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

March 22, 2022

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
768 Gilead St, Hebron, CT 06248
Latitude: 41.686314
Longitude: -72.415106
Site# Dish BOBDL00115A

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 768 Gilead St, Hebron, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antennas and six (6) RRUs, at the 115-foot level of the existing 160-foot monopole tower, twelve (12) 1-5/8" coax cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within a proposed 7'x 5' lease area. Included are plans by B + T Group, dated September 30, 2021 Exhibit 10. Also included is a structural analysis prepared by TES, dated September 7, 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 Hebron Planning and Zoning Commission on February 8, 2000. Please see attached Exhibit 6.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Noel Bishop, First Selectman for the Town of Westbrook, David Maiden-Building Official, as well as the tower owner (Crown Castle) and property owner (Toby Hill Farm LLC).

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 160-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 115-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 10.63% 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 Hebron. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit 2, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 115-foot level of the existing 160-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 Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

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

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

Sincerely,

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

Attachments:

cc: Andrew J. Tierney, Town Manager / with attachments
Town Office Bldg. & Horton House, 15 Gilead St.
(Rt. 85), Hebron, CT 06248
Pat Gallagher, Town Planner, AICP / with attachments 5
Town Office Bldg. & Horton House, 15 Gilead St.
(Rt. 85), Hebron, CT 06248
Edward A. & Renee J. Ellis / with attachments
768 Gilead St., Hebron, CT 06248-1317 (SBA address on file)

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 Hebron P&Z #99-11 (2/8/00), CSC Petition 565 June 21, 2002
Exhibit 7	EME Report	EBI Consulting 2/1/22
Exhibit 8	Structural Analysis	TES 9/7/21
Exhibit 9	Mount Analysis	B+T GRP 3/21/22
Exhibit 10	Construction Drawings	B+T GRP 9/30/21

EXHIBIT 1

Copy of Check

EXHIBIT 2
Letter of Intent

March 22, 2022

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

RE: **Notice of Intent to Allow Shared Use of the Existing SBA Telecommunications Site**
Location: 768 Gilead St., Hebron, CT
Dish Wireless Site No: BOBDL00115A
SBA Site No: CT01001-S

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish's shared use of the existing SBA telecommunications site at **768 Gilead St., Hebron, CT**.

SBA Properties, 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 115' for antennas and associated equipment.

Thank you,

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

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

EXHIBIT 3

Fedex Labels

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

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

FedEx

FedEx® Tracking Track Another Shipment Help

776318083880

ADD NICKNAME

ON TIME

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

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

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

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
Wednesday, March 16, 2022		
3:04 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 776318083880	**SERVICE** FedEx Priority Overnight	**WEIGHT** 2 lbs / 0.91 kgs
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 2 lbs / 0.91 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Pak	**SPECIAL HANDLING SECTION** Deliver Weekday
ACTUAL PICK UP	**SHIPMENT-FACTS.COD-DETAIL**	**STANDARD TRANSIT**

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

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

FedEx

FedEx® Tracking Track Another Shipment Help

776318150972

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 12:00 pm

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

TO
Andrew J Tierney
Town of Office Bldg. & Horton House
Town Manager
15 Gilead St (Rt 85)
HEBRON, CT US 06248
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
Wednesday, March 16, 2022		
3:07 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
776318150972

SERVICE
FedEx Priority Overnight

WEIGHT
0.5 lbs / 0.23 kgs

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

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

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

FedEx

FedEx® Tracking Track Another Shipment Help

776318166950

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 12:00 pm

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

TO
Pat Gallagher
Town Office Bldg. & Horton House
Town Planner
15 Gilead St (Rt 85)
HEBRON, CT US 06248
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
Wednesday, March 16, 2022		
3:08 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER
776318166950

SERVICE
FedEx Priority Overnight

WEIGHT
0.5 lbs / 0.23 kgs

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
0.5 lbs / 0.23 kgs

TERMS
Shipper

SHIPPER REFERENCE
10-56-92009-6089

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

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

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

FedEx

FedEx® Tracking Track Another Shipment Help

776318191593

ADD NICKNAME

ON TIME

Scheduled delivery:
Wednesday, March 23, 2022 before 12:00 pm

PICKED UP
WESTBOROUGH, MA

GET STATUS UPDATES

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

TO
Edward A. & Renee J. Ellis
768 Gilead St
HEBRON, CT US 06248
508-251-0720

MANAGE DELIVERY

Travel History | Shipment Facts

Travel History

TIME ZONE
Local Scan Time

Tuesday, March 22, 2022		
3:58 PM	WESTBOROUGH, MA	Picked up Tendered at FedEx Office
Wednesday, March 16, 2022		
3:09 PM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 776318191593	**SERVICE** FedEx Priority Overnight	**WEIGHT** 0.5 lbs / 0.23 kgs
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 0.5 lbs / 0.23 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Envelope	**SPECIAL HANDLING SECTION** Deliver Weekday
ACTUAL PICK UP	**SHIPMENT-FACTS.COD-DETAIL**	**STANDARD TRANSIT**

EXHIBIT 4

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.

Information on the Property Records for the Municipality of Hebron was last updated on 12/13/2021.

Parcel Information

Location:	768 GILEAD ST	Property Use:	Residential	Primary Use:	Residential
Unique ID:	837	Map Block Lot:	44-27	Acres:	93.42
490 Acres:	91.91	Zone:	R-1	Volume / Page:	0568/0591
Developers Map / Lot:	26/38	Census:	5261		

Value Information

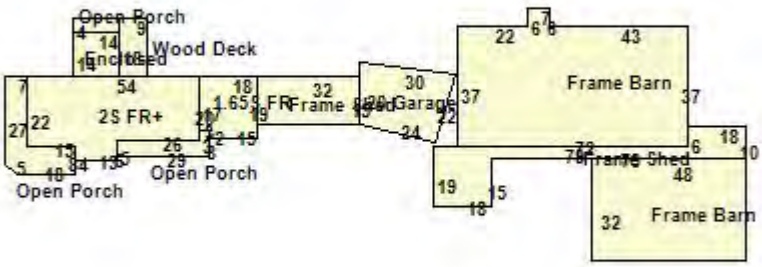
	Appraised Value	Assessed Value
Land	353,131	68,290
Buildings	230,669	161,470
Detached Outbuildings	240,652	168,460

	Appraised Value	Assessed Value
Total	824,452	398,220

Owner's Information

Owner's Data
ELLIS EDWARD A & RENEE J L/U MAPLELEAF FARM LAND TRUST LLC 768 GILEAD ST HEBRON CT 06248

Building 1



Building Use:	Single Family	Style:	Colonial	Living Area:	2,930
Stories:	2.00	Construction:	Wood Frame	Year Built:	1850
Total Rooms:	10	Bedrooms:	4	Full Baths:	2
Half Baths:	0	Fireplaces:	0	Heating:	Caste Iron
Fuel:	Oil	Cooling Percent:	0	Basement Area:	1,188
Basement Finished Area:	0	Basement Garages:	0	Roof Material:	Arch Shingles
Siding:	Vinyl Siding	Units:	One w/In Law		

Special Features

Solar Panels	200

Attached Components

Type:	Year Built:	Area:
Frame Barn	1850	1,536
Frame Barn	1850	2,706
Wood Deck	1850	162
Garage	1850	556
Enclosed Porch	1850	196
Open Porch	1850	154
Open Porch	1850	56
Open Porch	1850	329
Frame Shed	1850	766
Frame Shed	1850	480

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Frame Shed	1850	0.00	0.00	4,800
Frame Shed	1950	0.00	0.00	8,736
Frame Shed	1950	0.00	0.00	720
Frame Shed	2008	0.00	0.00	4,000
Frame Shed	1951	0.00	0.00	154
Frame Shed	1982	0.00	0.00	3,888
Frame Shed	2004	0.00	0.00	2,080
Frame Shed	1951	0.00	0.00	1,430
Frame Shed	1967	0.00	0.00	14,644

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
ELLIS EDWARD A & RENEE J L/U	0568	0591	05/18/2020	Quit Claim	$0
ELLIS EDWARD A & RENEE J	0167	0653	08/08/1994		$0
ELLIS KENNETH W	0128	0107	08/17/1987		$0

Building Permits

Permit Number	Permit Type	Date Opened	Reason
2021-0424	Outbuilding/Yard Item	08/05/2021	14 X 18 STRUCTURE
27404	Heating	12/18/2018	PROPANE GAS HEATER IN GARAGE
26917	Solar Panels	02/22/2018	200 PANEL SOLAR SYSTEM; INSTALLED ON FARM ROOF
25545	Outbuilding/Yard Item	08/05/2015	
21084	Outbuilding/Yard Item	05/16/2013	
2011-20526	Electrical	06/15/2011	UPGRADE SERVICE
2011-20457	Roof	05/18/2011	INSTLL PV SYSTEM

Permit Number	Permit Type	Date Opened	Reason
2010-1522	Mechanical	02/24/2010	RMV UG TANK
08-0476	Outbuilding/Yard Item	05/20/2008	
11766	Mechanical	07/30/2002	

EXHIBIT 5

Property Map

v1.14 - New Features

Town of Hebron, Connecticut

Web GIS Maps and Online Property Information

by MainStreetGIS, LLC Town Website

User Guide Feedback Disclaimer

Base Map: Town Base Map

768 GILEAD ST

Address | Parcel ID | Owner | Google

GIS Map | Street View | Tax Maps | Other Maps | GIS Links

Layers | Property | Selection

768 GILEAD ST

44-27

Zoom To

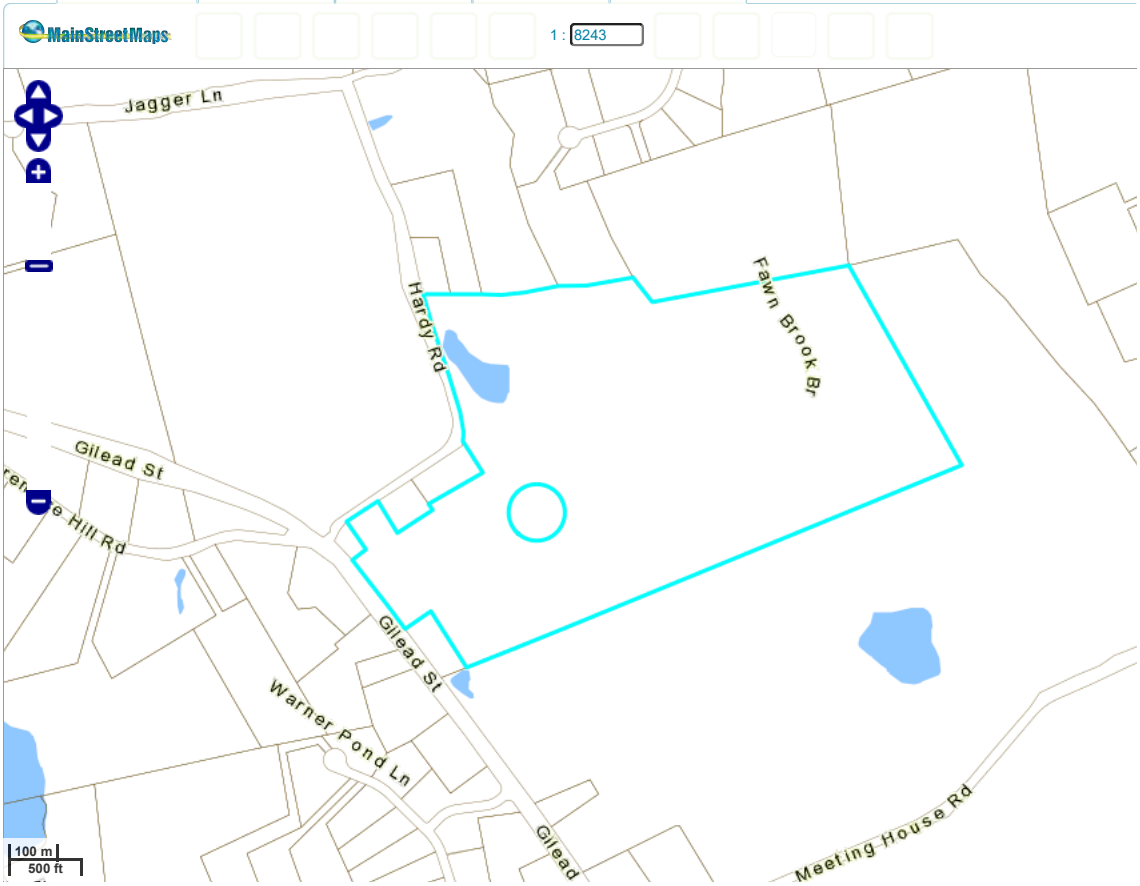
External Property Card

Abutters List

Tax Map

Property List

Report an Issue



Google Maps 768 Gilead St

Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 200 ft

EXHIBIT 6

Zoning Approval

Petition No. 565
SBA Properties Inc.
Hebron, Connecticut
Staff Report
June 21, 2002

On June 19, 2002, Connecticut Siting Council (Council) member Gerald J. Heffernan with Robert Mercier of Council staff conducted an inspection of an existing 160-foot stealth monopole owned and operated by SBA Properties Inc. (SBA) and located at 768 Gilead Street in Hebron, Connecticut. SBA seeks a declaratory ruling from the Council that no Certificate of Environmental Compatibility and Public Need (Certificate) is required this existing telecommunications facility. SBA also requests that the Council approve the proposed shared use of this facility by AT&T Wireless PCS, LLC (AT&T).

This petition was filed in response to the Council's letter to municipalities dated January 25, 2002. The letter requested that the owners of speculation and PCS towers which received municipal approval in the period between July 10 and December 17, 2001 submit a petition to the Council for a declaratory ruling as to whether such towers have a substantial adverse environmental effect. A tower application for this facility was filed with the town of Hebron on March 30, 2001. On October 16, 2001, the planning and zoning commission approved the construction of the tower, disguised as a flagpole.

The existing facility consists of a 160-foot stealth monopole located within a fenced, graveled compound. The 70-foot by 80-foot compound is located within a 100-foot by 100-foot lease area. The tower is designed for five telecommunication carriers. No carriers are currently located at the site. The facility is located on an active dairy farm zoned R-1, residential. Abutting properties include agricultural land to the north and west and rural residential to the east and south.

AT&T proposes to install six panel antennas at the 145-foot level and install two equipment cabinets on a concrete pad at the base of the tower. A structural analysis report indicates the tower can accommodate the proposed antenna loading.

The calculated worst-case radio frequency (RF) power density level for proposed telecommunications operations at the site would be approximately 6.8% of the applicable American National Standards Institute standard for exposure to uncontrolled environments.

SBA contends that the existing tower and proposed-shared use the tower and associated building compound would not cause a substantial adverse environmental effect, and therefore, no certificate is required.

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: BOBDL00115A

768 Gilead Street
Hebron, Connecticut 06248

February 1, 2022

EBI Project Number: 6222000573

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**10.63%**

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

February 1, 2022

Dish Wireless

Emissions Analysis for Site: BOBDL00115A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **768 Gilead Street** in **Hebron, 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 Wireless antenna facility located at 768 Gilead Street in Hebron, 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 Commscope FFVV-65B-R3 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the Commscope FFVV-65B-R3 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the Commscope FFVV-65B-R3 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 115 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:	Commscope FFVV-65B-R3	Make / Model:	Commscope FFVV-65B-R3	Make / Model:	Commscope FFVV-65B-R3
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:	17.55 dBd / 22.05 dBd / 22.05 dBd	Gain:	17.55 dBd / 22.05 dBd / 22.05 dBd	Gain:	17.55 dBd / 22.05 dBd / 22.05 dBd
Height (AGL):	115 feet	Height (AGL):	115 feet	Height (AGL):	115 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):	4,956.89	ERP (W):	4,956.89	ERP (W):	4,956.89
Antenna A1 MPE %:	**1.91%**	Antenna B1 MPE %:	**1.91%**	Antenna C1 MPE %:	**1.91%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.91%
AT&T	7.25%
Verizon	1.47%
Site Total MPE % :	10.63%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.91%
Dish Wireless Sector B Total:	1.91%
Dish Wireless Sector C Total:	1.91%
Site Total MPE % :	10.63%

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	226.27	115.0	2.74	600 MHz n71	400	0.68%
Dish Wireless 1900 MHz n70	4	506.48	115.0	6.13	1900 MHz n70	1000	0.61%
Dish Wireless 2190 MHz n66	4	506.48	115.0	6.13	2190 MHz n66	1000	0.61%
						Total:	**1.91%**

• 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:	1.91%
Sector B:	1.91%
Sector C:	1.91%
Dish Wireless Maximum MPE % (Sector A):	1.91%
Site Total:	10.63%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.63%** 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 160 ft Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01001-S

Customer Site Name: Hebron

Carrier Name: Dish Wireless (App#: 169180-1)

Carrier Site ID / Name: BOBDL00115A / SBA - CT01001-S

Site Location: 768 Gilead Street

Hebron, Connecticut

Tolland County

Latitude: 41.686314

Longitude: -72.415106

Exp.10/31/2021

09/07/2021

Analysis Result:

Max Structural Usage: 97.8% [Pass]

Max Foundation Usage: 41.0% [Pass]

Report Prepared By : Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 160 ft Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Original structure drawings by Armor Tower, Inc. Job#CT01001-S Dated:12/02/2001
Foundation Drawing	Original foundation drawings by Armor Tower, Inc. Job#CT01001-S Dated:10/24/2001
Geotechnical Report	Geotechnical Report by Jaworski Geotech, Inc. Job#: 00839G Dated:08/31/2001
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.177, S_1 = 0.063

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	150.0	3	Amphenol QXW-634X638XBF-EDIN - Panel	Inside 36" Concealment Canister	(12) 1 5/8"	Verizon
2		6	RFS FD9R6004-2C-3L - Diplexer			
3	145.0	3	KMW AM-X-CD-16-65-00T-RET - Panel	Inside 36" Concealment Canister	(18) 1 1/4"	AT&T
4		6	Cci DTMABP7819VG12A TMA			
5	135.0	6	Kaelus TMA2117F00V1-1			
6		3	Quintel QS66512-2 - Panel			

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
7	115.0	3	CommScope - FFVV-65B-R3 - Panel	Inside 36" Concealment Canister	(12) 1 5/8"	Dish Wireless
8		6	CommScope CDX623T-DS-T			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange
Max. Usage:	**52.8%**	**38.3%**	**46.2%**	**97.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1582.5	18.1	55.7

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 0.5008 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

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

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

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

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

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

Usage Diagram - Max Ratio 52.78% at 110.0ft

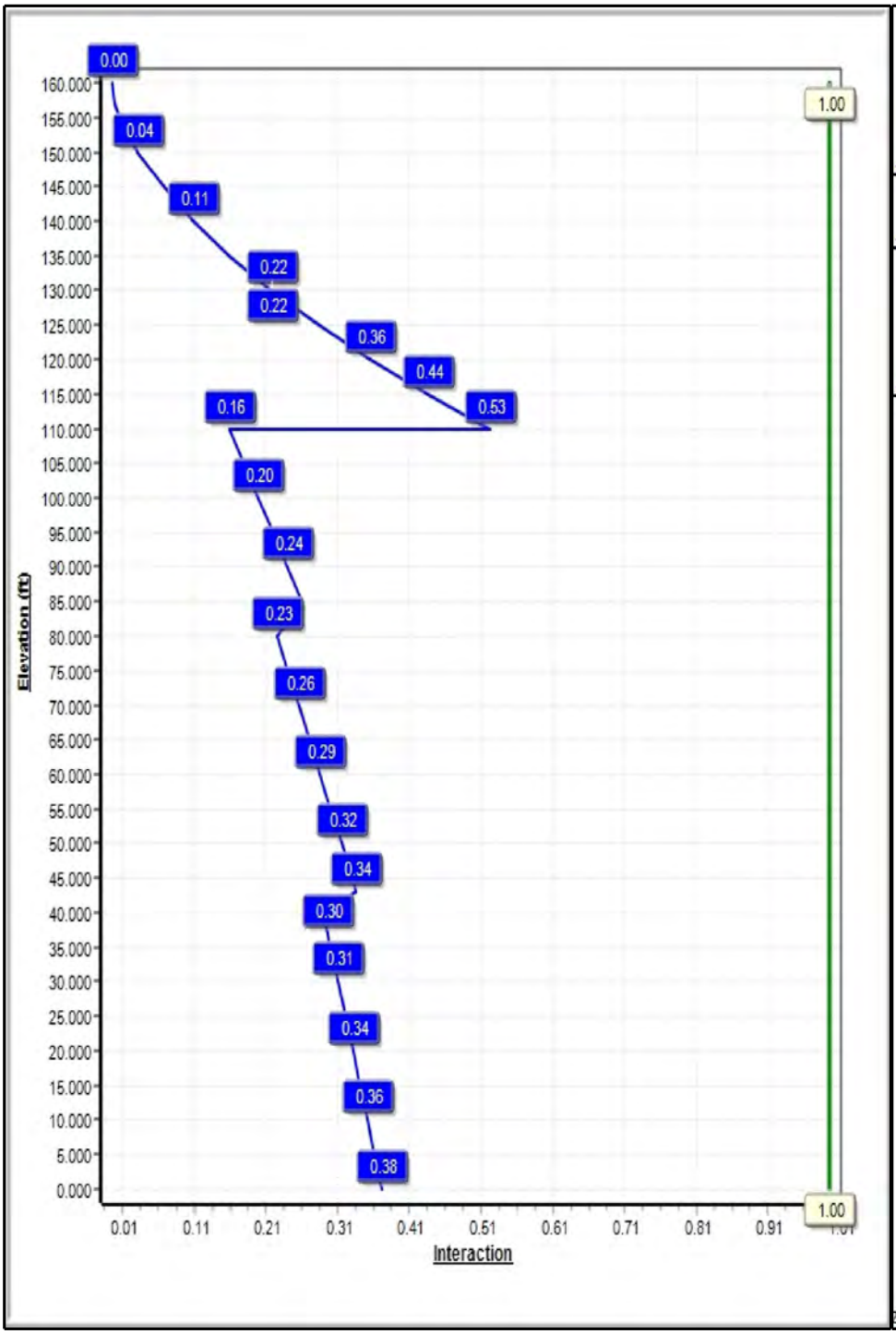
Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron	**Exposure:**	C	
Height:	160.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

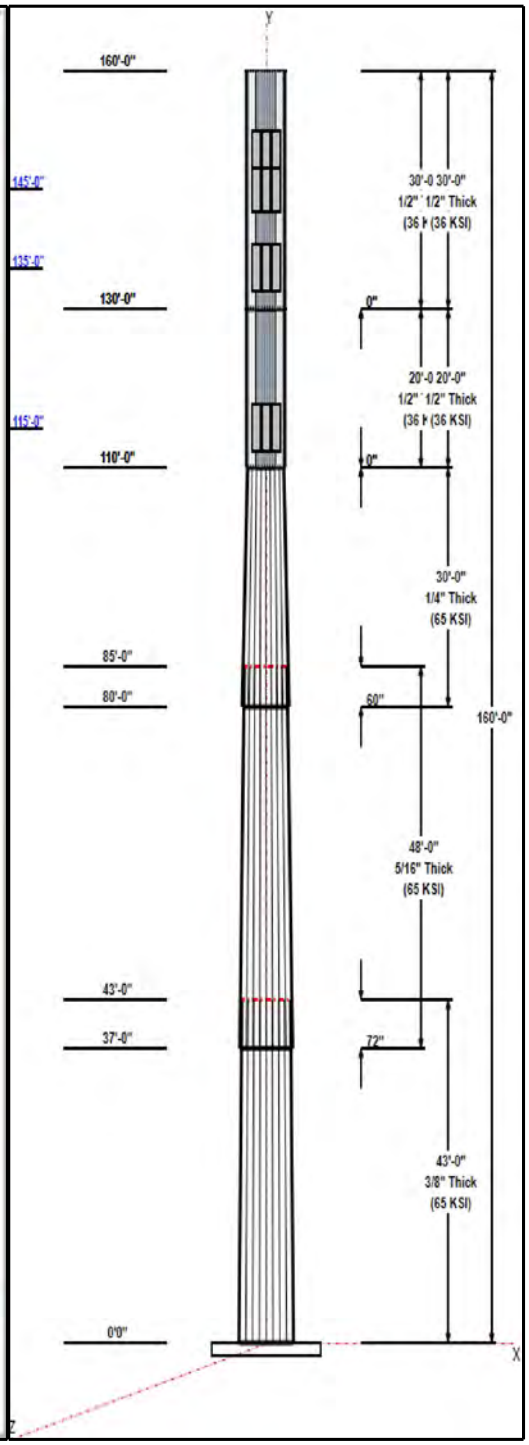
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 101 mph Wind

Iterations: 25





Structure: CT01001-S-SBA

Type: Custom
Site Name: Hebron
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.20383

9/7/2021

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	43.00	44.30	51.60	0.375		0.20383	65
2	48.00	37.78	45.95	0.313	Slip	0.20383	65
3	30.00	34.00	39.14	0.250	Slip	0.20383	65
4	20.00	17.00	17.00	0.500	Butt	0.00000	36
5	30.00	17.00	17.00	0.500	Butt	0.00000	36

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
157.00	157.00	1	Flag	AT&T
150.00	150.00	3	QXW-634X638XBF-EDIN	Verizon
150.00	150.00	6	FD9R6004-2C-3L	Verizon
145.00	145.00	3	AM-X-CD-16-65-00T	AT&T
145.00	145.00	6	DTMABP7819VG12A TMA	AT&T
135.00	135.00	6	TMA2093F00V1-1	AT&T
135.00	135.00	3	QS66512-2	AT&T
115.00	115.00	3	FFVV-65B-R3	Dish Wireless
115.00	115.00	6	Commscope	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	150.00	Inside	1 5/8" Coax	Verizon
0.00	145.00	Inside	1 1/4" Coax	AT&T
0.00	115.00	Inside	1 5/8" Coax	Dish Wireless

Anchor Bolts

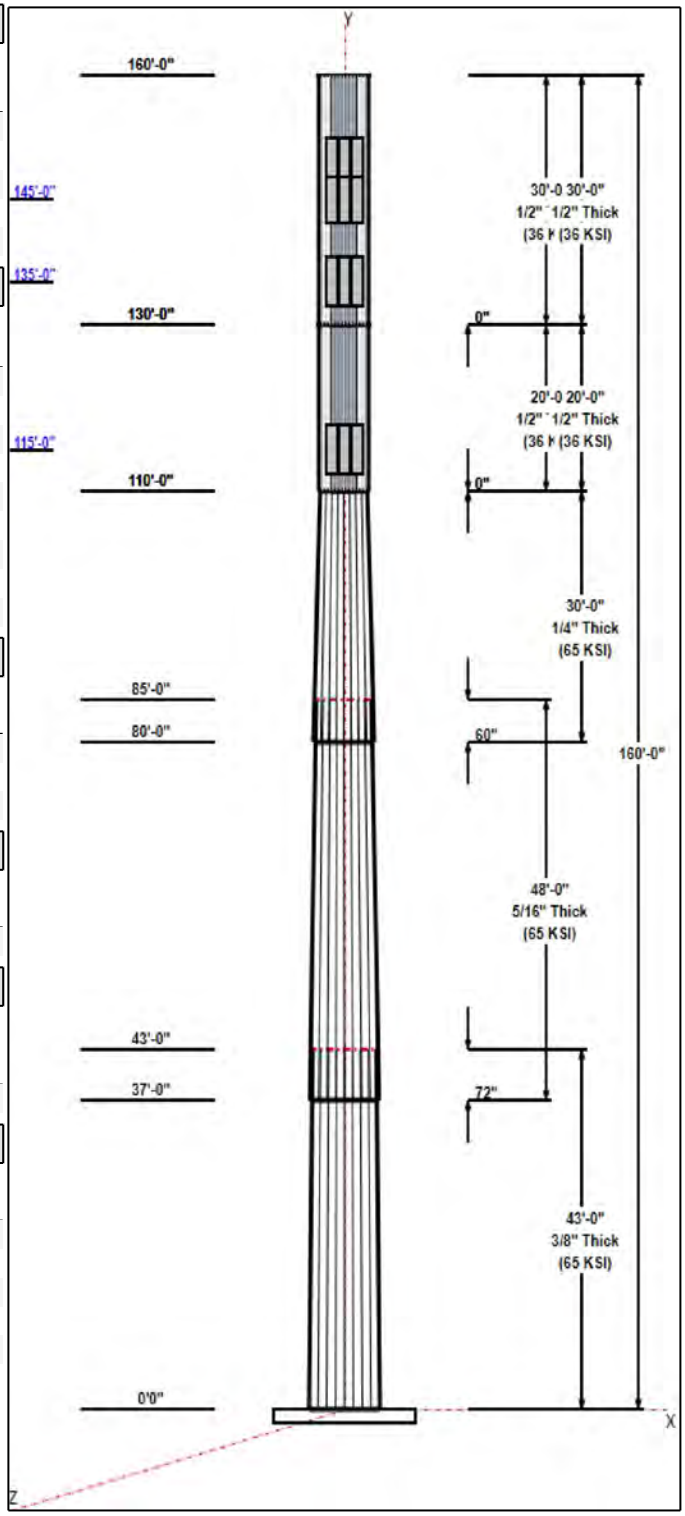
Qty	Specifications	Grade (ksi)	Arrangement
12	2.00" A687	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.0000	62.0	36.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	1582.5	18.1	34.6
0.9D + 1.6W 101 mph Wind	1570.3	18.1	25.9
1.2D + 1.0Di + 1.0Wi 50 mph Wind	611.1	6.4	55.7
1.2D + 1.0E	90.5	0.9	34.6
0.9D + 1.0E	89.7	0.9	25.9
1.0D + 1.0W 60 mph Wind	347.2	4.0	28.8



Structure: CT01001-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Hebron
Height: 160.00 (ft)

9/7/2021

Shaft Properties

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	R	43.000	0.3750	65		0.00	8,158
2	R	48.000	0.3125	65	Slip	72.00	6,600
3	R	30.000	0.2500	65	Slip	60.00	2,902
4	R	20.000	0.5000	36	Flange	0.00	1,764
5	R	30.000	0.5000	36	Flange	0.00	2,646
					Total Shaft Weight:		**22,070**

	Bottom						Top							
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**	**Canister Diam (in)**
1	51.60	0.00	60.97	20212.57	22.85	137.60	44.30	43.00	50.54	11511.4	18.73	118.1	0.203827	0.00
2	45.95	37.00	45.26	11908.97	24.51	147.03	37.78	85.00	35.56	5774.18	18.99	120.9	0.203827	0.00
3	39.14	80.00	30.86	5896.55	26.20	156.56	34.00	110.00	26.01	3529.55	21.88	136.0	0.203827	0.00
4	17.00	110.0	25.92	882.70	0.00	34.00	17.00	130.00	25.92	882.70	0.00	34.00	0.000000	36.00
5	17.00	130.0	25.92	882.70	0.00	34.00	17.00	160.00	25.92	882.70	0.00	34.00	0.000000	36.00

Load Summary

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

Discrete Appurtenances

				No Ice			Ice				
No.	**Elev (ft)**	**Description**	**Qty**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Hor. Ecc. (ft)**	**Vert Ecc (ft)**
1	157.00	Flag	1	200.00	11.49	1.00	218.70	36.179	1.00	0.00	0.00
2	150.00	QXW-634X638XBF-EDIN	3	29.80	0.00	0.79	218.27	0.000	0.79	0.00	0.00
3	150.00	FD9R6004-2C-3L	6	2.60	0.00	0.62	13.30	0.000	0.62	0.00	0.00
4	145.00	AM-X-CD-16-65-00T	3	48.50	0.00	0.75	264.14	0.000	0.75	0.00	0.00
5	145.00	DTMABP7819VG12A TMA	6	19.20	0.00	0.67	53.11	0.000	0.67	0.00	0.00
6	135.00	TMA2093F00V1-1	6	23.10	0.00	1.00	72.84	1.550	1.00	0.00	0.00
7	135.00	QS66512-2	3	111.00	0.00	0.00	427.78	9.880	0.00	0.00	0.00
8	115.00	FFVV-65B-R3	3	43.80	0.00	0.00	319.13	9.719	0.00	0.00	0.00
9	115.00	Commscope CDX623T-DS-T	6	10.10	0.00	0.00	40.98	0.770	0.00	0.00	0.00
		Totals:	**37**	**1,229.30**			**4,988.07**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	150.00	(12) 1 5/8" Coax	0.00	Inside
0.00	145.00	(18) 1 1/4" Coax	0.00	Inside
0.00	115.00	(12) 1 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	51.600	60.968	20212.6	22.85	137.60	74.5	771.5	0.0
5.00		0.3750	50.581	59.755	19030.0	22.37	134.88	75.1	741.0	1027.0
10.00		0.3750	49.562	58.542	17894.5	21.89	132.16	75.6	711.1	1006.4
15.00		0.3750	48.543	57.329	16805.1	21.41	129.45	76.2	681.9	985.7
20.00		0.3750	47.523	56.116	15760.8	20.94	126.73	76.8	653.2	965.1
25.00		0.3750	46.504	54.903	14760.7	20.46	124.01	77.3	625.2	944.4
30.00		0.3750	45.485	53.690	13803.8	19.98	121.29	77.9	597.7	923.8
35.00		0.3750	44.466	52.477	12889.2	19.50	118.58	78.5	570.9	903.2
37.00	Bot - Section 2	0.3750	44.058	51.992	12535.0	19.31	117.49	78.7	560.4	355.5
40.00		0.3750	43.447	51.264	12015.9	19.02	115.86	79.0	544.7	986.0
43.00	Top - Section 1	0.3125	44.724	44.049	10977.0	23.82	143.12	0.0	0.0	972.4
45.00		0.3125	44.316	43.645	10677.4	23.59	141.81	73.6	474.6	298.4
50.00		0.3125	43.297	42.634	9952.6	23.02	138.55	74.3	452.8	734.0
55.00		0.3125	42.278	41.623	9261.4	22.44	135.29	75.0	431.5	716.8
60.00		0.3125	41.259	40.612	8602.9	21.87	132.03	75.7	410.7	699.6
65.00		0.3125	40.240	39.602	7976.4	21.29	128.77	76.4	390.4	682.4
70.00		0.3125	39.221	38.591	7381.0	20.72	125.51	77.0	370.7	665.2
75.00		0.3125	38.202	37.580	6816.1	20.14	122.25	77.7	351.4	648.0
80.00	Bot - Section 3	0.3125	37.182	36.569	6280.7	19.57	118.98	78.4	332.7	630.8
85.00	Top - Section 2	0.2500	38.121	30.049	5445.0	25.48	152.48	0.0	0.0	1131.7
90.00		0.2500	37.102	29.241	5017.2	24.76	148.41	72.3	266.3	504.4
95.00		0.2500	36.083	28.432	4612.3	24.04	144.33	73.1	251.8	490.6
100.00		0.2500	35.063	27.623	4229.9	23.32	140.25	74.0	237.6	476.9
105.00		0.2500	34.044	26.815	3869.1	22.60	136.18	74.8	223.8	463.1
110.00	Top - Section 3	0.2500	33.025	26.006	3529.6	21.88	132.10	75.7	210.5	449.3
110.00	Bot - Section 4	0.5000	17.000	25.918	882.7	10.94	66.05	36.0	103.8	
115.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
120.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
125.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
130.00	Top - Section 4	0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
130.00	Bot - Section 5	0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	
135.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
140.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
145.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
150.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
155.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	441.0
157.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	176.4
160.00		0.5000	17.000	25.918	882.7	0.00	34.00	36.0	103.8	264.6
										22070.1

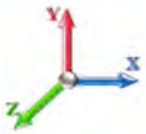
Wind Loading - Shaft

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	406.58	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	398.55	0.650	0.000	5.00	21.616	14.05	521.5	0.0	1232.4
10.00		1.00	0.85	21.088	23.20	390.52	0.650	0.000	5.00	21.185	13.77	511.1	0.0	1207.6
15.00		1.00	0.85	21.088	23.20	382.49	0.650	0.000	5.00	20.754	13.49	500.7	0.0	1182.9
20.00		1.00	0.90	22.375	24.61	385.72	0.650	0.000	5.00	20.323	13.21	520.2	0.0	1158.1
25.00		1.00	0.95	23.451	25.80	386.42	0.650	0.000	5.00	19.891	12.93	533.6	0.0	1133.3
30.00		1.00	0.98	24.369	26.81	385.27	0.650	0.000	5.00	19.460	12.65	542.5	0.0	1108.6
35.00		1.00	1.01	25.172	27.69	382.80	0.650	0.000	5.00	19.029	12.37	548.0	0.0	1083.8
37.00	Bot - Section 2	1.00	1.03	25.469	28.02	381.52	0.650	0.000	2.00	7.491	4.87	218.3	0.0	426.6
40.00		1.00	1.04	25.890	28.48	379.32	0.650	0.000	3.00	11.586	7.53	343.2	0.0	1183.2
43.00	Top - Section 1	1.00	1.06	26.287	28.92	376.84	0.650	0.000	3.00	11.431	7.43	343.8	0.0	1166.8
45.00		1.00	1.07	26.540	29.19	391.74	0.650	0.000	2.00	7.535	4.90	228.8	0.0	358.1
50.00		1.00	1.09	27.135	29.85	387.00	0.650	0.000	5.00	18.534	12.05	575.4	0.0	880.8
55.00		1.00	1.12	27.685	30.45	381.70	0.650	0.000	5.00	18.103	11.77	573.4	0.0	860.1
60.00		1.00	1.14	28.197	31.02	375.93	0.650	0.000	5.00	17.672	11.49	570.1	0.0	839.5
65.00		1.00	1.16	28.676	31.54	369.75	0.650	0.000	5.00	17.241	11.21	565.6	0.0	818.8
70.00		1.00	1.17	29.127	32.04	363.20	0.650	0.000	5.00	16.810	10.93	560.1	0.0	798.2
75.00		1.00	1.19	29.553	32.51	356.34	0.650	0.000	5.00	16.378	10.65	553.7	0.0	777.6
80.00	Bot - Section 3	1.00	1.21	29.958	32.95	349.20	0.650	0.000	5.00	15.947	10.37	546.5	0.0	756.9
85.00	Top - Section 2	1.00	1.22	30.342	33.38	341.81	0.650	0.000	5.00	16.344	10.62	567.3	0.0	1358.1
90.00		1.00	1.24	30.710	33.78	352.79	0.650	0.000	5.00	15.913	10.34	559.1	0.0	605.3
95.00		1.00	1.25	31.061	34.17	345.06	0.650	0.000	5.00	15.482	10.06	550.1	0.0	588.7
100.00		1.00	1.27	31.399	34.54	337.13	0.650	0.000	5.00	15.051	9.78	540.6	0.0	572.2
105.00		1.00	1.28	31.723	34.89	329.01	0.650	0.000	5.00	14.620	9.50	530.6	0.0	555.7
110.00	Top - Section 3	1.00	1.29	32.035	35.24	320.73	0.650	0.000	5.00	14.188	9.22	520.0	0.0	539.2
115.00	Appurtenance(s)	1.00	1.30	32.336	35.57	345.93	0.600	0.000	5.00	15.000	9.00	512.2	0.0	586.8
120.00		1.00	1.32	32.627	35.89	347.48	0.600	0.000	5.00	15.000	9.00	516.8	0.0	586.8
125.00		1.00	1.33	32.909	36.20	348.98	0.600	0.000	5.00	15.000	9.00	521.3	0.0	586.8
130.00	Top - Section 4	1.00	1.34	33.182	36.50	350.42	0.600	0.000	5.00	15.000	9.00	525.6	0.0	586.8
135.00	Appurtenance(s)	1.00	1.35	33.446	36.79	351.81	0.600	0.000	5.00	15.000	9.00	529.8	0.0	586.8
140.00		1.00	1.36	33.703	37.07	353.16	0.600	0.000	5.00	15.000	9.00	533.9	0.0	586.8
145.00	Appurtenance(s)	1.00	1.37	33.953	37.35	354.47	0.600	0.000	5.00	15.000	9.00	537.8	0.0	586.8
150.00	Appurtenance(s)	1.00	1.38	34.196	37.62	355.74	0.600	0.000	5.00	15.000	9.00	541.7	0.0	586.8
155.00		1.00	1.39	34.433	37.88	356.97	0.600	0.000	5.00	15.000	9.00	545.4	0.0	586.8
157.00	Appurtenance(s)	1.00	1.39	34.526	37.98	357.45	0.600	0.000	2.00	6.000	3.60	218.8	0.0	234.7
160.00		1.00	1.40	34.664	38.13	358.16	0.600	0.000	3.00	9.000	5.40	329.4	0.0	352.1
								Totals:	**160.00**			**17,336.6**		**27,060.2**

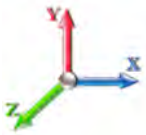
Discrete Appurtenance Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	Flag	1	34.526	37.979	1.00	1.00	11.49	240.00	0.000	0.000	698.21	0.00	0.00
2	150.00	QXW-634X638XBF-EDIN	3	34.196	37.616	0.79	1.00	0.00	107.28	0.000	0.000	0.00	0.00	0.00
3	150.00	FD9R6004-2C-3L	6	34.196	37.616	0.62	1.00	0.00	18.72	0.000	0.000	0.00	0.00	0.00
4	145.00	AM-X-CD-16-65-00T	3	33.953	37.349	0.75	1.00	0.00	174.60	0.000	0.000	0.00	0.00	0.00
5	145.00	DTMABP7819VG12A	6	33.953	37.349	0.67	1.00	0.00	138.24	0.000	0.000	0.00	0.00	0.00
6	135.00	TMA2093F00V1-1	6	33.446	36.791	1.00	1.00	0.00	166.32	0.000	0.000	0.00	0.00	0.00
7	135.00	QS66512-2	3	33.446	36.791	0.00	1.00	0.00	399.60	0.000	0.000	0.00	0.00	0.00
8	115.00	FFVV-65B-R3	3	32.336	35.570	0.00	1.00	0.00	157.68	0.000	0.000	0.00	0.00	0.00
9	115.00	Commscope	6	32.336	35.570	0.00	1.00	0.00	72.72	0.000	0.000	0.00	0.00	0.00
							Totals:		**1,475.16**			**698.21**		

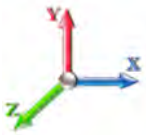
Total Applied Force Summary

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		521.47	1453.43	0.00	0.00
10.00		511.07	1428.66	0.00	0.00
15.00		500.66	1403.90	0.00	0.00
20.00		520.19	1379.13	0.00	0.00
25.00		533.64	1354.37	0.00	0.00
30.00		542.50	1329.60	0.00	0.00
35.00		547.98	1304.84	0.00	0.00
37.00		218.25	515.00	0.00	0.00
40.00		343.17	1315.82	0.00	0.00
43.00		343.76	1299.47	0.00	0.00
45.00		228.76	446.50	0.00	0.00
50.00		575.36	1101.80	0.00	0.00
55.00		573.36	1081.16	0.00	0.00
60.00		570.06	1060.53	0.00	0.00
65.00		565.60	1039.89	0.00	0.00
70.00		560.12	1019.25	0.00	0.00
75.00		553.74	998.61	0.00	0.00
80.00		546.54	977.98	0.00	0.00
85.00		567.34	1579.10	0.00	0.00
90.00		559.06	826.29	0.00	0.00
95.00		550.14	809.78	0.00	0.00
100.00		540.62	793.27	0.00	0.00
105.00		530.55	776.76	0.00	0.00
110.00		519.97	760.25	0.00	0.00
115.00	(9) attachments	512.20	1038.20	0.00	0.00
120.00		516.81	732.92	0.00	0.00
125.00		521.27	732.92	0.00	0.00
130.00		525.60	732.92	0.00	0.00
135.00	(9) attachments	529.79	1298.84	0.00	0.00
140.00		533.86	732.92	0.00	0.00
145.00	(9) attachments	537.82	1045.76	0.00	0.00
150.00	(9) attachments	541.67	787.64	0.00	0.00
155.00		545.42	586.76	0.00	0.00
157.00	(1) attachments	916.97	474.70	0.00	0.00
160.00		329.45	352.06	0.00	0.00
	Totals:	**18,034.78**	**34,571.08**	**0.00**	**0.00**

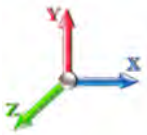
Calculated Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.55	-18.07	0.00	-1582.4	0.00	1582.46	4089.17	2044.59	8611.68	4312.24	0.00	0.000	0.000	0.375
5.00	-33.07	-17.61	0.00	-1492.1	0.00	1492.12	4038.13	2019.07	8333.76	4173.08	0.06	-0.108	0.000	0.366
10.00	-31.61	-17.15	0.00	-1404.0	0.00	1404.08	3985.86	1992.93	8057.66	4034.82	0.23	-0.216	0.000	0.356
15.00	-30.17	-16.70	0.00	-1318.3	0.00	1318.32	3932.35	1966.18	7783.54	3897.56	0.52	-0.325	0.000	0.346
20.00	-28.77	-16.23	0.00	-1234.8	0.00	1234.82	3877.61	1938.81	7511.55	3761.36	0.91	-0.433	0.000	0.336
25.00	-27.39	-15.73	0.00	-1153.6	0.00	1153.68	3821.65	1910.82	7241.85	3626.31	1.43	-0.540	0.000	0.325
30.00	-26.04	-15.23	0.00	-1075.0	0.00	1075.02	3764.45	1882.23	6974.60	3492.48	2.05	-0.648	0.000	0.315
35.00	-24.72	-14.69	0.00	-998.90	0.00	998.90	3706.02	1853.01	6709.94	3359.96	2.79	-0.755	0.000	0.304
37.00	-24.19	-14.49	0.00	-969.51	0.00	969.51	3682.31	1841.15	6604.84	3307.33	3.11	-0.798	0.000	0.300
40.00	-22.87	-14.15	0.00	-926.04	0.00	926.04	3646.36	1823.18	6448.04	3228.81	3.63	-0.863	0.000	0.293
43.00	-21.56	-13.81	0.00	-883.57	0.00	883.57	2909.03	1454.52	5312.97	2660.44	4.20	-0.927	0.000	0.340
45.00	-21.10	-13.60	0.00	-855.95	0.00	855.95	2892.96	1446.48	5234.78	2621.28	4.59	-0.970	0.000	0.334
50.00	-19.98	-13.05	0.00	-787.94	0.00	787.94	2851.91	1425.95	5040.14	2523.81	5.67	-1.079	0.000	0.319
55.00	-18.89	-12.49	0.00	-722.71	0.00	722.71	2809.63	1404.81	4846.84	2427.02	6.86	-1.187	0.000	0.305
60.00	-17.82	-11.93	0.00	-660.27	0.00	660.27	2766.12	1383.06	4655.04	2330.98	8.16	-1.294	0.000	0.290
65.00	-16.77	-11.37	0.00	-600.64	0.00	600.64	2721.38	1360.69	4464.89	2235.77	9.57	-1.398	0.000	0.275
70.00	-15.75	-10.81	0.00	-543.81	0.00	543.81	2675.40	1337.70	4276.56	2141.46	11.09	-1.500	0.000	0.260
75.00	-14.75	-10.25	0.00	-489.76	0.00	489.76	2628.20	1314.10	4090.19	2048.13	12.71	-1.600	0.000	0.245
80.00	-13.77	-9.70	0.00	-438.50	0.00	438.50	2579.77	1289.88	3905.94	1955.87	14.44	-1.696	0.000	0.230
85.00	-12.20	-9.11	0.00	-389.99	0.00	389.99	1931.95	965.98	3010.11	1507.29	16.27	-1.790	0.000	0.265
90.00	-11.37	-8.54	0.00	-344.45	0.00	344.45	1902.21	951.11	2883.49	1443.89	18.19	-1.881	0.000	0.245
95.00	-10.57	-7.98	0.00	-301.76	0.00	301.76	1871.24	935.62	2757.57	1380.83	20.21	-1.972	0.000	0.224
100.00	-9.79	-7.43	0.00	-261.86	0.00	261.86	1839.04	919.52	2632.50	1318.21	22.33	-2.059	0.000	0.204
105.00	-9.02	-6.88	0.00	-224.74	0.00	224.74	1805.60	902.80	2508.44	1256.08	24.53	-2.141	0.000	0.184
110.00	-8.27	-6.34	0.00	-190.35	0.00	190.35	1770.94	885.47	2385.54	1194.54	26.81	-2.217	0.000	0.164
110.00	-8.27	-6.34	0.00	-190.35	0.00	190.35	839.75	419.87	560.01	367.65	26.81	-2.217	0.000	0.528
115.00	-7.24	-5.81	0.00	-158.64	0.00	158.64	839.75	419.87	560.01	367.65	29.17	-2.288	0.000	0.440
120.00	-6.51	-5.28	0.00	-129.60	0.00	129.60	839.75	419.87	560.01	367.65	31.69	-2.520	0.000	0.360
125.00	-5.79	-4.75	0.00	-103.18	0.00	103.18	839.75	419.87	560.01	367.65	34.43	-2.708	0.000	0.288
130.00	-5.07	-4.20	0.00	-79.45	0.00	79.45	839.75	419.87	560.01	367.65	37.35	-2.855	0.000	0.222
130.00	-5.07	-4.20	0.00	-79.45	0.00	79.45	839.75	419.87	560.01	367.65	37.35	-2.855	0.000	0.222
135.00	-3.80	-3.61	0.00	-58.46	0.00	58.46	839.75	419.87	560.01	367.65	40.40	-2.966	0.000	0.164
140.00	-3.09	-3.04	0.00	-40.41	0.00	40.41	839.75	419.87	560.01	367.65	43.55	-3.045	0.000	0.114
145.00	-2.07	-2.45	0.00	-25.20	0.00	25.20	839.75	419.87	560.01	367.65	46.77	-3.098	0.000	0.071
150.00	-1.31	-1.87	0.00	-12.96	0.00	12.96	839.75	419.87	560.01	367.65	50.03	-3.129	0.000	0.037
155.00	-0.76	-1.29	0.00	-3.62	0.00	3.62	839.75	419.87	560.01	367.65	53.31	-3.142	0.000	0.011
157.00	-0.33	-0.35	0.00	-1.04	0.00	1.04	839.75	419.87	560.01	367.65	54.63	-3.144	0.000	0.003
160.00	0.00	-0.33	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65	56.60	-3.144	0.000	0.000

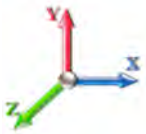
Wind Loading - Shaft

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	406.58	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	398.55	0.650	0.000	5.00	21.616	14.05	521.5	0.0	924.3
10.00		1.00	0.85	21.088	23.20	390.52	0.650	0.000	5.00	21.185	13.77	511.1	0.0	905.7
15.00		1.00	0.85	21.088	23.20	382.49	0.650	0.000	5.00	20.754	13.49	500.7	0.0	887.1
20.00		1.00	0.90	22.375	24.61	385.72	0.650	0.000	5.00	20.323	13.21	520.2	0.0	868.6
25.00		1.00	0.95	23.451	25.80	386.42	0.650	0.000	5.00	19.891	12.93	533.6	0.0	850.0
30.00		1.00	0.98	24.369	26.81	385.27	0.650	0.000	5.00	19.460	12.65	542.5	0.0	831.4
35.00		1.00	1.01	25.172	27.69	382.80	0.650	0.000	5.00	19.029	12.37	548.0	0.0	812.8
37.00	Bot - Section 2	1.00	1.03	25.469	28.02	381.52	0.650	0.000	2.00	7.491	4.87	218.3	0.0	319.9
40.00		1.00	1.04	25.890	28.48	379.32	0.650	0.000	3.00	11.586	7.53	343.2	0.0	887.4
43.00	Top - Section 1	1.00	1.06	26.287	28.92	376.84	0.650	0.000	3.00	11.431	7.43	343.8	0.0	875.1
45.00		1.00	1.07	26.540	29.19	391.74	0.650	0.000	2.00	7.535	4.90	228.8	0.0	268.6
50.00		1.00	1.09	27.135	29.85	387.00	0.650	0.000	5.00	18.534	12.05	575.4	0.0	660.6
55.00		1.00	1.12	27.685	30.45	381.70	0.650	0.000	5.00	18.103	11.77	573.4	0.0	645.1
60.00		1.00	1.14	28.197	31.02	375.93	0.650	0.000	5.00	17.672	11.49	570.1	0.0	629.6
65.00		1.00	1.16	28.676	31.54	369.75	0.650	0.000	5.00	17.241	11.21	565.6	0.0	614.1
70.00		1.00	1.17	29.127	32.04	363.20	0.650	0.000	5.00	16.810	10.93	560.1	0.0	598.7
75.00		1.00	1.19	29.553	32.51	356.34	0.650	0.000	5.00	16.378	10.65	553.7	0.0	583.2
80.00	Bot - Section 3	1.00	1.21	29.958	32.95	349.20	0.650	0.000	5.00	15.947	10.37	546.5	0.0	567.7
85.00	Top - Section 2	1.00	1.22	30.342	33.38	341.81	0.650	0.000	5.00	16.344	10.62	567.3	0.0	1018.5
90.00		1.00	1.24	30.710	33.78	352.79	0.650	0.000	5.00	15.913	10.34	559.1	0.0	453.9
95.00		1.00	1.25	31.061	34.17	345.06	0.650	0.000	5.00	15.482	10.06	550.1	0.0	441.6
100.00		1.00	1.27	31.399	34.54	337.13	0.650	0.000	5.00	15.051	9.78	540.6	0.0	429.2
105.00		1.00	1.28	31.723	34.89	329.01	0.650	0.000	5.00	14.620	9.50	530.6	0.0	416.8
110.00	Top - Section 3	1.00	1.29	32.035	35.24	320.73	0.650	0.000	5.00	14.188	9.22	520.0	0.0	404.4
115.00	Appurtenance(s)	1.00	1.30	32.336	35.57	345.93	0.600	0.000	5.00	15.000	9.00	512.2	0.0	440.1
120.00		1.00	1.32	32.627	35.89	347.48	0.600	0.000	5.00	15.000	9.00	516.8	0.0	440.1
125.00		1.00	1.33	32.909	36.20	348.98	0.600	0.000	5.00	15.000	9.00	521.3	0.0	440.1
130.00	Top - Section 4	1.00	1.34	33.182	36.50	350.42	0.600	0.000	5.00	15.000	9.00	525.6	0.0	440.1
135.00	Appurtenance(s)	1.00	1.35	33.446	36.79	351.81	0.600	0.000	5.00	15.000	9.00	529.8	0.0	440.1
140.00		1.00	1.36	33.703	37.07	353.16	0.600	0.000	5.00	15.000	9.00	533.9	0.0	440.1
145.00	Appurtenance(s)	1.00	1.37	33.953	37.35	354.47	0.600	0.000	5.00	15.000	9.00	537.8	0.0	440.1
150.00	Appurtenance(s)	1.00	1.38	34.196	37.62	355.74	0.600	0.000	5.00	15.000	9.00	541.7	0.0	440.1
155.00		1.00	1.39	34.433	37.88	356.97	0.600	0.000	5.00	15.000	9.00	545.4	0.0	440.1
157.00	Appurtenance(s)	1.00	1.39	34.526	37.98	357.45	0.600	0.000	2.00	6.000	3.60	218.8	0.0	176.0
160.00		1.00	1.40	34.664	38.13	358.16	0.600	0.000	3.00	9.000	5.40	329.4	0.0	264.0
								Totals:	**160.00**			**17,336.6**		**20,295.1**

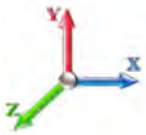
Discrete Appurtenance Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	Flag	1	34.526	37.979	1.00	1.00	11.49	180.00	0.000	0.000	698.21	0.00	0.00
2	150.00	QXW-634X638XBF-EDIN	3	34.196	37.616	0.79	1.00	0.00	80.46	0.000	0.000	0.00	0.00	0.00
3	150.00	FD9R6004-2C-3L	6	34.196	37.616	0.62	1.00	0.00	14.04	0.000	0.000	0.00	0.00	0.00
4	145.00	AM-X-CD-16-65-00T	3	33.953	37.349	0.75	1.00	0.00	130.95	0.000	0.000	0.00	0.00	0.00
5	145.00	DTMABP7819VG12A	6	33.953	37.349	0.67	1.00	0.00	103.68	0.000	0.000	0.00	0.00	0.00
6	135.00	TMA2093F00V1-1	6	33.446	36.791	1.00	1.00	0.00	124.74	0.000	0.000	0.00	0.00	0.00
7	135.00	QS66512-2	3	33.446	36.791	0.00	1.00	0.00	299.70	0.000	0.000	0.00	0.00	0.00
8	115.00	FFVV-65B-R3	3	32.336	35.570	0.00	1.00	0.00	118.26	0.000	0.000	0.00	0.00	0.00
9	115.00	Commscope	6	32.336	35.570	0.00	1.00	0.00	54.54	0.000	0.000	0.00	0.00	0.00
							Totals:		**1,106.37**			**698.21**		

Total Applied Force Summary

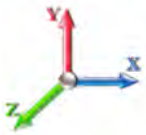
Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		521.47	1090.07	0.00	0.00
10.00		511.07	1071.50	0.00	0.00
15.00		500.66	1052.92	0.00	0.00
20.00		520.19	1034.35	0.00	0.00
25.00		533.64	1015.78	0.00	0.00
30.00		542.50	997.20	0.00	0.00
35.00		547.98	978.63	0.00	0.00
37.00		218.25	386.25	0.00	0.00
40.00		343.17	986.86	0.00	0.00
43.00		343.76	974.60	0.00	0.00
45.00		228.76	334.87	0.00	0.00
50.00		575.36	826.35	0.00	0.00
55.00		573.36	810.87	0.00	0.00
60.00		570.06	795.40	0.00	0.00
65.00		565.60	779.92	0.00	0.00
70.00		560.12	764.44	0.00	0.00
75.00		553.74	748.96	0.00	0.00
80.00		546.54	733.48	0.00	0.00
85.00		567.34	1184.33	0.00	0.00
90.00		559.06	619.72	0.00	0.00
95.00		550.14	607.34	0.00	0.00
100.00		540.62	594.96	0.00	0.00
105.00		530.55	582.57	0.00	0.00
110.00		519.97	570.19	0.00	0.00
115.00	(9) attachments	512.20	778.65	0.00	0.00
120.00		516.81	549.69	0.00	0.00
125.00		521.27	549.69	0.00	0.00
130.00		525.60	549.69	0.00	0.00
135.00	(9) attachments	529.79	974.13	0.00	0.00
140.00		533.86	549.69	0.00	0.00
145.00	(9) attachments	537.82	784.32	0.00	0.00
150.00	(9) attachments	541.67	590.73	0.00	0.00
155.00		545.42	440.07	0.00	0.00
157.00	(1) attachments	916.97	356.03	0.00	0.00
160.00		329.45	264.04	0.00	0.00
	Totals:	**18,034.78**	**25,928.31**	**0.00**	**0.00**

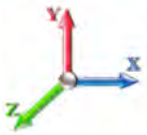
Calculated Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.91	-18.06	0.00	-1570.3	0.00	1570.34	4089.17	2044.59	8611.68	4312.24	0.00	0.000	0.000	0.371
5.00	-24.79	-17.58	0.00	-1480.0	0.00	1480.04	4038.13	2019.07	8333.76	4173.08	0.06	-0.107	0.000	0.361
10.00	-23.69	-17.11	0.00	-1392.1	0.00	1392.13	3985.86	1992.93	8057.66	4034.82	0.23	-0.215	0.000	0.351
15.00	-22.60	-16.65	0.00	-1306.5	0.00	1306.56	3932.35	1966.18	7783.54	3897.56	0.51	-0.322	0.000	0.341
20.00	-21.54	-16.16	0.00	-1223.3	0.00	1223.31	3877.61	1938.81	7511.55	3761.36	0.91	-0.429	0.000	0.331
25.00	-20.50	-15.66	0.00	-1142.4	0.00	1142.49	3821.65	1910.82	7241.85	3626.31	1.41	-0.536	0.000	0.320
30.00	-19.48	-15.14	0.00	-1064.1	0.00	1064.19	3764.45	1882.23	6974.60	3492.48	2.03	-0.642	0.000	0.310
35.00	-18.49	-14.61	0.00	-988.48	0.00	988.48	3706.02	1853.01	6709.94	3359.96	2.76	-0.748	0.000	0.299
37.00	-18.10	-14.40	0.00	-959.27	0.00	959.27	3682.31	1841.15	6604.84	3307.33	3.08	-0.791	0.000	0.295
40.00	-17.10	-14.06	0.00	-916.07	0.00	916.07	3646.36	1823.18	6448.04	3228.81	3.60	-0.855	0.000	0.288
43.00	-16.12	-13.72	0.00	-873.88	0.00	873.88	2909.03	1454.52	5312.97	2660.44	4.16	-0.918	0.000	0.334
45.00	-15.77	-13.50	0.00	-846.45	0.00	846.45	2892.96	1446.48	5234.78	2621.28	4.55	-0.961	0.000	0.328
50.00	-14.93	-12.94	0.00	-778.92	0.00	778.92	2851.91	1425.95	5040.14	2523.81	5.62	-1.069	0.000	0.314
55.00	-14.11	-12.38	0.00	-714.21	0.00	714.21	2809.63	1404.81	4846.84	2427.02	6.80	-1.176	0.000	0.299
60.00	-13.30	-11.82	0.00	-652.31	0.00	652.31	2766.12	1383.06	4655.04	2330.98	8.08	-1.281	0.000	0.285
65.00	-12.51	-11.26	0.00	-593.22	0.00	593.22	2721.38	1360.69	4464.89	2235.77	9.48	-1.384	0.000	0.270
70.00	-11.75	-10.70	0.00	-536.95	0.00	536.95	2675.40	1337.70	4276.56	2141.46	10.98	-1.484	0.000	0.255
75.00	-10.99	-10.14	0.00	-483.46	0.00	483.46	2628.20	1314.10	4090.19	2048.13	12.59	-1.583	0.000	0.240
80.00	-10.26	-9.59	0.00	-432.75	0.00	432.75	2579.77	1289.88	3905.94	1955.87	14.30	-1.678	0.000	0.225
85.00	-9.08	-9.00	0.00	-384.79	0.00	384.79	1931.95	965.98	3010.11	1507.29	16.11	-1.771	0.000	0.260
90.00	-8.47	-8.44	0.00	-339.78	0.00	339.78	1902.21	951.11	2883.49	1443.89	18.01	-1.860	0.000	0.240
95.00	-7.86	-7.88	0.00	-297.59	0.00	297.59	1871.24	935.62	2757.57	1380.83	20.01	-1.951	0.000	0.220
100.00	-7.28	-7.33	0.00	-258.18	0.00	258.18	1839.04	919.52	2632.50	1318.21	22.10	-2.036	0.000	0.200
105.00	-6.71	-6.79	0.00	-221.54	0.00	221.54	1805.60	902.80	2508.44	1256.08	24.28	-2.117	0.000	0.180
110.00	-6.15	-6.25	0.00	-187.60	0.00	187.60	1770.94	885.47	2385.54	1194.54	26.53	-2.192	0.000	0.161
110.00	-6.15	-6.25	0.00	-187.60	0.00	187.60	839.75	419.87	560.01	367.65	26.53	-2.192	0.000	0.518
115.00	-5.37	-5.73	0.00	-156.33	0.00	156.33	839.75	419.87	560.01	367.65	28.87	-2.262	0.000	0.432
120.00	-4.83	-5.20	0.00	-127.69	0.00	127.69	839.75	419.87	560.01	367.65	31.36	-2.490	0.000	0.353
125.00	-4.29	-4.67	0.00	-101.67	0.00	101.67	839.75	419.87	560.01	367.65	34.07	-2.675	0.000	0.282
130.00	-3.76	-4.13	0.00	-78.31	0.00	78.31	839.75	419.87	560.01	367.65	36.95	-2.820	0.000	0.218
130.00	-3.76	-4.13	0.00	-78.31	0.00	78.31	839.75	419.87	560.01	367.65	36.95	-2.820	0.000	0.218
135.00	-2.80	-3.56	0.00	-57.67	0.00	57.67	839.75	419.87	560.01	367.65	39.96	-2.930	0.000	0.160
140.00	-2.28	-3.00	0.00	-39.89	0.00	39.89	839.75	419.87	560.01	367.65	43.07	-3.008	0.000	0.111
145.00	-1.52	-2.42	0.00	-24.91	0.00	24.91	839.75	419.87	560.01	367.65	46.25	-3.061	0.000	0.070
150.00	-0.96	-1.85	0.00	-12.82	0.00	12.82	839.75	419.87	560.01	367.65	49.47	-3.091	0.000	0.036
155.00	-0.55	-1.28	0.00	-3.59	0.00	3.59	839.75	419.87	560.01	367.65	52.72	-3.104	0.000	0.010
157.00	-0.25	-0.34	0.00	-1.03	0.00	1.03	839.75	419.87	560.01	367.65	54.02	-3.106	0.000	0.003
160.00	0.00	-0.33	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65	55.97	-3.106	0.000	0.000

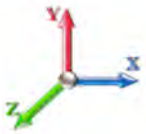
Wind Loading - Shaft

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.656	5.00	22.996	27.60	156.9	536.3	1768.7
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	22.664	27.20	154.6	564.9	1772.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	22.294	26.75	152.1	577.4	1760.3
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	5.00	21.908	26.29	158.6	582.9	1741.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	21.512	25.81	163.2	584.2	1717.6
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	21.111	25.33	166.4	582.9	1691.5
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	5.00	20.705	24.85	168.6	579.6	1663.4
37.00	Bot - Section 2	1.00	1.03	6.242	6.87	0.00	1.200	2.023	2.00	8.165	9.80	67.3	231.1	657.7
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	3.00	12.606	15.13	105.6	359.2	1542.4
43.00	Top - Section 1	1.00	1.06	6.442	7.09	0.00	1.200	2.054	3.00	12.458	14.95	105.9	357.3	1524.1
45.00		1.00	1.07	6.504	7.15	0.00	1.200	2.063	2.00	8.222	9.87	70.6	237.2	595.3
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	5.00	20.272	24.33	177.9	586.5	1467.2
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	5.00	19.857	23.83	177.8	579.0	1439.2
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	19.441	23.33	177.3	570.9	1410.4
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	5.00	19.024	22.83	176.5	562.2	1381.1
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	5.00	18.606	22.33	175.3	553.0	1351.2
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	18.188	21.83	173.9	543.3	1320.8
80.00	Bot - Section 3	1.00	1.21	7.342	8.08	0.00	1.200	2.185	5.00	17.768	21.32	172.2	533.2	1290.1
85.00	Top - Section 2	1.00	1.22	7.436	8.18	0.00	1.200	2.198	5.00	18.176	21.81	178.4	549.4	1907.4
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	5.00	17.756	21.31	176.4	538.7	1144.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	17.334	20.80	174.2	527.7	1116.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	5.00	16.913	20.30	171.8	516.5	1088.7
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	5.00	16.491	19.79	169.2	505.0	1060.7
110.00	Top - Section 3	1.00	1.29	7.851	8.64	0.00	1.200	2.256	5.00	16.068	19.28	166.5	493.2	1032.4
115.00	Appurtenance(s)	1.00	1.30	7.925	8.72	0.00	1.200	2.266	5.00	15.000	18.00	156.9	515.1	1101.9
120.00		1.00	1.32	7.996	8.80	0.00	1.200	2.276	5.00	15.000	18.00	158.3	516.4	1103.2
125.00		1.00	1.33	8.065	8.87	0.00	1.200	2.285	5.00	15.000	18.00	159.7	517.6	1104.4
130.00	Top - Section 4	1.00	1.34	8.132	8.95	0.00	1.200	2.294	5.00	15.000	18.00	161.0	518.8	1105.6
135.00	Appurtenance(s)	1.00	1.35	8.197	9.02	0.00	1.200	2.303	5.00	15.000	18.00	162.3	519.9	1106.7
140.00		1.00	1.36	8.260	9.09	0.00	1.200	2.311	5.00	15.000	18.00	163.5	521.1	1107.8
145.00	Appurtenance(s)	1.00	1.37	8.321	9.15	0.00	1.200	2.319	5.00	15.000	18.00	164.8	522.1	1108.9
150.00	Appurtenance(s)	1.00	1.38	8.381	9.22	0.00	1.200	2.327	5.00	15.000	18.00	165.9	523.2	1109.9
155.00		1.00	1.39	8.439	9.28	0.00	1.200	2.335	5.00	15.000	18.00	167.1	524.2	1110.9
157.00	Appurtenance(s)	1.00	1.39	8.462	9.31	0.00	1.200	2.338	2.00	6.000	7.20	67.0	209.8	444.5
160.00		1.00	1.40	8.495	9.34	0.00	1.200	2.342	3.00	9.000	10.80	100.9	315.1	667.2
								Totals:	**160.00**			**5,364.8**		**44,515.3**

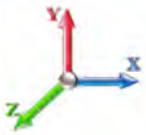
Discrete Appurtenance Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	Flag	1	8.462	9.308	1.00	1.00	36.18	458.70	0.000	0.000	336.74	0.00	0.00
2	150.00	QXW-634X638XBF-EDIN	3	8.381	9.219	0.79	1.00	0.00	551.20	0.000	0.000	0.00	0.00	0.00
3	150.00	FD9R6004-2C-3L	6	8.381	9.219	0.62	1.00	0.00	69.13	0.000	0.000	0.00	0.00	0.00
4	145.00	AM-X-CD-16-65-00T	3	8.321	9.153	0.75	1.00	0.00	682.01	0.000	0.000	0.00	0.00	0.00
5	145.00	DTMABP7819VG12A	6	8.321	9.153	0.67	1.00	0.00	297.91	0.000	0.000	0.00	0.00	0.00
6	135.00	TMA2093F00V1-1	6	8.197	9.016	1.00	1.00	9.30	464.75	0.000	0.000	83.87	0.00	0.00
7	135.00	QS66512-2	3	8.197	9.016	0.00	1.00	29.64	1349.95	0.000	0.000	267.25	0.00	0.00
8	115.00	FFVV-65B-R3	3	7.925	8.717	0.00	1.00	29.16	983.68	0.000	0.000	254.17	0.00	0.00
9	115.00	Commscope	6	7.925	8.717	0.00	1.00	4.62	257.99	0.000	0.000	40.30	0.00	0.00
							Totals:		**5,115.33**			**982.34**		

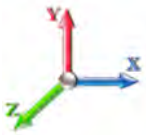
Total Applied Force Summary

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 17

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		156.87	1989.77	0.00	0.00
10.00		154.61	1993.56	0.00	0.00
15.00		152.08	1981.32	0.00	0.00
20.00		158.57	1962.01	0.00	0.00
25.00		163.20	1938.61	0.00	0.00
30.00		166.42	1912.50	0.00	0.00
35.00		168.61	1884.45	0.00	0.00
37.00		67.27	746.15	0.00	0.00
40.00		105.58	1675.06	0.00	0.00
43.00		105.94	1656.76	0.00	0.00
45.00		70.59	683.74	0.00	0.00
50.00		177.95	1688.28	0.00	0.00
55.00		177.84	1660.21	0.00	0.00
60.00		177.34	1631.45	0.00	0.00
65.00		176.48	1602.09	0.00	0.00
70.00		175.32	1572.22	0.00	0.00
75.00		173.88	1541.88	0.00	0.00
80.00		172.20	1511.13	0.00	0.00
85.00		178.41	2128.48	0.00	0.00
90.00		176.39	1365.01	0.00	0.00
95.00		174.18	1337.53	0.00	0.00
100.00		171.79	1309.76	0.00	0.00
105.00		169.23	1281.74	0.00	0.00
110.00		166.52	1253.46	0.00	0.00
115.00	(9) attachments	451.38	2564.60	0.00	0.00
120.00		158.32	1249.32	0.00	0.00
125.00		159.69	1250.54	0.00	0.00
130.00		161.01	1251.73	0.00	0.00
135.00	(9) attachments	513.42	3067.58	0.00	0.00
140.00		163.54	1253.98	0.00	0.00
145.00	(9) attachments	164.76	2234.97	0.00	0.00
150.00	(9) attachments	165.94	1805.15	0.00	0.00
155.00		167.09	1110.94	0.00	0.00
157.00	(1) attachments	403.76	903.24	0.00	0.00
160.00		100.92	667.16	0.00	0.00
	Totals:	**6,347.13**	**55,666.36**	**0.00**	**0.00**

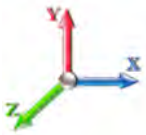
Calculated Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.66	-6.37	0.00	-611.13	0.00	611.13	4089.17	2044.59	8611.68	4312.24	0.00	0.000	0.000	0.155
5.00	-53.67	-6.25	0.00	-579.29	0.00	579.29	4038.13	2019.07	8333.76	4173.08	0.02	-0.042	0.000	0.152
10.00	-51.67	-6.13	0.00	-548.05	0.00	548.05	3985.86	1992.93	8057.66	4034.82	0.09	-0.084	0.000	0.149
15.00	-49.69	-6.01	0.00	-517.40	0.00	517.40	3932.35	1966.18	7783.54	3897.56	0.20	-0.126	0.000	0.145
20.00	-47.72	-5.88	0.00	-487.34	0.00	487.34	3877.61	1938.81	7511.55	3761.36	0.36	-0.169	0.000	0.142
25.00	-45.78	-5.75	0.00	-457.93	0.00	457.93	3821.65	1910.82	7241.85	3626.31	0.56	-0.212	0.000	0.138
30.00	-43.86	-5.61	0.00	-429.19	0.00	429.19	3764.45	1882.23	6974.60	3492.48	0.80	-0.254	0.000	0.135
35.00	-41.98	-5.45	0.00	-401.16	0.00	401.16	3706.02	1853.01	6709.94	3359.96	1.09	-0.297	0.000	0.131
37.00	-41.23	-5.39	0.00	-390.26	0.00	390.26	3682.31	1841.15	6604.84	3307.33	1.22	-0.315	0.000	0.129
40.00	-39.55	-5.30	0.00	-374.07	0.00	374.07	3646.36	1823.18	6448.04	3228.81	1.42	-0.341	0.000	0.127
43.00	-37.89	-5.20	0.00	-358.18	0.00	358.18	2909.03	1454.52	5312.97	2660.44	1.65	-0.367	0.000	0.148
45.00	-37.21	-5.14	0.00	-347.79	0.00	347.79	2892.96	1446.48	5234.78	2621.28	1.80	-0.384	0.000	0.146
50.00	-35.52	-4.98	0.00	-322.08	0.00	322.08	2851.91	1425.95	5040.14	2523.81	2.23	-0.429	0.000	0.140
55.00	-33.85	-4.81	0.00	-297.19	0.00	297.19	2809.63	1404.81	4846.84	2427.02	2.70	-0.473	0.000	0.135
60.00	-32.22	-4.65	0.00	-273.12	0.00	273.12	2766.12	1383.06	4655.04	2330.98	3.22	-0.517	0.000	0.129
65.00	-30.62	-4.48	0.00	-249.89	0.00	249.89	2721.38	1360.69	4464.89	2235.77	3.79	-0.560	0.000	0.123
70.00	-29.04	-4.31	0.00	-227.50	0.00	227.50	2675.40	1337.70	4276.56	2141.46	4.40	-0.603	0.000	0.117
75.00	-27.50	-4.14	0.00	-205.96	0.00	205.96	2628.20	1314.10	4090.19	2048.13	5.05	-0.644	0.000	0.111
80.00	-25.99	-3.97	0.00	-185.27	0.00	185.27	2579.77	1289.88	3905.94	1955.87	5.75	-0.685	0.000	0.105
85.00	-23.86	-3.78	0.00	-165.44	0.00	165.44	1931.95	965.98	3010.11	1507.29	6.48	-0.725	0.000	0.122
90.00	-22.49	-3.60	0.00	-146.55	0.00	146.55	1902.21	951.11	2883.49	1443.89	7.26	-0.763	0.000	0.113
95.00	-21.16	-3.42	0.00	-128.56	0.00	128.56	1871.24	935.62	2757.57	1380.83	8.09	-0.802	0.000	0.104
100.00	-19.85	-3.24	0.00	-111.45	0.00	111.45	1839.04	919.52	2632.50	1318.21	8.95	-0.839	0.000	0.095
105.00	-18.57	-3.06	0.00	-95.24	0.00	95.24	1805.60	902.80	2508.44	1256.08	9.84	-0.874	0.000	0.086
110.00	-17.31	-2.89	0.00	-79.92	0.00	79.92	1770.94	885.47	2385.54	1194.54	10.78	-0.906	0.000	0.077
110.00	-17.31	-2.89	0.00	-79.92	0.00	79.92	839.75	419.87	560.01	367.65	10.78	-0.906	0.000	0.238
115.00	-14.76	-2.41	0.00	-65.48	0.00	65.48	839.75	419.87	560.01	367.65	11.74	-0.936	0.000	0.196
120.00	-13.51	-2.25	0.00	-53.42	0.00	53.42	839.75	419.87	560.01	367.65	12.77	-1.031	0.000	0.161
125.00	-12.26	-2.08	0.00	-42.15	0.00	42.15	839.75	419.87	560.01	367.65	13.90	-1.108	0.000	0.129
130.00	-11.01	-1.91	0.00	-31.73	0.00	31.73	839.75	419.87	560.01	367.65	15.09	-1.168	0.000	0.099
130.00	-11.01	-1.91	0.00	-31.73	0.00	31.73	839.75	419.87	560.01	367.65	15.09	-1.168	0.000	0.099
135.00	-7.95	-1.34	0.00	-22.19	0.00	22.19	839.75	419.87	560.01	367.65	16.34	-1.211	0.000	0.070
140.00	-6.70	-1.15	0.00	-15.51	0.00	15.51	839.75	419.87	560.01	367.65	17.62	-1.242	0.000	0.050
145.00	-4.47	-0.94	0.00	-9.77	0.00	9.77	839.75	419.87	560.01	367.65	18.93	-1.262	0.000	0.032
150.00	-2.67	-0.73	0.00	-5.08	0.00	5.08	839.75	419.87	560.01	367.65	20.26	-1.274	0.000	0.017
155.00	-1.56	-0.54	0.00	-1.43	0.00	1.43	839.75	419.87	560.01	367.65	21.60	-1.279	0.000	0.006
157.00	-0.66	-0.12	0.00	-0.35	0.00	0.35	839.75	419.87	560.01	367.65	22.14	-1.280	0.000	0.002
160.00	0.00	-0.10	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65	22.94	-1.280	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Load Case:	1.2D + 1.0E							**Iterations**	22
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44		**SA**	0.04	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1026.9	0.00	0.03	0.02	14.87	
10.00		1006.3	0.01	0.05	0.03	22.11	
15.00		985.71	0.02	0.06	0.04	25.64	
20.00		965.08	0.03	0.07	0.04	27.26	
25.00		944.44	0.05	0.07	0.04	27.93	
30.00		923.80	0.07	0.07	0.04	28.18	
35.00		903.16	0.09	0.07	0.04	28.28	
37.00	Bot - Section 2	355.49	0.10	0.07	0.04	11.24	
40.00		985.99	0.12	0.07	0.03	31.63	
43.00	Top - Section 1	972.37	0.14	0.07	0.03	31.60	
45.00		298.40	0.15	0.07	0.03	9.77	
50.00		733.97	0.18	0.06	0.03	24.30	
55.00		716.77	0.22	0.06	0.02	23.58	
60.00		699.57	0.27	0.05	0.02	22.18	
65.00		682.37	0.31	0.04	0.01	19.88	
70.00		665.18	0.36	0.03	0.01	16.47	
75.00		647.98	0.42	0.01	0.01	11.92	
80.00	Bot - Section 3	630.78	0.47	-0.01	0.01	6.41	
85.00	Top - Section 2	1131.7	0.53	-0.03	0.01	0.77	
90.00		504.38	0.60	-0.05	0.01	-4.51	
95.00		490.62	0.67	-0.08	0.02	-8.52	
100.00		476.86	0.74	-0.10	0.04	-11.10	
105.00		463.10	0.81	-0.11	0.06	-11.91	
110.00	Top - Section 3	449.35	0.89	-0.12	0.08	-10.83	
115.00	Appurtenance(s)	632.97	0.98	-0.12	0.12	-11.49	
120.00		440.97	1.06	-0.09	0.17	-3.42	
125.00		440.97	1.15	-0.03	0.22	3.13	
130.00	Top - Section 4	440.97	1.25	0.05	0.29	11.68	
135.00	Appurtenance(s)	912.57	1.35	0.19	0.38	46.00	
140.00		440.97	1.45	0.38	0.48	34.79	
145.00	Appurtenance(s)	701.67	1.55	0.64	0.61	78.61	
150.00	Appurtenance(s)	545.97	1.66	0.98	0.76	81.83	
155.00		440.97	1.77	1.42	0.93	84.90	
157.00	Appurtenance(s)	376.39	1.82	1.63	1.01	79.40	
160.00		264.58	1.89	1.98	1.14	63.51	
	Totals:	**23,299.4**				**806.1**	**Total Wind:** **18,034.8**

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

Calculated Forces

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Load Case:	1.2D + 1.0E							**Iterations**	22
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44		**SA**	0.04	**Seismic Importance Factor**		1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.57	-0.87	0.00	-90.48	0.00	90.48	4089.17	2044.59	8611.68	4312.24		0.00	0.00	0.029
5.00	-33.12	-0.86	0.00	-86.14	0.00	86.14	4038.13	2019.07	8333.76	4173.08		0.00	-0.01	0.029
10.00	-31.69	-0.84	0.00	-81.85	0.00	81.85	3985.86	1992.93	8057.66	4034.82		0.01	-0.01	0.028
15.00	-30.28	-0.82	0.00	-77.65	0.00	77.65	3932.35	1966.18	7783.54	3897.56		0.03	-0.02	0.028
20.00	-28.91	-0.79	0.00	-73.57	0.00	73.57	3877.61	1938.81	7511.55	3761.36		0.05	-0.03	0.027
25.00	-27.55	-0.77	0.00	-69.62	0.00	69.62	3821.65	1910.82	7241.85	3626.31		0.08	-0.03	0.026
30.00	-26.22	-0.74	0.00	-65.79	0.00	65.79	3764.45	1882.23	6974.60	3492.48		0.12	-0.04	0.026
35.00	-24.92	-0.71	0.00	-62.09	0.00	62.09	3706.02	1853.01	6709.94	3359.96		0.16	-0.04	0.025
37.00	-24.40	-0.70	0.00	-60.66	0.00	60.66	3682.31	1841.15	6604.84	3307.33		0.18	-0.05	0.025
40.00	-23.09	-0.67	0.00	-58.55	0.00	58.55	3646.36	1823.18	6448.04	3228.81		0.21	-0.05	0.024
43.00	-21.79	-0.64	0.00	-56.54	0.00	56.54	2909.03	1454.52	5312.97	2660.44		0.25	-0.06	0.029
45.00	-21.34	-0.63	0.00	-55.26	0.00	55.26	2892.96	1446.48	5234.78	2621.28		0.27	-0.06	0.028
50.00	-20.24	-0.61	0.00	-52.10	0.00	52.10	2851.91	1425.95	5040.14	2523.81		0.34	-0.07	0.028
55.00	-19.16	-0.59	0.00	-49.06	0.00	49.06	2809.63	1404.81	4846.84	2427.02		0.41	-0.07	0.027
60.00	-18.10	-0.56	0.00	-46.13	0.00	46.13	2766.12	1383.06	4655.04	2330.98		0.49	-0.08	0.026
65.00	-17.06	-0.55	0.00	-43.30	0.00	43.30	2721.38	1360.69	4464.89	2235.77		0.58	-0.09	0.026
70.00	-16.04	-0.53	0.00	-40.57	0.00	40.57	2675.40	1337.70	4276.56	2141.46		0.67	-0.09	0.025
75.00	-15.04	-0.52	0.00	-37.92	0.00	37.92	2628.20	1314.10	4090.19	2048.13		0.78	-0.10	0.024
80.00	-14.06	-0.51	0.00	-35.33	0.00	35.33	2579.77	1289.88	3905.94	1955.87		0.89	-0.11	0.024
85.00	-12.48	-0.51	0.00	-32.77	0.00	32.77	1931.95	965.98	3010.11	1507.29		1.01	-0.12	0.028
90.00	-11.65	-0.51	0.00	-30.23	0.00	30.23	1902.21	951.11	2883.49	1443.89		1.13	-0.13	0.027
95.00	-10.84	-0.51	0.00	-27.68	0.00	27.68	1871.24	935.62	2757.57	1380.83		1.27	-0.13	0.026
100.00	-10.05	-0.51	0.00	-25.13	0.00	25.13	1839.04	919.52	2632.50	1318.21		1.42	-0.14	0.025
105.00	-9.27	-0.51	0.00	-22.59	0.00	22.59	1805.60	902.80	2508.44	1256.08		1.57	-0.15	0.023
110.00	-8.51	-0.51	0.00	-20.05	0.00	20.05	1770.94	885.47	2385.54	1194.54		1.73	-0.16	0.022
110.00	-8.51	-0.51	0.00	-20.05	0.00	20.05	839.75	419.87	560.01	367.65		1.73	-0.16	0.065
115.00	-7.48	-0.51	0.00	-17.51	0.00	17.51	839.75	419.87	560.01	367.65		1.90	-0.17	0.057
120.00	-6.74	-0.51	0.00	-14.98	0.00	14.98	839.75	419.87	560.01	367.65		2.09	-0.19	0.049
125.00	-6.01	-0.50	0.00	-12.44	0.00	12.44	839.75	419.87	560.01	367.65		2.30	-0.21	0.041
130.00	-5.28	-0.49	0.00	-9.92	0.00	9.92	839.75	419.87	560.01	367.65		2.53	-0.23	0.033
130.00	-5.28	-0.49	0.00	-9.92	0.00	9.92	839.75	419.87	560.01	367.65		2.53	-0.23	0.033
135.00	-3.98	-0.44	0.00	-7.47	0.00	7.47	839.75	419.87	560.01	367.65		2.78	-0.25	0.025
140.00	-3.25	-0.40	0.00	-5.27	0.00	5.27	839.75	419.87	560.01	367.65		3.05	-0.26	0.018
145.00	-2.20	-0.32	0.00	-3.26	0.00	3.26	839.75	419.87	560.01	367.65		3.32	-0.26	0.011
150.00	-1.41	-0.23	0.00	-1.66	0.00	1.66	839.75	419.87	560.01	367.65		3.60	-0.27	0.006
155.00	-0.83	-0.15	0.00	-0.49	0.00	0.49	839.75	419.87	560.01	367.65		3.88	-0.27	0.002
157.00	-0.35	-0.07	0.00	-0.20	0.00	0.20	839.75	419.87	560.01	367.65		3.99	-0.27	0.001
160.00	0.00	-0.06	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65		4.16	-0.27	0.000

Seismic Segment Forces (Factored)

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Load Case:	0.9D + 1.0E							**Iterations**	22
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44		**SA**	0.04	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1026.9	0.00	0.03	0.02	14.87	
10.00		1006.3	0.01	0.05	0.03	22.11	
15.00		985.71	0.02	0.06	0.04	25.64	
20.00		965.08	0.03	0.07	0.04	27.26	
25.00		944.44	0.05	0.07	0.04	27.93	
30.00		923.80	0.07	0.07	0.04	28.18	
35.00		903.16	0.09	0.07	0.04	28.28	
37.00	Bot - Section 2	355.49	0.10	0.07	0.04	11.24	
40.00		985.99	0.12	0.07	0.03	31.63	
43.00	Top - Section 1	972.37	0.14	0.07	0.03	31.60	
45.00		298.40	0.15	0.07	0.03	9.77	
50.00		733.97	0.18	0.06	0.03	24.30	
55.00		716.77	0.22	0.06	0.02	23.58	
60.00		699.57	0.27	0.05	0.02	22.18	
65.00		682.37	0.31	0.04	0.01	19.88	
70.00		665.18	0.36	0.03	0.01	16.47	
75.00		647.98	0.42	0.01	0.01	11.92	
80.00	Bot - Section 3	630.78	0.47	-0.01	0.01	6.41	
85.00	Top - Section 2	1131.7	0.53	-0.03	0.01	0.77	
90.00		504.38	0.60	-0.05	0.01	-4.51	
95.00		490.62	0.67	-0.08	0.02	-8.52	
100.00		476.86	0.74	-0.10	0.04	-11.10	
105.00		463.10	0.81	-0.11	0.06	-11.91	
110.00	Top - Section 3	449.35	0.89	-0.12	0.08	-10.83	
115.00	Appurtenance(s)	632.97	0.98	-0.12	0.12	-11.49	
120.00		440.97	1.06	-0.09	0.17	-3.42	
125.00		440.97	1.15	-0.03	0.22	3.13	
130.00	Top - Section 4	440.97	1.25	0.05	0.29	11.68	
135.00	Appurtenance(s)	912.57	1.35	0.19	0.38	46.00	
140.00		440.97	1.45	0.38	0.48	34.79	
145.00	Appurtenance(s)	701.67	1.55	0.64	0.61	78.61	
150.00	Appurtenance(s)	545.97	1.66	0.98	0.76	81.83	
155.00		440.97	1.77	1.42	0.93	84.90	
157.00	Appurtenance(s)	376.39	1.82	1.63	1.01	79.40	
160.00		264.58	1.89	1.98	1.14	63.51	
	Totals:	**23,299.4**				**806.1**	**Total Wind:** **18,034.8**

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

Calculated Forces

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Load Case:	0.9D + 1.0E							**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.44	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.93	-0.87	0.00	-89.67	0.00	89.67	4089.17	2044.59	8611.68	4312.24		0.00	0.00	0.027
5.00	-24.84	-0.86	0.00	-85.33	0.00	85.33	4038.13	2019.07	8333.76	4173.08		0.00	-0.01	0.027
10.00	-23.77	-0.84	0.00	-81.05	0.00	81.05	3985.86	1992.93	8057.66	4034.82		0.01	-0.01	0.026
15.00	-22.71	-0.81	0.00	-76.87	0.00	76.87	3932.35	1966.18	7783.54	3897.56		0.03	-0.02	0.025
20.00	-21.68	-0.79	0.00	-72.80	0.00	72.80	3877.61	1938.81	7511.55	3761.36		0.05	-0.02	0.025
25.00	-20.66	-0.76	0.00	-68.86	0.00	68.86	3821.65	1910.82	7241.85	3626.31		0.08	-0.03	0.024
30.00	-19.67	-0.74	0.00	-65.06	0.00	65.06	3764.45	1882.23	6974.60	3492.48		0.12	-0.04	0.024
35.00	-18.69	-0.71	0.00	-61.38	0.00	61.38	3706.02	1853.01	6709.94	3359.96		0.16	-0.04	0.023
37.00	-18.30	-0.70	0.00	-59.96	0.00	59.96	3682.31	1841.15	6604.84	3307.33		0.18	-0.05	0.023
40.00	-17.31	-0.67	0.00	-57.87	0.00	57.87	3646.36	1823.18	6448.04	3228.81		0.21	-0.05	0.023
43.00	-16.34	-0.63	0.00	-55.87	0.00	55.87	2909.03	1454.52	5312.97	2660.44		0.24	-0.06	0.027
45.00	-16.00	-0.63	0.00	-54.61	0.00	54.61	2892.96	1446.48	5234.78	2621.28		0.27	-0.06	0.026
50.00	-15.18	-0.60	0.00	-51.48	0.00	51.48	2851.91	1425.95	5040.14	2523.81		0.33	-0.06	0.026
55.00	-14.37	-0.58	0.00	-48.47	0.00	48.47	2809.63	1404.81	4846.84	2427.02		0.40	-0.07	0.025
60.00	-13.57	-0.56	0.00	-45.57	0.00	45.57	2766.12	1383.06	4655.04	2330.98		0.48	-0.08	0.024
65.00	-12.79	-0.54	0.00	-42.78	0.00	42.78	2721.38	1360.69	4464.89	2235.77		0.57	-0.09	0.024
70.00	-12.03	-0.52	0.00	-40.08	0.00	40.08	2675.40	1337.70	4276.56	2141.46		0.67	-0.09	0.023
75.00	-11.28	-0.51	0.00	-37.47	0.00	37.47	2628.20	1314.10	4090.19	2048.13		0.77	-0.10	0.023
80.00	-10.54	-0.50	0.00	-34.91	0.00	34.91	2579.77	1289.88	3905.94	1955.87		0.88	-0.11	0.022
85.00	-9.36	-0.50	0.00	-32.39	0.00	32.39	1931.95	965.98	3010.11	1507.29		1.00	-0.12	0.026
90.00	-8.74	-0.50	0.00	-29.88	0.00	29.88	1902.21	951.11	2883.49	1443.89		1.12	-0.12	0.025
95.00	-8.13	-0.50	0.00	-27.36	0.00	27.36	1871.24	935.62	2757.57	1380.83		1.26	-0.13	0.024
100.00	-7.54	-0.50	0.00	-24.85	0.00	24.85	1839.04	919.52	2632.50	1318.21		1.40	-0.14	0.023
105.00	-6.96	-0.50	0.00	-22.34	0.00	22.34	1805.60	902.80	2508.44	1256.08		1.55	-0.15	0.022
110.00	-6.39	-0.50	0.00	-19.83	0.00	19.83	1770.94	885.47	2385.54	1194.54		1.71	-0.16	0.020
110.00	-6.39	-0.50	0.00	-19.83	0.00	19.83	839.75	419.87	560.01	367.65		1.71	-0.16	0.062
115.00	-5.61	-0.50	0.00	-17.33	0.00	17.33	839.75	419.87	560.01	367.65		1.88	-0.16	0.054
120.00	-5.06	-0.50	0.00	-14.82	0.00	14.82	839.75	419.87	560.01	367.65		2.06	-0.19	0.046
125.00	-4.51	-0.50	0.00	-12.32	0.00	12.32	839.75	419.87	560.01	367.65		2.27	-0.21	0.039
130.00	-3.96	-0.48	0.00	-9.83	0.00	9.83	839.75	419.87	560.01	367.65		2.51	-0.23	0.031
130.00	-3.96	-0.48	0.00	-9.83	0.00	9.83	839.75	419.87	560.01	367.65		2.51	-0.23	0.031
135.00	-2.98	-0.44	0.00	-7.40	0.00	7.40	839.75	419.87	560.01	367.65		2.75	-0.24	0.024
140.00	-2.43	-0.40	0.00	-5.23	0.00	5.23	839.75	419.87	560.01	367.65		3.01	-0.25	0.017
145.00	-1.65	-0.32	0.00	-3.23	0.00	3.23	839.75	419.87	560.01	367.65		3.28	-0.26	0.011
150.00	-1.06	-0.23	0.00	-1.65	0.00	1.65	839.75	419.87	560.01	367.65		3.56	-0.26	0.006
155.00	-0.62	-0.15	0.00	-0.49	0.00	0.49	839.75	419.87	560.01	367.65		3.83	-0.27	0.002
157.00	-0.26	-0.06	0.00	-0.19	0.00	0.19	839.75	419.87	560.01	367.65		3.95	-0.27	0.001
160.00	0.00	-0.06	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65		4.11	-0.27	0.000

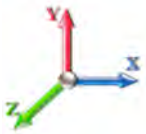
Wind Loading - Shaft

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	241.53	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	236.76	0.650	0.000	5.00	21.616	14.05	115.0	0.0	1027.0
10.00		1.00	0.85	7.442	8.19	231.99	0.650	0.000	5.00	21.185	13.77	112.7	0.0	1006.4
15.00		1.00	0.85	7.442	8.19	227.22	0.650	0.000	5.00	20.754	13.49	110.4	0.0	985.7
20.00		1.00	0.90	7.896	8.69	229.14	0.650	0.000	5.00	20.323	13.21	114.7	0.0	965.1
25.00		1.00	0.95	8.276	9.10	229.56	0.650	0.000	5.00	19.891	12.93	117.7	0.0	944.4
30.00		1.00	0.98	8.600	9.46	228.88	0.650	0.000	5.00	19.460	12.65	119.7	0.0	923.8
35.00		1.00	1.01	8.883	9.77	227.41	0.650	0.000	5.00	19.029	12.37	120.9	0.0	903.2
37.00	Bot - Section 2	1.00	1.03	8.988	9.89	226.65	0.650	0.000	2.00	7.491	4.87	48.1	0.0	355.5
40.00		1.00	1.04	9.137	10.05	225.34	0.650	0.000	3.00	11.586	7.53	75.7	0.0	986.0
43.00	Top - Section 1	1.00	1.06	9.277	10.20	223.87	0.650	0.000	3.00	11.431	7.43	75.8	0.0	972.4
45.00		1.00	1.07	9.366	10.30	232.72	0.650	0.000	2.00	7.535	4.90	50.5	0.0	298.4
50.00		1.00	1.09	9.576	10.53	229.90	0.650	0.000	5.00	18.534	12.05	126.9	0.0	734.0
55.00		1.00	1.12	9.770	10.75	226.75	0.650	0.000	5.00	18.103	11.77	126.5	0.0	716.8
60.00		1.00	1.14	9.951	10.95	223.32	0.650	0.000	5.00	17.672	11.49	125.7	0.0	699.6
65.00		1.00	1.16	10.120	11.13	219.65	0.650	0.000	5.00	17.241	11.21	124.8	0.0	682.4
70.00		1.00	1.17	10.279	11.31	215.76	0.650	0.000	5.00	16.810	10.93	123.5	0.0	665.2
75.00		1.00	1.19	10.430	11.47	211.69	0.650	0.000	5.00	16.378	10.65	122.1	0.0	648.0
80.00	Bot - Section 3	1.00	1.21	10.572	11.63	207.45	0.650	0.000	5.00	15.947	10.37	120.5	0.0	630.8
85.00	Top - Section 2	1.00	1.22	10.708	11.78	203.05	0.650	0.000	5.00	16.344	10.62	125.1	0.0	1131.7
90.00		1.00	1.24	10.838	11.92	209.58	0.650	0.000	5.00	15.913	10.34	123.3	0.0	504.4
95.00		1.00	1.25	10.962	12.06	204.99	0.650	0.000	5.00	15.482	10.06	121.3	0.0	490.6
100.00		1.00	1.27	11.081	12.19	200.27	0.650	0.000	5.00	15.051	9.78	119.2	0.0	476.9
105.00		1.00	1.28	11.195	12.31	195.45	0.650	0.000	5.00	14.620	9.50	117.0	0.0	463.1
110.00	Top - Section 3	1.00	1.29	11.305	12.44	190.53	0.650	0.000	5.00	14.188	9.22	114.7	0.0	449.3
115.00	Appurtenance(s)	1.00	1.30	11.412	12.55	205.50	0.600	0.000	5.00	15.000	9.00	113.0	0.0	489.0
120.00		1.00	1.32	11.514	12.67	206.42	0.600	0.000	5.00	15.000	9.00	114.0	0.0	489.0
125.00		1.00	1.33	11.614	12.78	207.31	0.600	0.000	5.00	15.000	9.00	115.0	0.0	489.0
130.00	Top - Section 4	1.00	1.34	11.710	12.88	208.17	0.600	0.000	5.00	15.000	9.00	115.9	0.0	489.0
135.00	Appurtenance(s)	1.00	1.35	11.803	12.98	209.00	0.600	0.000	5.00	15.000	9.00	116.9	0.0	489.0
140.00		1.00	1.36	11.894	13.08	209.80	0.600	0.000	5.00	15.000	9.00	117.8	0.0	489.0
145.00	Appurtenance(s)	1.00	1.37	11.982	13.18	210.58	0.600	0.000	5.00	15.000	9.00	118.6	0.0	489.0
150.00	Appurtenance(s)	1.00	1.38	12.068	13.27	211.33	0.600	0.000	5.00	15.000	9.00	119.5	0.0	489.0
155.00		1.00	1.39	12.152	13.37	212.06	0.600	0.000	5.00	15.000	9.00	120.3	0.0	489.0
157.00	Appurtenance(s)	1.00	1.39	12.185	13.40	212.35	0.600	0.000	2.00	6.000	3.60	48.3	0.0	195.6
160.00		1.00	1.40	12.233	13.46	212.77	0.600	0.000	3.00	9.000	5.40	72.7	0.0	293.4
								Totals:	**160.00**			**3,823.9**		**22,550.1**

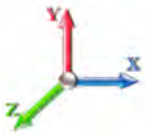
Discrete Appurtenance Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	Flag	1	12.185	13.403	1.00	1.00	11.49	200.00	0.000	0.000	154.00	0.00	0.00
2	150.00	QXW-634X638XBF-EDIN	3	12.068	13.275	0.79	1.00	0.00	89.40	0.000	0.000	0.00	0.00	0.00
3	150.00	FD9R6004-2C-3L	6	12.068	13.275	0.62	1.00	0.00	15.60	0.000	0.000	0.00	0.00	0.00
4	145.00	AM-X-CD-16-65-00T	3	11.982	13.181	0.75	1.00	0.00	145.50	0.000	0.000	0.00	0.00	0.00
5	145.00	DTMABP7819VG12A	6	11.982	13.181	0.67	1.00	0.00	115.20	0.000	0.000	0.00	0.00	0.00
6	135.00	TMA2093F00V1-1	6	11.803	12.984	1.00	1.00	0.00	138.60	0.000	0.000	0.00	0.00	0.00
7	135.00	QS66512-2	3	11.803	12.984	0.00	1.00	0.00	333.00	0.000	0.000	0.00	0.00	0.00
8	115.00	FFVV-65B-R3	3	11.412	12.553	0.00	1.00	0.00	131.40	0.000	0.000	0.00	0.00	0.00
9	115.00	Commscope	6	11.412	12.553	0.00	1.00	0.00	60.60	0.000	0.000	0.00	0.00	0.00
							Totals:		**1,229.30**			**154.00**		

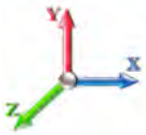
Total Applied Force Summary

Structure:	CT01001-S-SBA		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 25

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		115.02	1211.19	0.00	0.00
10.00		112.72	1190.55	0.00	0.00
15.00		110.43	1169.91	0.00	0.00
20.00		114.74	1149.28	0.00	0.00
25.00		117.70	1128.64	0.00	0.00
30.00		119.66	1108.00	0.00	0.00
35.00		120.87	1087.36	0.00	0.00
37.00		48.14	429.17	0.00	0.00
40.00		75.69	1096.51	0.00	0.00
43.00		75.82	1082.89	0.00	0.00
45.00		50.46	372.08	0.00	0.00
50.00		126.91	918.17	0.00	0.00
55.00		126.47	900.97	0.00	0.00
60.00		125.74	883.77	0.00	0.00
65.00		124.75	866.57	0.00	0.00
70.00		123.54	849.38	0.00	0.00
75.00		122.14	832.18	0.00	0.00
80.00		120.55	814.98	0.00	0.00
85.00		125.14	1315.92	0.00	0.00
90.00		123.31	688.58	0.00	0.00
95.00		121.34	674.82	0.00	0.00
100.00		119.24	661.06	0.00	0.00
105.00		117.02	647.30	0.00	0.00
110.00		114.69	633.55	0.00	0.00
115.00	(9) attachments	112.98	865.17	0.00	0.00
120.00		113.99	610.77	0.00	0.00
125.00		114.98	610.77	0.00	0.00
130.00		115.93	610.77	0.00	0.00
135.00	(9) attachments	116.85	1082.37	0.00	0.00
140.00		117.75	610.77	0.00	0.00
145.00	(9) attachments	118.63	871.47	0.00	0.00
150.00	(9) attachments	119.47	656.37	0.00	0.00
155.00		120.30	488.97	0.00	0.00
157.00	(1) attachments	202.25	395.59	0.00	0.00
160.00		72.67	293.38	0.00	0.00
	Totals:	**3,977.87**	**28,809.24**	**0.00**	**0.00**

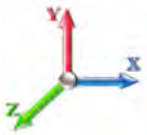
Calculated Forces

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.81	-3.98	0.00	-347.25	0.00	347.25	4089.17	2044.59	8611.68	4312.24	0.00	0.000	0.000	0.088
5.00	-27.60	-3.88	0.00	-327.33	0.00	327.33	4038.13	2019.07	8333.76	4173.08	0.01	-0.024	0.000	0.085
10.00	-26.40	-3.78	0.00	-307.93	0.00	307.93	3985.86	1992.93	8057.66	4034.82	0.05	-0.047	0.000	0.083
15.00	-25.23	-3.68	0.00	-289.05	0.00	289.05	3932.35	1966.18	7783.54	3897.56	0.11	-0.071	0.000	0.081
20.00	-24.08	-3.57	0.00	-270.67	0.00	270.67	3877.61	1938.81	7511.55	3761.36	0.20	-0.095	0.000	0.078
25.00	-22.95	-3.46	0.00	-252.83	0.00	252.83	3821.65	1910.82	7241.85	3626.31	0.31	-0.119	0.000	0.076
30.00	-21.84	-3.35	0.00	-235.54	0.00	235.54	3764.45	1882.23	6974.60	3492.48	0.45	-0.142	0.000	0.073
35.00	-20.75	-3.23	0.00	-218.81	0.00	218.81	3706.02	1853.01	6709.94	3359.96	0.61	-0.165	0.000	0.071
37.00	-20.33	-3.18	0.00	-212.35	0.00	212.35	3682.31	1841.15	6604.84	3307.33	0.68	-0.175	0.000	0.070
40.00	-19.23	-3.11	0.00	-202.81	0.00	202.81	3646.36	1823.18	6448.04	3228.81	0.80	-0.189	0.000	0.068
43.00	-18.14	-3.03	0.00	-193.48	0.00	193.48	2909.03	1454.52	5312.97	2660.44	0.92	-0.203	0.000	0.079
45.00	-17.77	-2.99	0.00	-187.42	0.00	187.42	2892.96	1446.48	5234.78	2621.28	1.01	-0.213	0.000	0.078
50.00	-16.85	-2.86	0.00	-172.49	0.00	172.49	2851.91	1425.95	5040.14	2523.81	1.24	-0.237	0.000	0.074
55.00	-15.95	-2.74	0.00	-158.18	0.00	158.18	2809.63	1404.81	4846.84	2427.02	1.50	-0.260	0.000	0.071
60.00	-15.07	-2.61	0.00	-144.49	0.00	144.49	2766.12	1383.06	4655.04	2330.98	1.79	-0.283	0.000	0.067
65.00	-14.20	-2.49	0.00	-131.42	0.00	131.42	2721.38	1360.69	4464.89	2235.77	2.10	-0.306	0.000	0.064
70.00	-13.35	-2.37	0.00	-118.97	0.00	118.97	2675.40	1337.70	4276.56	2141.46	2.43	-0.329	0.000	0.061
75.00	-12.52	-2.25	0.00	-107.13	0.00	107.13	2628.20	1314.10	4090.19	2048.13	2.79	-0.350	0.000	0.057
80.00	-11.70	-2.12	0.00	-95.90	0.00	95.90	2579.77	1289.88	3905.94	1955.87	3.17	-0.372	0.000	0.054
85.00	-10.39	-1.99	0.00	-85.28	0.00	85.28	1931.95	965.98	3010.11	1507.29	3.57	-0.392	0.000	0.062
90.00	-9.70	-1.87	0.00	-75.31	0.00	75.31	1902.21	951.11	2883.49	1443.89	3.99	-0.412	0.000	0.057
95.00	-9.03	-1.75	0.00	-65.97	0.00	65.97	1871.24	935.62	2757.57	1380.83	4.43	-0.432	0.000	0.053
100.00	-8.36	-1.62	0.00	-57.24	0.00	57.24	1839.04	919.52	2632.50	1318.21	4.89	-0.451	0.000	0.048
105.00	-7.72	-1.50	0.00	-49.12	0.00	49.12	1805.60	902.80	2508.44	1256.08	5.37	-0.469	0.000	0.043
110.00	-7.08	-1.39	0.00	-41.60	0.00	41.60	1770.94	885.47	2385.54	1194.54	5.87	-0.485	0.000	0.039
110.00	-7.08	-1.39	0.00	-41.60	0.00	41.60	839.75	419.87	560.01	367.65	5.87	-0.485	0.000	0.122
115.00	-6.22	-1.27	0.00	-34.67	0.00	34.67	839.75	419.87	560.01	367.65	6.39	-0.501	0.000	0.102
120.00	-5.61	-1.15	0.00	-28.32	0.00	28.32	839.75	419.87	560.01	367.65	6.94	-0.552	0.000	0.084
125.00	-5.00	-1.04	0.00	-22.55	0.00	22.55	839.75	419.87	560.01	367.65	7.54	-0.593	0.000	0.067
130.00	-4.39	-0.92	0.00	-17.37	0.00	17.37	839.75	419.87	560.01	367.65	8.18	-0.625	0.000	0.052
130.00	-4.39	-0.92	0.00	-17.37	0.00	17.37	839.75	419.87	560.01	367.65	8.18	-0.625	0.000	0.052
135.00	-3.31	-0.79	0.00	-12.79	0.00	12.79	839.75	419.87	560.01	367.65	8.85	-0.649	0.000	0.039
140.00	-2.70	-0.66	0.00	-8.84	0.00	8.84	839.75	419.87	560.01	367.65	9.54	-0.666	0.000	0.027
145.00	-1.83	-0.54	0.00	-5.52	0.00	5.52	839.75	419.87	560.01	367.65	10.24	-0.678	0.000	0.017
150.00	-1.17	-0.41	0.00	-2.84	0.00	2.84	839.75	419.87	560.01	367.65	10.96	-0.685	0.000	0.009
155.00	-0.69	-0.28	0.00	-0.79	0.00	0.79	839.75	419.87	560.01	367.65	11.68	-0.688	0.000	0.003
157.00	-0.29	-0.08	0.00	-0.23	0.00	0.23	839.75	419.87	560.01	367.65	11.96	-0.688	0.000	0.001
160.00	0.00	-0.07	0.00	0.00	0.00	0.00	839.75	419.87	560.01	367.65	12.40	-0.688	0.000	0.000

Final Analysis Summary

Structure:	CT01001-S-SBA	**Code:**	EIA/TIA-222-G	9/7/2021	
Site Name:	Hebron	**Exposure:**	C		
Height:	160.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	18.1	0.00	34.55	0.00	0.00	1582.46
0.9D + 1.6W 101 mph Wind	18.1	0.00	25.91	0.00	0.00	1570.34
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.4	0.00	55.66	0.00	0.00	611.13
1.2D + 1.0E	0.9	0.00	34.57	0.00	0.00	90.48
0.9D + 1.0E	0.9	0.00	25.93	0.00	0.00	89.67
1.0D + 1.0W 60 mph Wind	4.0	0.00	28.81	0.00	0.00	347.25

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-8.27	-6.34	0.00	-190.35	0.00	-190.35	1770.94	885.47	2385.54	1194.54	110.00	0.528
0.9D + 1.6W 101 mph Wind	-6.15	-6.25	0.00	-187.60	0.00	-187.60	1770.94	885.47	2385.54	1194.54	110.00	0.518
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-17.31	-2.89	0.00	-79.92	0.00	-79.92	1770.94	885.47	2385.54	1194.54	110.00	0.238
1.2D + 1.0E	-8.51	-0.51	0.00	-20.05	0.00	-20.05	1770.94	885.47	2385.54	1194.54	110.00	0.065
0.9D + 1.0E	-6.39	-0.50	0.00	-19.83	0.00	-19.83	1770.94	885.47	2385.54	1194.54	110.00	0.062
1.0D + 1.0W 60 mph Wind	-7.08	-1.39	0.00	-41.60	0.00	-41.60	1770.94	885.47	2385.54	1194.54	110.00	0.122

Base Plate Summary

Structure:	CT01001-S-SB		**Code:**	EIA/TIA-222-G	9/7/2021
Site Name:	Hebron		**Exposure:**	C	
Height:	160.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

Reactions	
Original Design	
Moment (kip-ft):	1456.00
Axial (kip):	33.00
Shear (kip):	16.00
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	1582.46
Axial (kip):	34.55
Shear (kip):	18.07

Base Plate	
Yield (ksi):	36.00
Width (in):	62.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	27.68
Moment (kip-in):	414.12
Allow Stress (ksi):	48.60
Applied Stress (ksi):	22.36
Stress Ratio:	0.46

Anchor Bolts	
Bolt Circle:	59.00
Number Bolts:	12.00
Bolt Type:	2.00" A687
Bolt Diameter (in):	2.00
Yield (ksi):	105.00
Ultimate (ksi):	150.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	111.92
Allowable (kip):	300.00
Ratio:	0.38
Tension	
Force (kip):	102.65
Allowable (kip):	300.00
Ratio:	0.35

Monopole Mat Foundation Design

			Date: 9/7/2021
Customer Name:	Dish Wireless	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	160
Site Number:	CT01001-S-SBA	**Engineer Name:**	T. Alajaj
Engr. Number:	114605	**Engineer Login ID:**	

Foundation Info Obtained from: Mapping Operation

Structure Type: Monopole

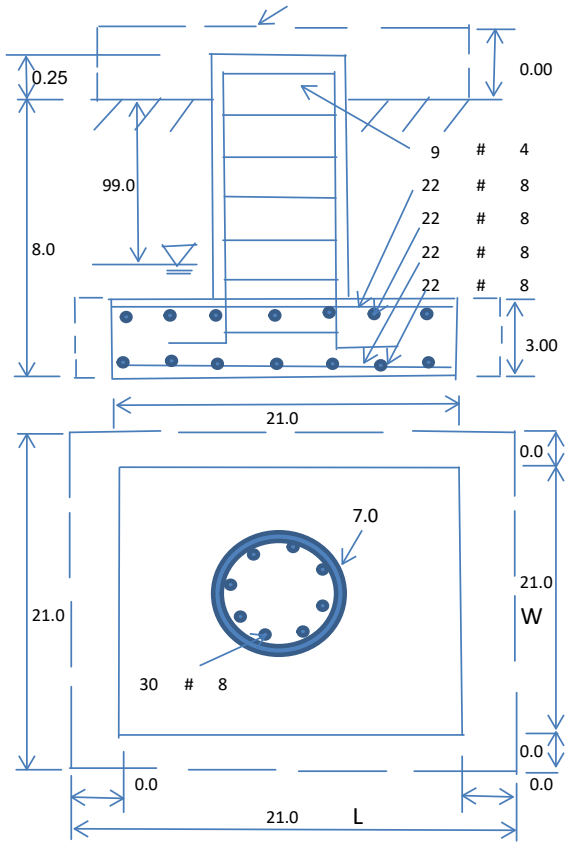
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	34.6	Shear Force (Kips):	18.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1582.5
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	8.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	21	Width of Pad (ft.):	21
Final Length of pad (ft)	21.0	Final width of pad (ft):	21.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	30	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	22	Qty. of Rebar in Pad (W):	22

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	22	Qty. of Rebar in Pad (W):	22
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	2012.58	Total Dry Soil Weight (Kips):	241.51
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	241.51	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1525.04	Total Dry Concrete Weight (Kips):	228.76
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	228.76	Total Vertical Load on Base (Kips):	504.87

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2169	<	Allowable Factored Soil Bearing (psf):	12000	0.18	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4807.3	>	Design Factored Momont (kips-ft):	1732	0.36	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.78	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4107.6	>	Design Factored Moment (Mu, Kips-F	1677.5	0.41	OK!
Calculated Shear Capacity (Kips):	660.1	>	Design Factored Shear (Kips):	18.1	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1279.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9755.9	>	Design Factored Axial Load (Pu Kips):	34.6	0.00	OK!
Moment & Axial Strength Combination:	0.41	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.004		Reinforcement Ratio is too small			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	777.0	>	One-Way Factored Shear (L-D. Kips):	124.6	0.16	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	777.0	>	One-Way Factored Shear (W-D., Kips)	124.6	0.16	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	639.4	>	One-Way Factored Shear (C-C, Kips):	116.2	0.18	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0021	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0021		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2494.2	>	Moment at Bottom (L-Dir. K-Ft):	609.1	0.24	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2494.2	>	Moment at Bottom (W-Dir. K-Ft):	609.1	0.24	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3506.6	>	Moment at Bottom (C-C Dir. K-Ft):	861.4	0.25	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0021	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0021		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2494.2	>	Moment at the top (L-Dir K-Ft):	233.5	0.09	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2494.2	>	Moment at the top (W-Dir K-Ft):	233.5	0.09	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3506.6	>	Moment at the top (C-C Dir. K-Ft):	221.2	0.06	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	633.0	k-ft.	Max. factored shear stress v_{u_CD}:		0.8	Psi
Max. factored shear stress v_{u_AB}:	5.3	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	5.3	Psi	Check Usage of Punching Shear Capacity:		0.03	OK!

EXHIBIT 9

Antenna Mount Analysis

March 21, 2022

Sherri Knapik
SBA Network Services, LLC.
134 Flanders Road, Suite 125
Westborough, MA 01581
(508) 251-0720 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:	BOBDL00115A
	Site Name:	SBA - CT01001-S
***SBA Network Services Designation*:**	**Site Number:**	CT01001-S
	Site Name:	Hebron
	Application Number:	169180, v1
Engineering Firm Designation:	**B+T Group Project Number:**	149429.003.01
Site Data:	**768 Gilead Street, Hebron, CT, 06248, Tolland County**	
	Latitude *41.68631*°, Longitude *-72.41511*°	
	Monopole	
	Pole 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 4.2%)**

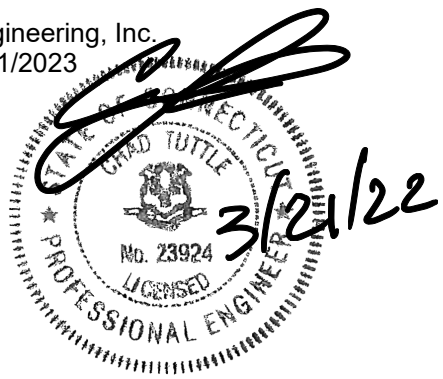
This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code(2018 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

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

Mount structural analysis prepared by: Chris Guidry

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



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of canister pole mount at 115 ft., attached to monopole at 768 Gilead Street, Hebron, CT, 06248, Tolland County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to B+T Group was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3-second gust wind speed of 120 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 canister pole mount has been analyzed for various live loading conditions consisting of a 0-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 0-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	115	1	3	Commscope FFVV-65B-R3	1
			6	Commscope CDX623T-DS-T	2

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

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
Collo App	Proposed Loading	Date: 08/10/2021	SBA Network Services, LLC.
RFDS		Date: 08/02/2021	

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.

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

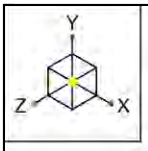
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Mount Pipes	115	4.2	Pass

5) RECOMMENDATIONS

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

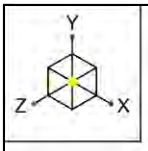
APPENDIX A

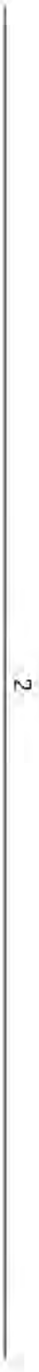
(RISA-3D Output)



Envelope Only Solution

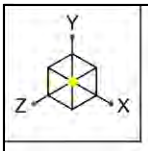
B+T Group	CT01001-S - Hebron	GRG-1
GRG		Mar 19, 2022
149429.003.01		149429_003_01_Hebron_CT.R3D





Envelope Only Solution

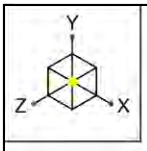
B+T Group	CT01001-S - Hebron	GRG-2
GRG		Mar 19, 2022
149429.003.01		149429_003_01_Hebron_CT.R3D



PIPE_17

Envelope Only Solution

B+T Group	CT01001-S - Hebron	GRG-3
GRG		Mar 19, 2022
149429.003.01		149429_003_01_Hebron_CT.R3D

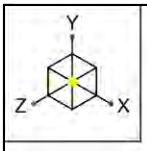


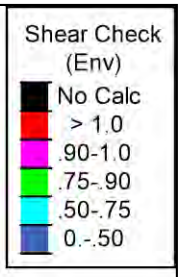
Code Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50

0.04

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT01001-S - Hebron	GRG-4
GRG		Mar 19, 2022
149429.003.01		149429_003_01_Hebron_CT.R3D





Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT01001-S - Hebron	GRG-5
GRG		Mar 19, 2022
149429.003.01		149429_003_01_Hebron_CT.R3D

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	0	
2	2	0	20.000302	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

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	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-P1	PIPE_17	Column	None	A53 Gr.B	Typical	25.918	882.837	882.837	1765.673

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	2	2	1	MF-P1	Column	None	A53 Gr.B	Typical

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Seismic DR
1	2	Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Function
1	2	MF-P1	20	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.022	%65
2	2	Y	-0.022	%90
3	2	Y	-0.01	%95
4	2	Y	-0.01	%95
5	2	Y	0	0
6	2	Y	-0.022	%65
7	2	Y	-0.022	%90
8	2	Y	-0.01	%95
9	2	Y	-0.01	%95

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	2	Y	0	0
11	2	Y	-0.022	%65
12	2	Y	-0.022	%90
13	2	Y	-0.01	%95
14	2	Y	-0.01	%95
15	2	Y	0	0
16	2	Y	-0.036	0
17	2	Y	-0.036	%100
18	2	Y	0	0
19	2	Y	0	0
20	2	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Z	-0.714	0
2	2	Z	-0.714	%100
3	2	Z	0	0
4	2	Z	0	0
5	2	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	X	-0.714	0
2	2	X	-0.714	%100
3	2	X	0	0
4	2	X	0	0
5	2	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Z	-0.124	0
2	2	Z	-0.124	%100
3	2	Z	0	0
4	2	Z	0	0
5	2	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	X	-0.124	0
2	2	X	-0.124	%100
3	2	X	0	0
4	2	X	0	0
5	2	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Z	-0.045	0
2	2	Z	-0.045	%100
3	2	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
4	2	Z	0	0
5	2	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	X	-0.045	0
2	2	X	-0.045	%100
3	2	X	0	0
4	2	X	0	0
5	2	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.062	%65
2	2	Y	-0.062	%90
3	2	Y	-0.008	%95
4	2	Y	-0.008	%95
5	2	Y	0	0
6	2	Y	-0.062	%65
7	2	Y	-0.062	%90
8	2	Y	-0.008	%95
9	2	Y	-0.008	%95
10	2	Y	0	0
11	2	Y	-0.062	%65
12	2	Y	-0.062	%90
13	2	Y	-0.008	%95
14	2	Y	-0.008	%95
15	2	Y	0	0
16	2	Y	-0.514	0
17	2	Y	-0.514	%100
18	2	Y	0	0
19	2	Y	0	0
20	2	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Z	-0.009	%65
2	2	Z	-0.009	%90
3	2	Z	-0.002	%95
4	2	Z	-0.002	%95
5	2	Z	0	0
6	2	Z	-0.009	%65
7	2	Z	-0.009	%90
8	2	Z	-0.002	%95
9	2	Z	-0.002	%95
10	2	Z	0	0
11	2	Z	-0.009	%65
12	2	Z	-0.009	%90
13	2	Z	-0.002	%95
14	2	Z	-0.002	%95
15	2	Z	0	0
16	2	Z	-0.014	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	2	Z	-0.014	%100
18	2	Z	0	0
19	2	Z	0	0
20	2	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	X	-0.009	%65
2	2	X	-0.009	%90
3	2	X	-0.002	%95
4	2	X	-0.002	%95
5	2	X	0	0
6	2	X	-0.009	%65
7	2	X	-0.009	%90
8	2	X	-0.002	%95
9	2	X	-0.002	%95
10	2	X	0	0
11	2	X	-0.009	%65
12	2	X	-0.009	%90
13	2	X	-0.002	%95
14	2	X	-0.002	%95
15	2	X	0	0
16	2	X	-0.014	0
17	2	X	-0.014	%100
18	2	X	0	0
19	2	X	0	0
20	2	X	0	0

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	2	Y	-0.025	-0.025	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	2	Z	-0.018	-0.018	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	2	X	-0.018	-0.018	0	%100

Member Area Loads

No Data to Print...

Nodal Loads and Enforced Displacements

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Dead	DL	-1	20	
2	0 Wind - No Ice	WLZ		5	
3	90 Wind - No Ice	WLX		5	
4	0 Wind - Ice	WLZ		5	
5	90 Wind - Ice	WLX		5	
6	0 Wind - Service	WLZ		5	
7	90 Wind - Service	WLX		5	
8	Ice	OL1		20	1
9	0 Seismic	ELZ		20	1
10	90 Seismic	ELX		20	1
11	Live Load a	LL			
12	Live Load b	LL			
13	Live Load c	LL			
14	Live Load d	LL			
15	Maint LL 1	LL			
16	Maint LL 2	LL			
17	Maint LL 3	LL			
18	Maint LL 4	LL			
19	Maint LL 5	LL			
20	Maint LL 6	LL			
21	Maint LL 7	LL			
22	Maint LL 8	LL			
23	Maint LL 9	LL			
24	Maint LL 10	LL			
25	Maint LL 11	LL			
26	Maint LL 12	LL			
27	Maint LL 13	LL			
28	Maint LL 14	LL			
29	Maint LL 15	LL			

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	1	max	1.427	5	4.38	25	1.427	2	14.291	2	0	100	14.291	11
2		min	-1.427	11	2.433	2	-1.427	8	-14.291	8	0	1	-14.291	5
3	Totals:	max	1.427	5	4.38	25	1.427	2						
4		min	-1.427	11	2.433	2	-1.427	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	2	PIPE_17	0.042	20	11	0.003	20	11	748.73	816.421	357.438	357.438	1.667	H1-1b

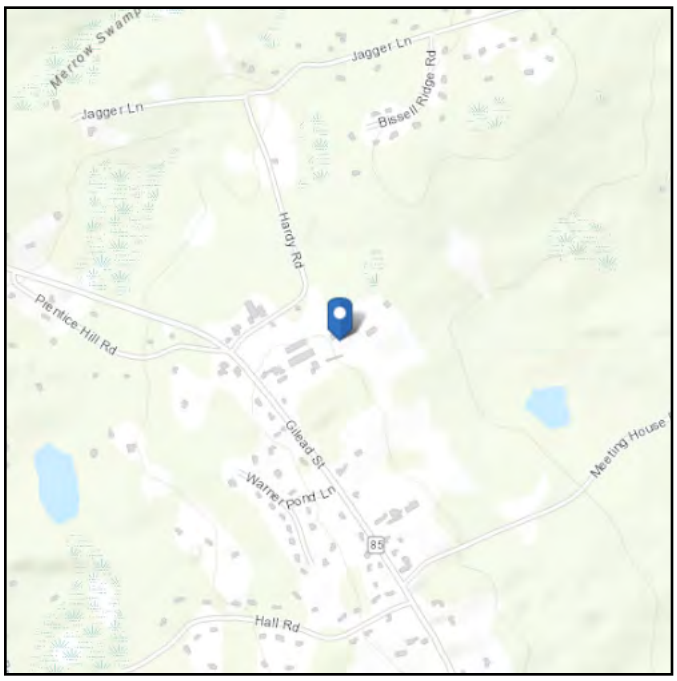
APPENDIX B
(Additional Calculations)

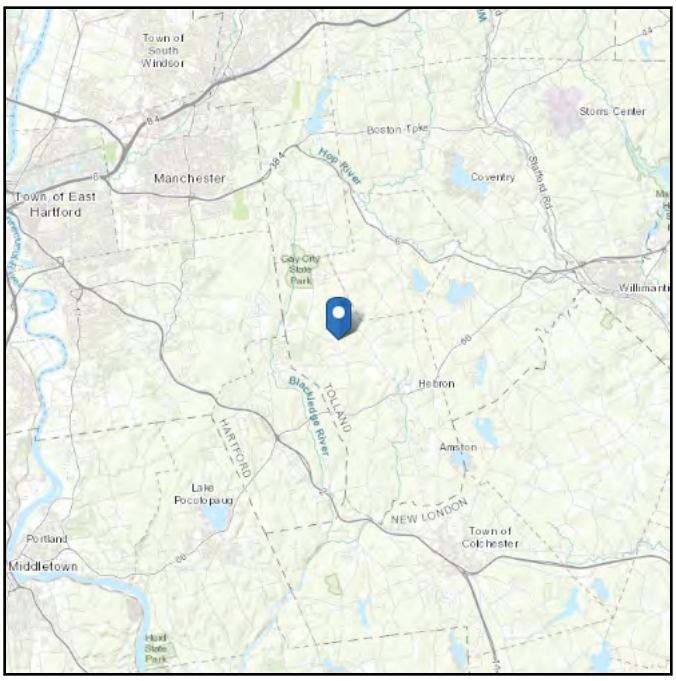
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 636.06 ft (NAVD 88)
Latitude: 41.686314
Longitude: -72.415106





Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Mar 17 2022

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

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

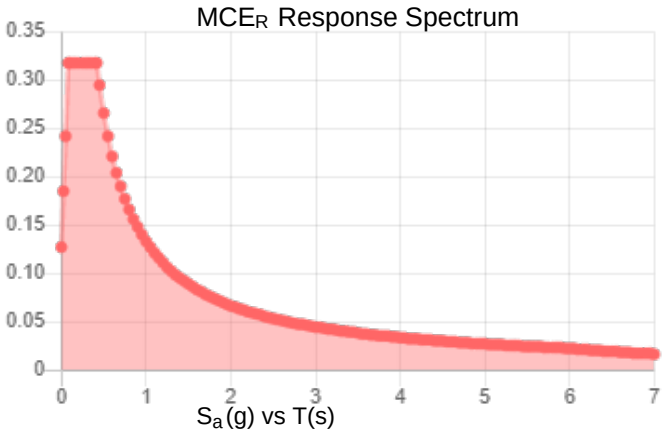
Seismic

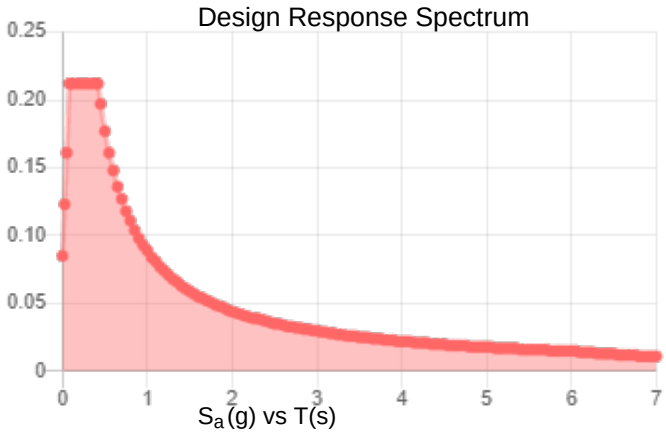
Site Soil Class: D - Default (see Section 11.4.3)

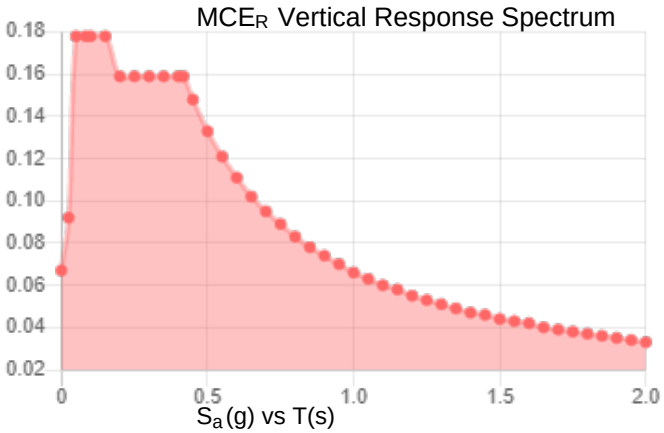
Results:

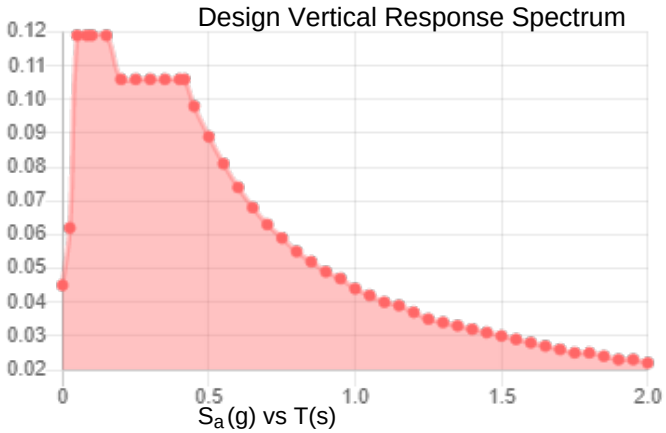
S_S :	0.199	S_{D1} :	0.089
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.109
F_v :	2.4	PGA_M :	0.172
S_{MS} :	0.318	F_{PGA} :	1.582
S_{M1} :	0.133	I_e :	1
S_{DS} :	0.212	C_v :	0.7

Seismic Design Category B









Data Accessed: **Thu Mar 17 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Mar 17 2022

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

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

PROJECT	**149429.003.01 - Hebron, CT**		**KSC**
SUBJECT	**Pole Mount Analysis**		
DATE	**03/21/22**	PAGE	OF

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	636	ft	[ASCE7 Hazard Tool]
Tower Height		:	160.00	ft	
Mount Elevation		:	115.00	ft	
Antenna Elevation		:	115.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	120	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.20		
	S_1	:	0.06		
	S_{DS}	:	0.21		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.30		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.98		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.13	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.106		[Sec. 2.7.7.1]
Amplification	A_s	:	1.875		[Sec. 16.7]
	q_z	:	44.61	psf	

PROJECT	149429.003.01 - Hebron, CT	KSC
SUBJECT	Pole Mount Analysis	
DATE	03/21/22	PAGE OF

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

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	EPA_{N-Ice} (ft^2)	EPA_{T-Ice} (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	FFVV-65B-R3	0.5	6.09	1.36	2.95	1.77	3.62	2.41	0.16	0.10	0.03	0.02
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Commscope	CDX623T-DS-T	1	1.79	1.20	0.31	0.28	0.56	0.53	0.01	0.01	0.00	0.00
Generic	Canister	0.5	6.67	0.59	30.00	30.00	32.19	32.19	0.71	0.71	0.12	0.12
Generic	Canister	0.5	6.67	0.59	30.00	30.00	32.19	32.19	0.71	0.71	0.12	0.12

EXHIBIT 10

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00115A

DISH Wireless L.L.C. SITE ADDRESS:

768 GILEAD STREET
HEBRON, CT 06248

SBA APPROVED

By Stephen Roth at 4:02:08 PM, 10/4/2021

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 (2) PROPOSED ANTENNA FLUSH MOUNTS
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUS (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE
- INSTALL (1) PROPOSED CABLE CLAMP

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 FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	ELLIS EDWARD A & RENEE J
ADDRESS:	8051 CONGRESS AVE BOCA RATON, FL 33487
TOWER TYPE:	STEALTH POLE
TOWER CO SITE ID:	CT01001-S
TOWER APP NUMBER:	169180
COUNTY:	TOLLAND
LATITUDE (NAD 83):	41° 41' 10.73" N 41.68631356 N
LONGITUDE (NAD 83):	72° 24' 54.38" W 72.41510556 W
ZONING JURISDICTION:	CITY OF HEBRON
ZONING DISTRICT:	R-1
PARCEL NUMBER:	09013067-34-27A
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER CO
TELEPHONE COMPANY:	XFINITY

PROJECT DIRECTORY

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

CONNECTICUT CODE OF COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT :

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT, TAKE I-91 S, I-291 E AND I-384 TO, CT-85 S IN BOLTON. TAKE EXIT 5 FROM I-384, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, USE THE RIGHT 2 LANES TO MERGE WITH I-91 S TOWARD HARTFORD, TAKE EXIT 35A FOR I-291 TOWARD MANCHESTER, CONTINUE ONTO I-291 E, TAKE THE I-384 E EXIT, CONTINUE ONTO I-384, TAKE EXIT 5 FOR CT-85 TOWARD BOLTON/COLCHESTER, FOLLOW CT-85 S TO HARDY RD IN HEBRON, TURN RIGHT ONTO CT-85 S, TURN RIGHT TO STAY ON CT-85 S, TURN LEFT TO STAY ON CT-85 S, TURN LEFT TO STAY ON CT-85 S, TURN LEFT ONTO HARDY RD AND ARRIVE AT BOBDL00115A.

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

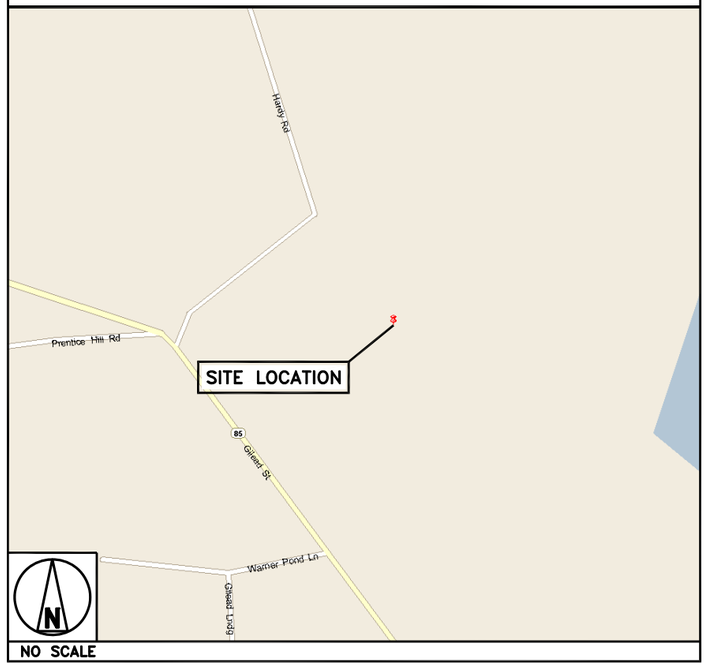
GENERAL NOTES

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

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

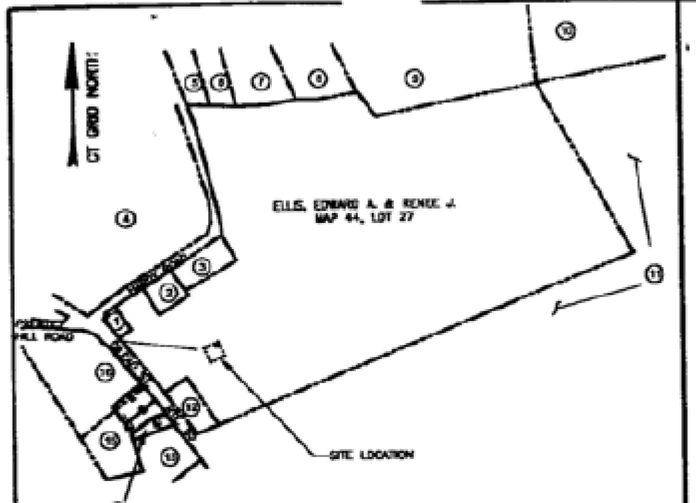
SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

CT1001-S



KEY MAP

SCALE 1"=500'

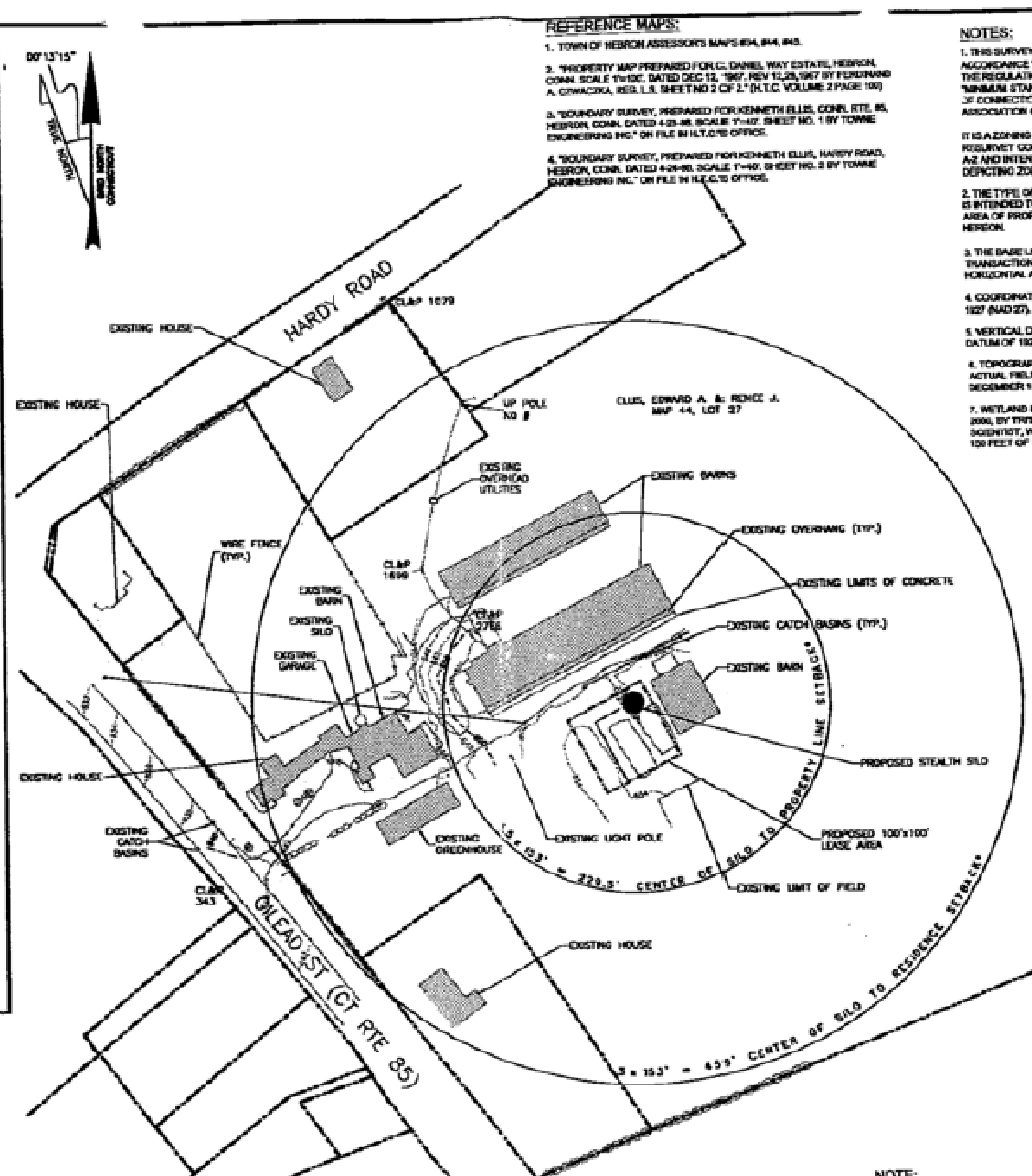
500 0 500 1000 1500 FT

REFERENCE NUMBER	ABUTTING PROPERTY OWNER	ASSESSORS MAP
1	N/F JOHNSON, GAIL E. & NICHOLAS L.	MAP 44, LOT 26
2	N/F MUNO, FRANK R. JR. & GWENDOLYN E.	MAP 44, LOT 25
3	N/F RAPP, STUART E. & GARBE, SARAH R. & UTT, NANCY R.	MAP 34, LOT 13
4	N/F WAY; HUNTER; SCHOONOVER; ET AL.	MAP 45, LOT 10
5	N/F ELLIS, EDWARD A. & RENEE J.	MAP 34, LOT 12
6	N/F DOLAN, SCOTT	MAP 34, LOT 11.1
7	N/F MUNO, FRANK R. & GWENDOLYN E.	MAP 34, LOT 11
8	N/F ELLIS EDWARD A. & RENEE J.	MAP 34, LOT 9A.8
9	N/F ELLIS, EDWARD A. & RENEE J. & MUNO, FRANK R. JR. & GWENDOLYN	MAP 34, LOT 6B
10	N/F WAY, JOHN L. II ESTATE OF (FLEET NATIONAL BANK EXEC)	MAP 34, LOT 6A
11	N/F WAY, JOHN L. II ESTATE OF WAY, VIRGINA S. & FLEET BANK CO-EX	MAP 44, LOT 28
12	N/F MUNO, GWENDOLYN ET AL.	MAP 44, LOT 27A
13	N/F WARNER, SCOTT C. & JOAN E.	MAP 44, LOT 20X
14	N/F GOLUB, THOMAS J. & KAREN T.	MAP 44, LOT 21
15	N/F MALCOKY, JOHN & GLORIA	MAP 44, LOT 22
16	N/F MCSHANE, KATHLEEN J.	MAP 44, LOT 24

LEGEND

DATUM IS MEAN SEA LEVEL

- EXISTING HIGHWAY LINE/PROPERTY LINE
- PROPOSED LEASE AREA
- 130 — EXISTING CONTOUR
- x 132 — EXISTING SPOT ELEVATION @ X
- BARBED WIRE, FARM AND CHAIN LINK FENCE
- EXISTING UTILITY POLE AND OVERHEAD UTILITIES
- PROPOSED UTILITY POLE AND OVERHEAD UTILITIES
- CHD BOUNDARY MONUMENT
- CLEARING LINE



SURVEY PLAN

SCALE 1"=80'

80 0 80 160 240 FT

REFERENCE MAPS:

1. TOWN OF HEBRON ASSESSOR'S MAPS #34, #44, #45.
2. "PROPERTY MAP PREPARED FOR C. DANIEL WAY ESTATE, HEBRON, CONN. SCALE 1"=100'. DATED DEC 12, 1967. REV 12.28.1967 BY FERDINAND A. CZWACZKA, REG. L.S. SHEET NO 2 OF 2." (H.T.C. VOLUME 2 PAGE 100)
3. "BOUNDARY SURVEY, PREPARED FOR KENNETH ELLIS, CONN. RTE. 85, HEBRON, CONN. DATED 4-25-86. SCALE 1"=40'. SHEET NO. 1 BY TOWNE ENGINEERING INC." ON FILE IN H.T.C.'S OFFICE.
4. "BOUNDARY SURVEY, PREPARED FOR KENNETH ELLIS, HARDY ROAD, HEBRON, CONN. DATED 4-24-86. SCALE 1"=40'. SHEET NO. 2 BY TOWNE ENGINEERING INC." ON FILE IN H.T.C.'S OFFICE.

NOTES:

1. THIS SURVEY AND MAP HAVE BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEY AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996.

IT IS A ZONING LOCATION SURVEY BASED ON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND INTENDED TO BE USED FOR THE PURPOSE OF DEPICTING ZONING COMPLIANCE.

2. THE TYPE OF SURVEY IS FOR LEASED PROPERTY AND IS INTENDED TO DEPICT THE LIMITS OF THE PROJECT AREA OF PROPERTY FOR THE PROJECT REFERENCED HEREON.
3. THE BASE LINE FROM WHICH THIS PROPERTY TRANSACTION IS REFERENCED CONFORMS TO CLASS A-2 HORIZONTAL ACCURACY.
4. COORDINATE SYSTEM IS NORTH AMERICAN DATUM OF 1927 (NAD 27).
5. VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929.
6. TOPOGRAPHY DEPICTED HEREON IS THE RESULT OF ACTUAL FIELD SURVEY PERFORMED BY GOODKIND & O'DEA, DECEMBER 14, 2000.
7. WETLAND INVESTIGATION COMPLETED ON NOVEMBER 29, 2000, BY TRITON ENVIRONMENTAL BY PROFESSIONAL SOIL SCIENTIST, WILLIAM KENNY. NO WETLANDS FOUND WITHIN 150 FEET OF PROJECT AREA.

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

EDWARD Z. NELSEN L.L.S.
for Goodkind & O'Dea, Inc.

PROPERTY INFORMATION

1. PROPERTY ADDRESS:

768 GILEAD STREET
HEBRON, CONNECTICUT

2. PROPERTY OWNER:

EDWARD A. & RENEE J. ELLIS
768 GILEAD STREET
HEBRON, CONNECTICUT

DEED: VOLUME 147, PAGE 653

2. ASSESSOR DATA: MAP 44, LOT 27
3. ZONE: DISTRICT R-1
4. FEMA/FIRM MAP: ZONED "X"
5. LOT AREA: 99 ACRES

SILO INFORMATION

1. LOCATION

NAD 27/CT
N 310,695.17
E 691,282.54

GEOD LAT/LONG NAD83
41° 41' 26.26" N
72° 24' 56.19" W

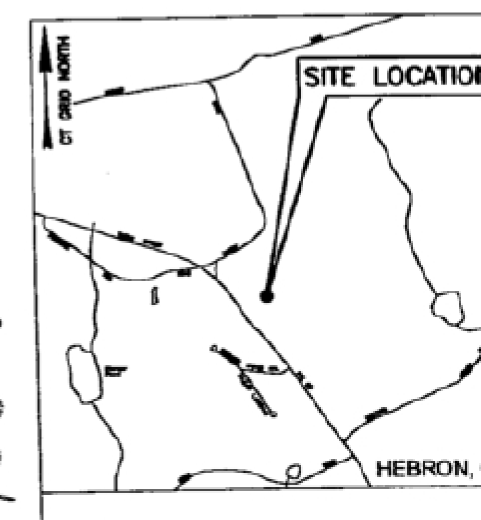
2. EXISTING GROUND ELEVATION AT TOWER: 652'± AMSL
3. TYPE: STEALTH SILO
4. SILO HEIGHT: 153' ABOVE TOP OF FOUNDATION

NOTE:

* = SETBACKS FOR STEALTH STRUCTURES SETBACKS ARE DISCRETIONARY UNDER SECTION 6.23.

4283
CT01001-S
RTP FINAL

SITE LOCATION



SCALE
1000 0 1000 2000 3000 FEET

LOCATION MAP

Goodkind & O'Dea, Inc.
Consulting Engineers and Planners
59 ELM STREET, SUITE 101
NEW HAVEN, CONNECTICUT 06510

4283
HEBRON SILO
768 GILEAD STREET
HEBRON, CONNECTICUT

SBA PROPERTIES, INC.
60 EASTERN BOULEVARD
GLASTONBURY, CONNECTICUT
(860) 659-9101
ONE TOWN CENTER RD, 3RD FL.
BOCA RATON, FL 33486
(561) 995-7670

NO.	REVISIONS	BY	CHK	APP
A	ISSUE FOR ZONING	FJD	EAN	
A	PRELIMINARY ISSUE FOR ZONING	FJD	EAN	

SITE NUMBER 10125-4283
HEBRON SILO
EXISTING CONDITION SURVEY

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

9/30/21

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

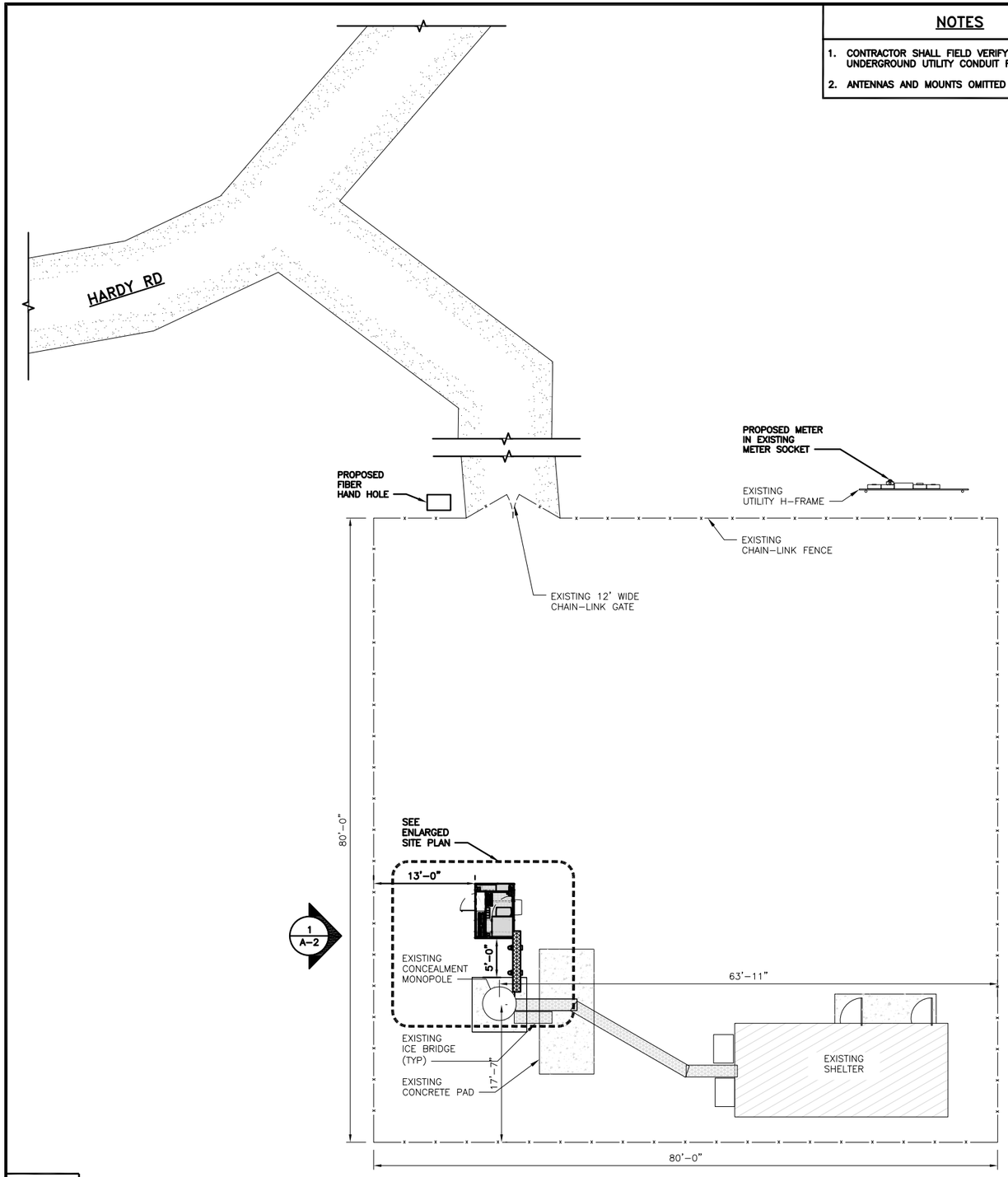
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

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.



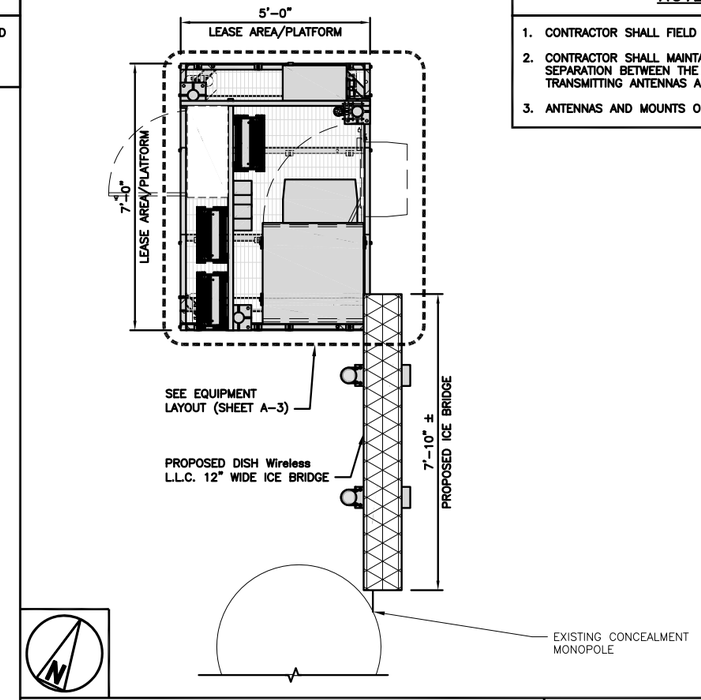
OVERALL SITE PLAN

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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

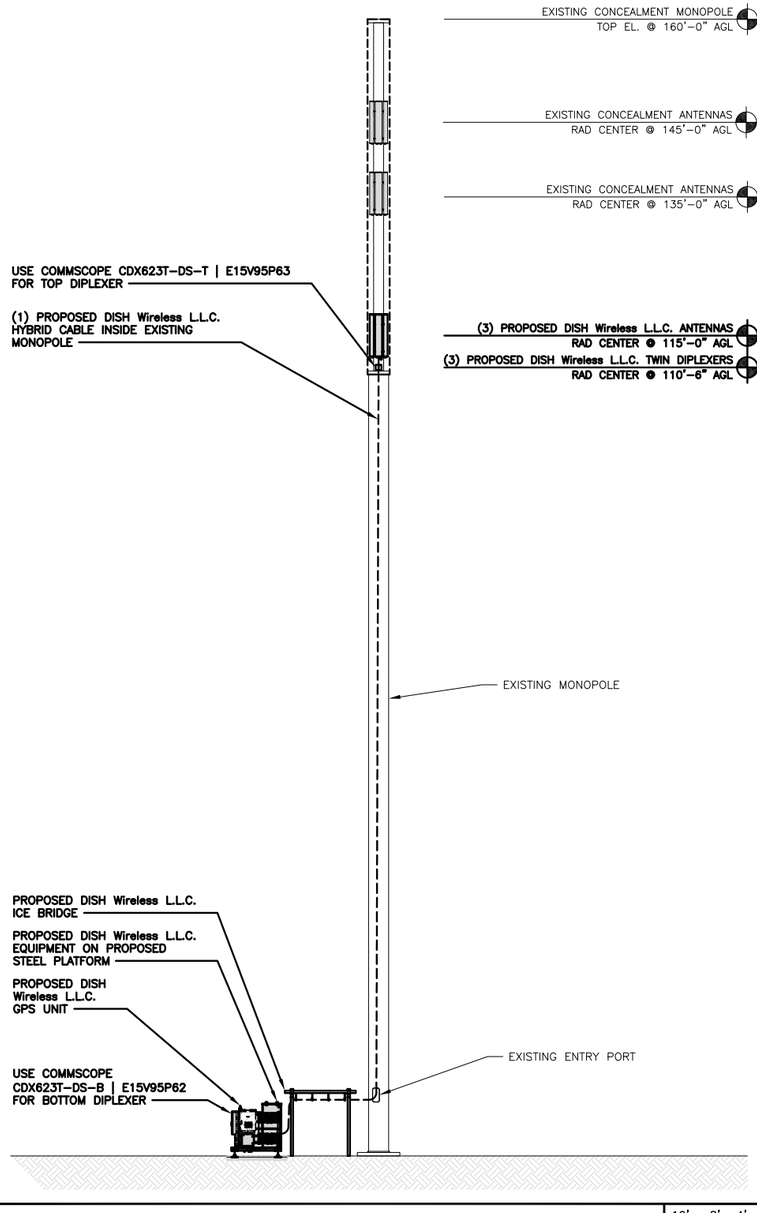
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

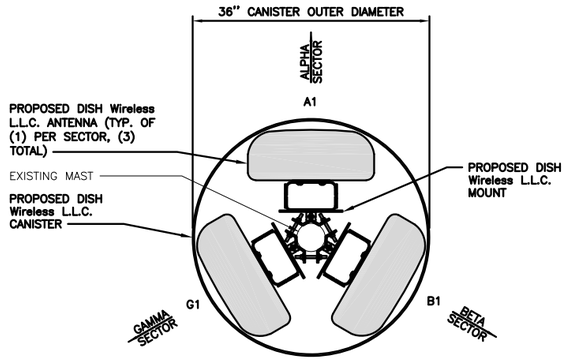
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



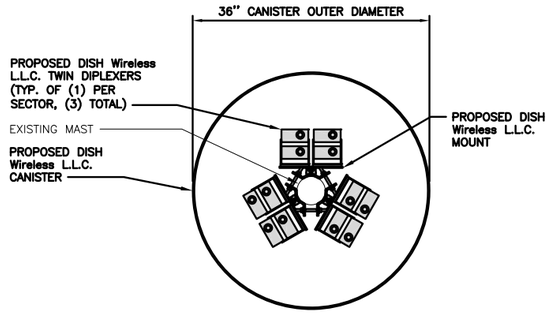
PROPOSED WEST ELEVATION

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

1



RAD CENTER @ 115'-0" A.G.L.



RAD CENTER @ 110'-6" A.G.L.

ANTENNA LAYOUT

12" 9" 6" 3" 0 1' 2'
1"=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	COMMSCOPE – FFVV-65B-R3	5G	71.969" x 11.811"	0°	115'-0"	(1) HIGH-CAPACITY HYBRID CABLE (150' LONG)
BETA	B1	PROPOSED	COMMSCOPE – FFVV-65B-R3	5G	71.969" x 11.811"	120°	115'-0"	
GAMMA	G1	PROPOSED	COMMSCOPE – FFVV-65B-R3	5G	71.969" x 11.811"	250°	115'-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.

ANTENNA SCHEDULE

NO SCALE

3

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

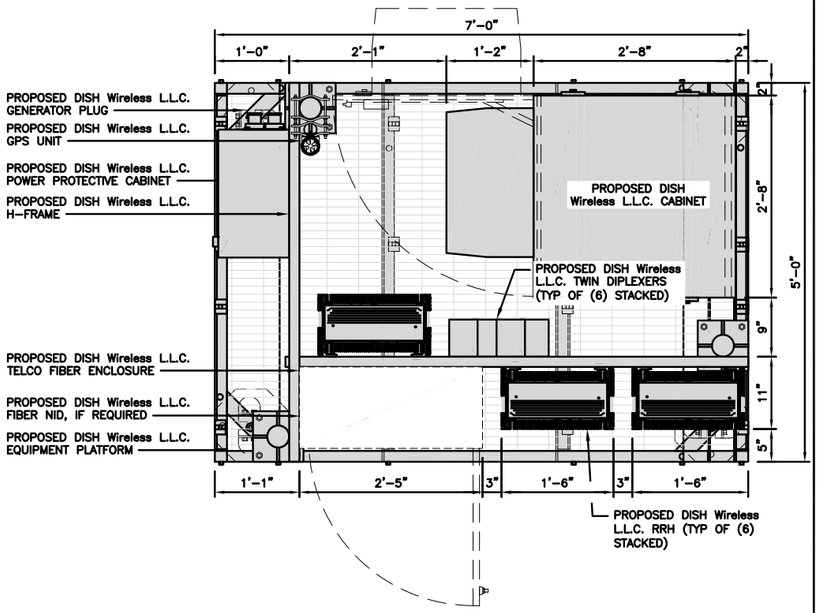
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

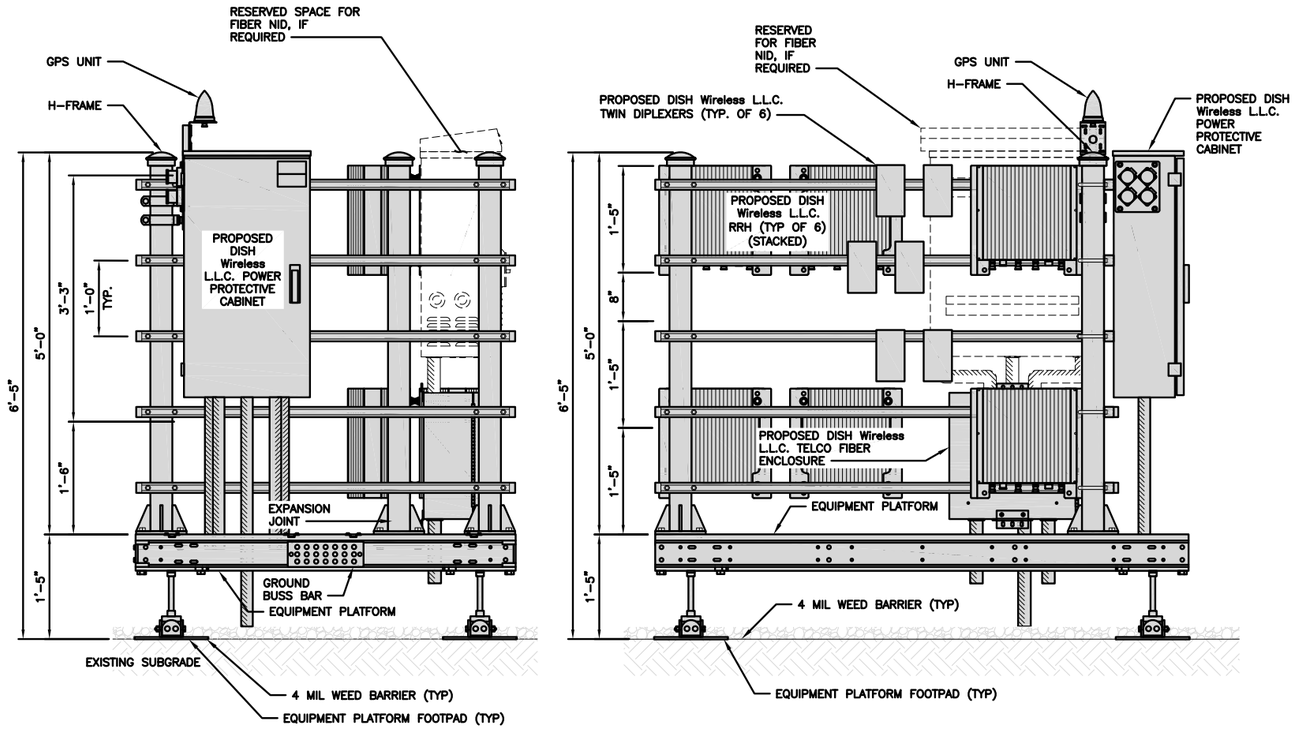
A-2

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.



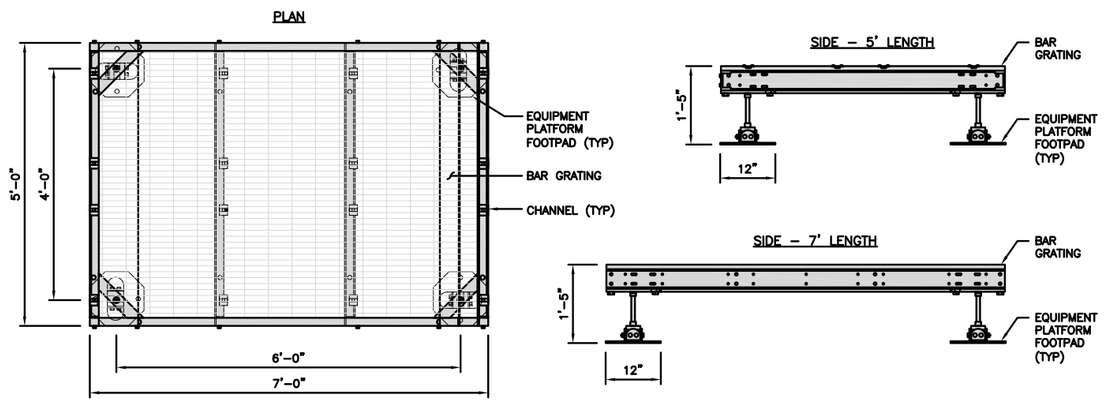
PLATFORM EQUIPMENT PLAN | NO SCALE | 1



H-FRAME EQUIPMENT ELEVATION | NO SCALE | 2

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

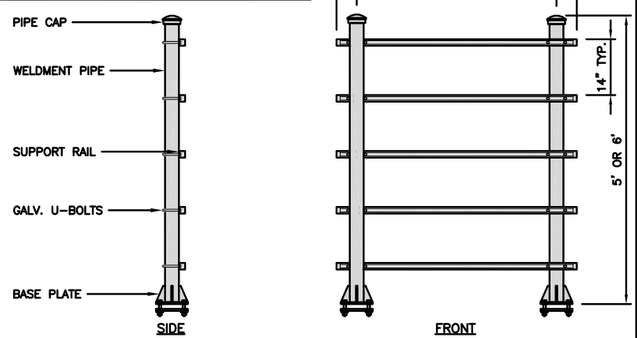
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL | NO SCALE | 3

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

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



H-FRAME DETAIL | NO SCALE | 4

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

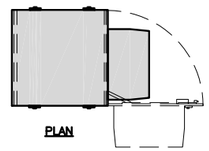
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

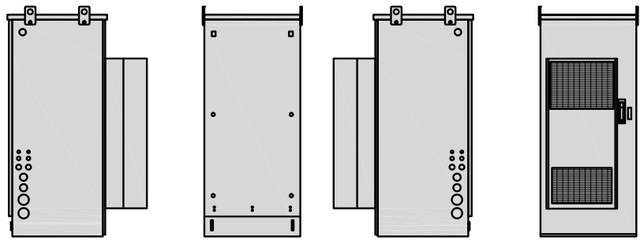
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

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



PLAN

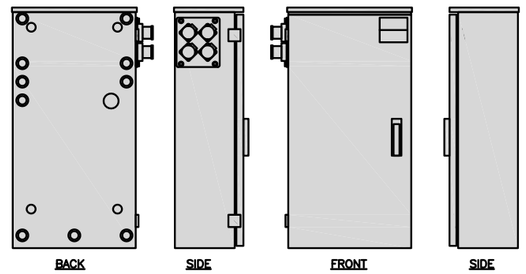


SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

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

TOP

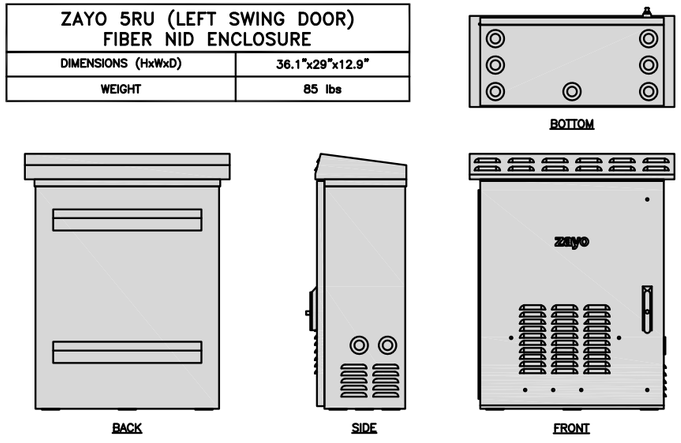


BACK SIDE FRONT SIDE

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

NOT USED | NO SCALE | 3

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

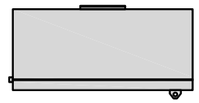


BOTTOM

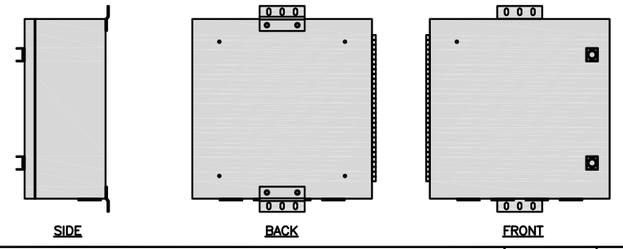
BACK SIDE FRONT

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

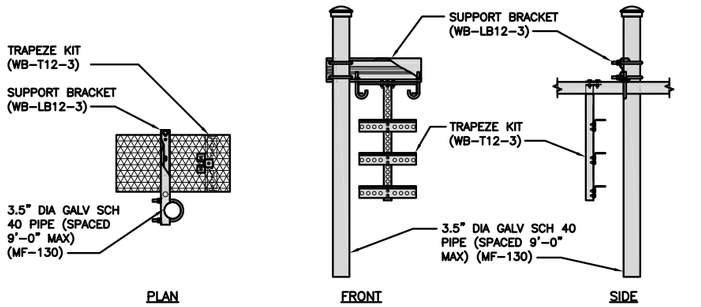


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

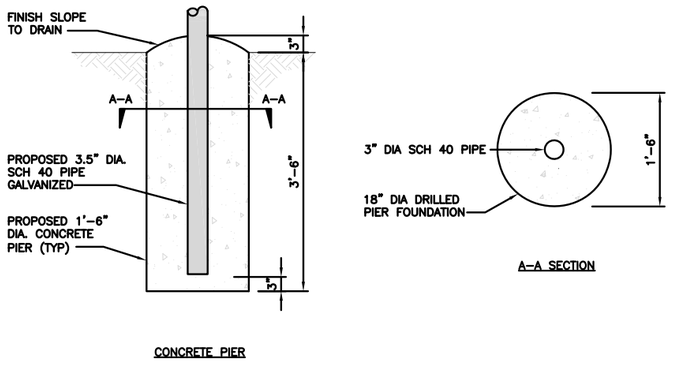
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



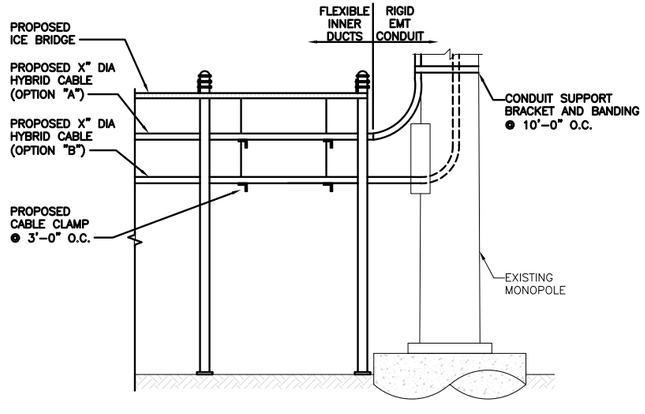
PLAN FRONT SIDE

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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

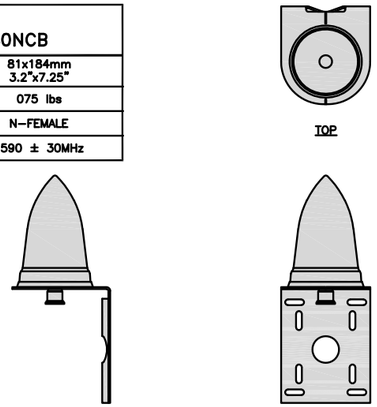
SHEET TITLE

EQUIPMENT DETAILS

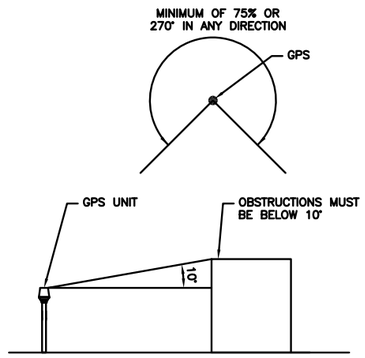
SHEET NUMBER

A-4

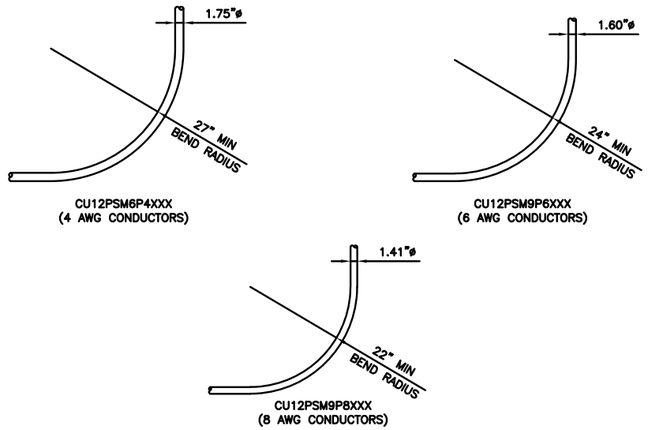
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1

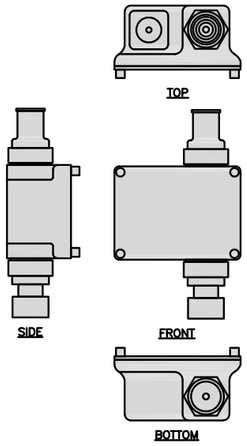


GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

KAELUS SMART BIAS TEE SBT0003F1V1 (BOTTOM OF TOWER)	
DIMENSIONS (HxWxD)	5.41"x3.27"x1.88"
WEIGHT	0.88 lbs
RF TO RF+AISG	
PASSBAND	555-3800 MHz
INSERTION LOSS	0.1dB MAX
RETURN LOSS	20dB MIN
MAX INPUT POWER	750W CW/5kW PEP
INTERMODULATION PRODUCTS	-160dBc(IM3)MAX @ 2x20W CW CARRIERS
RF IMPEDANCE	50 Ohms



SMART BIAS TEE 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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

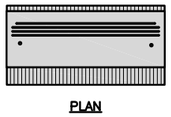
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

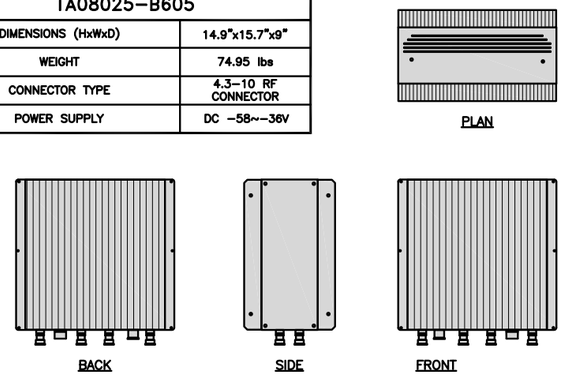
A-5

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



RRH DETAIL | NO SCALE | 1

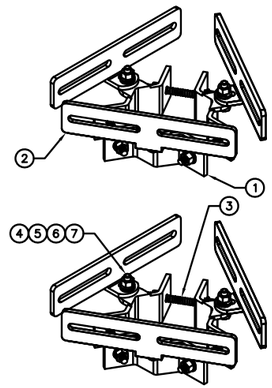
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



RRH DETAIL | NO SCALE | 2

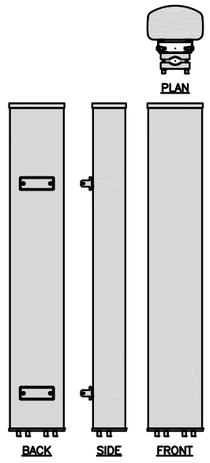
EEI FPS-AB TRIAD FLUH MOUNT	
DESCRIPTION	PART # - QTY
TRIAD-FPS - 1/4" BRACKET ASSEMBLY	PART 1 - QTY: 6
TRIAD-AB - 1/4" HRPO GUSSET ASSEMBLY	PART 2 - QTY: 6
3/8"x5-1/2" A36 THREADED ROD	PART 3 - QTY: 6
3/8"x1-1/4" A307 BOLT	PART 4 - QTY: 6
3/8" HEX NUT	PART 5 - QTY: 6
3/8" FLAT WASHER	PART 6 - QTY: 6
3/8" LOCK WASHER	PART 7 - QTY: 6
TOTAL WEIGHT	±8 lbs

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



MAST MOUNT DETAIL | NO SCALE | 3

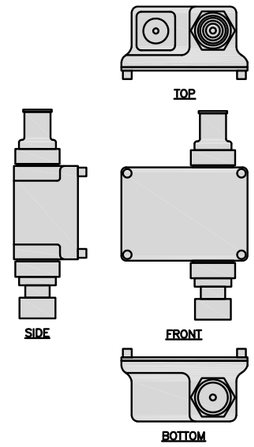
COMMSCOPE FVV-65B-R3	
DIMENSIONS (HxWxD)(MM/IN)	1828x300x181 71.9"x11.8"x7.1"
RF CONNECTOR INTERFACE	4.3-10 FEMALE
WEIGHT	43.8 lbs
WEIGHT WITH BRACKETS	70.9 lbs



ANTENNA DETAIL | NO SCALE | 4

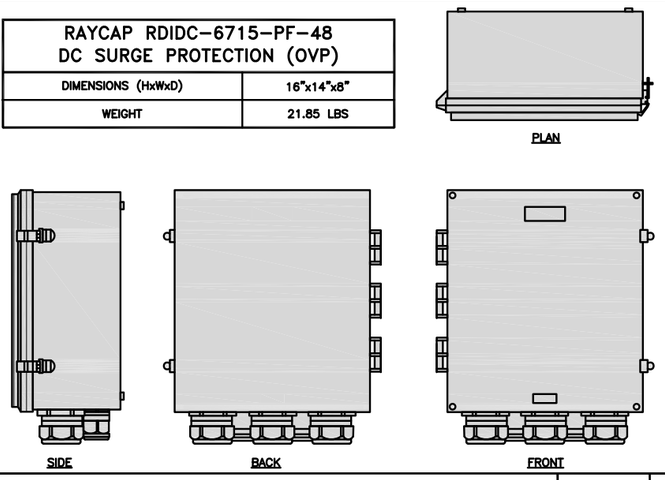
NOT USED | NO SCALE | 5

KAELUS SMART BIAS TEE SBT0003F1V2 (TOP OF TOWER)	
DIMENSIONS (HxWxD)	5.41"x3.27"x1.88"
WEIGHT	0.88 lbs
RF TO RF+AISG	
PASSBAND	555-3800 MHz
INSERTION LOSS	0.1dB MAX
RETURN LOSS	20dB MIN
MAX INPUT POWER	750W CW/5kW PEP
INTERMODULATION PRODUCTS	-160dBc(IM3)MAX @ 2x20W CW CARRIERS
RF IMPEDANCE	50 Ohms



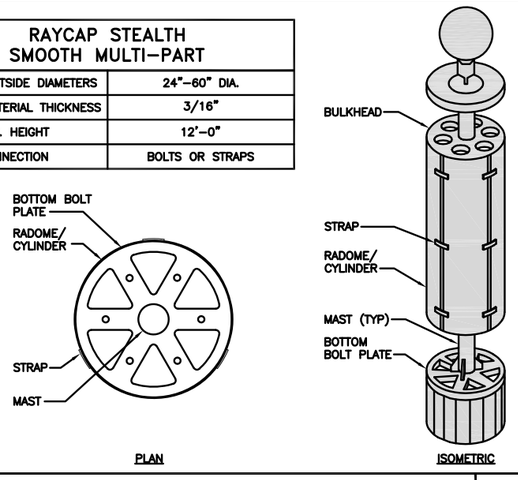
SMART BIAS TEE DETAIL | NO SCALE | 6

RAYCAP RDIDC-6715-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	16"x14"x8"
WEIGHT	21.85 LBS



SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

RAYCAP STEALTH SMOOTH MULTI-PART	
RADOME OUTSIDE DIAMETERS	24"-60" DIA.
APPROX. MATERIAL THICKNESS	3/16"
MAX. HEIGHT	12'-0"
CONNECTION	BOLTS OR STRAPS



RADOME CANISTER DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

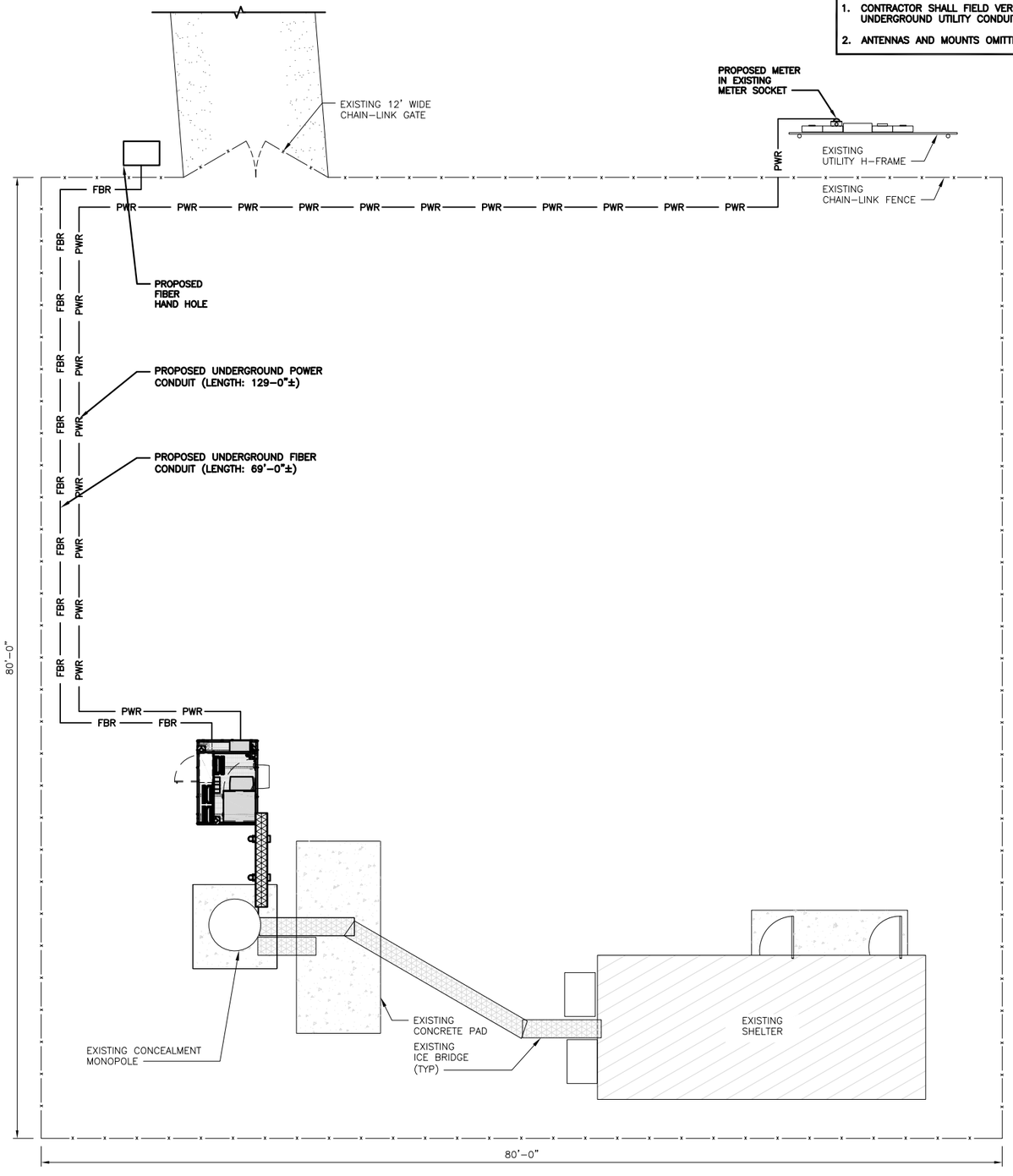
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

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



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.

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

UTILITY ROUTE PLAN

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

1

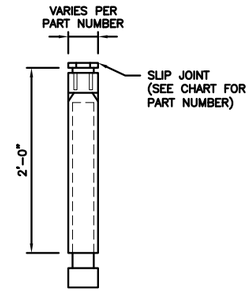
ELECTRICAL NOTES

NO SCALE

2

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"

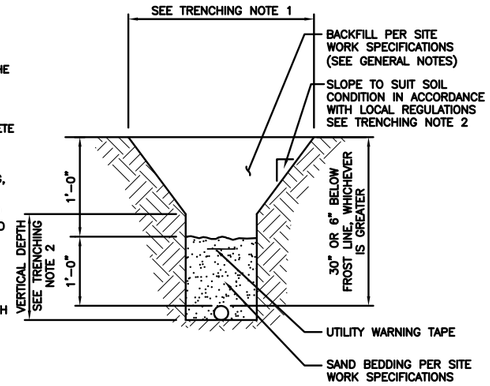


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

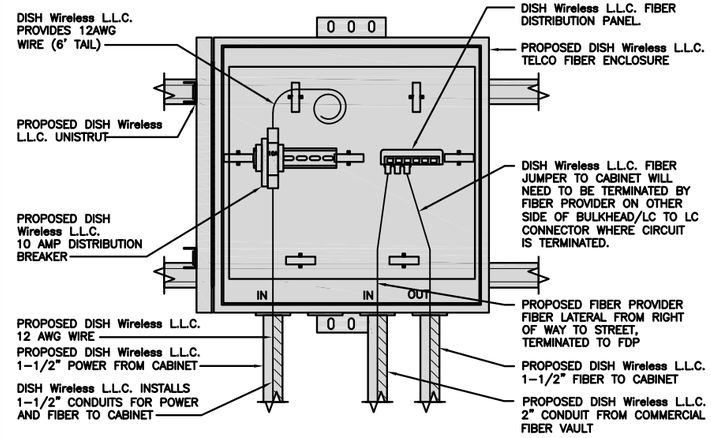
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

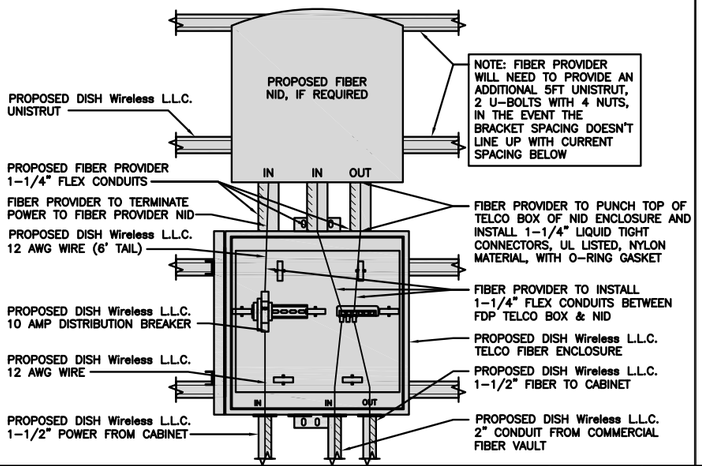
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

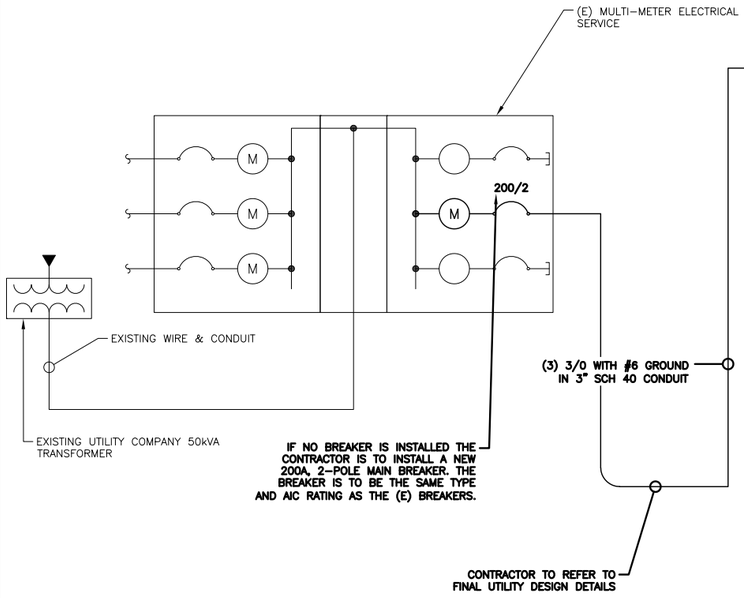
REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

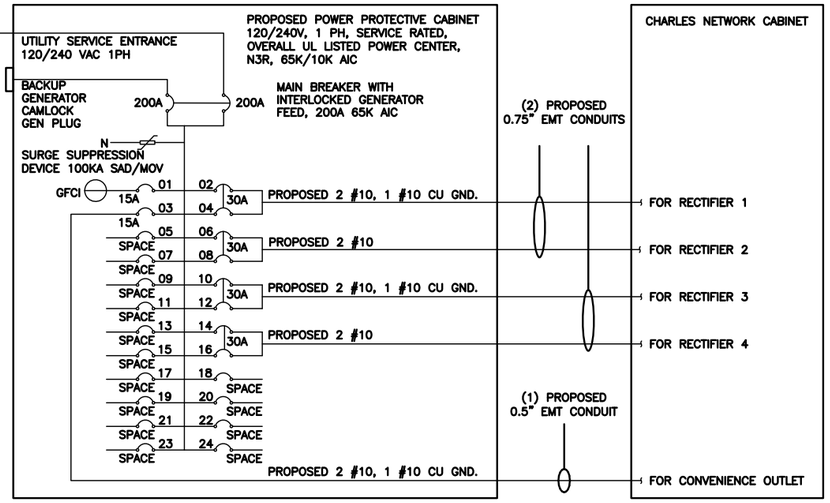
A&E PROJECT NUMBER
149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

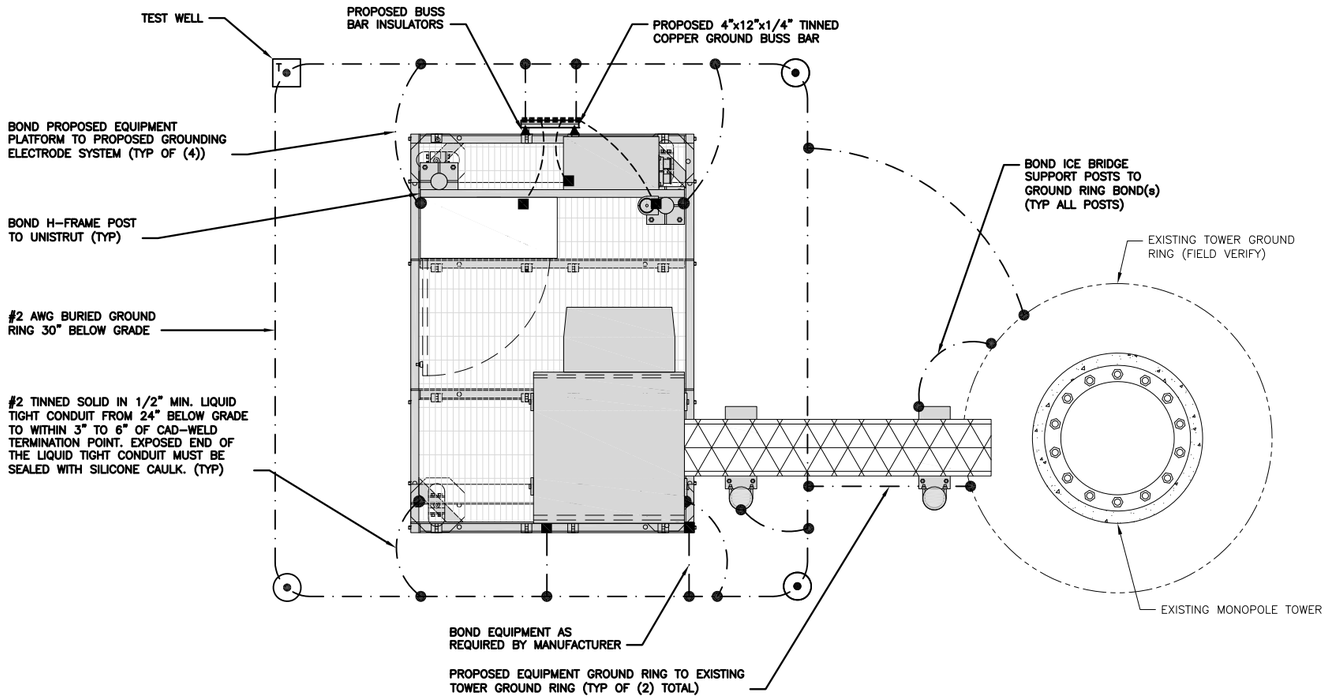
REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

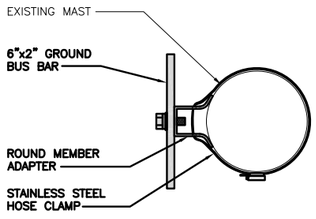
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3

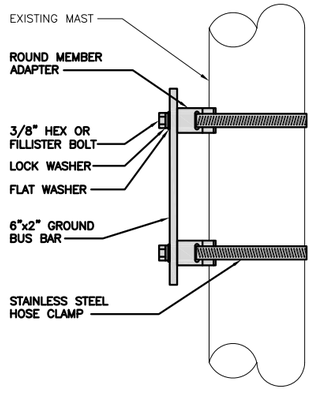


TYPICAL EQUIPMENT GROUNDING PLAN

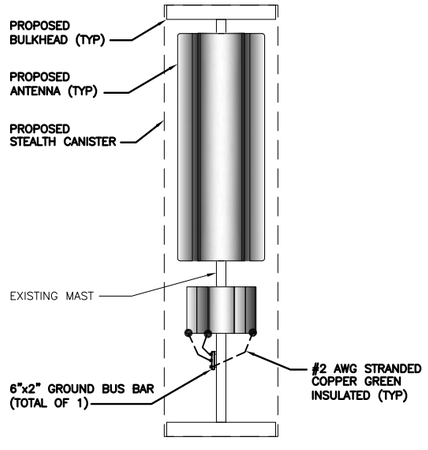
NO SCALE | 1



BUSS BAR PLAN



BUSS BAR ELEVATION



ANTENNA GROUNDING ELEVATION

TYPICAL ANTENNA GROUNDING DETAIL | NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

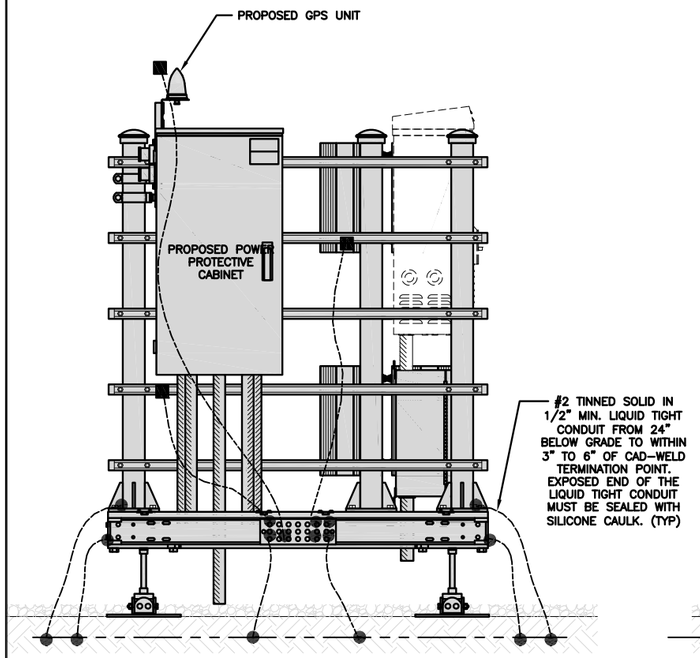
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE
GROUNDING PLANS AND NOTES

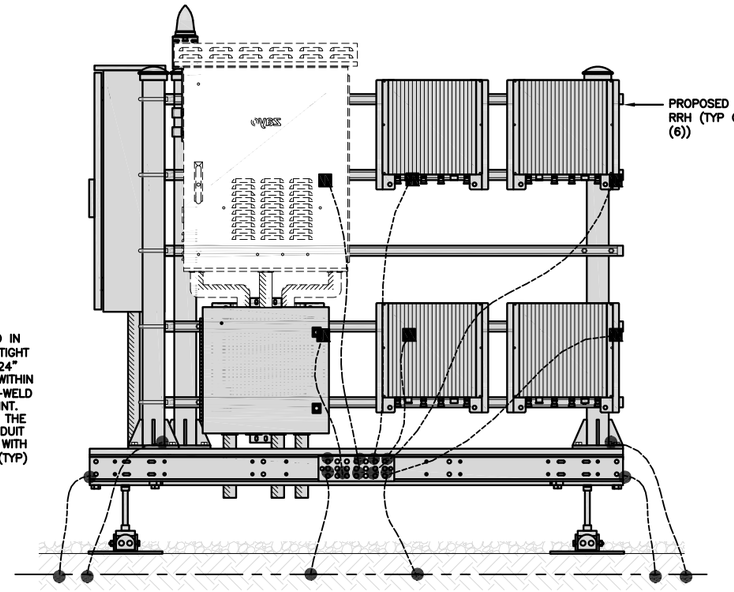
SHEET NUMBER
G-1

NOTES

EQUIPMENT CABINET OMITTED FOR CLARITY



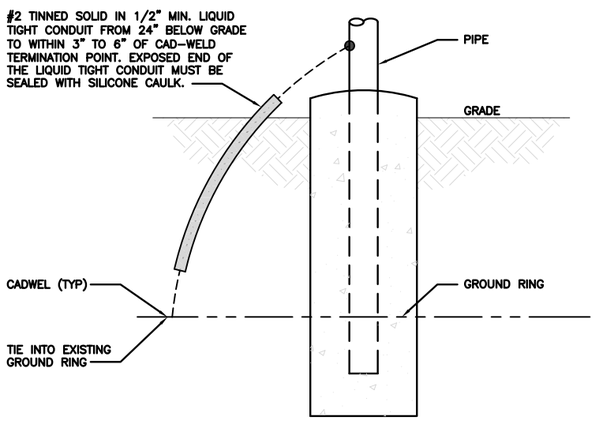
FRONT ELEVATION



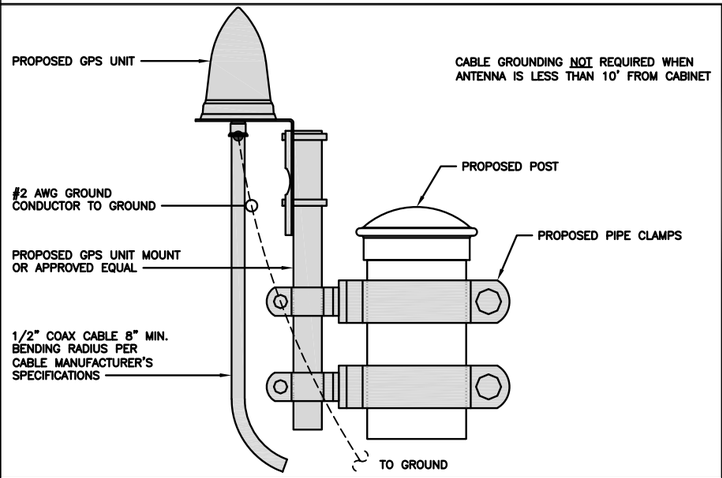
SIDE ELEVATION

NOT USED | NO SCALE | 1

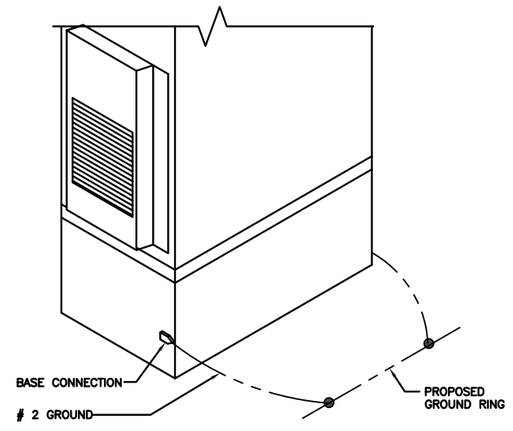
H-FRAME GROUNDING DETAIL | NO SCALE | 4



TRANSITIONING GROUND DETAIL | NO SCALE | 5



TYPICAL GPS UNIT GROUNDING | NO SCALE | 6



OUTDOOR CABINET GROUNDING | NO SCALE | 7

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

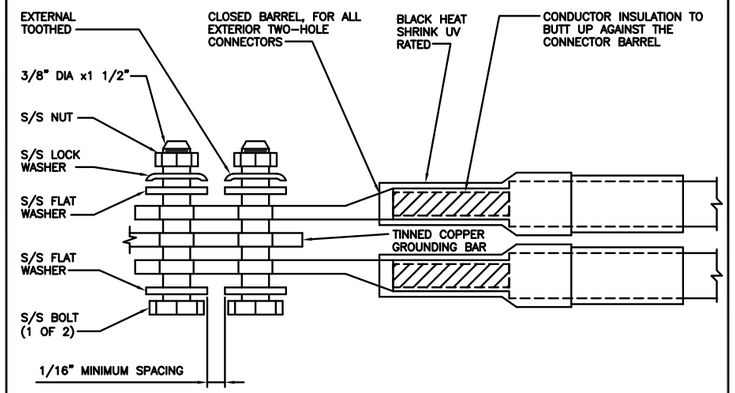
GROUNDING DETAILS

SHEET NUMBER

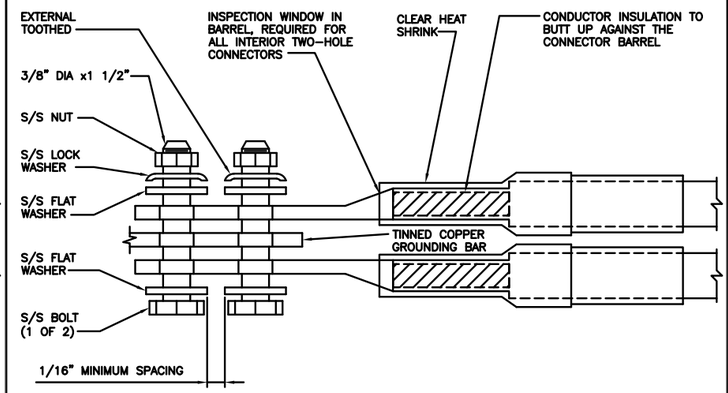
G-2

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).

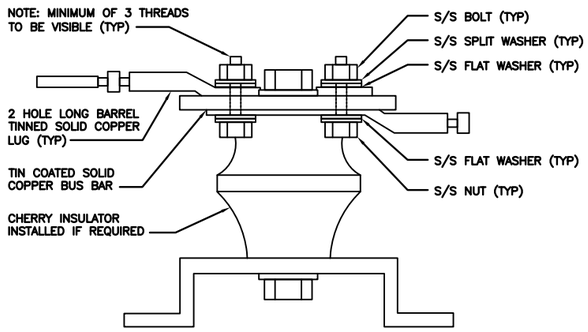
TYPICAL GROUNDING NOTES | NO SCALE | 1



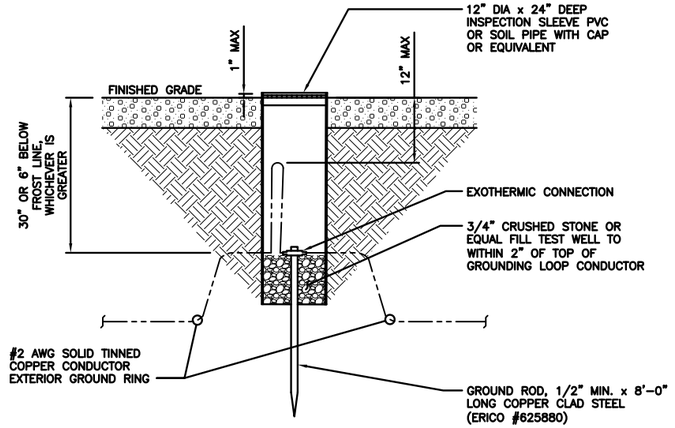
TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4



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

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE
GROUNDING DETAILS

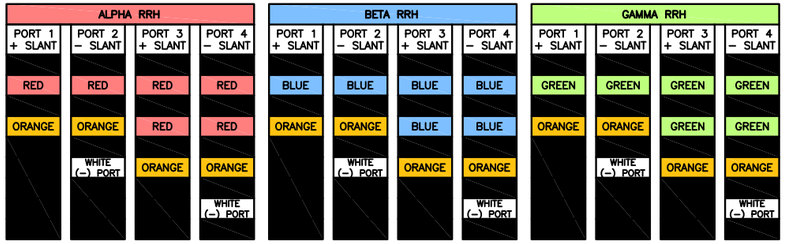
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

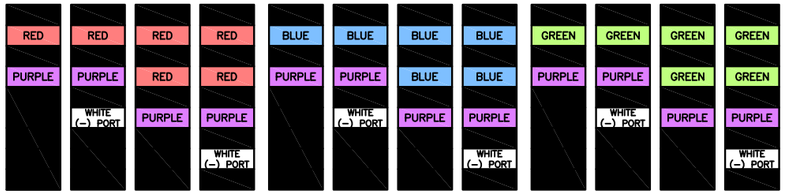
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

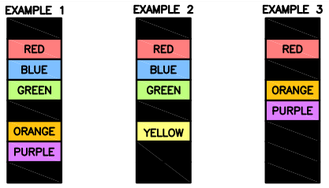


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

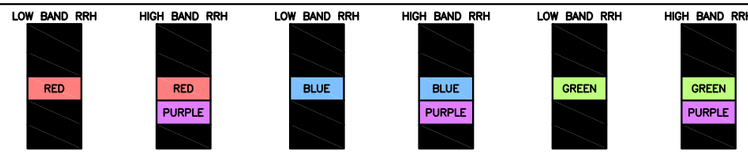
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS



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

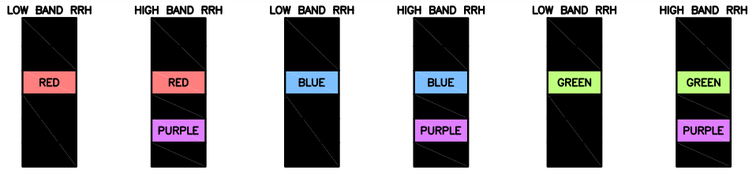
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

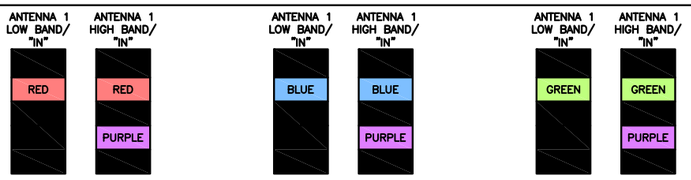


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



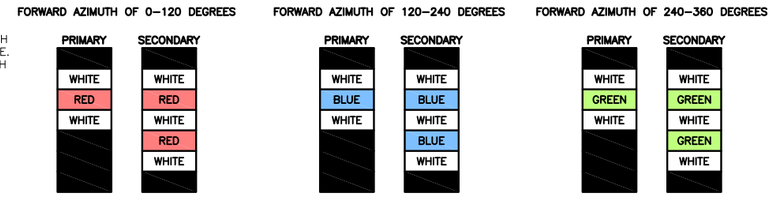
RET MOTORS AT ANTENNAS



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

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

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.

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

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.
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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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

9/30/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JW

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	8/31/21	ISSUED FOR REVIEW
0	9/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149429.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00115A
768 GILEAD STREET
HEBRON, CT 06248

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4