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

January 3, 2022

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Tower Share Application**
2-4 Volunteer Dr., Windsor Locks, CT
Latitude: 41.928100
Longitude: -72.646800
Dish Site# BOBDL00132A

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 **2-4 Volunteer Dr., Windsor Locks**, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antennas and six (6) RRUs, at the 125-foot level of the existing 195-foot Self Supporting tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7' x 5' lease area. Included are plans by B+T Group, dated December 15, 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. Attached as Exhibit 8. This facility was approved by the Town of Windsor Locks Building Official under Application# 23004 on June 29, 1999. 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 Town of Windsor Locks' First Selectman Paul M. Harrington, and Building Official, Housing Code Enforcement Officer, Mark Doody. (Separate notice is not being sent to tower owner, as it belongs to SBA, or the property owner as it belongs to the Town of Windsor Locks.).

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 195-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 125-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 40.27% 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 East Granby. 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 Intent 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 125-foot level of the existing 195-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 East Granby.

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: Paul M. Harrington, First Selectman / with attachments
Town of Windsor Locks 50 Church St., Windsor Locks, CT 06096
Mark Doody, Building Official & Housing Code Enf. Officer / with attachments
Town of Windsor Locks 50 Church St., Windsor Locks, CT 06096

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 Windsor Locks #23004 (6/29/99)
Exhibit 7	EME Report	EBI Consulting 12/21/21
Exhibit 8	Structural Analysis	TES 9/2/21
Exhibit 9	Mount Analysis	B+T Group 9/7/21
Exhibit 10	Construction Drawings	B+T Group 12/15/21

EXHIBIT 1

Copy of check

EXHIBIT 2
Letter of Intent

January 3, 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: **2-4 Volunteer Dr., Windsor Locks, CT**
Dish Wireless Site No: **BOBDL00132A**
Site No: **CT22108-A**

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 **2-4 Volunteer Dr., Windsor Locks, CT**.

SBA Towers IX, 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 97' 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

TRACK ANOTHER SHIPMENT

775650516722

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, 1/5/2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

FROM
SBA COMMUNICATIONS CORPORATION
Rick Woods

134 Flanders Rd
Suite 125
WESTBOROUGH, MA US 01581
508-614-0389

TO
Melanie A. Bachman Exec. Dir
Connecticut Siting Council

Ten Franklin Square
NEW BRITAIN, CT US 06051
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, January 4, 2022

11:45 AM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office

Monday, January 3, 2022

3:06 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT
775650516722	FedEx Priority Overnight	2 lbs / 0.91 kgs

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FedEx

TRACK ANOTHER SHIPMENT

775650539734

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, 1/5/2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

TO
Paul M. Harrington
Town of Windsor Locks
First Selectman
50 Church St
WINDSOR LOCKS, CT US 06096
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, January 4, 2022

11:45 AM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office

Monday, January 3, 2022

3:08 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT
775650539734	FedEx Priority Overnight	0.5 lbs / 0.23 kgs

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

FedEx

TRACK ANOTHER SHIPMENT

775650565032

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, 1/5/2022 before 10:30 am

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

TO
Mark Doody
Town of Windsor Locks
Building Official, Housing Officer
50 Church St
WINDSOR LOCKS, CT US 06096
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, January 4, 2022

11:45 AM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office

Monday, January 3, 2022

3:10 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT
775650565032	FedEx Priority Overnight	0.5 lbs / 0.23 kgs

EXHIBIT 4

Property Card

Windsor Locks, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
			4	VOLUNTEER DRIVE

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
00023300	034-062-080-0004	1	1	VOLUNTEER DRIVE	4	RESA	Municipal Indus	11.20

Owner Information:

Owner 1 Name:	WINDSOR LOCKS TOWN OF
Owner 2 Name:	
Street 1:	50 CHURCH ST
Street 2:	
City:	WINDSOR LOCKS
State:	CT
Zip:	06096
Volume:	113
Page:	299
Deed Date:	0000-00-00

Building Information:

Building Number:	1
Units:	0
Structure Type:	POLICE/FIRE STATION
Grade:	C
Identical Units:	1
Year Built:	1975

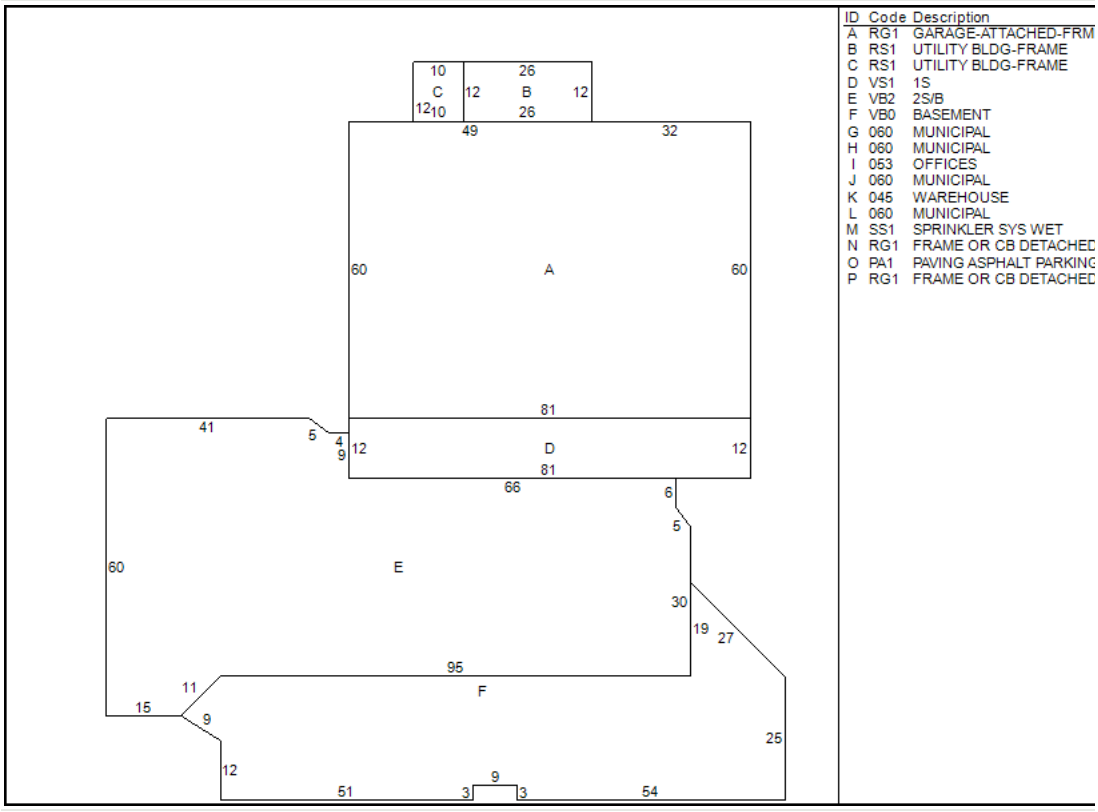
Valuation:

Appraised Land:	$562,200.00
Appraised Land PA490:	$0.00
Appraised Bldg:	$2,373,700.00
Appraised Total:	$2,935,900.00
Total Assessment:	$2,055,130.00

Property Images:

Picture:

Sketch:



Sales History:

Book:	Page:	Sale Date:	Price:	Validity:	Sale Type:
113	299	11/16/1972			

Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Conditio
RG1	FRAME OR CB DETACHED GARAGE	1	1999	0	0	2592	C	GOOD
PA1	PAVING ASPHALT PARKING	1	1999	0	0	46600	C	AVERAGE
RG1	FRAME OR CB DETACHED GARAGE	1	1999	0	0	800	C	GOOD

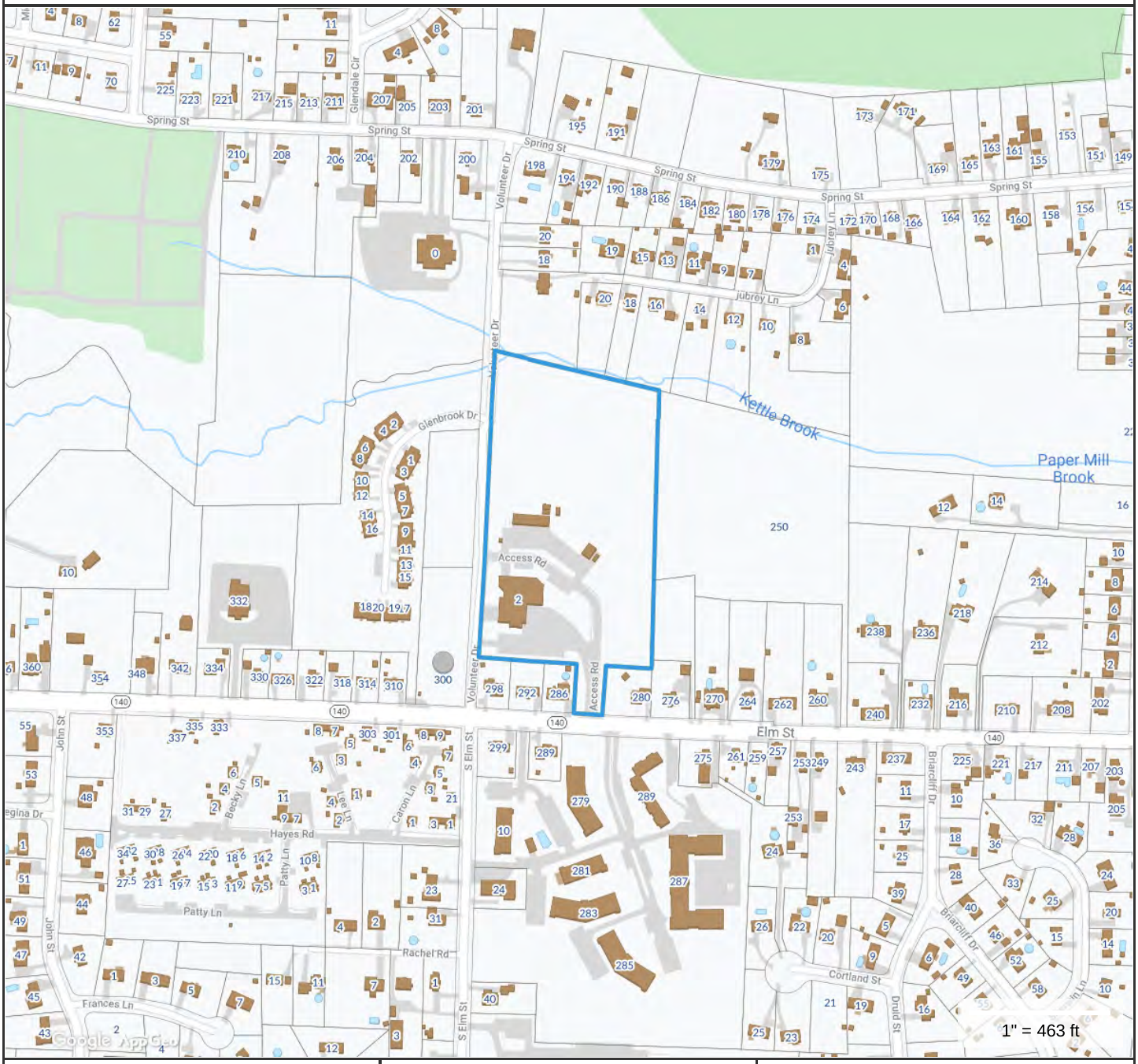
Building Interior/Exterior Information:

Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional Util
B1	B1	3056	MUNICIPAL	BRICK VENEER	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3
01	01	5418	MUNICIPAL	BRICK VENEER	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3
01	01	1944	OFFICES	BRICK VENEER	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3
01	01	4860	MUNICIPAL	BRICK VENEER	FIRE RESISTANT	NONE	NONE	NORMAL	3
01	01	432	WAREHOUSE	BRICK VENEER	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3
02	02	5418	MUNICIPAL	BRICK VENEER	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3

Mon. January 3, 2022 : 02:25 PM : 0.56s : 10mb

EXHIBIT 5

Property Map



Property Information

Property ID	23300
Location	2 VOLUNTEER DRIVE
Owner	WINDSOR LOCKS TOWN OF

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Windsor Locks, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 11/15/2017
Data updated 11/15/2017

Google Maps 4 Volunteer Dr

Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 50 ft

4 Volunteer Dr

Directions Save Nearby Send to your phone Share

4 Volunteer Dr, Windsor Locks, CT 06096

W9G3+X4 Windsor Locks, Connecticut

Photos

At this place

Windsor Locks Police Department

4.0 ★★★★☆ (7)

Police station

EXHIBIT 6

Zoning Approval

SITE NAME: Windsor Locks @ Volunteer Drive SITE ID: CT22108-A

Transaction: Message Center Management, Inc. (MCM) Nikki/Angela

ZONING/PERMITTING COMPLETION FORM

CT-318

Address: 2-4 Volunteer Drive, Windsor Locks, CT 6096

Jurisdiction: Connecticut Siting Council – Zoning (Currently)* Zoning District:
Town of Windsor Locks - Permitting

Zoning Approval Type: Building Permit at time built Case #:

Approval Date: 6/29/1999 Approved Height: 200

Conditions of Approval:	Yes
Removal Bond	☐
Site Plan Submittal	☐
Fall Zone	☐
Periodic Inspections	☐
Periodic Reporting	☐
Approval Renewal	☐
Additional Conditions	☐

Per Mark Doody – Zoning sign off was part of the building permit approval.
*Tower was built prior to statewide change in the law in 2001, which brought it under CSC jurisdiction.

JURISDICTION POC/DEPT.

Planning/Zoning:

Phone: Email:

Bldg./Code Enforcement: Mark Doody, Building Official/Housing Code Officer

Phone: 860-627-1447 Ext 320 Email: mdoody@Wlocks.com

Submitted by: Natches Estes Date: 3/28/2017
Zoning Compliance

TO BE COMPLETED BY CORPORATE

	Yes	No	N/A	
Zoning Approval Attached (required)	☐	☐	☒	
Building Permit Attached (required)	☒	☐	☐	Date Recd
23004				6/29/1999
Certificate of Occupancy or Compliance (CO) attached (required)	☒	☐	☐	5/22/2000

Zoning Manager Approval: Date: 3/28/2017

TOWN OF WINDSOR LOCKS, CT
BUILDING PERMIT

Nº 23004

DATE June 29, 1999
CHECK NO waived **CASH**
C.O. FEE waived

ESTIMATED COST/VALUE $ 60,000
(EXCLUDING ELECTRICAL, PLUMBING & HVAC)
FEE $ WAIVED

APPLICANT
NAME Message Center Management
ADDRESS 40 Woodland Street
Hartford, CT 06105

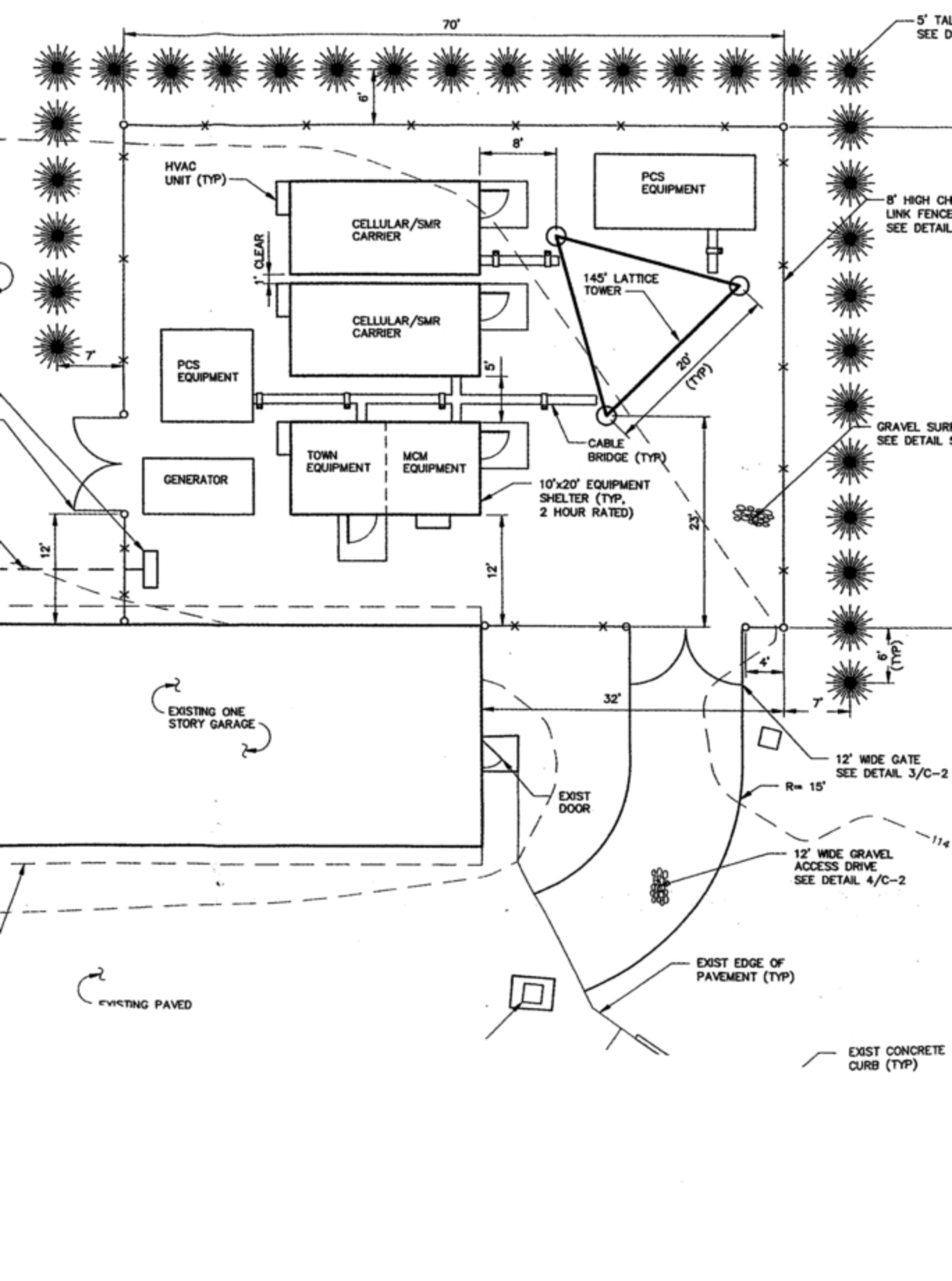
PHONE 860-418-5706 **LICENSE NO.**
OWNER 860-418-5752-Chris
NAME Town of Windsor Locks
ADDRESS 50 Church Street
Windsor Locks, CT 06096

To construct a Wireless Telecommunication Facility as per drawings at 2-4 Volunteer Drive.

Ft Front=70' Ft Deep= 54'

All work to be done in accordance with this application and plans approved by the Building Department

Building Official


70'
6'
8'
HVAC UNIT (TYP)
CELLULAR/SMR CARRIER
1' CLEAR
CELLULAR/SMR CARRIER
PCS EQUIPMENT
PCS EQUIPMENT
145' LATTICE TOWER
20' (TYP)
5'
7'
GENERATOR
TOWN EQUIPMENT
MCM EQUIPMENT
10'x20' EQUIPMENT SHELTER (TYP, 2 HOUR RATED)
CABLE BRIDGE (TYP)
23'
12'
12'
4'
32'
7'
6' (TYP)
EXISTING ONE STORY GARAGE
12' WIDE GATE SEE DETAIL 3/C-2
EXIST DOOR
R= 15'
12' WIDE GRAVEL ACCESS DRIVE SEE DETAIL 4/C-2
EXIST EDGE OF PAVEMENT (TYP)
EXISTING PAVED
EXIST CONCRETE CURB (TYP)
8' HIGH CH
LINK FENCE
SEE DETAIL
GRAVEL SUR
SEE DETAIL
5' TAL
SEE D

TOWN OF WINDSOR LOCKS, CT
BUILDING PERMIT

DATE June 29, 1999
CHECK NO waived CASH
C.O. FEE waived

No 23004

APPLICANT
NAME Message Center Management
ADDRESS 40 Woodland Street
Hartford, CT 06105

ESTIMATED COST/VALUE $ 60,000
(EXCLUDING ELECTRICAL, PLUMBING & HVAC)
FEE $ WAIVED

PHONE 860-418-5706 **LICENSE NO.**
OWNER 860-418-5752-Chris
NAME
ADDRESS Town of Windsor Locks
50 Church Street
Windsor Locks, CT 06096

To construct a Wireless Telecommunication Facility as per drawings at 2-4 Volunteer Drive.

Ft Front=70' Ft Deep= 54'

All work to be done in accordance with this application and plans approved by the Building Department

Building Official

BUILDING DEPARTMENT
TOWN OF WINDSOR LOCKS, CONNECTICUT

CERTIFICATE OF OCCUPANCY

FEE PAID: $10.00

ZONE: Res A

DATED: May 22 19 2000

This to certify that 2-4 Volunteer Drive, Windsor Locks, CT 06096 constructed under permit No. 23004 conforms substantially to the requirements of the building ordinances and the zoning regulations of the Town of Windsor Locks and is hereby approved for occupancy as indicated below.

Approved for Occupancy- As a wireless telecommunication facility

Use Group:
Constr. Type:

Building Official

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

Any change or extension of the use herein approved requires a new certificate of occupancy.

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: BOBDL00132A

BOBDL00132A
2-4 Volunteer Drive
Windsor Locks, Connecticut 06096

December 21, 2021

EBI Project Number: 6221007650

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**40.27%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

December 21, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00132A - BOBDL00132A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **2-4 Volunteer Drive** in **Windsor Locks, 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 2-4 Volunteer Drive in Windsor Locks, 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 125 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):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 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 %:	**1.67%**	Antenna B1 MPE %:	**1.67%**	Antenna C1 MPE %:	**1.67%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.67%
AT&T	15.53%
T-Mobile	13.68%
Verizon	3.16%
Clearwire	0.32%
Sprint	4.47%
Windsor FD	1.44%
Site Total MPE % :	40.27%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.67%
Dish Wireless Sector B Total:	1.67%
Dish Wireless Sector C Total:	1.67%
Site Total MPE % :	40.27%

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	125.0	2.27	600 MHz n71	400	0.57%
Dish Wireless 1900 MHz n70	4	542.70	125.0	5.51	1900 MHz n70	1000	0.55%
Dish Wireless 2190 MHz n66	4	542.70	125.0	5.51	2190 MHz n66	1000	0.55%
						Total:	**1.67%**

• 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:	1.67%
Sector B:	1.67%
Sector C:	1.67%
Dish Wireless Maximum MPE % (Sector A):	1.67%
Site Total:	40.27%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **40.27%** 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 195 ft PIROD Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT22108-A

Customer Site Name: Windsor Locks @ Volunteer Drive

Carrier Name: Dish Wireless (App#: 168265-1)

Carrier Site ID / Name: BOBDL00132A / 0

Site Location: 2-4 Volunteer Drive

Windsor Locks, Connecticut

HARTFORD County

Latitude: 41.928100

Longitude: -72.646800

9/2/21

Analysis Result:

Max Structural Usage: 98.5% [Pass]

Max Foundation Usage: 58.0% [Pass]

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

Report Prepared By: Mohammed Al Rubaye

Introduction

The purpose of this report is to summarize the analysis results on the 195 ft PIROD Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	PiROD Eng. File #A-115761-1, Archive #F-0078802, dated 10/06/00
Foundation Drawing	PiROD Eng. File #A-115761-1, Archive #F-0078802, dated 10/06/00
Geotechnical Report	Tectonic Engineering Consultants W.O. #2295 01, dated 05/18/99
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

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	203.4	1	Andrew - DB224-A	Direct	(1) 7/8"	WLPD
2	183.7	5	Andrew - 20' Dipoles w/ (4) Element	(3) T-Frame	(8) 7/8"	
3	182.8	1	2.5" Ø x 20.0' Omni			
4	180.6	1	1.3" Ø x 13.0' Omni			
5	179.1	1	1.3" Ø x 10.0' Omni			
6	164.0	3	CCI - TPA-65R-LCUUUU-H8 - Panel	(3) Modified Sector Frame with new standoff 2" and 3" SCH.40 pipes at each sector and 3" SCH. 40 vertical pipe per sector	(9) 1 5/8" (1) 2" Conduit** (1) 3" Conduit**	AT&T
7		6	CCI - TPA65R-BU8D - Panel			
8		3	Powerwave LGP21401 TMA			
9		3	Kaelus DBCT108F1V92-1 Diplexer			
10		6	Kathrein 860 10025 RET			
11		3	Ericsson RRUS 32 B30			
12		3	Ericsson 4449 B5/B12			
13		3	Ericsson RRUS 8843 B2 B66A			
14		3	Ericsson RRUS 4478 B14			
15		2	Raycap DC6-48-60-18-8F - OVP			
18	150.0	3	Amphenol BXA-70063-6CF-5 - Panel	(3) Sector Frame	(2) 1 5/8" Hybrid (12) 1 5/8" Coax	Verizon
19		6	Commscope SBNHH-1D65B - Panel			
20		3	Samsung MT6407-77A - Panel			
21		6	RFS FD9R6004/2C-3L Diplexer			
22		3	Samsung LTE AWS/PCS RFV01U-D1A - RRU			
23		3	Samsung LTE 700/850 MHz RFV01U-D2A - RRU			
24		2	RFS DB-T1-6Z-8AB-0Z - DC Surge Suppressors			
26	135.0	3	Ericsson - AIR32 KRD901146-1_B66A (Octa) - Panel	(3) T-Frame w/ Mods (Replace Existing Pipe mast w/ new 2-1/2" std. (2.88" OD) steel pipe mast secured to the existing mount (typ. Of 1 per sector, total of 3); Secure the existing and proposed pipe masts to the existing mount with a minimum of two points of connection (typ. Of 3 per sector, total of 9))	(15) 1 5/8" (3) 1 1/4" Hybrid	T-Mobile
27		3	RFS - APX16DWV-16DWVS-E-A20 - Panel			
28		3	RFS - APXVAARR24_43-U-NA20 (Octa) - Panel			
29		6	Ericsson - KRY 112 144/2 - TMA			
30		3	Ericsson - Radio 4449 B71 + B12 - RRU			
35	116.8	3	RFS - APXVSPP18-C-A20 - Panel	(3) T- Frame	(4) 1-1/4" Fiber	Sprint Nextel
36	115.0	3	RFS - APXVTM14-C-I20 - Panel			
37		3	Alcatel-Lucent - TD-RRH8x20-25 - RRH			
38	110.3	3	Alcatel-Lucent - 800 MHz RRH	Direct		
39	107.6	3	Alcatel-Lucent - 1900 MHz RRH	Direct		

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
40	104.6	1	Andrew - 3.3' Dish	(3) Standoffs	(2) 1/2" (1) 1-5/16" Conduit	Clearwire
41	104.0	1	Andrew - VHLP1-23-DW1			
42		3	Argus - LLPX310R-V1 - Panel			
43	103.8	3	Alcatel-Lucent - SPI-22132825WB -			
44	102.4	1	12" x 12" x 6.38" Junction Box	Direct		
45	75.9	1	3.5" Ø x 8" GPS	(1) Standoff	(1) 1/2"	Unknown
46	60.0	1	PCTEL - GPS-TMG-HR-26N - GPS	Direct	(1) 1/2"	Sprint Nextel

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
31	125.0	3	JMA Wireless MX08FRO665-21 - Panel	(3) Sector Frames Commscope MTC3975083	(1) 1.6" Hybrid	Dish Wireless
32		3	Fujitsu TA08025-B604 - RRU			
33		3	Fujitsu TA08025-B605 - RRU			
34		1	Raycap RDIDC-9181-PF-48 - OVP			

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

Analysis Results

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**75.6%**	**98.5%**	**52.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)
Original Design Reactions	369.9	325.9
Analysis Reactions	391.6	341.4
Factored Reactions*	499.4	440.0
% of Design Reactions	78.4%	77.6%

* 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 0.1962 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.

Structure: CT22108-A-SBA

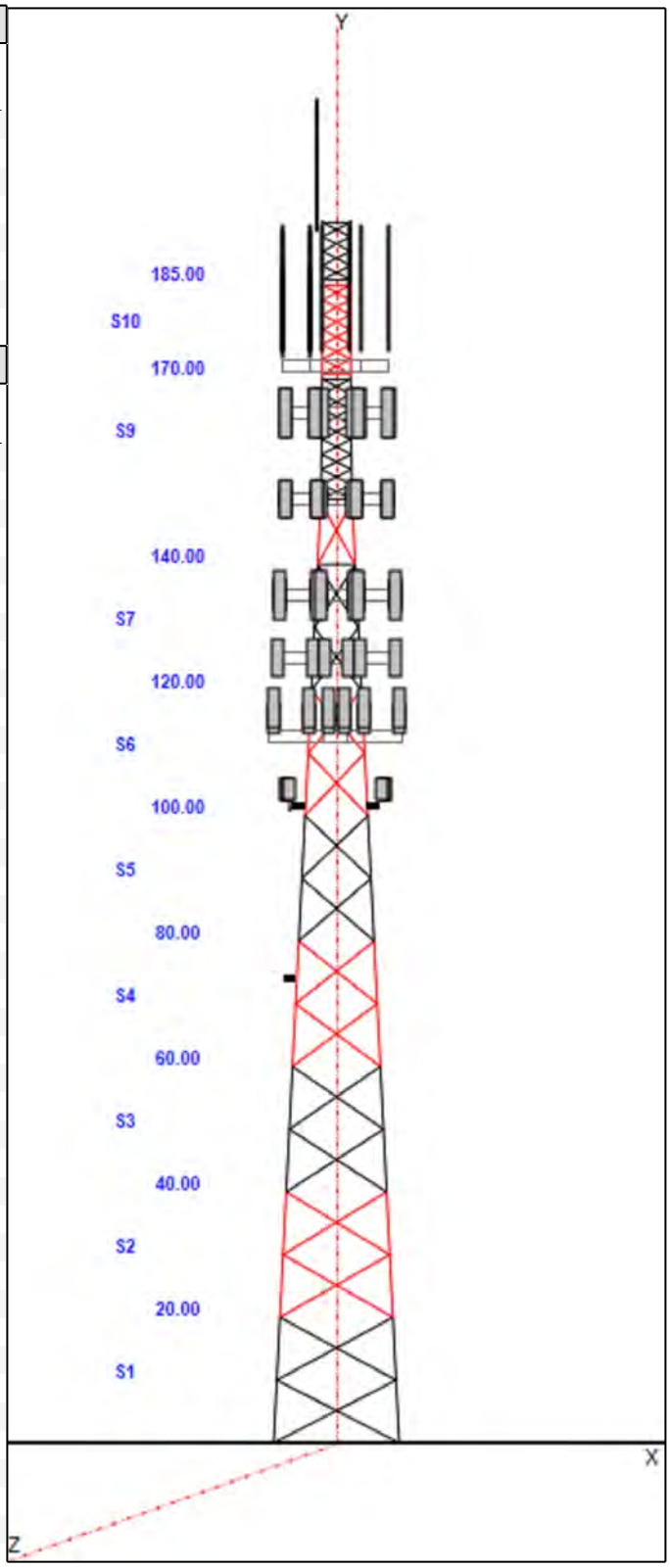
Site Name:	Windsor Locks @ Volunteer Drive			**Code:**	EIA/TIA-222-G	9/2/2021
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	195.00 (ft)	**Base Width:**	20.00	**Basic Ice WS:**	50.00	
Base Elev:	5.00 (ft)	**Top Width:**	4.50	**Operational WS:**	60.00	Page: 1

Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	12B 12"BD 2.25"	SAE 3.5X3.5X0.3125	
3-4	12B 12"BD 2"	SAE 3X3X0.3125	
5	12B 12"BD 1.75"	SAE 3X3X0.3125	
6	12B 12"BD 1.75"	SAE 3X3X0.1875	
7	12B 12"BD 1.5"	SAE 2.5X2.5X0.1875	SAE 2.5X2.5X0.1875
8	12B 12"BD 1.25"	SAE 2.5X2.5X0.1875	
9	SOL 2" SOLID	SOL 7/8" SOLID	SOL 1" SOLID
10-11	SOL 1 3/4" SOLID	SOL 3/4" SOLID	SOL 7/8" SOLID

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
195.00	195.00	1	Lightning Rod
195.00	195.00	1	Beacon
195.00	203.40	1	Andrew - DB224-A
171.50	171.50	3	15' T-Frame
171.50	183.70	5	Andrew - 20' Dipoles w/ (4) Element
171.50	182.80	1	2.5" Ø x 20.0' Omni
171.50	180.60	1	1.3" Ø x 13.0' Omni
171.50	179.10	1	1.3" Ø x 10.0' Omni
164.00	164.00	3	T-Frame
164.00	164.00	3	TPA-65R-LCUUUU-H8
164.00	164.00	6	TPA65R-BU8D
164.00	164.00	3	Powerwave LGP21401 TMA
164.00	164.00	3	Kaelus DBCT108F1V92-1 Diplexer
164.00	164.00	6	Kathrein 860 10025 RET
164.00	164.00	3	RRUS 32 B30
164.00	164.00	3	Ericsson 4449 B5/B12
164.00	164.00	3	Ericsson RRUS 8843 B2 B66A
164.00	164.00	3	Ericsson RRUS 4478 B14
164.00	164.00	2	Raycap DC6-48-60-18-8F
164.00	164.00	1	Mount Mods
150.00	150.00	3	Samsung MT6407-77A
150.00	150.00	6	RFS FD9R6004/2C-3L Diplexer
150.00	150.00	3	Samsung LTE AWS/PCS RFV01U-D1A
150.00	150.00	3	Samsung LTE 700/850 MHz RFV01U
150.00	150.00	2	RFS DB-T1-6Z-8AB-0Z
150.00	150.00	3	Sector Frame
150.00	150.00	3	Amphenol - BXA-70063/6CF-EDIN
150.00	150.00	6	Commscope SBNHH-1D65B
135.00	135.00	3	Sector Frame
135.00	135.00	3	APXVAARR24_43-U-NA20 (Octa)
135.00	135.00	3	AIR32 KRD901146-1_B66A (Octa)
135.00	135.00	6	Ericsson KRY 112 144/2 TMA
135.00	135.00	3	Ericsson - Radio 4449 B71 + B12
135.00	135.00	1	New T-arms Mods1
135.00	135.00	3	APX16DWV-16DWV-S-E-A20
125.00	125.00	3	JMA Wireless MX08FRO665-21
125.00	125.00	3	Fujitsu TA08025-B604
125.00	125.00	3	Fujitsu TA08025-B605
125.00	125.00	1	Raycap RDIDC-9181-PF-48
125.00	125.00	1	(3) Commscope MTC3975083
112.30	112.30	3	Sector Frame-Pipe/Rod



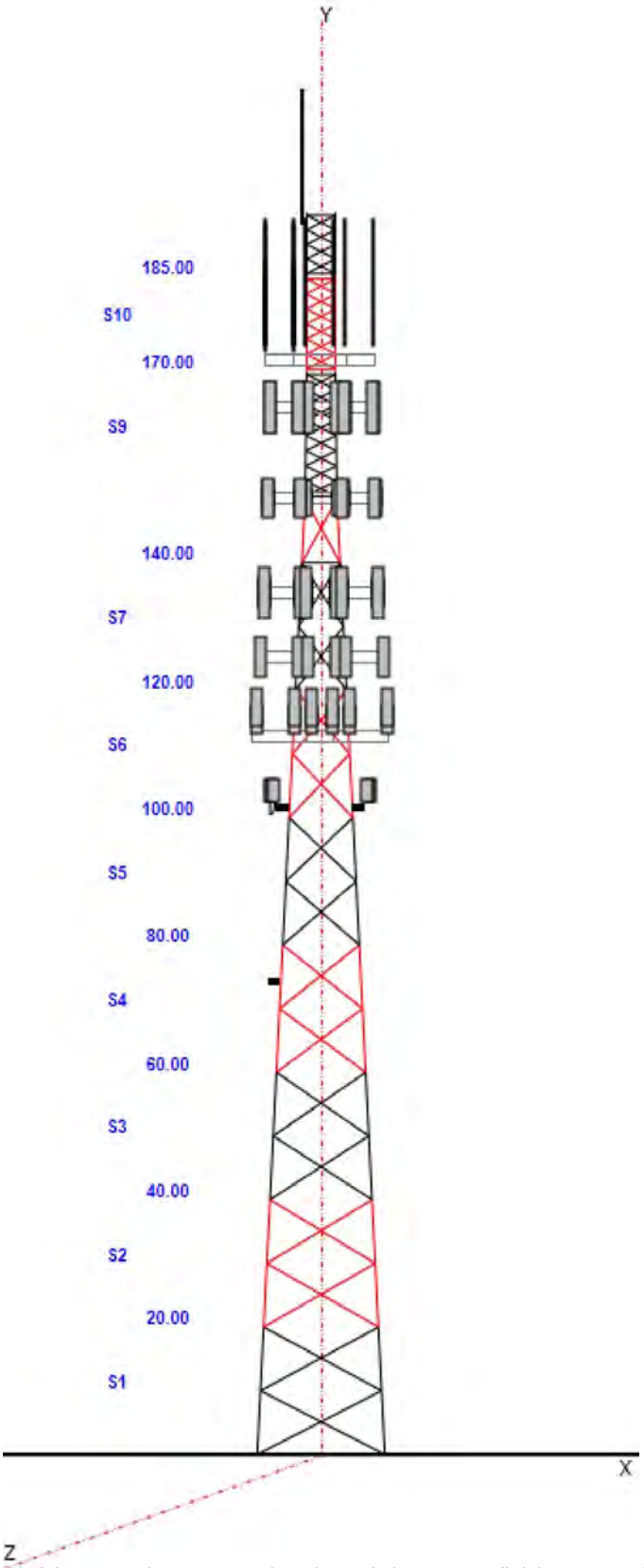
112.30	116.80	3	RFS - APXVSPP18-C-A20
112.30	115.00	3	RFS - APXVTM14-C-I20
112.30	115.00	3	Alcatel-Lucent - TD-RRH8x20-25 - RRH
110.30	110.30	3	Alcatel-Lucent - 800 MHz RRH
107.60	107.60	3	Alcatel-Lucent - 1900 MHz RRH
102.40	102.40	1	12" x 12" x 6.38" Junction Box
101.40	101.40	3	Standoffs
101.40	104.60	1	Andrew - 3.3' Dish
101.40	104.00	1	Andrew - VHLP1-23-DW1
101.40	104.00	3	Argus - LLPX310R-V4
101.40	103.80	3	Alcatel-Lucent - SPI-22132825WB
74.00	75.90	1	3.5" Ø x 8" GPS
74.00	74.00	1	Standoff
60.00	60.00	1	PCTEL - GPS-TMG-HR-26N - GPS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	195.00	1	7/8" Coax
0.00	171.50	8	7/8" Coax
0.00	164.00	9	1 5/8" Coax
0.00	164.00	1	2" Conduit
0.00	164.00	1	3" Conduit
0.00	150.00	6	1 5/8" Coax
0.00	150.00	6	1 5/8" Coax
0.00	150.00	2	1 5/8" Hybrid
0.00	135.00	15	1 5/8" Coax
0.00	135.00	3	1-1/4" Hybrid
0.00	125.00	1	1.6" Hybrid
0.00	125.00	1	W/G Ladder
0.00	112.30	4	1-1/4" Fiber
0.00	101.40	1	1-5/16" Conduit
0.00	101.40	2	1/2" Coax
0.00	74.00	1	1/2" Coax
0.00	60.00	1	1/2" Coax

Base Reactions

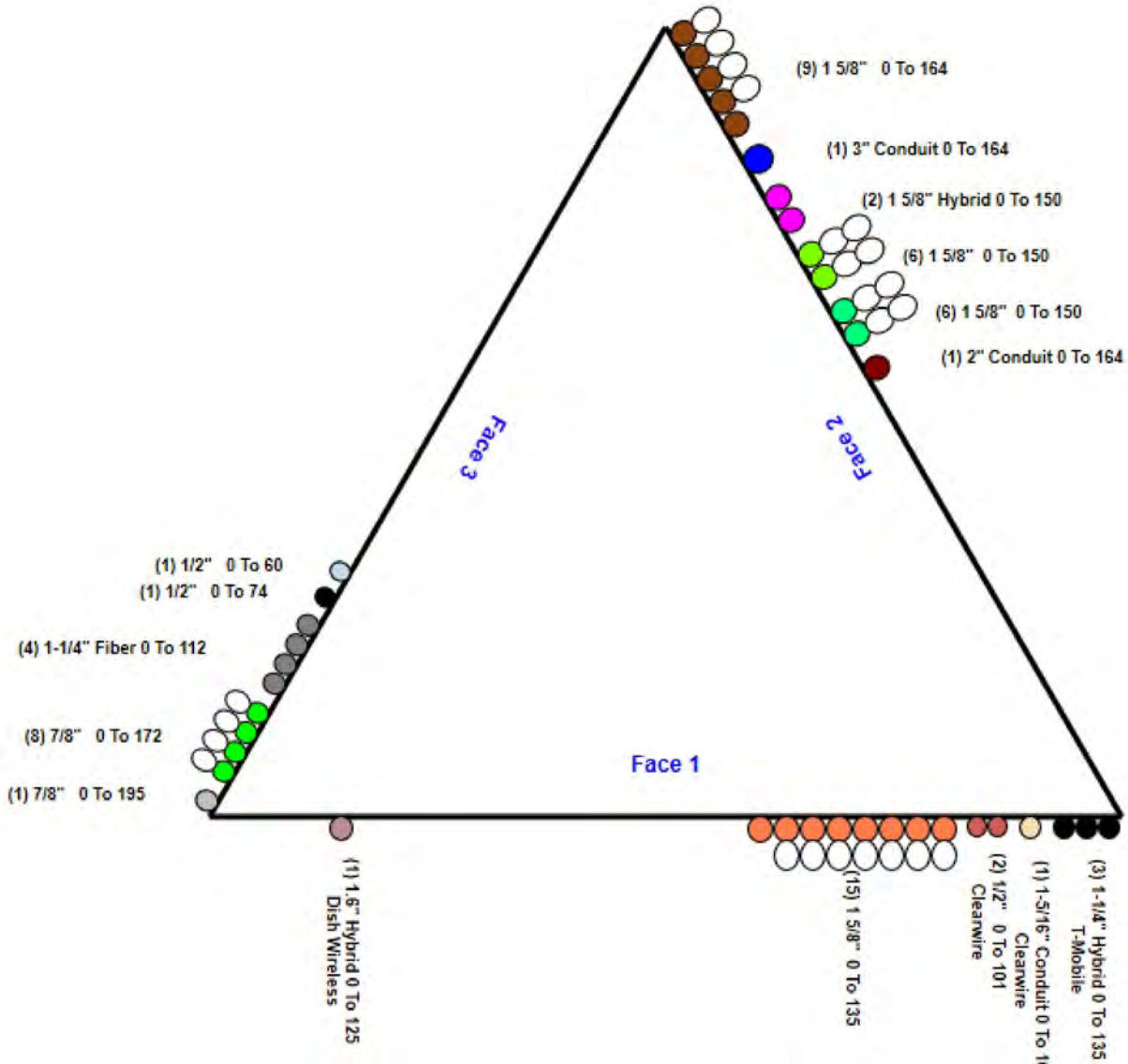
Leg		Overturning	
Max Uplift:	-341.45 (kips	Moment:	6408.12 (ft-kips)
Max Down:	391.60 (kips	Total Down:	64.88 (kips)
Max Shear:	39.04 (kips	Total Shear:	60.37 (kips)



Structure: CT22108-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)

9/2/2021



Loading Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
195.00	Lightning Rod	1	5.00	0.500	33.67	2.889	72.000	1.000	1.000	1.00	1.00	0.000
195.00	Beacon	1	36.00	2.720	218.31	4.019	28.000	17.500	17.500	1.00	1.00	0.000
195.00	Andrew - DB224-A	1	35.00	5.650	275.06	29.777	255.000	0.000	0.000	1.00	1.00	8.400
171.50	15' T-Frame	3	400.00	10.000	779.69	21.865	0.000	0.000	0.000	0.75	0.75	0.000
171.50	Andrew - 20' Dipoles w/ (4) Element	5	60.00	7.520	361.51	23.681	240.000	3.000	3.000	1.00	1.00	12.20
171.50	2.5" Ø x 20.0' Omni	1	55.00	6.000	259.86	15.648	240.000	3.000	3.000	1.00	1.00	11.30
171.50	1.3" Ø x 13.0' Omni	1	40.00	3.900	173.84	10.227	156.000	3.000	3.000	1.00	1.00	9.100
171.50	1.3" Ø x 10.0' Omni	1	25.00	3.000	128.42	7.904	120.000	3.000	3.000	1.00	1.00	7.600
164.00	T-Frame	3	400.00	10.000	775.88	21.746	0.000	0.000	0.000	0.75	0.75	0.000
164.00	TPA-65R-LCUUUU-H8	3	75.00	13.300	518.55	15.563	96.000	14.400	8.600	0.80	0.83	0.000
164.00	TPA65R-BU8D	6	82.50	17.870	616.34	20.288	96.000	20.700	7.700	0.80	0.72	0.000
164.00	Powerwave LGP21401 TMA	3	14.10	1.290	47.75	2.415	14.400	9.200	2.600	0.80	1.00	0.000
164.00	Kaelus DBCT108F1V92-1 Diplexer	3	19.80	0.700	65.75	1.228	10.600	7.900	4.700	0.80	0.80	0.000
164.00	Kathrein 860 10025 RET	6	1.10	0.160	8.33	0.628	6.900	2.400	2.000	0.80	0.92	0.000
164.00	RRUS 32 B30	3	53.00	2.740	181.49	3.748	27.200	12.100	7.000	0.80	0.67	0.000
164.00	Ericsson 4449 B5/B12	3	71.00	1.970	142.86	2.707	17.900	13.200	9.400	0.80	0.67	0.000
164.00	Ericsson RRUS 8843 B2 B66A	3	75.00	1.650	184.29	2.401	15.000	13.200	11.100	0.80	0.67	0.000
164.00	Ericsson RRUS 4478 B14	3	59.40	1.650	115.22	2.348	15.000	13.200	7.300	0.80	0.67	0.000
164.00	Raycap DC6-48-60-18-8F	2	31.80	0.920	115.02	1.510	24.000	11.000	11.000	0.80	1.00	0.000
164.00	Mount Mods	1	512.00	15.000	1474.25	36.143	0.000	0.000	0.000	0.75	1.00	0.000
150.00	Samsung MT6407-77A	3	79.40	4.690	250.17	5.973	35.100	16.100	5.500	0.80	0.70	0.000
150.00	RFS FD9R6004/2C-3L Diplexer	6	3.10	0.360	13.80	0.951	5.800	6.500	1.500	0.80	1.00	0.000
150.00	Samsung LTE AWS/PCS	3	84.40	1.880	152.75	2.615	15.000	15.000	10.000	0.80	0.67	0.000
150.00	Samsung LTE 700/850 MHz	3	70.30	1.880	135.15	2.615	15.000	15.000	8.100	0.80	0.67	0.000
150.00	RFS DB-T1-6Z-8AB-0Z	2	18.90	4.800	180.34	6.140	24.000	24.000	10.000	0.80	1.00	0.000
150.00	Sector Frame	3	500.00	17.500	1430.78	36.069	0.000	0.000	0.000	0.75	0.75	0.000
150.00	Amphenol - BXA-70063/6CF-EDIN	3	17.00	7.570	214.73	11.255	71.000	11.200	5.200	0.80	0.78	0.000
150.00	Commscope SBNHH-1D65B	6	40.60	8.080	326.81	9.842	72.000	11.900	7.100	0.80	0.83	0.000
135.00	Sector Frame	3	450.00	14.000	914.20	23.284	0.000	0.000	0.000	0.75	0.75	0.000
135.00	APXVAARR24_43-U-NA20 (Octa)	3	128.00	20.240	701.99	22.777	95.900	24.000	7.800	0.80	0.70	0.000
135.00	AIR32 KRD901146-1_B66A (Octa)	3	132.20	6.510	389.88	8.081	57.000	12.900	8.700	0.80	0.87	0.000
135.00	Ericsson KRY 112 144/2 TMA	6	11.00	0.410	25.22	1.037	6.900	6.100	2.700	0.80	0.70	0.000
135.00	Ericsson - Radio 4449 B71 + B12	3	70.00	1.650	167.63	2.384	15.000	13.200	9.300	0.80	0.67	0.000
135.00	New T-arms Mods1	1	180.00	6.100	478.41	14.527	0.000	0.000	0.000	0.75	1.00	0.000
135.00	APX16DWV-16DWV-S-E-A20	3	40.70	6.460	234.77	7.960	55.900	13.000	3.200	0.80	0.62	0.000
125.00	JMA Wireless MX08FRO665-21	3	64.50	12.490	442.16	14.392	72.000	20.000	8.000	0.80	0.74	0.000
125.00	Fujitsu TA08025-B604	3	63.90	1.960	129.64	2.688	15.800	15.000	7.900	0.80	0.67	0.000
125.00	Fujitsu TA08025-B605	3	75.00	1.960	142.91	2.688	15.800	15.000	9.100	0.80	0.67	0.000
125.00	Raycap RDIDC-9181-PF-48	1	21.90	2.010	91.04	2.748	16.600	14.600	8.500	1.00	1.00	0.000
125.00	(3) Commscope MTC3975083	1	1242.0	28.050	2818.01	73.813	0.000	0.000	0.000	0.00	0.00	0.000
112.30	Sector Frame-Pipe/Rod	3	450.00	14.000	906.81	23.136	0.000	0.000	0.000	0.75	0.75	0.000
112.30	RFS - APXVSPP18-C-A20	3	57.00	8.020	281.43	11.647	72.000	11.800	7.000	0.80	0.83	4.500
112.30	RFS - APXVTM14-C-I20	3	56.20	6.340	269.07	7.811	56.300	12.600	6.300	0.80	0.78	2.700
112.30	Alcatel-Lucent - TD-RRH8x20-25 -	3	70.00	4.050	196.89	5.885	26.100	18.600	6.700	0.80	0.67	2.700
110.30	Alcatel-Lucent - 800 MHz RRH	3	53.00	2.490	149.03	3.975	19.700	13.000	10.800	0.80	0.67	0.000
107.60	Alcatel-Lucent - 1900 MHz RRH	3	44.00	3.800	185.74	5.605	23.000	13.000	17.000	0.80	0.67	0.000
102.40	12" x 12" x 6.38" Junction Box	1	10.00	1.400	63.17	2.481	12.000	12.000	8.000	1.00	1.00	0.000
101.40	Standoffs	3	120.00	4.500	253.38	11.182	0.000	0.000	0.000	0.75	0.75	0.000

Loading Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 6	

101.40	Andrew - 3.3' Dish	1	140.00	8.920	372.43	11.157	36.000	36.000	0.000	1.00	1.00	3.200
101.40	Andrew - VHLP1-23-DW1	1	14.00	1.610	59.10	2.576	15.300	15.300	8.700	1.00	1.00	2.600
101.40	Argus - LLPX310R-V4	3	28.70	4.310	144.33	6.426	42.100	11.800	4.500	0.80	0.73	2.600
101.40	Alcatel-Lucent - SPI-22132825WB	3	33.10	1.820	89.05	3.063	16.100	11.600	6.000	0.80	0.67	2.400
74.00	3.5" Ø x 8" GPS	1	10.00	0.160	16.90	0.638	8.000	2.000	2.000	1.00	1.00	1.900
74.00	Standoff	1	120.00	2.500	250.27	6.126	0.000	0.000	0.000	1.00	1.00	0.000
60.00	PCTEL - GPS-TMG-HR-26N - GPS	1	0.60	0.090	6.45	0.308	5.000	3.200	3.200	1.00	1.00	0.000
	Totals:	**148**	**15,241.80**		**46,842.26**				**Number of Appurtenances :**			**55**

Loading Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	195.00	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	171.50	7/8" Coax	8	1.11	0.52	50.00	3	Block		N	1.00	0.67	
0.00	164.00	1 5/8" Coax	9	1.98	1.04	50.00	2	Block		N	1.00	0.59	
0.00	164.00	2" Conduit	1	2.00	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	164.00	3" Conduit	1	3.02	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.00	1 5/8" Coax	6	1.98	1.04	33.30	2	Block		N	1.00	0.47	
0.00	150.00	1 5/8" Coax	6	1.98	1.04	33.30	2	Block		N	1.00	1.00	0
0.00	150.00	1 5/8" Hybrid	2	2.00	1.10	100.00	2	Individual NR		N	1.00	1.00	0
0.00	135.00	1 5/8" Coax	15	1.98	1.04	50.00	1	Block		N	1.00	1.00	
0.00	135.00	1-1/4" Hybrid	3	1.25	0.95	50.00	1	Individual IR		N	1.00	1.00	
0.00	125.00	1.6" Hybrid	1	1.60	1.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	125.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	112.30	1-1/4" Fiber	4	1.25	0.95	100.00	3	Individual IR		N	1.00	0.59	
0.00	101.40	1-5/16" Conduit	1	1.38	1.13	100.00	1	Individual NR		N	1.00	1.00	0
0.00	101.40	1/2" Coax	2	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	0
0.00	74.00	1/2" Coax	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	0
0.00	60.00	1/2" Coax	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	35.27	136.67	0.00	7,712.9	0.0	2400.35	2024.58	4,424.92
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	32.73	136.67	0.00	7,531.7	0.0	2630.08	2416.75	5,046.83
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	27.28	136.67	0.00	6,421.3	0.0	2422.68	2658.02	5,080.70
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	25.58	135.26	0.00	6,273.6	0.0	2383.53	2811.36	5,194.89
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	23.37	134.50	0.00	5,364.4	0.0	2273.88	2954.50	5,228.37
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	22.05	127.14	0.00	4,709.6	0.0	2165.60	2990.11	5,155.71
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	19.67	106.12	0.00	3,846.9	0.0	1942.09	2423.68	4,365.77
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	8.71	35.69	0.00	1,469.1	0.0	856.41	652.75	1,509.16
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	1.00	1.00	0.00	7.74	38.72	0.00	1,817.6	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	1.00	1.00	0.00	5.00	2.50	0.00	855.1	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	585.8	0.0	398.71	27.01	425.73
														46,588.0	**0.0**			**38,903.84**

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	30.40	136.67	0.00	7,712.9	0.0	2068.74	2024.58	4,093.32
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	28.27	136.67	0.00	7,531.7	0.0	2271.30	2416.75	4,688.05
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	23.79	136.67	0.00	6,421.3	0.0	2112.37	2658.02	4,770.39
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	22.41	135.26	0.00	6,273.6	0.0	2088.01	2811.36	4,899.38
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	20.50	134.50	0.00	5,364.4	0.0	1994.01	2954.50	4,948.51
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	19.45	127.14	0.00	4,709.6	0.0	1910.39	2990.11	4,900.50
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	17.47	106.12	0.00	3,846.9	0.0	1725.36	2423.68	4,149.04
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	7.79	35.69	0.00	1,469.1	0.0	766.25	652.75	1,419.00
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	0.80	1.00	0.00	7.74	38.72	0.00	1,817.6	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	0.80	1.00	0.00	5.00	2.50	0.00	855.1	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	585.8	0.0	398.71	27.01	425.73
														46,588.0	**0.0**			**36,765.66**

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	31.62	136.67	0.00	7,712.9	0.0	2151.64	2024.58	4,176.22
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	29.38	136.67	0.00	7,531.7	0.0	2360.99	2416.75	4,777.75
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	24.66	136.67	0.00	6,421.3	0.0	2189.95	2658.02	4,847.97
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	23.20	135.26	0.00	6,273.6	0.0	2161.89	2811.36	4,973.26
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	21.21	134.50	0.00	5,364.4	0.0	2063.98	2954.50	5,018.48
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	20.10	127.14	0.00	4,709.6	0.0	1974.19	2990.11	4,964.30
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	18.02	106.12	0.00	3,846.9	0.0	1779.54	2423.68	4,203.22
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.02	35.69	0.00	1,469.1	0.0	788.79	652.75	1,441.54
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	0.85	1.00	0.00	7.74	38.72	0.00	1,817.6	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	0.85	1.00	0.00	5.00	2.50	0.00	855.1	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	585.8	0.0	398.71	27.01	425.73
														46,588.0	**0.0**			**37,300.20**

Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

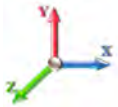
Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	35.27	136.67	0.00	5,784.7	0.0	2400.35	2024.58	4,424.92
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	32.73	136.67	0.00	5,648.8	0.0	2630.08	2416.75	5,046.83
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	27.28	136.67	0.00	4,816.0	0.0	2422.68	2658.02	5,080.70
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	25.58	135.26	0.00	4,705.2	0.0	2383.53	2811.36	5,194.89
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	23.37	134.50	0.00	4,023.3	0.0	2273.88	2954.50	5,228.37
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	22.05	127.14	0.00	3,532.2	0.0	2165.60	2990.11	5,155.71
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	19.67	106.12	0.00	2,885.2	0.0	1942.09	2423.68	4,365.77
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	8.71	35.69	0.00	1,101.8	0.0	856.41	652.75	1,509.16
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	1.00	1.00	0.00	7.74	38.72	0.00	1,363.2	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	1.00	1.00	0.00	5.00	2.50	0.00	641.3	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	439.3	0.0	398.71	27.01	425.73
														34,941.0	**0.0**			**38,903.84**

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	



Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	30.40	136.67	0.00	5,784.7	0.0	2068.74	2024.58	4,093.32
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	28.27	136.67	0.00	5,648.8	0.0	2271.30	2416.75	4,688.05
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	23.79	136.67	0.00	4,816.0	0.0	2112.37	2658.02	4,770.39
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	22.41	135.26	0.00	4,705.2	0.0	2088.01	2811.36	4,899.38
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	20.50	134.50	0.00	4,023.3	0.0	1994.01	2954.50	4,948.51
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	19.45	127.14	0.00	3,532.2	0.0	1910.39	2990.11	4,900.50
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	17.47	106.12	0.00	2,885.2	0.0	1725.36	2423.68	4,149.04
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	7.79	35.69	0.00	1,101.8	0.0	766.25	652.75	1,419.00
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	0.80	1.00	0.00	7.74	38.72	0.00	1,363.2	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	0.80	1.00	0.00	5.00	2.50	0.00	641.3	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	439.3	0.0	398.71	27.01	425.73
														34,941.0	**0.0**			**36,765.66**

Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

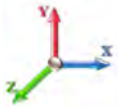
Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	31.62	136.67	0.00	5,784.7	0.0	2151.64	2024.58	4,176.22
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	29.38	136.67	0.00	5,648.8	0.0	2360.99	2416.75	4,777.75
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	24.66	136.67	0.00	4,816.0	0.0	2189.95	2658.02	4,847.97
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	23.20	135.26	0.00	4,705.2	0.0	2161.89	2811.36	4,973.26
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	21.21	134.50	0.00	4,023.3	0.0	2063.98	2954.50	5,018.48
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	20.10	127.14	0.00	3,532.2	0.0	1974.19	2990.11	4,964.30
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	18.02	106.12	0.00	2,885.2	0.0	1779.54	2423.68	4,203.22
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.02	35.69	0.00	1,101.8	0.0	788.79	652.75	1,441.54
9	160.0	28.79	0.000	13.44	0.00	0.14	2.82	0.85	1.00	0.00	7.74	38.72	0.00	1,363.2	0.0	854.95	971.76	1,826.71
10	177.5	29.41	0.000	8.71	0.00	0.13	2.87	0.85	1.00	0.00	5.00	2.50	0.00	641.3	0.0	573.12	71.93	645.05
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	439.3	0.0	398.71	27.01	425.73
														34,941.0	**0.0**			**37,300.20**

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	



TES Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.62	24.365	62.44	38.80	0.22	2.54	1.00	1.00	1.85	60.45	188.14	67.77	17,500.	9787.8	602.67	581.81	1,184.48
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	1.00	1.00	2.01	59.33	192.50	73.77	18,123.	10591.4	687.43	714.02	1,401.45
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	1.00	1.00	2.10	53.36	194.98	77.18	16,908.	10487.3	672.79	798.29	1,471.08
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	1.00	1.00	2.17	51.49	195.34	70.20	16,727.	10453.6	671.80	815.34	1,487.13
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	1.00	1.00	2.22	47.69	195.96	66.69	15,615.	10250.9	636.78	858.59	1,495.38
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	1.00	1.00	2.27	46.28	184.91	46.90	14,281.	9571.9	611.10	859.41	1,470.51
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	1.00	1.00	2.30	45.44	147.54	40.29	12,227.	8380.7	577.18	638.71	1,215.89
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	1.00	1.00	2.33	20.85	50.00	19.39	4,907.3	3438.2	259.60	171.43	431.03
9	160.0	7.65	0.000	66.16	52.71	0.62	1.79	1.00	1.00	2.35	50.36	49.64	18.79	6,911.3	5093.7	586.66	174.81	761.47
10	177.5	7.81	0.000	48.26	39.54	0.64	1.79	1.00	1.00	2.37	37.18	2.91	5.93	3,500.2	2645.1	440.96	24.79	465.75
11	190.0	7.92	0.000	33.63	27.63	0.67	1.78	1.00	1.00	2.39	26.57	0.93	3.98	2,417.7	1831.9	318.20	13.21	331.41
														129,120.5	**82532.5**			**11,715.58**

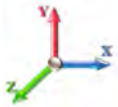
Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.62	24.365	62.44	38.80	0.22	2.54	0.80	1.00	1.85	55.58	188.14	67.77	17,500.	9787.8	554.09	581.81	1,135.90
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	0.80	1.00	2.01	54.87	192.50	73.77	18,123.	10591.4	635.69	714.02	1,349.71
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	0.80	1.00	2.10	49.86	194.98	77.18	16,908.	10487.3	628.73	798.29	1,427.02
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	0.80	1.00	2.17	48.32	195.34	70.20	16,727.	10453.6	630.42	815.34	1,445.76
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	0.80	1.00	2.22	44.81	195.96	66.69	15,615.	10250.9	598.37	858.59	1,456.96
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	0.80	1.00	2.27	43.68	184.91	46.90	14,281.	9571.9	576.79	859.41	1,436.20
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	0.80	1.00	2.30	43.24	147.54	40.29	12,227.	8380.7	549.30	638.71	1,188.01
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	0.80	1.00	2.33	19.93	50.00	19.39	4,907.3	3438.2	248.18	171.43	419.61
9	160.0	7.65	0.000	66.16	52.71	0.62	1.79	0.80	1.00	2.35	50.36	49.64	18.79	6,911.3	5093.7	586.66	174.81	761.47
10	177.5	7.81	0.000	48.26	39.54	0.64	1.79	0.80	1.00	2.37	37.18	2.91	5.93	3,500.2	2645.1	440.96	24.79	465.75
11	190.0	7.92	0.000	33.63	27.63	0.67	1.78	0.80	1.00	2.39	26.57	0.93	3.98	2,417.7	1831.9	318.20	13.21	331.41
														129,120.5	**82532.5**			**11,417.80**

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



TES Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.62	24.365	62.44	38.80	0.22	2.54	0.85	1.00	1.85	56.80	188.14	67.77	17,500.	9787.8	566.23	581.81	1,148.04
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	0.85	1.00	2.01	55.98	192.50	73.77	18,123.	10591.4	648.63	714.02	1,362.65
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	0.85	1.00	2.10	50.74	194.98	77.18	16,908.	10487.3	639.74	798.29	1,438.04
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	0.85	1.00	2.17	49.12	195.34	70.20	16,727.	10453.6	640.77	815.34	1,456.10
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	0.85	1.00	2.22	45.53	195.96	66.69	15,615.	10250.9	607.97	858.59	1,466.57
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	0.85	1.00	2.27	44.33	184.91	46.90	14,281.	9571.9	585.37	859.41	1,444.78
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	0.85	1.00	2.30	43.79	147.54	40.29	12,227.	8380.7	556.27	638.71	1,194.98
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	0.85	1.00	2.33	20.16	50.00	19.39	4,907.3	3438.2	251.03	171.43	422.46
9	160.0	7.65	0.000	66.16	52.71	0.62	1.79	0.85	1.00	2.35	50.36	49.64	18.79	6,911.3	5093.7	586.66	174.81	761.47
10	177.5	7.81	0.000	48.26	39.54	0.64	1.79	0.85	1.00	2.37	37.18	2.91	5.93	3,500.2	2645.1	440.96	24.79	465.75
11	190.0	7.92	0.000	33.63	27.63	0.67	1.78	0.85	1.00	2.39	26.57	0.93	3.98	2,417.7	1831.9	318.20	13.21	331.41
														129,120.5	**82532.5**			**11,492.24**

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.66	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	37.65	136.67	0.00	6,427.4	0.0	612.73	484.14	1,096.87
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	35.28	136.67	0.00	6,276.5	0.0	677.86	577.92	1,255.78
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	29.62	136.67	0.00	5,351.1	0.0	629.08	635.62	1,264.70
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	27.92	135.26	0.00	5,228.0	0.0	622.12	672.29	1,294.41
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	25.06	134.50	0.00	4,470.4	0.0	583.06	706.52	1,289.57
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	23.70	127.14	0.00	3,924.7	0.0	556.70	715.03	1,271.74
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	20.84	106.12	0.00	3,205.8	0.0	492.15	579.58	1,071.73
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	9.09	35.69	0.00	1,224.2	0.0	213.67	156.09	369.77
9	160.0	11.02	0.000	13.44	0.00	0.14	2.82	1.00	1.00	0.00	7.74	38.72	0.00	1,514.6	0.0	204.45	232.38	436.83
10	177.5	11.25	0.000	8.71	0.00	0.13	2.87	1.00	1.00	0.00	5.00	2.50	0.00	712.6	0.0	137.05	17.20	154.25
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	488.2	0.0	95.35	6.46	101.81
														38,823.3	**0.0**			**9,607.45**

Section Forces

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.66	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	32.78	136.67	0.00	6,427.4	0.0	533.43	484.14	1,017.57
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	30.81	136.67	0.00	6,276.5	0.0	592.06	577.92	1,169.98
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	26.13	136.67	0.00	5,351.1	0.0	554.87	635.62	1,190.49
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	24.75	135.26	0.00	5,228.0	0.0	551.45	672.29	1,223.74
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	22.18	134.50	0.00	4,470.4	0.0	516.13	706.52	1,222.65
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	21.10	127.14	0.00	3,924.7	0.0	495.68	715.03	1,210.71
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	18.65	106.12	0.00	3,205.8	0.0	440.33	579.58	1,019.91
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	8.17	35.69	0.00	1,224.2	0.0	192.11	156.09	348.20
9	160.0	11.02	0.000	13.44	0.00	0.14	2.82	0.80	1.00	0.00	7.74	38.72	0.00	1,514.6	0.0	204.45	232.38	436.83
10	177.5	11.25	0.000	8.71	0.00	0.13	2.87	0.80	1.00	0.00	5.00	2.50	0.00	712.6	0.0	137.05	17.20	154.25
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	488.2	0.0	95.35	6.46	101.81
														38,823.3	**0.0**			**9,096.14**

Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

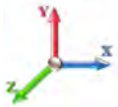
Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.66	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	34.00	136.67	0.00	6,427.4	0.0	553.25	484.14	1,037.40
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	31.93	136.67	0.00	6,276.5	0.0	613.51	577.92	1,191.43
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	27.00	136.67	0.00	5,351.1	0.0	573.42	635.62	1,209.04
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	25.54	135.26	0.00	5,228.0	0.0	569.12	672.29	1,241.41
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	22.90	134.50	0.00	4,470.4	0.0	532.86	706.52	1,239.38
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	21.75	127.14	0.00	3,924.7	0.0	510.93	715.03	1,225.97
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	19.20	106.12	0.00	3,205.8	0.0	453.28	579.58	1,032.86
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.40	35.69	0.00	1,224.2	0.0	197.50	156.09	353.59
9	160.0	11.02	0.000	13.44	0.00	0.14	2.82	0.85	1.00	0.00	7.74	38.72	0.00	1,514.6	0.0	204.45	232.38	436.83
10	177.5	11.25	0.000	8.71	0.00	0.13	2.87	0.85	1.00	0.00	5.00	2.50	0.00	712.6	0.0	137.05	17.20	154.25
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	488.2	0.0	95.35	6.46	101.81
														38,823.3	**0.0**			**9,223.97**

Force/Stress Compression Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	12B - 12"BD 2.25"	-382.30	1.2D + 1.6W Normal Wind	10.02	100	100	100	24.38	50.00	514.03	74.4	Member X
2	40	12B - 12"BD 2.25"	-347.29	1.2D + 1.6W Normal Wind	10.02	100	100	100	24.38	50.00	514.03	67.6	Member X
3	60	12B - 12"BD 2"	-306.97	1.2D + 1.6W Normal Wind	10.02	100	100	100	24.41	50.00	405.83	75.6	Member X
4	80	12B - 12"BD 2"	-264.62	1.2D + 1.6W Normal Wind	10.02	100	100	100	24.41	50.00	405.83	65.2	Member X
5	100	12B - 12"BD 1.75"	-218.56	1.2D + 1.6W Normal Wind	10.02	100	100	100	25.99	50.00	308.82	70.8	Member X
6	120	12B - 12"BD 1.75"	-166.97	1.2D + 1.6W Normal Wind	10.02	100	100	100	25.99	50.00	308.82	54.1	Member X
7	140	12B - 12"BD 1.5"	-114.91	1.2D + 1.6W Normal Wind	10.02	100	100	100	30.32	50.00	222.99	51.5	Member X
8	150	12B - 12"BD 1.25"	-64.19	1.2D + 1.6W Normal Wind	10.02	100	100	100	36.38	50.00	150.33	42.7	Member X
9	170	SOL - 2" SOLID	-53.56	1.2D + 1.6W Normal Wind	2.40	100	100	100	57.51	50.00	111.01	48.2	Member X
10	185	SOL - 1 3/4" SOLID	-11.58	1.2D + 1.6W Normal Wind	0.42	100	100	100	11.44	50.00	107.21	10.8	Member X
11	195	SOL - 1 3/4" SOLID	-2.20	1.2D + 1.0Di + 1.0Wi Normal	2.29	100	100	100	62.85	50.00	81.08	2.7	Member X

Splices

		Top Splice						Bottom Splice					
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	1.2D + 1.6W Normal Wind	356.85	0.00	0.0			1.2D + 1.6W Normal Wind	392.31	0.00			
2	40	1.2D + 1.6W Normal Wind	317.62	0.00	0.0			1.2D + 1.6W Normal Wind	356.85	0.00		1/4 A325	6
3	60	1.2D + 1.6W Normal Wind	275.96	0.00	0.0			1.2D + 1.6W Normal Wind	317.62	0.00		1/4 A325	6
4	80	1.2D + 1.6W Normal Wind	231.09	0.00	0.0			1.2D + 1.6W Normal Wind	275.96	0.00		1/4 A325	6
5	100	1.2D + 1.6W Normal Wind	181.03	0.00	0.0			1.2D + 1.6W Normal Wind	231.09	0.00		1 A325	6
6	120	1.2D + 1.6W Normal Wind	128.31	0.00	0.0			1.2D + 1.6W Normal Wind	181.03	0.00		1 A325	6
7	140	1.2D + 1.6W Normal Wind	81.74	0.00	0.0			1.2D + 1.6W Normal Wind	128.31	0.00		1 A325	6
8	150	1.2D + 1.6W Normal Wind	58.06	0.00	0.0			1.2D + 1.6W Normal Wind	81.74	0.00		1 A325	6
9	170	1.2D + 1.6W Normal Wind	11.69	0.00	0.0			1.2D + 1.6W Normal Wind	58.06	0.00		1 A325	6
10	185	1.2D + 1.0Di + 1.0Wi Normal Wi	2.83	0.00	0.0			1.2D + 1.6W Normal Wind	11.69	0.00			
11	195	1.2D + 1.0Di + 1.0Wi 90° Wind	0.40	0.00	0.0			1.2D + 1.0Di + 1.0Wi Normal Wi	2.83	0.00			

HORIZONTAL MEMBERS

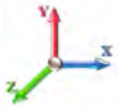
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	100										0.00	0	0				
6	120										0.00	0	0				
7	140	SAE - 2.5X2.5X0.1875	-3.04	0.9D + 1.6W Normal Wind	6.00	100	100	100	145.45	36.00	9.63	1	1	31.81	17.94	32	Member Z
8	150										0.00	0	0				
9	170	SOL - 1" SOLID	-1.04	0.9D + 1.6W Normal Wind	4.99	100	100	100	167.65	50.00	6.31	0	0			16	Member X
10	185	SOL - 7/8" SOLID	-2.41	1.2D + 1.6W Normal Wind	4.50	100	100	100	172.76	50.00	4.55	0	0			53	Member X
11	195	SOL - 7/8" SOLID	-0.76	0.9D + 1.6W 90° Wind	4.50	100	100	100	172.76	50.00	4.55	0	0			17	Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 3.5X3.5X0.3125	-10.0	1.2D + 1.6W Normal Wind	21.92	50	50	50	190.58	36.00	13.00	1	1	43.49	37.5	77	Member Z
2	40	SAE - 3.5X3.5X0.3125	-10.5	1.2D + 1.6W 90° Wind	20.16	50	50	50	175.28	36.00	15.37	1	1	43.49	37.5	69	Member Z
3	60	SAE - 3X3X0.3125	-10.2	1.2D + 1.6W 90° Wind	18.45	50	50	50	187.93	36.00	11.39	1	1	43.49	37.5	90	Member Z

Force/Stress Compression Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	



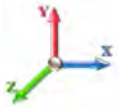
Tower Engineering Solutions

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
4	80	SAE - 3X3X0.3125	-10.1	1.2D + 1.6W 90° Wind	16.80	50	50	50	171.17	36.00	13.73	1	1	43.49	37.5	74	Member Z
5	100	SAE - 3X3X0.3125	-10.3	1.2D + 1.6W 90° Wind	15.24	50	50	50	155.27	36.00	16.68	1	1	31.81	29.9	62	Member Z
6	120	SAE - 3X3X0.1875	-9.96	1.2D + 1.6W 90° Wind	13.80	50	50	50	138.89	36.00	12.77	1	1	31.81	17.9	78	Member Z
7	140	SAE - 2.5X2.5X0.1875	-8.74	1.2D + 1.6W 90° Wind	12.50	50	50	50	151.56	36.00	8.87	1	1	31.81	17.9	99	Member Z
8	150	SAE - 2.5X2.5X0.1875	-9.94	1.2D + 1.6W Normal Wind	11.42	50	50	50	138.38	36.00	10.64	1	1	31.81	17.9	93	Member Z
9	170	SOL - 7/8" SOLID	-3.99	1.2D + 1.6W 90° Wind	5.51	50	50	50	135.94	50.00	7.35	0	0			54	Member X
10	185	SOL - 3/4" SOLID	-3.91	1.2D + 1.6W Normal Wind	5.08	50	50	50	146.35	50.00	4.66	0	0			84	Member X
11	195	SOL - 3/4" SOLID	-1.17	1.2D + 1.6W 60° Wind	5.05	50	50	50	145.44	50.00	4.72	0	0			25	Member X

Force/Stress Tension Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	



Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	12B - 12"BD 2.25"	334.44	0.9D + 1.6W 60° Wind	50	536.85	62.3	Member
2	40	12B - 12"BD 2.25"	303.49	0.9D + 1.6W 60° Wind	50	536.85	56.5	Member
3	60	12B - 12"BD 2"	268.79	0.9D + 1.6W 60° Wind	50	423.90	63.4	Member
4	80	12B - 12"BD 2"	231.09	0.9D + 1.6W 60° Wind	50	423.90	54.5	Member
5	100	12B - 12"BD 1.75"	189.66	0.9D + 1.6W 60° Wind	50	324.45	58.5	Member
6	120	12B - 12"BD 1.75"	142.38	0.9D + 1.6W 60° Wind	50	324.45	43.9	Member
7	140	12B - 12"BD 1.5"	96.32	0.9D + 1.6W 60° Wind	50	238.50	40.4	Member
8	150	12B - 12"BD 1.25"	50.14	0.9D + 1.6W 60° Wind	50	165.60	30.3	Member
9	170	SOL - 2" SOLID	42.27	0.9D + 1.6W 60° Wind	50	141.37	29.9	Member
10	185	SOL - 1 3/4" SOLID	4.60	0.9D + 1.6W 60° Wind	50	108.24	4.3	Member
11	195	SOL - 1 3/4" SOLID	1.17	0.9D + 1.6W 60° Wind	50	108.24	1.2	Bolt Shear

Splices

		Top Splice						Bottom Splice					
Sect	Top Elev	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	310.93	0.00	0.0			0.9D + 1.6W 60° Wind	343.5	0.00			
2	40	0.9D + 1.6W 60° Wind	276.60	0.00	0.0			0.9D + 1.6W 60° Wind	310.9	457.92	67.9	1 1/4 A325	6
3	60	0.9D + 1.6W 60° Wind	240.01	0.00	0.0			0.9D + 1.6W 60° Wind	276.6	457.92	60.4	1 1/4 A325	6
4	80	0.9D + 1.6W 60° Wind	199.77	0.00	0.0			0.9D + 1.6W 60° Wind	240.0	457.92	52.4	1 1/4 A325	6
5	100	0.9D + 1.6W 60° Wind	153.61	0.00	0.0			0.9D + 1.6W 60° Wind	199.7	318.06	62.8	1 A325	6
6	120	0.9D + 1.6W 60° Wind	106.93	0.00	0.0			0.9D + 1.6W 60° Wind	153.6	318.06	48.3	1 A325	6
7	140	0.9D + 1.6W 60° Wind	64.97	0.00	0.0			0.9D + 1.6W 60° Wind	106.9	318.06	33.6	1 A325	6
8	150	0.9D + 1.6W 60° Wind	40.94	0.00	0.0			0.9D + 1.6W 60° Wind	64.97	318.06	20.4	1 A325	6
9	170	0.9D + 1.6W Normal Wind	4.41	0.00	0.0			0.9D + 1.6W 60° Wind	40.94	318.06	12.9	1 A325	6
10	185	0.9D + 1.6W 60° Wind	1.14	0.00	0.0			0.9D + 1.6W Normal Wind	4.41	0.00			
11	195		0.00	0.00	0.0			0.9D + 1.6W 60° Wind	1.14	0.00			

HORIZONTAL MEMBERS

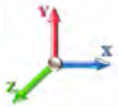
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	SAE - 2.5X2.5X0.1875	3.28	1.2D + 1.6W 60° Wind	36	22.55	1	1	31.81	17.94	10.66	30.7	Blck Shear
8	150	-			36	0.00	0	0					
9	170	SOL - 1" SOLID	2.19	1.2D + 1.6W Normal Wi	50	35.34	0	0				6.2	Member
10	185	SOL - 7/8" SOLID	1.88	1.2D + 1.6W 60° Wind	50	27.06	0	0				6.9	Member
11	195	SOL - 7/8" SOLID	0.99	0.9D + 1.6W 60° Wind	50	27.06	0	0				3.7	Member

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 3.5X3.5X0.3125	10.07	1.2D + 1.6W 90° Wind	36	54.17	1	1	43.49	37.52	23.70	42.5	Blck Shear
2	40	SAE - 3.5X3.5X0.3125	10.17	0.9D + 1.6W 90° Wind	36	54.17	1	1	43.49	37.52	23.70	42.9	Blck Shear
3	60	SAE - 3X3X0.3125	9.87	0.9D + 1.6W 90° Wind	36	44.05	1	1	43.49	37.52	20.30	48.6	Blck Shear
4	80	SAE - 3X3X0.3125	9.84	1.2D + 1.6W 90° Wind	36	44.05	1	1	43.49	37.52	20.30	48.5	Blck Shear

Force/Stress Tension Summary

Structure:	CT22108-A-SBA	**Code:**	EIA/TIA-222-G	9/2/2021	
Site Name:	Windsor Locks @ Volunteer Drive	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	5.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	



TES Tower Engineering Solutions

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
5	100	SAE - 3X3X0.3125	10.28	1.2D + 1.6W 90° Wind	36	46.60	1	1	31.81	29.91	19.47	52.8	Blck Shear
6	120	SAE - 3X3X0.1875	9.63	1.2D + 1.6W 90° Wind	36	28.68	1	1	31.81	17.94	11.68	82.4	Blck Shear
7	140	SAE - 2.5X2.5X0.1875	8.50	1.2D + 1.6W 90° Wind	36	22.55	1	1	31.81	17.94	10.66	79.7	Blck Shear
8	150	SAE - 2.5X2.5X0.1875	9.28	0.9D + 1.6W 60° Wind	36	22.55	1	1	31.81	17.94	10.66	87.0	Blck Shear
9	170	SOL - 7/8" SOLID	3.96	1.2D + 1.6W 90° Wind	50	27.06	0	0				14.6	Member
10	185	SOL - 3/4" SOLID	2.95	1.2D + 1.6W 60° Wind	50	19.88	0	0				14.8	Member
11	195	SOL - 3/4" SOLID	0.87	0.9D + 1.6W 90° Wind	50	19.88	0	0				4.4	Member

Support Forces Summary

Structure:	CT22108-A-SBA		**Code:**	EIA/TIA-222-G	9/2/2021
Site Name:	Windsor Locks @ Volunteer Drive		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	5.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	-0.01	391.60	-39.04	
	1a	13.75	-163.37	-10.66	
	1b	-13.74	-163.36	-10.67	
1.2D + 1.6W 60° Wind	1	-2.18	202.24	-19.75	
	1a	-18.07	199.28	8.06	
	1b	-30.18	-336.64	-17.42	
1.2D + 1.6W 90° Wind	1	-2.63	21.72	-1.60	
	1a	-29.32	332.90	15.56	
	1b	-26.81	-289.74	-13.96	
0.9D + 1.6W Normal Wind	1	-0.01	385.56	-38.61	
	1a	14.09	-168.45	-10.87	
	1b	-14.09	-168.45	-10.88	
0.9D + 1.6W 60° Wind	1	-2.19	196.51	-19.33	
	1a	-17.72	193.60	7.84	
	1b	-30.52	-341.45	-17.62	
0.9D + 1.6W 90° Wind	1	-2.65	16.29	-1.19	
	1a	-28.96	327.00	15.34	
	1b	-27.15	-294.63	-14.15	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	174.68	-10.58	
	1a	5.29	-0.28	-3.67	
	1b	-5.29	-0.24	-3.67	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.56	115.84	-4.84	
	1a	-4.41	114.19	1.97	
	1b	-10.29	-55.87	-5.95	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.66	58.21	0.74	
	1a	-7.86	156.42	4.21	
	1b	-9.17	-40.47	-4.95	
1.0D + 1.0W Normal Wind	1	0.00	107.71	-10.52	
	1a	2.50	-26.83	-2.11	
	1b	-2.50	-26.82	-2.11	
1.0D + 1.0W 60° Wind	1	-0.56	61.84	-5.80	
	1a	-5.27	61.07	2.43	
	1b	-6.49	-68.84	-3.75	
1.0D + 1.0W 90° Wind	1	-0.66	18.09	-1.37	
	1a	-8.02	93.45	4.27	
	1b	-5.68	-57.47	-2.91	

Max Reactions

Leg			Overturning		
Max Uplift:	-341.45	(kips)	Moment:	6408.12	(ft-kips)
Max Down:	391.60	(kips)	Total Down:	64.88	(kips)
Max Shear:	39.04	(kips)	Total Shear:	60.37	(kips)

Max Reactions

Leg			Overturning		
Max Uplift:	-341.45	(kips)	Moment:	6408.12	(ft-kips)
Max Down:	391.60	(kips)	Total Down:	64.88	(kips)
Max Shear:	39.04	(kips)	Total Shear:	60.37	(kips)

Anchor Bolts

Bolt Size (in.):	1.25	Number Bolts:	6
Yield Strength (Ksi):	105.00	Tensile Strength (Ksi):	150.00
Detail Type:	C		

Interaction Ratio: 0.59

Max Usages

Max Leg: 75.6% (1.2D + 1.6W Normal Wind - Sect 3)
Max Diag: 98.5% (1.2D + 1.6W 90° Wind - Sect 7)
Max Horiz: 52.9% (1.2D + 1.6W Normal Wind - Sect 10)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 97 mph Wind at 60° From Face	60.00	0.1885	0.0293	0.3547
	70.00	0.2535	-0.0112	0.4166
	100.00	0.5298	0.0550	0.6449
	110.00	0.6495	0.0619	0.7200
	120.00	0.7811	0.0675	0.7842
	130.00	0.9266	0.0776	0.8770
	150.00	1.2566	0.1018	1.0449
	164.79	1.5356	1.4390	1.1273
	170.42	1.6382	1.9133	1.9778
	195.00	2.1133	2.2001	1.3971
0.9D + 1.6W 97 mph Wind at 90° From Face	60.00	0.1880	-0.0315	0.3554
	70.00	0.2534	-0.0371	0.4159
	100.00	0.5291	-0.0586	0.6429
	110.00	0.6486	-0.0649	0.7147
	120.00	0.7796	-0.0685	0.7801
	130.00	0.9242	-0.0743	0.8715
	150.00	1.2535	-0.0831	1.0299
	164.79	1.5283	-0.3780	1.0450
	170.42	1.6174	-0.4685	0.8042
	195.00	2.0788	-0.4680	1.1131

0.9D + 1.6W 97 mph Wind at Normal To Face	60.00	0.1944	0.0028	0.3658
	70.00	0.2637	0.0001	0.4281
	100.00	0.5461	0.0030	0.6686
	110.00	0.6697	0.0034	0.7517
	120.00	0.8058	0.0040	0.8103
	130.00	0.9566	0.0061	0.9096
	150.00	1.3005	-0.0037	1.0893
	164.79	1.5977	-0.2833	1.2565
	170.42	1.7376	-0.3703	3.5072
	195.00	2.2629	0.3560	2.5958
1.0D + 1.0W 60 mph Wind at 60° From Face	60.00	0.0456	-0.0055	0.0857
	70.00	0.0616	-0.0065	0.1007
	100.00	0.1281	-0.0102	0.1555
	110.00	0.1570	-0.0112	0.1739
	120.00	0.1888	-0.0117	0.1890
	130.00	0.2238	-0.0124	0.2108
	150.00	0.3038	0.0130	0.2523
	164.79	0.3710	0.1383	0.2650
	170.42	0.3956	0.1800	0.4500
	195.00	0.5099	0.1811	0.3141
1.0D + 1.0W 60 mph Wind at 90° From Face	60.00	0.0458	-0.0076	0.0861
	70.00	0.0615	-0.0090	0.1007
	100.00	0.1283	-0.0142	0.1554
	110.00	0.1572	-0.0157	0.1729
	120.00	0.1888	-0.0165	0.1887
	130.00	0.2239	-0.0179	0.2103
	150.00	0.3030	-0.0201	0.2488
	164.79	0.3693	-0.0914	0.2516
	170.42	0.3908	-0.1132	0.1907
	195.00	0.5018	-0.1118	0.2680
1.0D + 1.0W 60 mph Wind at Normal To Face	60.00	0.0474	0.0008	0.0888
	70.00	0.0642	0.0000	0.1037
	100.00	0.1327	0.0009	0.1619
	110.00	0.1625	0.0010	0.1819
	120.00	0.1955	0.0012	0.1962
	130.00	0.2320	0.0017	0.2200
	150.00	0.3146	0.0012	0.2621
	164.79	0.3863	-0.0645	0.3027
	170.42	0.4200	-0.0837	0.8406
	195.00	0.5468	0.0820	0.6232
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	60.00	0.0609	0.0072	0.1141
	70.00	0.0807	-0.0050	0.1349
	100.00	0.1717	0.0136	0.2122
	110.00	0.2113	0.0154	0.2402
	120.00	0.2552	0.0168	0.2622
	130.00	0.3039	0.0194	0.2985
	150.00	0.4188	0.0253	0.3698
	164.79	0.5195	0.3834	0.4066
	170.42	0.5567	0.5049	0.9504
	195.00	0.7346	0.5121	1.0660
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	60.00	0.0603	-0.0094	0.1142
	70.00	0.0806	-0.0111	0.1342
	100.00	0.1704	-0.0177	0.2111
	110.00	0.2097	-0.0198	0.2373
	120.00	0.2531	-0.0210	0.2613
	130.00	0.3019	-0.0234	0.2954
	150.00	0.4152	-0.0274	0.3609
	164.79	0.5133	-0.1762	0.3731
	170.42	0.5438	-0.2217	0.5511
	195.00	0.7123	-0.2200	0.7343

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	60.00	0.0609	0.0007	0.1178
	70.00	0.0830	0.0000	0.1381
	100.00	0.1758	0.0008	0.2208
	110.00	0.2167	-0.0010	0.2501
	120.00	0.2624	-0.0010	0.2745
	130.00	0.3142	-0.0016	0.3126
	150.00	0.4338	0.0000	0.3852
	164.79	0.5432	-0.1432	0.4814
	170.42	0.5994	-0.1852	1.6392
	195.00	0.8058	0.1805	1.6837
1.2D + 1.6W 97 mph Wind at 60° From Face	60.00	0.1888	0.0293	0.3555
	70.00	0.2540	-0.0112	0.4175
	100.00	0.5308	0.0551	0.6465
	110.00	0.6508	0.0621	0.7219
	120.00	0.7828	0.0677	0.7862
	130.00	0.9287	0.0778	0.8793
	150.00	1.2597	0.1020	1.0482
	164.79	1.5396	1.4428	1.1308
	170.42	1.6426	1.9183	1.9803
	195.00	2.1191	2.2084	1.3991
1.2D + 1.6W 97 mph Wind at 90° From Face	60.00	0.1884	-0.0315	0.3561
	70.00	0.2538	-0.0372	0.4168
	100.00	0.5301	-0.0587	0.6445
	110.00	0.6499	-0.0650	0.7166
	120.00	0.7813	-0.0686	0.7822
	130.00	0.9263	-0.0744	0.8739
	150.00	1.2565	-0.0832	1.0331
	164.79	1.5322	-0.3780	1.0483
	170.42	1.6216	-0.4684	0.8009
	195.00	2.0844	-0.4679	1.1165
1.2D + 1.6W 97 mph Wind at Normal To Face	60.00	0.1948	0.0028	0.3666
	70.00	0.2643	0.0001	0.4290
	100.00	0.5473	0.0030	0.6703
	110.00	0.6712	0.0034	0.7537
	120.00	0.8077	0.0041	0.8126
	130.00	0.9590	0.0062	0.9123
	150.00	1.3038	-0.0038	1.0924
	164.79	1.6019	-0.2833	1.2603
	170.42	1.7422	-0.3704	3.5132
	195.00	2.2691	0.3559	2.5998

Mat Foundation Design for Self Supporting Tower

			Date: 9/2/2021
Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	195
Site Nmber:	CT22108-A-SBA	Engineer Name:	J. Tibbetts
Engr. Number:	114604	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

Analysis or Design? Analysis

Number of Tower Legs: 3 Legs

Base Reactions (Factored):

(1). Individual Leg:

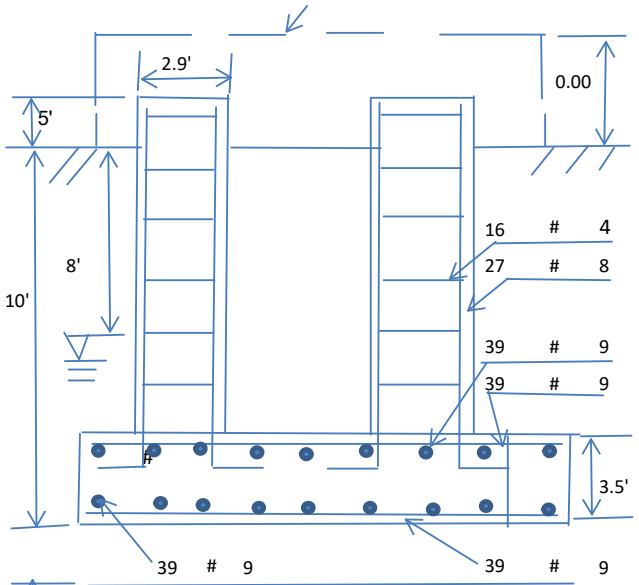
Axial Load (Kips):	391.6	Uplift Force (Kips):	341.4
Shear Force (Kips):	39.0		

(2). Tower Base:

Total Vertical Load (Kips):	64.9	Total Shear Force (Kips):	60.4
Moment (Kips-ft):	6408.1		

Foundation Geometries:

Leg distance (Center-to-Center ft.):		20.0	Mods required -Yes/No ?:	No	
Diameter of Pier (ft.):	Round	2.9	Pier Height A. G. (ft.):	5.00	
Tower center to mat center (ft):		0	Depth of Base BG (ft.):	10.0	
Length of Pad (ft.):		29.5	Width of Pad (ft.):	29.5	
Thickness of Pad (ft):		3.50			



Material Properties and Reabr Info:

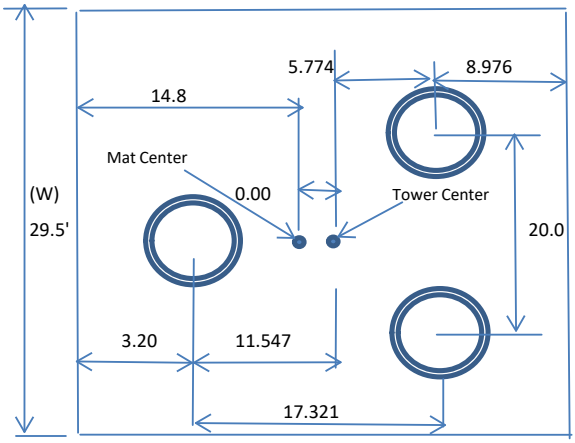
Concrete Strength (psi):	4500	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	27	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

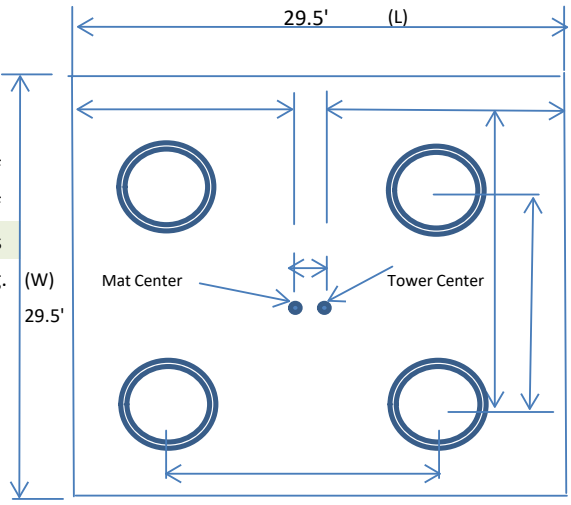
Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39





Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	8.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	7000	Consider ties in concrete shear strength:		Yes
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg.
		Depth to ignor lateral resistance	1.0	Ft.

Apply 1.35 for e/w per G/H: 1.35

Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75			
Total Dry Soil Volume (cu. Ft.):		5527.82	Total Dry Soil Weight (Kips):	552.78			
Total Buoyant Soil Volume (cu. Ft.):		0.00	Total Buoyant Soil Weight (Kips):	0.00			
Total Effective Soil Weight (Kips):		552.78	Weight from the Concrete Block at Top (K):	0.00			
Total Dry Concrete Volume (cu. Ft.):		1533.25	Total Dry Concrete Weight (Kips):	229.99			
Total Buoyant Concrete Volume (cu. Ft.):		1740.50	Total Buoyant Concrete Weight (Kips):	152.47			
Total Effective Concrete Weight (Kips):		382.46	Total Vertical Load on Base (Kips):	1000.12			
Check Soil Capacities:						Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):		3063.98	<	Allowable Factored Soil Bearing (psf):	5250	0.58	OK!
Allowable Foundation Overturning Resistance (kips-ft.):		13372.2	>	Design Factored Momont (kips-ft):	7156	0.54	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):		1.87	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		
(1) Concrete Pier:						Load/ Capacity Ratio	
	Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
	Calculated Moment Capacity (Mn,Kips-Ft):	853.6	>	Design Factored Moment (Mu, Kips-Ft)	430.8	0.50	OK!
	Calculated Shear Capacity (Kips):	64.9	>	Design Factored Shear (Kips):	39.0	0.60	OK!
	Calculated Tension Capacity (Tn, Kips):	1151.8	>	Design Factored Tension (Tu Kips):	341.4	0.30	OK!
	Calculated Compression Capacity (Pn, Kips):	1849.4	>	Design Factored Axial Load (Pu Kips):	391.6	0.21	OK!
	Moment & Tension Strength Combination:	0.50	OK!	Check Tie Spacing (Design/Req'd):	1.00		
	Pier Reinforcement Ratio:	0.022	Reinforcement Ratio is satisfied per ACI				
(2).Concrete Pad:							
	One-Way Design Shear Capacity (L or W Direction, Kips):	1369.2	>	One-Way Factored Shear (L/W-Dir Kips	381.9	0.28	OK!
	One-Way Design Shear Capacity (Diagonal Dir., Kips):	1042.1	>	One-Way Factored Shear (Dia. Dir, Kips	272.5	0.26	OK!
	Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0029		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0027		
	Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	6589.5	>	Moment at Bottom (L-Direct. K-Ft):	2344.2	0.36	OK!
	Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	6192.6	>	Moment at Bottom (Dia. Dir. K-Ft):	1973.8	0.32	OK!
	Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0029		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0027		
	Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	6589.5	>	Moment at the top (L-Dir Kips-Ft):	789.3	0.12	OK!
	Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	6192.6	>	Moment at the top (Dia. Dir., K-Ft):	478.0	0.08	OK!
	Punching Failure Capacity (Kips):	1484.5	>	Punch. Failure Factored Shear (K):	391.6	0.26	OK!

EXHIBIT 9

Antenna Mount Analysis

September 7, 2021

Sherri Knapik
SBA Network Services, LLC
134 Flanders Road, Suite 125
Westborough, MA 01581
(508) 251-0720 x 3805

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:	BOBDL00132A
	Site Name:	N/A
***SBA Network Services Designation*:**	**Site Number:**	CT22108-A
	Site Name:	Windsor Locks @ Volunteer Drive
	Application Number:	168265, v1
Engineering Firm Designation:	**B+T Group Project Number:**	149481.003.01
Site Data:	**2-4 Volunteer Drive, Windsor Locks, CT, 06096, Hartford County**	
	Latitude *41.92809*°, Longitude *-72.64678*°	
	Self-Support Tower	
	8' Sector Mount	

Dear Ms. 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 60.8%)**

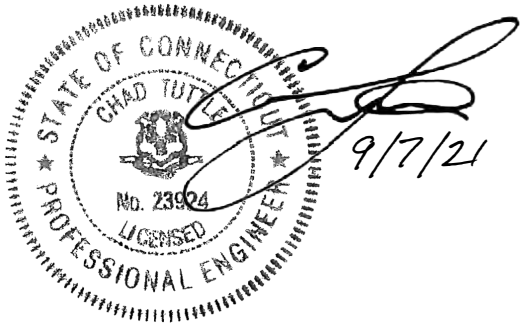
This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

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: Massood Sattari, EIT

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2022

Chad E. Tuttle, P.E.



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1) INTRODUCTION

The mount consists of Commscope sector mount (Part# MTC3975083) at 125 ft., attached to self-support tower at 2-4 Volunteer Drive, Windsor Locks, CT, 06096, 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-G-2-2005 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a 3-second gust wind speed of 97 mph with no ice and 50 mph with 1 inch escalated ice thickness. Exposure Category C, Topographic Category 1 and Risk Category II were used in this analysis. In addition, the sector 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	125	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 proposed 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 App	Proposed Loading	Date: 08/04/2021	SBA Network Services, LLC
RFDS		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

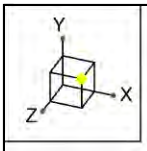
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Face Horizontals	125	19.8	Pass
-	Support Arm	125	32.2	Pass
-	Diagonals	125	42.9	Pass
-	Connection Plates	125	29.6	Pass
-	Verticals	125	60.8	Pass
-	Tieback	125	10.7	Pass
-	Mount Pipes	125	22.9	Pass
-	Connection Bolts	125	24.08	Pass

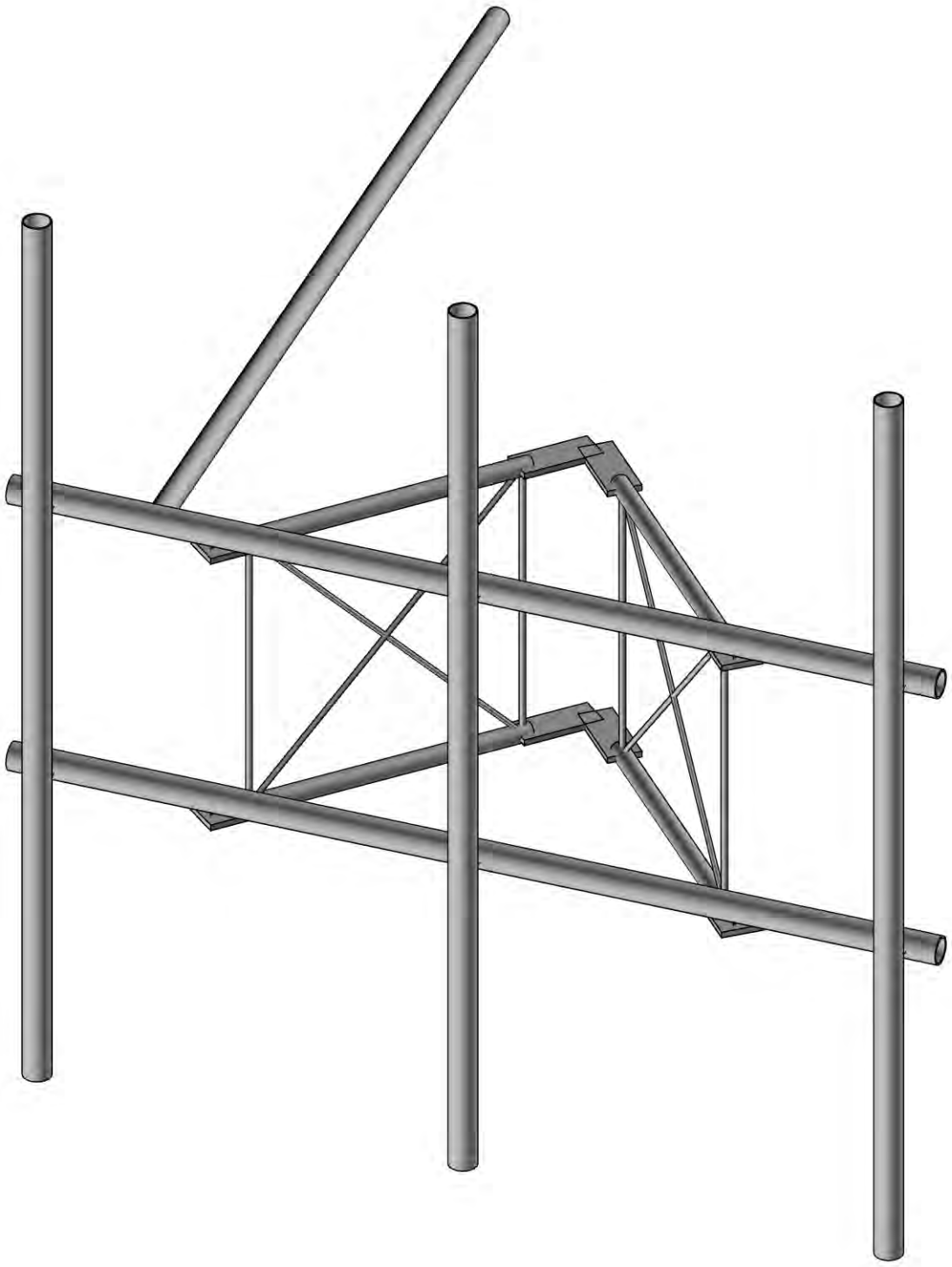
5) RECOMMENDATIONS

The Commscope sector mount (Part # MTC3975083) has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-G standard for the proposed loading. (Refer to the RISA output for the specific members).

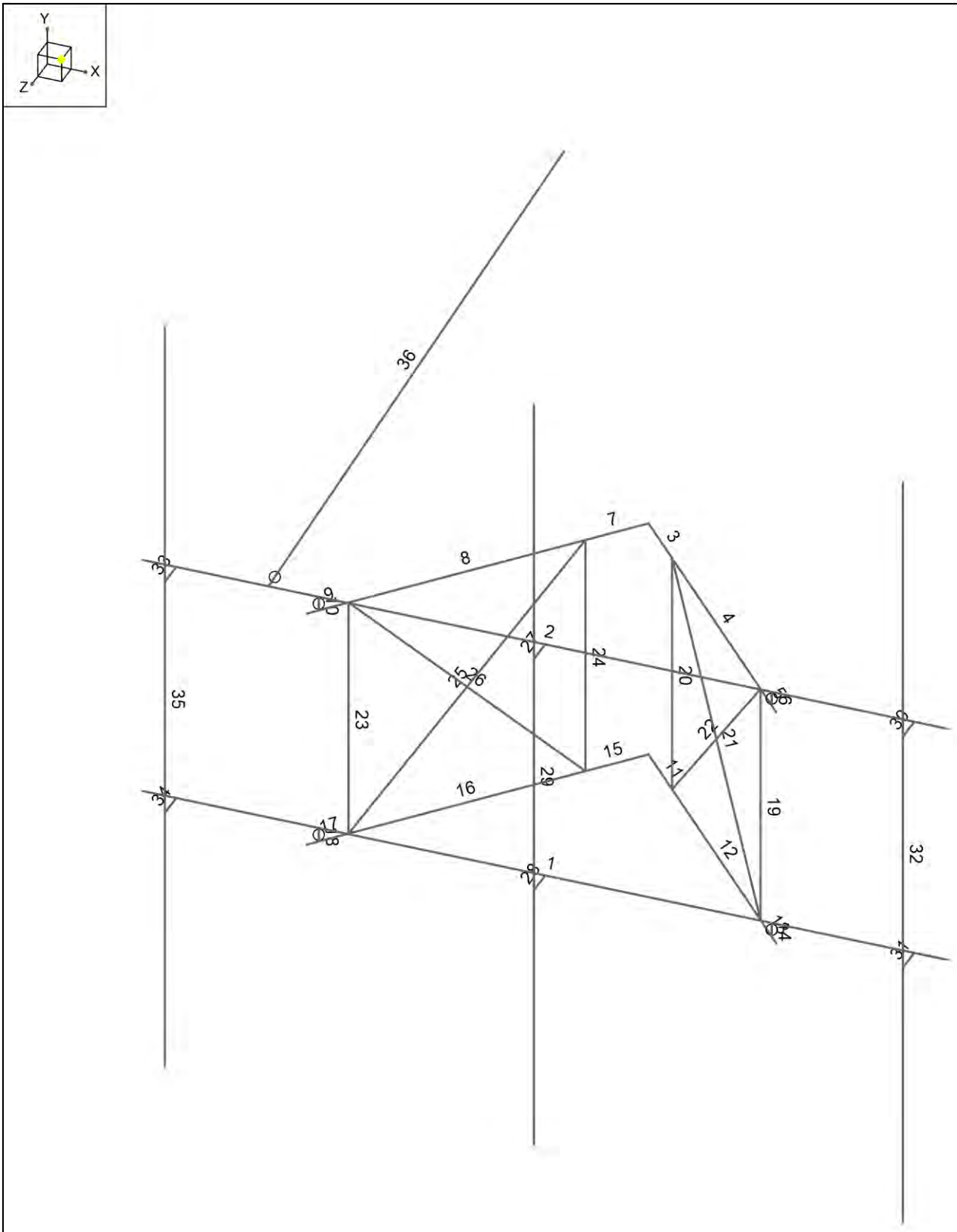
APPENDIX A

(RISA-3D Output)





B+T Group	CT22108-A - Windsor Locks @ Volunteer Drive	SK-1
KP		Sep 03, 2021
149481.003.01		149481_003_01_Windsor Locks …



Envelope Only Solution

B+T Group	CT22108-A - Windsor Locks @ Volunteer Drive	SK-2
KP		Sep 03, 2021
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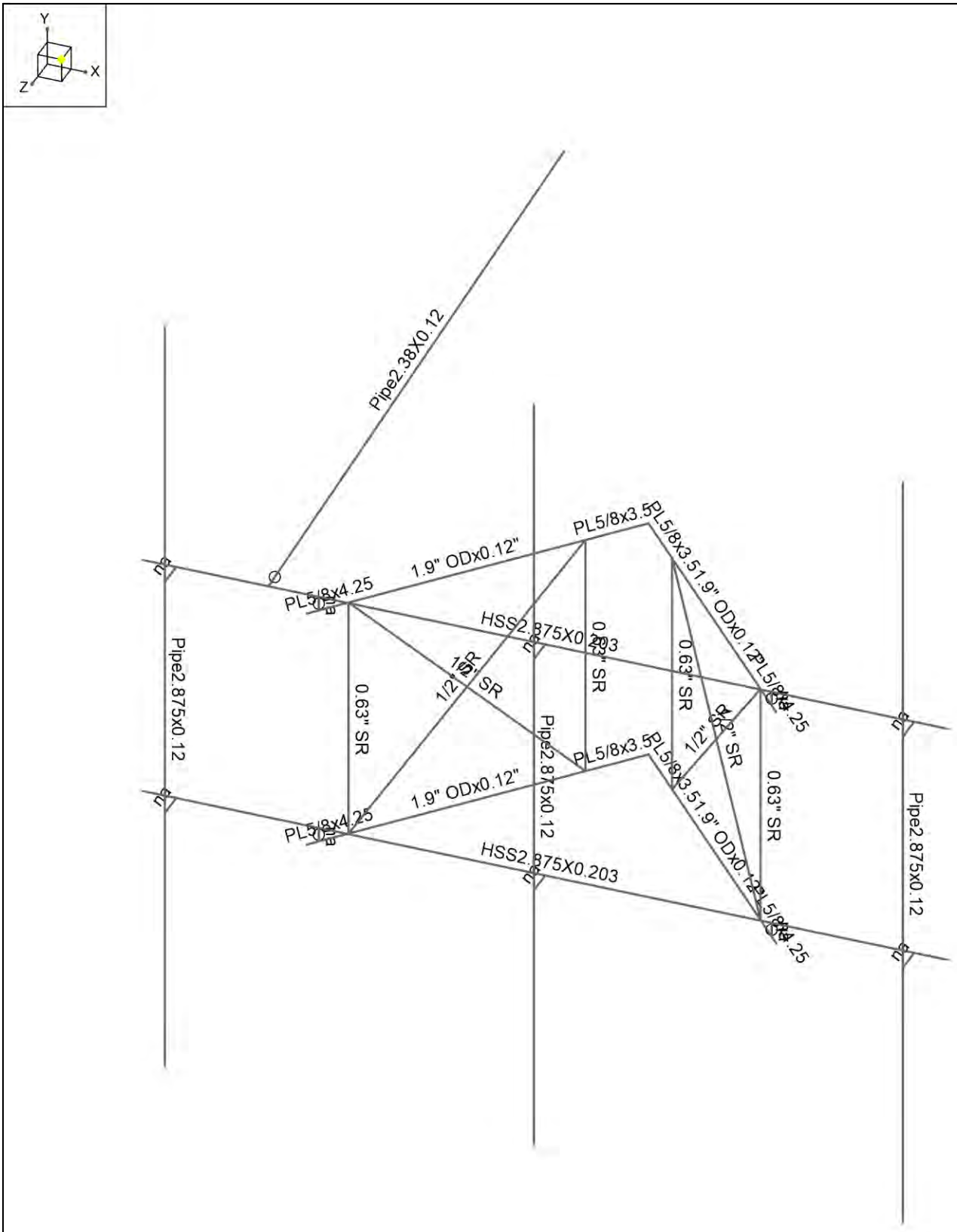

Envelope Only Solution

B+T Group	CT22108-A - Windsor Locks @ Volunteer Drive	SK-3
KP		Sep 03, 2021
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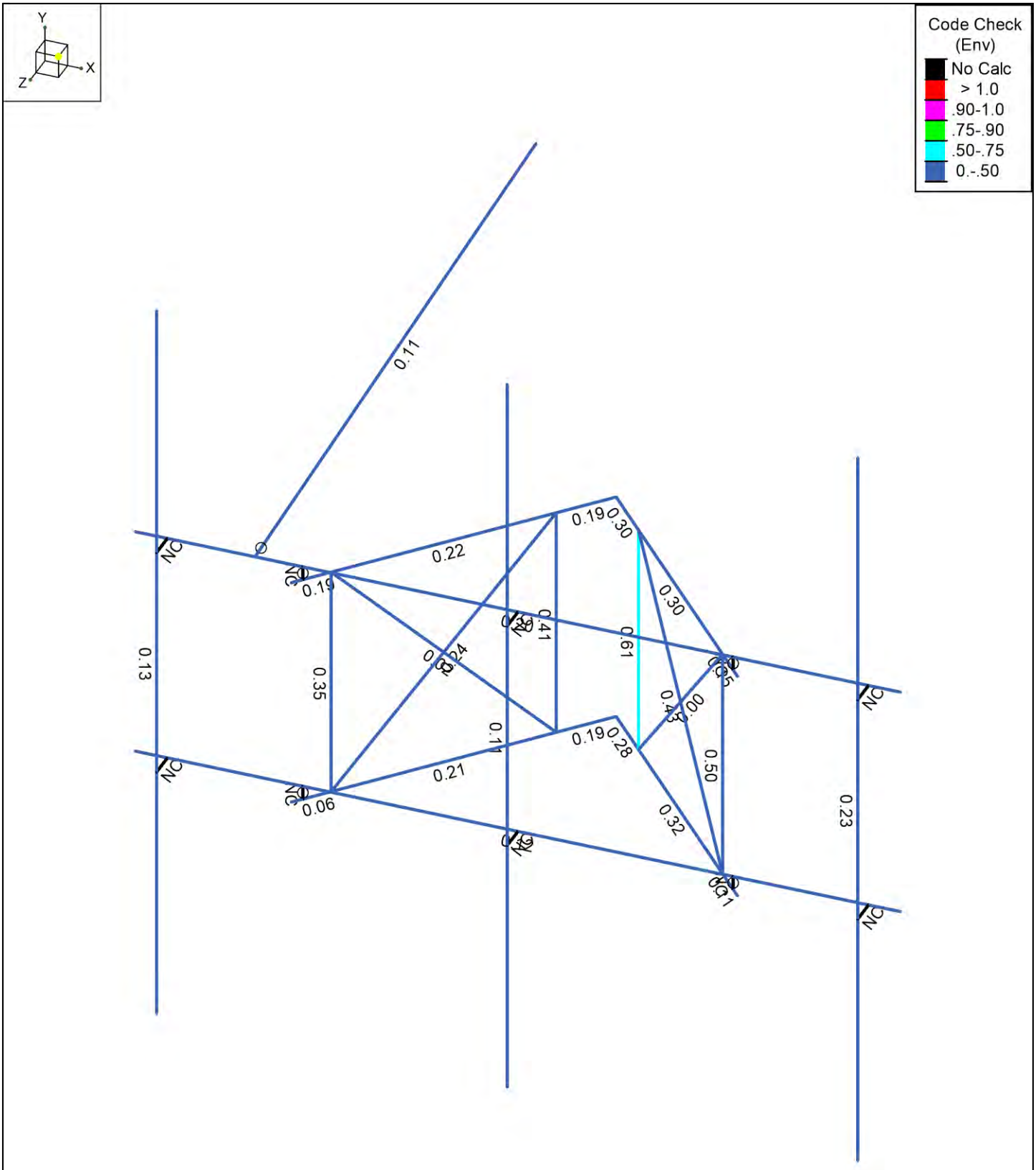
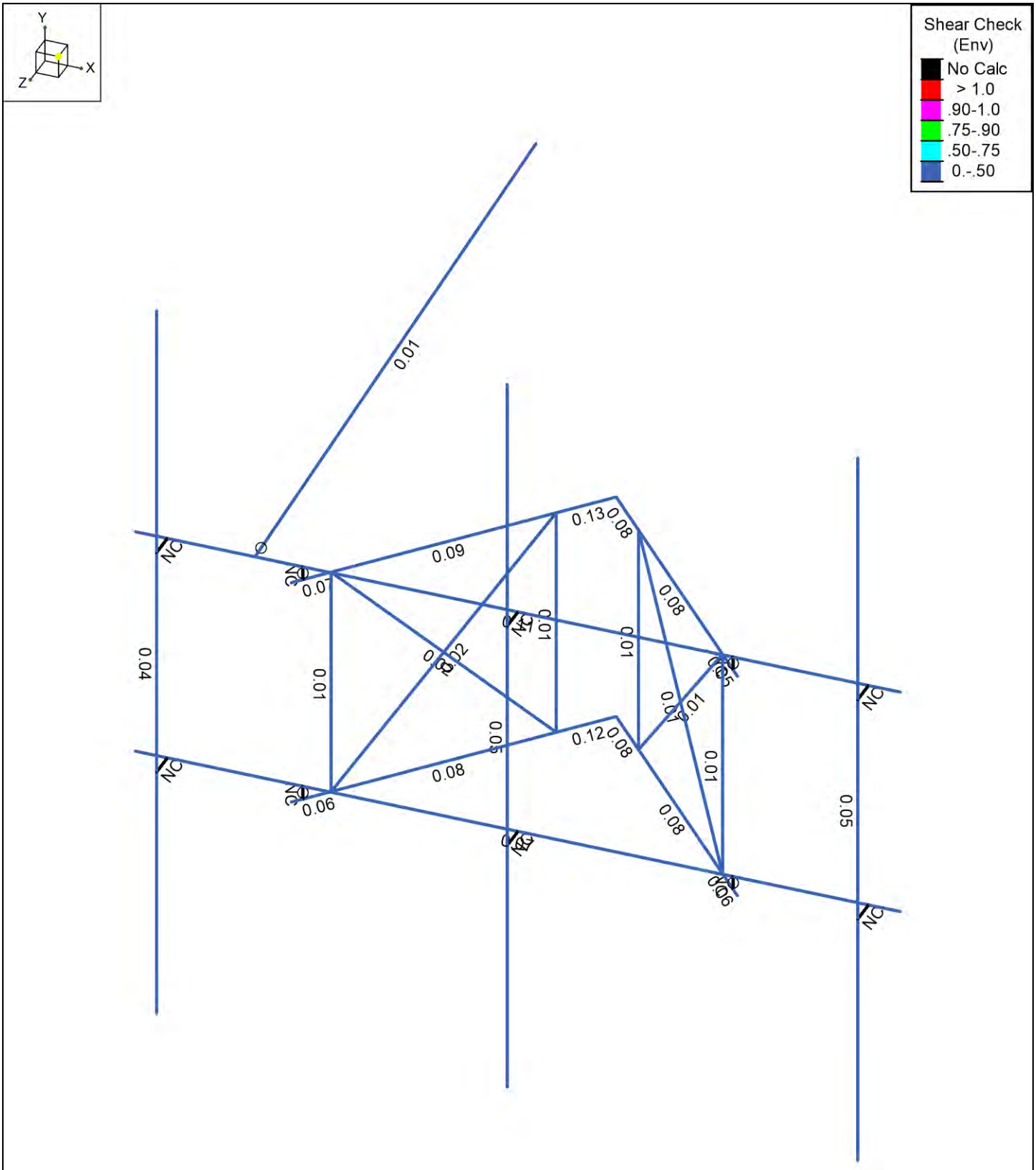


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT22108-A - Windsor Locks @ Volunteer Drive	SK-4
KP		Sep 03, 2021
149481.003.01		149481_003_01_Windsor Locks …



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT22108-A - Windsor Locks @ Volunteer Drive	SK-5
KP		Sep 03, 2021
149481.003.01		149481_003_01_Windsor Locks …

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	-4	-2.354167	2.806795	
2	2	4	-2.354167	2.806795	
3	3	-4	0.145833	2.806795	
4	4	4	0.145833	2.806795	
5	5	0.467947	0	0.781753	
6	6	0.385368	0	0.687914	
7	7	2.091999	0.	2.62725	
8	8	2.00942	0.	2.533411	
9	9	2.332579	0.	2.900634	
10	10	2.25	0.145833	2.806795	
11	11	2.25	0.	2.806795	
12	12	0.	0	0.25	
13	13	-0.467947	0	0.781753	
14	14	-0.385368	0	0.687914	
15	15	-2.091999	0.	2.62725	
16	16	-2.00942	0.	2.533411	
17	17	-2.332579	0.	2.900634	
18	18	-2.25	0.145833	2.806795	
19	19	-2.25	0.	2.806795	
20	20	0.467947	-2.5	0.781753	
21	21	0.385368	-2.5	0.687914	
22	22	2.091999	-2.5	2.62725	
23	23	2.00942	-2.5	2.533411	
24	24	2.332579	-2.5	2.900634	
25	25	2.25	-2.354167	2.806795	
26	26	2.25	-2.5	2.806795	
27	27	0.	-2.5	0.25	
28	28	-0.467947	-2.5	0.781753	
29	29	-0.385368	-2.5	0.687914	
30	30	-2.091999	-2.5	2.62725	
31	31	-2.00942	-2.5	2.533411	
32	32	-2.332579	-2.5	2.900634	
33	33	-2.25	-2.354167	2.806795	
34	34	-2.25	-2.5	2.806795	
35	35	0.430236	0	0.7389	
36	36	2.047131	-2.5	2.576264	
37	37	2.047131	0.	2.576264	
38	38	0.430236	-2.5	0.7389	
39	39	-0.430236	0	0.7389	
40	40	-2.047131	-2.5	2.576264	
41	41	-2.047131	0.	2.576264	
42	42	-0.430236	-2.5	0.7389	
43	43	0.	0.145833	2.806795	
44	44	0.	0.145833	3.088045	
45	45	0.	-2.354167	2.806795	
46	46	0.	-2.354167	3.088045	
47	47	0.	2.895833	3.088045	
48	48	0.	-5.104167	3.088045	
49	49	3.666667	0.145833	2.806795	
50	50	3.666667	0.145833	3.088045	
51	51	3.666667	-2.354167	2.806795	
52	52	3.666667	-2.354167	3.088045	
53	53	3.666667	2.895833	3.088045	
54	54	3.666667	-5.104167	3.088045	
55	55	-3.666667	0.145833	2.806795	
56	56	-3.666667	0.145833	3.088045	
57	57	-3.666667	-2.354167	2.806795	
58	58	-3.666667	-2.354167	3.088045	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
59	59	-3.666667	2.895833	3.088045	
60	60	-3.666667	-5.104167	3.088045	
61	61	-2.75	0.145833	2.806795	
62	62	-3.08	0.145833	-5.334716	
63	63	0.	0	-0.	
64	65	3.08	0	-5.334716	
65	66	-3.08	0	-5.334716	

Node Boundary Conditions

	Y [k/in]	X [k/in]	Z [k/in]	Node Label
1	Reaction	Reaction	Reaction	12
2	Reaction	Reaction	Reaction	27
3	Reaction	Reaction	Reaction	62
4				63

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	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	A529 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
9	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
10	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3
11	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	HSS2.875X0.203	Beam	HSS Pipe	A500 Gr.C	Typical	1.59	1.45	1.45	2.89
2	MF- SA1	1.9" ODx0.12"	Beam	Pipe	A500 Gr.C	Typical	0.671	0.267	0.267	0.534
3	MF-D1	1/2" SR	VBrace	BAR	A529 Gr.50	Typical	0.196	0.003	0.003	0.006
4	MF-CP1	PL5/8x3.5	Beam	RECT	A572 Gr.50	Typical	2.205	0.073	2.251	0.259
5	MF-V1	0.63" SR	Column	BAR	A529 Gr.50	Typical	0.312	0.008	0.008	0.015
6	MF-CP2	PL5/8x4.25	Beam	RECT	A572 Gr.50	Typical	2.656	0.086	3.998	0.314
7	Tieback	Pipe2.38X0.12	Beam	Pipe	A500 Gr.C	Typical	0.852	0.545	0.545	1.091
8	MF-P1	Pipe2.875x0.12	Column	Pipe	A500 Gr.C	Typical	1.039	0.987	0.987	1.975

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	CF1	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		MF-H1	Beam	HSS Pipe	A500 Gr.C	Typical
2	2	3	4		MF-H1	Beam	HSS Pipe	A500 Gr.C	Typical
3	3	12	5	90	MF-CP1	Beam	RECT	A572 Gr.50	Typical
4	4	6	7		MF- SA1	Beam	Pipe	A500 Gr.C	Typical
5	5	8	9	90	MF-CP2	Beam	RECT	A572 Gr.50	Typical
6	6	10	11	90	RIGID	None	None	RIGID	Typical
7	7	12	13	90	MF-CP1	Beam	RECT	A572 Gr.50	Typical
8	8	14	15		MF- SA1	Beam	Pipe	A500 Gr.C	Typical
9	9	16	17	90	MF-CP2	Beam	RECT	A572 Gr.50	Typical
10	10	18	19	90	RIGID	None	None	RIGID	Typical
11	11	27	20	90	MF-CP1	Beam	RECT	A572 Gr.50	Typical
12	12	21	22		MF- SA1	Beam	Pipe	A500 Gr.C	Typical
13	13	23	24	90	MF-CP2	Beam	RECT	A572 Gr.50	Typical
14	14	25	26	90	RIGID	None	None	RIGID	Typical
15	15	27	28	90	MF-CP1	Beam	RECT	A572 Gr.50	Typical
16	16	29	30		MF- SA1	Beam	Pipe	A500 Gr.C	Typical
17	17	31	32	90	MF-CP2	Beam	RECT	A572 Gr.50	Typical
18	18	33	34	90	RIGID	None	None	RIGID	Typical
19	19	37	36		MF-V1	Column	BAR	A529 Gr.50	Typical
20	20	35	38		MF-V1	Column	BAR	A529 Gr.50	Typical
21	21	35	36		MF-D1	VBrace	BAR	A529 Gr.50	Typical
22	22	37	38		MF-D1	VBrace	BAR	A529 Gr.50	Typical
23	23	41	40		MF-V1	Column	BAR	A529 Gr.50	Typical
24	24	39	42		MF-V1	Column	BAR	A529 Gr.50	Typical
25	25	39	40		MF-D1	VBrace	BAR	A529 Gr.50	Typical
26	26	41	42		MF-D1	VBrace	BAR	A529 Gr.50	Typical
27	27	43	44	90	RIGID	None	None	RIGID	Typical
28	28	45	46	90	RIGID	None	None	RIGID	Typical
29	29	47	48		MF-P1	Column	Pipe	A500 Gr.C	Typical
30	30	49	50	90	RIGID	None	None	RIGID	Typical
31	31	51	52	90	RIGID	None	None	RIGID	Typical
32	32	53	54		MF-P1	Column	Pipe	A500 Gr.C	Typical
33	33	55	56	90	RIGID	None	None	RIGID	Typical
34	34	57	58	90	RIGID	None	None	RIGID	Typical
35	35	59	60		MF-P1	Column	Pipe	A500 Gr.C	Typical
36	36	61	62		Tieback	Beam	Pipe	A500 Gr.C	Typical

Member Advanced Data

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
1	1			Yes	Default	None
2	2			Yes		None
3	3			Yes		None
4	4			Yes		None
5	5			Yes		None
6	6	OOOOXO		Yes	** NA **	None
7	7			Yes		None
8	8			Yes		None
9	9			Yes		None
10	10	OOOOXO		Yes	** NA **	None
11	11			Yes		None
12	12			Yes		None
13	13			Yes		None
14	14	OOOOXO		Yes	** NA **	None
15	15			Yes		None
16	16			Yes		None
17	17			Yes		None
18	18	OOOOXO		Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
19	19			Yes	** NA **	None
20	20			Yes	** NA **	None
21	21			Yes	** NA **	None
22	22		Euler Buckling	Yes	** NA **	None
23	23			Yes	** NA **	None
24	24			Yes	** NA **	None
25	25			Yes	** NA **	None
26	26		Euler Buckling	Yes	** NA **	None
27	27			Yes	** NA **	None
28	28			Yes	** NA **	None
29	29			Yes	** NA **	None
30	30			Yes	** NA **	None
31	31			Yes	** NA **	None
32	32			Yes	** NA **	None
33	33			Yes	** NA **	None
34	34			Yes	** NA **	None
35	35			Yes	** NA **	None
36	36	BenPIN		Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	MF-H1	8	Lbyy	Lateral
2	2	MF-H1	8	Lbyy	Lateral
3	3	MF-CP1	0.708	Lbyy	Lateral
4	4	MF- SA1	2.583	Lbyy	Lateral
5	5	MF-CP2	0.489	Lbyy	Lateral
6	7	MF-CP1	0.708	Lbyy	Lateral
7	8	MF- SA1	2.583	Lbyy	Lateral
8	9	MF-CP2	0.489	Lbyy	Lateral
9	11	MF-CP1	0.708	Lbyy	Lateral
10	12	MF- SA1	2.583	Lbyy	Lateral
11	13	MF-CP2	0.489	Lbyy	Lateral
12	15	MF-CP1	0.708	Lbyy	Lateral
13	16	MF- SA1	2.583	Lbyy	Lateral
14	17	MF-CP2	0.489	Lbyy	Lateral
15	19	MF-V1	2.5	Lbyy	Lateral
16	20	MF-V1	2.5	Lbyy	Lateral
17	21	MF-D1	3.499	Lbyy	Lateral
18	22	MF-D1	3.499	Lbyy	Lateral
19	23	MF-V1	2.5	Lbyy	Lateral
20	24	MF-V1	2.5	Lbyy	Lateral
21	25	MF-D1	3.499	Lbyy	Lateral
22	26	MF-D1	3.499	Lbyy	Lateral
23	29	MF-P1	8	Lbyy	Lateral
24	32	MF-P1	8	Lbyy	Lateral
25	35	MF-P1	8	Lbyy	Lateral
26	36	Tieback	8.148	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.032	%15
2	32	Y	-0.032	%85
3	32	Y	-0.075	%15
4	32	Y	-0.064	%50
5	32	Y	0	0
6	8	Y	-0.022	%50

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	8	Y	0	0
8	8	Y	0	0
9	8	Y	0	0
10	8	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Z	-0.19	%15
2	32	Z	-0.19	%85
3	32	Z	-0.06	%15
4	32	Z	-0.06	%50
5	32	Z	0	0
6	8	Z	-0.061	%50
7	8	Z	0	0
8	8	Z	0	0
9	8	Z	0	0
10	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	X	-0.076	%15
2	32	X	-0.076	%85
3	32	X	-0.036	%15
4	32	X	-0.031	%50
5	32	X	0	0
6	8	X	-0.034	%50
7	8	X	0	0
8	8	X	0	0
9	8	X	0	0
10	8	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Z	-0.065	%15
2	32	Z	-0.065	%85
3	32	Z	-0.027	%15
4	32	Z	-0.027	%50
5	32	Z	0	0
6	8	Z	-0.027	%50
7	8	Z	0	0
8	8	Z	0	0
9	8	Z	0	0
10	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	X	-0.033	%15
2	32	X	-0.033	%85
3	32	X	-0.019	%15
4	32	X	-0.017	%50
5	32	X	0	0
6	8	X	-0.018	%50
7	8	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
8	8	X	0	0
9	8	X	0	0
10	8	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Z	-0.018	%15
2	32	Z	-0.018	%85
3	32	Z	-0.006	%15
4	32	Z	-0.006	%50
5	32	Z	0	0
6	8	Z	-0.006	%50
7	8	Z	0	0
8	8	Z	0	0
9	8	Z	0	0
10	8	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	X	-0.007	%15
2	32	X	-0.007	%85
3	32	X	-0.003	%15
4	32	X	-0.003	%50
5	32	X	0	0
6	8	X	-0.003	%50
7	8	X	0	0
8	8	X	0	0
9	8	X	0	0
10	8	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.2	%15
2	32	Y	-0.2	%85
3	32	Y	-0.072	%15
4	32	Y	-0.07	%50
5	32	Y	0	0
6	8	Y	-0.073	%50
7	8	Y	0	0
8	8	Y	0	0
9	8	Y	0	0
10	8	Y	0	0

Member Point Loads (BLC 13 : Maint LL 1)

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

Member Point Loads (BLC 14 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.25	%95

Member Point Loads (BLC 15 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	16	Y	-0.25	%50

Member Point Loads (BLC 16 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	8	Y	-0.25	%50

Member Point Loads (BLC 17 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	12	Y	-0.25	%50

Member Point Loads (BLC 18 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	4	Y	-0.25	%50

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	-0.009	-0.009	0	%100
2	2	Z	-0.009	-0.009	0	%100
3	3	Z	-0.003	-0.003	0	%100
4	4	Z	-0.005	-0.005	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	7	Z	-0.003	-0.003	0	%100
7	8	Z	-0.005	-0.005	0	%100
8	9	Z	-0.002	-0.002	0	%100
9	11	Z	-0.003	-0.003	0	%100
10	12	Z	-0.005	-0.005	0	%100
11	13	Z	-0.002	-0.002	0	%100
12	15	Z	-0.003	-0.003	0	%100
13	16	Z	-0.005	-0.005	0	%100
14	17	Z	-0.002	-0.002	0	%100
15	19	Z	-0.002	-0.002	0	%100
16	20	Z	-0.002	-0.002	0	%100
17	21	Z	-0.002	-0.002	0	%100
18	22	Z	-0.002	-0.002	0	%100
19	23	Z	-0.002	-0.002	0	%100
20	24	Z	-0.002	-0.002	0	%100
21	25	Z	-0.002	-0.002	0	%100
22	26	Z	-0.002	-0.002	0	%100
23	29	Z	-0.009	-0.009	0	%100
24	32	Z	-0.009	-0.009	0	%100
25	35	Z	-0.009	-0.009	0	%100
26	36	Z	-0.007	-0.007	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	-0.009	-0.009	0	%100
2	2	X	-0.009	-0.009	0	%100
3	3	X	-0.003	-0.003	0	%100
4	4	X	-0.005	-0.005	0	%100
5	5	X	-0.002	-0.002	0	%100
6	7	X	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 3 : 90 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, %)]
7	8	X	-0.005	-0.005	0	%100
8	9	X	-0.002	-0.002	0	%100
9	11	X	-0.003	-0.003	0	%100
10	12	X	-0.005	-0.005	0	%100
11	13	X	-0.002	-0.002	0	%100
12	15	X	-0.003	-0.003	0	%100
13	16	X	-0.005	-0.005	0	%100
14	17	X	-0.002	-0.002	0	%100
15	19	X	-0.002	-0.002	0	%100
16	20	X	-0.002	-0.002	0	%100
17	21	X	-0.002	-0.002	0	%100
18	22	X	-0.002	-0.002	0	%100
19	23	X	-0.002	-0.002	0	%100
20	24	X	-0.002	-0.002	0	%100
21	25	X	-0.002	-0.002	0	%100
22	26	X	-0.002	-0.002	0	%100
23	29	X	-0.009	-0.009	0	%100
24	32	X	-0.009	-0.009	0	%100
25	35	X	-0.009	-0.009	0	%100
26	36	X	-0.007	-0.007	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	-0.003	-0.003	0	%100
2	2	Z	-0.003	-0.003	0	%100
3	3	Z	-0.009	-0.009	0	%100
4	4	Z	-0.003	-0.003	0	%100
5	5	Z	-0.009	-0.009	0	%100
6	7	Z	-0.009	-0.009	0	%100
7	8	Z	-0.003	-0.003	0	%100
8	9	Z	-0.009	-0.009	0	%100
9	11	Z	-0.009	-0.009	0	%100
10	12	Z	-0.003	-0.003	0	%100
11	13	Z	-0.009	-0.009	0	%100
12	15	Z	-0.009	-0.009	0	%100
13	16	Z	-0.003	-0.003	0	%100
14	17	Z	-0.009	-0.009	0	%100
15	19	Z	-0.003	-0.003	0	%100
16	20	Z	-0.003	-0.003	0	%100
17	21	Z	-0.005	-0.005	0	%100
18	22	Z	-0.005	-0.005	0	%100
19	23	Z	-0.003	-0.003	0	%100
20	24	Z	-0.003	-0.003	0	%100
21	25	Z	-0.005	-0.005	0	%100
22	26	Z	-0.005	-0.005	0	%100
23	29	Z	-0.003	-0.003	0	%100
24	32	Z	-0.003	-0.003	0	%100
25	35	Z	-0.003	-0.003	0	%100
26	36	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	-0.003	-0.003	0	%100
2	2	X	-0.003	-0.003	0	%100
3	3	X	-0.009	-0.009	0	%100
4	4	X	-0.003	-0.003	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, %)]
5	5	X	-0.009	-0.009	0	%100
6	7	X	-0.009	-0.009	0	%100
7	8	X	-0.003	-0.003	0	%100
8	9	X	-0.009	-0.009	0	%100
9	11	X	-0.009	-0.009	0	%100
10	12	X	-0.003	-0.003	0	%100
11	13	X	-0.009	-0.009	0	%100
12	15	X	-0.009	-0.009	0	%100
13	16	X	-0.003	-0.003	0	%100
14	17	X	-0.009	-0.009	0	%100
15	19	X	-0.003	-0.003	0	%100
16	20	X	-0.003	-0.003	0	%100
17	21	X	-0.005	-0.005	0	%100
18	22	X	-0.005	-0.005	0	%100
19	23	X	-0.003	-0.003	0	%100
20	24	X	-0.003	-0.003	0	%100
21	25	X	-0.005	-0.005	0	%100
22	26	X	-0.005	-0.005	0	%100
23	29	X	-0.003	-0.003	0	%100
24	32	X	-0.003	-0.003	0	%100
25	35	X	-0.003	-0.003	0	%100
26	36	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	-0.0004	-0.0004	0	%100
2	2	Z	-0.0004	-0.0004	0	%100
3	3	Z	-0.0002	-0.0002	0	%100
4	4	Z	-0.0003	-0.0003	0	%100
5	5	Z	-0.0002	-0.0002	0	%100
6	7	Z	-0.0002	-0.0002	0	%100
7	8	Z	-0.0003	-0.0003	0	%100
8	9	Z	-0.0002	-0.0002	0	%100
9	11	Z	-0.0002	-0.0002	0	%100
10	12	Z	-0.0003	-0.0003	0	%100
11	13	Z	-0.0002	-0.0002	0	%100
12	15	Z	-0.0002	-0.0002	0	%100
13	16	Z	-0.0003	-0.0003	0	%100
14	17	Z	-0.0002	-0.0002	0	%100
15	19	Z	-1e-04	-1e-04	0	%100
16	20	Z	-1e-04	-1e-04	0	%100
17	21	Z	-1e-04	-1e-04	0	%100
18	22	Z	-1e-04	-1e-04	0	%100
19	23	Z	-1e-04	-1e-04	0	%100
20	24	Z	-1e-04	-1e-04	0	%100
21	25	Z	-1e-04	-1e-04	0	%100
22	26	Z	-1e-04	-1e-04	0	%100
23	29	Z	-0.0004	-0.0004	0	%100
24	32	Z	-0.0004	-0.0004	0	%100
25	35	Z	-0.0004	-0.0004	0	%100
26	36	Z	-0.0003	-0.0003	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	-0.0004	-0.0004	0	%100
2	2	X	-0.0004	-0.0004	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, %)]
3	3	X	-0.0002	-0.0002	0	%100
4	4	X	-0.0003	-0.0003	0	%100
5	5	X	-0.0002	-0.0002	0	%100
6	7	X	-0.0002	-0.0002	0	%100
7	8	X	-0.0003	-0.0003	0	%100
8	9	X	-0.0002	-0.0002	0	%100
9	11	X	-0.0002	-0.0002	0	%100
10	12	X	-0.0003	-0.0003	0	%100
11	13	X	-0.0002	-0.0002	0	%100
12	15	X	-0.0002	-0.0002	0	%100
13	16	X	-0.0003	-0.0003	0	%100
14	17	X	-0.0002	-0.0002	0	%100
15	19	X	-1e-04	-1e-04	0	%100
16	20	X	-1e-04	-1e-04	0	%100
17	21	X	-1e-04	-1e-04	0	%100
18	22	X	-1e-04	-1e-04	0	%100
19	23	X	-1e-04	-1e-04	0	%100
20	24	X	-1e-04	-1e-04	0	%100
21	25	X	-1e-04	-1e-04	0	%100
22	26	X	-1e-04	-1e-04	0	%100
23	29	X	-0.0004	-0.0004	0	%100
24	32	X	-0.0004	-0.0004	0	%100
25	35	X	-0.0004	-0.0004	0	%100
26	36	X	-0.0003	-0.0003	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	-0.014	-0.014	0	%100
2	2	Y	-0.014	-0.014	0	%100
3	3	Y	-0.016	-0.016	0	%100
4	4	Y	-0.012	-0.012	0	%100
5	5	Y	-0.018	-0.018	0	%100
6	7	Y	-0.016	-0.016	0	%100
7	8	Y	-0.012	-0.012	0	%100
8	9	Y	-0.018	-0.018	0	%100
9	11	Y	-0.016	-0.016	0	%100
10	12	Y	-0.012	-0.012	0	%100
11	13	Y	-0.018	-0.018	0	%100
12	15	Y	-0.016	-0.016	0	%100
13	16	Y	-0.012	-0.012	0	%100
14	17	Y	-0.018	-0.018	0	%100
15	19	Y	-0.008	-0.008	0	%100
16	20	Y	-0.008	-0.008	0	%100
17	21	Y	-0.008	-0.008	0	%100
18	22	Y	-0.008	-0.008	0	%100
19	23	Y	-0.008	-0.008	0	%100
20	24	Y	-0.008	-0.008	0	%100
21	25	Y	-0.008	-0.008	0	%100
22	26	Y	-0.008	-0.008	0	%100
23	29	Y	-0.014	-0.014	0	%100
24	32	Y	-0.014	-0.014	0	%100
25	35	Y	-0.014	-0.014	0	%100
26	36	Y	-0.013	-0.013	0	%100

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	Dead	DL	-1		10	
2	0 Wind - No Ice	WLZ			10	26
3	90 Wind - No Ice	WLX			10	26
4	0 Wind - Ice	WLZ			10	26
5	90 Wind - Ice	WLX			10	26
6	0 Wind - Service	WLZ			10	26
7	90 Wind - Service	WLX			10	26
8	Ice	OL1			10	26
9	Live Load a	LL		1		
10	Live Load b	LL		1		
11	Live Load c	LL		1		
12	Live Load d	LL				
13	Maint LL 1	LL			1	
14	Maint LL 2	LL			1	
15	Maint LL 3	LL			1	
16	Maint LL 4	LL			1	
17	Maint LL 5	LL			1	
18	Maint LL 6	LL			1	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	0.9 D + 1.6 - 0 W	Yes	Y	1	0.9	2	1.6				
3	0.9 D + 1.6 - 30 W	Yes	Y	1	0.9	2	1.386	3	0.8		
4	0.9 D + 1.6 - 60 W	Yes	Y	1	0.9	3	1.386	2	0.8		
5	0.9 D + 1.6 - 90 W	Yes	Y	1	0.9	3	1.6				
6	0.9 D + 1.6 - 120 W	Yes	Y	1	0.9	3	1.386	2	-0.8		
7	0.9 D + 1.6 - 150 W	Yes	Y	1	0.9	2	-1.386	3	0.8		
8	0.9 D + 1.6 - 180 W	Yes	Y	1	0.9	2	-1.6				
9	0.9 D + 1.6 - 210 W	Yes	Y	1	0.9	2	-1.386	3	-0.8		
10	0.9 D + 1.6 - 240 W	Yes	Y	1	0.9	3	-1.386	2	-0.8		
11	0.9 D + 1.6 - 270 W	Yes	Y	1	0.9	3	-1.6				
12	0.9 D + 1.6 - 300 W	Yes	Y	1	0.9	3	-1.386	2	0.8		
13	0.9 D + 1.6 - 330 W	Yes	Y	1	0.9	2	1.386	3	-0.8		
14	1.2 D + 1.6 - 0 W	Yes	Y	1	1.2	2	1.6				
15	1.2 D + 1.6 - 30 W	Yes	Y	1	1.2	2	1.386	3	0.8		
16	1.2 D + 1.6 - 60 W	Yes	Y	1	1.2	3	1.386	2	0.8		
17	1.2 D + 1.6 - 90 W	Yes	Y	1	1.2	3	1.6				
18	1.2 D + 1.6 - 120 W	Yes	Y	1	1.2	3	1.386	2	-0.8		
19	1.2 D + 1.6 - 150 W	Yes	Y	1	1.2	2	-1.386	3	0.8		
20	1.2 D + 1.6 - 180 W	Yes	Y	1	1.2	2	-1.6				
21	1.2 D + 1.6 - 210 W	Yes	Y	1	1.2	2	-1.386	3	-0.8		
22	1.2 D + 1.6 - 240 W	Yes	Y	1	1.2	3	-1.386	2	-0.8		
23	1.2 D + 1.6 - 270 W	Yes	Y	1	1.2	3	-1.6				
24	1.2 D + 1.6 - 300 W	Yes	Y	1	1.2	3	-1.386	2	0.8		
25	1.2 D + 1.6 - 330 W	Yes	Y	1	1.2	2	1.386	3	-0.8		
26	0.9 D + 1.6 - 0 W/Ice	Yes	Y	1	0.9	4	1.6			8	1
27	0.9 D + 1.6 - 30 W/Ice	Yes	Y	1	0.9	4	1.386	5	0.8	8	1
28	0.9 D + 1.6 - 60 W/Ice	Yes	Y	1	0.9	5	1.386	4	0.8	8	1
29	0.9 D + 1.6 - 90 W/Ice	Yes	Y	1	0.9	5	1.6			8	1
30	0.9 D + 1.6 - 120 W/Ice	Yes	Y	1	0.9	5	1.386	4	-0.8	8	1
31	0.9 D + 1.6 - 150 W/Ice	Yes	Y	1	0.9	4	-1.386	5	0.8	8	1
32	0.9 D + 1.6 - 180 W/Ice	Yes	Y	1	0.9	4	-1.6			8	1
33	0.9 D + 1.6 - 210 W/Ice	Yes	Y	1	0.9	4	-1.386	5	-0.8	8	1
34	0.9 D + 1.6 - 240 W/Ice	Yes	Y	1	0.9	5	-1.386	4	-0.8	8	1
35	0.9 D + 1.6 - 270 W/Ice	Yes	Y	1	0.9	5	-1.6			8	1
36	0.9 D + 1.6 - 300 W/Ice	Yes	Y	1	0.9	5	-1.386	4	0.8	8	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
37	0.9 D + 1.6 - 330 W/Ice	Yes	Y	1	0.9	4	1.386	5	-0.8	8	1
38	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
39	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
40	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
41	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
42	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
43	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
44	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
45	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
46	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
47	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
48	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
49	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
50	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			9	1.5
51	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	9	1.5
52	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	9	1.5
53	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			9	1.5
54	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	9	1.5
55	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	9	1.5
56	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			9	1.5
57	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	9	1.5
58	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	9	1.5
59	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			9	1.5
60	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	9	1.5
61	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	9	1.5
62	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			10	1.5
63	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	10	1.5
64	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	10	1.5
65	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			10	1.5
66	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	10	1.5
67	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	10	1.5
68	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			10	1.5
69	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	10	1.5
70	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	10	1.5
71	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			10	1.5
72	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	10	1.5
73	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	10	1.5
74	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
75	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
76	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
77	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
78	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
79	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
80	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
81	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
82	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
83	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
84	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
85	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
86	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
87	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
88	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
89	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
90	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
91	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
92	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
93	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
94	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
95	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
96	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
97	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
98	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					13	1.5
99	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					14	1.5
100	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					15	1.5
101	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					16	1.5
102	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					17	1.5
103	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					18	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	12	max	0.8	53	1.187	42	1.913	13	0	103	0	103	0	103
2		min	-1.459	83	0.166	11	-3.005	31	0	1	0	1	0	1
3	27	max	1.444	77	1.077	48	2.297	38	0	103	0	103	0	103
4		min	-0.785	59	0.159	5	-0.08	8	0	1	0	1	0	1
5	62	max	0.095	18	0.067	48	1.334	18	0	103	0	103	0	103
6		min	-0.096	24	0.011	4	-1.336	24	0	1	0	1	0	1
7	Totals:	max	1.218	17	2.281	49	1.707	2						
8		min	-1.218	11	0.453	7	-1.707	20						

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

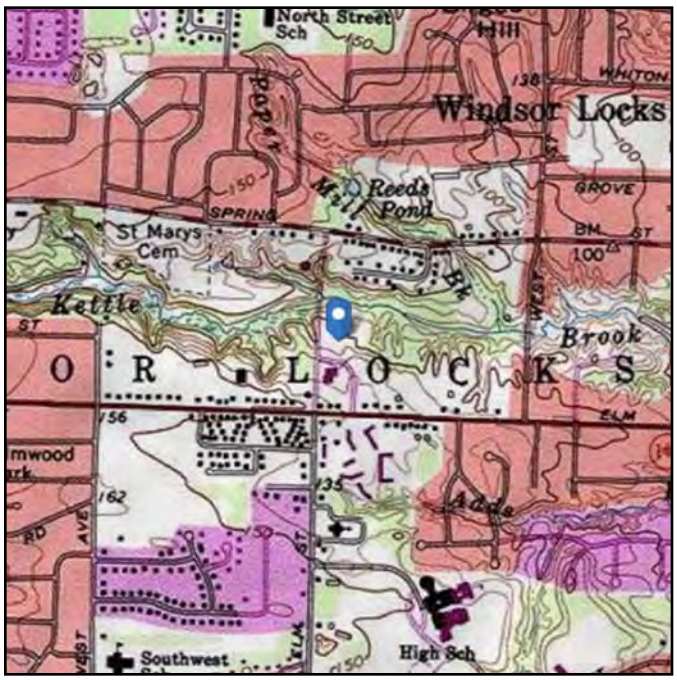
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	HSS2.875X0.203	0.123	6.25	20	0.074	6.25		20	33.355	65.826	4.727	4.727	1.601	H1-1b
2	2	HSS2.875X0.203	0.198	6.25	20	0.111	1.75		18	33.355	65.826	4.727	4.727	1.449	H1-1b
3	3	PL5/8x3.5	0.296	0.583	42	0.082	0.583	y	42	84.578	99.225	1.302	7.235	1.076	H1-1b
4	4	1.9" ODx0.12"	0.304	0.135	42	0.084	2.449		42	23.614	27.779	1.314	1.314	2.038	H1-1b
5	5	PL5/8x4.25	0.146	0.362	20	0.051	0.362	y	48	110.629	119.531	1.556	10.583	1.426	H1-1b
6	7	PL5/8x3.5	0.189	0.583	61	0.127	0.583	y	43	84.578	99.225	1.302	7.235	1.238	H1-1b
7	8	1.9" ODx0.12"	0.218	2.449	25	0.09	2.449		31	23.614	27.779	1.314	1.314	1.089	H1-1b
8	9	PL5/8x4.25	0.195	0.362	25	0.073	0.127	y	30	110.629	119.531	1.556	10.583	1.427	H1-1b
9	11	PL5/8x3.5	0.279	0.583	41	0.08	0.583	y	57	84.578	99.225	1.302	7.235	1.071	H1-1b
10	12	1.9" ODx0.12"	0.322	0.135	41	0.076	2.449		32	23.614	27.779	1.314	1.314	2.021	H1-1b
11	13	PL5/8x4.25	0.109	0.127	20	0.061	0.362	y	20	110.629	119.531	1.556	10.583	1.443	H1-1b
12	15	PL5/8x3.5	0.186	0.583	61	0.116	0	y	41	84.578	99.225	1.302	7.235	1.036	H1-1b
13	16	1.9" ODx0.12"	0.214	0.135	61	0.075	2.449		44	23.614	27.779	1.314	1.314	2.057	H1-1b
14	17	PL5/8x4.25	0.057	0.127	25	0.06	0.362	y	32	110.629	119.531	1.556	10.583	1.446	H1-1b
15	19	0.63" SR	0.499	2.5	39	0.006	2.5		78	1.941	14.028	0.147	0.147	1.929	H1-1a
16	20	0.63" SR	0.608	2.5	40	0.013	0		79	1.941	14.028	0.147	0.147	2.175	H1-1a
17	21	1/2" SR	0.429	3.499	29	0.009	3.499		37	0.393	8.836	0.074	0.074	2.118	H1-1a
18	22	1/2" SR	0	3.499	103	0.007	0		55	0.393	8.836	0.074	0.074	1	H1-1a
19	23	0.63" SR	0.349	0	36	0.014	0		18	1.941	14.028	0.147	0.147	2.454	H1-1a
20	24	0.63" SR	0.414	2.5	61	0.014	0		79	1.941	14.028	0.147	0.147	2.264	H1-1a
21	25	1/2" SR	0.242	3.499	26	0.016	3.499		26	0.393	8.836	0.074	0.074	1.93	H1-1b
22	26	1/2" SR	0.017	3.499	6	0.017	0		19	0.393	8.836	0.074	0.074	3	H1-1b*
23	29	Pipe2.875x0.12	0.111	2.75	19	0.051	2.75		19	22.398	42.998	3.144	3.144	3	H1-1b
24	32	Pipe2.875x0.12	0.229	2.75	14	0.05	2.75		2	22.398	42.998	3.144	3.144	3	H1-1b
25	35	Pipe2.875x0.12	0.126	5.25	55	0.041	2.75		18	22.398	42.998	3.144	3.144	3	H1-1b
26	36	Pipe2.38X0.12	0.107	0	18	0.006	8.148		47	12.878	35.273	2.115	2.115	1.136	H1-1b*

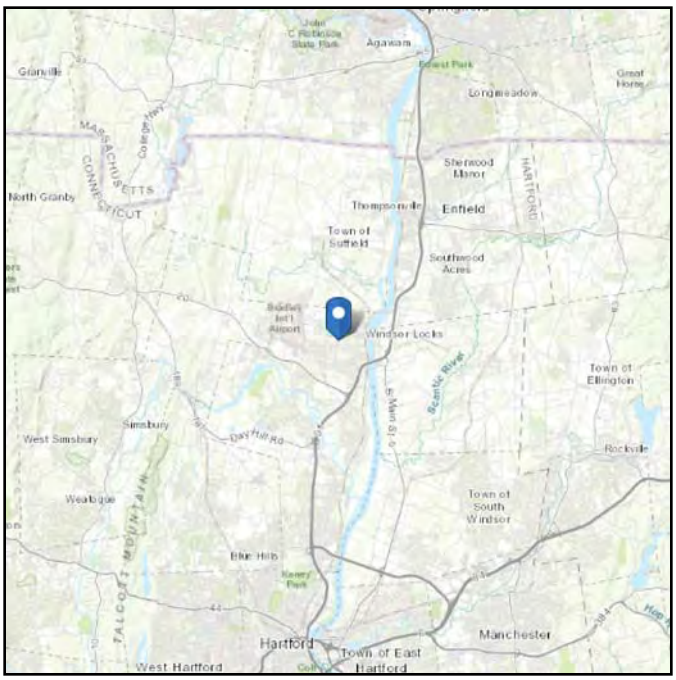
APPENDIX B
(Additional Calculations)

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	106.85 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.9281
Soil Class:	D - Stiff Soil	**Longitude:**	-72.6468





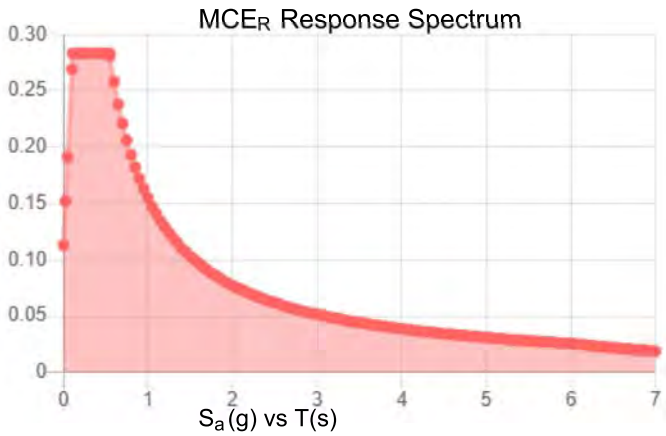
Seismic

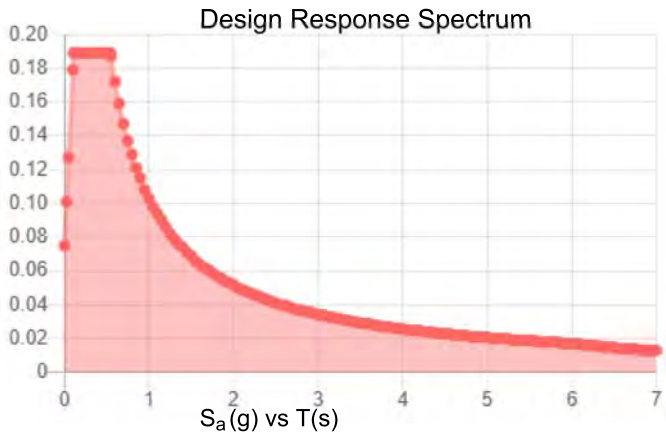
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.189
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.283	PGA_M :	0.14
S_{M1} :	0.155	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Sep 03 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 03 2021

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 50-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.

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

B+T GRP

INPUT

[REF: ANSI/TIA-222-G2005]

Tower Type		:	SST		
Tower Height		:	195	ft	
Mount Elevation		:	125	ft	
Antenna Elevation		:	125	ft	
Crest Height		:	0	ft	
Structure Class		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5]
Topography Category		:	1		[Sec. 2.6.6.2]
Wind Velocity	V	:	97	mph	[Annex B]
Ice wind Velocity	V_i	:	50	mph	[Annex B]
Service Velocity	V_s	:	30	mph	[Annex B]
Base Ice thickness	t_i	:	1	in	[Annex B]

ANTENNAS

	Manufacturer	Model	Height (in)	Front Width (in)	Side Width (in)	Weight (lbs)	Shape	Quantity	Location (%)
Mount Pipe	32								
	JMA Wireless	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	15
	JMA Wireless	MX08FRO665-21	72.00	20.00	8.00	64.50	Flat	0.5	85
	Fujitsu	TA08025-B605	15.75	14.96	9.05	74.95	Flat	1	15
	Fujitsu	TA08025-B604	15.75	14.96	7.87	63.93	Flat	1	50
Mount Pipe	8								
	Raycap	RDIDC-9181-PF-48	16.57	14.57	8.15	21.85	Flat	1	50
Mount Pipe									
Mount Pipe									
Mount Pipe									
Mount Pipe									

PROJECT	**#149481.003.01- Windsor Locks @ VolKSC**				
SUBJECT	**Sector- Mount Analysis**				
DATE	**09/03/21**	PAGE	1	OF	1

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

[REF: ANSI/TIA-222-G2005]

Reactions at Bolted Connection

Tension	:	2.297	k
Vertical Shear	:	1.077	k
Horizontal Shear	:	1.444	k
Torsion	:	0	k.ft
Moment from Horizontal Forces	:	0	k.ft
Moment from Vertical Forces	:	0	k.ft

Bolt Parameters

Bolt Grade	:	A307	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1	in
Bolt edge distance, plate width	:	1	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	1.80	k
Force from Horz. Moment	:	0.00	k
Force from Vert. Moment	:	0.00	k
Shear Load / Bolt	:	0.45	k
Tension Load / Bolt	:	0.57	k
Resultant from Moments / Bolt	:	0.00	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	45.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	10.36	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**5.54%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	24.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	5.53	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**18.54%**		**OKAY**
Unity Check, Combined	:	**24.08%**		**OKAY**
Available Bearing Strength, ΦR_n	:	18.35	k/bolt	
Unity Check, Bolt Bearing	:	**2.45%**		**OKAY**

EXHIBIT 10

Construction Drawings

dish wireless™

DISH Wireless L.L.C. SITE ID:

BOBDL00132A

DISH Wireless L.L.C. SITE ADDRESS:

2-4 VOLUNTEER DRIVE
WINDSOR LOCKS, CT 06096

SBA APPROVED

By Stephen Roth at 2:33:21 PM, 12/16/2021

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 (3) PROPOSED SECTOR FRAMES
- 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 (1) PROPOSED METAL 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 SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

SITE INFORMATION

PROPERTY OWNER:	THE TOWN OF WINDSOR LOCKS
ADDRESS:	ATTN: FINANCE DEPT WINDSOR LOCKS, CT 06096
TOWER TYPE:	SELF-SUPPORT TOWER
TOWER CO SITE ID:	CT22108-A
TOWER APP NUMBER:	168265
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 55' 41.16" N 41.92809933 N
LONGITUDE (NAD 83):	72° 38' 48.42" W 72.646783 W
ZONING JURISDICTION:	CITY OF WINDSOR LOCKS
ZONING DISTRICT:	RESA
PARCEL NUMBER:	09003165-034-062-080
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	CROWN CASTLE

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, CONTINUE ON BRADLEY INTERNATIONAL, AIRPORT CON. TAKE CT-75 N AND ELM ST TO VOLUNTEER DR IN WINDSOR LOCKS, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, TAKE THE CT-75 EXIT TOWARD POQUONOCK/SUFFIELD, TURN LEFT ONTO CT-75 N/POQUONOCK AVE, CONTINUE TO FOLLOW CT-75 N, TURN RIGHT ONTO ELM ST, NTINUE ON VOLUNTEER DR TO YOUR DESTINATION, RN LEFT ONTO VOLUNTEER DR, RN RIGHT ONTO ACCESS RD, RN LEFT, RN RIGHT AND ARRIVE AT BOBDL00132A.

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

811

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

dish wireless™

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

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
12/15/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CDD	CDD	CDD

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/15/21	ISSUED FOR REVIEW
0	12/13/21	ISSUED FOR CONSTRUCTION
1	12/15/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149481.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

FAA 2-C INFORMATION

LATITUDE	41°55'41.17"N.
LONGITUDE	72°38'48.42"W.
GROUND EL	114' NAVD88

PARENT PARCEL INFORMATION

PARCEL OWNER: TOWN OF WINDSOR LOCKS
DEED BOOK 113, PAGE 299
TAX PARCEL ID NO. 1943

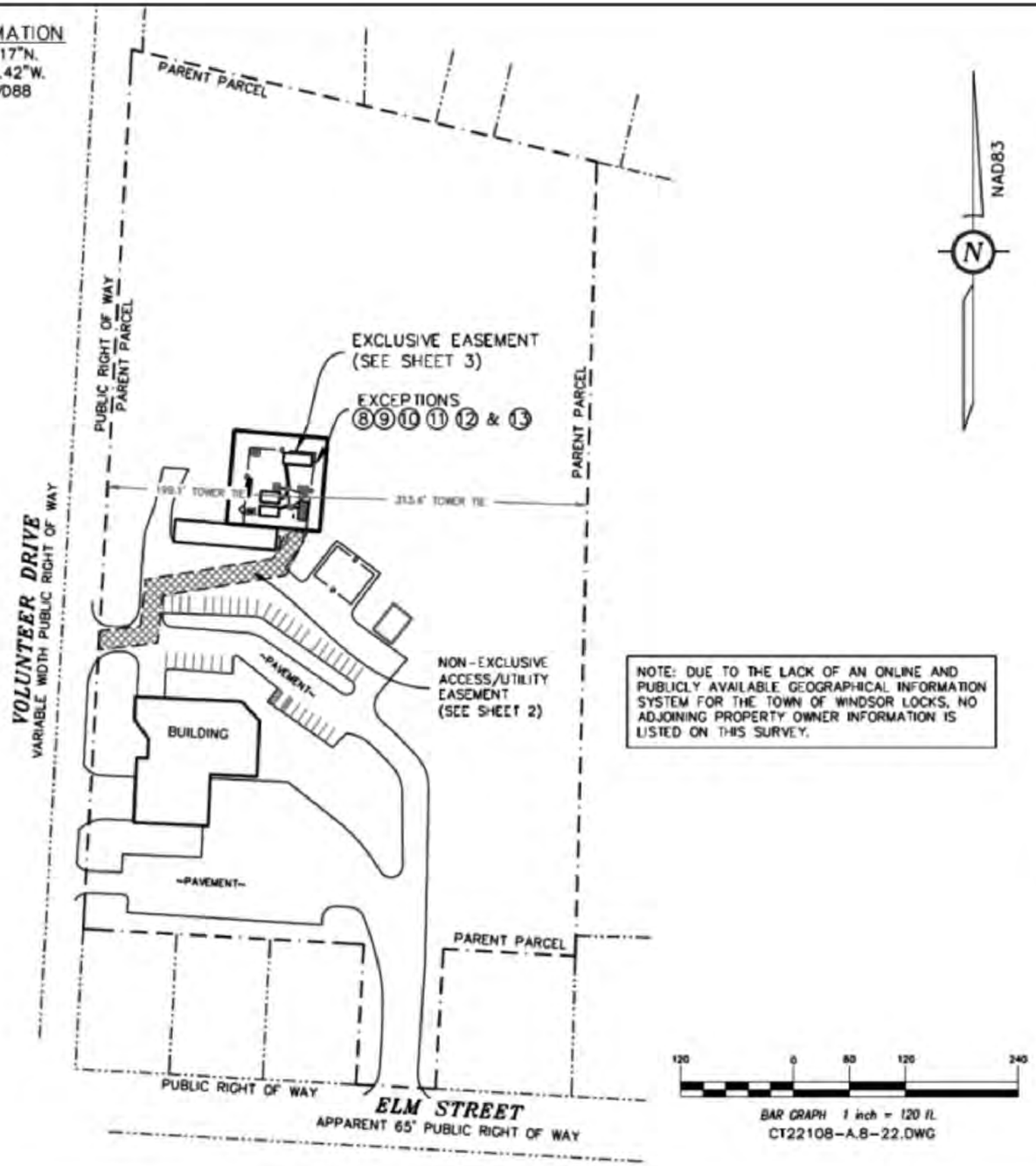
ZONING: RESADENTIAL

THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE X WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER F.I.R.M. PANEL NUMBER: 09003C0217F EFFECTIVE DATE: 09/26/2008

LEGEND

- O :FOUND 1/2" REBAR AS NOTED.
- ● :SET 1/2" REBAR AS NOTED.
- (___) :RECORD DESCRIPTION DATA.
- P.O.B. :POINT OF BEGINNING.
- P.O.C. :POINT OF COMMENCEMENT.
- —— o —— :FENCE AS NOTED.
- —— OH —— :OVER HEAD UTILITY LINES.
- :WOOD UTILITY POLE.
- :ELECTRIC TRANSFORMER.
- :TELCO PEDESTAL.
- WM :WATER METER.
- :POWER BOX
- :HAND HOLE
- N/A :NOT AVAILABLE

AREA	SQUARE FEET	ACRE
PARENT PARCEL	487872	11.20
LEASE AREA	10000	0.23
COMPOUND AREA	5684	0.13
20' ACCESS/UTILITY EASEMENT	5686	0.13



SHEET 1 OF 4

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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
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CHAD TUTTLE
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CT 06096

SHEET TITLE

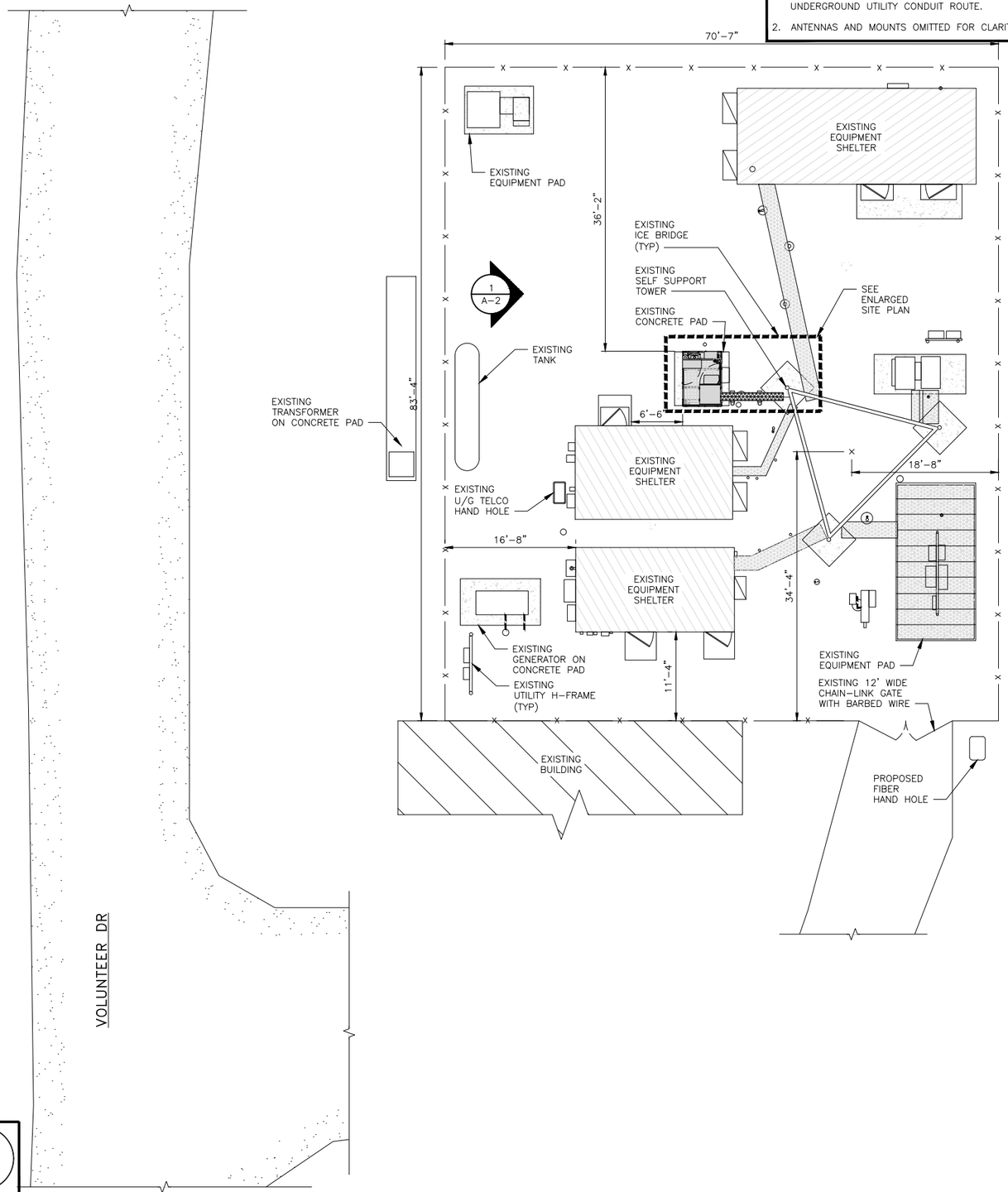
SITE SURVEY

SHEET NUMBER

LS-1

NOTES

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



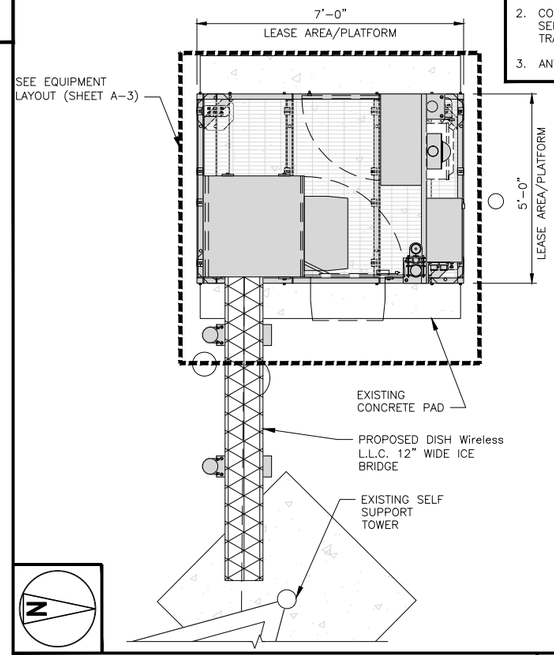
OVERALL SITE PLAN

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'
1/2"=1'-0"

2

NOT USED

3

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WINDSOR LOCKS,
CT 06096

SHEET TITLE

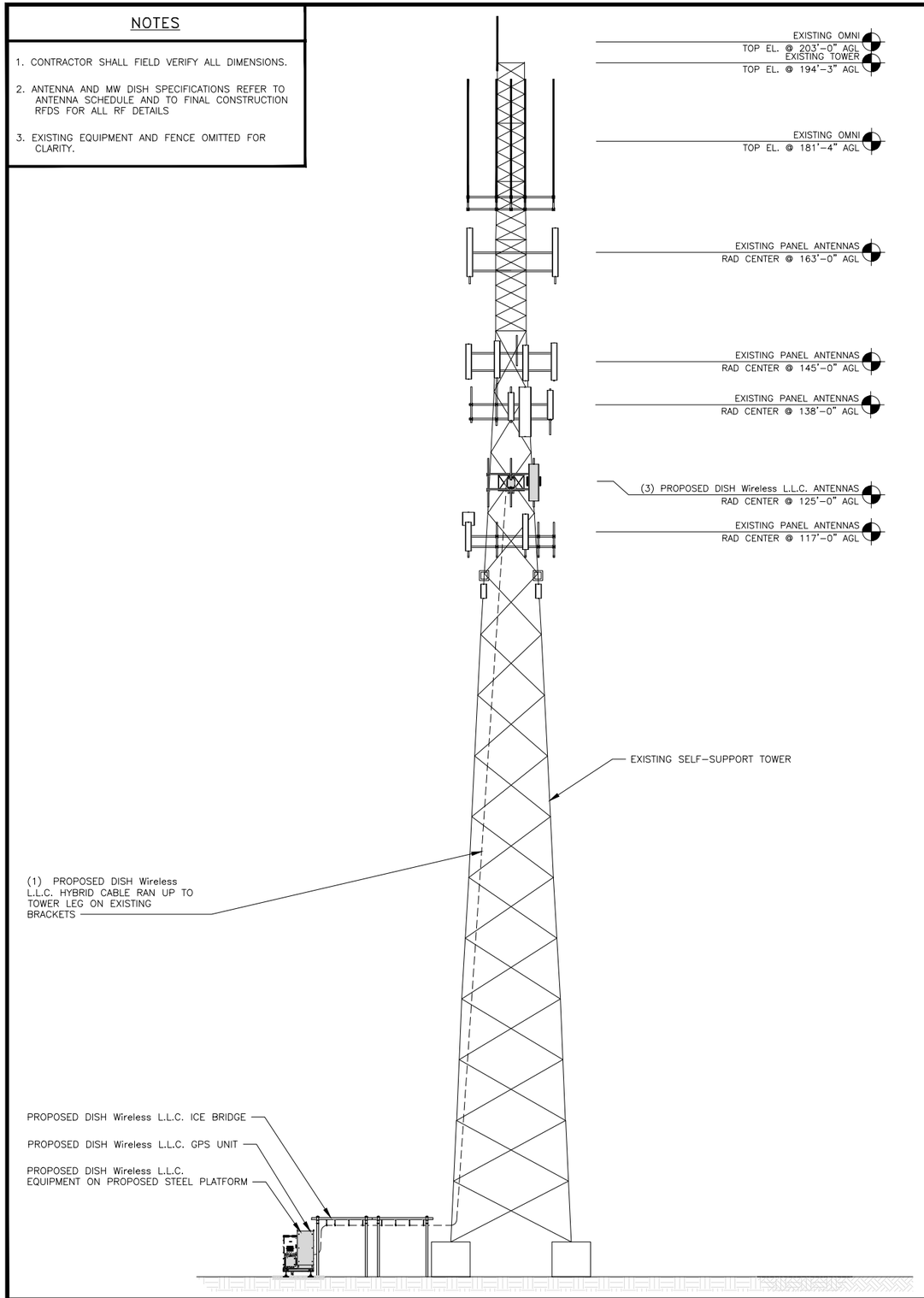
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

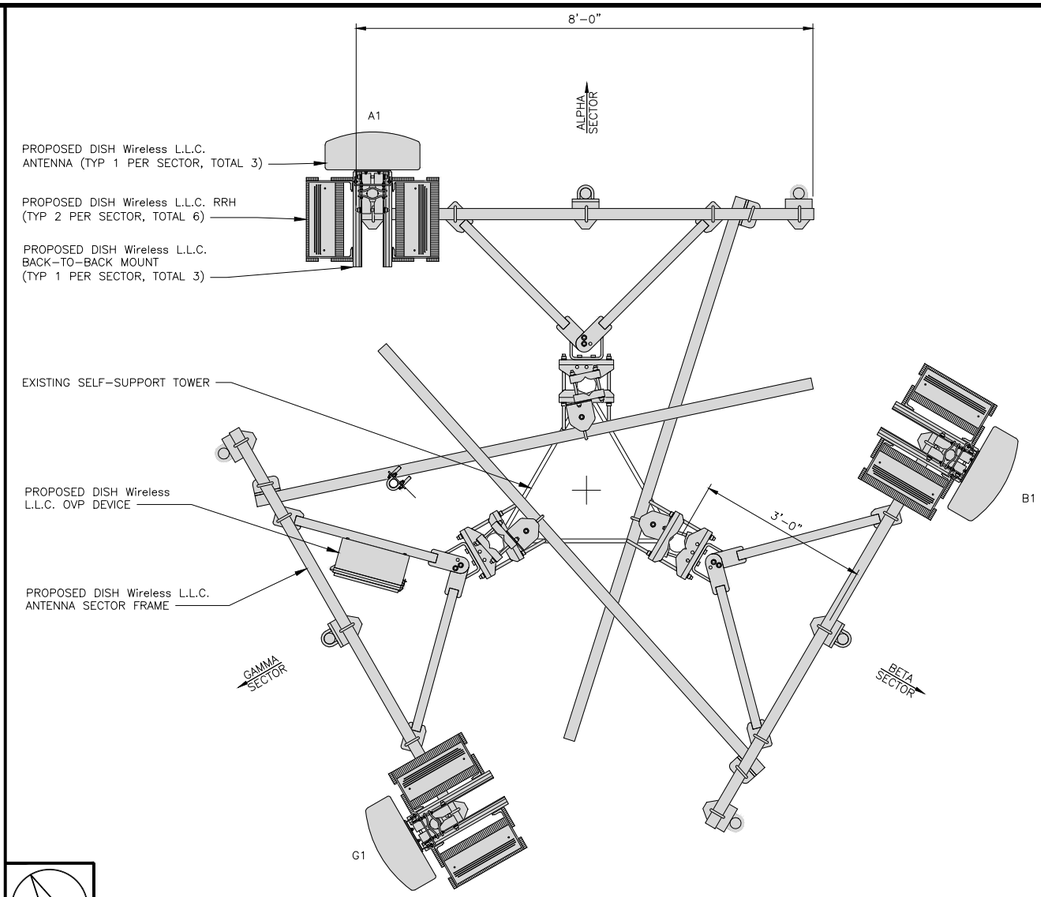
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED WEST ELEVATION

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

1



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	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	30°	125'-0"	(1) HIGH-CAPACITY HYBRID CABLE (165' LONG)
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	150°	125'-0"	
GAMMA	G1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	270°	125'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	Fujitsu – TA08025-B605	5G
	A1	Fujitsu – TA08025-B604	5G
BETA	B1	Fujitsu – TA08025-B605	5G
	B1	Fujitsu – TA08025-B604	5G
GAMMA	G1	Fujitsu – TA08025-B605	5G
	G1	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.

OVP		
EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	SIZE (HxWxD)
PROPOSED	RAYCAP-RDIDC-9181-PF-48	18.98"x14.39"x8.15"

ANTENNA SCHEDULE

NO SCALE

3

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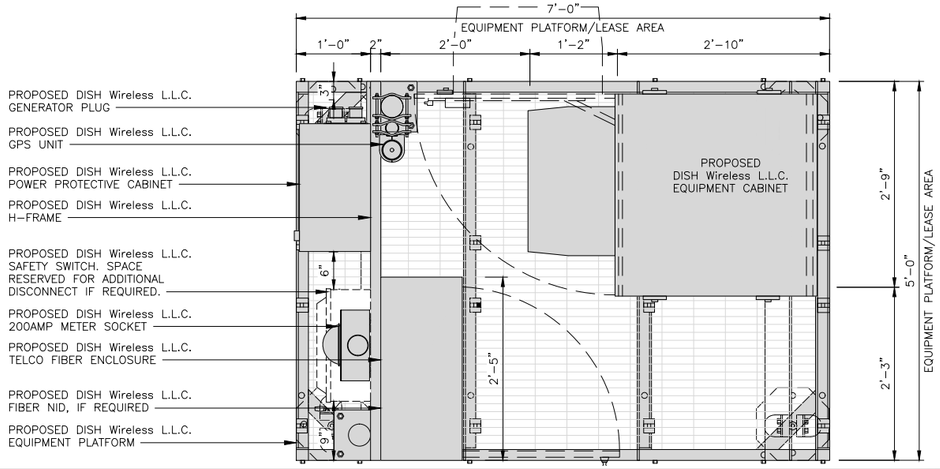
CT 06096

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



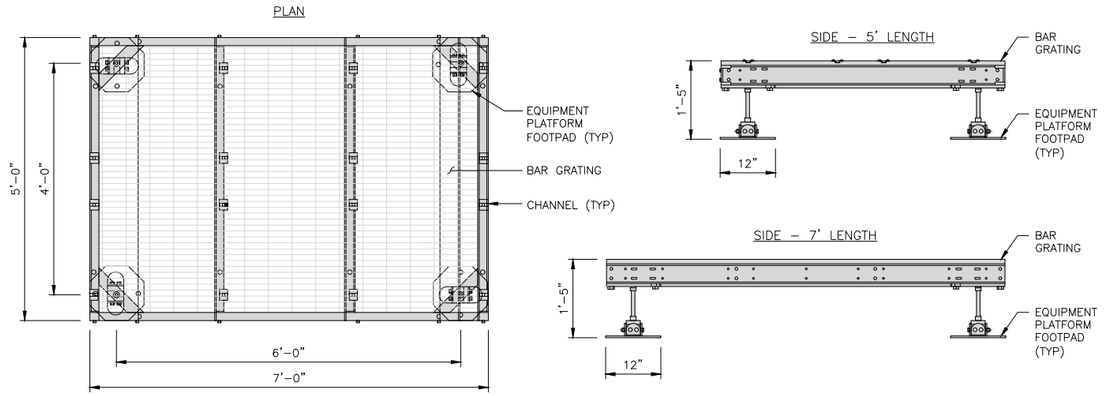
PLATFORM EQUIPMENT PLAN

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

1

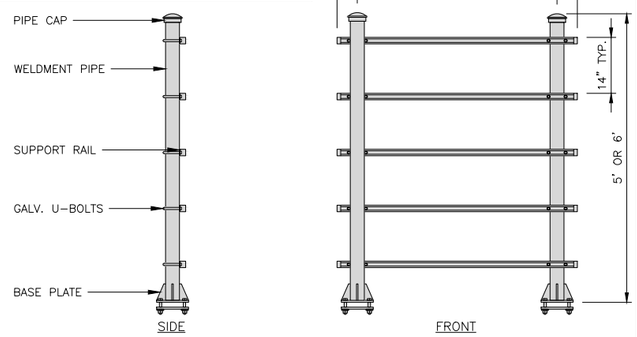
COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL | NO SCALE | 2

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

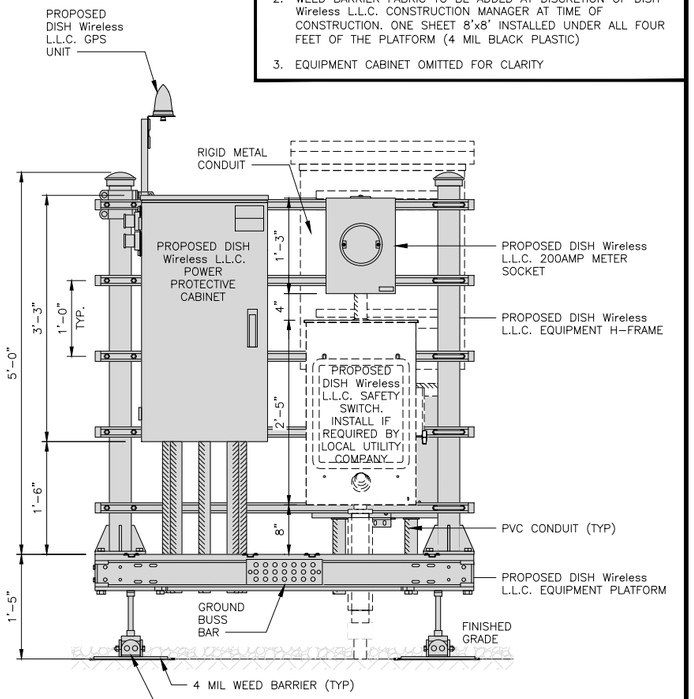


H-FRAME DETAIL | NO SCALE | 3

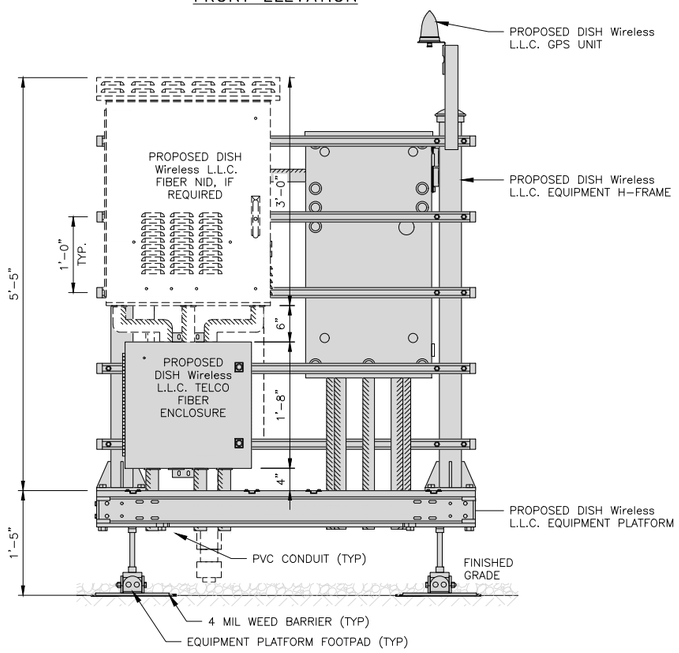
NOT USED | NO SCALE | 4

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

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 5

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CT 06096

SHEET TITLE

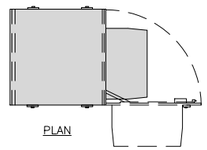
EQUIPMENT PLATFORM AND H-FRAME DETAILS

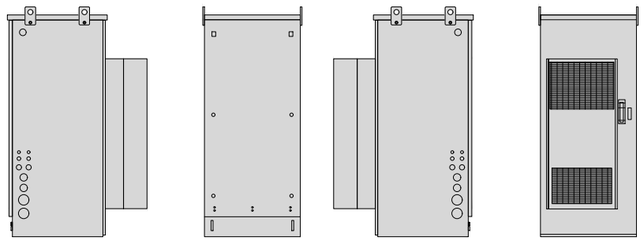
SHEET NUMBER

A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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


PLAN

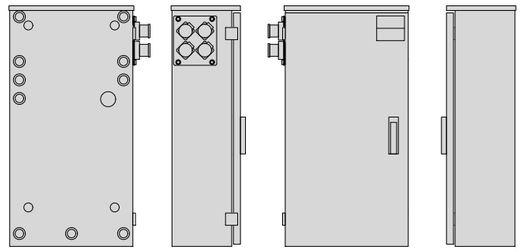

SIDE BACK SIDE FRONT

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

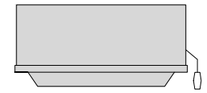

TOP

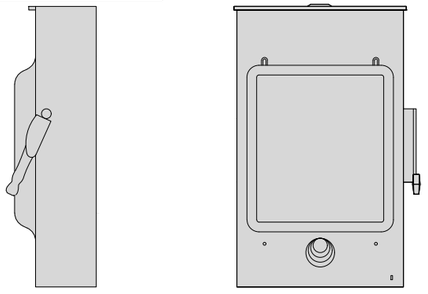

BACK SIDE FRONT SIDE

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

SQUARE D SAFETY SWITCHES D224NRB

ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

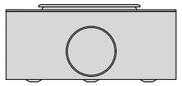

TOP

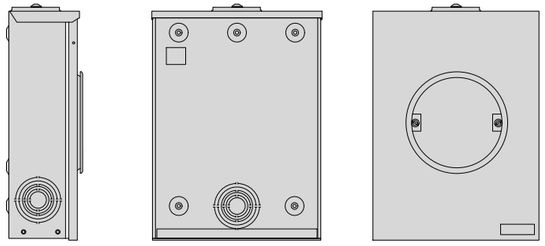

SIDE FRONT

SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS


PLAN

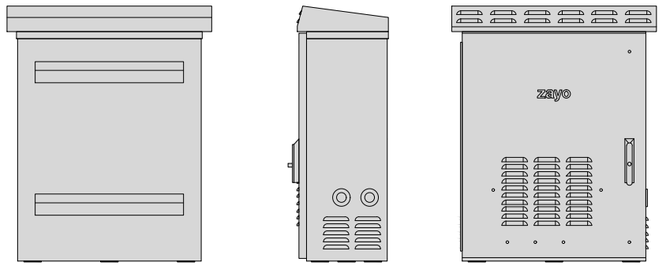

SIDE BACK FRONT

METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE

DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs

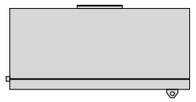

BOTTOM

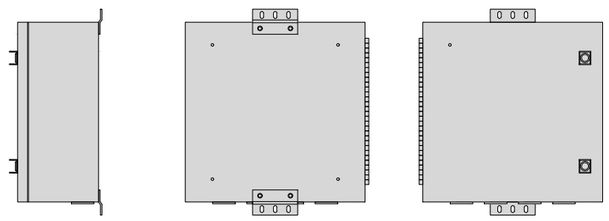

BACK SIDE FRONT

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

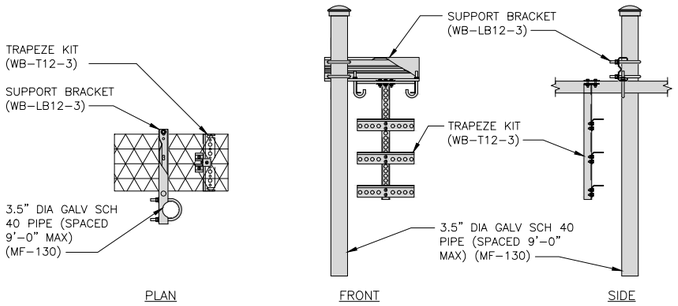

SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

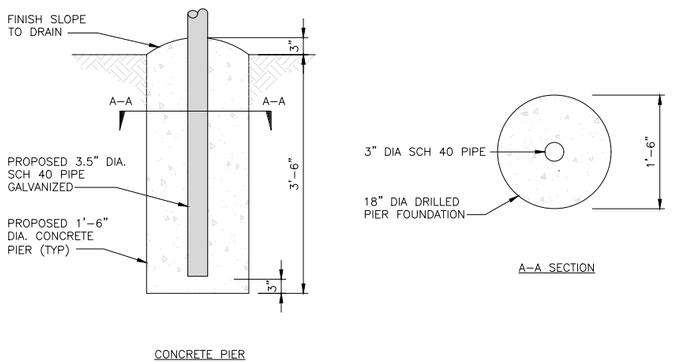
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



PLAN FRONT SIDE

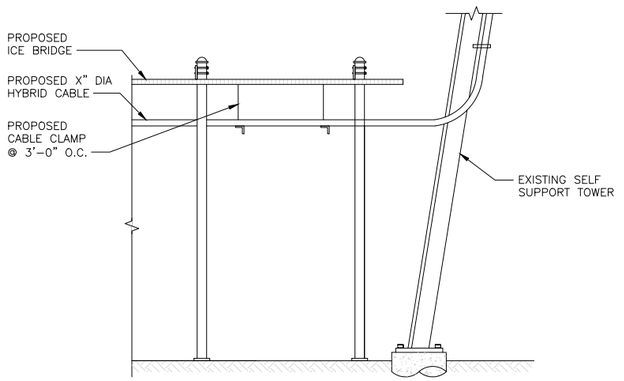
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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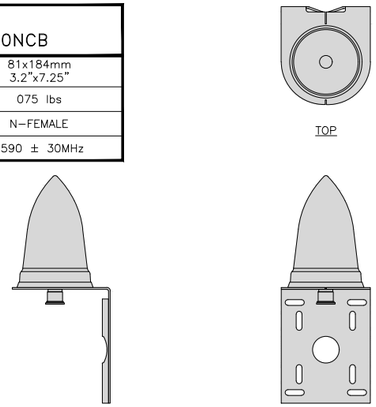
SHEET TITLE

EQUIPMENT DETAILS

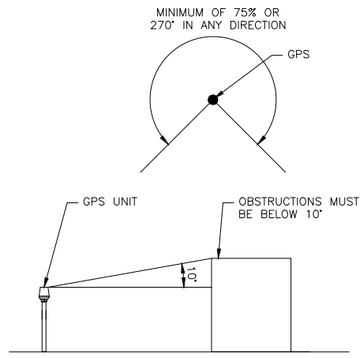
SHEET NUMBER

A-4

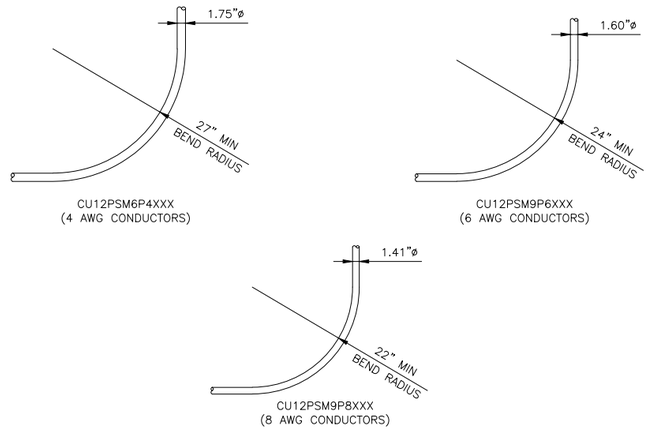
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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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CHAD D. TUTTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
12/15/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CDD	CDD	CDD

RFDS REV #: 1

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A&E PROJECT NUMBER

149481.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

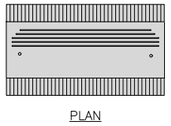
SHEET TITLE

EQUIPMENT DETAILS

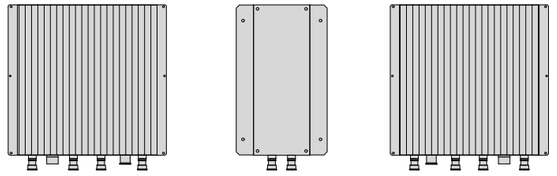
SHEET NUMBER

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

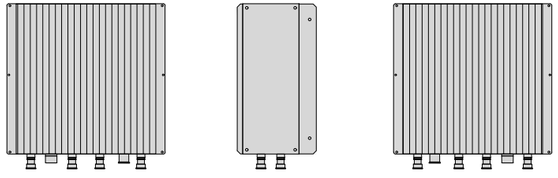


BACK SIDE FRONT

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

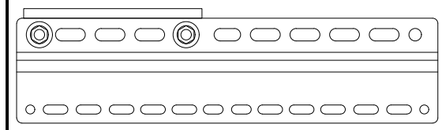


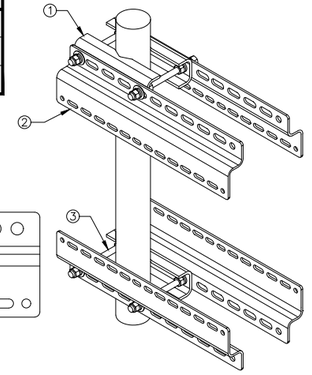
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"

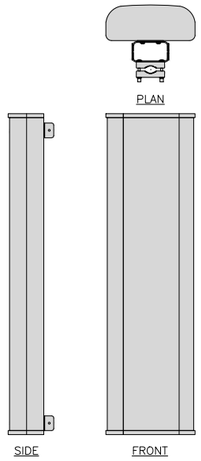




NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

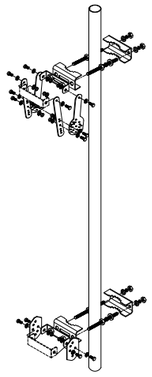
ANTENNA DETAIL | NO SCALE | 4

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

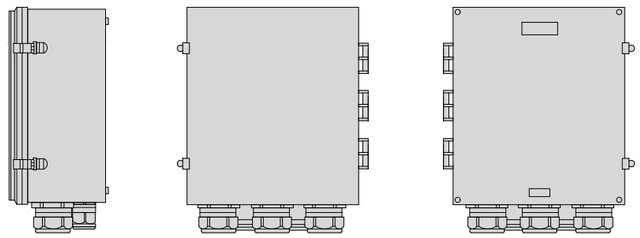


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

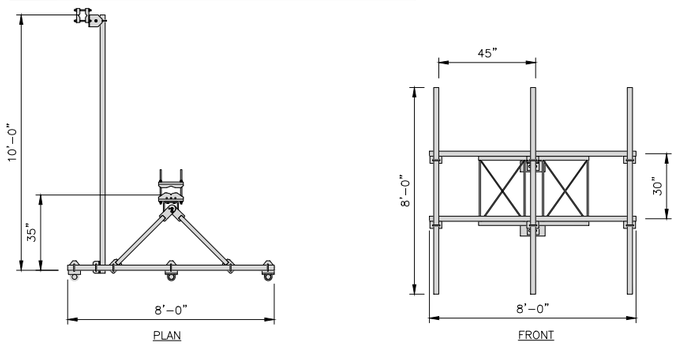


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



PLAN FRONT

ANTENNA FRAME DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

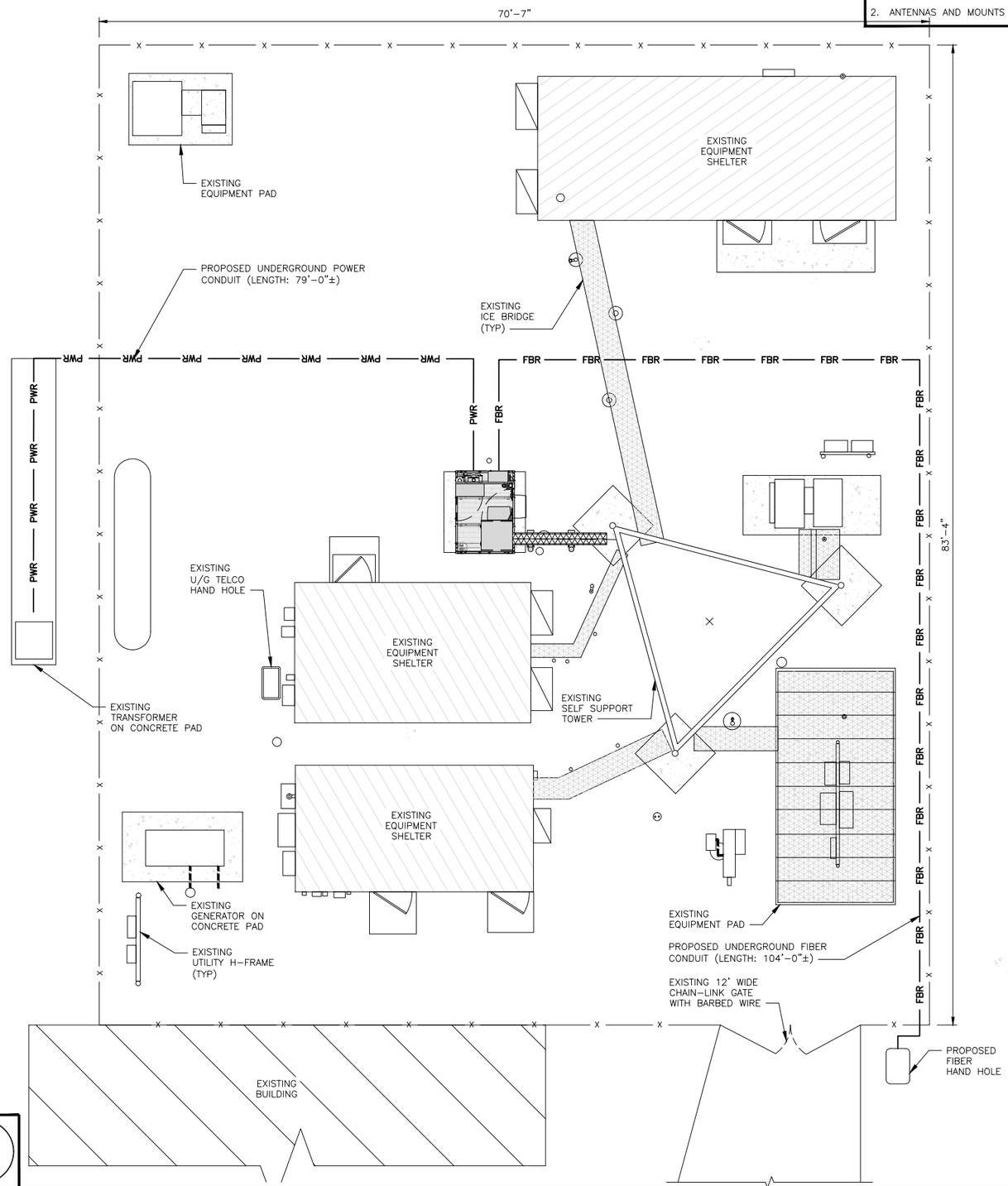
EQUIPMENT DETAILS

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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2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

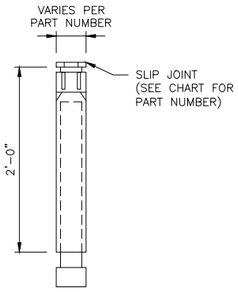
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

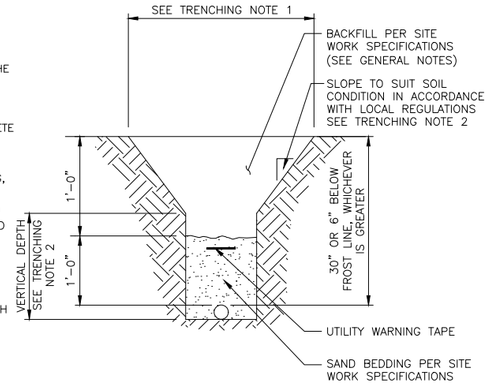


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

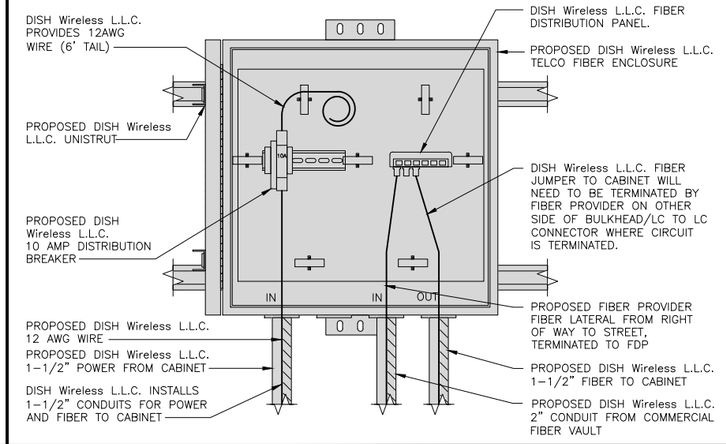
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

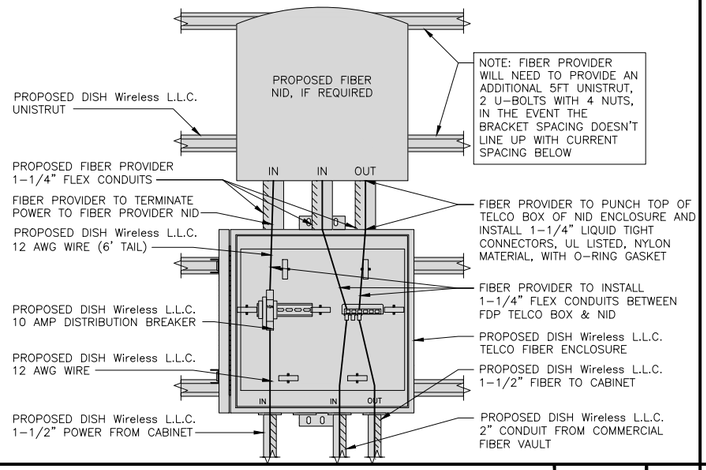
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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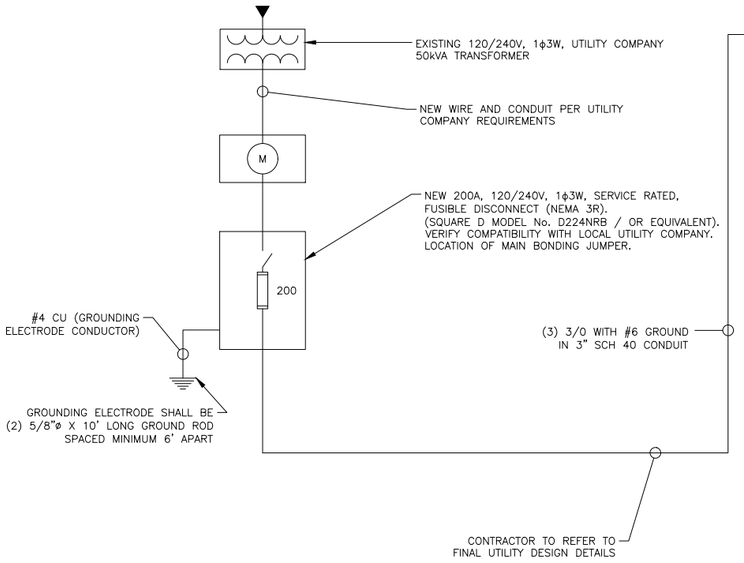
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

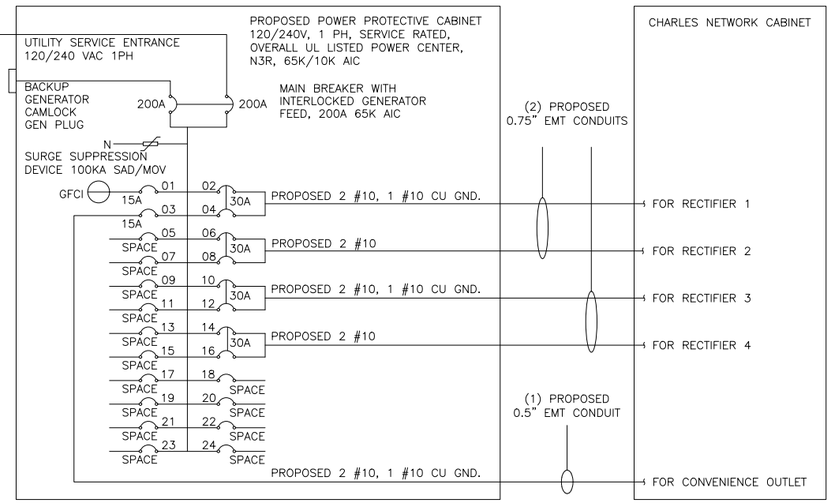
SHEET TITLE

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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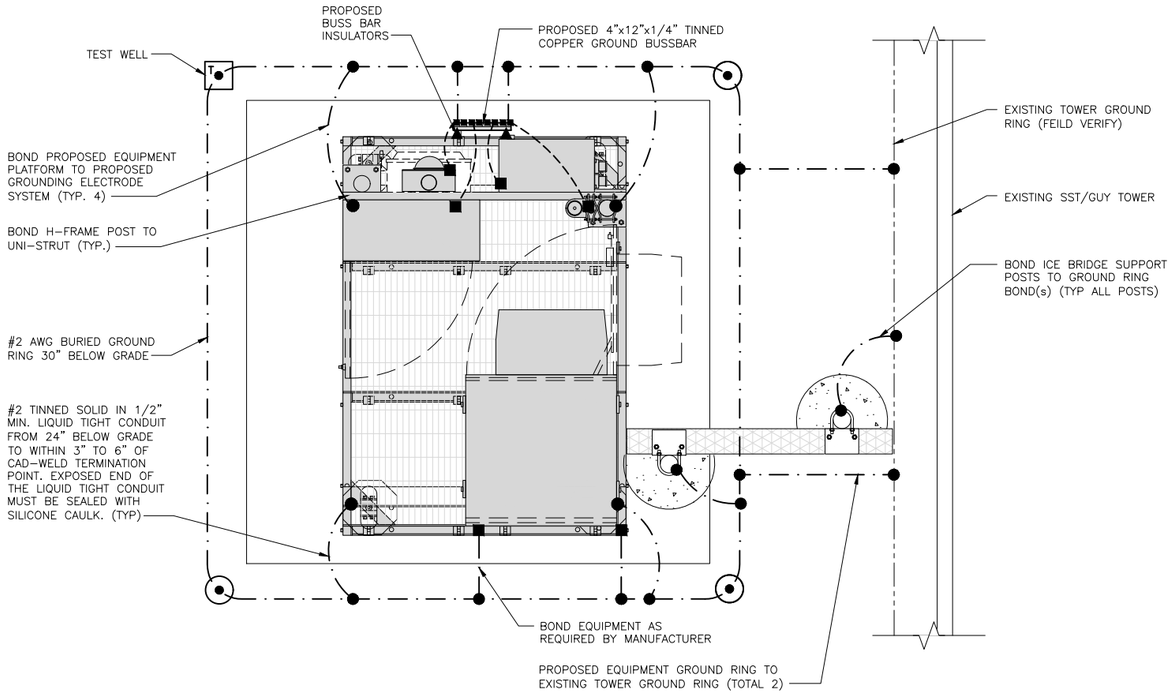
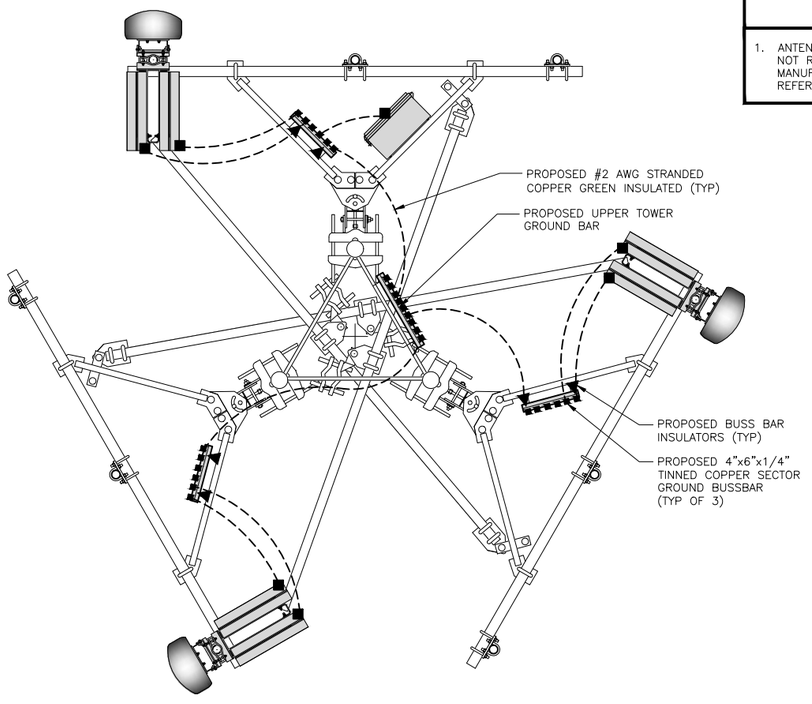
CT 06096

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

- 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 TOWER STEEL.

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

GROUNDING KEY NOTES | NO SCALE | 3

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STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
12/15/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CDD	CDD	CDD

RFDS REV #: 1

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A&E PROJECT NUMBER

149481.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

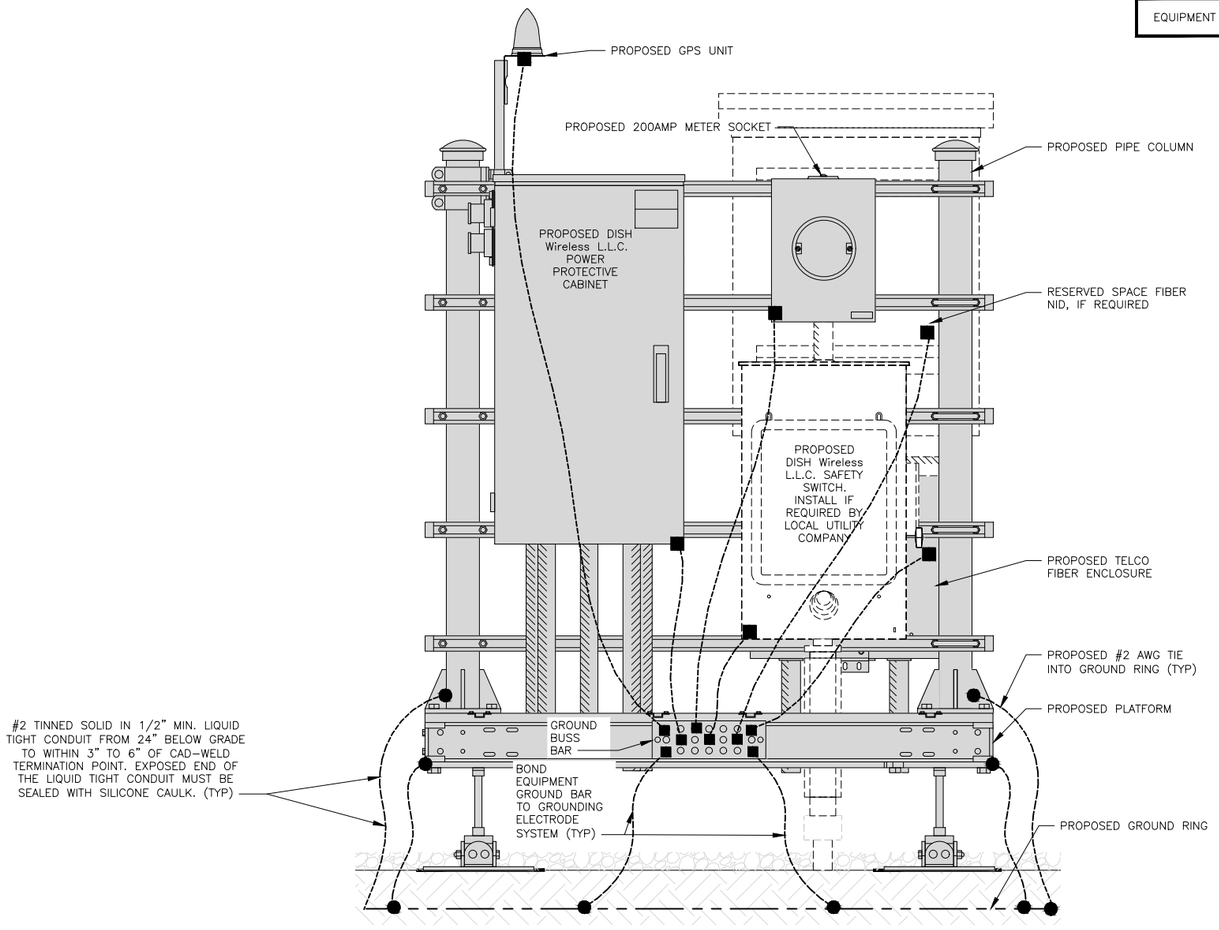
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

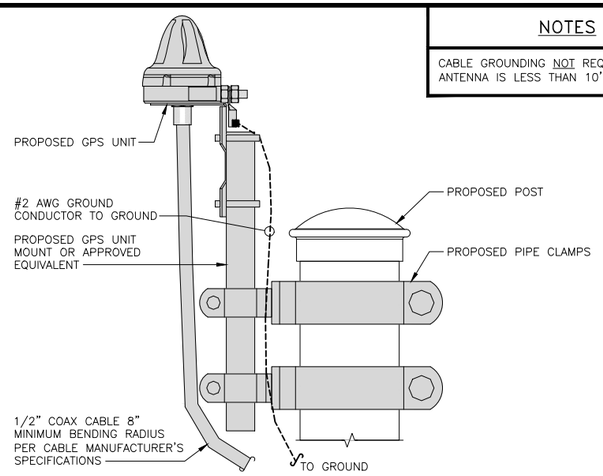
EQUIPMENT CABINET OMITTED FOR CLARITY



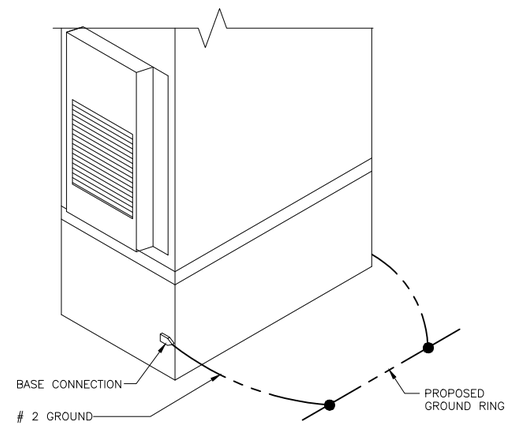
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

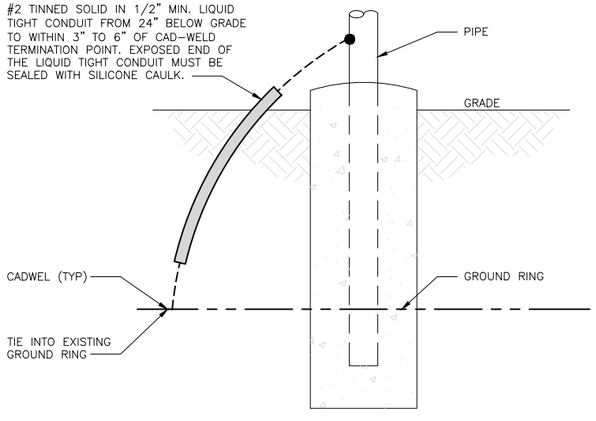
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



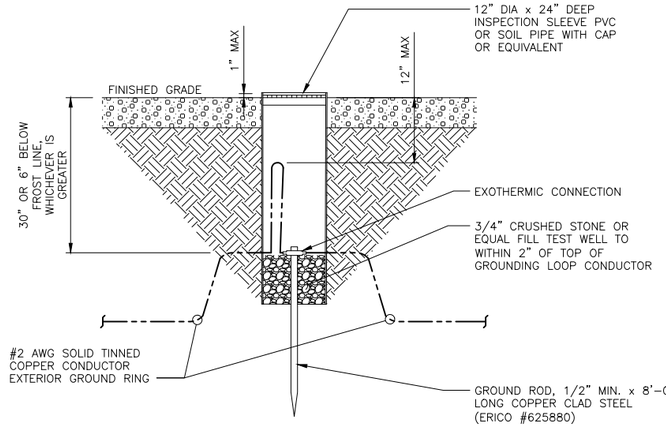
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



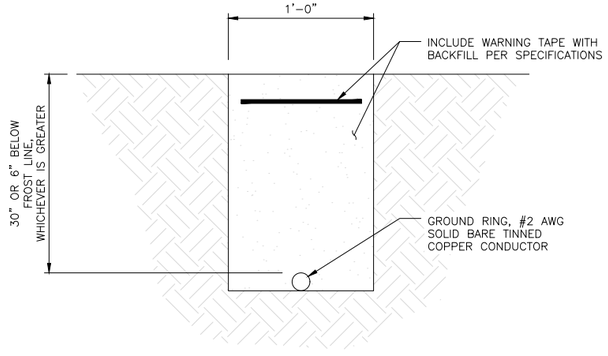
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

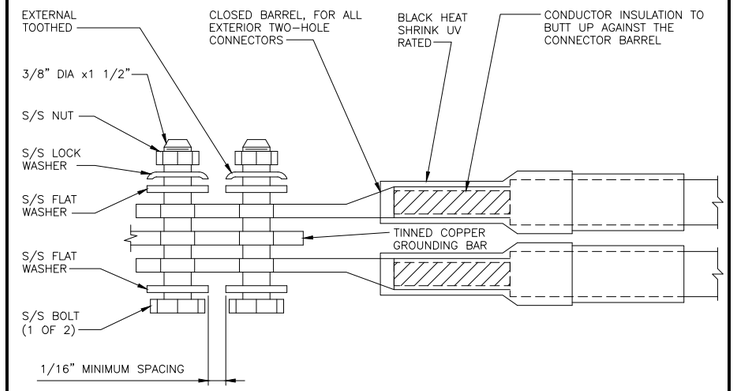
GROUNDING DETAILS

SHEET NUMBER

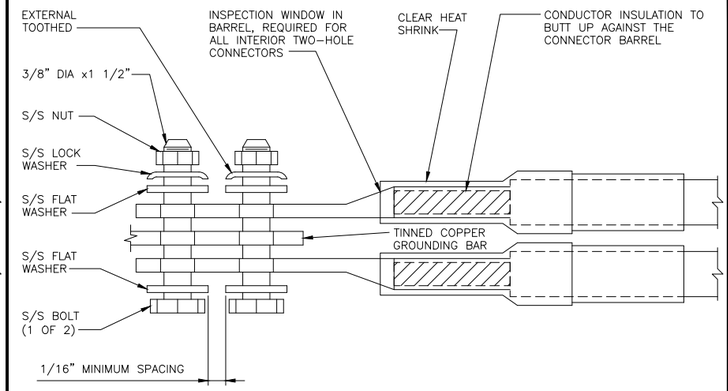
G-2

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).

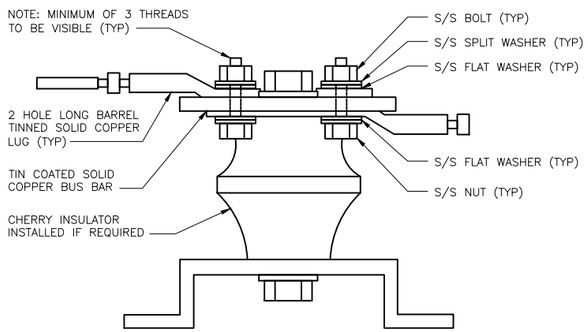
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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WINDSOR LOCKS,
CT 06096

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

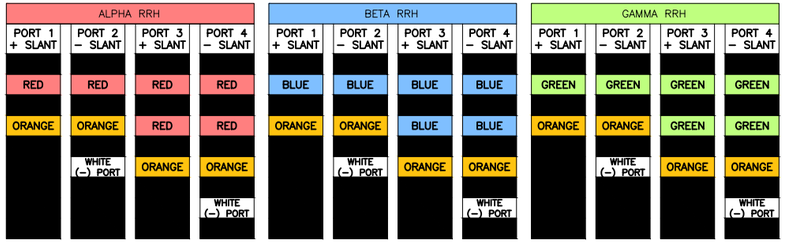
G-3

RF JUMPER COLOR CODING

3/4" TAPE WIDTHS WITH 3/4" SPACING

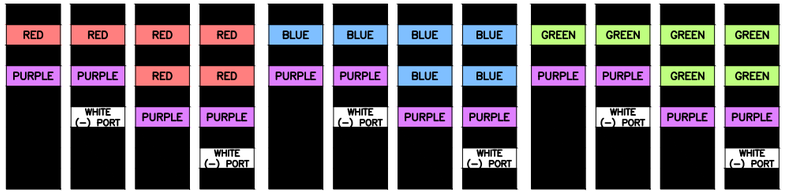
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

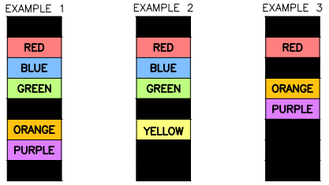


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

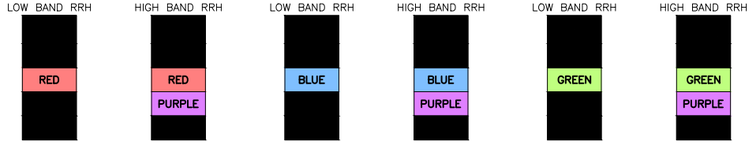
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS



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

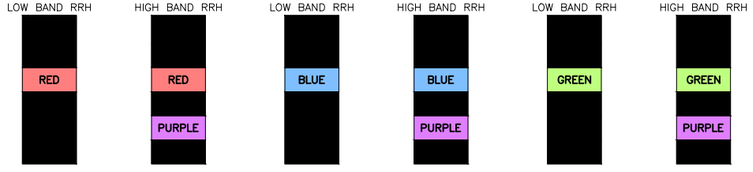
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

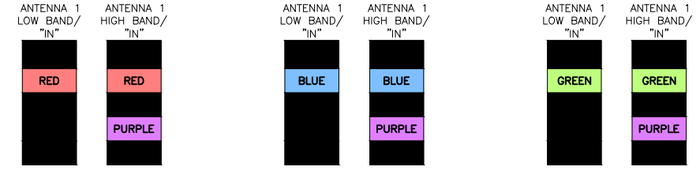


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



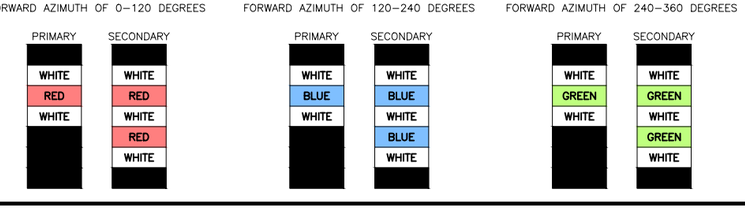
RET MOTORS AT ANTENNAS



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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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

RF
CABLE COLOR CODE

SHEET NUMBER

RF-1

LEGEND

EXOTHERMIC CONNECTION	
MECHANICAL CONNECTION	
BUSS BAR INSULATOR	
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	T
EXOTHERMIC WITH INSPECTION SLEEVE	
GROUNDING BAR	
GROUND ROD	
TEST GROUND ROD WITH INSPECTION SLEEVE	T
SINGLE POLE SWITCH	$
DUPLEX RECEPTACLE	
DUPLEX GFCI RECEPTACLE	GFCI
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8	F
SMOKE DETECTION (DC)	SD
EMERGENCY LIGHTING (DC)	
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD	
CHAIN LINK FENCE	—— x —— x —— x —— x ——
WOOD/WROUGHT IRON FENCE	
WALL STRUCTURE	
LEASE AREA	
PROPERTY LINE (PL)	
SETBACKS	
ICE BRIDGE	
CABLE TRAY	
WATER LINE	—— W —— W —— W —— W —— W ——
UNDERGROUND POWER	—— UGP —— UGP —— UGP —— UGP —— UGP ——
UNDERGROUND TELCO	—— UGT —— UGT —— UGT —— UGT —— UGT ——
OVERHEAD POWER	—— OHP —— OHP —— OHP —— OHP ——
OVERHEAD TELCO	—— OHT —— OHT —— OHT —— OHT ——
UNDERGROUND TELCO/POWER	—— UGT/P —— UGT/P —— UGT/P —— UGT/P ——
ABOVE GROUND POWER	—— AGP —— AGP —— AGP —— AGP —— AGP ——
ABOVE GROUND TELCO	—— AGT —— AGT —— AGT —— AGT —— AGT ——
ABOVE GROUND TELCO/POWER	—— AGT/P —— AGT/P —— AGT/P —— AGT/P ——
WORKPOINT	W.P.
SECTION REFERENCE	XX / X–X
DETAIL REFERENCE	XX / X–X

ABBREVIATIONS

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

dish wireless

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LITTLETON, CO 80120

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STATE OF CONNECTICUT
CHAD TUTTLE
No. 28924
LICENSED
PROFESSIONAL ENGINEER
12/15/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
CDD	CDD	CDD

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER

149481.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2–4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

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.

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

dish wireless

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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2–4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

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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STATE OF CONNECTICUT
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12/15/21

B&T ENGINEERING, INC.
PEC.0001564
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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
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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.

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DRAWN BY:	CHECKED BY:	APPROVED BY:
CDD	CDD	CDD

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/15/21	ISSUED FOR REVIEW
0	12/13/21	ISSUED FOR CONSTRUCTION
1	12/15/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149481.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00132A
2-4 VOLUNTEER DRIVE
WINDSOR LOCKS,
CT 06096

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

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