24	38	Y	-0.01	-0.01	0	%100
25	39	Y	-0.01	-0.01	0	%100
26	40	Y	-0.021	-0.021	0	%100
27	49	Y	-0.021	-0.021	0	%100
28	50	Y	-0.016	-0.016	0	%100
29	51	Y	-0.012	-0.012	0	%100
30	52	Y	-0.012	-0.012	0	%100
31	53	Y	-0.017	-0.017	0	%100
32	54	Y	-0.017	-0.017	0	%100
33	55	Y	-0.017	-0.017	0	%100
34	56	Y	-0.017	-0.017	0	%100
35	57	Y	-0.01	-0.01	0	%100
36	58	Y	-0.01	-0.01	0	%100
37	59	Y	-0.021	-0.021	0	%100
38	68	Y	-0.021	-0.021	0	%100
39	69	Y	-0.011	-0.011	0	%100
40	72	Y	-0.01	-0.01	0	%100
41	73	Y	-0.01	-0.01	0	%100
42	76	Y	-0.01	-0.01	0	%100
43	78	Y	-0.01	-0.01	0	%100
44	80	Y	-0.011	-0.011	0	%100
45	83	Y	-0.01	-0.01	0	%100
46	84	Y	-0.01	-0.01	0	%100
47	87	Y	-0.01	-0.01	0	%100
48	89	Y	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.0009	-0.0009	0	%100
3	3	Z	-0.0009	-0.0009	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.001	-0.001	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.003	-0.003	0	%100
12	18	Z	-0.001	-0.001	0	%100
13	19	Z	-0.001	-0.001	0	%100
14	22	Z	-0.001	-0.001	0	%100
15	28	Z	-0.001	-0.001	0	%100
16	30	Z	-0.002	-0.002	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.0009	-0.0009	0	%100
19	33	Z	-0.0009	-0.0009	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.0007	-0.0007	0	%100
26	40	Z	-0.003	-0.003	0	%100
27	49	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.0009	-0.0009	0	%100
30	52	Z	-0.0009	-0.0009	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	58	Z	-0.0007	-0.0007	0	%100
37	59	Z	-0.003	-0.003	0	%100
38	68	Z	-0.002	-0.002	0	%100
39	69	Z	-0.001	-0.001	0	%100
40	72	Z	-0.001	-0.001	0	%100
41	73	Z	-0.001	-0.001	0	%100
42	76	Z	-0.001	-0.001	0	%100
43	78	Z	-0.001	-0.001	0	%100
44	80	Z	-0.001	-0.001	0	%100
45	83	Z	-0.001	-0.001	0	%100
46	84	Z	-0.001	-0.001	0	%100
47	87	Z	-0.001	-0.001	0	%100
48	89	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.0009	-0.0009	0	%100
3	3	X	-0.0009	-0.0009	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.001	-0.001	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.003	-0.003	0	%100
12	18	X	-0.001	-0.001	0	%100
13	19	X	-0.001	-0.001	0	%100
14	22	X	-0.001	-0.001	0	%100
15	28	X	-0.001	-0.001	0	%100
16	30	X	-0.002	-0.002	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.0009	-0.0009	0	%100
19	33	X	-0.0009	-0.0009	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.0007	-0.0007	0	%100
26	40	X	-0.003	-0.003	0	%100
27	49	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.0009	-0.0009	0	%100
30	52	X	-0.0009	-0.0009	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	58	X	-0.0007	-0.0007	0	%100
37	59	X	-0.003	-0.003	0	%100
38	68	X	-0.002	-0.002	0	%100
39	69	X	-0.001	-0.001	0	%100
40	72	X	-0.001	-0.001	0	%100
41	73	X	-0.001	-0.001	0	%100
42	76	X	-0.001	-0.001	0	%100
43	78	X	-0.001	-0.001	0	%100
44	80	X	-0.001	-0.001	0	%100
45	83	X	-0.001	-0.001	0	%100
46	84	X	-0.001	-0.001	0	%100
47	87	X	-0.001	-0.001	0	%100
48	89	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	10	Y	-0.02	-0.026	1.27	2.309
2	38	Y	-0.014	-0.02	0	2.078
3	39	Y	0.0006164	-0.016	0	1.155
4	39	Y	-0.016	-0.035	1.155	2.309
5	57	Y	-0.035	-0.016	0	1.155
6	57	Y	-0.016	0.0006163	1.155	2.309
7	58	Y	-0.018	-0.016	0.231	2.309
8	9	Y	-0.015	-0.015	0	2.078
9	10	Y	-0.014	-0.02	0.231	1.27

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	9	Y	-0.013	-0.013	0	2.078
2	10	Y	-0.012	-0.017	0.231	1.27
3	10	Y	-0.017	-0.022	1.27	2.309
4	38	Y	-0.01	-0.017	0	2.078
5	39	Y	0.0004931	-0.013	0	1.155
6	39	Y	-0.013	-0.028	1.155	2.309
7	57	Y	-0.028	-0.013	0	1.155
8	57	Y	-0.013	0.0004931	1.155	2.309
9	58	Y	-0.014	-0.013	0.231	2.309

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.01
2	73	72	75	74	Y	Two Way	-0.01
3	102	101	104	103	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.008
2	73	72	75	74	Y	Two Way	-0.008
3	102	101	104	103	Y	Two Way	-0.008

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	30	L	Y	-0.5
2	113	L	Y	-0.5
3	135	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	31	L	Y	-0.5
2	114	L	Y	-0.5
3	136	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	44	L	Y	-0.5
2	127	L	Y	-0.5
3	149	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	48	
3	90 Wind - No Ice	WLX			20	48	
4	0 Wind - Ice	WLZ			20	48	
5	90 Wind - Ice	WLX			20	48	
6	0 Wind - Service	WLZ			20	48	
7	90 Wind - Service	WLX			20	48	
8	Ice	OL1			20	48	3
9	0 Seismic	ELZ			20	48	
10	90 Seismic	ELX			20	48	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				9	
31	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	1	max	1.189	5	2.236	14	1.447	2	4.483	14	1.206	11	0.348	94
2		min	-1.191	11	-0.176	8	-1.572	8	-0.924	8	-1.206	5	-0.207	87
3	53	max	1.247	5	2.282	18	1.506	2	0.322	13	1.46	3	0.324	12
4		min	-1.353	11	0.041	12	-1.443	8	-2.041	19	-1.461	9	-3.96	18
5	82	max	1.216	5	2.196	22	1.629	2	0.294	3	1.464	7	3.685	22
6		min	-1.108	11	0.008	4	-1.568	8	-2.41	21	-1.465	13	-0.406	4
7	Totals:	max	3.652	5	6.15	23	4.583	2						
8		min	-3.652	11	2.395	5	-4.583	8						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	HSS4X4X2	0.558	0	25	0.138	0	y	25	70.173	73.278	8.24	8.24	2.179	H1-1b
2	2	C3.38x2.06x.188	0.434	2.592	15	0.071	0.351	y	17	35.669	43.384	1.694	4.482	1.631	H1-1b
3	3	C3.38x2.06x.188	0.404	0	25	0.072	2.241	z	8	35.669	43.384	1.694	4.482	1.632	H1-1b
4	4	PL3/8"x6	0.095	0	2	0.171	0	y	2	68.997	72.9	0.57	9.113	2.359	H1-1b
5	5	PL3/8"x6	0.099	0	3	0.133	0	y	2	68.997	72.9	0.57	9.113	1.927	H1-1b
6	6	PIPE_3.5x0.165	0.079	6.75	7	0.04	4		5	45.872	71.57	6.336	6.336	1.951	H1-1b
7	7	PL3/8"x6	0.144	0.208	8	0.228	0.208	y	14	70.882	72.9	0.57	9.113	1.4	H1-1b
8	8	PL3/8"x6	0.149	0	13	0.239	0	y	15	70.882	72.9	0.57	9.113	2.885	H1-1b
9	9	L2x2x4	0.299	0	8	0.031	2.309	y	48	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2x2x4	0.263	2.309	8	0.042	0	y	16	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63x2.5x6	0.396	1.604	8	0.087	0.334	y	14	75.414	118.523	1.798	13.75	1.243	H2-1
12	18	PIPE_2.88x0.203	0.116	5.583	5	0.044	5.583		6	35.361	70.548	5.01	5.01	3	H1-1b
13	19	PIPE_2.88x0.203	0.14	2.333	9	0.048	5.583		9	35.361	70.548	5.01	5.01	3	H1-1b
14	22	PIPE_2.88x0.203	0.148	7.812	13	0.137	8.958		2	23.996	70.548	5.01	5.01	2.435	H1-1b
15	28	PIPE_2.88x0.203	0.116	2.333	7	0.044	5.583		8	35.361	70.548	5.01	5.01	3	H1-1b
16	30	L6.63x4.33x.25	0.207	3.25	6	0.025	3.25	z	12	51.794	86.751	2.311	6.976	1.5	H2-1
17	31	HSS4X4X2	0.56	0	19	0.141	0	y	17	70.173	73.278	8.24	8.24	2.201	H1-1b
18	32	C3.38x2.06x.188	0.433	2.592	19	0.071	0.351	y	21	35.669	43.384	1.694	4.482	1.628	H1-1b
19	33	C3.38x2.06x.188	0.397	0	21	0.067	2.241	y	24	35.669	43.384	1.704	4.482	1.643	H1-1b
20	34	PL3/8"x6	0.082	0	6	0.151	0	y	67	68.997	72.9	0.57	9.113	2.342	H1-1b
21	35	PL3/8"x6	0.097	0	7	0.122	0	y	42	68.997	72.9	0.57	9.113	1.852	H1-1b
22	36	PL3/8"x6	0.129	0.208	13	0.224	0.208	y	18	70.882	72.9	0.57	9.113	1.9	H1-1b
23	37	PL3/8"x6	0.123	0	5	0.242	0	y	19	70.882	72.9	0.57	9.113	2.946	H1-1b
24	38	L2x2x4	0.236	0	11	0.031	2.309	y	40	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2x2x4	0.227	2.309	13	0.042	2.309	y	20	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63x2.5x6	0.312	1.604	12	0.087	0.334	y	19	75.414	118.523	1.798	13.821	1.258	H2-1
27	49	L6.63x4.33x.25	0.224	0	2	0.028	3.25	y	9	51.794	86.751	2.311	6.976	1.5	H2-1
28	50	HSS4X4X2	0.556	0	21	0.14	0	y	21	70.173	73.278	8.24	8.24	2.181	H1-1b
29	51	C3.38x2.06x.188	0.426	2.592	23	0.071	0.351	y	14	35.669	43.384	1.694	4.482	1.631	H1-1b
30	52	C3.38x2.06x.188	0.402	0	21	0.067	2.241	y	15	35.669	43.384	1.694	4.482	1.63	H1-1b
31	53	PL3/8"x6	0.092	0.164	3	0.149	0	y	70	68.997	72.9	0.57	9.113	2.134	H1-1b
32	54	PL3/8"x6	0.081	0	11	0.124	0	y	45	68.997	72.9	0.57	9.113	1.846	H1-1b
33	55	PL3/8"x6	0.13	0.085	2	0.228	0.208	y	21	70.882	72.9	0.57	9.113	1.651	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
34	56	PL3/8"x6	0.15	0	9	0.236	0	y	23	70.882	72.9	0.57	9.113	2.899	H1-1b
35	57	L2x2x4	0.29	0	3	0.03	2.309	y	44	23.349	30.586	0.691	1.577	1.5	H2-1
36	58	L2x2x4	0.224	2.309	4	0.042	0	y	25	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63x2.5x6	0.354	1.604	3	0.087	0.334	y	22	75.414	118.523	1.798	14.185	1.343	H2-1
38	68	L6.63x4.33x.25	0.255	3.25	2	0.032	3.25	z	8	51.794	86.751	2.311	6.976	1.5	H2-1
39	69	PIPE_3.5x0.165	0.082	1.25	2	0.051	4		9	45.872	71.57	6.336	6.336	1.758	H1-1b
40	72	PIPE_2.88x0.203	0.142	5.583	9	0.05	5.583		9	35.361	70.548	5.01	5.01	3	H1-1b
41	73	PIPE_2.88x0.203	0.167	2.333	2	0.048	5.583		13	35.361	70.548	5.01	5.01	3	H1-1b
42	76	PIPE_2.88x0.203	0.145	2.188	13	0.116	2.188		13	23.996	70.548	5.01	5.01	2.283	H1-1b
43	78	PIPE_2.88x0.203	0.127	5.583	9	0.044	5.583		2	35.361	70.548	5.01	5.01	3	H1-1b
44	80	PIPE_3.5x0.165	0.075	6.75	2	0.05	2.75		13	45.872	71.57	6.336	6.336	1.512	H1-1b
45	83	PIPE_2.88x0.203	0.141	5.583	13	0.056	5.583		13	35.361	70.548	5.01	5.01	3	H1-1b
46	84	PIPE_2.88x0.203	0.135	2.333	6	0.037	5.583		5	35.361	70.548	5.01	5.01	3	H1-1b
47	87	PIPE_2.88x0.203	0.137	7.813	9	0.124	8.958		9	23.996	70.548	5.01	5.01	2.503	H1-1b
48	89	PIPE_2.88x0.203	0.142	5.583	2	0.036	5.583		4	35.361	70.548	5.01	5.01	3	H1-1b

APPENDIX B

(Additional Calculations)

PROJECT	**149448.003.01 - South Winds**		**KSC**
SUBJECT	**Platform Mount Analysis**		
DATE	**03/21/22**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Tower Type		:	Monopole		
Ground Elevation	z_s	:	164	ft	[ASCE7 Hazard Tool]
Tower Height		:	187.00	ft	
Mount Elevation		:	150.00	ft	
Antenna Elevation		:	150.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	118	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.50	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.18		
	S_1	:	0.06		
	S_{DS}	:	0.20		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.38		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.99		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.75	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.098		[Sec. 2.7.7.1]
Amplification	A_s	:	2.208556		[Sec. 16.7]
	q_z	:	46.40	psf	

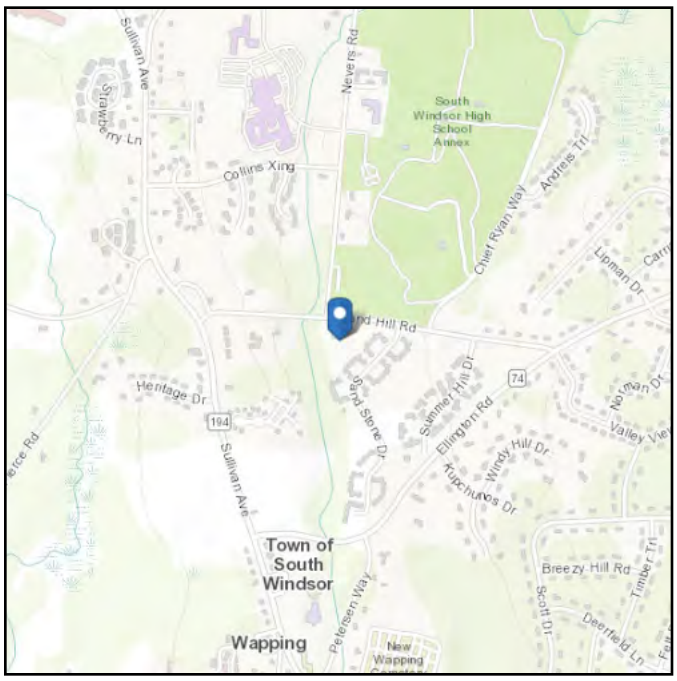
Manufacturer	**Model**	**Qty**	**Aspect Ratio**	**C_a** flat/round	**EPA_N** (ft^2)	**EPA_T** (ft^2)	**EPA_{N-Ice}** (ft^2)	**EPA_{T-Ice}** (ft^2)	**$F_{A\ No\ Ice}$** (N)	**$F_{A\ No\ Ice}$** (T)	**$F_{A\ Ice}$** (N)	**$F_{A\ Ice}$** (T)
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.47	1.46	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.47	1.61	0.08	0.05	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.47	1.46	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.47	1.61	0.08	0.05	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.19	0.07	0.04	0.02
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.47	1.46	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.47	1.61	0.08	0.05	0.01	0.01
RAYCAP	RDIDC-9181-PF-48	1	1.14	1.20	1.68	0.97	2.52	1.66	0.08	0.05	0.02	0.01

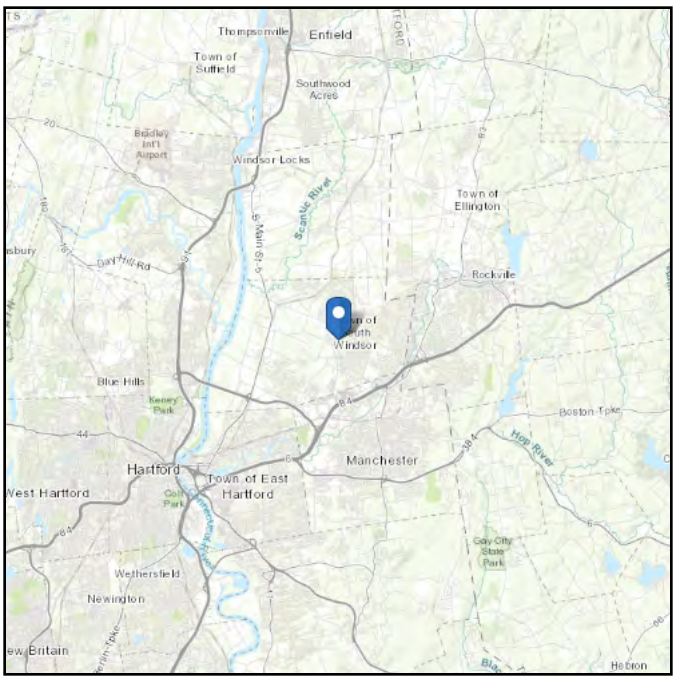
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 163.63 ft (NAVD 88)
Latitude: 41.836
Longitude: -72.552





Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Sat Mar 19 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

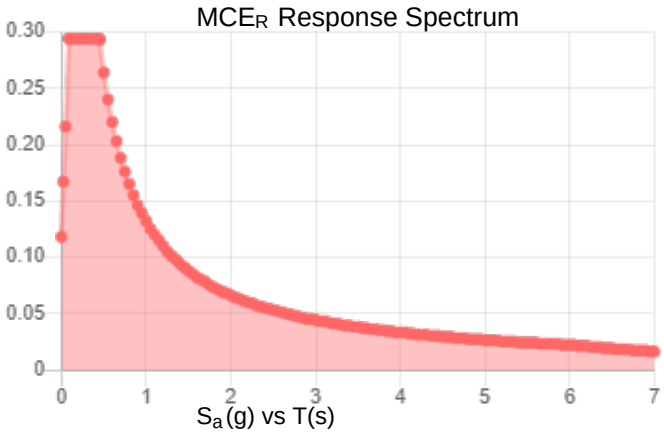
Seismic

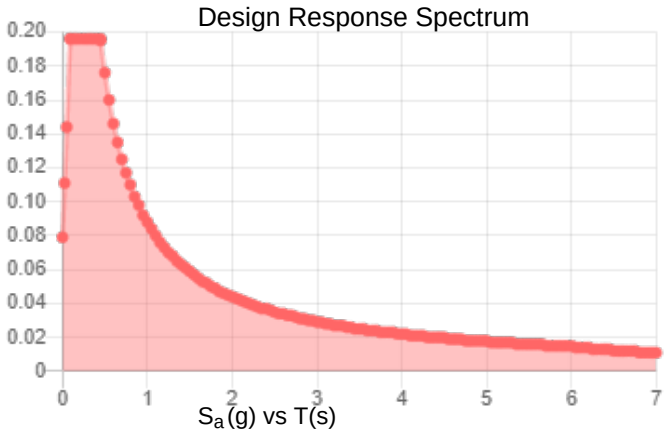
Site Soil Class: D - Default (see Section 11.4.3)

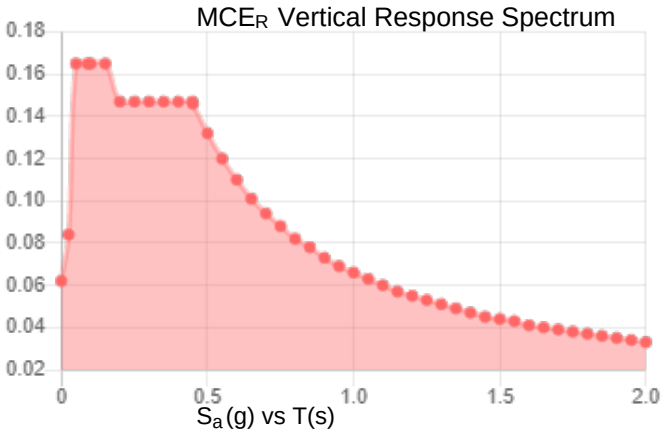
Results:

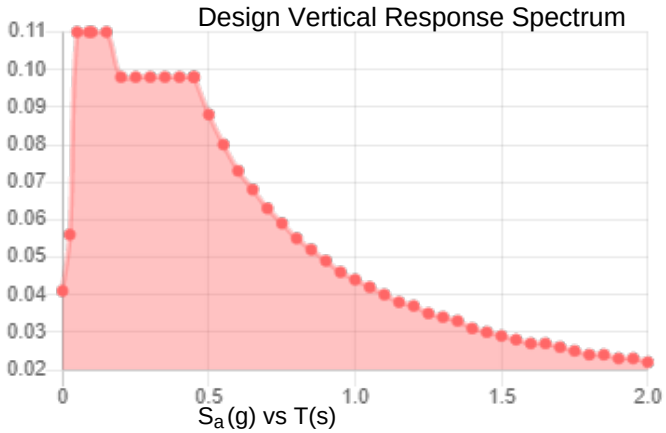
S_S :	0.184	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.098
F_v :	2.4	PGA_M :	0.157
S_{MS} :	0.294	F_{PGA} :	1.6
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.196	C_v :	0.7

Seismic Design Category B









Data Accessed: **Sat Mar 19 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Sat Mar 19 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

EXHIBIT 10

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00122A

DISH Wireless L.L.C. SITE ADDRESS:

151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SBA APPROVED

By Stephen Roth at 4:53:48 AM, 12/10/2021

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL PROPOSED CONCRETE PAD EXTENSION
- INSTALL (1) PROPOSED CONCRETE PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	SOUTH WINDSOR TOWN OF 56
ADDRESS:	1540 SULLIVAN AVENUE SOUTH WINDSOR, CT 06074
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT07824-S
TOWER APP NUMBER:	167822
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 50' 9.6" N 41.83599967 N
LONGITUDE (NAD 83):	72° 33' 7.2" W 72.5520000000 W
ZONING JURISDICTION:	TOWN OF SOUTH WINDSOR
ZONING DISTRICT:	RR
PARCEL NUMBER:	76-8
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	T.B.D.

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	RYAN LYNCH RYAN.LYNCH@DISH.COM
CONST. MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

CONNECTICUT CODE OF COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT :

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT, TAKE CT-20 E AND US-5 S TO CT-194 E IN SOUTH WINDSOR, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, USE THE LEFT 2 LANES TO MERGE WITH I-91 N TOWARD SPRINGFIELD, TAKE EXIT 44 FOR US-5 S TOWARD E.WINDSOR, TURN RIGHT ONTO US-5 S, CONTINUE ON CT-194 E. DRIVE TO SAND HILL DR, USE THE LEFT 2 LANES TO TURN LEFT ONTO CT-194 E, TURN LEFT ONTO SAND HILL RD, TURN RIGHT ONTO SAND HILL DR AND ARRIVE AT BOBDL00122A.

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

VICINITY MAP

NO SCALE

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

12/9/21

STATE OF CONNECTICUT
BRAD J. LITTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/30/21	ISSUED FOR REVIEW
0	9/23/21	ISSUED FOR CONSTRUCTION
1	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

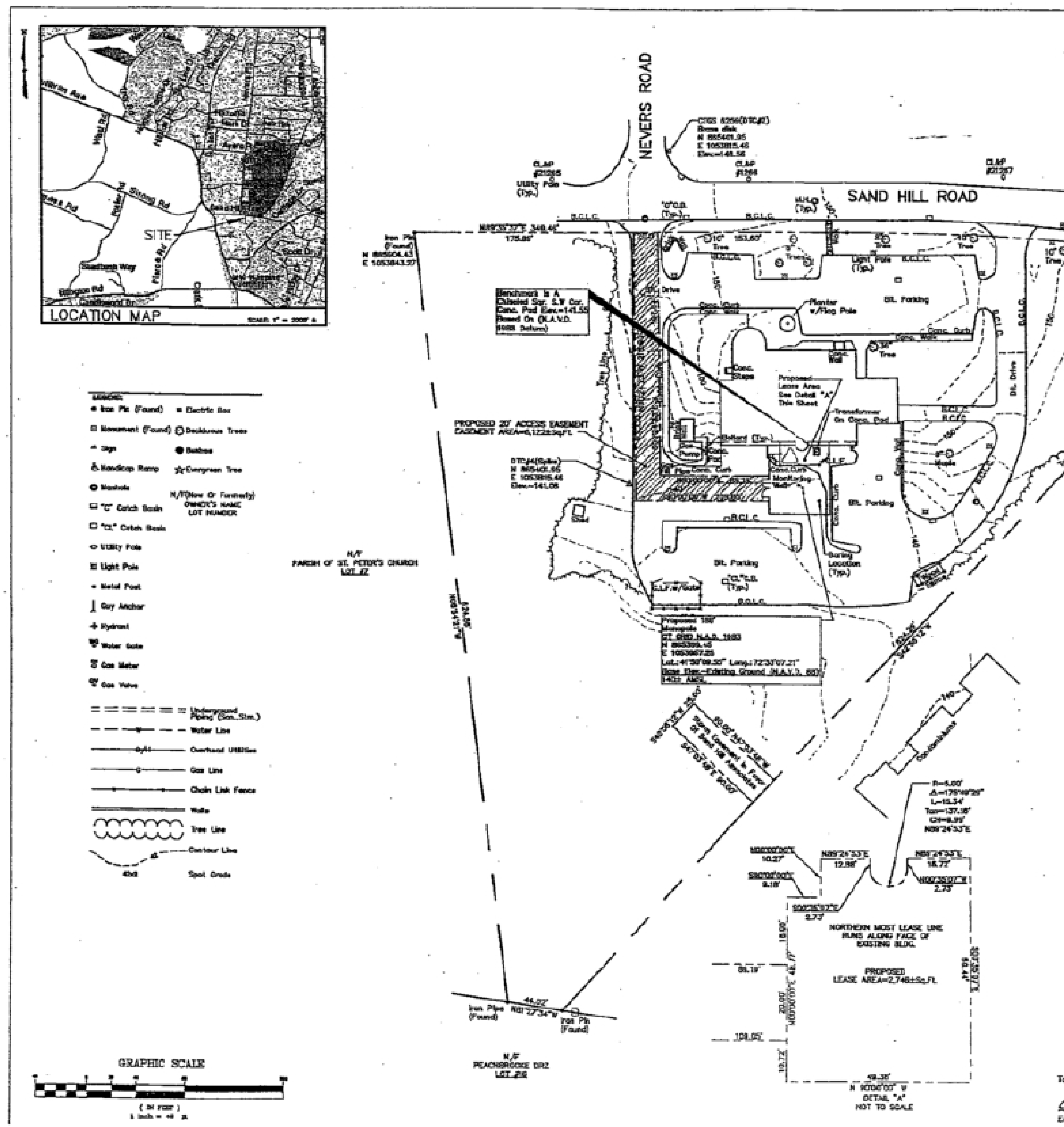
SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

CT9824-S



Notes:

1. This survey and map have been prepared pursuant to the Regulations of State Agencies Sections 20-300b-1 through 20-300b-20 and the "standards of Surveys and Maps in the state of Connecticut" as adopted by the Connecticut Association of Land Surveyors, Inc., on September 26, 1996.

2. The type of survey performed and the mapped features depicted hereon are in accordance with the requirements of a Topographic/Boundary Survey Based upon dependent resurvey of the map referenced on Map 6A.

3. This survey conforms to:
Class A-2 with regard to the horizontal baseline
Class T-2 with regard to the topographic locations
Class V-2 with regard to the vertical baseline

4. The North Arrow is based on upon The Connecticut State Coordinate System (N.A.D. 1983) derived from horizontal locations of existing monuments CTGS 6225X and CTGS 6256.

5. The elevations are based upon (N.A.V.D. 1988) derived from existing GGS Station Benchmark number 2969.

6. Reference is made to the following maps:

A. "Plot Plan / Site Plan Improvement Location Map/Dependent Resurvey Prepared For Town Of South Windsor 151 Sand Hill Road South Windsor Connecticut" 1"=40' revised to August 2, 2000 prepared by Design Professionals, Inc..

B. "Plan Prepared For St. Peter's Episcopal Church Sand hill road South Windsor Conn." 1"=40' revised to January 17, 1985 prepared by Meehan Associates SWLR #2085.

C. "Police/Ambulance Facility Sand Hill Road, South Windsor, Conn. Topographic Map Site Grading, Drainage and Utilities Plan" 1"=20' April 6, 1983 prepared by The Lawrence Associates SWLR #291A.

D. Storm And Sanitary Easements Prepared for Sand Hill Associates Sand Hill Road South Windsor, CT" 1"=40' revised to June 4, 1980 prepared by Foss & O'neil SWLR #1584.

E. "Plot Plan Peachbrooke Property of Norman F. Priest Sullivan Avenue-Conn. Route 194 South Windsor, Connecticut" 1"=40' revised to December 6, 1991 prepared by David L. Slain SWLR #2164A.

F. "Plot Plan Sand hill Condominiums Ellington RD. & Sand Hill Road-South Windsor, CT" 1"=40' revised to November 14, 1984 prepared by Foss & O'neil SWLR #2468A.

To my knowledge and belief, this map is substantially correct as noted hereon.

Edward S. Ruchin, P.L.S. CT # 15460 — 11/09/21 — Date

10125-087
CT07824-S
RTP FINAL

SBA PROPERTIES, INC.

CONSTRUCTION DOCUMENTS

PROJECT NUMBER 01-242-140

APPROVALS
CONSTRUCTION ____ DATE:
LEASING ____ DATE:
RF ____ DATE:
ZONING ____ DATE:
QC ____ DATE:
NETWORK ENG. ____ DATE:

SOUTH WINDSOR
151 SAND HILL ROAD
SOUTH WINDSOR, CT.

REDUCED COPY

SITE NO.: 10125-087
SOUTH WINDSOR
TOPOGRAPHIC/BOUNDARY SURVEY

CT5087S1

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

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SUITE 300
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12/9/21

STATE OF CONNECTICUT — CHAD TUTTLE — No. 23924 — LICENSED PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/30/21	ISSUED FOR REVIEW
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A&E PROJECT NUMBER
149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

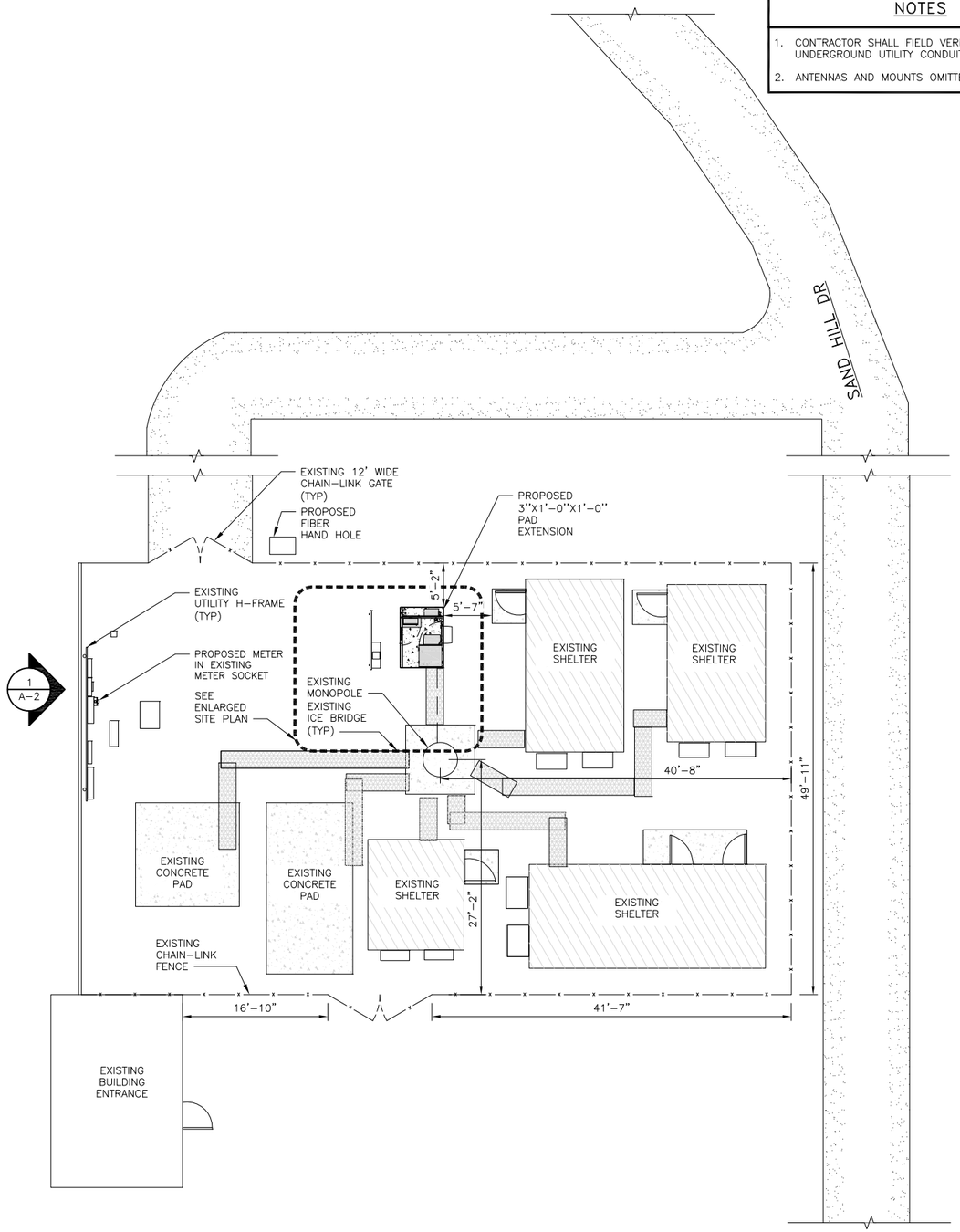
BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE
SITE SURVEY

SHEET NUMBER
LS1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



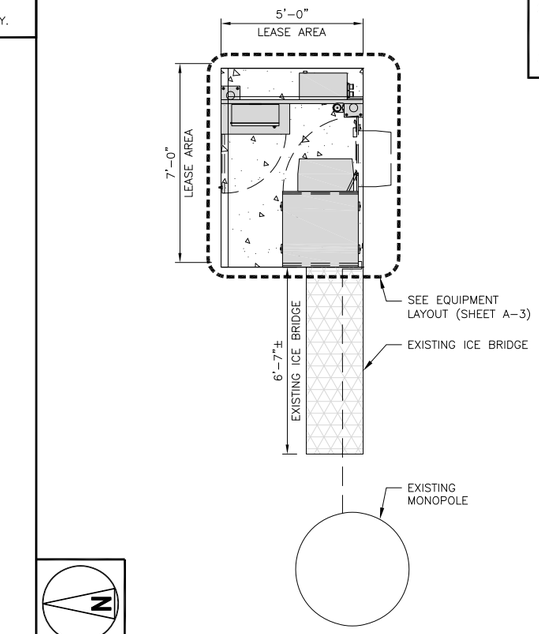
OVERALL SITE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2

NOT USED

3

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12/9/21

STATE OF CONNECTICUT
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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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DISH Wireless L.L.C.
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BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

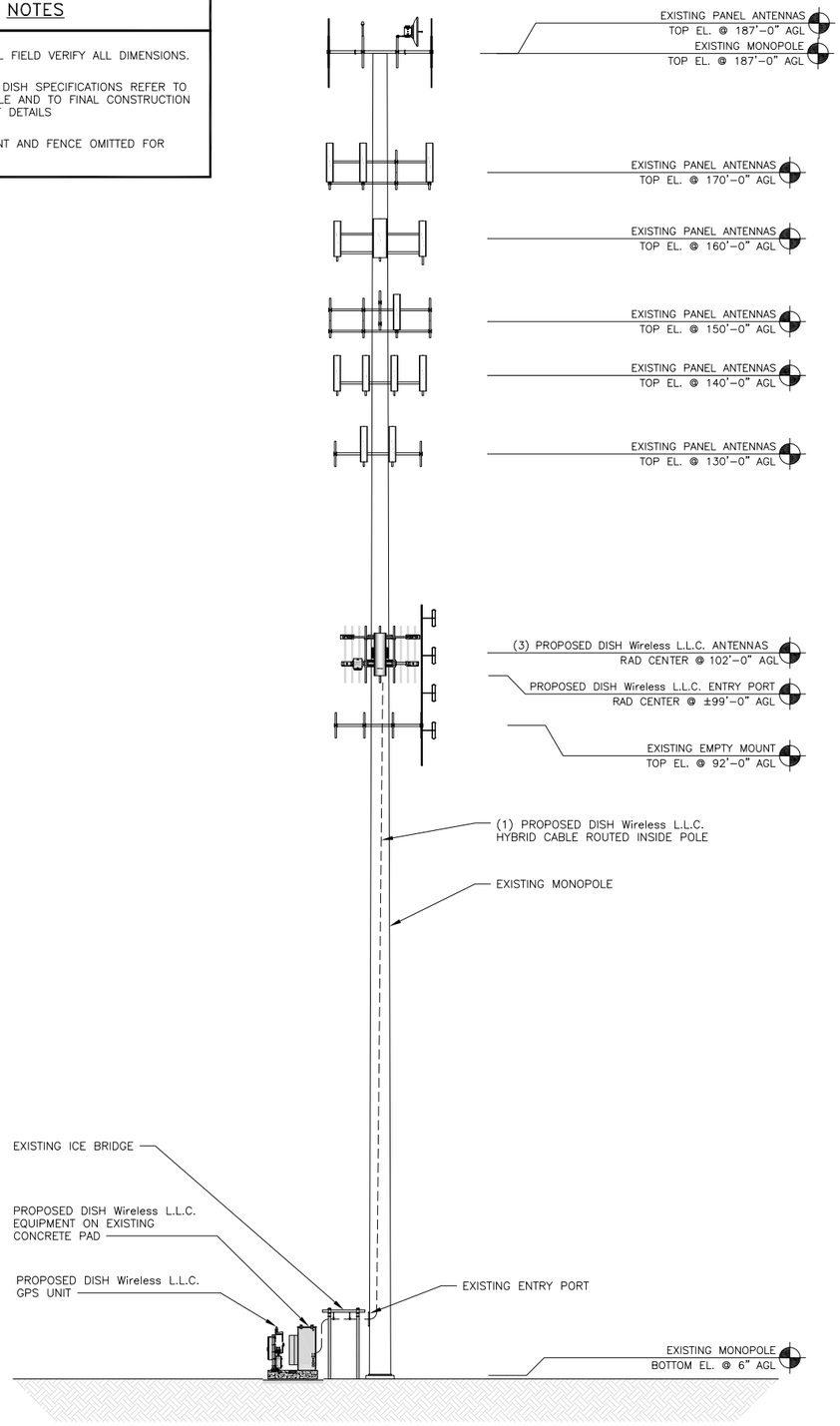
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

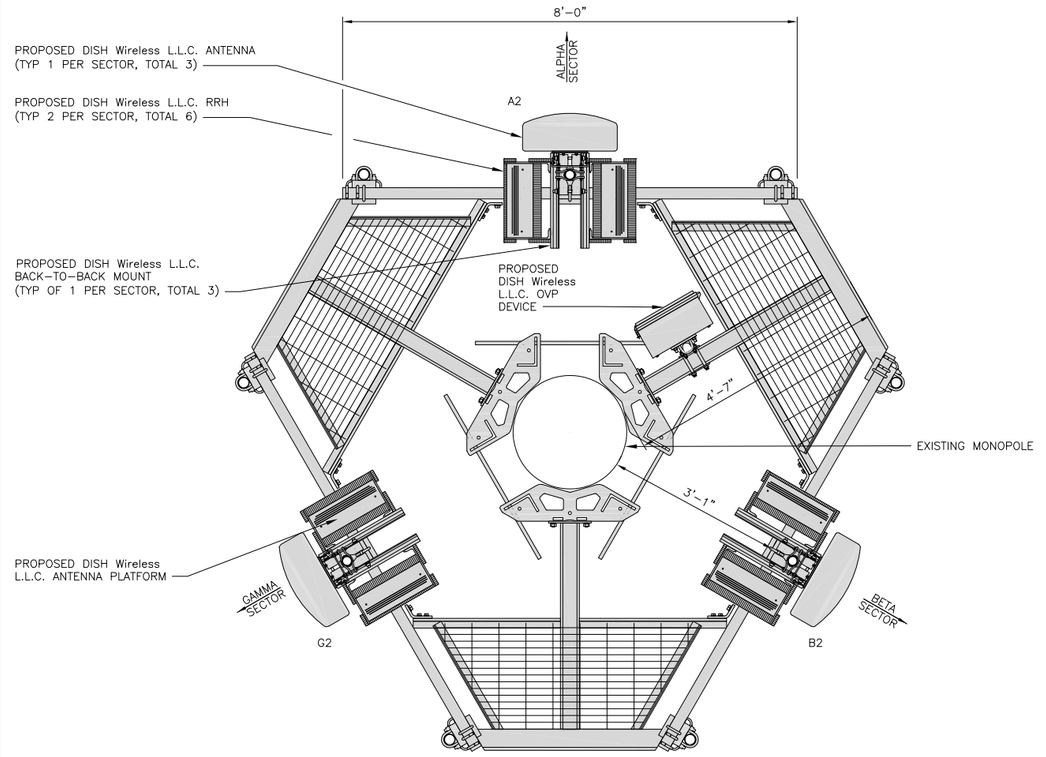
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1



N

ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A2	PROPOSED	JMA – MX08FRO665-21	5G	20.0" x 11.0"	0°	102'-0"	(1) HIGH-CAPACITY HYBRID CABLE (140' LONG)
BETA	B2	PROPOSED	JMA – MX08FRO665-21	5G	20.0" x 11.0"	120°	102'-0"	
GAMMA	G2	PROPOSED	JMA – MX08FRO665-21	5G	20.0" x 11.0"	240°	102'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A2	FUJITSU – TA08025-B605	5G
	A2	FUJITSU – TA08025-B604	5G
BETA	B2	FUJITSU – TA08025-B605	5G
	B2	FUJITSU – TA08025-B604	5G
GAMMA	G2	FUJITSU – TA08025-B605	5G
	G2	FUJITSU – TA08025-B604	5G

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

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12/9/21

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CHAD JOSEPH TILLE
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Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	MP

RFDS REV #: 1

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A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

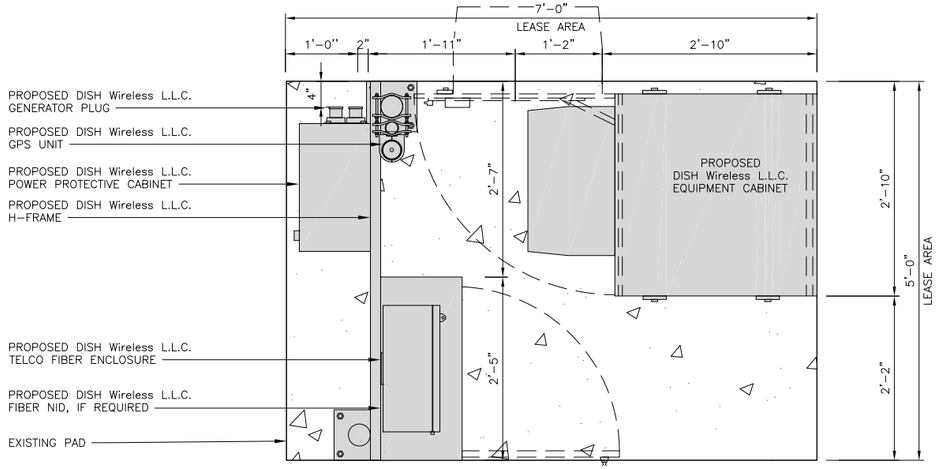
BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

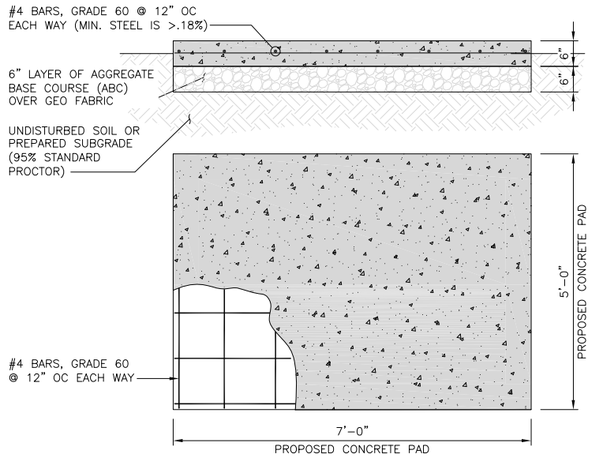
A-2



PLATFORM EQUIPMENT PLAN

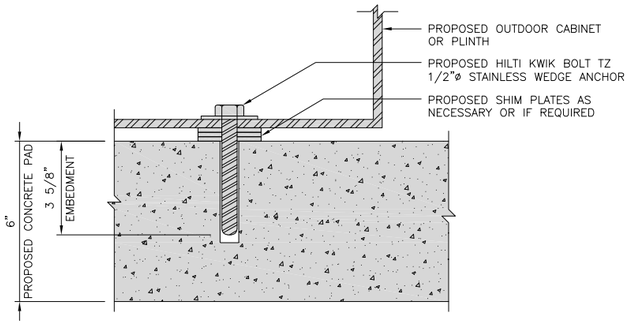
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1



TYPICAL CONCRETE PAD DETAIL

2A

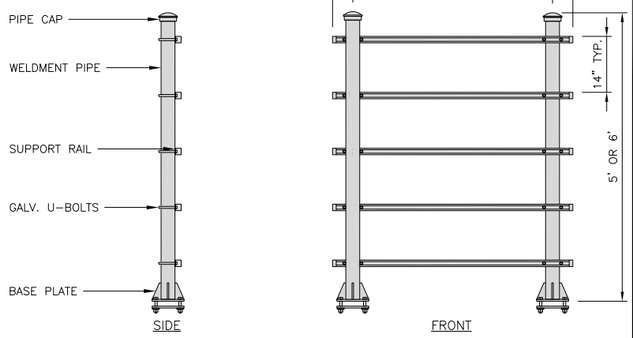


TYPICAL OUTDOOR EQUIPMENT TO CONCRETE SLAB ANCHORAGE

2B

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT

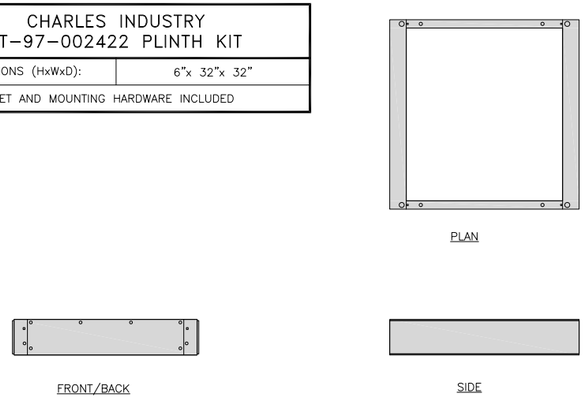


H-FRAME DETAIL

NO SCALE

3

CHARLES INDUSTRY LT-97-002422 PLINTH KIT	
DIMENSIONS (HxWxD):	6"x 32"x 32"
NOTE: GASKET AND MOUNTING HARDWARE INCLUDED	



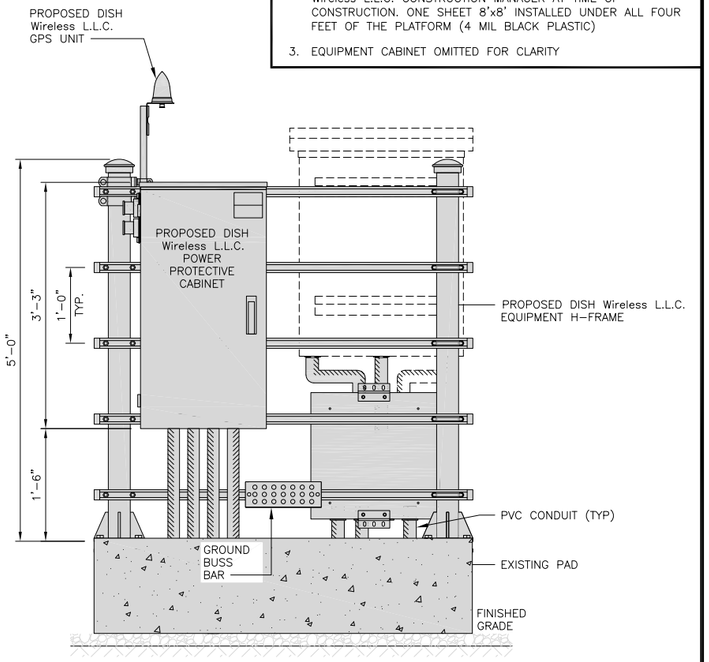
PLINTH DETAIL

NO SCALE

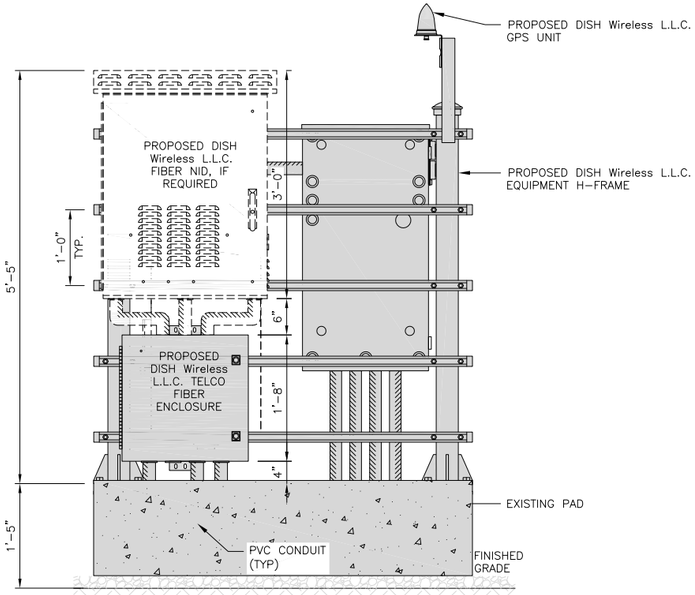
4

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

5

H-FRAME EQUIPMENT ELEVATION

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Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/30/21	ISSUED FOR REVIEW
0	9/23/21	ISSUED FOR CONSTRUCTION
1	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

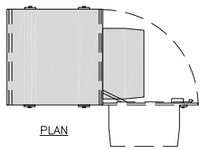
SHEET TITLE

EQUIPMENT PLATFORM AND H-FRAME DETAILS

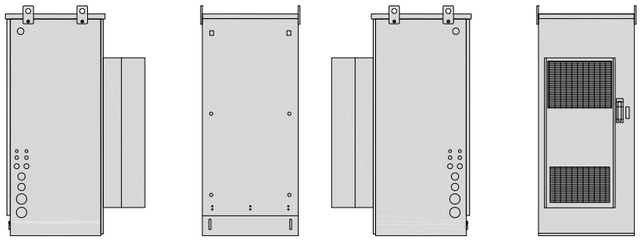
SHEET NUMBER

A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS



PLAN

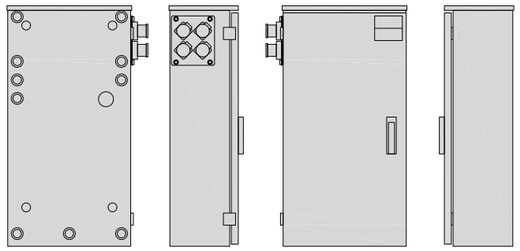


SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

TOP



BACK SIDE FRONT SIDE

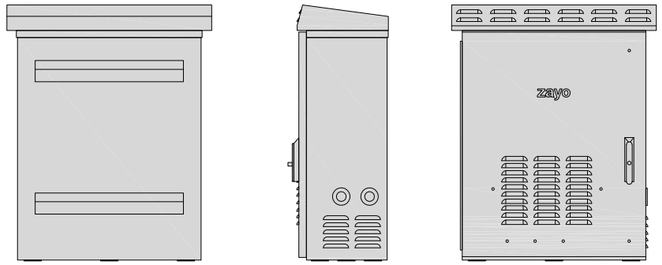
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs

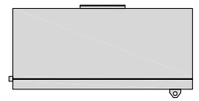
BOTTOM



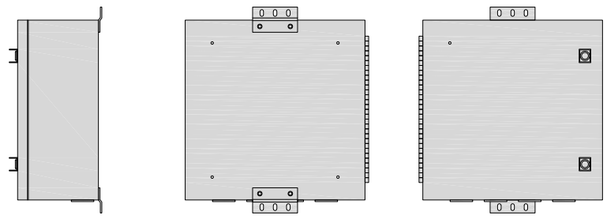
BACK SIDE FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



FRONT

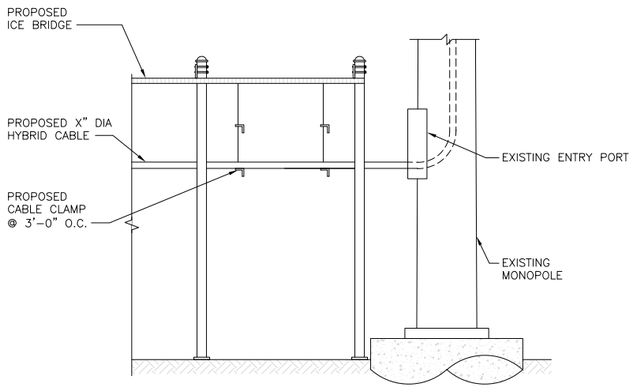


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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12/9/21

STATE OF CONNECTICUT
CHAD JUDGE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 1

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

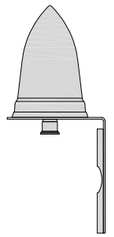
SHEET TITLE

EQUIPMENT DETAILS

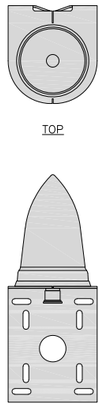
SHEET NUMBER

A-4

PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



BACK



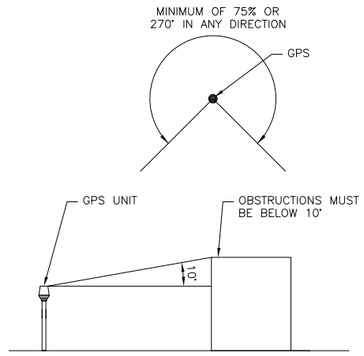
TOP

SIDE

GPS DETAIL

NO SCALE

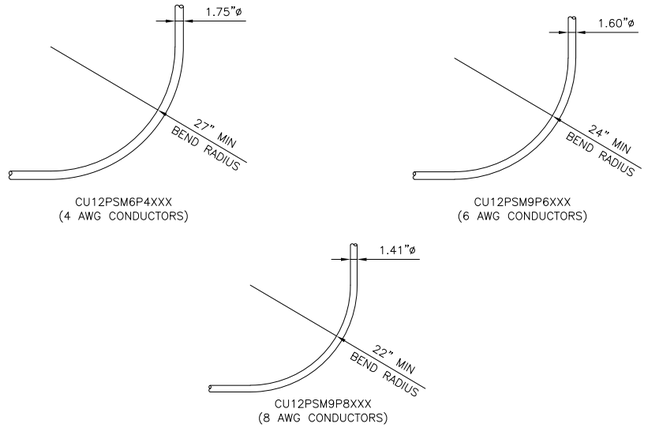
1



GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

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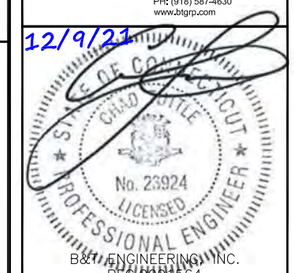

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151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

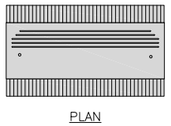
SHEET TITLE

EQUIPMENT DETAILS

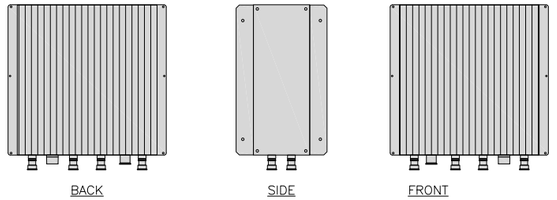
SHEET NUMBER

A-5

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



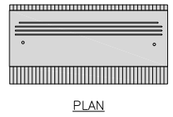
PLAN



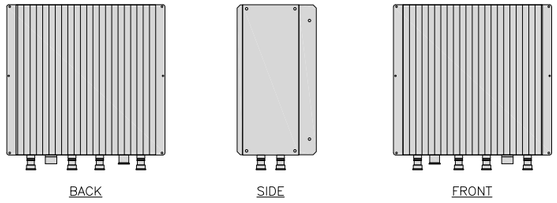
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



PLAN

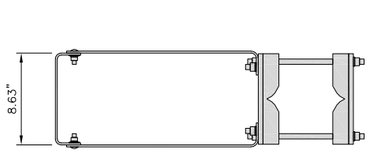


BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

COMMSCOPE RR-FA2 LARGE STABILIZER	
DIMENSIONS (HxWxD)	16.4"x8.5"x18"
WEIGHT	39.2 lbs

DESIGN NOTES:
MOUNT WILL FIT LEGS UP TO:
- 5.6" ROUND
- 6.0" 60° ANGLE
- 4.5" 90° ANGLE



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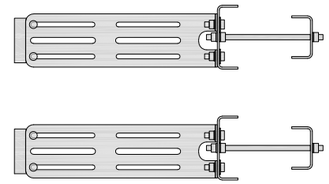
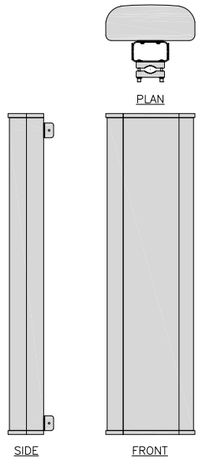


SIDE

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

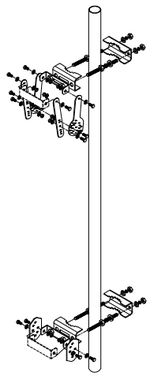
NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

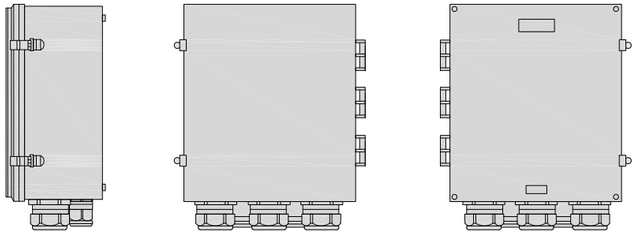
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



ANTENNA BRACKET DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS

PLAN

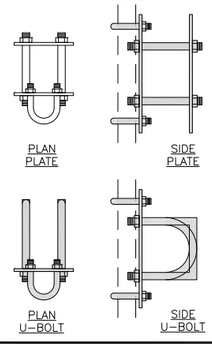


SIDE BACK FRONT

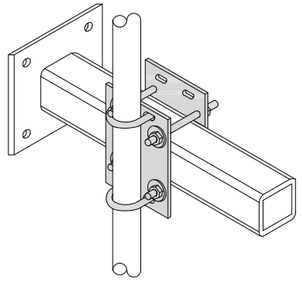
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



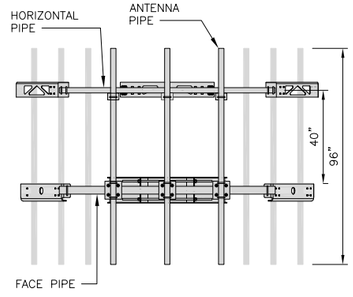
PLAN PLATE SIDE PLATE
PLAN U-BOLT SIDE U-BOLT

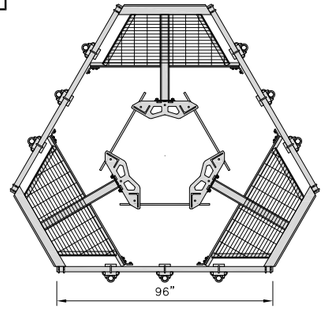


RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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12/9/21

STATE OF CONNECTICUT
CHAD JULIE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

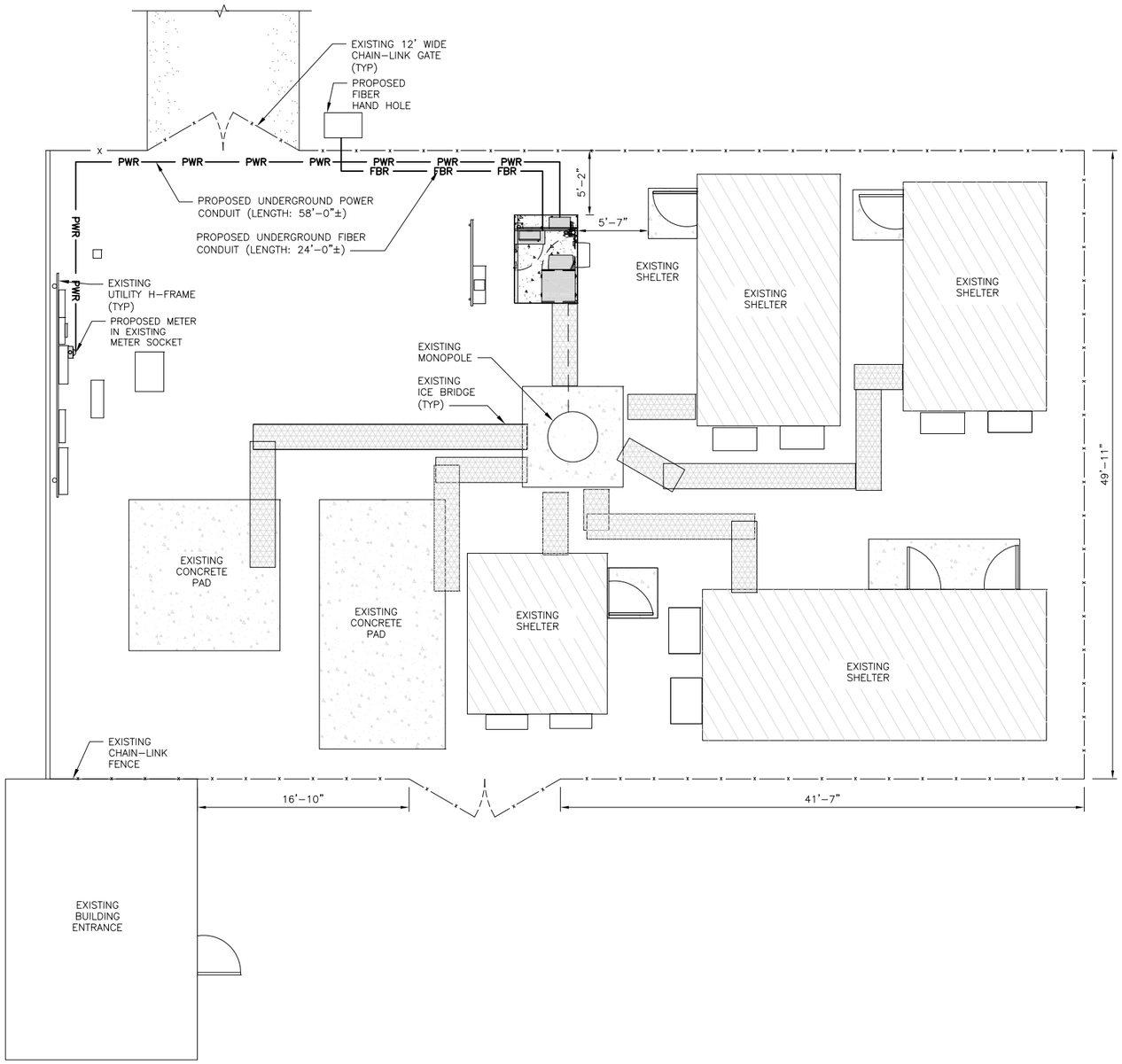
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG.

ELECTRICAL NOTES

NO SCALE

2

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SOUTH WINDSOR, CT 06074

SHEET TITLE

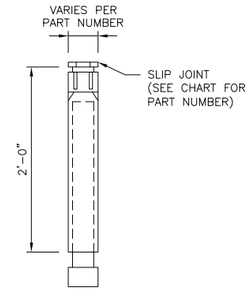
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"

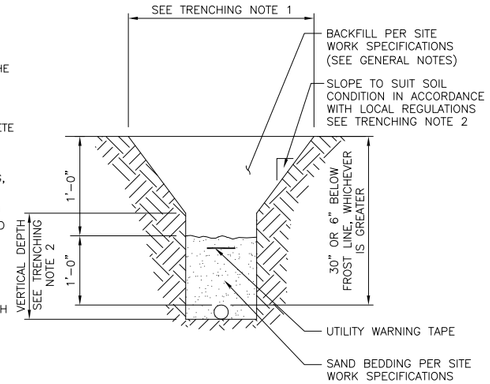


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

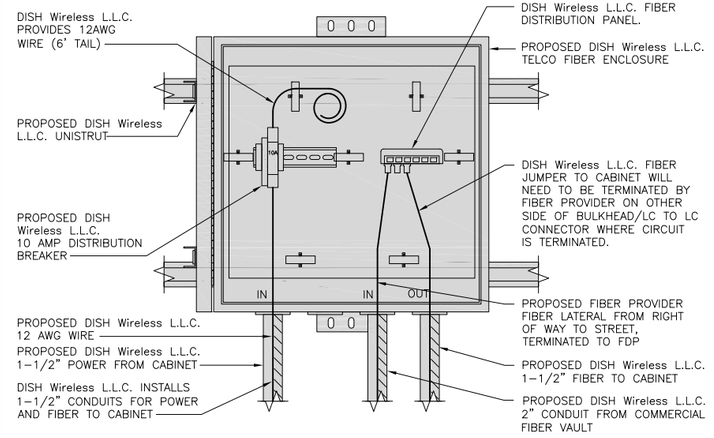
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

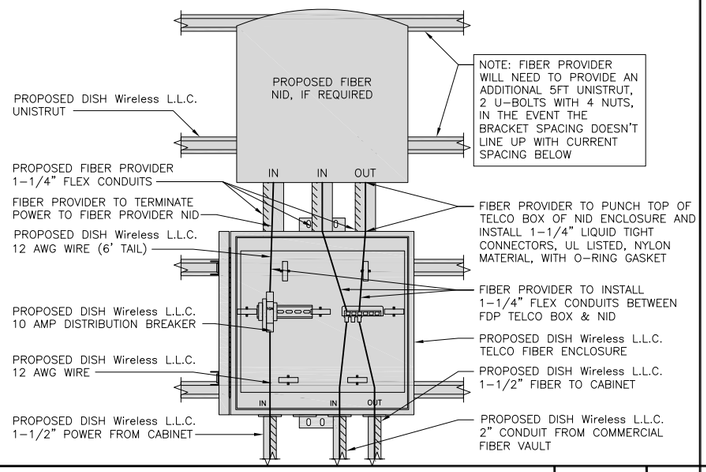
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
3. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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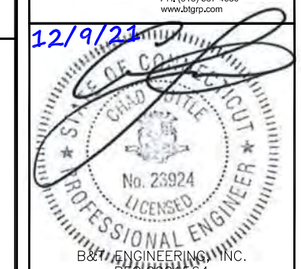

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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

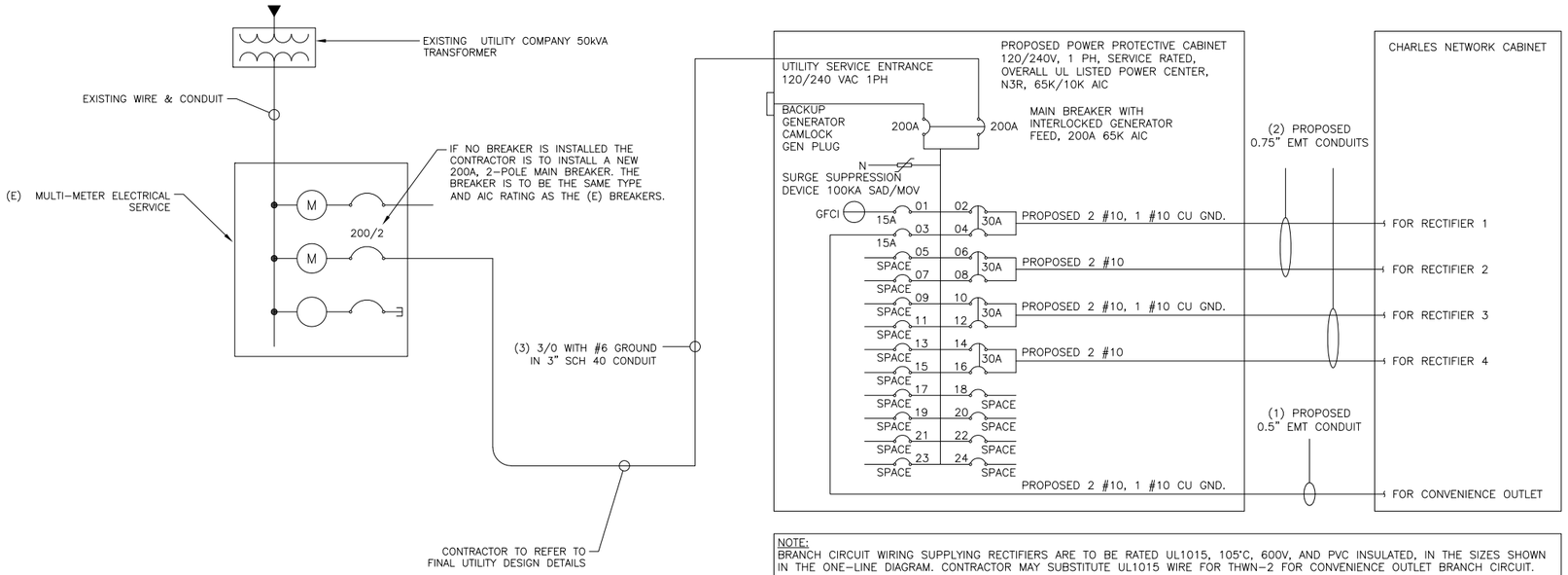
BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8			2880	
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12			2880	
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16			2880	
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1φ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700		11700		VOLTAGE AMPS			
			98		98		AMPS			
			98				MAX AMPS			
			123				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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12/9/21

STATE OF CONNECTICUT * CHAD J. TUTTLE * No. 23924 LICENSED PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	MP

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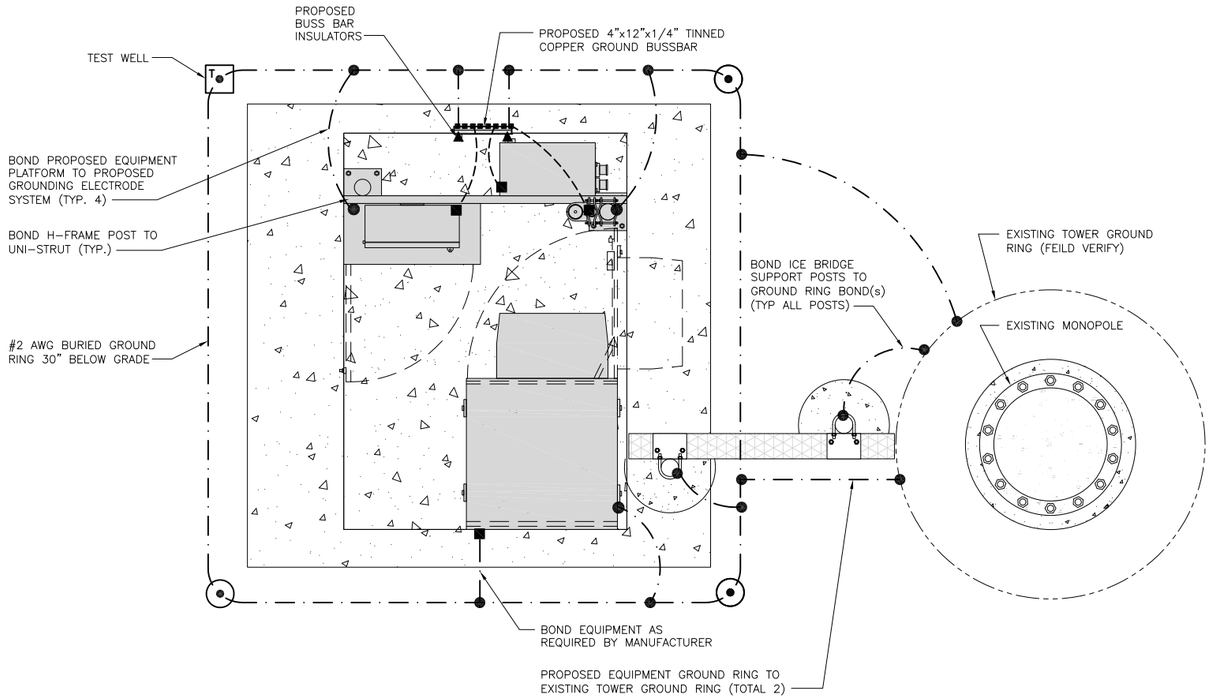
149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

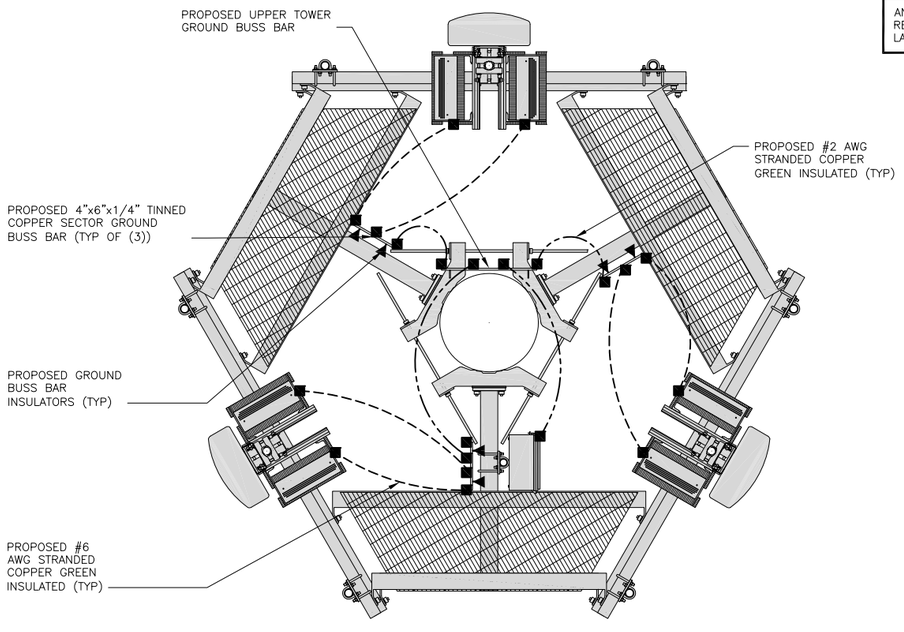
SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE PURPOSES ONLY



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
BUSS BAR INSULATOR

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH Wireless L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

(A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.

(B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES | NO SCALE | 3

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12/9/21

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

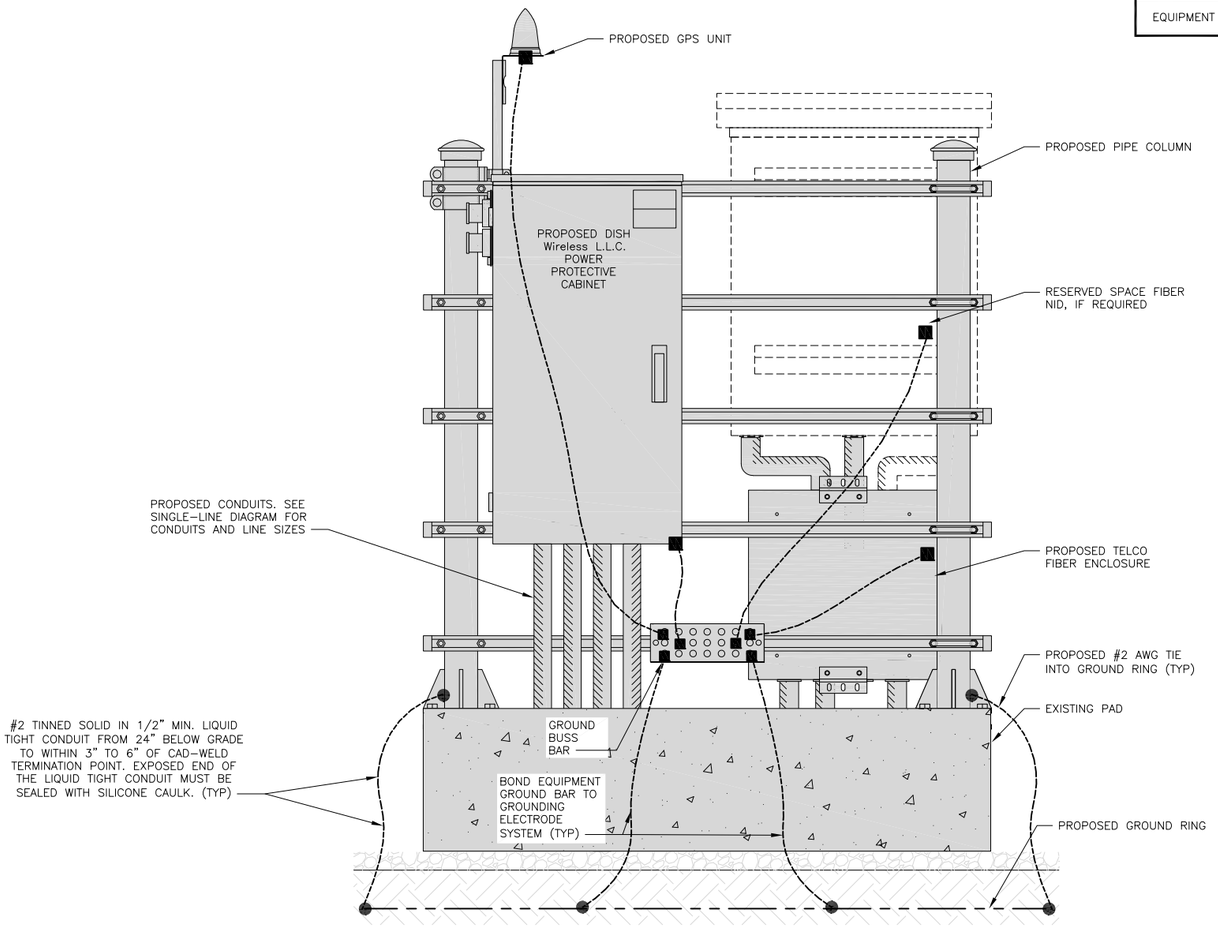
GROUNDING PLANS AND NOTES

SHEET NUMBER

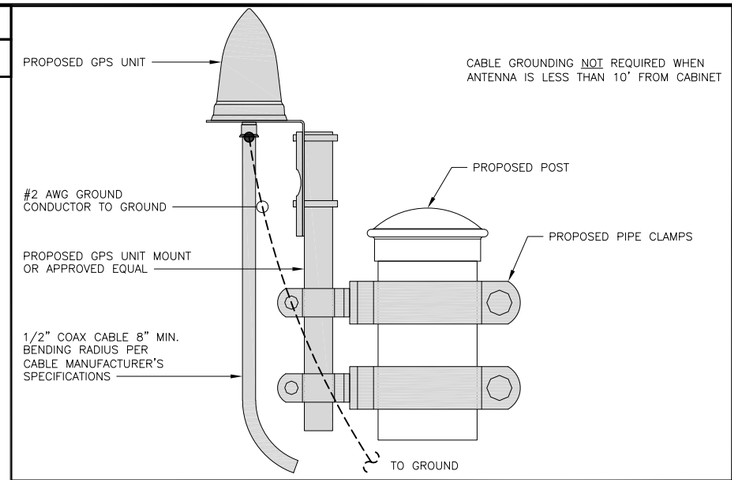
G-1

NOTES

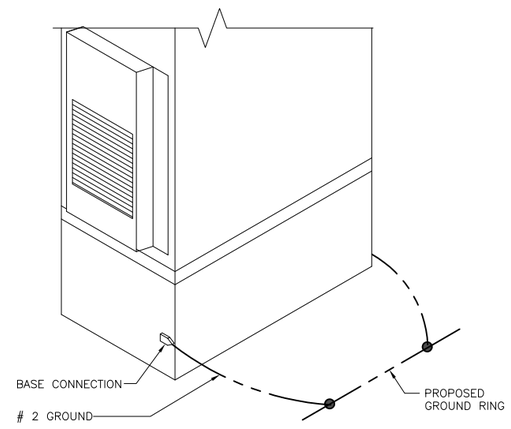
EQUIPMENT CABINET OMITTED FOR CLARITY



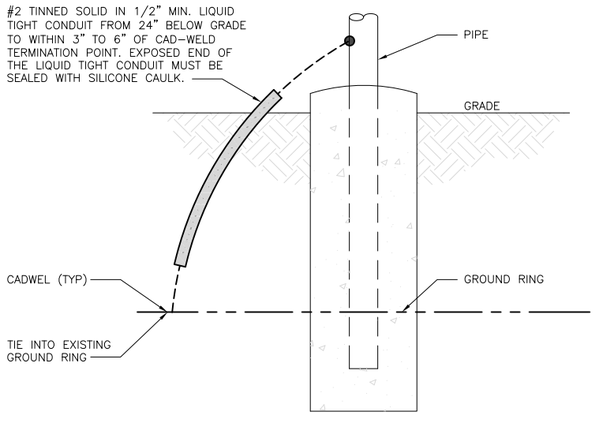
H-FRAME GROUNDING DETAIL | NO SCALE | 1



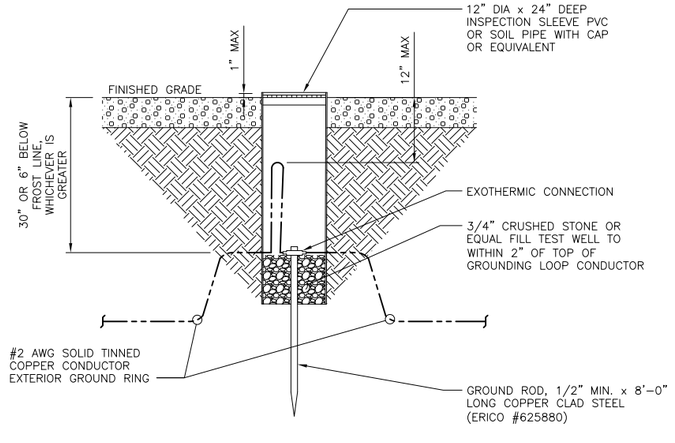
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



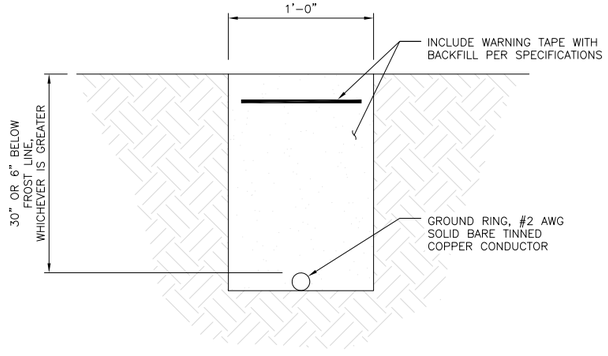
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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STATE OF CONNECTICUT * CHAD JUDGE * No. 23924 LICENSED PROFESSIONAL ENGINEER

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

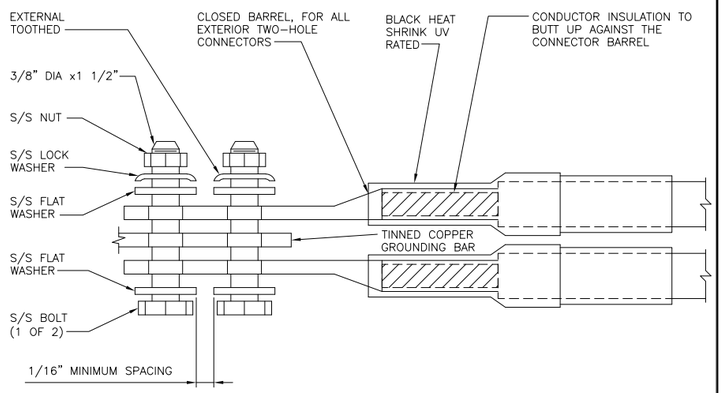
GROUNDING DETAILS

SHEET NUMBER

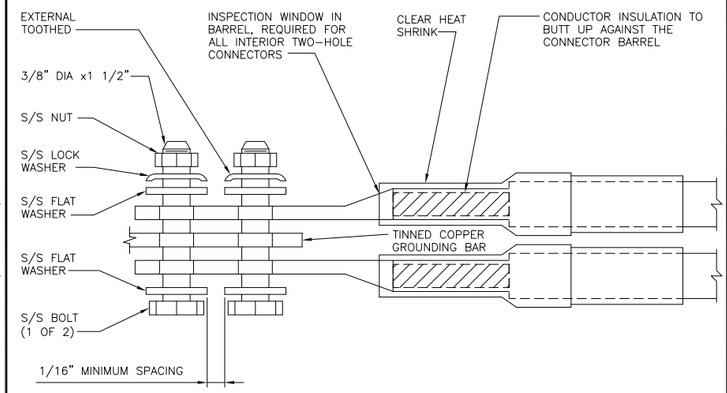
G-2

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR, ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

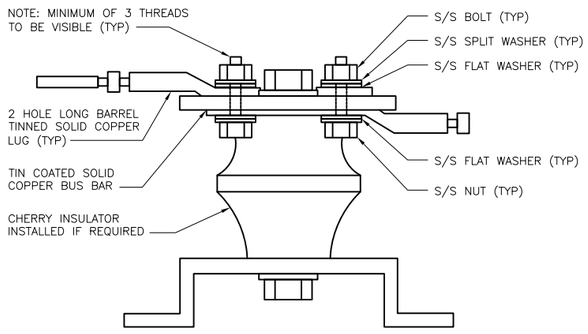
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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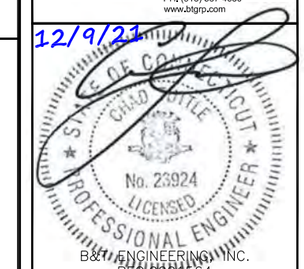

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PROJECT INFORMATION

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151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

GROUNDING DETAILS

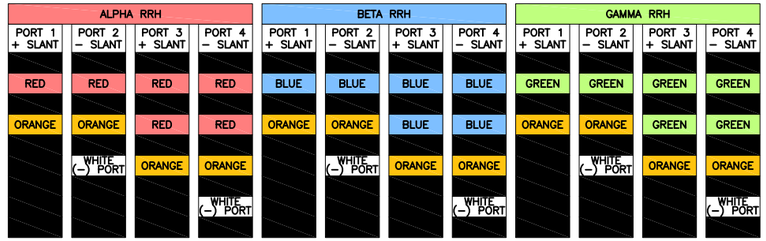
SHEET NUMBER

G-3

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

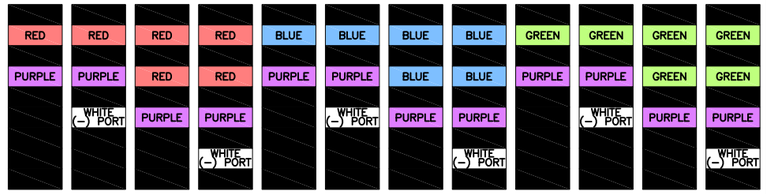
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BAND)



MID–BAND RRH
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)



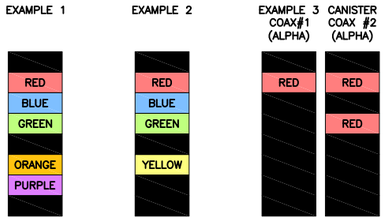
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW–BANDS AND MID–BANDS.

EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

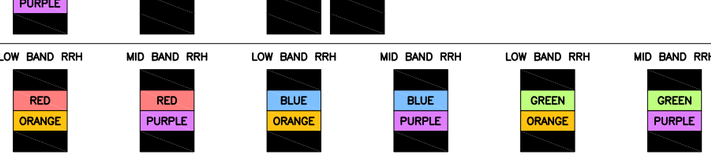
EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

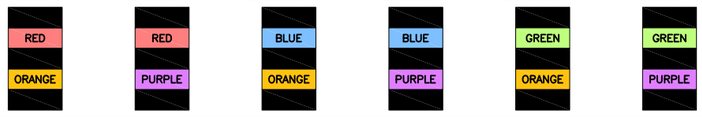
FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

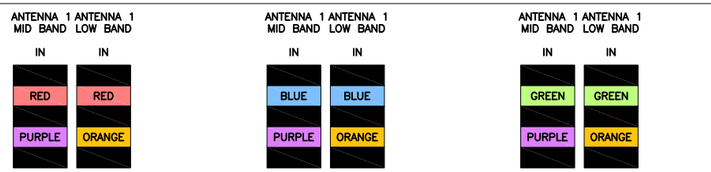
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

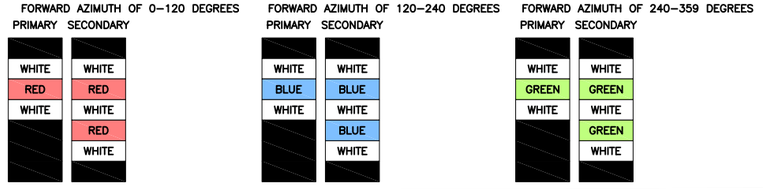
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71+N26) OPTIONAL – (N29): ORANGE

AWS (N66+N70+H–BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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A&E PROJECT NUMBER
149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT W.P.

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL.	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
EW	EACH WAY
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDG	HOT DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NEC	NATIONAL ELECTRIC CODE
NM	NEWTON METERS
NO.	NUMBER
#	NUMBER
NTS	NOT TO SCALE
OC	ON–CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OPNG	OPENING
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RF	RADIO FREQUENCY
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED ACCESS DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

ABBREVIATIONS

dish wireless.

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BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

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

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

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. 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 CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR 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 E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. 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 DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. 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 ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR 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.

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

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

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. 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.

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 CARRIER POC AND TOWER OWNER.

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

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

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

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER

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

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. 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.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. 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 BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

dish wireless.
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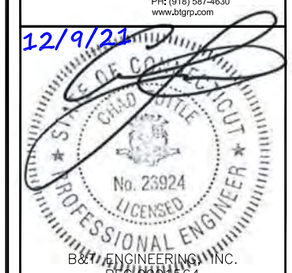
12/9/21



B&T ENGINEERING, INC.
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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/30/21	ISSUED FOR REVIEW
0	9/23/21	ISSUED FOR CONSTRUCTION
1	12/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00122A
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

dish wireless.

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STATE OF CONNECTICUT
CHAD LITTLE
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PROFESSIONAL ENGINEER

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GN-4