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

October 7, 2021

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

Application for Tower Share
131 Bishop Crossing, Griswold
Latitude: 41.623352
Longitude: -72.942241
Dish Wireless #: BOBOS00040A

Dear Ms. Bachman:

Please accept this letter as notification pursuant to the Connecticut General Statutes § 16-50aa and R.C.S.A § 16-50j-88 of Dish Wireless' Application for Tower Sharing at the existing 146-foot Monopole Tower at 131 Bishop Crossing, Griswold, CT.

- **The new antennas would support 5G services and would be installed at the 132-foot level of the tower.**

Per the requirements under R.C.S.A §16-50j-89 please find the following statements in support of Dish Wireless L.L.C.'s Application:

1. Facility and Proposed Modifications

    A. Existing Facility and Appurtenances

This facility was originally approved by the Town of Griswold's Planning and Zoning Commission on April 13, 1998 for the construction of of a 150-foot monopole at the Polinsky farm located at 131 Bishop Crossing Road, Griswold CT with the following conditions:

- 1. The Monopole tower is to be used as a "co-location" facility for more than one licensed carrier.

The facility was later approved by the Connecticut Siting (CSC) under EM-CING-058-081209 for an Exempt Modification on February 2, 2009. There were no other stipulations set forth by the Town of Griswold. Please see attached.

- Latitude / Longitude: **41.623352/ -72.942241**
- Height of Tower: 146'
- Owned/operated by: SBA Towers, LLC
- Property Owner: Harvey Polinsky
- Size/Components of existing equipment compound:

  - 88'10" x 90'0" fenced compound with a 12' wide chain link gate within an 100' x 100' lease area containing:
    - Monopole
    - Sprint 8' 6" x 11' ground space [east of monopole w/in compound]
    - AT&T 11'6" x 20' ground space [west of monopole w/in compound]
  - Components of existing tower:
    - AT&T:
    - 151'
      - (3) Cci DMP65R-BU6DA-Panel antennas
      - (3) Cci OPA65R-BU6DA-pPanel antennas
      - (6) Powerwave LGP21903-Diplexers
      - (3) Ericsson 4449 B5/B12-RRUs
      - (3) Ericsson 4478 B14-RRUs
      - (3) Ericsson RRUS 8843 B2 B66A
      - (3) Raycap DC6-48-60-18-8F OVP
      - (1) 13' Low profile platform
      - (12) 1-5/8" coax
      - (6) ½" DC
      - (3) 3/8" Fiber
      - (1) ½" coax

    - Sprint/Nextel
    - 117'
      - (3) RFS APXVTM14-C-I20-Panel antennas
      - (3) Commscope NNVV-65B-R4-Panel antennas
      - (3) ALU 1900 Mhz
      - (6) ALU 800 Mhz
      - (3) ALU TD-RRH8x20-25
      - (3) Modified T-Arms: (Sitepro PRK-1245L, Sitepro PRK-SFS-H-L, (3) 8.5' Horizontal Rail, (3) 9' long Corner Braces, (12) Sitepro SCXx-K)
      - (4) 1-1/4" Fiber

B. Nature and Extent of Proposed Modifications

Dish Wireless proposes to install (3) panel antennas at the 132' level of the existing 146'-foot Monopole Tower and occupy a ground lease area of 5'x7' within the existing 88'10" x 90'0"fenced compound. Dish Wireless' proposed scope of work is as follows:

Remove:

- N/A

Remove and Replace:

- N/A

Install:
Tower:
At 132':

(3) JMA Wireless MX08FRO665-21 - Panel – 600/1900/2190 MHz Panel Antennas
(3) Fujitsu TAO8025-B605 - RRUs
(3) Fujitsu TAO8025-B604 - RRUs
(1) Raycap RDIC-9181-PF-48 – OVP
Commscope MC-PK8-DSH Platform
w/HRK
(1) 1.6" Hybrid

Ground (within existing compound):

- 5'x7' concrete pad
- Generator Plug (generator not installed)
- GPS unit
- Power protective cabinet
- H-Frame
- Safety Switch space
- 200AMP Meter socket
- Telco fiber enclosure
- Fiber ND (If required)
- Equipment platform
- Dish Equipment cabinet
- 19'- 6" L x 12" W Ice bridge

Existing Equipment to Remain: N/A

C. This Proposal is technically, legally, environmentally, and economically feasible and meets public safety concerns per Connecticut General Statute Section 16-50aa.

Dish Wireless proposes to collocate at the above-referenced existing telecommunication facility rather than to require additional tower construction. The need for the site was dictated by the existing lack of, or extremely poor service, and projected future capacity and coverage requirements for this particular geographic area. Because new wireless telecommunications sites must function as an integral part of an existing network, their locations affect the services areas of all surrounding site. In order to use mobile communications services, users must be "handed-off" efficiently from one site to the next as they travel. To accomplish this goal, new sites must be placed on very exact, calculated locations.

When the need for a new site in the Griswold area was established, SBA system engineers identified a target area in which to locate the facility. Within the general target area, there are no other tall structures that are suitable for this purpose. The Selection of this specific site location was determined by local topographic and geographic factors, mitigation of the antenna mounting structure's visual impact, compatibility with existing land use, and the ability to negotiate a mutually beneficial lease with a landlord. SBA engineers believe that the Hubbard Road site is ideally suited for the proposed monople tower facility. One carrier is currently on the tower.

This site will be located within a 10,000 square foot compound area owned by Harvey Polinsky. The property is on Assessor's Map 33 Block 54 Lot 35A, and it is zoned Residential R-60.

The proposed collocation meets with all legal and technical requirements. This Application contains all required information and statements per R.C.S.A §16-50j-89 and the proposed installation has been drafted per current code, and studied with regard to structural feasibility and RF emissions output. Drawings and Reports are attached. Dish Wireless' proposed collocation presents no known material changes to environmental conditions from those as documented in the Council's original Findings of Fact and presents no known public safety concerns.

2. Engineering Drawings per the requirements under R.C.S.A. §16-50j-89 are enclosed herewith.

3. Engineering and Structural Analysis per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

4. Engineering and Mount Analysis per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

5. A Letter from SBA, as Owner of the Facility, agreeing to the proposed shared use of the facility, is enclosed herewith.

6. With regard to any potential environmental impact:

    A. Dish Wireless' collocation will not have any significant adverse visual impact on the surrounding areas. The antennas should result in only marginal additional equipment visibility from areas that already have views of the existing tower. The proposed work would not require any Federal Aviation Administration obstruction marking or lighting.

    B. The proposed collocation does not affect or alter the existing site with regard to wetlands, water resources or air quality. National Wetlands Inventory Maps indicated that the site was not within the 100 year floor zone.

    The proposed work is not thought to have any substantial adverse environmental impact. Public Need for the additional coverage outweighs any minor environmental effects that would result from the construction, operation, and maintenance of the proposed collocation.

7. The operation of Dish Wireless' new antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above the applicable standards. The anticipated Maximum Composite contributions from the Dish Wireless facility are only 1.49% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 12.71% of the allowable FCC established general public limit sampled at the ground level. FCC guidelines state that if a site is to be out of compliance (over allowable thresholds), the carriers over 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 per the federal government. A Power Density / RF Report per the requirements under R.C.S.A. §16-50j-89 is enclosed herewith.

8. Per the Connecticut Siting Council's COVID 19 Guidelines, one original hard copy of this Tower Share Application is being submitted, along with check in the amount of $625 for the filing fee per Conn. Gen. Stat. §4-189j; Regs., Conn. State Agencies §16-50v-1a.

    A. A copy of this Application and all attachments is being sent to:
        i. The Town of Griswold's First Selectman, Todd Babbitt
        ii. The Town of Griswold's Building & Zoning Enforcement Officer, Jack Cipriano
        iii. The Property Owner, Harvey Polinsky
        iv. (Separate notice is not being sent to tower owner, as it belongs to SBA)

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a significant change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

Dish Wireless respectfully submits for the Council's review and approval this Application for Tower Share.

Sincerely,

G. 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: Todd Babbitt, First Selectman / with attachments
Griswold Town Hall, 28 Main St., Jewett City, CT 06351
Jack Cipriano, Building & Zoning Enf. Officer / with attachments
Griswold Town Hall, 28 Main St., Jewett City, CT 06351
Harvey Polinsky / with attachments
129 Bishop Crossing Rd., Jewett City CT 06351 (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	ZP# 9-98, Town of Griswold Planning & zoning
Exhibit 7	EME Report	EBI Consulting 9/8/21
Exhibit 8	Structural Analysis	TES 7/7/21
Exhibit 9	Mount Analysis	B+T GRP 6/30/21
Exhibit 10	Construction Drawings	B+T GRP 7/19/21
Exhibit 11	Site Sketch (Ground)	SBA 7/15/21

EXHIBIT 1

Copy of check

EXHIBIT 2
Letter of Intent

October 7, 2021

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: **131 Bishop Crossing, Griswold, CT**
Dish Wireless Site No: BOBOS00040A
Site No: CT00303-S

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish Wireless' shared use of the existing SBA telecommunications site at **131 Bishop Crossing, Griswold, CT**.

SBA Towers, LLC ("Owner") and Dish Wireless ("Tenant") are entering into a Site Lease Agreement. Tenant will be provided ground space within the existing site compound for its base station equipment and space at the height of 132' 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

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

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774909129895

ADD NICKNAME

Scheduled delivery:
Monday, October 11, 2021 before 10:30 am

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GET STATUS UPDATES

FROM	TO
WESTBOROUGH, MA US	NEW BRITAIN, CT US

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Friday, October 8, 2021

12:40 PM	FRAMINGHAM, MA	Picked up

Thursday, October 7, 2021

10:42 AM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774909129895	**SERVICE** FedEx Priority Overnight	**WEIGHT** 5 lbs / 2.27 kgs
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 5 lbs / 2.27 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Box	**SPECIAL HANDLING SECTION** Deliver Weekday
ACTUAL PICK UP 10/8/21	**STANDARD TRANSIT** 10/11/21 before 10:30 am	**SCHEDULED DELIVERY** 10/11/21 before 10:30 am

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Shipment Facts

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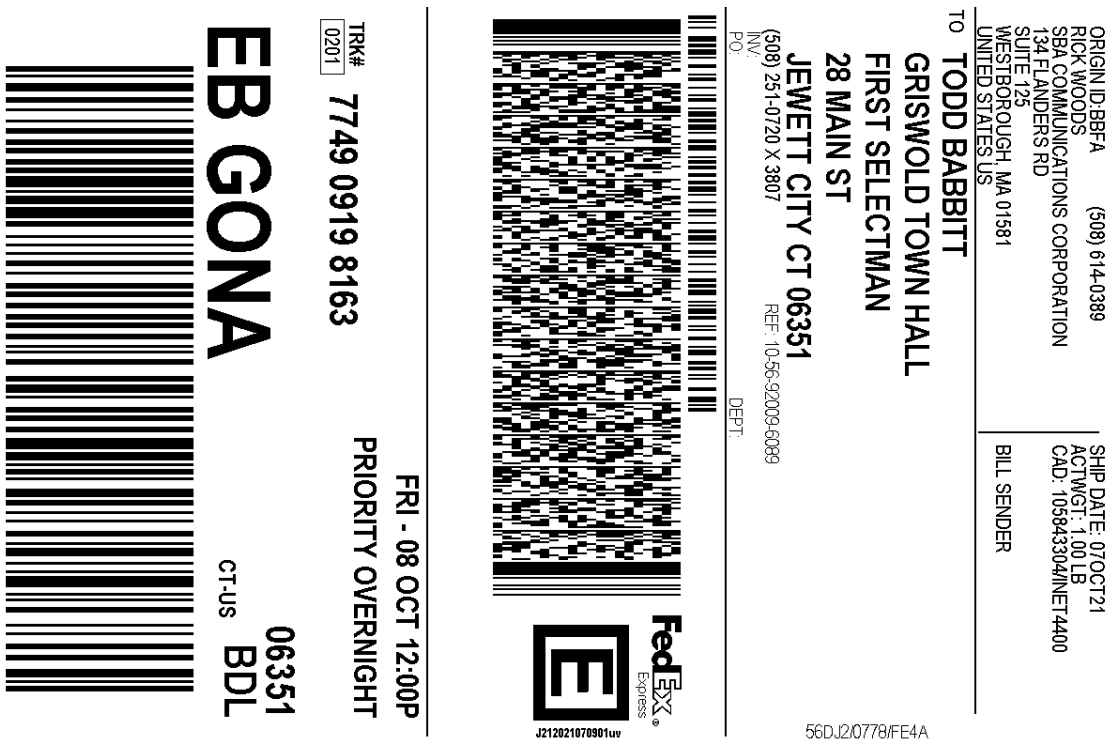
TOTAL PIECES 1	**TOTAL SHIPMENT WEIGHT** 5 lbs / 2.27 kgs	**TERMS** Shipper
SHIPPER REFERENCE 10-56-92009-6089	**PACKAGING** FedEx Box	**SPECIAL HANDLING SECTION** Deliver Weekday
ACTUAL PICK UP 10/8/21	**STANDARD TRANSIT** 10/11/21 before 10:30 am	**SCHEDULED DELIVERY** 10/11/21 before 10:30 am



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774909198163

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WESTBOROUGH, MA US	JEWETT CITY, CT US

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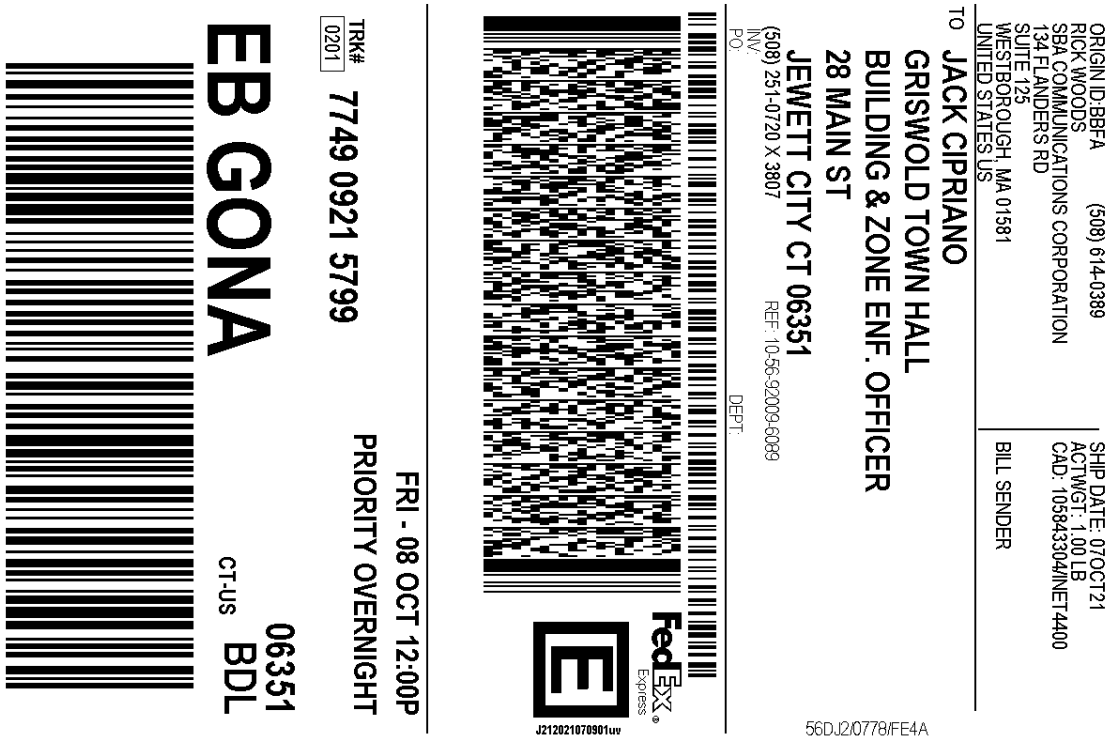
10:45 AM		Shipment information sent to FedEx

Shipment Facts

TRACKING NUMBER 774909198163	**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 10/8/21	**STANDARD TRANSIT** 10/11/21 before 12:00 pm	**SCHEDULED DELIVERY** 10/11/21 before 12:00 pm



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TRACKING NUMBER 774909215799	**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 10/8/21	**STANDARD TRANSIT** 10/11/21 before 12:00 pm	**SCHEDULED DELIVERY** 10/11/21 before 12:00 pm

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Monday, October 11, 2021 before 12:00 pm

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Shipment Facts

TRACKING NUMBER	SERVICE	WEIGHT
774909248584	FedEx Priority Overnight	0.5 lbs / 0.23 kgs
TOTAL PIECES	**TOTAL SHIPMENT WEIGHT**	**TERMS**
1	0.5 lbs / 0.23 kgs	Shipper
SHIPPER REFERENCE	**PACKAGING**	**SPECIAL HANDLING SECTION**
10-56-92009-6089	FedEx Envelope	Deliver Weekday

EXHIBIT 4

Property Card

qPublic.net™ Town of Griswold, CT

Summary

ParcelId	10800
Account Number	P0329501
Location Address	131 BISHOP CROSSING RD
Map-Block-Lot	20 /54 /35A Dev Lot. 7091
Use Class/Description	4310 TEL REL TW
Assessing Neighborhood	0050A
Census Tract	7091
Acreage	0.18
Utilities	

Owner

POLINSKY HARVEY
129 BISHOP CROSSING RD
GRISWOLD, CT 06351

Current Appraised Value

		2017	2015
+	Building Value	$0	$0
+	XF Value	$0	$0
+	OB Value	$96,600	$96,600
+	Land Value	$156,500	$150,000
+	Special Land Value		
+	Total Appraised Value	$253,100	$246,600
+	Net Appraised Value	$253,100	$246,600
+	Current Assessment	$177,170	$172,620

Assessment History

		2017	2015
+	Building Value	$0	$0
+	OB/Misc	$67,620	$67,620
+	Land	$109,550	$105,000
+	Total Assessment	$177,170	$172,620

Land

Use	Class	Zoning	Area	Value
4310 TEL REL TW	I	R60	7744 SF	$156,500

Out Buildings\Extra Features

Description	Sub Description	Area	Year Built	Value
CELL TOWER		151HEIGHT	1998	$68,000
CELL EQUIP SHELTER		240S.F.	2007	$18,000
CELL EQUIP SHELTER		200S.F.	2000	$10,000
CONC PAD/CELL SITES		96S.F.	1999	$100
CONC PAD/CELL SITES		384S.F.	2000	$500

Sales History

Sales Date	Type of Document	Grantee	Vacant/Improved	Book/Page	Amount
04-05-2019		POLINSKY HARVEY	Vacant	386/ 6	$0
01-13-1999		POLINSKY HARVEY	Improved		$0

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
26-21	07-17-2020	CM	COMMERCIAL	$15,000		0		INSTALL NEW DIESEL STANDBY GENERATOR ON 4'-0 X 10'-0 POURED IN PLACE CONCRETE PAD AND CONNECT ATS AND UTILITY EQUIPMT AT&T CELL TOWER
41-19	08-14-2018	MN	MAINTENANCE	$20,000		0		SWAP 6 EXISTING CELL ANTENNAS WITH 6 NEWER TECHNOLOGY CELL ANTENNAS AND ASSOC EQUPMT AT EXISTING CELL SITE
139-13	02-28-2013	AD	2 ANT/6 REMOTE RADIO	$25,000		100	07-23-2013	

374-07	05-23-2007	AD	POWERHOUSE	$52,750		100	04-02-2008	240-08 CC
291-07	04-05-2007	AD	ANTENNA	$50,000		100	04-02-2008	239-08 CC
518-01	06-26-2002		ANTENNA	$30,000		100	08-08-2002	22-03 CO
136-00	12-19-2000	AD	POWERHOUSE	$0		100	10-01-2001	192-01 CO
123-98	07-15-1998		POWER HOUSE	$0	12/9/1998 12:00:00 AM	100	12-09-1998	79-98
260-97	05-13-1998		150' TOWER	$0	12/9/1998 12:00:00 AM	100	12-09-1998	79-98

Sketch

No data available for the following modules: Building Data, Building Data, Commercial Building, Photos.

Developed by Schneider GEOSPATIAL

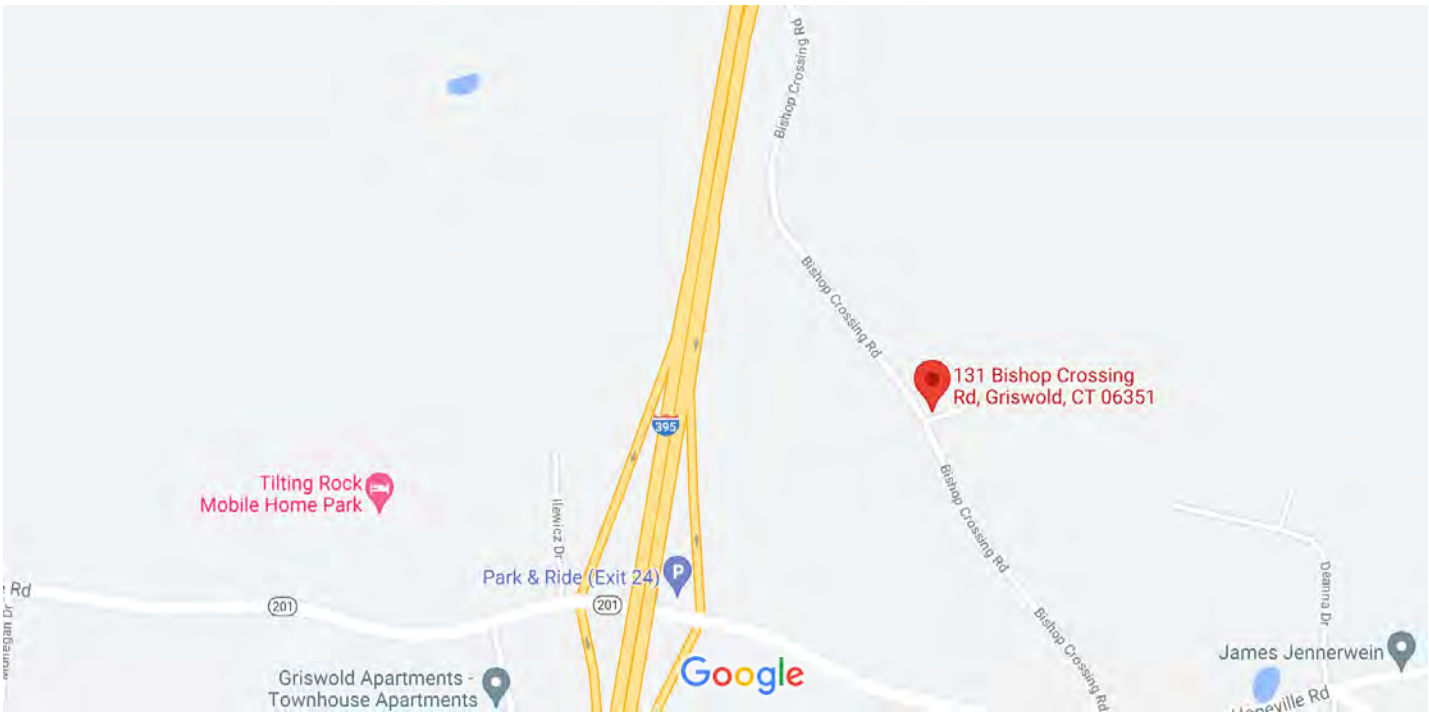
Last Data Upload: 8/16/2021, 8:28:43 PM

Version 2.3.141

EXHIBIT 5

Property Map

Google Maps 131 Bishop Crossing Rd



Map data ©2021 500 ft

[redacted]

131 Bishop Crossing Rd

Directions Save Nearby Send to your phone Share

131 Bishop Crossing Rd, Griswold, CT 06351

J385+HC Griswold, Connecticut

Photos

EXHIBIT 6

Zoning Approval

Town of Griswold

TOWN HALL, 32 SCHOOL STREET
JEWETT CITY, CONNECTICUT 06351

SELECTMEN	376-7061	TOWN CLERK	376-7063
ASSESSOR	376-7071	BUILDING INSPECTOR	376-7065
TAX COLLECTOR	376-7068	PLANNING & ZONING	376-7073
SOCIAL SERVICES	376-7067	BOOKKEEPING	376-7074
PUBLIC HEALTH NURSES	376-7077	SANITARIAN	376-7065

PLANNING & ZONING COMMISSION

April 20, 1998

Ms. Esther McNany
SBA, Inc.
125 Shaw Street, #116
New London, CT 06320

Re: SBA, Inc., (ZP 9-98)
Construction of 150 ft Monopole at
131 Bishop Crossing Road, Griswold, CT

Dear Ms. McNany:

The Griswold Planning & Zoning Commission, at it's Regular Meeting held on April 13, 1998, reviewed the above-referenced application to construct a 150 ft monopole at the Polinsky farm located at 131 Bishop Crossing Road.

Following a discussion on the matter, the commission voted to approve the application with the condition that the location is a "co-location" whereby the monopole facility can be used by more than one licensed carrier.

Should you have any questions, please do not hesitate to contact Mario J. Tristany, Jr., Town Planner, at 376-7084.

Very truly yours,

J. Clyde Seaman

F. Clyde Seaman
Chairman

CERTIFIED: Z 307 861 176

cc: Peter Zvingilas, Z.E.O.
Cynthia Kata, Tax Assessor

(PZFY98II\LETTERS\DL SBA INC ZP 9-98 041398)

Griswold CT 00303-5

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

February 2, 2009

Scan
Zoning

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-058-081209** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 131 Bishop Crossing, Griswold, Connecticut.

Dear Mr. Levine:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with following conditions:

- The proposed coax lines should be installed inside the monopole shaft, but may be installed outside of the monopole shaft in a single row, if necessary;
- The proposed tower mounted amplifiers and diplexers shall be installed behind the proposed panel antennas; and
- The Council shall be notified in writing that the coax lines, tower mounted amplifiers, and diplexers were installed as specified.

The proposed modifications are to be implemented as specified here and in your notice dated December 9, 2008, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

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: BOBOS00040A

131 Bishop Crossing
Griswold, Connecticut 06351

September 8, 2021

EBI Project Number: 6221004762

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**12.71%**

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

September 8, 2021

Dish Wireless

Emissions Analysis for Site: BOBOS00040A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **131 Bishop Crossing** in **Griswold, 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 131 Bishop Crossing in Griswold, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

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

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

7) The antenna mounting height centerline of the proposed antennas is 132 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	132 feet	Height (AGL):	132 feet	Height (AGL):	132 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.49%**	Antenna B1 MPE %:	**1.49%**	Antenna C1 MPE %:	**1.49%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.49%
AT&T	4.22%
Metro PCS	0.26%
Sprint	4.45%
Nextel	0.69%
Verizon	1.6%
Site Total MPE % :	12.71%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.49%
Dish Wireless Sector B Total:	1.49%
Dish Wireless Sector C Total:	1.49%
Site Total MPE % :	12.71%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	132.0	2.03	600 MHz n71	400	0.51%
Dish Wireless 1900 MHz n70	4	542.70	132.0	4.92	1900 MHz n70	1000	0.49%
Dish Wireless 2190 MHz n66	4	542.70	132.0	4.92	2190 MHz n66	1000	0.49%
						Total:	**1.49%**

• 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:	1.49%
Sector B:	1.49%
Sector C:	1.49%
Dish Wireless Maximum MPE % (Sector A):	1.49%
Site Total:	12.71%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.71%** 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 146 ft FWT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00303-S

Customer Site Name: Griswold

Carrier Name: Dish Wireless (App#: 162752, V1)

Carrier Site ID / Name: BOBOS00040A / 0

Site Location: 131 Bishop Crossing

Griswold, Connecticut

New London County

Latitude: 41.623352

Longitude: -71.942241

Exp.10/31/2021

07/07/2021

Analysis Result:

Max Structural Usage: 61.3% [Pass]

Max Foundation Usage: 50.0% [Pass]

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

Report Prepared By : Delu Zhou

Introduction

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

Sources of Information

Tower Drawings	Tower Drawing prepared by FWT, Job #16937 dated 5/11/98
Foundation Drawing	Foundation Drawing prepared by FWT, Job #16937 dated 5/11/98
Geotechnical Report	Geotechnical Report prepared by Sage, Project #M129 dated 4/30/98
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} = 135.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" 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 = 0.168, S_1 = 0.06

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	151.0	3	Cci DMP65R-BU6DA- Panel	13' Low Profile Platform	(12) 1-5/8" (6) 1/2" DC (3) 3/8" Fiber (1) 1/2"	AT&T
2		3	Cci OPA65R-BU6DA- Panel			
3		6	Powerwave LGP21903 Diplexer			
4		3	Ericsson 4449 B5/B12- RRU			
5		3	Ericsson 4478 B14- RRU			
6		3	Ericsson RRUS 8843 B2 B66A			
7		3	Raycap DC6-48-60-18-8F OVP			
12	117.0	3	RFS APXVTM14-C-I20 - Panel	(3) Modified T-Arms: (SitePro PRK-1245L, Sitepro PRK-SFS-H-L, (3) 8.5' Horizontal Rail (3) 9' Long Corner Braces, (12) Sitepro SCXx-K)	(4) 1 1/4" Fiber	Sprint Nextel
13		3	Commscope NNVV-65B-R4 - Panel			
14		3	ALU 1900 Mhz			
15		6	ALU 800 Mhz			
16		3	ALU TD-RRH8x20-25			

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
8	132.0	3	JMA Wireless MX08FRO665-21 Panel	Commscope MC-PK8-DSH Platform w/HRK	(1) 1.6" Hybrid	Dish Wireless
9		3	Fujitsu TA08025-B605 RRU			
10		3	Fujitsu TA08025-B604 RRU			
11		1	Raycap RDIDC-9181-PF-48 OVP			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**61.3%**	**57.4%**	**38.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3299.3	32.5	60.8

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

Operational Condition (Rigidity):

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 0.9726 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 61.33% at 53.0ft

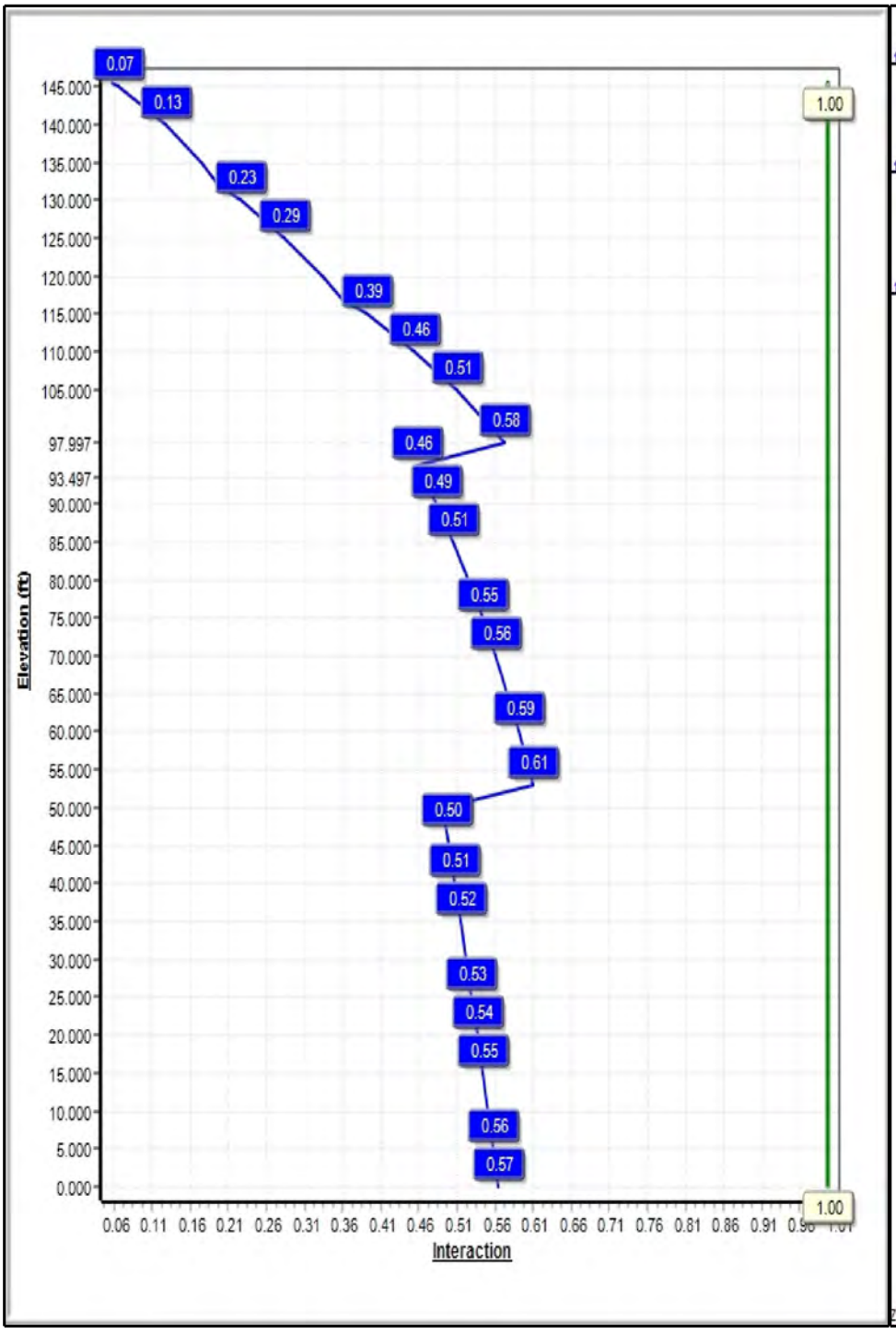
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold	**Exposure:**	C	
Height:	145.50 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

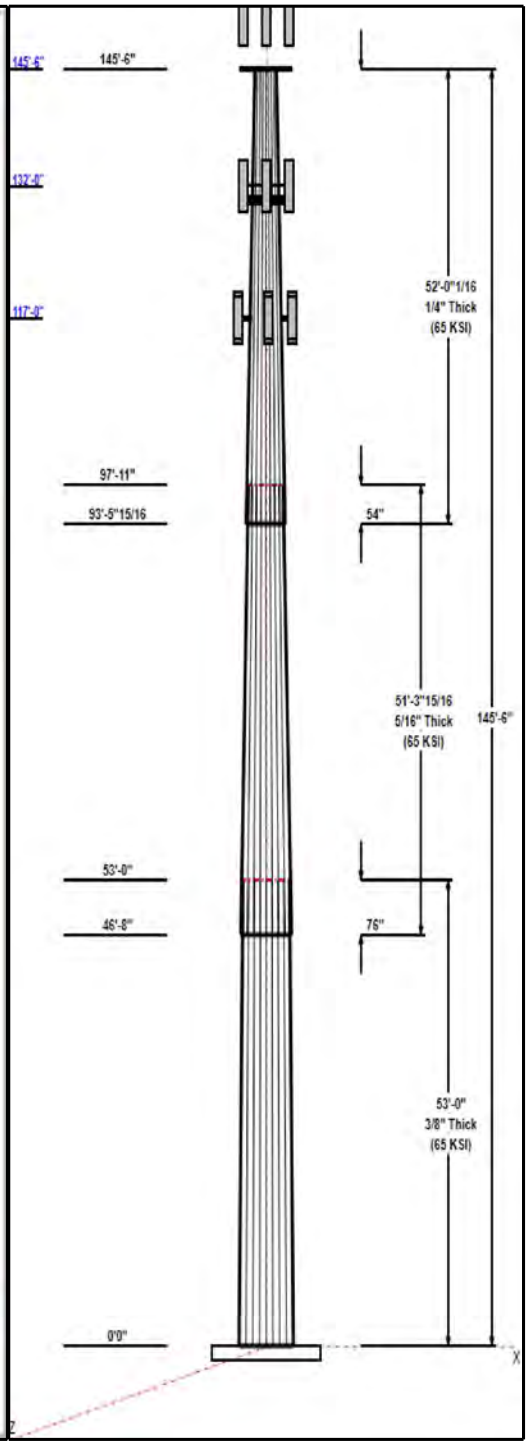
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 105 mph Wind

Iterations: 22





Structure: CT00303-S-SBA

Type: Tapered
Site Name: Griswold
Height: 145.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.31701

7/7/2021

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.00	46.20	63.00	0.375		0.31701	65
2	51.33	32.56	48.83	0.313	Slip	0.31701	65
3	52.00	18.00	34.49	0.250	Slip	0.31701	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
145.50	151.00	3	DMP65R-BU6DA	AT&T
145.50	151.00	3	OPA65R-BU6DA	AT&T
145.50	151.00	3	4449 B5/B12	AT&T
145.50	151.00	3	4478 B14	AT&T
145.50	151.00	3	RRUS 8843 B2 B66A	AT&T
145.50	151.00	6	LGP21903 Diplexer	AT&T
145.50	151.00	3	DC6-48-60-18-8F	AT&T
145.50	145.50	1	Low Profile Platform	Sprint Nextel
132.00	132.00	3	MX08FRO665-21	Dish Wireless
132.00	132.00	1	MC-PK8-DSH	Dish Wireless
132.00	132.00	3	TA08025-B605	Dish Wireless
132.00	132.00	3	TA08025-B604	Dish Wireless
132.00	132.00	1	RDIDC-9181-PF-48	Dish Wireless
117.00	117.00	3	ALU 1900 Mhz	Sprint Nextel
117.00	117.00	6	ALU 800 Mhz	Sprint Nextel
117.00	117.00	3	ALU TD-RRH8x20-25	Sprint Nextel
117.00	117.00	3	RFS APXVTM14-C-I20	Sprint Nextel
117.00	117.00	3	Commscope	Sprint Nextel
117.00	117.00	3	Modified T-Arm	Sprint Nextel
117.00	117.00	1	SitePro PRK-1245L	Sprint Nextel
117.00	117.00	1	Sitepro PRK-SFS-H-L	Sprint Nextel
117.00	117.00	1	(3) 8.5' Horizontal Rail	Sprint Nextel
117.00	117.00	1	(3) 9' Long Corner Braces	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	151.00	Inside	1 5/8" Coax	AT&T
0.00	151.00	Inside	1/2" Coax	AT&T
0.00	151.00	Inside	1/2" DC Power	AT&T
0.00	151.00	Inside	3/8" Fiber	AT&T
0.00	132.00	Inside	1.6" Hybrid	Dish Wireless
0.00	117.00	Inside	1 1/4" Fiber	Sprint Nextel

Anchor Bolts

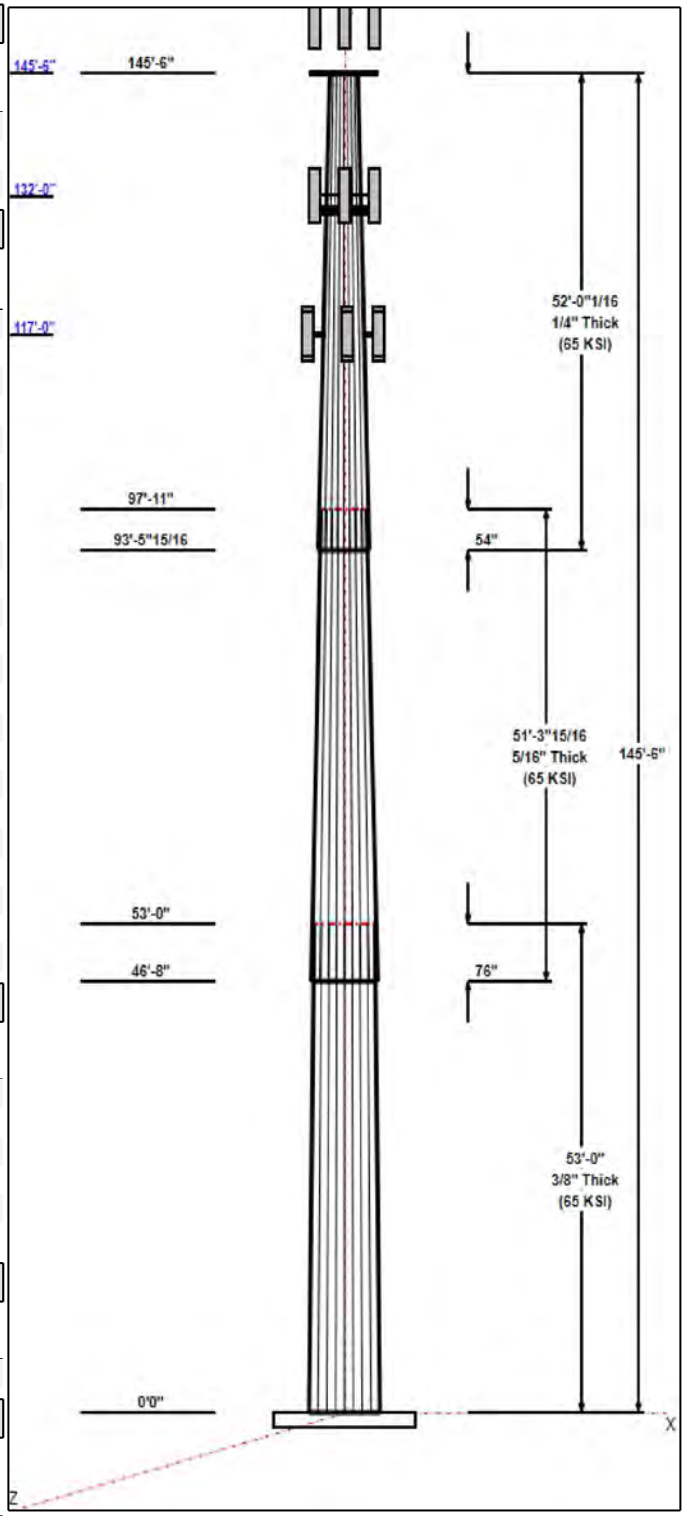
Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	76.0	60.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)

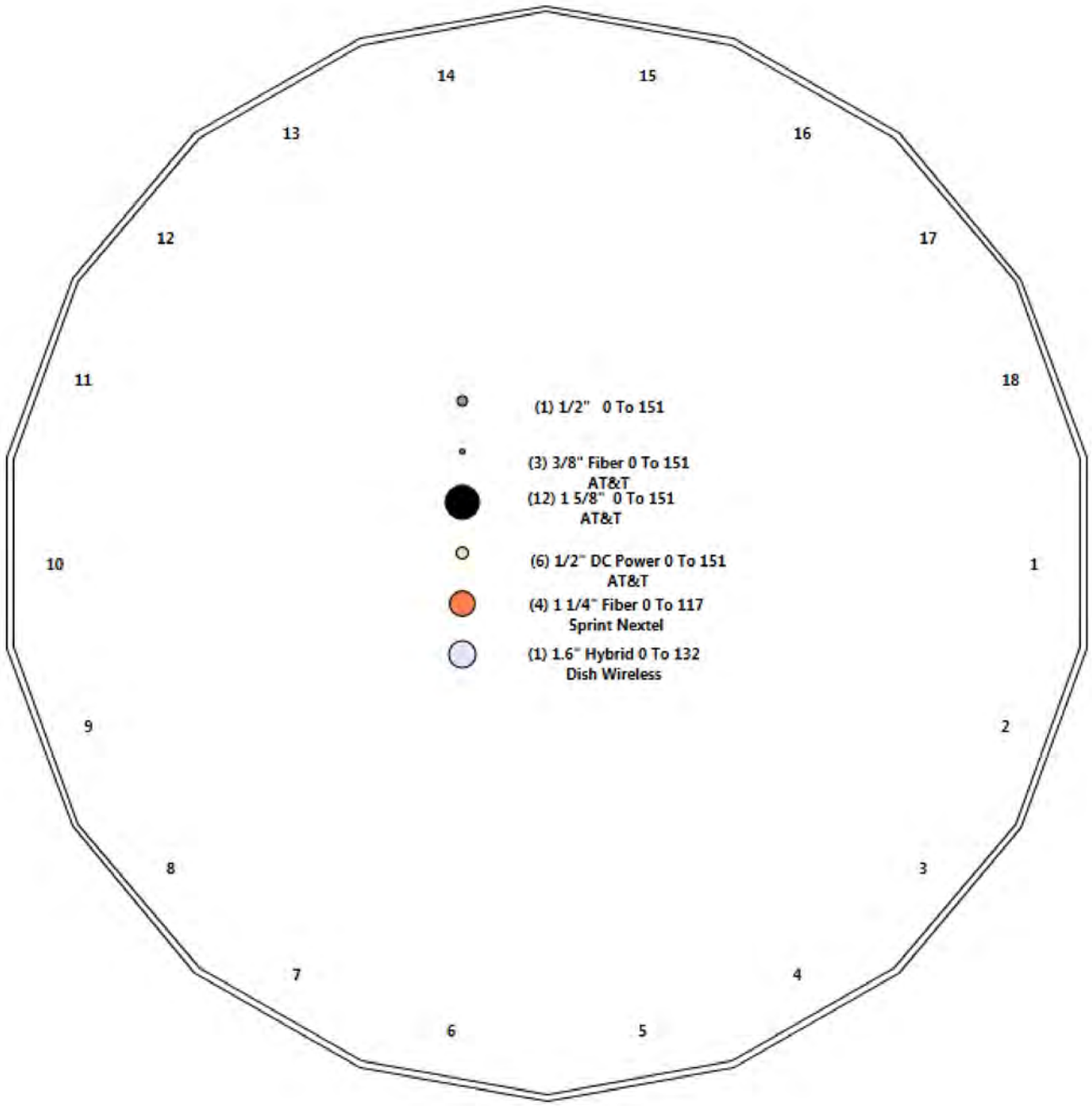


1.2D + 1.6W 105 mph Wind	3299.3	32.5	39.7
0.9D + 1.6W 105 mph Wind	3277.4	32.5	29.8
1.2D + 1.0Di + 1.0Wi 50 mph Wind	810.4	8.2	60.8
1.2D + 1.0E	169.2	1.5	39.7
0.9D + 1.0E	167.9	1.5	29.8
1.0D + 1.0W 60 mph Wind	670.8	6.6	33.1

Structure: CT00303-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Griswold
Height: 145.50 (ft)

7/7/2021



Shaft Properties

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.000	0.3750	65		0.00	11,639
2	18	51.330	0.3125	65	Slip	76.00	6,996
3	18	52.003	0.2500	65	Slip	54.00	3,650
					Total Shaft Weight:		**22,285**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	63.00	0.00	74.54	36933.36	28.21	168.00	46.20	53.00	54.54	14469.0	20.31	123.2	0.317010
2	48.83	46.67	48.12	14312.70	26.14	156.26	32.56	98.00	31.98	4201.88	16.96	104.1	0.317010
3	34.49	93.50	27.16	4022.70	22.91	137.94	18.00	145.50	14.08	560.63	11.28	72.00	0.317010

Load Summary

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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

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	145.50	DMP65R-BU6DA	3	79.40	12.71	0.72	373.05	14.169	0.72	0.00	5.50
2	145.50	OPA65R-BU6DA	3	60.20	12.71	0.73	350.53	14.361	0.73	0.00	5.50
3	145.50	4449 B5/B12	3	71.00	1.97	0.67	124.22	2.516	0.67	0.00	5.50
4	145.50	4478 B14	3	59.40	1.75	0.67	100.74	2.298	0.67	0.00	5.50
5	145.50	RRUS 8843 B2 B66A	3	72.00	1.64	0.67	118.70	2.135	0.67	0.00	5.50
6	145.50	LGP21903 Diplexer	6	5.50	0.27	0.84	13.90	0.666	0.84	0.00	5.50
7	145.50	DC6-48-60-18-8F	3	32.80	1.30	1.00	96.37	1.917	1.00	0.00	5.50
8	145.50	Low Profile Platform	1	1200.00	28.00	1.00	2243.94	51.384	1.00	0.00	0.00
9	132.00	MX08FRO665-21	3	64.50	12.49	0.74	351.68	13.936	0.74	0.00	0.00
10	132.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3393.39	84.224	1.00	0.00	0.00
11	132.00	TA08025-B605	3	75.00	1.96	0.67	126.64	2.514	0.67	0.00	0.00
12	132.00	TA08025-B604	3	63.90	1.96	0.67	113.89	2.514	0.67	0.00	0.00
13	132.00	RDIDC-9181-PF-48	1	21.85	2.01	1.00	74.30	2.571	1.00	0.00	0.00
14	117.00	ALU 1900 Mhz	3	44.00	3.80	0.67	150.49	5.156	0.67	0.00	0.00
15	117.00	ALU 800 Mhz	6	53.00	2.49	0.67	125.15	3.606	0.67	0.00	0.00
16	117.00	ALU TD-RRH8x20-25	3	70.00	4.05	0.67	177.20	4.842	0.67	0.00	0.00
17	117.00	RFS APXVTM14-C-I20	3	56.20	6.34	0.77	211.90	7.424	0.77	0.00	0.00
18	117.00	Commscope NNVV-65B-R4	3	77.40	12.27	0.75	355.95	13.690	0.75	0.00	0.00
19	117.00	Modified T-Arm	3	350.00	10.00	0.75	588.33	18.512	0.75	0.00	0.00
20	117.00	SitePro PRK-1245L	1	464.91	9.50	0.75	781.49	19.204	0.75	0.00	0.00
21	117.00	Sitepro PRK-SFS-H-L	1	230.00	6.70	0.75	543.24	13.544	0.75	0.00	0.00
22	117.00	(3) 8.5' Horizontal Rail	1	300.00	4.25	0.75	647.29	8.302	0.75	0.00	0.00
23	117.00	(3) 9' Long Corner Braces	1	350.00	6.75	0.75	755.17	13.185	0.75	0.00	0.00
		Totals:	**61**	**8,172.16**			**18,992.16**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	151.00	(12) 1 5/8" Coax	0.00	Inside
0.00	151.00	(1) 1/2" Coax	0.00	Inside
0.00	151.00	(6) 1/2" DC Power	0.00	Inside
0.00	151.00	(3) 3/8" Fiber	0.00	Inside
0.00	132.00	(1) 1.6" Hybrid	0.00	Inside
0.00	117.00	(4) 1 1/4" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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	

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	63.000	74.537	36933.4	28.21	168.00	68.2	1154.	0.0
5.00		0.3750	61.415	72.650	34199.4	27.47	163.77	69.1	1096.	1252.1
10.00		0.3750	59.830	70.764	31603.7	26.72	159.55	70.0	1040.	1220.0
15.00		0.3750	58.245	68.877	29142.9	25.98	155.32	70.8	985.5	1187.9
20.00		0.3750	56.660	66.991	26813.2	25.23	151.09	71.7	932.1	1155.8
25.00		0.3750	55.075	65.104	24611.1	24.49	146.87	72.6	880.2	1123.7
30.00		0.3750	53.490	63.217	22533.0	23.74	142.64	73.5	829.7	1091.6
35.00		0.3750	51.905	61.331	20575.3	23.00	138.41	74.4	780.8	1059.5
40.00		0.3750	50.320	59.444	18734.4	22.25	134.19	75.2	733.3	1027.4
45.00		0.3750	48.735	57.558	17006.8	21.50	129.96	76.1	687.3	995.3
46.67	Bot - Section 2	0.3750	48.206	56.929	16455.4	21.26	128.55	76.4	672.3	324.6
50.00		0.3750	47.149	55.671	15388.7	20.76	125.73	77.0	642.8	1178.5
53.00	Top - Section 1	0.3125	46.823	46.131	12608.4	25.01	149.84	0.0	0.0	1038.3
55.00		0.3125	46.189	45.503	12099.8	24.65	147.81	72.4	516.0	311.8
60.00		0.3125	44.604	43.930	10888.5	23.76	142.73	73.5	480.8	760.8
65.00		0.3125	43.019	42.358	9760.8	22.86	137.66	74.5	446.9	734.1
70.00		0.3125	41.434	40.786	8713.8	21.97	132.59	75.6	414.2	707.3
75.00		0.3125	39.849	39.214	7744.6	21.07	127.52	76.6	382.8	680.6
80.00		0.3125	38.264	37.642	6849.9	20.18	122.45	77.7	352.6	653.8
85.00		0.3125	36.679	36.070	6027.0	19.29	117.37	78.7	323.6	627.1
90.00		0.3125	35.094	34.498	5272.8	18.39	112.30	79.8	295.9	600.3
93.50	Bot - Section 3	0.3125	33.986	33.398	4784.6	17.77	108.75	80.5	277.3	403.9
95.00		0.3125	33.509	32.926	4584.3	17.50	107.23	80.8	269.5	307.6
98.00	Top - Section 2	0.2500	33.059	26.033	3540.5	21.91	132.24	0.0	0.0	600.2
100.00		0.2500	32.424	25.529	3338.9	21.46	129.70	76.2	202.8	175.7
105.00		0.2500	30.839	24.271	2869.3	20.34	123.36	77.5	183.3	423.7
110.00		0.2500	29.254	23.014	2446.0	19.22	117.02	78.8	164.7	402.3
115.00		0.2500	27.669	21.756	2066.5	18.10	110.68	80.1	147.1	380.9
117.00		0.2500	27.035	21.253	1926.4	17.66	108.14	80.6	140.3	146.4
120.00		0.2500	26.084	20.498	1728.4	16.99	104.34	81.4	130.5	213.1
125.00		0.2500	24.499	19.241	1429.4	15.87	97.99	82.5	114.9	338.1
130.00		0.2500	22.914	17.983	1167.0	14.75	91.65	82.5	100.3	316.7
132.00		0.2500	22.280	17.480	1071.8	14.30	89.12	82.5	94.8	120.7
135.00		0.2500	21.329	16.725	938.9	13.63	85.31	82.5	86.7	174.6
140.00		0.2500	19.744	15.468	742.6	12.51	78.97	82.5	74.1	273.9
145.00		0.2500	18.159	14.210	575.8	11.40	72.63	82.5	62.5	252.5
145.50		0.2500	18.000	14.084	560.6	11.28	72.00	82.5	61.3	24.1
										22284.7

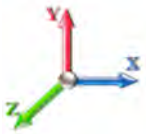
Wind Loading - Shaft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	22.791	25.07	516.07	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	503.08	0.650	0.000	5.00	26.320	17.11	686.2	0.0	1502.5
10.00		1.00	0.85	22.791	25.07	490.10	0.650	0.000	5.00	25.649	16.67	668.7	0.0	1464.0
15.00		1.00	0.85	22.791	25.07	477.12	0.650	0.000	5.00	24.978	16.24	651.3	0.0	1425.5
20.00		1.00	0.90	24.182	26.60	478.09	0.650	0.000	5.00	24.308	15.80	672.5	0.0	1387.0
25.00		1.00	0.95	25.345	27.88	475.76	0.650	0.000	5.00	23.637	15.36	685.4	0.0	1348.5
30.00		1.00	0.98	26.337	28.97	471.02	0.650	0.000	5.00	22.967	14.93	692.0	0.0	1309.9
35.00		1.00	1.01	27.206	29.93	464.54	0.650	0.000	5.00	22.296	14.49	693.9	0.0	1271.4
40.00		1.00	1.04	27.981	30.78	456.73	0.650	0.000	5.00	21.625	14.06	692.2	0.0	1232.9
45.00		1.00	1.07	28.684	31.55	447.86	0.650	0.000	5.00	20.955	13.62	687.6	0.0	1194.4
46.67	Bot - Section 2	1.00	1.08	28.904	31.79	444.70	0.650	0.000	1.67	6.836	4.44	226.0	0.0	389.6
50.00		1.00	1.09	29.327	32.26	438.12	0.650	0.000	3.33	13.624	8.86	457.1	0.0	1414.2
53.00	Top - Section 1	1.00	1.11	29.689	32.66	431.93	0.650	0.000	3.00	12.007	7.80	407.8	0.0	1245.9
55.00		1.00	1.12	29.922	32.91	433.53	0.650	0.000	2.00	7.871	5.12	269.4	0.0	374.2
60.00		1.00	1.14	30.475	33.52	422.51	0.650	0.000	5.00	19.207	12.48	669.6	0.0	913.0
65.00		1.00	1.16	30.993	34.09	410.94	0.650	0.000	5.00	18.537	12.05	657.2	0.0	880.9
70.00		1.00	1.17	31.480	34.63	398.90	0.650	0.000	5.00	17.866	11.61	643.4	0.0	848.8
75.00		1.00	1.19	31.941	35.13	386.44	0.650	0.000	5.00	17.195	11.18	628.3	0.0	816.7
80.00		1.00	1.21	32.377	35.62	373.59	0.650	0.000	5.00	16.525	10.74	612.1	0.0	784.6
85.00		1.00	1.22	32.793	36.07	360.41	0.650	0.000	5.00	15.854	10.31	594.8	0.0	752.5
90.00		1.00	1.24	33.190	36.51	346.92	0.650	0.000	5.00	15.183	9.87	576.5	0.0	720.4
93.50	Bot - Section 3	1.00	1.25	33.458	36.80	337.31	0.650	0.000	3.50	10.220	6.64	391.2	0.0	484.7
95.00		1.00	1.25	33.570	36.93	333.14	0.650	0.000	1.50	4.357	2.83	167.3	0.0	369.2
98.00	Top - Section 2	1.00	1.26	33.791	37.17	324.75	0.650	0.000	3.00	8.503	5.53	328.7	0.0	720.3
100.00		1.00	1.27	33.935	37.33	324.10	0.650	0.000	2.00	5.550	3.61	215.5	0.0	210.9
105.00		1.00	1.28	34.285	37.71	309.84	0.650	0.000	5.00	13.383	8.70	524.9	0.0	508.4
110.00		1.00	1.29	34.623	38.08	295.36	0.650	0.000	5.00	12.712	8.26	503.5	0.0	482.7
115.00		1.00	1.30	34.948	38.44	280.66	0.650	0.000	5.00	12.042	7.83	481.4	0.0	457.0
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	274.73	0.650	0.000	2.00	4.629	3.01	185.7	0.0	175.6
120.00		1.00	1.32	35.263	38.79	265.77	0.650	0.000	3.00	6.742	4.38	272.0	0.0	255.7
125.00		1.00	1.33	35.567	39.12	250.70	0.650	0.000	5.00	10.701	6.96	435.4	0.0	405.7
130.00		1.00	1.34	35.862	39.45	235.45	0.650	0.000	5.00	10.030	6.52	411.5	0.0	380.0
132.00	Appurtenance(s)	1.00	1.34	35.977	39.58	229.30	0.650	0.000	2.00	3.824	2.49	157.4	0.0	144.8
135.00		1.00	1.35	36.148	39.76	220.03	0.650	0.000	3.00	5.535	3.60	228.9	0.0	209.5
140.00		1.00	1.36	36.426	40.07	204.46	0.650	0.000	5.00	8.689	5.65	362.1	0.0	328.6
145.00		1.00	1.37	36.696	40.37	188.74	0.650	0.000	5.00	8.018	5.21	336.6	0.0	303.0
145.50	Appurtenance(s)	1.00	1.37	36.722	40.39	187.16	0.650	0.000	0.50	0.765	0.50	32.1	0.0	28.9
								Totals:	**145.50**			**16,906.3**		**26,741.7**

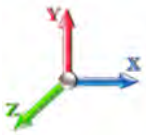
Discrete Appurtenance Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	145.50	DMP65R-BU6DA	3	37.010	40.712	0.65	0.90	24.71	285.84	0.000	5.500	1609.46	0.00	8852.00
2	145.50	LGP21903 Diplexer	6	37.010	40.712	0.84	1.00	1.36	39.60	0.000	5.500	88.64	0.00	487.52
3	145.50	DC6-48-60-18-8F	3	37.010	40.712	0.90	0.90	3.51	118.08	0.000	5.500	228.64	0.00	1257.50
4	145.50	Low Profile Platform	1	36.722	40.395	1.00	1.00	28.00	1440.00	0.000	0.000	1809.68	0.00	0.00
5	145.50	RRUS 8843 B2 B66A	3	37.010	40.712	0.60	0.90	2.97	259.20	0.000	5.500	193.25	0.00	1062.88
6	145.50	OPA65R-BU6DA	3	37.010	40.712	0.66	0.90	25.05	216.72	0.000	5.500	1631.81	0.00	8974.95
7	145.50	4449 B5/B12	3	37.010	40.712	0.60	0.90	3.56	255.60	0.000	5.500	232.14	0.00	1276.75
8	145.50	4478 B14	3	37.010	40.712	0.60	0.90	3.17	213.84	0.000	5.500	206.21	0.00	1134.17
9	132.00	RDIDC-9181-PF-48	1	35.977	39.575	1.00	1.00	2.01	26.22	0.000	0.000	127.27	0.00	0.00
10	132.00	TA08025-B604	3	35.977	39.575	0.50	0.75	2.95	230.04	0.000	0.000	187.09	0.00	0.00
11	132.00	TA08025-B605	3	35.977	39.575	0.50	0.75	2.95	270.00	0.000	0.000	187.09	0.00	0.00
12	132.00	MC-PK8-DSH	1	35.977	39.575	1.00	1.00	37.59	2072.40	0.000	0.000	2380.20	0.00	0.00
13	132.00	MX08FRO665-21	3	35.977	39.575	0.55	0.75	20.80	232.20	0.000	0.000	1316.80	0.00	0.00
14	117.00	Commscope	3	35.075	38.583	0.60	0.80	22.09	278.64	0.000	0.000	1363.42	0.00	0.00
15	117.00	ALU 1900 Mhz	3	35.075	38.583	0.54	0.80	6.11	158.40	0.000	0.000	377.21	0.00	0.00
16	117.00	ALU 800 Mhz	6	35.075	38.583	0.54	0.80	8.01	381.60	0.000	0.000	494.34	0.00	0.00
17	117.00	ALU TD-RRH8x20-25	3	35.075	38.583	0.54	0.80	6.51	252.00	0.000	0.000	402.03	0.00	0.00
18	117.00	RFS APXVTM14-C-I20	3	35.075	38.583	0.62	0.80	11.72	202.32	0.000	0.000	723.28	0.00	0.00
19	117.00	Modified T-Arm	3	35.075	38.583	0.56	0.75	16.88	1260.00	0.000	0.000	1041.73	0.00	0.00
20	117.00	SitePro PRK-1245L	1	35.075	38.583	0.56	0.75	5.34	557.89	0.000	0.000	329.88	0.00	0.00
21	117.00	Sitepro PRK-SFS-H-L	1	35.075	38.583	0.56	0.75	3.77	276.00	0.000	0.000	232.65	0.00	0.00
22	117.00	(3) 8.5' Horizontal Rail	1	35.075	38.583	0.56	0.75	2.39	360.00	0.000	0.000	147.58	0.00	0.00
23	117.00	(3) 9' Long Corner Braces	1	35.075	38.583	0.56	0.75	3.80	420.00	0.000	0.000	234.39	0.00	0.00
							Totals:		**9,806.59**			**15,544.79**		

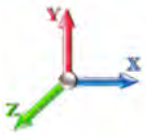
Total Applied Force Summary

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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		686.23	1615.69	0.00	0.00
10.00		668.74	1577.18	0.00	0.00
15.00		651.26	1538.66	0.00	0.00
20.00		672.46	1500.14	0.00	0.00
25.00		685.36	1461.63	0.00	0.00
30.00		691.97	1423.11	0.00	0.00
35.00		693.92	1384.59	0.00	0.00
40.00		692.24	1346.08	0.00	0.00
45.00		687.61	1307.56	0.00	0.00
46.67		226.04	427.29	0.00	0.00
50.00		457.10	1489.62	0.00	0.00
53.00		407.82	1313.82	0.00	0.00
55.00		269.41	419.44	0.00	0.00
60.00		669.62	1026.12	0.00	0.00
65.00		657.22	994.02	0.00	0.00
70.00		643.41	961.93	0.00	0.00
75.00		628.32	929.83	0.00	0.00
80.00		612.07	897.73	0.00	0.00
85.00		594.77	865.63	0.00	0.00
90.00		576.51	833.54	0.00	0.00
93.50		391.17	563.85	0.00	0.00
95.00		167.31	403.19	0.00	0.00
98.00		328.71	788.11	0.00	0.00
100.00		215.47	256.24	0.00	0.00
105.00		524.91	621.54	0.00	0.00
110.00		503.52	595.86	0.00	0.00
115.00		481.44	570.18	0.00	0.00
117.00	(25) attachments	5532.25	4367.74	0.00	0.00
120.00		271.99	314.12	0.00	0.00
125.00		435.39	502.99	0.00	0.00
130.00		411.49	477.31	0.00	0.00
132.00	(11) attachments	4355.85	3014.59	0.00	0.00
135.00		228.90	264.30	0.00	0.00
140.00		362.07	419.96	0.00	0.00
145.00		336.60	394.28	0.00	0.00
145.50	(25) attachments	6031.96	2866.90	0.00	23045.76
	Totals:	**32,451.10**	**39,734.75**	**0.00**	**23,045.76**

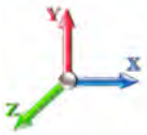
Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	-39.70	-32.49	0.00	-3299.3	0.00	3299.31	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.567
5.00	-38.01	-31.89	0.00	-3136.8	0.00	3136.83	4517.77	2258.89	11350.5	5683.71	0.07	-0.124	0.000	0.561
10.00	-36.37	-31.30	0.00	-2977.3	0.00	2977.38	4456.28	2228.14	10903.5	5459.88	0.27	-0.251	0.000	0.554
15.00	-34.76	-30.72	0.00	-2820.9	0.00	2820.90	4391.82	2195.91	10457.5	5236.55	0.60	-0.382	0.000	0.547
20.00	-33.20	-30.11	0.00	-2667.3	0.00	2667.30	4324.38	2162.19	10013.1	5014.00	1.07	-0.516	0.000	0.540
25.00	-31.67	-29.49	0.00	-2516.7	0.00	2516.74	4253.96	2126.98	9570.83	4792.53	1.69	-0.653	0.000	0.533
30.00	-30.18	-28.86	0.00	-2369.2	0.00	2369.29	4180.57	2090.28	9131.30	4572.43	2.45	-0.794	0.000	0.526
35.00	-28.74	-28.21	0.00	-2225.0	0.00	2225.02	4104.19	2052.10	8695.09	4354.01	3.36	-0.939	0.000	0.518
40.00	-27.33	-27.57	0.00	-2083.9	0.00	2083.94	4024.85	2012.42	8262.80	4137.54	4.42	-1.088	0.000	0.511
45.00	-25.99	-26.90	0.00	-1946.0	0.00	1946.09	3942.52	1971.26	7835.01	3923.33	5.64	-1.241	0.000	0.503
46.67	-25.53	-26.70	0.00	-1901.2	0.00	1901.25	3914.42	1957.21	7693.52	3852.48	6.09	-1.295	0.000	0.500
50.00	-24.01	-26.25	0.00	-1812.2	0.00	1812.24	3857.22	1928.61	7412.31	3711.67	7.03	-1.402	0.000	0.495
53.00	-22.66	-25.85	0.00	-1733.4	0.00	1733.48	2988.70	1494.35	5718.32	2863.41	7.94	-1.500	0.000	0.613
55.00	-22.19	-25.62	0.00	-1681.7	0.00	1681.79	2965.19	1482.60	5595.48	2801.90	8.59	-1.567	0.000	0.608
60.00	-21.10	-24.99	0.00	-1553.7	0.00	1553.71	2904.34	1452.17	5290.00	2648.93	10.33	-1.758	0.000	0.594
65.00	-20.05	-24.37	0.00	-1428.7	0.00	1428.77	2840.50	1420.25	4987.29	2497.35	12.28	-1.952	0.000	0.579
70.00	-19.03	-23.76	0.00	-1306.9	0.00	1306.93	2773.69	1386.84	4687.92	2347.44	14.43	-2.152	0.000	0.564
75.00	-18.04	-23.16	0.00	-1188.1	0.00	1188.14	2703.90	1351.95	4392.49	2199.51	16.79	-2.355	0.000	0.547
80.00	-17.09	-22.57	0.00	-1072.3	0.00	1072.35	2631.14	1315.57	4101.58	2053.84	19.37	-2.563	0.000	0.529
85.00	-16.17	-22.00	0.00	-959.49	0.00	959.49	2555.39	1277.70	3815.78	1910.73	22.17	-2.774	0.000	0.509
90.00	-15.30	-21.43	0.00	-849.51	0.00	849.51	2476.68	1238.34	3535.67	1770.46	25.19	-2.987	0.000	0.486
93.50	-14.71	-21.04	0.00	-774.59	0.00	774.59	2419.86	1209.93	3343.48	1674.23	27.43	-3.141	0.000	0.469
95.00	-14.28	-20.87	0.00	-742.96	0.00	742.96	2394.98	1197.49	3261.85	1633.35	28.43	-3.208	0.000	0.461
98.00	-13.48	-20.52	0.00	-680.42	0.00	680.42	1772.11	886.06	2389.60	1196.58	30.49	-3.341	0.000	0.577
100.00	-13.17	-20.33	0.00	-639.31	0.00	639.31	1749.91	874.96	2313.65	1158.54	31.91	-3.430	0.000	0.560
105.00	-12.50	-19.83	0.00	-537.64	0.00	537.64	1692.43	846.21	2126.56	1064.86	35.64	-3.681	0.000	0.513
110.00	-11.86	-19.33	0.00	-438.52	0.00	438.52	1631.96	815.98	1943.46	973.18	39.63	-3.923	0.000	0.458
115.00	-11.27	-18.84	0.00	-341.86	0.00	341.86	1568.52	784.26	1764.96	883.79	43.86	-4.150	0.000	0.395
117.00	-7.30	-13.02	0.00	-304.17	0.00	304.17	1542.31	771.16	1694.98	848.75	45.61	-4.239	0.000	0.363
120.00	-6.97	-12.74	0.00	-265.12	0.00	265.12	1502.10	751.05	1591.63	797.00	48.32	-4.365	0.000	0.338
125.00	-6.46	-12.29	0.00	-201.40	0.00	201.40	1429.48	714.74	1420.86	711.49	52.99	-4.557	0.000	0.288
130.00	-6.00	-11.85	0.00	-139.95	0.00	139.95	1336.04	668.02	1240.29	621.07	57.85	-4.727	0.000	0.230
132.00	-3.34	-7.27	0.00	-116.24	0.00	116.24	1298.67	649.33	1171.50	586.62	59.85	-4.789	0.000	0.201
135.00	-3.09	-7.02	0.00	-94.44	0.00	94.44	1242.60	621.30	1071.99	536.79	62.88	-4.873	0.000	0.179
140.00	-2.69	-6.63	0.00	-59.33	0.00	59.33	1149.16	574.58	915.96	458.66	68.05	-4.990	0.000	0.132
145.00	-2.32	-6.26	0.00	-26.18	0.00	26.18	1055.72	527.86	772.20	386.67	73.31	-5.072	0.000	0.070
145.50	0.00	-6.03	0.00	-23.05	0.00	23.05	1046.38	523.19	758.49	379.81	73.84	-5.078	0.000	0.061

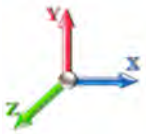
Wind Loading - Shaft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	22.791	25.07	516.07	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	503.08	0.650	0.000	5.00	26.320	17.11	686.2	0.0	1126.9
10.00		1.00	0.85	22.791	25.07	490.10	0.650	0.000	5.00	25.649	16.67	668.7	0.0	1098.0
15.00		1.00	0.85	22.791	25.07	477.12	0.650	0.000	5.00	24.978	16.24	651.3	0.0	1069.1
20.00		1.00	0.90	24.182	26.60	478.09	0.650	0.000	5.00	24.308	15.80	672.5	0.0	1040.2
25.00		1.00	0.95	25.345	27.88	475.76	0.650	0.000	5.00	23.637	15.36	685.4	0.0	1011.3
30.00		1.00	0.98	26.337	28.97	471.02	0.650	0.000	5.00	22.967	14.93	692.0	0.0	982.5
35.00		1.00	1.01	27.206	29.93	464.54	0.650	0.000	5.00	22.296	14.49	693.9	0.0	953.6
40.00		1.00	1.04	27.981	30.78	456.73	0.650	0.000	5.00	21.625	14.06	692.2	0.0	924.7
45.00		1.00	1.07	28.684	31.55	447.86	0.650	0.000	5.00	20.955	13.62	687.6	0.0	895.8
46.67	Bot - Section 2	1.00	1.08	28.904	31.79	444.70	0.650	0.000	1.67	6.836	4.44	226.0	0.0	292.2
50.00		1.00	1.09	29.327	32.26	438.12	0.650	0.000	3.33	13.624	8.86	457.1	0.0	1060.6
53.00	Top - Section 1	1.00	1.11	29.689	32.66	431.93	0.650	0.000	3.00	12.007	7.80	407.8	0.0	934.4
55.00		1.00	1.12	29.922	32.91	433.53	0.650	0.000	2.00	7.871	5.12	269.4	0.0	280.6
60.00		1.00	1.14	30.475	33.52	422.51	0.650	0.000	5.00	19.207	12.48	669.6	0.0	684.7
65.00		1.00	1.16	30.993	34.09	410.94	0.650	0.000	5.00	18.537	12.05	657.2	0.0	660.6
70.00		1.00	1.17	31.480	34.63	398.90	0.650	0.000	5.00	17.866	11.61	643.4	0.0	636.6
75.00		1.00	1.19	31.941	35.13	386.44	0.650	0.000	5.00	17.195	11.18	628.3	0.0	612.5
80.00		1.00	1.21	32.377	35.62	373.59	0.650	0.000	5.00	16.525	10.74	612.1	0.0	588.4
85.00		1.00	1.22	32.793	36.07	360.41	0.650	0.000	5.00	15.854	10.31	594.8	0.0	564.4
90.00		1.00	1.24	33.190	36.51	346.92	0.650	0.000	5.00	15.183	9.87	576.5	0.0	540.3
93.50	Bot - Section 3	1.00	1.25	33.458	36.80	337.31	0.650	0.000	3.50	10.220	6.64	391.2	0.0	363.5
95.00		1.00	1.25	33.570	36.93	333.14	0.650	0.000	1.50	4.357	2.83	167.3	0.0	276.9
98.00	Top - Section 2	1.00	1.26	33.791	37.17	324.75	0.650	0.000	3.00	8.503	5.53	328.7	0.0	540.2
100.00		1.00	1.27	33.935	37.33	324.10	0.650	0.000	2.00	5.550	3.61	215.5	0.0	158.2
105.00		1.00	1.28	34.285	37.71	309.84	0.650	0.000	5.00	13.383	8.70	524.9	0.0	381.3
110.00		1.00	1.29	34.623	38.08	295.36	0.650	0.000	5.00	12.712	8.26	503.5	0.0	362.0
115.00		1.00	1.30	34.948	38.44	280.66	0.650	0.000	5.00	12.042	7.83	481.4	0.0	342.8
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	274.73	0.650	0.000	2.00	4.629	3.01	185.7	0.0	131.7
120.00		1.00	1.32	35.263	38.79	265.77	0.650	0.000	3.00	6.742	4.38	272.0	0.0	191.8
125.00		1.00	1.33	35.567	39.12	250.70	0.650	0.000	5.00	10.701	6.96	435.4	0.0	304.3
130.00		1.00	1.34	35.862	39.45	235.45	0.650	0.000	5.00	10.030	6.52	411.5	0.0	285.0
132.00	Appurtenance(s)	1.00	1.34	35.977	39.58	229.30	0.650	0.000	2.00	3.824	2.49	157.4	0.0	108.6
135.00		1.00	1.35	36.148	39.76	220.03	0.650	0.000	3.00	5.535	3.60	228.9	0.0	157.1
140.00		1.00	1.36	36.426	40.07	204.46	0.650	0.000	5.00	8.689	5.65	362.1	0.0	246.5
145.00		1.00	1.37	36.696	40.37	188.74	0.650	0.000	5.00	8.018	5.21	336.6	0.0	227.2
145.50	Appurtenance(s)	1.00	1.37	36.722	40.39	187.16	0.650	0.000	0.50	0.765	0.50	32.1	0.0	21.7
								Totals:	**145.50**			**16,906.3**		**20,056.3**

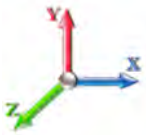
Discrete Appurtenance Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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	

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	145.50	DMP65R-BU6DA	3	37.010	40.712	0.65	0.90	24.71	214.38	0.000	5.500	1609.46	0.00	8852.00
2	145.50	LGP21903 Diplexer	6	37.010	40.712	0.84	1.00	1.36	29.70	0.000	5.500	88.64	0.00	487.52
3	145.50	DC6-48-60-18-8F	3	37.010	40.712	0.90	0.90	3.51	88.56	0.000	5.500	228.64	0.00	1257.50
4	145.50	Low Profile Platform	1	36.722	40.395	1.00	1.00	28.00	1080.00	0.000	0.000	1809.68	0.00	0.00
5	145.50	RRUS 8843 B2 B66A	3	37.010	40.712	0.60	0.90	2.97	194.40	0.000	5.500	193.25	0.00	1062.88
6	145.50	OPA65R-BU6DA	3	37.010	40.712	0.66	0.90	25.05	162.54	0.000	5.500	1631.81	0.00	8974.95
7	145.50	4449 B5/B12	3	37.010	40.712	0.60	0.90	3.56	191.70	0.000	5.500	232.14	0.00	1276.75
8	145.50	4478 B14	3	37.010	40.712	0.60	0.90	3.17	160.38	0.000	5.500	206.21	0.00	1134.17
9	132.00	RDIDC-9181-PF-48	1	35.977	39.575	1.00	1.00	2.01	19.67	0.000	0.000	127.27	0.00	0.00
10	132.00	TA08025-B604	3	35.977	39.575	0.50	0.75	2.95	172.53	0.000	0.000	187.09	0.00	0.00
11	132.00	TA08025-B605	3	35.977	39.575	0.50	0.75	2.95	202.50	0.000	0.000	187.09	0.00	0.00
12	132.00	MC-PK8-DSH	1	35.977	39.575	1.00	1.00	37.59	1554.30	0.000	0.000	2380.20	0.00	0.00
13	132.00	MX08FRO665-21	3	35.977	39.575	0.55	0.75	20.80	174.15	0.000	0.000	1316.80	0.00	0.00
14	117.00	Commscope	3	35.075	38.583	0.60	0.80	22.09	208.98	0.000	0.000	1363.42	0.00	0.00
15	117.00	ALU 1900 Mhz	3	35.075	38.583	0.54	0.80	6.11	118.80	0.000	0.000	377.21	0.00	0.00
16	117.00	ALU 800 Mhz	6	35.075	38.583	0.54	0.80	8.01	286.20	0.000	0.000	494.34	0.00	0.00
17	117.00	ALU TD-RRH8x20-25	3	35.075	38.583	0.54	0.80	6.51	189.00	0.000	0.000	402.03	0.00	0.00
18	117.00	RFS APXVTM14-C-I20	3	35.075	38.583	0.62	0.80	11.72	151.74	0.000	0.000	723.28	0.00	0.00
19	117.00	Modified T-Arm	3	35.075	38.583	0.56	0.75	16.88	945.00	0.000	0.000	1041.73	0.00	0.00
20	117.00	SitePro PRK-1245L	1	35.075	38.583	0.56	0.75	5.34	418.42	0.000	0.000	329.88	0.00	0.00
21	117.00	Sitepro PRK-SFS-H-L	1	35.075	38.583	0.56	0.75	3.77	207.00	0.000	0.000	232.65	0.00	0.00
22	117.00	(3) 8.5' Horizontal Rail	1	35.075	38.583	0.56	0.75	2.39	270.00	0.000	0.000	147.58	0.00	0.00
23	117.00	(3) 9' Long Corner Braces	1	35.075	38.583	0.56	0.75	3.80	315.00	0.000	0.000	234.39	0.00	0.00
							Totals:		**7,354.94**			**15,544.79**		

Total Applied Force Summary

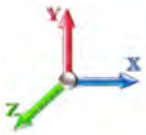
Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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		686.23	1211.77	0.00	0.00
10.00		668.74	1182.88	0.00	0.00
15.00		651.26	1153.99	0.00	0.00
20.00		672.46	1125.11	0.00	0.00
25.00		685.36	1096.22	0.00	0.00
30.00		691.97	1067.33	0.00	0.00
35.00		693.92	1038.44	0.00	0.00
40.00		692.24	1009.56	0.00	0.00
45.00		687.61	980.67	0.00	0.00
46.67		226.04	320.47	0.00	0.00
50.00		457.10	1117.21	0.00	0.00
53.00		407.82	985.37	0.00	0.00
55.00		269.41	314.58	0.00	0.00
60.00		669.62	769.59	0.00	0.00
65.00		657.22	745.52	0.00	0.00
70.00		643.41	721.45	0.00	0.00
75.00		628.32	697.37	0.00	0.00
80.00		612.07	673.30	0.00	0.00
85.00		594.77	649.23	0.00	0.00
90.00		576.51	625.15	0.00	0.00
93.50		391.17	422.89	0.00	0.00
95.00		167.31	302.39	0.00	0.00
98.00		328.71	591.08	0.00	0.00
100.00		215.47	192.18	0.00	0.00
105.00		524.91	466.16	0.00	0.00
110.00		503.52	446.90	0.00	0.00
115.00		481.44	427.64	0.00	0.00
117.00	(25) attachments	5532.25	3275.80	0.00	0.00
120.00		271.99	235.59	0.00	0.00
125.00		435.39	377.24	0.00	0.00
130.00		411.49	357.98	0.00	0.00
132.00	(11) attachments	4355.85	2260.95	0.00	0.00
135.00		228.90	198.22	0.00	0.00
140.00		362.07	314.97	0.00	0.00
145.00		336.60	295.71	0.00	0.00
145.50	(25) attachments	6031.96	2150.17	0.00	23045.76
	Totals:	**32,451.10**	**29,801.06**	**0.00**	**23,045.76**

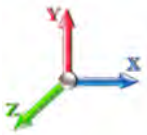
Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	-29.76	-32.48	0.00	-3277.3	0.00	3277.36	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.561
5.00	-28.48	-31.86	0.00	-3114.9	0.00	3114.94	4517.77	2258.89	11350.5	5683.71	0.07	-0.123	0.000	0.555
10.00	-27.23	-31.25	0.00	-2955.6	0.00	2955.65	4456.28	2228.14	10903.5	5459.88	0.26	-0.249	0.000	0.548
15.00	-26.01	-30.65	0.00	-2799.4	0.00	2799.42	4391.82	2195.91	10457.5	5236.55	0.60	-0.379	0.000	0.541
20.00	-24.82	-30.03	0.00	-2646.1	0.00	2646.18	4324.38	2162.19	10013.1	5014.00	1.06	-0.512	0.000	0.534
25.00	-23.66	-29.39	0.00	-2496.0	0.00	2496.06	4253.96	2126.98	9570.83	4792.53	1.67	-0.648	0.000	0.527
30.00	-22.53	-28.74	0.00	-2349.1	0.00	2349.13	4180.57	2090.28	9131.30	4572.43	2.43	-0.788	0.000	0.519
35.00	-21.43	-28.08	0.00	-2205.4	0.00	2205.44	4104.19	2052.10	8695.09	4354.01	3.33	-0.932	0.000	0.512
40.00	-20.37	-27.43	0.00	-2065.0	0.00	2065.03	4024.85	2012.42	8262.80	4137.54	4.39	-1.080	0.000	0.504
45.00	-19.35	-26.75	0.00	-1927.9	0.00	1927.91	3942.52	1971.26	7835.01	3923.33	5.60	-1.231	0.000	0.496
46.67	-19.00	-26.55	0.00	-1883.3	0.00	1883.32	3914.42	1957.21	7693.52	3852.48	6.04	-1.284	0.000	0.494
50.00	-17.85	-26.09	0.00	-1794.8	0.00	1794.83	3857.22	1928.61	7412.31	3711.67	6.98	-1.390	0.000	0.488
53.00	-16.84	-25.69	0.00	-1716.5	0.00	1716.55	2988.70	1494.35	5718.32	2863.41	7.88	-1.488	0.000	0.605
55.00	-16.47	-25.45	0.00	-1665.1	0.00	1665.18	2965.19	1482.60	5595.48	2801.90	8.52	-1.554	0.000	0.600
60.00	-15.64	-24.81	0.00	-1537.9	0.00	1537.95	2904.34	1452.17	5290.00	2648.93	10.25	-1.742	0.000	0.586
65.00	-14.83	-24.18	0.00	-1413.9	0.00	1413.92	2840.50	1420.25	4987.29	2497.35	12.18	-1.935	0.000	0.572
70.00	-14.05	-23.56	0.00	-1293.0	0.00	1293.04	2773.69	1386.84	4687.92	2347.44	14.31	-2.133	0.000	0.556
75.00	-13.30	-22.95	0.00	-1175.2	0.00	1175.26	2703.90	1351.95	4392.49	2199.51	16.65	-2.334	0.000	0.540
80.00	-12.57	-22.35	0.00	-1060.5	0.00	1060.52	2631.14	1315.57	4101.58	2053.84	19.21	-2.539	0.000	0.521
85.00	-11.87	-21.77	0.00	-948.74	0.00	948.74	2555.39	1277.70	3815.78	1910.73	21.98	-2.748	0.000	0.501
90.00	-11.21	-21.20	0.00	-839.88	0.00	839.88	2476.68	1238.34	3535.67	1770.46	24.97	-2.959	0.000	0.479
93.50	-10.77	-20.81	0.00	-765.74	0.00	765.74	2419.86	1209.93	3343.48	1674.23	27.20	-3.111	0.000	0.462
95.00	-10.44	-20.64	0.00	-734.45	0.00	734.45	2394.98	1197.49	3261.85	1633.35	28.19	-3.178	0.000	0.454
98.00	-9.83	-20.30	0.00	-672.59	0.00	672.59	1772.11	886.06	2389.60	1196.58	30.22	-3.308	0.000	0.568
100.00	-9.59	-20.10	0.00	-631.92	0.00	631.92	1749.91	874.96	2313.65	1158.54	31.63	-3.397	0.000	0.551
105.00	-9.07	-19.59	0.00	-531.40	0.00	531.40	1692.43	846.21	2126.56	1064.86	35.32	-3.645	0.000	0.505
110.00	-8.58	-19.09	0.00	-433.45	0.00	433.45	1631.96	815.98	1943.46	973.18	39.27	-3.884	0.000	0.451
115.00	-8.14	-18.61	0.00	-337.99	0.00	337.99	1568.52	784.26	1764.96	883.79	43.46	-4.108	0.000	0.388
117.00	-5.25	-12.86	0.00	-300.78	0.00	300.78	1542.31	771.16	1694.98	848.75	45.20	-4.196	0.000	0.358
120.00	-5.00	-12.58	0.00	-262.20	0.00	262.20	1502.10	751.05	1591.63	797.00	47.87	-4.321	0.000	0.333
125.00	-4.62	-12.14	0.00	-199.27	0.00	199.27	1429.48	714.74	1420.86	711.49	52.50	-4.511	0.000	0.284
130.00	-4.27	-11.71	0.00	-138.59	0.00	138.59	1336.04	668.02	1240.29	621.07	57.31	-4.679	0.000	0.227
132.00	-2.37	-7.18	0.00	-115.18	0.00	115.18	1298.67	649.33	1171.50	586.62	59.29	-4.741	0.000	0.198
135.00	-2.18	-6.94	0.00	-93.64	0.00	93.64	1242.60	621.30	1071.99	536.79	62.29	-4.824	0.000	0.176
140.00	-1.88	-6.56	0.00	-58.93	0.00	58.93	1149.16	574.58	915.96	458.66	67.40	-4.939	0.000	0.130
145.00	-1.61	-6.20	0.00	-26.14	0.00	26.14	1055.72	527.86	772.20	386.67	72.62	-5.021	0.000	0.069
145.50	0.00	-6.03	0.00	-23.05	0.00	23.05	1046.38	523.19	758.49	379.81	73.14	-5.027	0.000	0.061

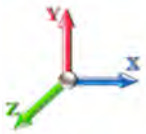
Wind Loading - Shaft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	27.355	32.83	186.6	487.5	1990.1
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	26.758	32.11	182.5	510.0	1974.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	26.134	31.36	178.3	517.8	1943.3
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	25.497	30.60	184.5	519.1	1906.1
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.853	29.82	188.5	516.7	1865.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	24.205	29.05	190.8	511.7	1821.6
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.553	28.26	191.8	504.8	1776.3
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.900	27.48	191.8	496.6	1729.5
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.244	26.69	191.0	487.3	1681.7
46.67	Bot - Section 2	1.00	1.08	6.554	7.21	0.00	1.200	1.553	1.67	7.267	8.72	62.9	161.3	550.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	3.33	14.493	17.39	127.2	322.1	1736.3
53.00	Top - Section 1	1.00	1.11	6.732	7.41	0.00	1.200	1.573	3.00	12.794	15.35	113.7	286.1	1532.0
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	2.00	8.397	10.08	75.2	188.9	563.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.534	24.64	187.3	460.8	1373.7
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	19.874	23.85	184.4	448.6	1329.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.214	23.06	181.0	436.0	1284.8
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	18.552	22.26	177.4	423.0	1239.7
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	17.890	21.47	173.4	409.6	1194.1
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	17.228	20.67	169.1	395.8	1148.3
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	16.565	19.88	164.6	381.7	1102.0
93.50	Bot - Section 3	1.00	1.25	7.587	8.35	0.00	1.200	1.665	3.50	11.190	13.43	112.1	259.9	744.6
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	1.50	4.774	5.73	48.0	112.0	481.2
98.00	Top - Section 2	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	9.339	11.21	94.5	218.0	938.3
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	2.00	6.110	7.33	62.1	143.4	354.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	14.786	17.74	151.7	343.0	851.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	14.122	16.95	146.4	327.8	810.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	13.458	16.15	140.8	312.5	769.5
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	1.702	2.00	5.196	6.24	54.6	122.5	298.1
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	3.00	7.596	9.11	80.2	178.2	433.9
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	12.129	14.55	129.1	281.2	686.9
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	11.464	13.76	123.1	265.3	645.3
132.00	Appurtenance(s)	1.00	1.34	8.158	8.97	0.00	1.200	1.723	2.00	4.399	5.28	47.4	103.6	248.4
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	3.00	6.399	7.68	69.2	149.5	359.0
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	5.00	10.133	12.16	110.5	233.0	561.6
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	9.467	11.36	104.0	216.6	519.5
145.50	Appurtenance(s)	1.00	1.37	8.327	9.16	0.00	1.200	1.740	0.50	0.910	1.09	10.0	21.5	50.4
								Totals:	**145.50**			**4,785.4**		**38,495.2**

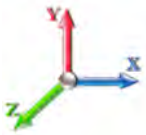
Discrete Appurtenance Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 21

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	145.50	DMP65R-BU6DA	3	8.392	9.232	0.65	0.90	27.55	964.89	0.000	5.500	254.29	0.00	1398.60
2	145.50	LGP21903 Diplexer	6	8.392	9.232	0.84	1.00	3.36	75.61	0.000	5.500	31.01	0.00	170.56
3	145.50	DC6-48-60-18-8F	3	8.392	9.232	0.90	0.90	5.18	258.70	0.000	5.500	47.78	0.00	262.81
4	145.50	Low Profile Platform	1	8.327	9.160	1.00	1.00	51.38	2183.94	0.000	0.000	470.67	0.00	0.00
5	145.50	RRUS 8843 B2 B66A	3	8.392	9.232	0.60	0.90	3.86	363.31	0.000	5.500	35.66	0.00	196.13
6	145.50	OPA65R-BU6DA	3	8.392	9.232	0.66	0.90	28.31	1087.70	0.000	5.500	261.30	0.00	1437.18
7	145.50	4449 B5/B12	3	8.392	9.232	0.60	0.90	4.55	374.45	0.000	5.500	42.01	0.00	231.07
8	145.50	4478 B14	3	8.392	9.232	0.60	0.90	4.16	309.66	0.000	5.500	38.38	0.00	211.08
9	132.00	RDIDC-9181-PF-48	1	8.158	8.974	1.00	1.00	2.57	100.52	0.000	0.000	23.07	0.00	0.00
10	132.00	TA08025-B604	3	8.158	8.974	0.50	0.75	3.79	343.70	0.000	0.000	34.01	0.00	0.00
11	132.00	TA08025-B605	3	8.158	8.974	0.50	0.75	3.79	387.12	0.000	0.000	34.01	0.00	0.00
12	132.00	MC-PK8-DSH	1	8.158	8.974	1.00	1.00	84.22	3365.79	0.000	0.000	755.82	0.00	0.00
13	132.00	MX08FRO665-21	3	8.158	8.974	0.55	0.75	23.20	892.13	0.000	0.000	208.23	0.00	0.00
14	117.00	Commscope	3	7.954	8.749	0.60	0.80	24.64	916.89	0.000	0.000	215.60	0.00	0.00
15	117.00	ALU 1900 Mhz	3	7.954	8.749	0.54	0.80	8.29	384.26	0.000	0.000	72.53	0.00	0.00
16	117.00	ALU 800 Mhz	6	7.954	8.749	0.54	0.80	11.60	687.87	0.000	0.000	101.45	0.00	0.00
17	117.00	ALU TD-RRH8x20-25	3	7.954	8.749	0.54	0.80	7.79	573.60	0.000	0.000	68.11	0.00	0.00
18	117.00	RFS APXVTM14-C-I20	3	7.954	8.749	0.62	0.80	13.72	669.42	0.000	0.000	120.04	0.00	0.00
19	117.00	Modified T-Arm	3	7.954	8.749	0.56	0.75	31.24	1765.00	0.000	0.000	273.31	0.00	0.00
20	117.00	SitePro PRK-1245L	1	7.954	8.749	0.56	0.75	10.80	779.38	0.000	0.000	94.51	0.00	0.00
21	117.00	Sitepro PRK-SFS-H-L	1	7.954	8.749	0.56	0.75	7.62	488.24	0.000	0.000	66.65	0.00	0.00
22	117.00	(3) 8.5' Horizontal Rail	1	7.954	8.749	0.56	0.75	4.67	1007.29	0.000	0.000	40.85	0.00	0.00
23	117.00	(3) 9' Long Corner Braces	1	7.954	8.749	0.56	0.75	7.42	1175.17	0.000	0.000	64.89	0.00	0.00
							Totals:		**19,154.65**			**3,354.19**		

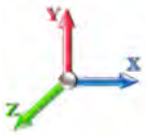
Total Applied Force Summary

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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 21

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		186.61	2103.23	0.00	0.00
10.00		182.54	2087.22	0.00	0.00
15.00		178.28	2056.51	0.00	0.00
20.00		184.55	2019.29	0.00	0.00
25.00		188.54	1978.29	0.00	0.00
30.00		190.81	1934.76	0.00	0.00
35.00		191.80	1889.42	0.00	0.00
40.00		191.79	1842.70	0.00	0.00
45.00		190.98	1794.87	0.00	0.00
46.67		62.87	588.63	0.00	0.00
50.00		127.22	1811.77	0.00	0.00
53.00		113.69	1599.88	0.00	0.00
55.00		75.20	608.36	0.00	0.00
60.00		187.31	1486.88	0.00	0.00
65.00		184.37	1442.67	0.00	0.00
70.00		181.04	1397.97	0.00	0.00
75.00		177.37	1352.82	0.00	0.00
80.00		173.38	1307.29	0.00	0.00
85.00		169.11	1261.41	0.00	0.00
90.00		164.57	1215.21	0.00	0.00
93.50		112.06	823.74	0.00	0.00
95.00		47.97	515.18	0.00	0.00
98.00		94.45	1006.12	0.00	0.00
100.00		62.06	399.62	0.00	0.00
105.00		151.74	964.50	0.00	0.00
110.00		146.35	923.70	0.00	0.00
115.00		140.78	882.68	0.00	0.00
117.00	(25) attachments	1172.50	8790.52	0.00	0.00
120.00		80.17	492.29	0.00	0.00
125.00		129.12	784.21	0.00	0.00
130.00		123.05	742.62	0.00	0.00
132.00	(11) attachments	1102.51	5376.56	0.00	0.00
135.00		69.23	413.83	0.00	0.00
140.00		110.48	652.94	0.00	0.00
145.00		103.99	610.87	0.00	0.00
145.50	(25) attachments	1191.11	5677.77	0.00	3907.41
	Totals:	**8,139.60**	**60,836.31**	**0.00**	**3,907.41**

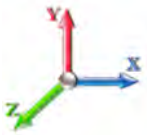
Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-60.83	-8.16	0.00	-810.40	0.00	810.40	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.150
5.00	-58.73	-8.00	0.00	-769.62	0.00	769.62	4517.77	2258.89	11350.5	5683.71	0.02	-0.030	0.000	0.148
10.00	-56.64	-7.85	0.00	-729.63	0.00	729.63	4456.28	2228.14	10903.5	5459.88	0.07	-0.062	0.000	0.146
15.00	-54.57	-7.70	0.00	-690.39	0.00	690.39	4391.82	2195.91	10457.5	5236.55	0.15	-0.094	0.000	0.144
20.00	-52.55	-7.54	0.00	-651.91	0.00	651.91	4324.38	2162.19	10013.1	5014.00	0.26	-0.126	0.000	0.142
25.00	-50.57	-7.38	0.00	-614.22	0.00	614.22	4253.96	2126.98	9570.83	4792.53	0.41	-0.160	0.000	0.140
30.00	-48.63	-7.21	0.00	-577.34	0.00	577.34	4180.57	2090.28	9131.30	4572.43	0.60	-0.194	0.000	0.138
35.00	-46.74	-7.04	0.00	-541.30	0.00	541.30	4104.19	2052.10	8695.09	4354.01	0.82	-0.230	0.000	0.136
40.00	-44.89	-6.87	0.00	-506.11	0.00	506.11	4024.85	2012.42	8262.80	4137.54	1.08	-0.266	0.000	0.133
45.00	-43.09	-6.69	0.00	-471.77	0.00	471.77	3942.52	1971.26	7835.01	3923.33	1.38	-0.303	0.000	0.131
46.67	-42.50	-6.63	0.00	-460.63	0.00	460.63	3914.42	1957.21	7693.52	3852.48	1.49	-0.316	0.000	0.130
50.00	-40.69	-6.51	0.00	-438.51	0.00	438.51	3857.22	1928.61	7412.31	3711.67	1.72	-0.342	0.000	0.129
53.00	-39.09	-6.40	0.00	-418.97	0.00	418.97	2988.70	1494.35	5718.32	2863.41	1.94	-0.366	0.000	0.159
55.00	-38.48	-6.35	0.00	-406.16	0.00	406.16	2965.19	1482.60	5595.48	2801.90	2.10	-0.382	0.000	0.158
60.00	-36.99	-6.18	0.00	-374.43	0.00	374.43	2904.34	1452.17	5290.00	2648.93	2.52	-0.428	0.000	0.154
65.00	-35.54	-6.01	0.00	-343.54	0.00	343.54	2840.50	1420.25	4987.29	2497.35	3.00	-0.475	0.000	0.150
70.00	-34.14	-5.85	0.00	-313.47	0.00	313.47	2773.69	1386.84	4687.92	2347.44	3.52	-0.523	0.000	0.146
75.00	-32.78	-5.69	0.00	-284.23	0.00	284.23	2703.90	1351.95	4392.49	2199.51	4.09	-0.571	0.000	0.141
80.00	-31.47	-5.53	0.00	-255.81	0.00	255.81	2631.14	1315.57	4101.58	2053.84	4.72	-0.621	0.000	0.137
85.00	-30.21	-5.37	0.00	-228.17	0.00	228.17	2555.39	1277.70	3815.78	1910.73	5.40	-0.671	0.000	0.131
90.00	-28.99	-5.21	0.00	-201.33	0.00	201.33	2476.68	1238.34	3535.67	1770.46	6.13	-0.722	0.000	0.125
93.50	-28.17	-5.10	0.00	-183.10	0.00	183.10	2419.86	1209.93	3343.48	1674.23	6.67	-0.758	0.000	0.121
95.00	-27.65	-5.06	0.00	-175.43	0.00	175.43	2394.98	1197.49	3261.85	1633.35	6.91	-0.774	0.000	0.119
98.00	-26.64	-4.96	0.00	-160.27	0.00	160.27	1772.11	886.06	2389.60	1196.58	7.41	-0.805	0.000	0.149
100.00	-26.24	-4.91	0.00	-150.33	0.00	150.33	1749.91	874.96	2313.65	1158.54	7.75	-0.826	0.000	0.145
105.00	-25.27	-4.77	0.00	-125.76	0.00	125.76	1692.43	846.21	2126.56	1064.86	8.65	-0.885	0.000	0.133
110.00	-24.35	-4.64	0.00	-101.89	0.00	101.89	1631.96	815.98	1943.46	973.18	9.61	-0.942	0.000	0.120
115.00	-23.47	-4.49	0.00	-78.72	0.00	78.72	1568.52	784.26	1764.96	883.79	10.62	-0.994	0.000	0.104
117.00	-14.70	-3.17	0.00	-69.73	0.00	69.73	1542.31	771.16	1694.98	848.75	11.04	-1.015	0.000	0.092
120.00	-14.20	-3.09	0.00	-60.21	0.00	60.21	1502.10	751.05	1591.63	797.00	11.69	-1.043	0.000	0.085
125.00	-13.42	-2.96	0.00	-44.74	0.00	44.74	1429.48	714.74	1420.86	711.49	12.81	-1.087	0.000	0.072
130.00	-12.68	-2.83	0.00	-29.94	0.00	29.94	1336.04	668.02	1240.29	621.07	13.97	-1.124	0.000	0.058
132.00	-7.32	-1.62	0.00	-24.28	0.00	24.28	1298.67	649.33	1171.50	586.62	14.44	-1.137	0.000	0.047
135.00	-6.91	-1.55	0.00	-19.42	0.00	19.42	1242.60	621.30	1071.99	536.79	15.16	-1.154	0.000	0.042
140.00	-6.26	-1.43	0.00	-11.69	0.00	11.69	1149.16	574.58	915.96	458.66	16.38	-1.178	0.000	0.031
145.00	-5.65	-1.31	0.00	-4.56	0.00	4.56	1055.72	527.86	772.20	386.67	17.63	-1.194	0.000	0.017
145.50	0.00	-1.19	0.00	-3.91	0.00	3.91	1046.38	523.19	758.49	379.81	17.75	-1.195	0.000	0.010

Seismic Segment Forces (Factored)

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	20
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.47		**SA**	0.05	**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		1252.1	0.00	0.03	0.02	17.48	
10.00		1220.0	0.01	0.05	0.03	25.52	
15.00		1187.9	0.02	0.06	0.04	29.12	
20.00		1155.8	0.04	0.07	0.04	30.56	
25.00		1123.7	0.06	0.07	0.04	31.03	
30.00		1091.6	0.08	0.07	0.04	31.13	
35.00		1059.5	0.11	0.07	0.04	31.09	
40.00		1027.4	0.14	0.07	0.03	30.91	
45.00		995.33	0.18	0.07	0.03	30.42	
46.67	Bot - Section 2	324.64	0.19	0.06	0.02	9.94	
50.00		1178.4	0.22	0.06	0.02	35.88	
53.00	Top - Section 1	1038.2	0.25	0.06	0.02	31.06	
55.00		311.81	0.27	0.05	0.02	9.13	
60.00		760.80	0.32	0.04	0.01	20.25	
65.00		734.05	0.38	0.03	0.01	16.15	
70.00		707.31	0.44	0.01	0.01	10.81	
75.00		680.56	0.50	-0.02	0.01	4.60	
80.00		653.81	0.57	-0.04	0.01	-1.73	
85.00		627.06	0.65	-0.07	0.02	-7.20	
90.00		600.31	0.72	-0.09	0.03	-10.90	
93.50	Bot - Section 3	403.93	0.78	-0.11	0.05	-8.40	
95.00		307.64	0.81	-0.11	0.06	-6.56	
98.00	Top - Section 2	600.24	0.86	-0.12	0.07	-12.71	
100.00		175.75	0.89	-0.12	0.08	-3.53	
105.00		423.65	0.98	-0.11	0.12	-5.94	
110.00		402.25	1.08	-0.08	0.17	-1.14	
115.00		380.85	1.18	-0.01	0.24	5.15	
117.00	Appurtenance(s)	3602.0	1.22	0.03	0.27	77.57	
120.00		213.11	1.29	0.10	0.32	7.48	
125.00		338.06	1.39	0.27	0.43	20.95	
130.00		316.66	1.51	0.52	0.55	29.81	
132.00	Appurtenance(s)	2479.7	1.56	0.65	0.61	269.12	
135.00		174.59	1.63	0.86	0.71	23.00	
140.00		273.86	1.75	1.32	0.89	47.88	
145.00		252.46	1.88	1.91	1.12	56.43	
145.50	Appurtenance(s)	2381.4	1.89	1.98	1.14	544.67	
	Totals:	**30,456.9**				**1,419.1**	**Total Wind:** **32,451.1**

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

Calculated Forces

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 20

Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.47	**SA**	0.05	**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	-39.73	-1.48	0.00	-169.17	0.00	169.17	4576.28	2288.14	11797.9	5907.74		0.00	0.00	0.037
5.00	-38.12	-1.47	0.00	-161.77	0.00	161.77	4517.77	2258.89	11350.5	5683.71		0.00	-0.01	0.037
10.00	-36.54	-1.44	0.00	-154.44	0.00	154.44	4456.28	2228.14	10903.5	5459.88		0.01	-0.01	0.036
15.00	-35.00	-1.42	0.00	-147.22	0.00	147.22	4391.82	2195.91	10457.5	5236.55		0.03	-0.02	0.036
20.00	-33.50	-1.39	0.00	-140.13	0.00	140.13	4324.38	2162.19	10013.1	5014.00		0.06	-0.03	0.036
25.00	-32.04	-1.36	0.00	-133.17	0.00	133.17	4253.96	2126.98	9570.83	4792.53		0.09	-0.03	0.035
30.00	-30.62	-1.34	0.00	-126.35	0.00	126.35	4180.57	2090.28	9131.30	4572.43		0.13	-0.04	0.035
35.00	-29.23	-1.31	0.00	-119.67	0.00	119.67	4104.19	2052.10	8695.09	4354.01		0.17	-0.05	0.035
40.00	-27.89	-1.28	0.00	-113.13	0.00	113.13	4024.85	2012.42	8262.80	4137.54		0.23	-0.06	0.034
45.00	-26.58	-1.25	0.00	-106.73	0.00	106.73	3942.52	1971.26	7835.01	3923.33		0.30	-0.07	0.034
46.67	-26.15	-1.24	0.00	-104.65	0.00	104.65	3914.42	1957.21	7693.52	3852.48		0.32	-0.07	0.034
50.00	-24.66	-1.21	0.00	-100.51	0.00	100.51	3857.22	1928.61	7412.31	3711.67		0.37	-0.07	0.033
53.00	-23.35	-1.18	0.00	-96.89	0.00	96.89	2988.70	1494.35	5718.32	2863.41		0.42	-0.08	0.042
55.00	-22.93	-1.17	0.00	-94.53	0.00	94.53	2965.19	1482.60	5595.48	2801.90		0.45	-0.08	0.041
60.00	-21.90	-1.15	0.00	-88.69	0.00	88.69	2904.34	1452.17	5290.00	2648.93		0.54	-0.09	0.041
65.00	-20.91	-1.14	0.00	-82.93	0.00	82.93	2840.50	1420.25	4987.29	2497.35		0.65	-0.11	0.041
70.00	-19.95	-1.13	0.00	-77.24	0.00	77.24	2773.69	1386.84	4687.92	2347.44		0.77	-0.12	0.040
75.00	-19.02	-1.13	0.00	-71.60	0.00	71.60	2703.90	1351.95	4392.49	2199.51		0.90	-0.13	0.040
80.00	-18.12	-1.13	0.00	-65.96	0.00	65.96	2631.14	1315.57	4101.58	2053.84		1.04	-0.14	0.039
85.00	-17.25	-1.13	0.00	-60.32	0.00	60.32	2555.39	1277.70	3815.78	1910.73		1.20	-0.16	0.038
90.00	-16.42	-1.13	0.00	-54.67	0.00	54.67	2476.68	1238.34	3535.67	1770.46		1.37	-0.17	0.038
93.50	-15.85	-1.13	0.00	-50.71	0.00	50.71	2419.86	1209.93	3343.48	1674.23		1.49	-0.18	0.037
95.00	-15.45	-1.13	0.00	-49.01	0.00	49.01	2394.98	1197.49	3261.85	1633.35		1.55	-0.18	0.036
98.00	-14.66	-1.13	0.00	-45.62	0.00	45.62	1772.11	886.06	2389.60	1196.58		1.67	-0.19	0.046
100.00	-14.41	-1.13	0.00	-43.35	0.00	43.35	1749.91	874.96	2313.65	1158.54		1.75	-0.20	0.046
105.00	-13.78	-1.14	0.00	-37.68	0.00	37.68	1692.43	846.21	2126.56	1064.86		1.97	-0.22	0.044
110.00	-13.19	-1.14	0.00	-32.00	0.00	32.00	1631.96	815.98	1943.46	973.18		2.20	-0.23	0.041
115.00	-12.62	-1.13	0.00	-26.32	0.00	26.32	1568.52	784.26	1764.96	883.79		2.45	-0.25	0.038
117.00	-8.25	-1.04	0.00	-24.05	0.00	24.05	1542.31	771.16	1694.98	848.75		2.56	-0.26	0.034
120.00	-7.94	-1.03	0.00	-20.94	0.00	20.94	1502.10	751.05	1591.63	797.00		2.72	-0.27	0.032
125.00	-7.43	-1.01	0.00	-15.79	0.00	15.79	1429.48	714.74	1420.86	711.49		3.01	-0.28	0.027
130.00	-6.96	-0.98	0.00	-10.75	0.00	10.75	1336.04	668.02	1240.29	621.07		3.31	-0.29	0.023
132.00	-3.94	-0.69	0.00	-8.80	0.00	8.80	1298.67	649.33	1171.50	586.62		3.44	-0.30	0.018
135.00	-3.68	-0.67	0.00	-6.72	0.00	6.72	1242.60	621.30	1071.99	536.79		3.63	-0.31	0.015
140.00	-3.26	-0.62	0.00	-3.38	0.00	3.38	1149.16	574.58	915.96	458.66		3.95	-0.31	0.010
145.00	-2.86	-0.56	0.00	-0.28	0.00	0.28	1055.72	527.86	772.20	386.67		4.29	-0.32	0.003
145.50	0.00	-0.54	0.00	0.00	0.00	0.00	1046.38	523.19	758.49	379.81		4.32	-0.32	0.000

Seismic Segment Forces (Factored)

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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**	20
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.47		**SA**	0.05	**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		1252.1	0.00	0.03	0.02	17.48	
10.00		1220.0	0.01	0.05	0.03	25.52	
15.00		1187.9	0.02	0.06	0.04	29.12	
20.00		1155.8	0.04	0.07	0.04	30.56	
25.00		1123.7	0.06	0.07	0.04	31.03	
30.00		1091.6	0.08	0.07	0.04	31.13	
35.00		1059.5	0.11	0.07	0.04	31.09	
40.00		1027.4	0.14	0.07	0.03	30.91	
45.00		995.33	0.18	0.07	0.03	30.42	
46.67	Bot - Section 2	324.64	0.19	0.06	0.02	9.94	
50.00		1178.4	0.22	0.06	0.02	35.88	
53.00	Top - Section 1	1038.2	0.25	0.06	0.02	31.06	
55.00		311.81	0.27	0.05	0.02	9.13	
60.00		760.80	0.32	0.04	0.01	20.25	
65.00		734.05	0.38	0.03	0.01	16.15	
70.00		707.31	0.44	0.01	0.01	10.81	
75.00		680.56	0.50	-0.02	0.01	4.60	
80.00		653.81	0.57	-0.04	0.01	-1.73	
85.00		627.06	0.65	-0.07	0.02	-7.20	
90.00		600.31	0.72	-0.09	0.03	-10.90	
93.50	Bot - Section 3	403.93	0.78	-0.11	0.05	-8.40	
95.00		307.64	0.81	-0.11	0.06	-6.56	
98.00	Top - Section 2	600.24	0.86	-0.12	0.07	-12.71	
100.00		175.75	0.89	-0.12	0.08	-3.53	
105.00		423.65	0.98	-0.11	0.12	-5.94	
110.00		402.25	1.08	-0.08	0.17	-1.14	
115.00		380.85	1.18	-0.01	0.24	5.15	
117.00	Appurtenance(s)	3602.0	1.22	0.03	0.27	77.57	
120.00		213.11	1.29	0.10	0.32	7.48	
125.00		338.06	1.39	0.27	0.43	20.95	
130.00		316.66	1.51	0.52	0.55	29.81	
132.00	Appurtenance(s)	2479.7	1.56	0.65	0.61	269.12	
135.00		174.59	1.63	0.86	0.71	23.00	
140.00		273.86	1.75	1.32	0.89	47.88	
145.00		252.46	1.88	1.91	1.12	56.43	
145.50	Appurtenance(s)	2381.4	1.89	1.98	1.14	544.67	
	Totals:	**30,456.9**				**1,419.1**	**Total Wind:** **32,451.1**

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

Calculated Forces

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Iterations 20

Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.47	**SA**	0.05	**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	-29.80	-1.48	0.00	-167.93	0.00	167.93	4576.28	2288.14	11797.9	5907.74		0.00	0.00	0.035
5.00	-28.59	-1.46	0.00	-160.53	0.00	160.53	4517.77	2258.89	11350.5	5683.71		0.00	-0.01	0.035
10.00	-27.41	-1.44	0.00	-153.21	0.00	153.21	4456.28	2228.14	10903.5	5459.88		0.01	-0.01	0.034
15.00	-26.25	-1.42	0.00	-146.01	0.00	146.01	4391.82	2195.91	10457.5	5236.55		0.03	-0.02	0.034
20.00	-25.13	-1.39	0.00	-138.93	0.00	138.93	4324.38	2162.19	10013.1	5014.00		0.05	-0.03	0.034
25.00	-24.03	-1.36	0.00	-131.99	0.00	131.99	4253.96	2126.98	9570.83	4792.53		0.09	-0.03	0.033
30.00	-22.96	-1.33	0.00	-125.20	0.00	125.20	4180.57	2090.28	9131.30	4572.43		0.13	-0.04	0.033
35.00	-21.92	-1.30	0.00	-118.55	0.00	118.55	4104.19	2052.10	8695.09	4354.01		0.17	-0.05	0.033
40.00	-20.91	-1.27	0.00	-112.05	0.00	112.05	4024.85	2012.42	8262.80	4137.54		0.23	-0.06	0.032
45.00	-19.93	-1.24	0.00	-105.69	0.00	105.69	3942.52	1971.26	7835.01	3923.33		0.29	-0.07	0.032
46.67	-19.61	-1.23	0.00	-103.62	0.00	103.62	3914.42	1957.21	7693.52	3852.48		0.32	-0.07	0.032
50.00	-18.50	-1.20	0.00	-99.50	0.00	99.50	3857.22	1928.61	7412.31	3711.67		0.37	-0.07	0.032
53.00	-17.51	-1.17	0.00	-95.91	0.00	95.91	2988.70	1494.35	5718.32	2863.41		0.41	-0.08	0.039
55.00	-17.20	-1.16	0.00	-93.57	0.00	93.57	2965.19	1482.60	5595.48	2801.90		0.45	-0.08	0.039
60.00	-16.43	-1.14	0.00	-87.77	0.00	87.77	2904.34	1452.17	5290.00	2648.93		0.54	-0.09	0.039
65.00	-15.68	-1.13	0.00	-82.07	0.00	82.07	2840.50	1420.25	4987.29	2497.35		0.64	-0.10	0.038
70.00	-14.96	-1.12	0.00	-76.43	0.00	76.43	2773.69	1386.84	4687.92	2347.44		0.76	-0.12	0.038
75.00	-14.26	-1.12	0.00	-70.84	0.00	70.84	2703.90	1351.95	4392.49	2199.51		0.89	-0.13	0.037
80.00	-13.59	-1.12	0.00	-65.26	0.00	65.26	2631.14	1315.57	4101.58	2053.84		1.03	-0.14	0.037
85.00	-12.94	-1.12	0.00	-59.68	0.00	59.68	2555.39	1277.70	3815.78	1910.73		1.18	-0.15	0.036
90.00	-12.31	-1.12	0.00	-54.09	0.00	54.09	2476.68	1238.34	3535.67	1770.46		1.35	-0.17	0.036
93.50	-11.89	-1.12	0.00	-50.18	0.00	50.18	2419.86	1209.93	3343.48	1674.23		1.48	-0.18	0.035
95.00	-11.59	-1.12	0.00	-48.50	0.00	48.50	2394.98	1197.49	3261.85	1633.35		1.54	-0.18	0.035
98.00	-11.00	-1.12	0.00	-45.14	0.00	45.14	1772.11	886.06	2389.60	1196.58		1.65	-0.19	0.044
100.00	-10.80	-1.12	0.00	-42.90	0.00	42.90	1749.91	874.96	2313.65	1158.54		1.73	-0.20	0.043
105.00	-10.34	-1.12	0.00	-37.30	0.00	37.30	1692.43	846.21	2126.56	1064.86		1.95	-0.21	0.041
110.00	-9.89	-1.12	0.00	-31.69	0.00	31.69	1631.96	815.98	1943.46	973.18		2.18	-0.23	0.039
115.00	-9.46	-1.12	0.00	-26.08	0.00	26.08	1568.52	784.26	1764.96	883.79		2.43	-0.25	0.036
117.00	-6.19	-1.03	0.00	-23.84	0.00	23.84	1542.31	771.16	1694.98	848.75		2.54	-0.25	0.032
120.00	-5.95	-1.02	0.00	-20.76	0.00	20.76	1502.10	751.05	1591.63	797.00		2.70	-0.26	0.030
125.00	-5.57	-1.00	0.00	-15.66	0.00	15.66	1429.48	714.74	1420.86	711.49		2.98	-0.28	0.026
130.00	-5.22	-0.97	0.00	-10.67	0.00	10.67	1336.04	668.02	1240.29	621.07		3.28	-0.29	0.021
132.00	-2.96	-0.69	0.00	-8.73	0.00	8.73	1298.67	649.33	1171.50	586.62		3.41	-0.30	0.017
135.00	-2.76	-0.66	0.00	-6.67	0.00	6.67	1242.60	621.30	1071.99	536.79		3.60	-0.30	0.015
140.00	-2.44	-0.61	0.00	-3.35	0.00	3.35	1149.16	574.58	915.96	458.66		3.92	-0.31	0.009
145.00	-2.15	-0.56	0.00	-0.28	0.00	0.28	1055.72	527.86	772.20	386.67		4.24	-0.31	0.003
145.50	0.00	-0.54	0.00	0.00	0.00	0.00	1046.38	523.19	758.49	379.81		4.28	-0.31	0.000

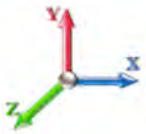
Wind Loading - Shaft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 21

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	294.90	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	287.48	0.650	0.000	5.00	26.320	17.11	140.0	0.0	1252.1
10.00		1.00	0.85	7.442	8.19	280.06	0.650	0.000	5.00	25.649	16.67	136.5	0.0	1220.0
15.00		1.00	0.85	7.442	8.19	272.64	0.650	0.000	5.00	24.978	16.24	132.9	0.0	1187.9
20.00		1.00	0.90	7.896	8.69	273.19	0.650	0.000	5.00	24.308	15.80	137.2	0.0	1155.8
25.00		1.00	0.95	8.276	9.10	271.86	0.650	0.000	5.00	23.637	15.36	139.9	0.0	1123.7
30.00		1.00	0.98	8.600	9.46	269.15	0.650	0.000	5.00	22.967	14.93	141.2	0.0	1091.6
35.00		1.00	1.01	8.883	9.77	265.45	0.650	0.000	5.00	22.296	14.49	141.6	0.0	1059.5
40.00		1.00	1.04	9.137	10.05	260.99	0.650	0.000	5.00	21.625	14.06	141.3	0.0	1027.4
45.00		1.00	1.07	9.366	10.30	255.92	0.650	0.000	5.00	20.955	13.62	140.3	0.0	995.3
46.67	Bot - Section 2	1.00	1.08	9.438	10.38	254.12	0.650	0.000	1.67	6.836	4.44	46.1	0.0	324.6
50.00		1.00	1.09	9.576	10.53	250.36	0.650	0.000	3.33	13.624	8.86	93.3	0.0	1178.5
53.00	Top - Section 1	1.00	1.11	9.694	10.66	246.82	0.650	0.000	3.00	12.007	7.80	83.2	0.0	1038.3
55.00		1.00	1.12	9.770	10.75	247.73	0.650	0.000	2.00	7.871	5.12	55.0	0.0	311.8
60.00		1.00	1.14	9.951	10.95	241.43	0.650	0.000	5.00	19.207	12.48	136.7	0.0	760.8
65.00		1.00	1.16	10.120	11.13	234.82	0.650	0.000	5.00	18.537	12.05	134.1	0.0	734.1
70.00		1.00	1.17	10.279	11.31	227.94	0.650	0.000	5.00	17.866	11.61	131.3	0.0	707.3
75.00		1.00	1.19	10.430	11.47	220.82	0.650	0.000	5.00	17.195	11.18	128.2	0.0	680.6
80.00		1.00	1.21	10.572	11.63	213.48	0.650	0.000	5.00	16.525	10.74	124.9	0.0	653.8
85.00		1.00	1.22	10.708	11.78	205.95	0.650	0.000	5.00	15.854	10.31	121.4	0.0	627.1
90.00		1.00	1.24	10.838	11.92	198.24	0.650	0.000	5.00	15.183	9.87	117.7	0.0	600.3
93.50	Bot - Section 3	1.00	1.25	10.925	12.02	192.75	0.650	0.000	3.50	10.220	6.64	79.8	0.0	403.9
95.00		1.00	1.25	10.962	12.06	190.36	0.650	0.000	1.50	4.357	2.83	34.1	0.0	307.6
98.00	Top - Section 2	1.00	1.26	11.034	12.14	185.57	0.650	0.000	3.00	8.503	5.53	67.1	0.0	600.2
100.00		1.00	1.27	11.081	12.19	185.20	0.650	0.000	2.00	5.550	3.61	44.0	0.0	175.7
105.00		1.00	1.28	11.195	12.31	177.05	0.650	0.000	5.00	13.383	8.70	107.1	0.0	423.7
110.00		1.00	1.29	11.305	12.44	168.78	0.650	0.000	5.00	12.712	8.26	102.8	0.0	402.3
115.00		1.00	1.30	11.412	12.55	160.38	0.650	0.000	5.00	12.042	7.83	98.3	0.0	380.9
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	156.99	0.650	0.000	2.00	4.629	3.01	37.9	0.0	146.4
120.00		1.00	1.32	11.514	12.67	151.87	0.650	0.000	3.00	6.742	4.38	55.5	0.0	213.1
125.00		1.00	1.33	11.614	12.78	143.26	0.650	0.000	5.00	10.701	6.96	88.9	0.0	338.1
130.00		1.00	1.34	11.710	12.88	134.54	0.650	0.000	5.00	10.030	6.52	84.0	0.0	316.7
132.00	Appurtenance(s)	1.00	1.34	11.748	12.92	131.03	0.650	0.000	2.00	3.824	2.49	32.1	0.0	120.7
135.00		1.00	1.35	11.803	12.98	125.73	0.650	0.000	3.00	5.535	3.60	46.7	0.0	174.6
140.00		1.00	1.36	11.894	13.08	116.84	0.650	0.000	5.00	8.689	5.65	73.9	0.0	273.9
145.00		1.00	1.37	11.982	13.18	107.85	0.650	0.000	5.00	8.018	5.21	68.7	0.0	252.5
145.50	Appurtenance(s)	1.00	1.37	11.991	13.19	106.95	0.650	0.000	0.50	0.765	0.50	6.6	0.0	24.1
								Totals:	**145.50**			**3,450.3**		**22,284.7**

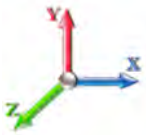
Discrete Appurtenance Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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 21

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	145.50	DMP65R-BU6DA	3	12.085	13.294	0.65	0.90	24.71	238.20	0.000	5.500	328.46	0.00	1806.53
2	145.50	LGP21903 Diplexer	6	12.085	13.294	0.84	1.00	1.36	33.00	0.000	5.500	18.09	0.00	99.49
3	145.50	DC6-48-60-18-8F	3	12.085	13.294	0.90	0.90	3.51	98.40	0.000	5.500	46.66	0.00	256.63
4	145.50	Low Profile Platform	1	11.991	13.190	1.00	1.00	28.00	1200.00	0.000	0.000	369.32	0.00	0.00
5	145.50	RRUS 8843 B2 B66A	3	12.085	13.294	0.60	0.90	2.97	216.00	0.000	5.500	39.44	0.00	216.91
6	145.50	OPA65R-BU6DA	3	12.085	13.294	0.66	0.90	25.05	180.60	0.000	5.500	333.02	0.00	1831.62
7	145.50	4449 B5/B12	3	12.085	13.294	0.60	0.90	3.56	213.00	0.000	5.500	47.37	0.00	260.56
8	145.50	4478 B14	3	12.085	13.294	0.60	0.90	3.17	178.20	0.000	5.500	42.08	0.00	231.46
9	132.00	RDIDC-9181-PF-48	1	11.748	12.922	1.00	1.00	2.01	21.85	0.000	0.000	25.97	0.00	0.00
10	132.00	TA08025-B604	3	11.748	12.922	0.50	0.75	2.95	191.70	0.000	0.000	38.18	0.00	0.00
11	132.00	TA08025-B605	3	11.748	12.922	0.50	0.75	2.95	225.00	0.000	0.000	38.18	0.00	0.00
12	132.00	MC-PK8-DSH	1	11.748	12.922	1.00	1.00	37.59	1727.00	0.000	0.000	485.76	0.00	0.00
13	132.00	MX08FRO665-21	3	11.748	12.922	0.55	0.75	20.80	193.50	0.000	0.000	268.73	0.00	0.00
14	117.00	Commscope	3	11.453	12.598	0.60	0.80	22.09	232.20	0.000	0.000	278.25	0.00	0.00
15	117.00	ALU 1900 Mhz	3	11.453	12.598	0.54	0.80	6.11	132.00	0.000	0.000	76.98	0.00	0.00
16	117.00	ALU 800 Mhz	6	11.453	12.598	0.54	0.80	8.01	318.00	0.000	0.000	100.89	0.00	0.00
17	117.00	ALU TD-RRH8x20-25	3	11.453	12.598	0.54	0.80	6.51	210.00	0.000	0.000	82.05	0.00	0.00
18	117.00	RFS APXVTM14-C-I20	3	11.453	12.598	0.62	0.80	11.72	168.60	0.000	0.000	147.61	0.00	0.00
19	117.00	Modified T-Arm	3	11.453	12.598	0.56	0.75	16.88	1050.00	0.000	0.000	212.60	0.00	0.00
20	117.00	SitePro PRK-1245L	1	11.453	12.598	0.56	0.75	5.34	464.91	0.000	0.000	67.32	0.00	0.00
21	117.00	Sitepro PRK-SFS-H-L	1	11.453	12.598	0.56	0.75	3.77	230.00	0.000	0.000	47.48	0.00	0.00
22	117.00	(3) 8.5' Horizontal Rail	1	11.453	12.598	0.56	0.75	2.39	300.00	0.000	0.000	30.12	0.00	0.00
23	117.00	(3) 9' Long Corner Braces	1	11.453	12.598	0.56	0.75	3.80	350.00	0.000	0.000	47.83	0.00	0.00
							Totals:		**8,172.16**			**3,172.41**		

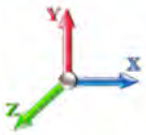
Total Applied Force Summary

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (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 21

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		140.05	1346.41	0.00	0.00
10.00		136.48	1314.31	0.00	0.00
15.00		132.91	1282.22	0.00	0.00
20.00		137.24	1250.12	0.00	0.00
25.00		139.87	1218.02	0.00	0.00
30.00		141.22	1185.92	0.00	0.00
35.00		141.62	1153.83	0.00	0.00
40.00		141.27	1121.73	0.00	0.00
45.00		140.33	1089.63	0.00	0.00
46.67		46.13	356.08	0.00	0.00
50.00		93.29	1241.35	0.00	0.00
53.00		83.23	1094.85	0.00	0.00
55.00		54.98	349.53	0.00	0.00
60.00		136.66	855.10	0.00	0.00
65.00		134.13	828.35	0.00	0.00
70.00		131.31	801.61	0.00	0.00
75.00		128.23	774.86	0.00	0.00
80.00		124.91	748.11	0.00	0.00
85.00		121.38	721.36	0.00	0.00
90.00		117.66	694.61	0.00	0.00
93.50		79.83	469.87	0.00	0.00
95.00		34.15	335.99	0.00	0.00
98.00		67.08	656.76	0.00	0.00
100.00		43.97	213.53	0.00	0.00
105.00		107.13	517.95	0.00	0.00
110.00		102.76	496.55	0.00	0.00
115.00		98.25	475.15	0.00	0.00
117.00	(25) attachments	1129.03	3639.78	0.00	0.00
120.00		55.51	261.77	0.00	0.00
125.00		88.86	419.16	0.00	0.00
130.00		83.98	397.76	0.00	0.00
132.00	(11) attachments	888.95	2512.16	0.00	0.00
135.00		46.71	220.25	0.00	0.00
140.00		73.89	349.96	0.00	0.00
145.00		68.69	328.56	0.00	0.00
145.50	(25) attachments	1231.01	2389.08	0.00	4703.22
	Totals:	**6,622.67**	**33,112.29**	**0.00**	**4,703.22**

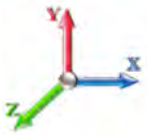
Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	-33.11	-6.63	0.00	-670.85	0.00	670.85	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.121
5.00	-31.76	-6.50	0.00	-637.70	0.00	637.70	4517.77	2258.89	11350.5	5683.71	0.01	-0.025	0.000	0.119
10.00	-30.44	-6.38	0.00	-605.18	0.00	605.18	4456.28	2228.14	10903.5	5459.88	0.05	-0.051	0.000	0.118
15.00	-29.16	-6.26	0.00	-573.28	0.00	573.28	4391.82	2195.91	10457.5	5236.55	0.12	-0.078	0.000	0.116
20.00	-27.91	-6.13	0.00	-541.99	0.00	541.99	4324.38	2162.19	10013.1	5014.00	0.22	-0.105	0.000	0.115
25.00	-26.69	-6.00	0.00	-511.32	0.00	511.32	4253.96	2126.98	9570.83	4792.53	0.34	-0.133	0.000	0.113
30.00	-25.50	-5.87	0.00	-481.30	0.00	481.30	4180.57	2090.28	9131.30	4572.43	0.50	-0.161	0.000	0.111
35.00	-24.34	-5.74	0.00	-451.93	0.00	451.93	4104.19	2052.10	8695.09	4354.01	0.68	-0.191	0.000	0.110
40.00	-23.22	-5.61	0.00	-423.23	0.00	423.23	4024.85	2012.42	8262.80	4137.54	0.90	-0.221	0.000	0.108
45.00	-22.13	-5.47	0.00	-395.19	0.00	395.19	3942.52	1971.26	7835.01	3923.33	1.15	-0.252	0.000	0.106
46.67	-21.77	-5.43	0.00	-386.07	0.00	386.07	3914.42	1957.21	7693.52	3852.48	1.24	-0.263	0.000	0.106
50.00	-20.53	-5.34	0.00	-367.97	0.00	367.97	3857.22	1928.61	7412.31	3711.67	1.43	-0.285	0.000	0.104
53.00	-19.43	-5.25	0.00	-351.96	0.00	351.96	2988.70	1494.35	5718.32	2863.41	1.61	-0.305	0.000	0.129
55.00	-19.08	-5.21	0.00	-341.45	0.00	341.45	2965.19	1482.60	5595.48	2801.90	1.74	-0.318	0.000	0.128
60.00	-18.22	-5.08	0.00	-315.42	0.00	315.42	2904.34	1452.17	5290.00	2648.93	2.10	-0.357	0.000	0.125
65.00	-17.39	-4.95	0.00	-290.04	0.00	290.04	2840.50	1420.25	4987.29	2497.35	2.49	-0.397	0.000	0.122
70.00	-16.59	-4.82	0.00	-265.29	0.00	265.29	2773.69	1386.84	4687.92	2347.44	2.93	-0.437	0.000	0.119
75.00	-15.81	-4.70	0.00	-241.17	0.00	241.17	2703.90	1351.95	4392.49	2199.51	3.41	-0.478	0.000	0.116
80.00	-15.06	-4.58	0.00	-217.66	0.00	217.66	2631.14	1315.57	4101.58	2053.84	3.94	-0.521	0.000	0.112
85.00	-14.33	-4.46	0.00	-194.75	0.00	194.75	2555.39	1277.70	3815.78	1910.73	4.50	-0.563	0.000	0.108
90.00	-13.64	-4.35	0.00	-172.43	0.00	172.43	2476.68	1238.34	3535.67	1770.46	5.12	-0.607	0.000	0.103
93.50	-13.17	-4.27	0.00	-157.23	0.00	157.23	2419.86	1209.93	3343.48	1674.23	5.57	-0.638	0.000	0.099
95.00	-12.83	-4.23	0.00	-150.81	0.00	150.81	2394.98	1197.49	3261.85	1633.35	5.78	-0.652	0.000	0.098
98.00	-12.17	-4.16	0.00	-138.12	0.00	138.12	1772.11	886.06	2389.60	1196.58	6.20	-0.678	0.000	0.122
100.00	-11.96	-4.13	0.00	-129.78	0.00	129.78	1749.91	874.96	2313.65	1158.54	6.48	-0.697	0.000	0.119
105.00	-11.44	-4.02	0.00	-109.15	0.00	109.15	1692.43	846.21	2126.56	1064.86	7.24	-0.747	0.000	0.109
110.00	-10.94	-3.92	0.00	-89.04	0.00	89.04	1631.96	815.98	1943.46	973.18	8.05	-0.797	0.000	0.098
115.00	-10.46	-3.82	0.00	-69.43	0.00	69.43	1568.52	784.26	1764.96	883.79	8.91	-0.843	0.000	0.085
117.00	-6.84	-2.64	0.00	-61.79	0.00	61.79	1542.31	771.16	1694.98	848.75	9.27	-0.861	0.000	0.077
120.00	-6.58	-2.59	0.00	-53.86	0.00	53.86	1502.10	751.05	1591.63	797.00	9.82	-0.886	0.000	0.072
125.00	-6.16	-2.49	0.00	-40.93	0.00	40.93	1429.48	714.74	1420.86	711.49	10.77	-0.925	0.000	0.062
130.00	-5.76	-2.41	0.00	-28.46	0.00	28.46	1336.04	668.02	1240.29	621.07	11.76	-0.960	0.000	0.050
132.00	-3.26	-1.48	0.00	-23.64	0.00	23.64	1298.67	649.33	1171.50	586.62	12.16	-0.973	0.000	0.043
135.00	-3.04	-1.43	0.00	-19.21	0.00	19.21	1242.60	621.30	1071.99	536.79	12.78	-0.990	0.000	0.038
140.00	-2.69	-1.35	0.00	-12.08	0.00	12.08	1149.16	574.58	915.96	458.66	13.83	-1.013	0.000	0.029
145.00	-2.37	-1.27	0.00	-5.34	0.00	5.34	1055.72	527.86	772.20	386.67	14.90	-1.030	0.000	0.016
145.50	0.00	-1.23	0.00	-4.70	0.00	4.70	1046.38	523.19	758.49	379.81	15.01	-1.031	0.000	0.012

Final Analysis Summary

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	7/7/2021	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (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

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 105 mph Wind	32.5	0.00	39.70	0.00	0.00	3299.31
0.9D + 1.6W 105 mph Wind	32.5	0.00	29.76	0.00	0.00	3277.36
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.2	0.00	60.83	0.00	0.00	810.40
1.2D + 1.0E	1.5	0.00	39.73	0.00	0.00	169.17
0.9D + 1.0E	1.5	0.00	29.80	0.00	0.00	167.93
1.0D + 1.0W 60 mph Wind	6.6	0.00	33.11	0.00	0.00	670.85

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 105 mph Wind	-22.66	-25.85	0.00	-1733.4	0.00	-1733.4	2988.70	1494.3	5718.32	2863.41	53.00	0.613
0.9D + 1.6W 105 mph Wind	-16.84	-25.69	0.00	-1716.5	0.00	-1716.5	2988.70	1494.3	5718.32	2863.41	53.00	0.605
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-39.09	-6.40	0.00	-418.97	0.00	-418.97	2988.70	1494.3	5718.32	2863.41	53.00	0.159
1.2D + 1.0E	-14.66	-1.13	0.00	-45.62	0.00	-45.62	1772.11	886.06	2389.60	1196.58	98.00	0.046
0.9D + 1.0E	-11.00	-1.12	0.00	-45.14	0.00	-45.14	1772.11	886.06	2389.60	1196.58	98.00	0.044
1.0D + 1.0W 60 mph Wind	-19.43	-5.25	0.00	-351.96	0.00	-351.96	2988.70	1494.3	5718.32	2863.41	53.00	0.129

Base Plate Summary

Structure:	CT00303-S-SB		**Code:**	EIA/TIA-222-G	7/7/2021
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	4168.00
Axial (kip):	38.20
Shear (kip):	37.90
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	3299.31
Axial (kip):	39.70
Shear (kip):	32.49

Base Plate	
Yield (ksi):	60.00
Width (in):	76.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	15.68
Moment (kip-in):	508.20
Allow Stress (ksi):	81.00
Applied Stress (ksi):	30.78
Stress Ratio:	0.38

Anchor Bolts	
Bolt Circle:	70.00
Number Bolts:	16.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	145.20
Allowable (kip):	260.00
Ratio:	0.57
Tension	
Force (kip):	137.60
Allowable (kip):	260.00
Ratio:	0.54

Monopole Mat Foundation Design

			Date: 7/7/2021
Customer Name:	Dish Wireless	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	145.5
Site Number:	CT00303-S-SBA	**Engineer Name:**	D. Zhou
Engr. Number:	111753	**Engineer Login ID:**	

Foundation Info Obtained from: Mapping Operation

Structure Type: Monopole

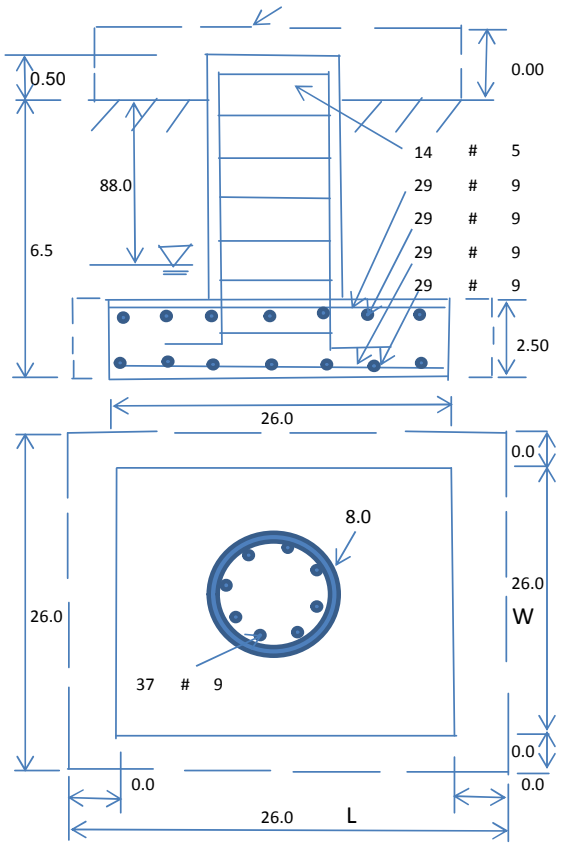
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	39.7	Shear Force (Kips):	32.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3299.3
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	6.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	26	Width of Pad (ft.):	26
Final Length of pad (ft)	26.0	Final width of pad (ft):	26.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	37	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	29	Qty. of Rebar in Pad (W):	29	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	29	Qty. of Rebar in Pad (W):	29	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	145.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	88.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	20000	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.):	2502.94	Total Dry Soil Weight (Kips):	362.93
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	362.93	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1916.19	Total Dry Concrete Weight (Kips):	287.43
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	287.43	Total Vertical Load on Base (Kips):	690.06

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2103	<	Allowable Factored Soil Bearing (psf): 15000	0.14	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8125.3	>	Design Factored Momont (kips-ft): 3527	0.43	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.30	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	6859.7	>	Design Factored Moment (Mu, Kips-F	3445.6	0.50	OK!
Calculated Shear Capacity (Kips):	1070.8	>	Design Factored Shear (Kips):	32.5	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1998.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9548.8	>	Design Factored Axial Load (Pu Kips):	39.7	0.00	OK!
Moment & Axial Strength Combination:	0.50	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	677.7	>	One-Way Factored Shear (L-D. Kips):	213.7	0.32	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	677.7	>	One-Way Factored Shear (W-D., Kips)	213.7	0.32	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	635.0	>	One-Way Factored Shear (C-C, Kips):	203.0	0.32	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0035	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0035		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3307.4	>	Moment at Bottom (L-Dir. K-Ft):	1128.3	0.34	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3307.4	>	Moment at Bottom (W-Dir. K-Ft):	1128.3	0.34	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4621.2	>	Moment at Bottom (C-C Dir. K-Ft):	1595.6	0.35	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0035	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0035		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3307.4	>	Moment at the top (L-Dir K-Ft):	523.8	0.16	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3307.4	>	Moment at the top (W-Dir K-Ft):	523.8	0.16	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4621.2	>	Moment at the top (C-C Dir. K-Ft):	493.5	0.11	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1319.7	k-ft.	Max. factored shear stress v_{u_CD}:		2.4	Psi
Max. factored shear stress v_{u_AB}:	8.8	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	8.8	Psi	Check Usage of Punching Shear Capacity:		0.05	OK!

Pier Foundation Design For Monopole

			Date: 7/7/2021
Customer Name:	**Dish Wireless**	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	145.5
Site Number:	CT00303-S-SBA	**Engineer Name:**	D. Zhou
Engr. Number:	111753	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	39.7	Shear Force (Kips):	32.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3299.3

Foundation Geometries:

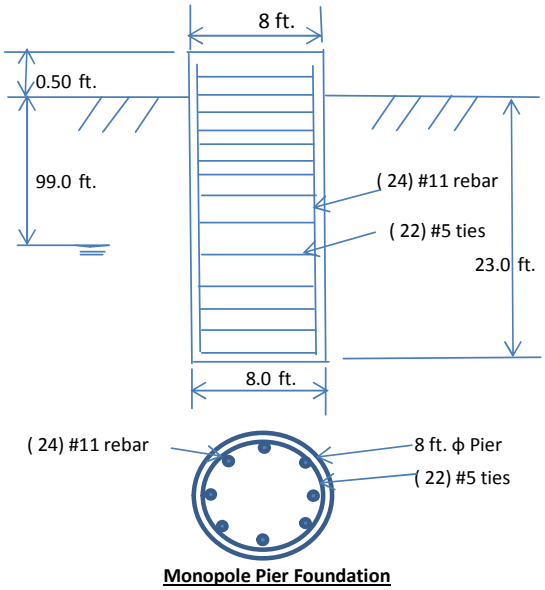
Diameter of Pier (ft.):	8.0	Depth of Base B. G. S. :	23.0	ft.
Pier Height A. G. (ft.):	0.50			

Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	60	ksi
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	24	Tie Spacing:	18.0	in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0	pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)
Skin Frictions are to be obtained from:		Soil Report		



Monopole Pier Foundation

Depth of Layers (ft) Top	Depth of Layers (ft) Bottom	γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types					
0.0	3.0	145	0	0	0	0	Sand					
3.0	30.0	145	33	0	500	8000	Sand					
30.0	35.0	145	33	0	420	8000	Sand					

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75	
Total Dry Soil Volume from Conical Failure (cu. Ft.):	8060	Dry Soil Weight from Conical Failure:	1169	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	0	Buoyant Soil Weight from Conical Failure (K	0	Kips
Total Dry Concrete Volume (cu. Ft.):	1181	Total Dry Concrete Weight:	177.2	Kips
Total Buoyant Concrete Volume (cu. Ft.):	0.0	Total Buoyant Concrete Weight:	0.00	Kips
Total Effective Concrete Weight (Kips):	177.2	Total Effective Soil Weight:	1168.7	Kips
Total Effective Vertical Load on Base (Kips):	49.3			

Check Soil Capacities:

					Usage	
Allowable Foundation Overturning Resistance (kips-ft.):	8379.1	>	Design Factored Moment (kips-ft):	3823	0.46	OK!
Factor of Safety of Passive Soil Resistance against Moment:	2.19	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	

Reinforcing Concrete Pier:

					Usage	
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	7178.0	>	Design Factored Moment (Mu, K-Ft):	3430.8	0.48	OK!
Calculated Shear Capacity (Kips):	1274.2	>	Design Factored Shear (Kips):	362.1	0.28	OK!
Calculated Tension Capacity (Tn, Kips):	2021.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9548	>	Design Factored Axial Load (Pu Kips):	39.7	0.00	OK!
Moment & Axial Strength Combination:	0.48	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is too small			

EXHIBIT 9

Antenna Mount Analysis

June 24, 2021

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

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

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	***Dish Wireless* Co-Locate**	
	Site Number:	BOBOS00040A
	Site Name:	N/A
***SBA Network Services Designation*:**	**Site Number:**	CT00303-S
	Site Name:	Griswold
	Application Number:	162752, v1
Engineering Firm Designation:	**B+T Group Project Number:**	149425.003.01
Site Data:	**131 Bishop Crossing, Griswold, CT, 06351, New London County** **Latitude *41.62335*°, Longitude *-71.94224*°** **Monopole** **8' Platform 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:

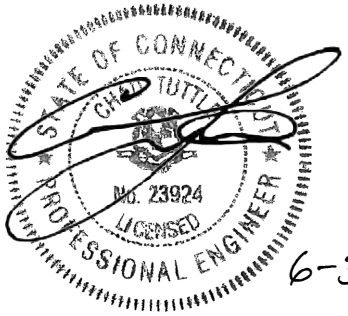
Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 80.5%)**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

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

Mount structural analysis prepared by: Massood Sattari, Project Engineer

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



6-30-21

Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

The mount consists of Commscope platform mount (Part #MC-PK8-DSH) at 132 ft., attached to monopole at 131 Bishop Crossing, Griswold, CT, 06351, New London County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to B+T Group was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-G-2-2005 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a 3-second gust wind speed of 105 mph with no ice and 50 mph with 0.75 inch escalated ice thickness. Exposure Category C, Topographic Category 1 and Risk Category II were used in this analysis. In addition, the platform mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust of 30 mph. The mount was analyzed under 30º increments in the wind direction. The analyzed loading is detailed in Table 1.

Table 1 – Proposed Equipment Information

Loading	RAD Center Elev. (ft.)	Position	Qty.	Description	Note
Proposed	132	1	3	JMA MX08FRO665-21	1
		1	3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		--	1	Raycap RDIDC-9181-PF-48	3

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

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
Colo App	Proposed Loading	Date: 06/19/2021	SBA Network Services, LLC
RFDS		Date: 04/30/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.

The following assumptions have been included in the analysis of the mount

Component	Section	Length	Note
Proposed Mount Pipes	2" Std. Pipe	8'-0''	All Positions, All Sectors

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

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

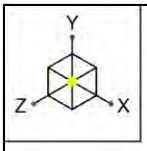
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Face Horizontals	132	15.5	Pass
-	Support Rails	132	80.5	Pass
-	Support Tubes	132	77.5	Pass
-	Support Channels	132	42.6	Pass
-	Support Angles	132	51.0	Pass
-	Mount Pipes	132	60.8	Pass
-	Connection Plates	132	29.5	Pass
	Connection Angles	132	38.3	Pass
-	Connection Bolts	132	35.90	Pass

5) RECOMMENDATIONS

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

APPENDIX A

(RISA-3D Output)



Envelope Only Solution

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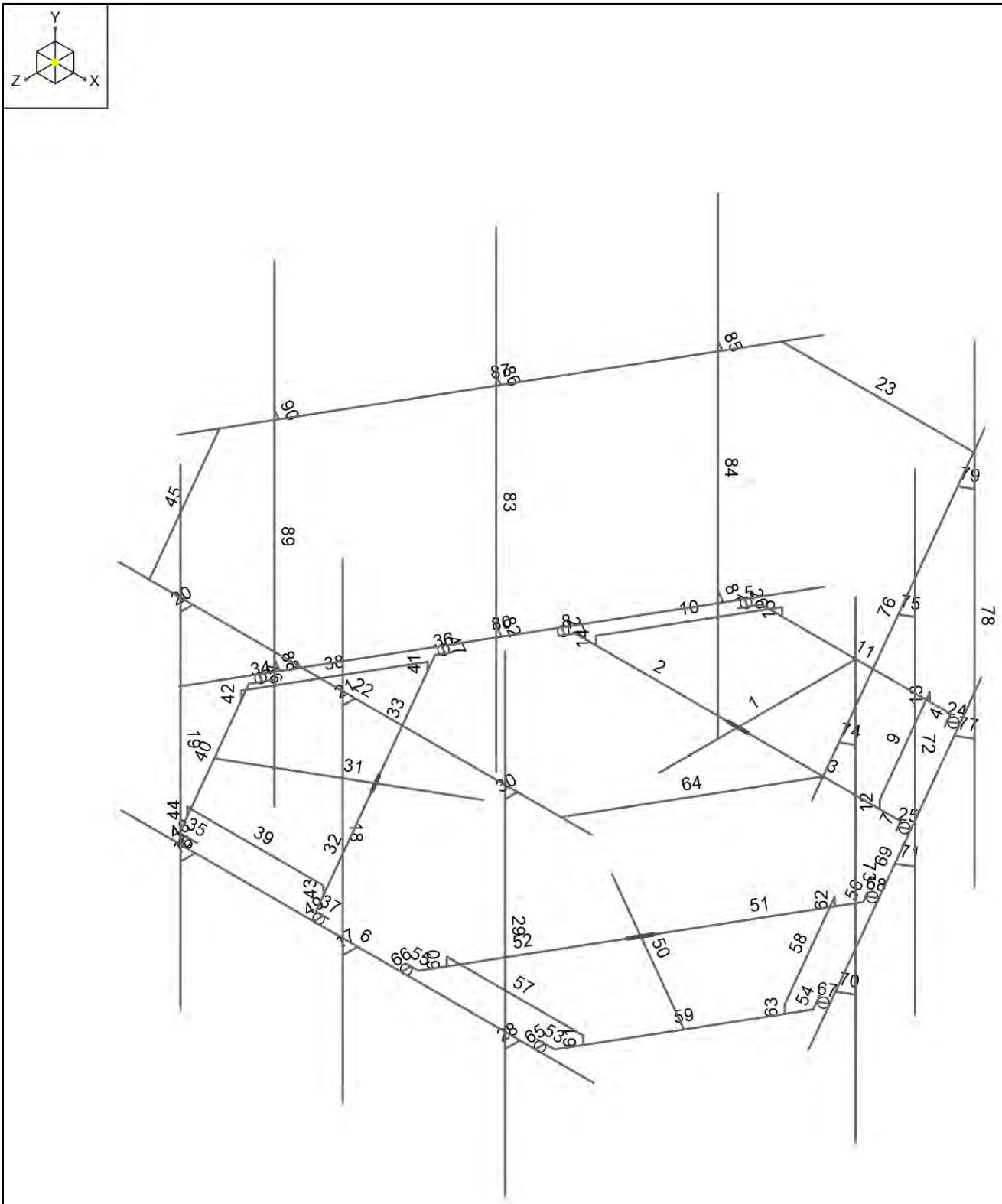

Envelope Only Solution

B+T Group	CT00303-S - Griswold	SK-2
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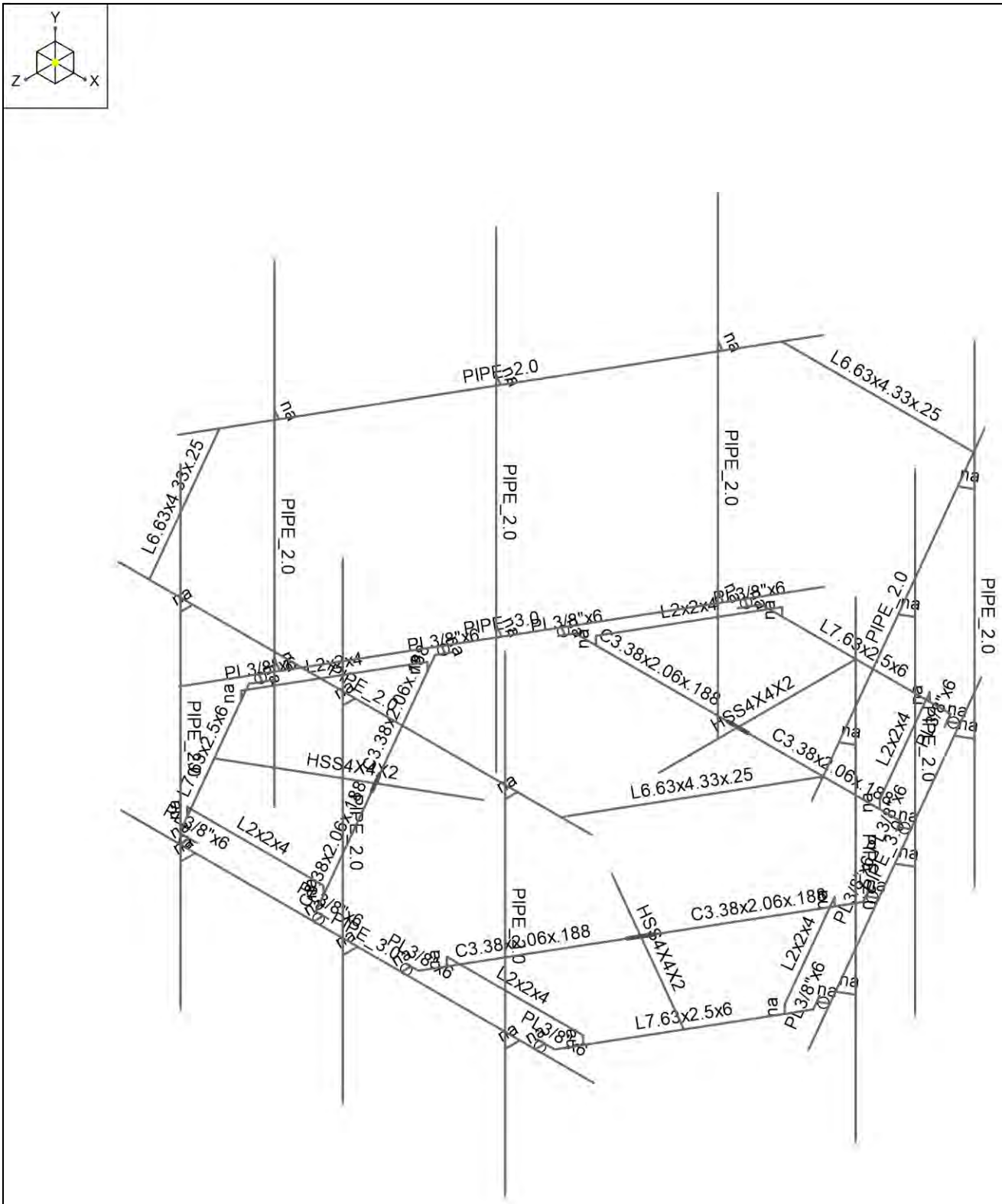

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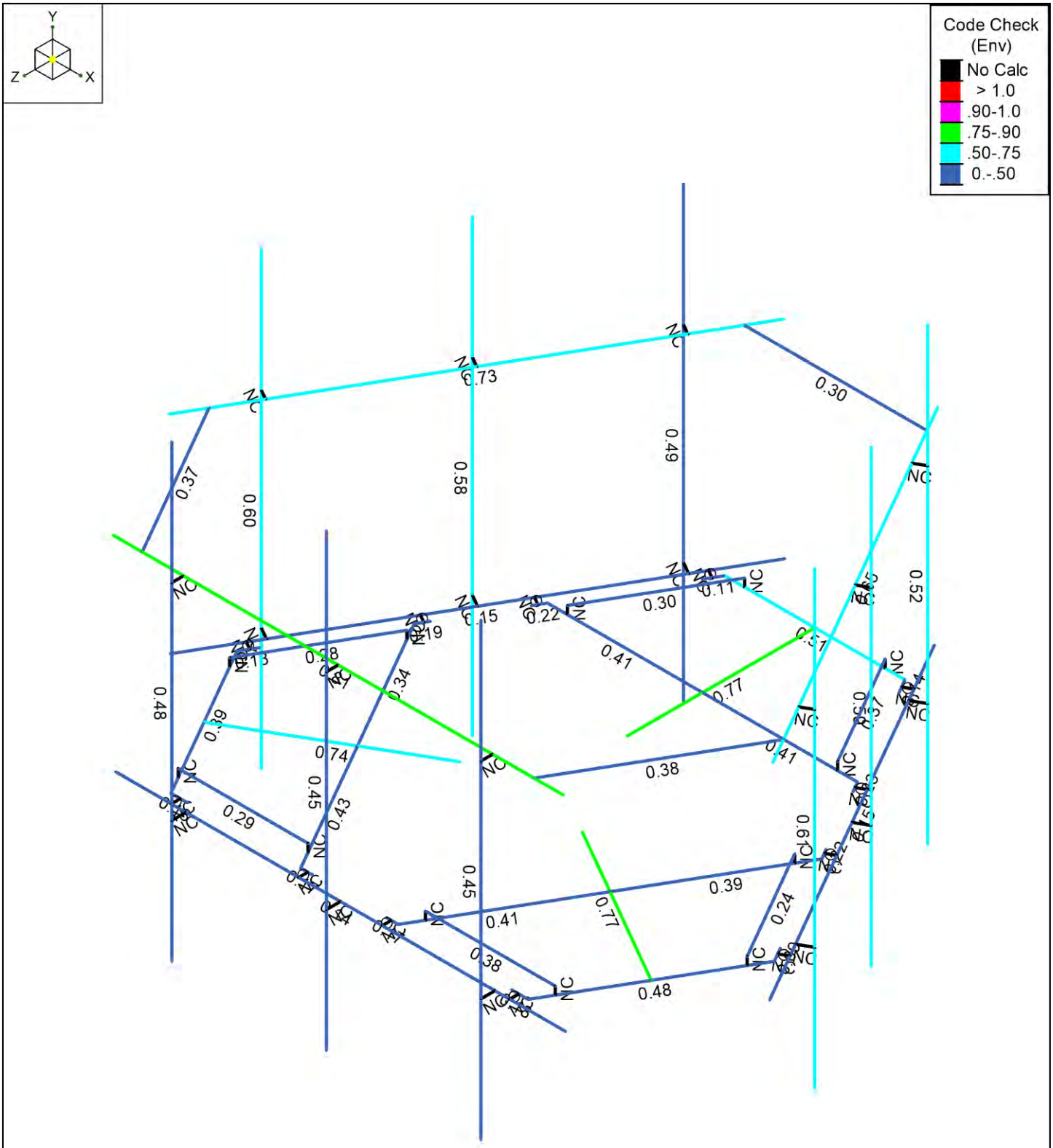

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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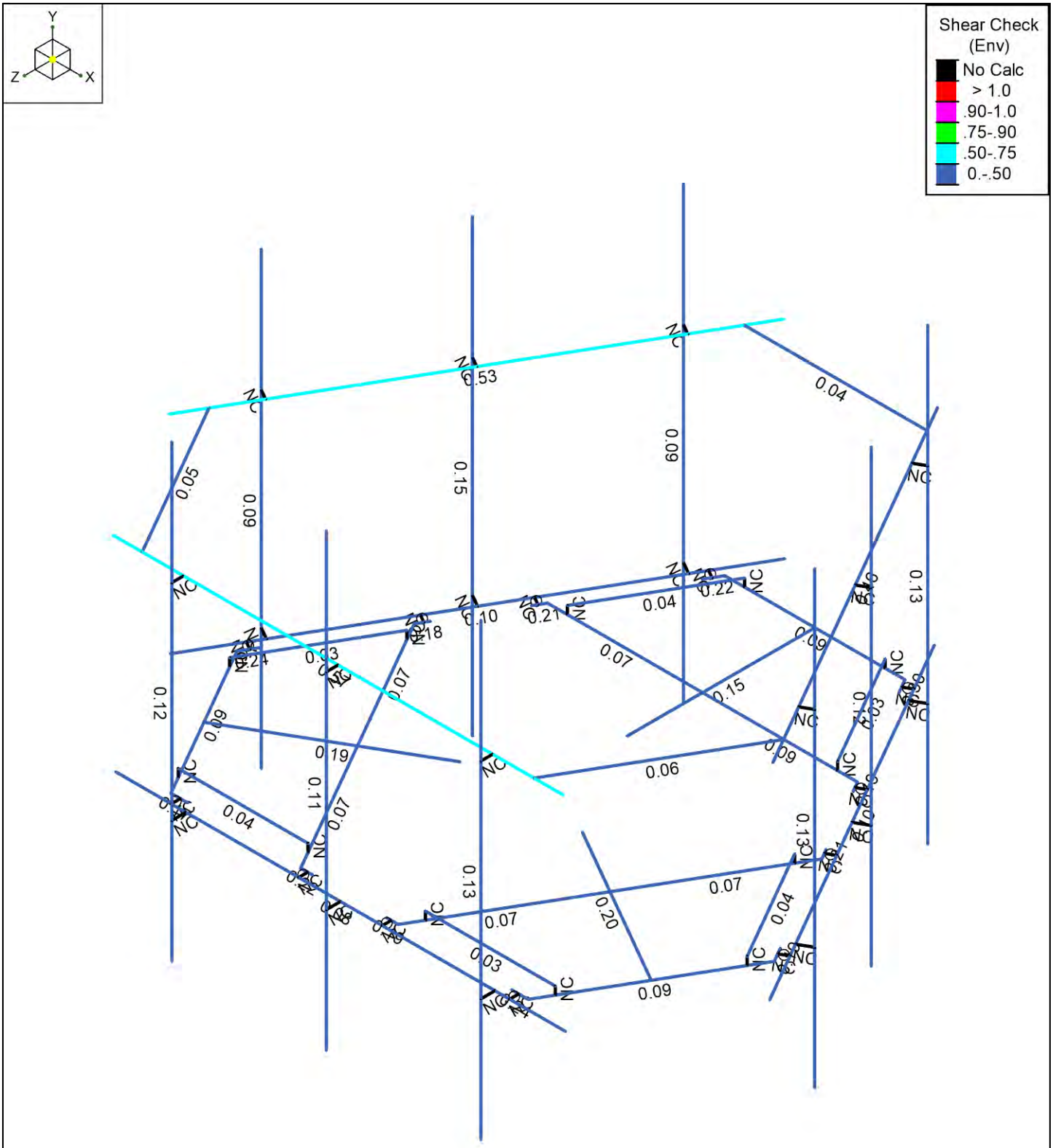

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	CT00303-S - Griswold	SK-5
KR		Jun 22, 2021
149425.003.01		149425_003_01_Griswold_CT.R3D

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	MF-H2	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38x2.06x.188	Beam	Channel	A36 Gr.36	Typical	1.339	0.562	2.4	0.015
5	SF-H3	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
6	SF-H4	L7.63x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	3.658	1.307	22.092	0.163
7	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
8	MF-CP1	PL3/8"x6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
9	MF-H3	L6.63x4.33x.25	Beam	Single Angle	A36 Gr.36	Typical	2.678	4.383	12.502	0.054

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A53 Gr.B	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	25	24		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24		RIGID	None	None	RIGID	Typical
13	13	29	25		RIGID	None	None	RIGID	Typical
14	14	27	23		RIGID	None	None	RIGID	Typical
15	15	26	22		RIGID	None	None	RIGID	Typical
16	16	32	30		RIGID	None	None	RIGID	Typical
17	17	33	31		RIGID	None	None	RIGID	Typical
18	18	37	35		MF-P1	Column	Pipe	A53 Gr.B	Typical
19	19	36	34		MF-P1	Column	Pipe	A53 Gr.B	Typical
20	20	38	40		RIGID	None	None	RIGID	Typical
21	21	39	41		RIGID	None	None	RIGID	Typical
22	22	42	43		MF-H2	Beam	Pipe	A53 Gr.B	Typical
23	23	44	45	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
24	24	11	10		RIGID	None	None	RIGID	Typical
25	25	18	17		RIGID	None	None	RIGID	Typical
26	26	13	12		RIGID	None	None	RIGID	Typical
27	27	21	20		RIGID	None	None	RIGID	Typical
28	28	47	46		RIGID	None	None	RIGID	Typical
29	29	49	48		MF-P1	Column	Pipe	A53 Gr.B	Typical
30	30	50	51		RIGID	None	None	RIGID	Typical
31	31	53	54		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74		RIGID	None	None	RIGID	Typical
42	42	79	75		RIGID	None	None	RIGID	Typical
43	43	77	73		RIGID	None	None	RIGID	Typical
44	44	76	72		RIGID	None	None	RIGID	Typical
45	45	80	81	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
46	46	63	62		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
47	47	68	67		RIGID	None	None	RIGID	Typical
48	48	65	64		RIGID	None	None	RIGID	Typical
49	49	71	70		RIGID	None	None	RIGID	Typical
50	50	82	83		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
51	51	86	84	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
53	53	88	89		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	109	110	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
65	65	92	91		RIGID	None	None	RIGID	Typical
66	66	97	96		RIGID	None	None	RIGID	Typical
67	67	94	93		RIGID	None	None	RIGID	Typical
68	68	100	99		RIGID	None	None	RIGID	Typical
69	69	111	112		MF-H1	Beam	Pipe	A53 Gr.B	Typical
70	70	115	113		RIGID	None	None	RIGID	Typical
71	71	116	114		RIGID	None	None	RIGID	Typical
72	72	120	118		MF-P1	Column	Pipe	A53 Gr.B	Typical
73	73	119	117		MF-P1	Column	Pipe	A53 Gr.B	Typical
74	74	121	123		RIGID	None	None	RIGID	Typical
75	75	122	124		RIGID	None	None	RIGID	Typical
76	76	125	126		MF-H2	Beam	Pipe	A53 Gr.B	Typical
77	77	128	127		RIGID	None	None	RIGID	Typical
78	78	130	129		MF-P1	Column	Pipe	A53 Gr.B	Typical
79	79	131	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A53 Gr.B	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	142	140		MF-P1	Column	Pipe	A53 Gr.B	Typical
84	84	141	139		MF-P1	Column	Pipe	A53 Gr.B	Typical
85	85	143	145		RIGID	None	None	RIGID	Typical
86	86	144	146		RIGID	None	None	RIGID	Typical
87	87	147	148		MF-H2	Beam	Pipe	A53 Gr.B	Typical
88	88	150	149		RIGID	None	None	RIGID	Typical
89	89	152	151		MF-P1	Column	Pipe	A53 Gr.B	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	48	
3	90 Wind - No Ice	WLX			20	48	
4	0 Wind - Ice	WLZ			20	48	
5	90 Wind - Ice	WLX			20	48	
6	0 Wind - Service	WLZ			20	48	
7	90 Wind - Service	WLX			20	48	
8	Ice	OL1			20	48	3
9	Live Load a	LL		3			
10	Live Load b	LL		3			
11	Live Load c	LL		3			

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
12	Live Load d	LL					
13	Maint LL 1	LL			1		
14	Maint LL 2	LL			1		
15	Maint LL 3	LL			1		
16	Maint LL 4	LL			1		
17	Maint LL 5	LL			1		
18	Maint LL 6	LL			1		
19	Maint LL 7	LL			1		
20	Maint LL 8	LL			1		
21	Maint LL 9	LL			1		
22	Maint LL 10	LL			1		
23	Maint LL 11	LL			1		
24	Maint LL 12	LL			1		
25	Maint LL 13	LL			1		
26	Maint LL 14	LL			1		
27	Maint LL 15	LL			1		
31	BLC 1 Transient Area Loads	None				9	
32	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	0.9 D + 1.6 - 0 W	Yes	Y	1	0.9	2	1.6				
3	0.9 D + 1.6 - 30 W	Yes	Y	1	0.9	2	1.386	3	0.8		
4	0.9 D + 1.6 - 60 W	Yes	Y	1	0.9	3	1.386	2	0.8		
5	0.9 D + 1.6 - 90 W	Yes	Y	1	0.9	3	1.6				
6	0.9 D + 1.6 - 120 W	Yes	Y	1	0.9	3	1.386	2	-0.8		
7	0.9 D + 1.6 - 150 W	Yes	Y	1	0.9	2	-1.386	3	0.8		
8	0.9 D + 1.6 - 180 W	Yes	Y	1	0.9	2	-1.6				
9	0.9 D + 1.6 - 210 W	Yes	Y	1	0.9	2	-1.386	3	-0.8		
10	0.9 D + 1.6 - 240 W	Yes	Y	1	0.9	3	-1.386	2	-0.8		
11	0.9 D + 1.6 - 270 W	Yes	Y	1	0.9	3	-1.6				
12	0.9 D + 1.6 - 300 W	Yes	Y	1	0.9	3	-1.386	2	0.8		
13	0.9 D + 1.6 - 330 W	Yes	Y	1	0.9	2	1.386	3	-0.8		
14	1.2 D + 1.6 - 0 W	Yes	Y	1	1.2	2	1.6				
15	1.2 D + 1.6 - 30 W	Yes	Y	1	1.2	2	1.386	3	0.8		
16	1.2 D + 1.6 - 60 W	Yes	Y	1	1.2	3	1.386	2	0.8		
17	1.2 D + 1.6 - 90 W	Yes	Y	1	1.2	3	1.6				
18	1.2 D + 1.6 - 120 W	Yes	Y	1	1.2	3	1.386	2	-0.8		
19	1.2 D + 1.6 - 150 W	Yes	Y	1	1.2	2	-1.386	3	0.8		
20	1.2 D + 1.6 - 180 W	Yes	Y	1	1.2	2	-1.6				
21	1.2 D + 1.6 - 210 W	Yes	Y	1	1.2	2	-1.386	3	-0.8		
22	1.2 D + 1.6 - 240 W	Yes	Y	1	1.2	3	-1.386	2	-0.8		
23	1.2 D + 1.6 - 270 W	Yes	Y	1	1.2	3	-1.6				
24	1.2 D + 1.6 - 300 W	Yes	Y	1	1.2	3	-1.386	2	0.8		
25	1.2 D + 1.6 - 330 W	Yes	Y	1	1.2	2	1.386	3	-0.8		
26	0.9 D + 1.6 - 0 W/Ice	Yes	Y	1	0.9	4	1.6			8	1
27	0.9 D + 1.6 - 30 W/Ice	Yes	Y	1	0.9	4	1.386	5	0.8	8	1
28	0.9 D + 1.6 - 60 W/Ice	Yes	Y	1	0.9	5	1.386	4	0.8	8	1
29	0.9 D + 1.6 - 90 W/Ice	Yes	Y	1	0.9	5	1.6			8	1
30	0.9 D + 1.6 - 120 W/Ice	Yes	Y	1	0.9	5	1.386	4	-0.8	8	1
31	0.9 D + 1.6 - 150 W/Ice	Yes	Y	1	0.9	4	-1.386	5	0.8	8	1
32	0.9 D + 1.6 - 180 W/Ice	Yes	Y	1	0.9	4	-1.6			8	1
33	0.9 D + 1.6 - 210 W/Ice	Yes	Y	1	0.9	4	-1.386	5	-0.8	8	1
34	0.9 D + 1.6 - 240 W/Ice	Yes	Y	1	0.9	5	-1.386	4	-0.8	8	1
35	0.9 D + 1.6 - 270 W/Ice	Yes	Y	1	0.9	5	-1.6			8	1
36	0.9 D + 1.6 - 300 W/Ice	Yes	Y	1	0.9	5	-1.386	4	0.8	8	1
37	0.9 D + 1.6 - 330 W/Ice	Yes	Y	1	0.9	4	1.386	5	-0.8	8	1

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
38	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
39	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
40	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
41	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
42	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
43	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
44	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
45	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
46	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
47	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
48	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
49	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
50	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			9	1.5
51	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	9	1.5
52	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	9	1.5
53	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			9	1.5
54	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	9	1.5
55	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	9	1.5
56	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			9	1.5
57	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	9	1.5
58	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	9	1.5
59	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			9	1.5
60	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	9	1.5
61	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	9	1.5
62	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			10	1.5
63	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	10	1.5
64	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	10	1.5
65	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			10	1.5
66	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	10	1.5
67	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	10	1.5
68	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			10	1.5
69	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	10	1.5
70	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	10	1.5
71	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			10	1.5
72	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	10	1.5
73	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	10	1.5
74	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
75	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
76	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
77	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
78	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
79	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
80	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
81	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
82	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
83	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
84	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
85	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
86	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
87	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
88	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
89	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
90	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
91	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
92	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
93	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
94	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
95	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
96	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
97	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
98	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					13	1.5
99	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					14	1.5
100	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					15	1.5
101	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					16	1.5
102	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					17	1.5
103	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					18	1.5
104	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					19	1.5
105	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					20	1.5
106	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					21	1.5
107	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					22	1.5
108	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					23	1.5
109	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					24	1.5
110	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					25	1.5
111	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					26	1.5
112	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					27	1.5
113	1.2 D + 1.5 LL Maint (16)	Yes	Y	1	1.2					28	1.5
114	1.2 D + 1.5 LL Maint (17)	Yes	Y	1	1.2					29	1.5
115	1.2 D + 1.5 LL Maint (18)	Yes	Y	1	1.2					30	1.5

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.032	%15
2	29	Y	-0.032	%85
3	29	Y	-0.075	%20
4	29	Y	-0.064	%50
5	29	Y	0	0
6	89	Y	-0.032	%15
7	89	Y	-0.032	%85
8	89	Y	-0.075	%20
9	89	Y	-0.064	%50
10	89	Y	0	0
11	78	Y	-0.032	%15
12	78	Y	-0.032	%85
13	78	Y	-0.075	%20
14	78	Y	-0.064	%50
15	78	Y	0	0
16	31	Y	-0.022	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.225	%15
2	29	Z	-0.225	%85
3	29	Z	-0.071	%20
4	29	Z	-0.071	%50
5	29	Z	0	0
6	89	Z	-0.225	%15
7	89	Z	-0.225	%85
8	89	Z	-0.071	%20
9	89	Z	-0.071	%50
10	89	Z	0	0
11	78	Z	-0.225	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
12	78	Z	-0.225	%85
13	78	Z	-0.071	%20
14	78	Z	-0.071	%50
15	78	Z	0	0
16	31	Z	-0.072	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.09	%15
2	29	X	-0.09	%85
3	29	X	-0.043	%20
4	29	X	-0.037	%50
5	29	X	0	0
6	89	X	-0.09	%15
7	89	X	-0.09	%85
8	89	X	-0.043	%20
9	89	X	-0.037	%50
10	89	X	0	0
11	78	X	-0.09	%15
12	78	X	-0.09	%85
13	78	X	-0.043	%20
14	78	X	-0.037	%50
15	78	X	0	0
16	31	X	-0.041	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.062	%15
2	29	Z	-0.062	%85
3	29	Z	-0.024	%20
4	29	Z	-0.024	%50
5	29	Z	0	0
6	89	Z	-0.062	%15
7	89	Z	-0.062	%85
8	89	Z	-0.024	%20
9	89	Z	-0.024	%50
10	89	Z	0	0
11	78	Z	-0.062	%15
12	78	Z	-0.062	%85
13	78	Z	-0.024	%20
14	78	Z	-0.024	%50
15	78	Z	0	0
16	31	Z	-0.025	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.03	%15
2	29	X	-0.03	%85
3	29	X	-0.016	%20
4	29	X	-0.015	%50
5	29	X	0	0
6	89	X	-0.03	%15
7	89	X	-0.03	%85
8	89	X	-0.016	%20
9	89	X	-0.015	%50
10	89	X	0	0
11	78	X	-0.03	%15
12	78	X	-0.03	%85
13	78	X	-0.016	%20
14	78	X	-0.015	%50
15	78	X	0	0
16	31	X	-0.016	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.018	%15
2	29	Z	-0.018	%85
3	29	Z	-0.006	%20
4	29	Z	-0.006	%50
5	29	Z	0	0
6	89	Z	-0.018	%15
7	89	Z	-0.018	%85
8	89	Z	-0.006	%20
9	89	Z	-0.006	%50
10	89	Z	0	0
11	78	Z	-0.018	%15
12	78	Z	-0.018	%85
13	78	Z	-0.006	%20
14	78	Z	-0.006	%50
15	78	Z	0	0
16	31	Z	-0.006	%20
17	31	Z	0	0
18	31	Z	0	0
19	31	Z	0	0
20	31	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.007	%15
2	29	X	-0.007	%85
3	29	X	-0.004	%20
4	29	X	-0.003	%50
5	29	X	0	0
6	89	X	-0.007	%15
7	89	X	-0.007	%85
8	89	X	-0.004	%20
9	89	X	-0.003	%50
10	89	X	0	0
11	78	X	-0.007	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
12	78	X	-0.007	%85
13	78	X	-0.004	%20
14	78	X	-0.003	%50
15	78	X	0	0
16	31	X	-0.003	%20
17	31	X	0	0
18	31	X	0	0
19	31	X	0	0
20	31	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.147	%15
2	29	Y	-0.147	%85
3	29	Y	-0.053	%20
4	29	Y	-0.052	%50
5	29	Y	0	0
6	89	Y	-0.147	%15
7	89	Y	-0.147	%85
8	89	Y	-0.053	%20
9	89	Y	-0.052	%50
10	89	Y	0	0
11	78	Y	-0.147	%15
12	78	Y	-0.147	%85
13	78	Y	-0.053	%20
14	78	Y	-0.052	%50
15	78	Y	0	0
16	31	Y	-0.054	%20
17	31	Y	0	0
18	31	Y	0	0
19	31	Y	0	0
20	31	Y	0	0

Member Point Loads (BLC 13 : Maint LL 1)

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

Member Point Loads (BLC 14 : Maint LL 2)

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

Member Point Loads (BLC 15 : Maint LL 3)

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

Member Point Loads (BLC 16 : Maint LL 4)

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

Member Point Loads (BLC 17 : Maint LL 5)

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

Member Point Loads (BLC 18 : Maint LL 6)

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

Member Point Loads (BLC 19 : Maint LL 7)

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

Member Point Loads (BLC 20 : Maint LL 8)

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

Member Point Loads (BLC 21 : Maint LL 9)

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

Member Point Loads (BLC 22 : Maint LL 10)

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

Member Point Loads (BLC 23 : Maint LL 11)

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

Member Point Loads (BLC 24 : Maint LL 12)

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

Member Point Loads (BLC 25 : Maint LL 13)

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

Member Point Loads (BLC 26 : Maint LL 14)

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

Member Point Loads (BLC 27 : Maint LL 15)

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

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.018	-0.018	0	%100
2	2	Z	-0.015	-0.015	0	%100
3	3	Z	-0.015	-0.015	0	%100
4	4	Z	-0.022	-0.022	0	%100
5	5	Z	-0.022	-0.022	0	%100
6	6	Z	-0.011	-0.011	0	%100
7	7	Z	-0.022	-0.022	0	%100
8	8	Z	-0.022	-0.022	0	%100
9	9	Z	-0.01	-0.01	0	%100
10	10	Z	-0.01	-0.01	0	%100
11	11	Z	-0.03	-0.03	0	%100
12	18	Z	-0.009	-0.009	0	%100
13	19	Z	-0.009	-0.009	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
14	22	Z	-0.009	-0.009	0	%100
15	23	Z	-0.026	-0.026	0	%100
16	29	Z	-0.009	-0.009	0	%100
17	31	Z	-0.018	-0.018	0	%100
18	32	Z	-0.015	-0.015	0	%100
19	33	Z	-0.015	-0.015	0	%100
20	34	Z	-0.022	-0.022	0	%100
21	35	Z	-0.022	-0.022	0	%100
22	36	Z	-0.022	-0.022	0	%100
23	37	Z	-0.022	-0.022	0	%100
24	38	Z	-0.01	-0.01	0	%100
25	39	Z	-0.01	-0.01	0	%100
26	40	Z	-0.03	-0.03	0	%100
27	45	Z	-0.026	-0.026	0	%100
28	50	Z	-0.018	-0.018	0	%100
29	51	Z	-0.015	-0.015	0	%100
30	52	Z	-0.015	-0.015	0	%100
31	53	Z	-0.022	-0.022	0	%100
32	54	Z	-0.022	-0.022	0	%100
33	55	Z	-0.022	-0.022	0	%100
34	56	Z	-0.022	-0.022	0	%100
35	57	Z	-0.01	-0.01	0	%100
36	58	Z	-0.01	-0.01	0	%100
37	59	Z	-0.03	-0.03	0	%100
38	64	Z	-0.026	-0.026	0	%100
39	69	Z	-0.011	-0.011	0	%100
40	72	Z	-0.009	-0.009	0	%100
41	73	Z	-0.009	-0.009	0	%100
42	76	Z	-0.009	-0.009	0	%100
43	78	Z	-0.009	-0.009	0	%100
44	80	Z	-0.011	-0.011	0	%100
45	83	Z	-0.009	-0.009	0	%100
46	84	Z	-0.009	-0.009	0	%100
47	87	Z	-0.009	-0.009	0	%100
48	89	Z	-0.009	-0.009	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.018	-0.018	0	%100
2	2	X	-0.015	-0.015	0	%100
3	3	X	-0.015	-0.015	0	%100
4	4	X	-0.022	-0.022	0	%100
5	5	X	-0.022	-0.022	0	%100
6	6	X	-0.011	-0.011	0	%100
7	7	X	-0.022	-0.022	0	%100
8	8	X	-0.022	-0.022	0	%100
9	9	X	-0.01	-0.01	0	%100
10	10	X	-0.01	-0.01	0	%100
11	11	X	-0.03	-0.03	0	%100
12	18	X	-0.009	-0.009	0	%100
13	19	X	-0.009	-0.009	0	%100
14	22	X	-0.009	-0.009	0	%100
15	23	X	-0.026	-0.026	0	%100
16	29	X	-0.009	-0.009	0	%100
17	31	X	-0.018	-0.018	0	%100
18	32	X	-0.015	-0.015	0	%100
19	33	X	-0.015	-0.015	0	%100
20	34	X	-0.022	-0.022	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
21	35	X	-0.022	-0.022	0	%100
22	36	X	-0.022	-0.022	0	%100
23	37	X	-0.022	-0.022	0	%100
24	38	X	-0.01	-0.01	0	%100
25	39	X	-0.01	-0.01	0	%100
26	40	X	-0.03	-0.03	0	%100
27	45	X	-0.026	-0.026	0	%100
28	50	X	-0.018	-0.018	0	%100
29	51	X	-0.015	-0.015	0	%100
30	52	X	-0.015	-0.015	0	%100
31	53	X	-0.022	-0.022	0	%100
32	54	X	-0.022	-0.022	0	%100
33	55	X	-0.022	-0.022	0	%100
34	56	X	-0.022	-0.022	0	%100
35	57	X	-0.01	-0.01	0	%100
36	58	X	-0.01	-0.01	0	%100
37	59	X	-0.03	-0.03	0	%100
38	64	X	-0.026	-0.026	0	%100
39	69	X	-0.011	-0.011	0	%100
40	72	X	-0.009	-0.009	0	%100
41	73	X	-0.009	-0.009	0	%100
42	76	X	-0.009	-0.009	0	%100
43	78	X	-0.009	-0.009	0	%100
44	80	X	-0.011	-0.011	0	%100
45	83	X	-0.009	-0.009	0	%100
46	84	X	-0.009	-0.009	0	%100
47	87	X	-0.009	-0.009	0	%100
48	89	X	-0.009	-0.009	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.008	-0.008	0	%100
2	2	Z	-0.008	-0.008	0	%100
3	3	Z	-0.008	-0.008	0	%100
4	4	Z	-0.015	-0.015	0	%100
5	5	Z	-0.015	-0.015	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.018	-0.018	0	%100
8	8	Z	-0.018	-0.018	0	%100
9	9	Z	-0.007	-0.007	0	%100
10	10	Z	-0.007	-0.007	0	%100
11	11	Z	-0.011	-0.011	0	%100
12	18	Z	-0.003	-0.003	0	%100
13	19	Z	-0.003	-0.003	0	%100
14	22	Z	-0.003	-0.003	0	%100
15	23	Z	-0.01	-0.01	0	%100
16	29	Z	-0.003	-0.003	0	%100
17	31	Z	-0.008	-0.008	0	%100
18	32	Z	-0.008	-0.008	0	%100
19	33	Z	-0.008	-0.008	0	%100
20	34	Z	-0.015	-0.015	0	%100
21	35	Z	-0.015	-0.015	0	%100
22	36	Z	-0.018	-0.018	0	%100
23	37	Z	-0.018	-0.018	0	%100
24	38	Z	-0.007	-0.007	0	%100
25	39	Z	-0.007	-0.007	0	%100
26	40	Z	-0.011	-0.011	0	%100
27	45	Z	-0.01	-0.01	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
28	50	Z	-0.008	-0.008	0	%100
29	51	Z	-0.008	-0.008	0	%100
30	52	Z	-0.008	-0.008	0	%100
31	53	Z	-0.015	-0.015	0	%100
32	54	Z	-0.015	-0.015	0	%100
33	55	Z	-0.018	-0.018	0	%100
34	56	Z	-0.018	-0.018	0	%100
35	57	Z	-0.007	-0.007	0	%100
36	58	Z	-0.007	-0.007	0	%100
37	59	Z	-0.011	-0.011	0	%100
38	64	Z	-0.01	-0.01	0	%100
39	69	Z	-0.003	-0.003	0	%100
40	72	Z	-0.003	-0.003	0	%100
41	73	Z	-0.003	-0.003	0	%100
42	76	Z	-0.003	-0.003	0	%100
43	78	Z	-0.003	-0.003	0	%100
44	80	Z	-0.003	-0.003	0	%100
45	83	Z	-0.003	-0.003	0	%100
46	84	Z	-0.003	-0.003	0	%100
47	87	Z	-0.003	-0.003	0	%100
48	89	Z	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.008	-0.008	0	%100
2	2	X	-0.008	-0.008	0	%100
3	3	X	-0.008	-0.008	0	%100
4	4	X	-0.015	-0.015	0	%100
5	5	X	-0.015	-0.015	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.018	-0.018	0	%100
8	8	X	-0.018	-0.018	0	%100
9	9	X	-0.007	-0.007	0	%100
10	10	X	-0.007	-0.007	0	%100
11	11	X	-0.011	-0.011	0	%100
12	18	X	-0.003	-0.003	0	%100
13	19	X	-0.003	-0.003	0	%100
14	22	X	-0.003	-0.003	0	%100
15	23	X	-0.01	-0.01	0	%100
16	29	X	-0.003	-0.003	0	%100
17	31	X	-0.008	-0.008	0	%100
18	32	X	-0.008	-0.008	0	%100
19	33	X	-0.008	-0.008	0	%100
20	34	X	-0.015	-0.015	0	%100
21	35	X	-0.015	-0.015	0	%100
22	36	X	-0.018	-0.018	0	%100
23	37	X	-0.018	-0.018	0	%100
24	38	X	-0.007	-0.007	0	%100
25	39	X	-0.007	-0.007	0	%100
26	40	X	-0.011	-0.011	0	%100
27	45	X	-0.01	-0.01	0	%100
28	50	X	-0.008	-0.008	0	%100
29	51	X	-0.008	-0.008	0	%100
30	52	X	-0.008	-0.008	0	%100
31	53	X	-0.015	-0.015	0	%100
32	54	X	-0.015	-0.015	0	%100
33	55	X	-0.018	-0.018	0	%100
34	56	X	-0.018	-0.018	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
35	57	X	-0.007	-0.007	0	%100
36	58	X	-0.007	-0.007	0	%100
37	59	X	-0.011	-0.011	0	%100
38	64	X	-0.01	-0.01	0	%100
39	69	X	-0.003	-0.003	0	%100
40	72	X	-0.003	-0.003	0	%100
41	73	X	-0.003	-0.003	0	%100
42	76	X	-0.003	-0.003	0	%100
43	78	X	-0.003	-0.003	0	%100
44	80	X	-0.003	-0.003	0	%100
45	83	X	-0.003	-0.003	0	%100
46	84	X	-0.003	-0.003	0	%100
47	87	X	-0.003	-0.003	0	%100
48	89	X	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.0005	-0.0005	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0008	-0.0008	0	%100
10	10	Z	-0.0008	-0.0008	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.0003	-0.0003	0	%100
13	19	Z	-0.0003	-0.0003	0	%100
14	22	Z	-0.0003	-0.0003	0	%100
15	23	Z	-0.002	-0.002	0	%100
16	29	Z	-0.0003	-0.0003	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0008	-0.0008	0	%100
25	39	Z	-0.0008	-0.0008	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	45	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0008	-0.0008	0	%100
36	58	Z	-0.0008	-0.0008	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	64	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0003	-0.0003	0	%100
41	73	Z	-0.0003	-0.0003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
42	76	Z	-0.0003	-0.0003	0	%100
43	78	Z	-0.0003	-0.0003	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0003	-0.0003	0	%100
46	84	Z	-0.0003	-0.0003	0	%100
47	87	Z	-0.0003	-0.0003	0	%100
48	89	Z	-0.0003	-0.0003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.0005	-0.0005	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0008	-0.0008	0	%100
10	10	X	-0.0008	-0.0008	0	%100
11	11	X	-0.002	-0.002	0	%100
12	18	X	-0.0003	-0.0003	0	%100
13	19	X	-0.0003	-0.0003	0	%100
14	22	X	-0.0003	-0.0003	0	%100
15	23	X	-0.002	-0.002	0	%100
16	29	X	-0.0003	-0.0003	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.0008	-0.0008	0	%100
25	39	X	-0.0008	-0.0008	0	%100
26	40	X	-0.002	-0.002	0	%100
27	45	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0008	-0.0008	0	%100
36	58	X	-0.0008	-0.0008	0	%100
37	59	X	-0.002	-0.002	0	%100
38	64	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0003	-0.0003	0	%100
41	73	X	-0.0003	-0.0003	0	%100
42	76	X	-0.0003	-0.0003	0	%100
43	78	X	-0.0003	-0.0003	0	%100
44	80	X	-0.0005	-0.0005	0	%100
45	83	X	-0.0003	-0.0003	0	%100
46	84	X	-0.0003	-0.0003	0	%100
47	87	X	-0.0003	-0.0003	0	%100
48	89	X	-0.0003	-0.0003	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.016	-0.016	0	%100
2	2	Y	-0.012	-0.012	0	%100
3	3	Y	-0.012	-0.012	0	%100
4	4	Y	-0.016	-0.016	0	%100
5	5	Y	-0.016	-0.016	0	%100
6	6	Y	-0.011	-0.011	0	%100
7	7	Y	-0.016	-0.016	0	%100
8	8	Y	-0.016	-0.016	0	%100
9	9	Y	-0.01	-0.01	0	%100
10	10	Y	-0.01	-0.01	0	%100
11	11	Y	-0.021	-0.021	0	%100
12	18	Y	-0.009	-0.009	0	%100
13	19	Y	-0.009	-0.009	0	%100
14	22	Y	-0.009	-0.009	0	%100
15	23	Y	-0.02	-0.02	0	%100
16	29	Y	-0.009	-0.009	0	%100
17	31	Y	-0.016	-0.016	0	%100
18	32	Y	-0.012	-0.012	0	%100
19	33	Y	-0.012	-0.012	0	%100
20	34	Y	-0.016	-0.016	0	%100
21	35	Y	-0.016	-0.016	0	%100
22	36	Y	-0.016	-0.016	0	%100
23	37	Y	-0.016	-0.016	0	%100
24	38	Y	-0.01	-0.01	0	%100
25	39	Y	-0.01	-0.01	0	%100
26	40	Y	-0.021	-0.021	0	%100
27	45	Y	-0.02	-0.02	0	%100
28	50	Y	-0.016	-0.016	0	%100
29	51	Y	-0.012	-0.012	0	%100
30	52	Y	-0.012	-0.012	0	%100
31	53	Y	-0.016	-0.016	0	%100
32	54	Y	-0.016	-0.016	0	%100
33	55	Y	-0.016	-0.016	0	%100
34	56	Y	-0.016	-0.016	0	%100
35	57	Y	-0.01	-0.01	0	%100
36	58	Y	-0.01	-0.01	0	%100
37	59	Y	-0.021	-0.021	0	%100
38	64	Y	-0.02	-0.02	0	%100
39	69	Y	-0.011	-0.011	0	%100
40	72	Y	-0.009	-0.009	0	%100
41	73	Y	-0.009	-0.009	0	%100
42	76	Y	-0.009	-0.009	0	%100
43	78	Y	-0.009	-0.009	0	%100
44	80	Y	-0.011	-0.011	0	%100
45	83	Y	-0.009	-0.009	0	%100
46	84	Y	-0.009	-0.009	0	%100
47	87	Y	-0.009	-0.009	0	%100
48	89	Y	-0.009	-0.009	0	%100

Member Distributed Loads (BLC 31 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	38	Y	-0.017	-0.017	0	2.078
2	39	Y	0.0006164	-0.016	0	1.155
3	39	Y	-0.016	-0.035	1.155	2.309
4	9	Y	-0.014	-0.016	0	2.078
5	10	Y	-0.014	-0.02	0.231	1.27
6	10	Y	-0.02	-0.026	1.27	2.309
7	57	Y	-0.035	-0.016	0	1.155

Member Distributed Loads (BLC 31 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
8	57	Y	-0.016	0.0006163	1.155	2.309
9	58	Y	-0.018	-0.016	0.231	2.309

Member Distributed Loads (BLC 32 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	38	Y	-0.014	-0.014	0	2.078
2	39	Y	0.0005054	-0.013	0	1.155
3	39	Y	-0.013	-0.028	1.155	2.309
4	9	Y	-0.011	-0.013	0	2.078
5	10	Y	-0.011	-0.016	0.231	1.27
6	10	Y	-0.016	-0.021	1.27	2.309
7	57	Y	-0.028	-0.013	0	1.155
8	57	Y	-0.013	0.0004931	1.155	2.309
9	58	Y	-0.014	-0.013	0.231	2.309

Member Area Loads (BLC 1 : Dead)

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

Member Area Loads (BLC 8 : Ice)

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

Node Loads and Enforced Displacements (BLC 9 : Live Load a)

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

Node Loads and Enforced Displacements (BLC 10 : Live Load b)

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

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	46	L	Y	-0.5
2	127	L	Y	-0.5
3	149	L	Y	-0.5

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	1.86	5	2.304	14	1.72	2	5.835	14	1.844	11	0.475	24
2		min	-1.869	23	-1.084	8	-1.82	20	-3.402	8	-1.851	17	-0.336	6
3	53	max	1.55	5	2.179	42	2.372	14	1.324	13	2.37	3	1.998	12
4		min	-1.629	23	-0.69	12	-2.311	8	-2.433	19	-2.372	21	-4.224	18
5	82	max	1.487	17	2.092	46	2.444	14	1.463	3	2.367	7	4.085	22
6		min	-1.398	11	-0.718	4	-2.405	8	-2.829	21	-2.371	25	-2.044	4
7	Totals:	max	4.884	17	5.602	40	6.523	14						
8		min	-4.884	11	1.589	10	-6.523	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	HSS4X4X2	0.775	0	25	0.154	0	y	25	70.173	73.278	8.24	8.24	1.878	H1-1b
2	2	C3.38x2.06x.188	0.411	2.592	15	0.07	0.351	y	40	38.433	43.394	1.694	4.483	1.591	H1-1b
3	3	C3.38x2.06x.188	0.415	0	25	0.09	2.241	z	20	38.433	43.394	1.694	4.483	1.583	H1-1b
4	4	PL3/8"x6	0.138	0.164	19	0.295	0	y	14	68.856	72.9	0.57	9.113	2.395	H1-1b
5	5	PL3/8"x6	0.114	0	15	0.225	0	y	14	68.856	72.9	0.57	9.113	2.514	H1-1b
6	6	PIPE_3.0	0.144	3.25	21	0.076	4		17	46.291	65.205	5.749	5.749	1.709	H1-1b
7	7	PL3/8"x6	0.231	0.208	20	0.188	0.208	y	49	70.733	72.9	0.57	9.113	1.49	H1-1b
8	8	PL3/8"x6	0.215	0	25	0.215	0	y	39	70.733	72.9	0.57	9.113	2.931	H1-1b
9	9	L2x2x4	0.374	0	19	0.03	2.309	y	58	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2x2x4	0.3	2.309	21	0.041	2.309	y	40	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63x2.5x6	0.51	1.604	8	0.094	1.57	z	15	73.845	118.523	1.798	13.723	1.243	H2-1
12	18	PIPE_2.0	0.446	5.833	17	0.112	5.833		18	14.916	32.13	1.872	1.872	3	H1-1b
13	19	PIPE_2.0	0.483	2.167	21	0.119	5.833		21	14.916	32.13	1.872	1.872	3	H1-1b
14	22	PIPE_2.0	0.805	6.75	25	0.567	7.417		14	14.916	32.13	1.872	1.872	2.617	H3-6
15	23	L6.63x4.33x.25	0.3	3.25	18	0.042	3.25	z	24	49.975	86.751	2.311	6.976	1.5	H2-1
16	29	PIPE_2.0	0.449	5.833	18	0.132	2.167		20	14.916	32.13	1.872	1.872	3	H1-1b
17	31	HSS4X4X2	0.735	0	19	0.194	0	z	15	70.173	73.278	8.24	8.24	1.911	H1-1b
18	32	C3.38x2.06x.188	0.426	2.592	20	0.071	0.351	y	44	38.433	43.394	1.694	4.483	1.593	H1-1b
19	33	C3.38x2.06x.188	0.344	0	29	0.066	2.241	z	24	38.433	43.394	1.694	4.483	1.631	H1-1b
20	34	PL3/8"x6	0.126	0.164	22	0.236	0	y	18	68.856	72.9	0.57	9.113	1.588	H1-1b
21	35	PL3/8"x6	0.127	0	20	0.174	0	y	18	68.856	72.9	0.57	9.113	1.839	H1-1b
22	36	PL3/8"x6	0.193	0.208	19	0.184	0.208	y	41	70.733	72.9	0.57	9.113	2.527	H1-1b
23	37	PL3/8"x6	0.168	0	17	0.218	0	y	43	70.733	72.9	0.57	9.113	2.982	H1-1b
24	38	L2x2x4	0.282	0	23	0.03	2.309	y	50	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2x2x4	0.292	2.309	25	0.042	2.309	y	44	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63x2.5x6	0.391	1.604	13	0.094	1.57	z	19	73.845	118.523	1.798	13.866	1.274	H2-1
27	45	L6.63x4.33x.25	0.372	0	2	0.045	0	y	15	49.975	86.751	2.311	6.976	1.5	H2-1
28	50	HSS4X4X2	0.766	0	21	0.202	0	z	19	70.173	73.278	8.24	8.24	1.878	H1-1b
29	51	C3.38x2.06x.188	0.388	2.592	47	0.07	0.351	y	49	38.433	43.394	1.694	4.483	1.634	H1-1b
30	52	C3.38x2.06x.188	0.415	0	21	0.074	2.241	z	15	38.433	43.394	1.694	4.483	1.581	H1-1b
31	53	PL3/8"x6	0.176	0.164	14	0.236	0	y	22	68.856	72.9	0.57	9.113	2.696	H1-1b
32	54	PL3/8"x6	0.095	0	24	0.19	0	y	21	68.856	72.9	0.57	9.113	1.635	H1-1b
33	55	PL3/8"x6	0.174	0.208	22	0.189	0.208	y	45	70.733	72.9	0.57	9.113	2.504	H1-1b
34	56	PL3/8"x6	0.22	0	21	0.21	0	y	47	70.733	72.9	0.57	9.113	2.896	H1-1b
35	57	L2x2x4	0.378	0	15	0.032	2.309	z	20	23.349	30.586	0.691	1.577	1.5	H2-1
36	58	L2x2x4	0.241	2.309	17	0.041	0	y	49	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63x2.5x6	0.475	1.604	3	0.086	1.604	y	48	73.845	118.523	1.798	14	1.305	H2-1
38	64	L6.63x4.33x.25	0.383	0	7	0.056	0	y	20	49.975	86.751	2.311	6.976	1.5	H2-1
39	69	PIPE_3.0	0.155	4	14	0.103	4		21	46.291	65.205	5.749	5.749	1.507	H1-1b
40	72	PIPE_2.0	0.588	5.833	21	0.123	5.833		21	14.916	32.13	1.872	1.872	3	H1-1b
41	73	PIPE_2.0	0.608	2.167	14	0.131	5.833		25	14.916	32.13	1.872	1.872	2.955	H1-1b
42	76	PIPE_2.0	0.646	1.25	25	0.464	1.25		25	14.916	32.13	1.872	1.872	2.265	H3-6
43	78	PIPE_2.0	0.52	5.833	21	0.134	2.167		25	14.916	32.13	1.872	1.872	3	H1-1b
44	80	PIPE_3.0	0.148	4	14	0.096	4		25	46.291	65.205	5.749	5.749	1.41	H1-1b
45	83	PIPE_2.0	0.582	5.833	25	0.147	5.833		14	14.916	32.13	1.872	1.872	3	H1-1b
46	84	PIPE_2.0	0.488	5.833	19	0.092	5.833		17	14.916	32.13	1.872	1.872	3	H1-1b
47	87	PIPE_2.0	0.732	6.75	21	0.525	7.417		21	14.916	32.13	1.872	1.872	2.501	H3-6
48	89	PIPE_2.0	0.595	5.833	14	0.089	2.167		16	14.916	32.13	1.872	1.872	3	H1-1b

APPENDIX B

(Additional Calculations)

PROJECT	**149425.003.01-Griswold, CT**				**KSC**
SUBJECT	**Platform- Mount Analysis**				
DATE	**06/24/21**	PAGE	1	OF	1

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

[REF: ANSI/TIA-222-G2005]

Reactions at Bolted Connection

Tension	:	1.72	k
Vertical Shear	:	2.304	k
Horizontal Shear	:	1.86	k
Torsion	:	0.475	k.ft
Moment from Horizontal Forces	:	1.844	k.ft
Moment from Vertical Forces	:	5.835	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	7	in
Bolt spacing, Vertical	:	7	in
Bolt edge distance, plate height	:	1	in
Bolt edge distance, plate width	:	1	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.96	k
Force from Horz. Moment	:	2.90	k
Force from Vert. Moment	:	9.18	k
Shear Load / Bolt	:	0.74	k
Tension Load / Bolt	:	0.43	k
Resultant from Moments / Bolt	:	4.82	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**25.31%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**10.59%**		**OKAY**
Unity Check, Combined	:	**35.90%**		**OKAY**
Available Bearing Strength, ΦR_n	:	18.35	k/bolt	
Unity Check, Bolt Bearing	:	**4.03%**		**OKAY**

EXHIBIT 10

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00040A

DISH Wireless L.L.C. SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

SITE INFORMATION

PROPERTY OWNER:	POLINSKY HARVEY
ADDRESS:	129 BISHOP CROSSING RD GRISWOLD, CT 06351
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT00303-S
TOWER APP NUMBER:	162752
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 37' 24.07" N 41.62335211 N
LONGITUDE (NAD 83):	71° 56' 32.07" W 71.94224133 W
ZONING JURISDICTION:	TOWN OF GRISWOLD
ZONING DISTRICT:	R-60
PARCEL NUMBER:	10800
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	EVERSOUCE (CT LIGHT & POWER)
TELEPHONE COMPANY:	AT&T

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:	JEAN COTTRELL JEAN.COTTRELL@DISH.COM
CONSTRUCTION MANAGER:	AARON CHANDLER AARON.CHANDLER@DISH.COM
RF ENGINEER:	ARVIN SEBASTIAN

CONNECTICUT CODE 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

UNAVAILABLE

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 30, TAKE RAMP ONTO I-84 [US-44]. AT EXIT 55, TAKE RAMP (RIGHT) ONTO CT-2 [VETERANS OF FOREIGN WARS MEM'L HWY]. AT EXIT 28N, TAKE RAMP (RIGHT) ONTO I-395 [GOVERNOR JOHN DAVIS LODGE TPKE]. AT EXIT 86, TURN RIGHT ONTO RAMP. TURN RIGHT ONTO CT-201 [HOPEVILLE RD]. TURN LEFT ONTO BISHOP CROSSING RD. TURN RIGHT ONTO ACCESS ROAD AND ARRIVE AT BOBOS00040A.

SHEET INDEX

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

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

VICINITY MAP

NO SCALE

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BOCA RATON, FL 33487

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

7/20/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLB	BLB	JW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	7/19/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149425.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

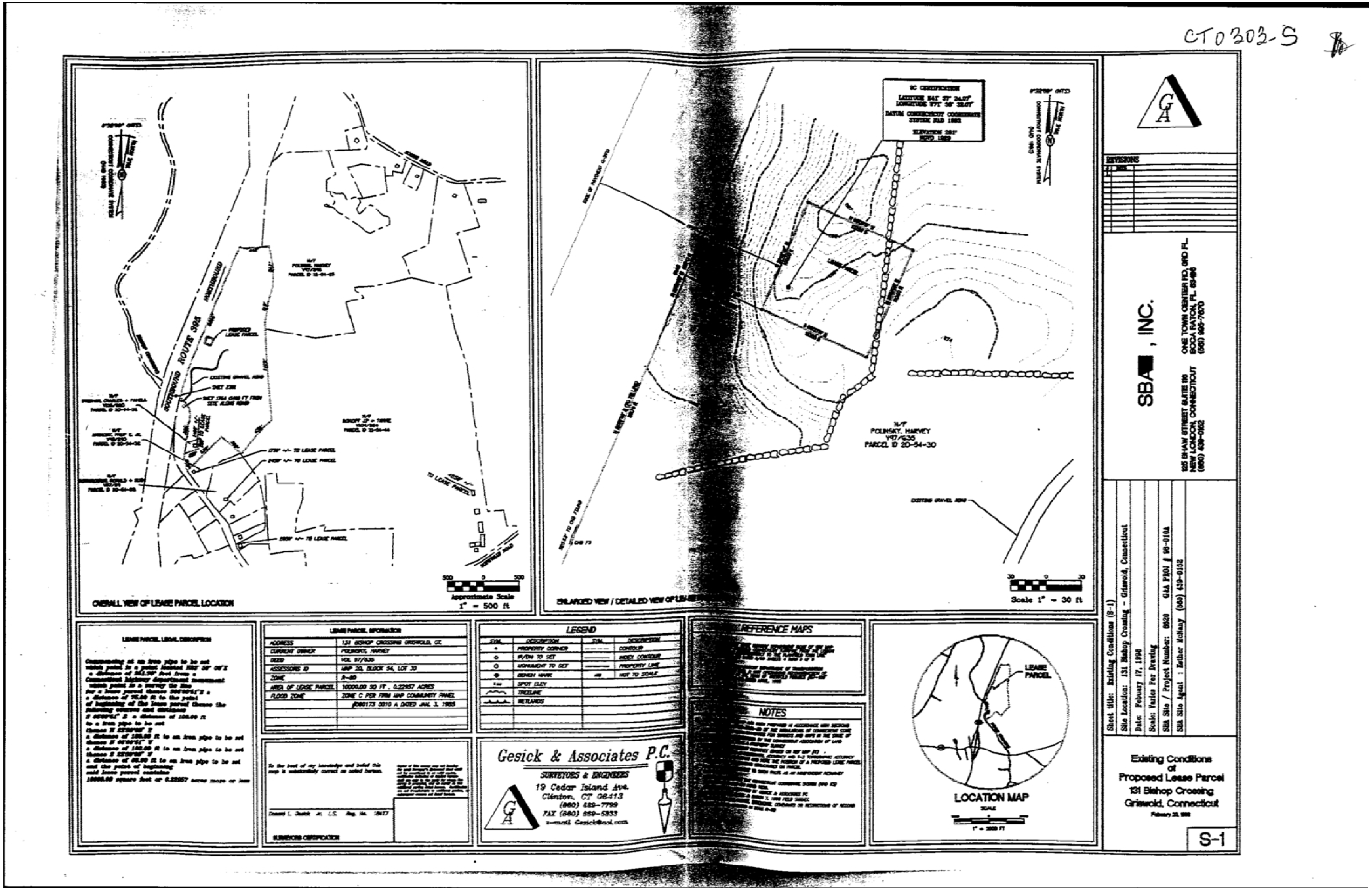
BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



SITE SURVEY

NO SCALE | 1

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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:
BLB	BLB	JW

RFDS REV #: 0

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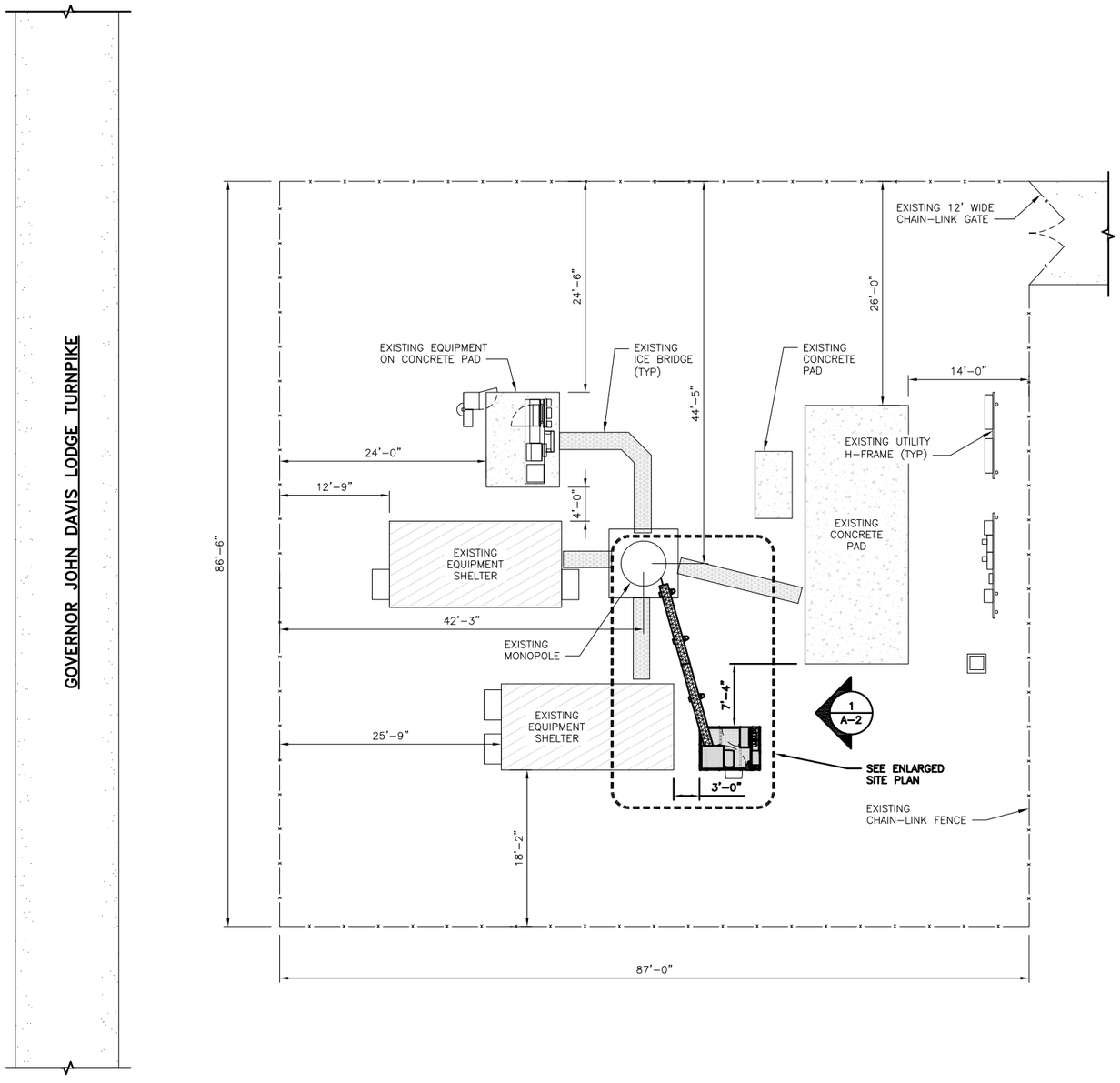
GRISWOLD, CT 06351

SHEET TITLE
SITE SURVEY

SHEET NUMBER
LS1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



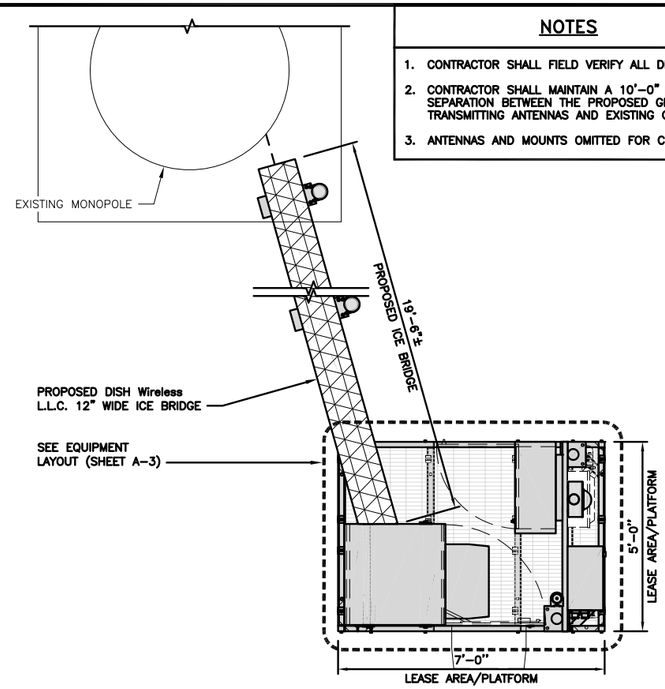
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

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

2

NOT USED

3

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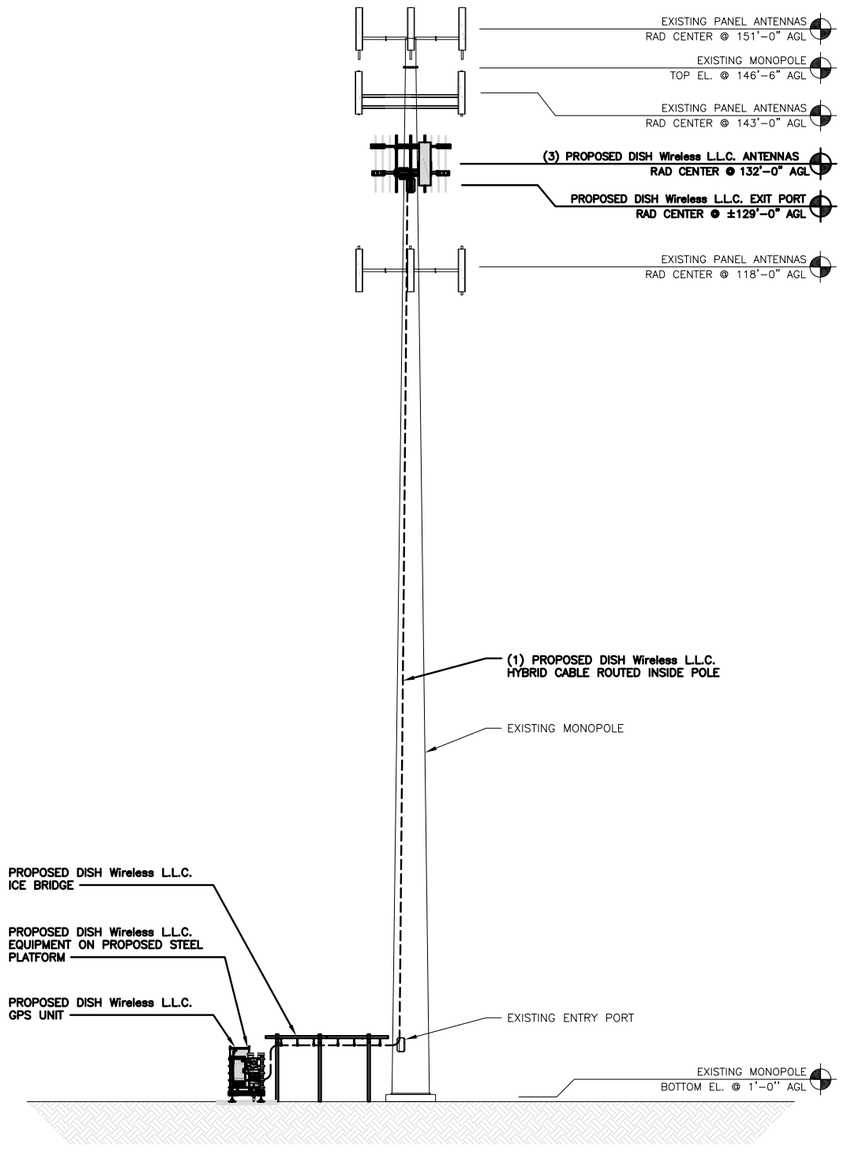
SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

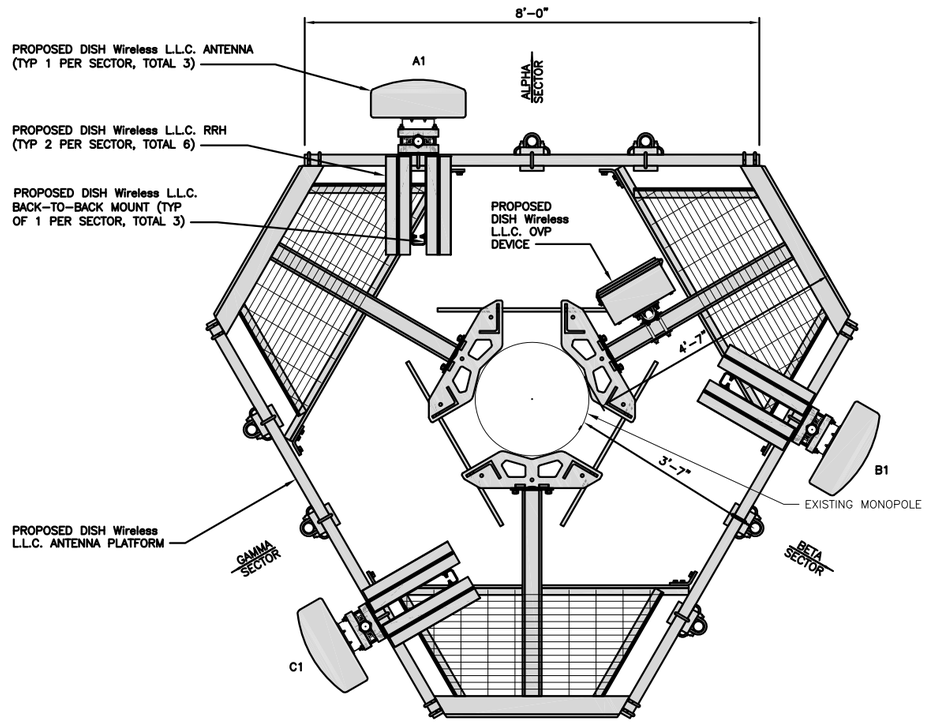
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH EAST ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	0°	132'-0"	(1) HIGH-CAPACITY HYBRID CABLE (175' LONG)
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	120°	132'-0"	
GAMMA	C1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	240°	132'-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	C1	FUJITSU – TA08025-B605	5G
	C1	FUJITSU – TA08025-B604	5G

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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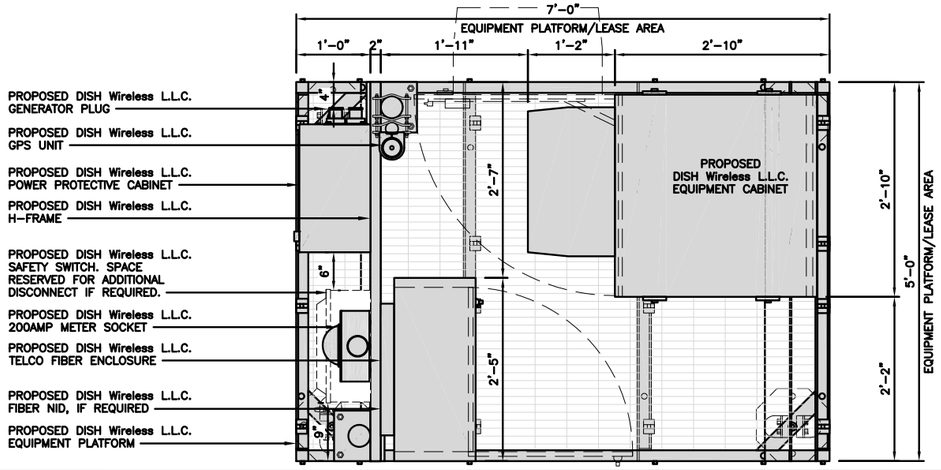
GRISWOLD, CT 06351

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



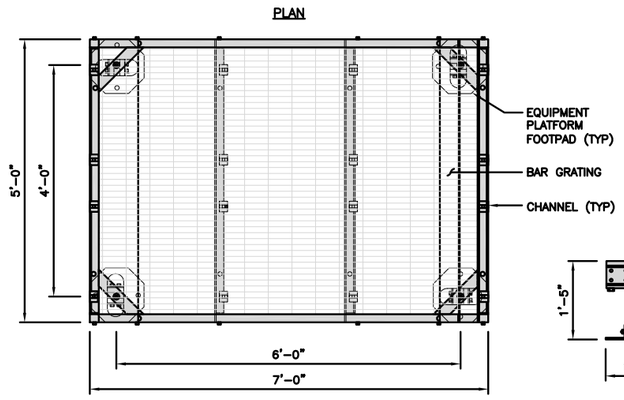
PLATFORM EQUIPMENT PLAN

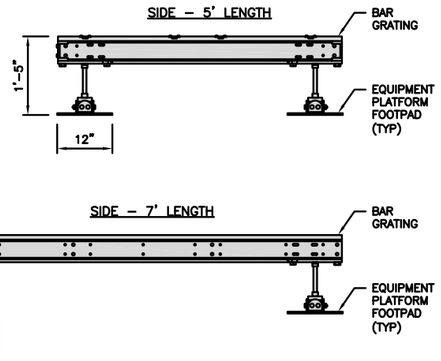
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

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

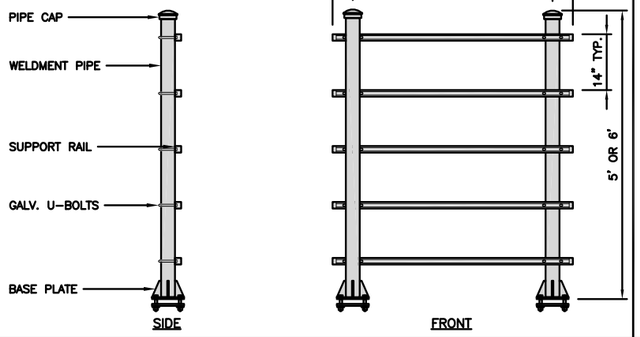
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"





PLATFORM DETAIL | NO SCALE | 2

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

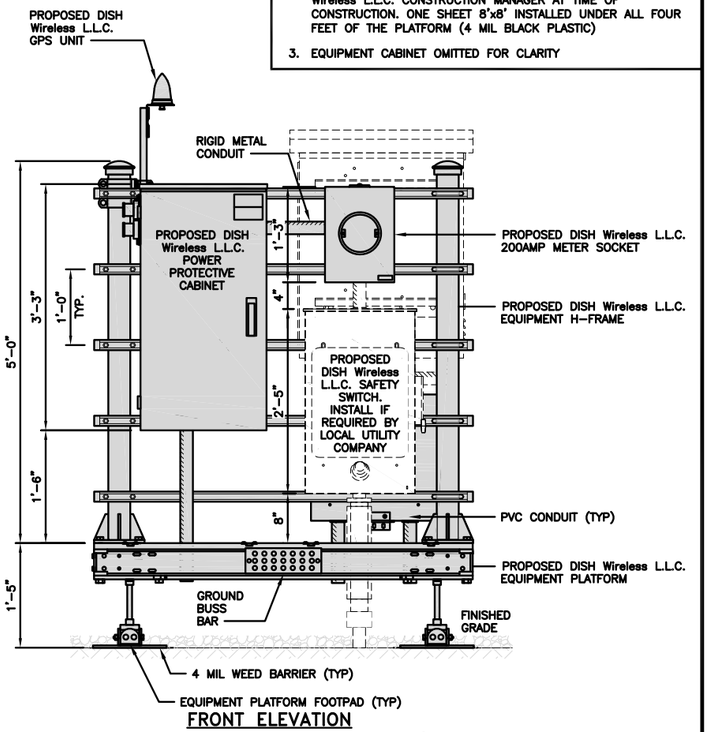


H-FRAME DETAIL | NO SCALE | 3

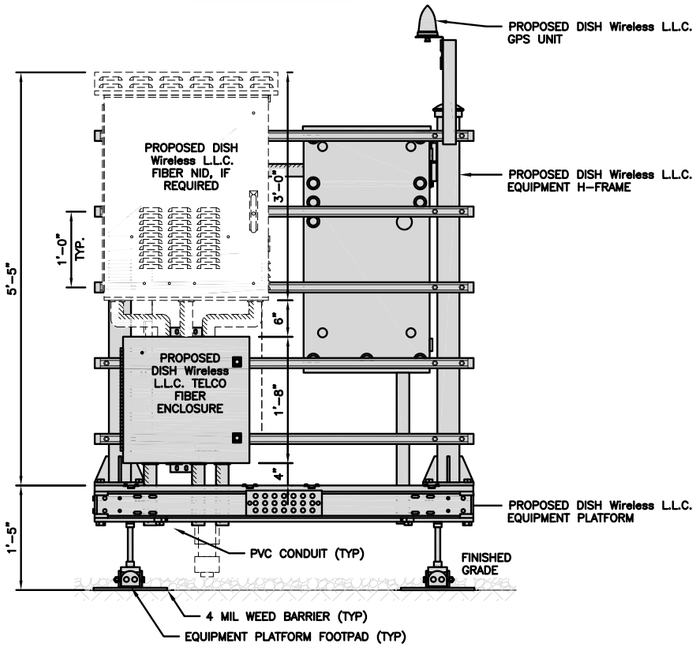
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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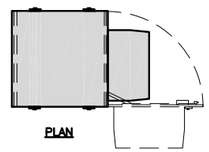
131 BISHOP CROSSING
GRISWOLD, CT 06351

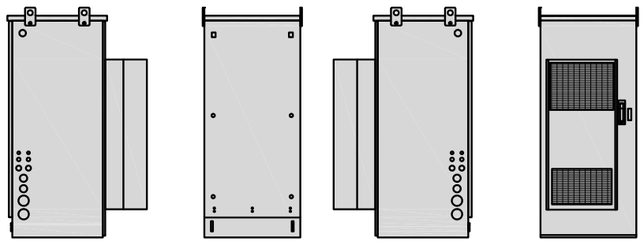
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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

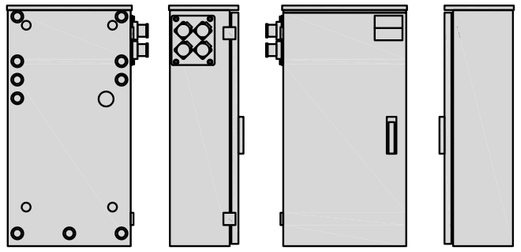




CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

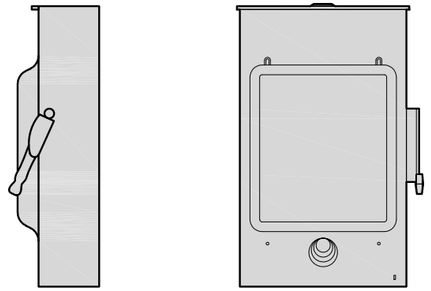
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



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

SQUARE D SAFETY SWITCHES D224NRB

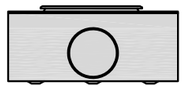
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

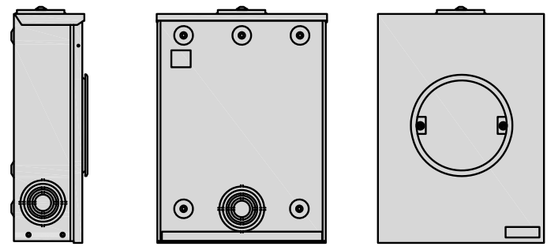


SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

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

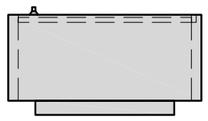


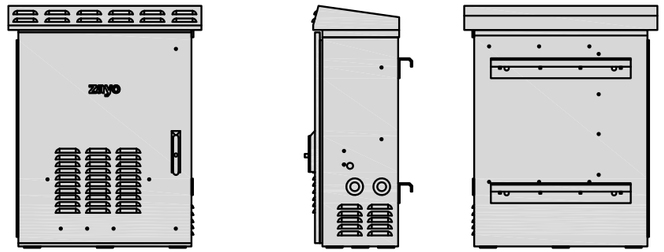


METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)

DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

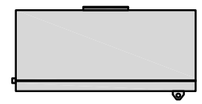


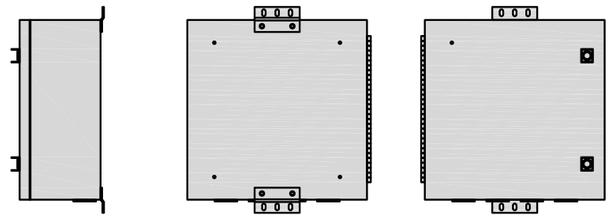


NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



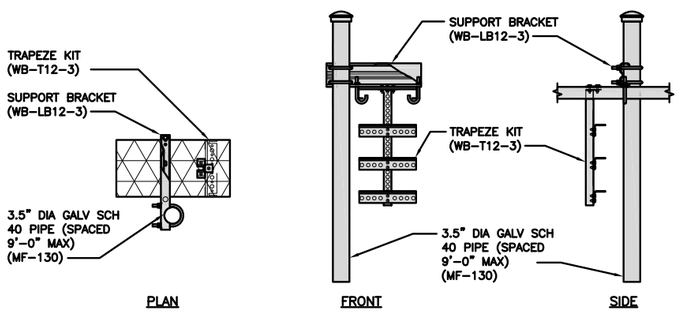


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

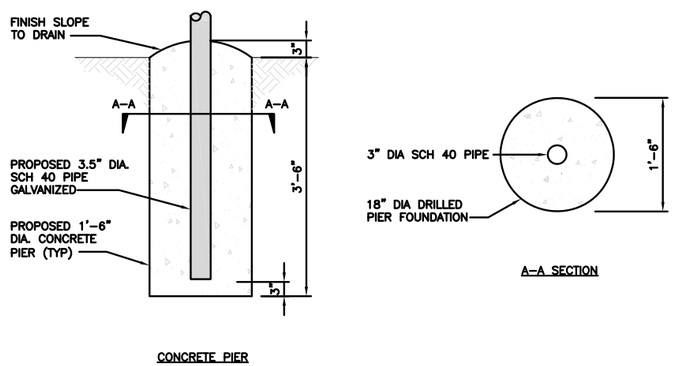
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

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

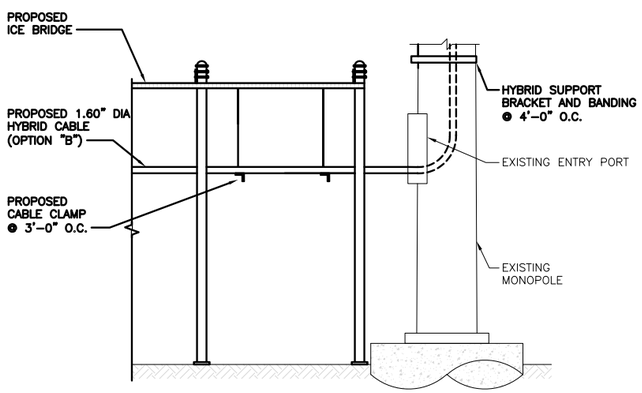
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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7/20/2021

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Expires 2/10/22

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CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER

149425.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

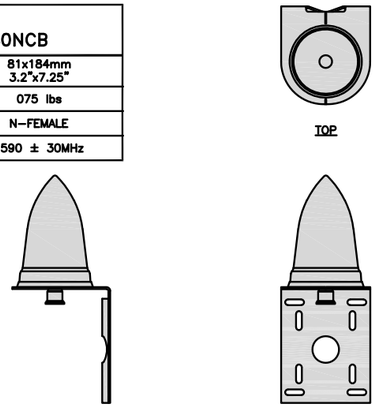
SHEET TITLE

EQUIPMENT DETAILS

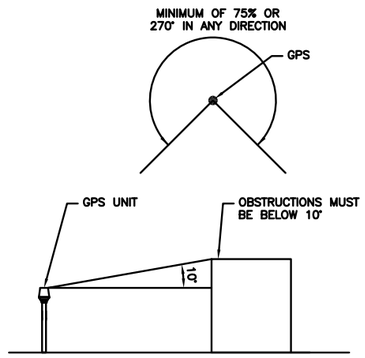
SHEET NUMBER

A-4

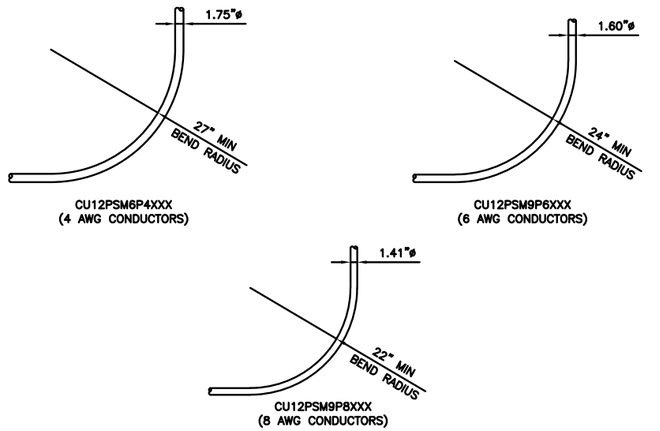
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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SHEET TITLE

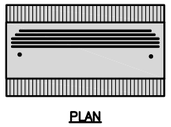
EQUIPMENT DETAILS

SHEET NUMBER

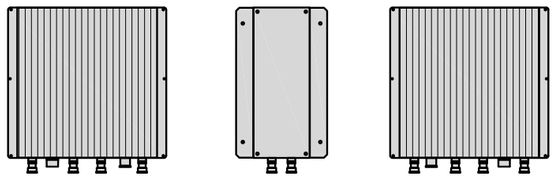
A-5

FUJITSU TRIPLE BAND TA08025-B605

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



PLAN



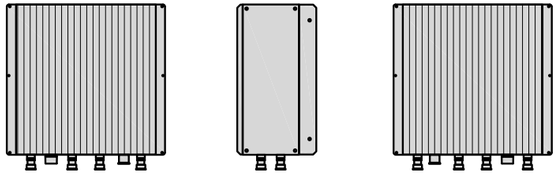
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

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

PLAN



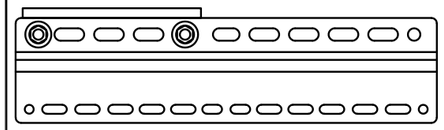
BACK SIDE FRONT

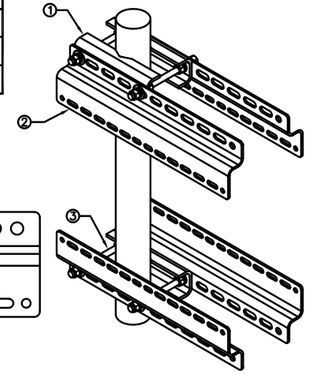
RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155

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

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





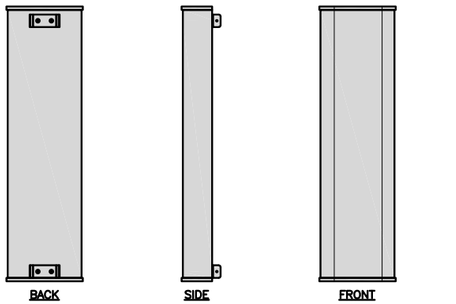
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA WIRELESS MX08FRO665-21 ANTENNA

DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



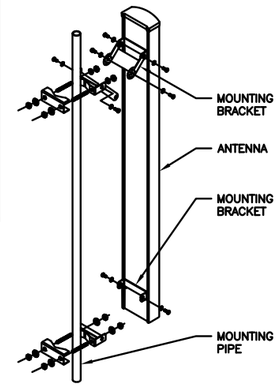
BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

M04 MOUNTING BRACKET HPA-33R-BUU-H4-K

WIDTH	5"
DEPTH	2"
HEIGHT	8"
TOTAL WEIGHT	1.5 lbs
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1x8-PIN DAISY CHAIN

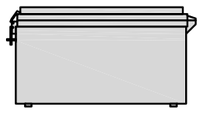


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

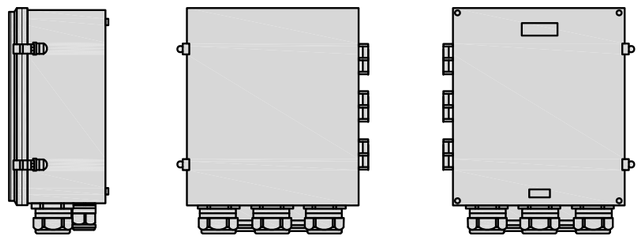
ANTENNA MOUNTING DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



PLAN



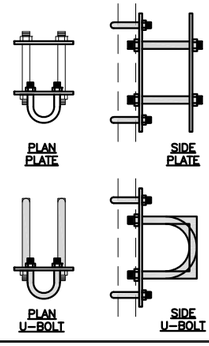
SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

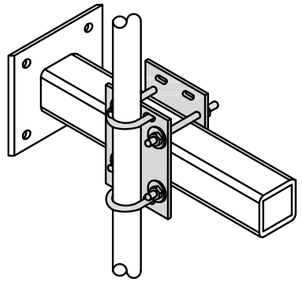
COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



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



RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

NOTE:
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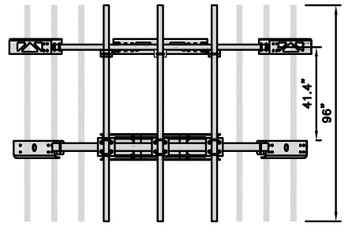

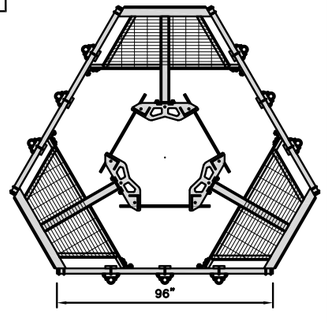

ANTENNA PLATFORM DETAIL | NO SCALE | 9

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PROJECT INFORMATION
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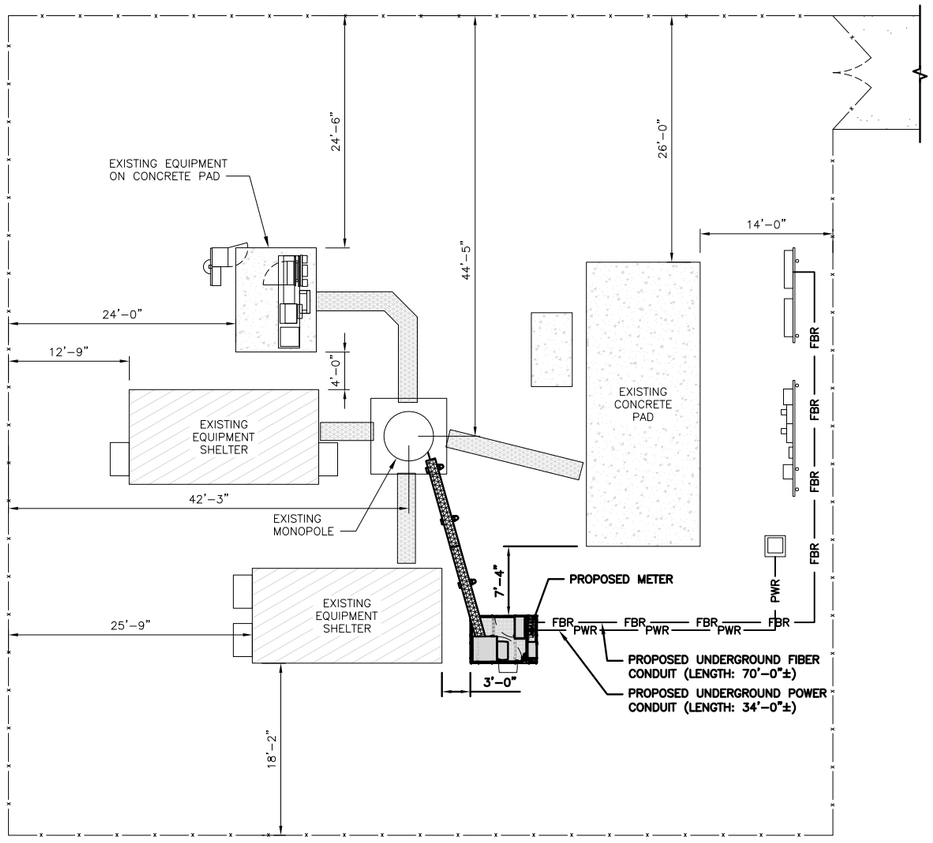
131 BISHOP CROSSING
GRISWOLD, CT 06351

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

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131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

UTILITY ROUTE PLAN

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

1

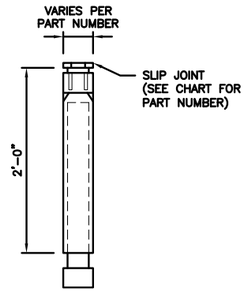
ELECTRICAL NOTES

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"

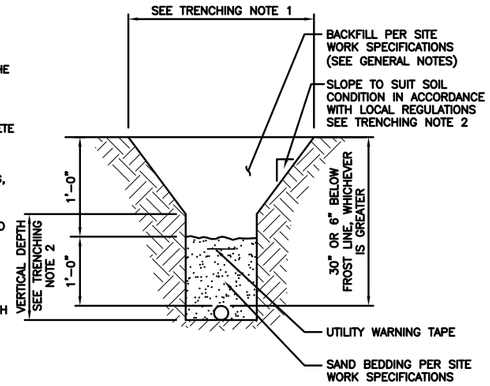


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

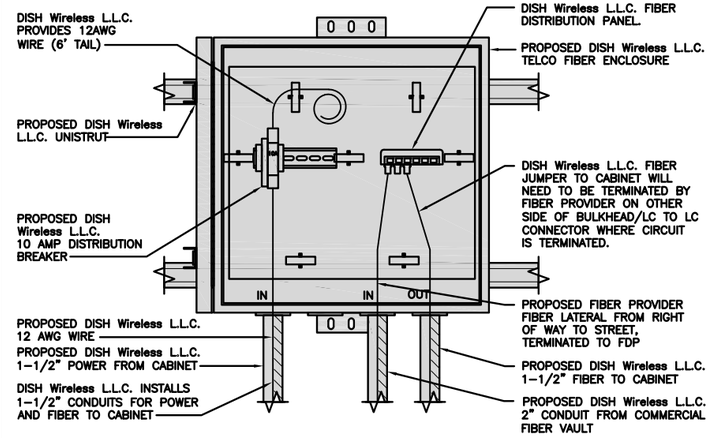
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

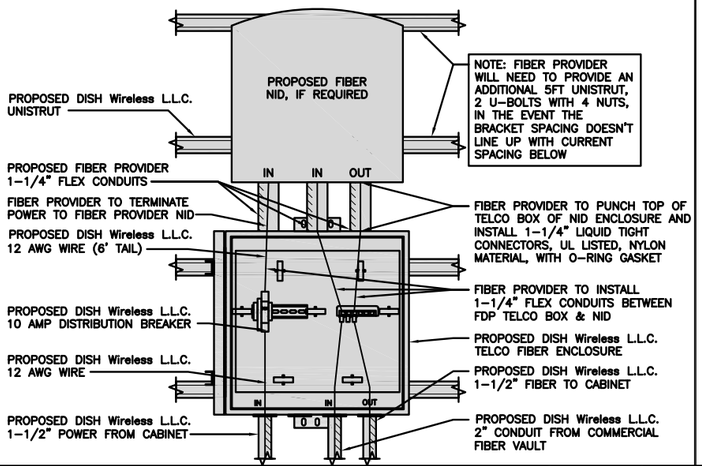
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

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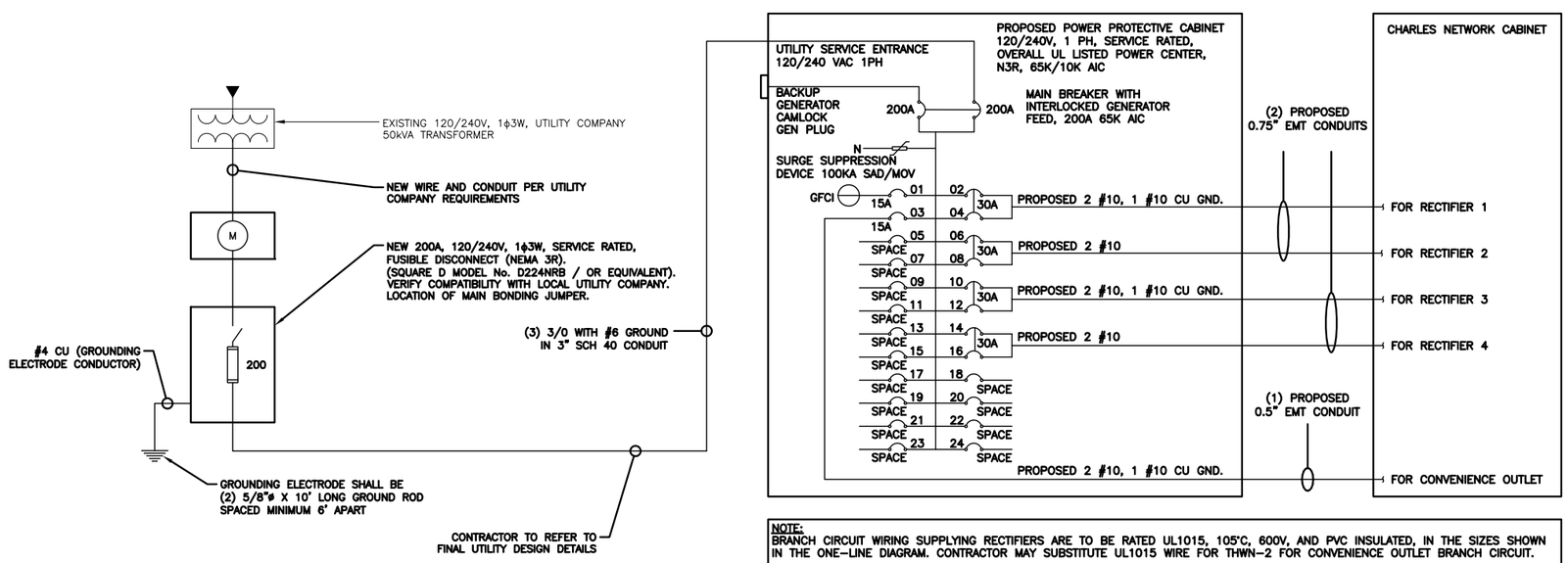
SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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CONSTRUCTION DOCUMENTS

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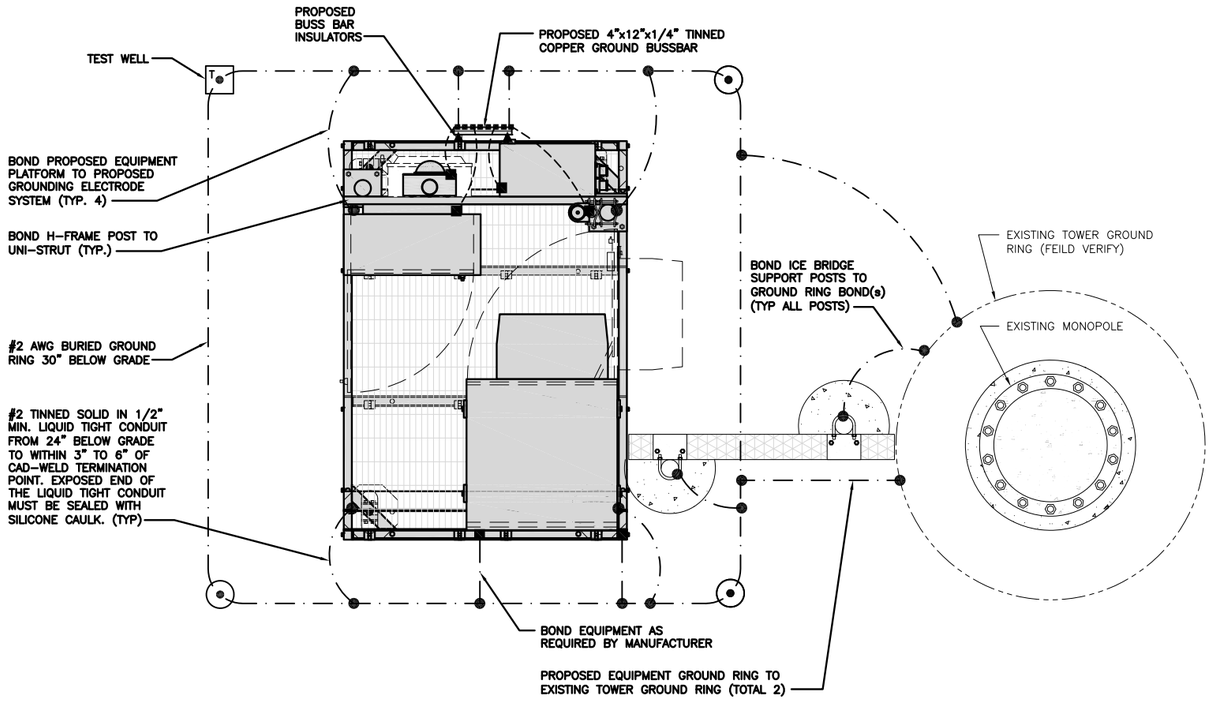
A&E PROJECT NUMBER
149425.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

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

SHEET NUMBER
E-3

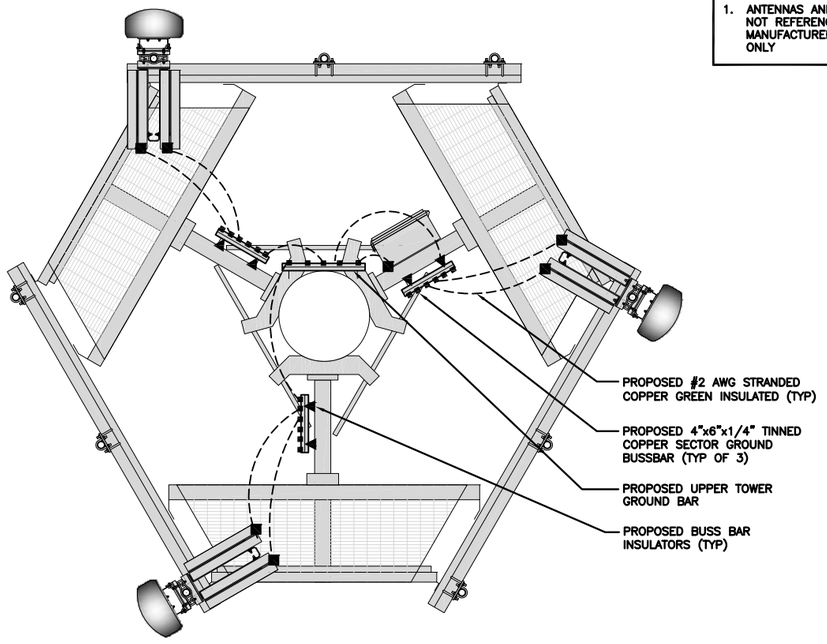


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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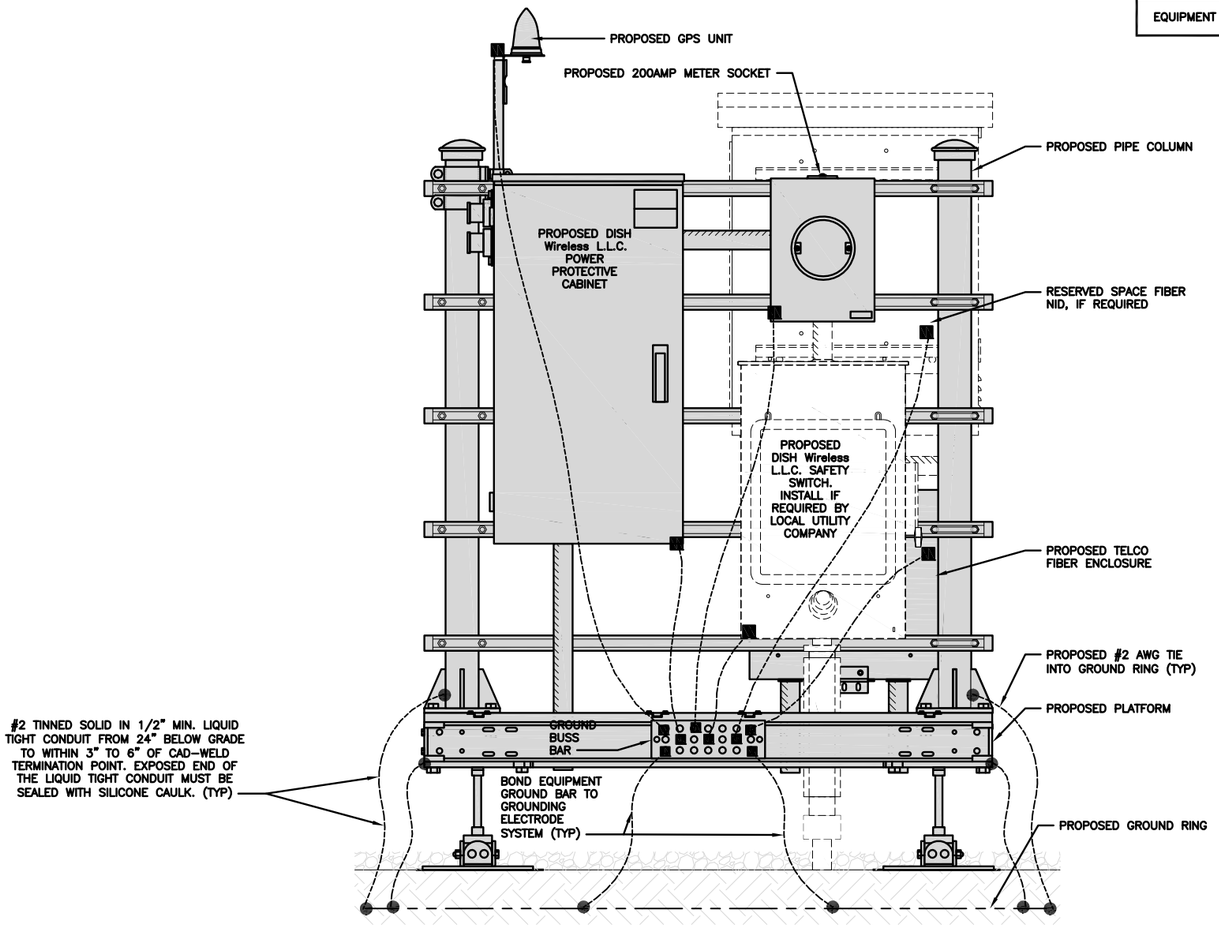
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

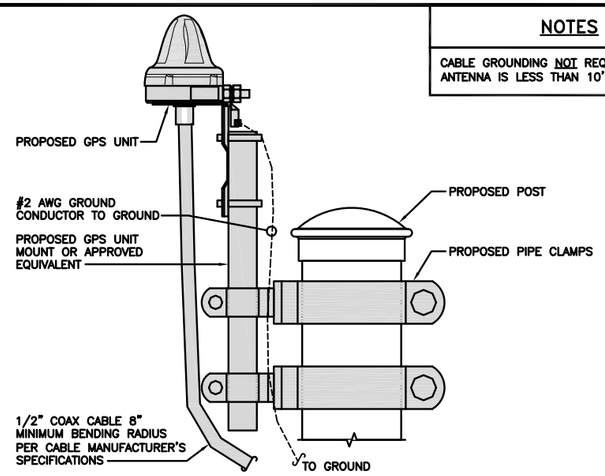
EQUIPMENT CABINET OMITTED FOR CLARITY



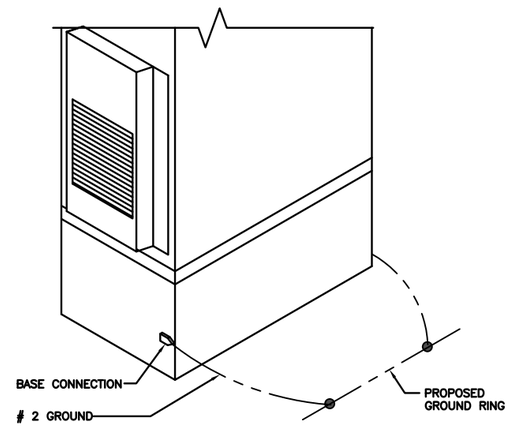
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

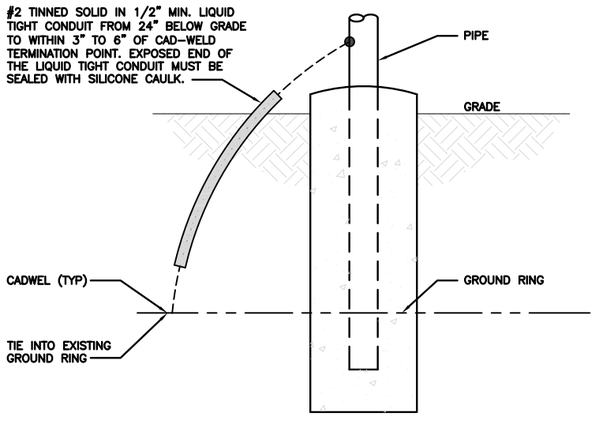
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



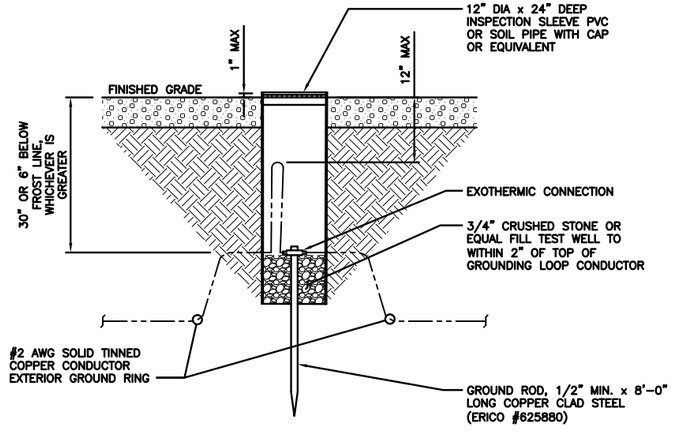
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



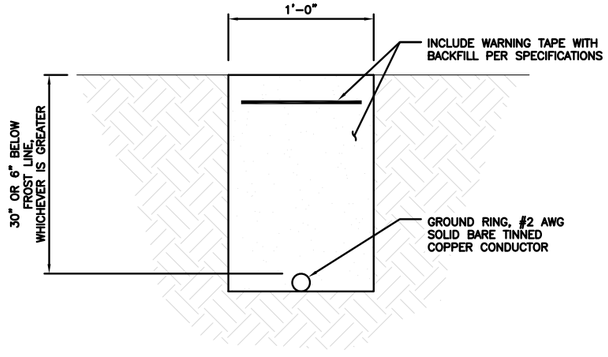
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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PROJECT INFORMATION

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131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

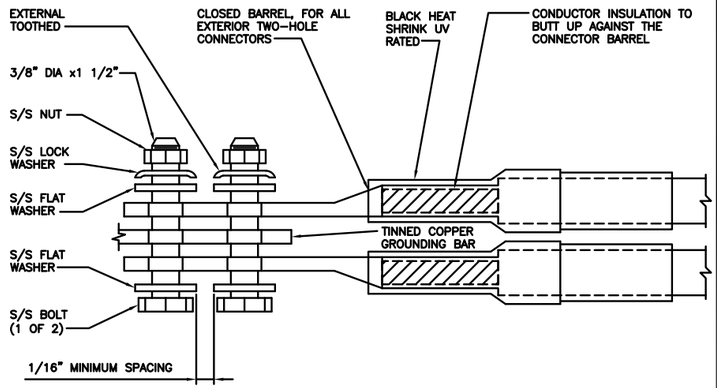
GROUNDING DETAILS

SHEET NUMBER

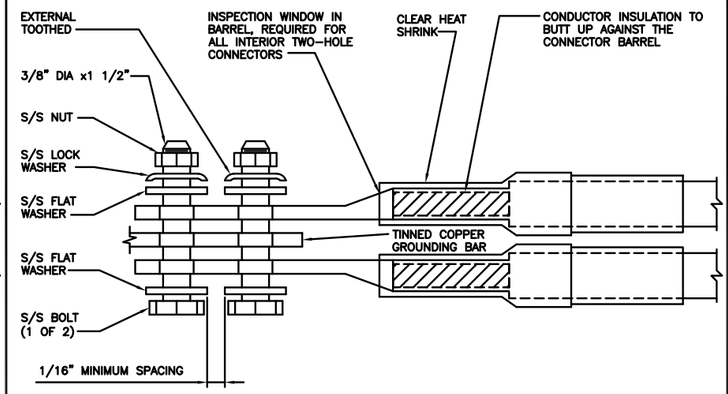
G-2

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

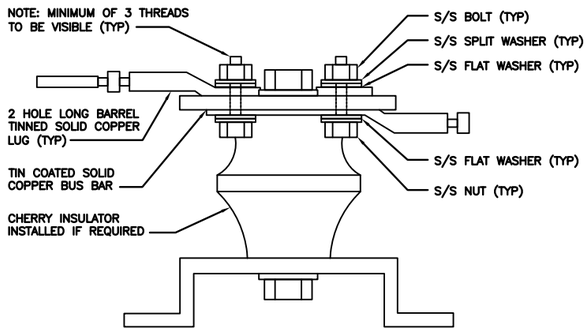
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION
BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE
GROUNDING DETAILS

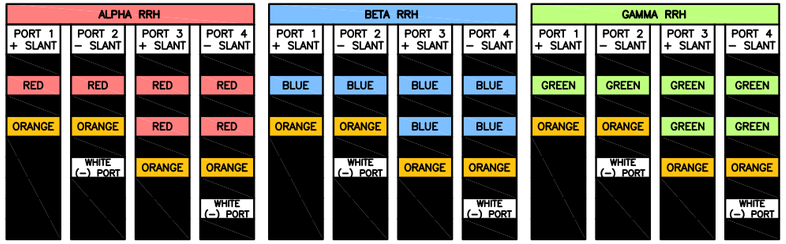
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

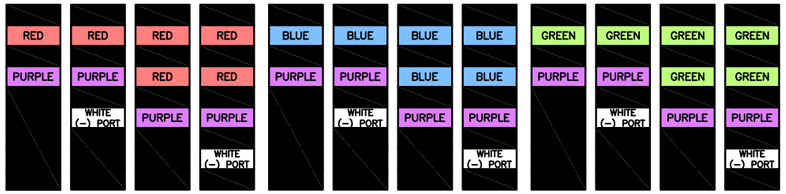
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

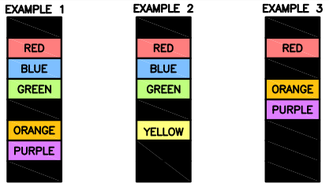


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

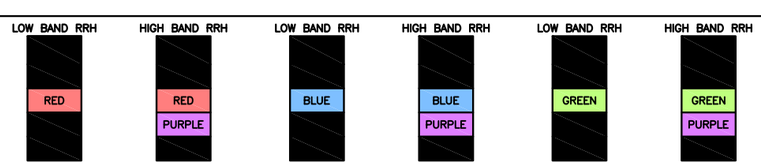
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



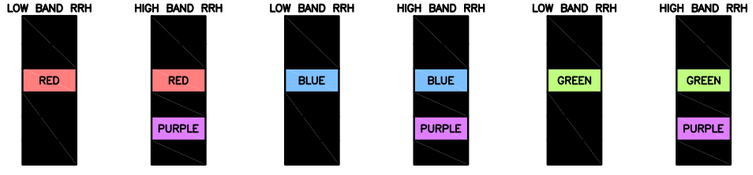
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

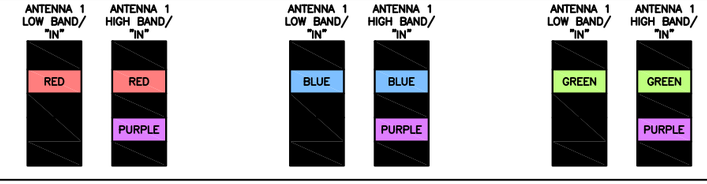


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



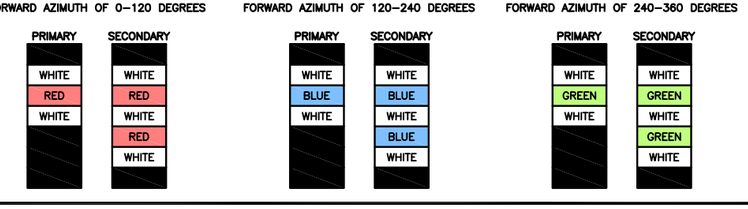
RET MOTORS AT ANTENNAS



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

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. FINAL RFDS IS IN NEXYSONE.

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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GRISWOLD, CT 06351

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

149425.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

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

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

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

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

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

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

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

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

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

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

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

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

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

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

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

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

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

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

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

dish wireless.

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RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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0	7/19/21	ISSUED FOR CONSTRUCTION

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

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

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

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

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

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

dish wireless.

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7/20/2021

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PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLB	BLB	JW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/28/21	ISSUED FOR REVIEW
0	7/19/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149425.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00040A
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SHEET TITLE

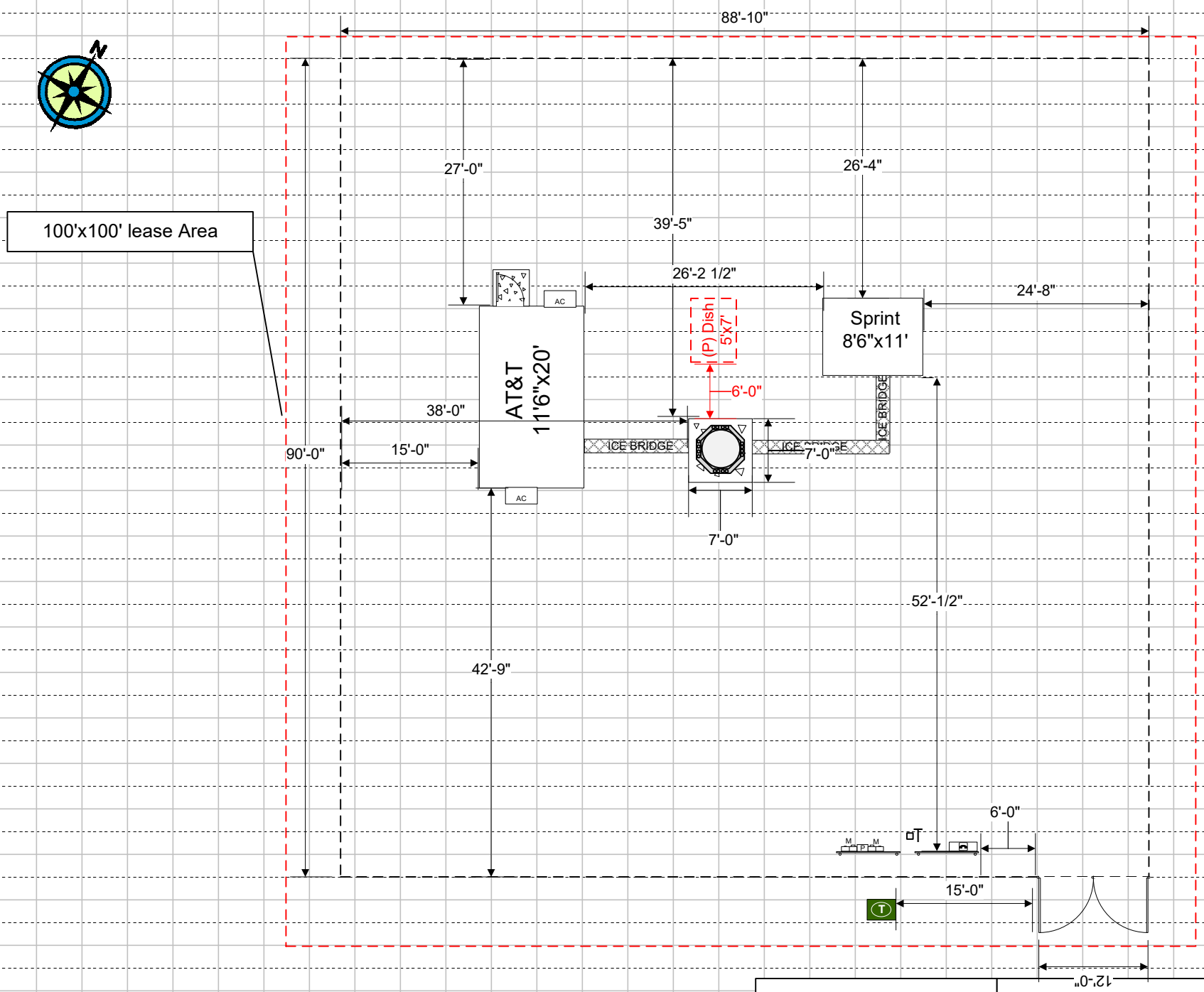
GENERAL NOTES

SHEET NUMBER

GN-4

EXHIBIT 11

Site Sketch (Ground)



SBA Communications	Griswold		
SBA	COMPOUND DRAWING		
By: Stephen Roth sroth@sbasite.com	DATE: 7/15/2021	SITE NUMBER: CT00303-S	STATE: CT