



Filed by:

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

October 20, 2021

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
237 Sandy Hollow Rd., Groton, CT 06355
Latitude: 41.369510
Longitude: -71.892463
Dish Site# BOBOS00054A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 237 Sandy Hollow Rd., Groton, CT 06355

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antennas and six (6) RRUs, at the 107-foot level of the existing 130-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7' x 5' lease area. Included are plans by B+T Group, dated August 12, 2021 Exhibit 10. Also included is an Structural Analysis prepared by TES, dated July 9, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment, attached as Exhibit 8. This facility was approved by the Connecticut Siting Council under Docket NO. 343 on March 26, 2008 and also approved by the Town of Groton's Building and Zoning Dept. under ZP-08-185 September 9, 2008. Please see attached Exhibit 6.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Patrice Granatosky, Mayor for the Town of Groton, Deborah G. Jones, AICP, P&Z & Wetlands, as well as the tower property owner Mystic River Ambulance Assoc. Inc. Separate notice is not being mailed to the tower owner, as it belongs to SBA.

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 150-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 107-feet.
2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 6.96% as evidenced by Exhibit 7.

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

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

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 107-foot level of the existing 130-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit 7, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

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

Sincerely,

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

Attachments:



cc: Patrice Granatosky, Mayor / with attachments
Town of Groton 45 Fort Hill Rd., Groton, CT 06340
Deborah G. Jones, AICP, P&Z & Wetlands/with attachments
134 Groton Long Point Rd. Groton, CT 06340-4873
Mystic River Ambulance Assoc. Inc / with attachments
PO Box 64 West Mystic CT 06388 (SBA address on file)

EXHIBIT LIST

Exhibit 1	Copy of Check	X
Exhibit 2	Letter of Intent to Allow Shared Use of the Existing SBA Telecommunications Site	X
Exhibit 3	Notification Receipts	x
Exhibit 4	Property Card	x
Exhibit 5	Property Map	x
Exhibit 6	Original Zoning Approval	Town of Glastonbury Zoning Board of Appeals 8/9/00
Exhibit 7	EME Report	EBI Consulting 10/19/21
Exhibit 8	Structural Analysis	TES 9/2/21
Exhibit 9	Mount Analysis	B+T Group 7/23/21
Exhibit 10	Construction Drawings	B+T Group 8/12/21

EXHIBIT 1

Copy of check

EXHIBIT 2

Letter of Intent

October 20, 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: 237 Sandy Hollow Rd., Groton, CT
Dish Wireless Site No: BOBOS00054A
Site No: CT11561-A

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish Wireless' shared use of the existing SBA telecommunications site at **237 Sandy Hollow Rd., Groton, CT.**

SBA Infrastructure, 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 107' 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@sbsite.com

EXHIBIT 3

Fedex Labels

ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20OC171
ACTWGT: 5.00 LB
CAD: 105843304/NET4400

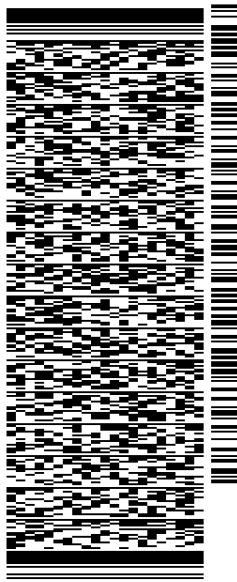
BILL SENDER

TO **MELANIE A. BACHMAN EXEC. DIR**
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

NEW BRITAIN CT 06051

REF: 105692009-6089

(508) 251-0720 X 3807
INV#
PO:
DEPT:



J212021070901uv

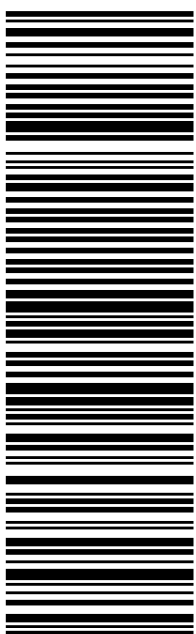
THU - 21 OCT 10:30A

PRIORITY OVERNIGHT

TRK# 7749 7656 4027
0201

EB BDLA

06051
CT-US BDL



56DJ3/14BA/FE4A

After printing this label:

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

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

ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20OC121
ACTWGT: 5.00 LB
CAD: 105843304/NET4400

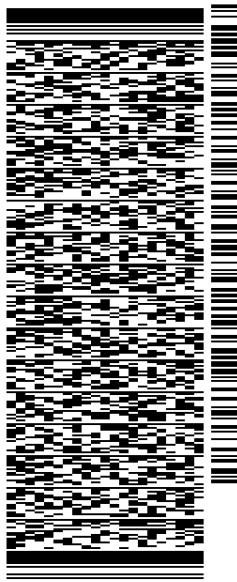
BILL SENDER

TO MELANIE A. BACHMAN EXEC. DIR
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

NEW BRITAIN CT 06051

(508) 251-0720 X 3807 REF: 105692009-6089
INV. PO. DEPT:

56DJ3/14BA/FE4A

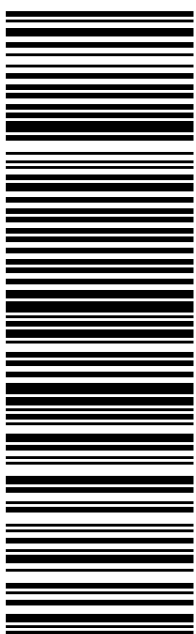


J212021070901uv

TRK# 7749 7658 7819 THU - 21 OCT 10:30A
0201 PRIORITY OVERNIGHT

EB BDLA

06051
CT-US BDL



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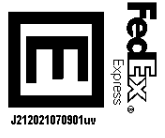
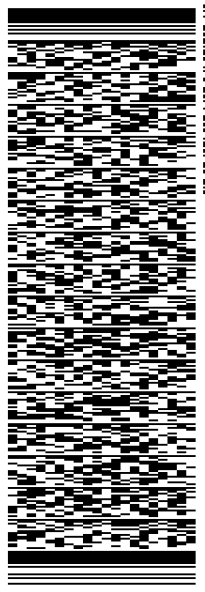
ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 200CT21
ACTWGT: 1.00 LB
CAD: 105843304/NET4400
BILL SENDER

TO
PATRICE GRANATOSKY
TOWN OF GROTON
MAYOR
45 FORT HILL RD.,
GROTON CT 06340

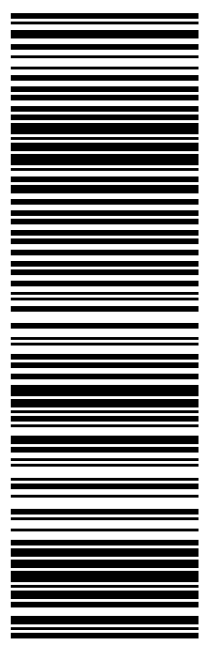
REF: 105692009-6089
INV: (508) 251-0720 X 3807
PO: DEPT:

56DJ3/14BA/FE4A



TRK# 7749 7669 3953
THU - 21 OCT 10:30A
PRIORITY OVERNIGHT

EB GONA
06340
CT-US BDL



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RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

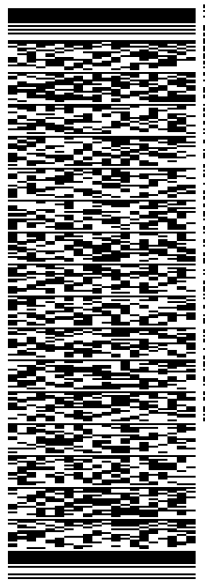
SHIP DATE: 200CT21
ACTWGT: 1.00 LB
CAD: 105843304/NET4400
BILL SENDER

TO **DEBORAH G. JONES, AICP**

P&Z AND WETLANDS
134 GROTON LONG POND RD
GROTON CT 06340

(508) 251-0720 X.3807 REF: 1056-92009-6089
INV. PO. DEPT:

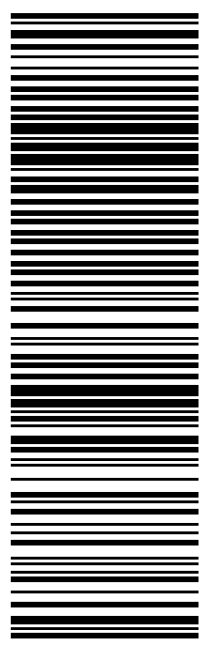
56DJ3/14BA/FE4A



J212021070901uv

TRK# 7749 7673 1178 THU - 21 OCT 10:30A
0201 PRIORITY OVERNIGHT

EB GONA 06340
CT-US BDL



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EDWARD

COMMUNICATIONS

ANDERS RD

125

ORCUTT, MA 01581

MYSTIC RIVER AMBULANCE, INC,
P.O. BOX 64
WEST MYSTIC, CT 06388

7021 0950 0002 2499 0864

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com.
WEST MYSTIC 06388
WEST MYSTIC, CT 06388

Certified Mail Fee \$3.75
0581
1012

Extra Services & Fees (check box, add fee as appropriate)
 Return Receipt (hardcopy) \$0.00
 Return Receipt (electronic) \$0.00
 Certified Mail Restricted Delivery \$0.00
 Adult Signature Required \$0.00
 Adult Signature Restricted Delivery \$0.00
Postage \$7.95

Total Postage and Fees \$11.70
WESTBOROUGH
OCT 20 2021
10/20/2021

Sept 10
MYSTIC RIVER AMBULANCE ASSOCI,
Street and Apt. No., or PO Box No.
PO BOX 64
City, State, ZIP+4®
WEST MYSTIC, CT 06388
PS Form 3800, April 2015 PSN 7530-02-000-9000 See Reverse for Instructions

In a hurry? Self-service online return



WESTBOROUGH
150 E MAIN ST
WESTBOROUGH, MA 01581-9998
(800) 275-8777
10/20/2021 03:02 PM

Product Qty Unit Price
Priority Mail® 2-Day 1 \$7.95

West Mystic, CT 06388
Weight: 0.16-14.99 oz
Expected Delivery Date
Sat 10/23/2021

Certified Mail® \$3.75
Tracking #:
70210950000224990864
Total \$11.70

EXHIBIT 4

Property Card

Commercial Property Card

Print Date: 9/29/2021

Card 1 of 1

Account 261909065371 E	Location 237 SANDY HOLLOW RD	Zoning RS-20	Deed Book/Page 518/	Acres 3.35
District OLD MYSTIC	Use Code ALL OTHER CHARITABLE ORGANIZATIONS			

Current Owner

MYSTIC RIVER AMBULANCE ASSOC
P O BOX 64
W MYSTIC CT 06388

Property Picture



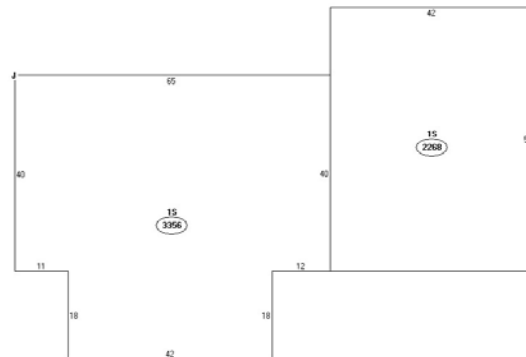
Building Information

Building No:	1
Year Built:	1992
No of Units:	1
Structure Type:	POLICE/FIRE STATION
Building Total Area:	5624 sqft.
Grade:	B-
Identical Units:	1

Valuation

Land:	\$670,000
Building:	\$445,400
Total:	\$1,115,400
Total Assessed Value:	\$780,780

Building Sketch



Describe
A 090 2250 sqft
B 060 3396 sqft
C 001 144 sqft
D LFP3 360 sqft
E 15 3396 sqft
F 15 2250 sqft
G PA1 10000 sq
H 001 150 sqft
I PA1 54 sqft
J CP1 36 sqft

Recent Sales

Book/Page	Date	Price
518/656	9/25/1990	\$141,900

Sketch Legend

----	Main Living Area	LSMA	Masonry	GRHS	Attached Greenhouse
1FR	Frame	OMP	Open Masonry Porch	CAT	Cathedral Ceiling
OFF	Open Frame Porch	EMP	Enclosed Msry Porch	SOP	Screen Open Frame Prch
EFP	Enclosed Frame Porch	MUB	Masonry Utility	SMP	Screen Open Msrny Prch
FUB	Frame Utility Building	MB	Masonry Bay	CPAT	Concrete Patio
FB	Frame Bay	MOH	Masonry Overhang	B	Basement
FG	Frame Garage	.SMA	1/2 Story Masonry		
FOH	Frame Overhang	MP	Masonry Patio		
.SFR	1/2 Story Frame	WD	Wood Deck		
A(U)	Attic (Unfinished)	CPY	Canopy		
A(F)	Attic (Finished)				

Exterior/Interior Information

Levels	Use Type	Ext. Walls	Const. Type	Heating	A/C	Condition
01 - 01	PARKING GARAGE	FRAME	WOOD JOIST	HOT AIR	NONE	NORMAL
01 - 01	MULTI-USE OFFICE	FRAME	WOOD JOIST	HOT AIR	CENTRAL	NORMAL

EXHIBIT 5

Property Map

Google Maps 237 Sandy Hollow Rd



Imagery ©2021 Maxar Technologies, USDA Farm Service Agency, Map data ©2021 100 ft

EXHIBIT 6

Zoning Approval

SITE NAME: Groton 2 SITE ID: CT11561-A
 Transaction: MCF Communications Jennifer

ZONING/PERMITTING COMPLETION FORM

Address: 237 Sandy Hollow Rd, Groton, CT 06355

Jurisdiction: CSC/Town of Groton Zoning District: RS-20

Zoning Approval Type: Cert. of Env. Comp. & Public Need Case #: Docket No.343

Approval Date: 3/26/08 Approved Height: 130 Tower Build Date: _____

If tower is destroyed or drop/swap required, tower can likely be rebuilt? YES NO

Conditions of Approval:

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Removal Bond _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Site Plan Submittal _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fall Zone _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Periodic Inspections _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Periodic Reporting _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Approval Renewal _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Additional Conditions <u>See approval for all conditions</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Monopole type NTE 130 ft. Tower to be installed 60 ft. N of proposed compound.
 Equipment compound = 35'x50' fenced area.

JURISDICTION POC/DEPT.

Planning/Zoning: _____

Phone: _____ Fax: _____

Bldg./Code Enforcement: Kevin Quinn (Town of Groton)

Phone: 860-446-5982 x2 Fax: _____

Submitted by: *Batches Estes* Date: 10/22/08
 Zoning Compliance

TO BE COMPLETED BY CORPORATE

	<u>Yes</u>	<u>No</u>	<u>N/A</u>	
Zoning Approval Attached (required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Building Permit Attached (required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Date Recd</u> <u>9/9/08</u>
_____ BP08-380 _____				
Certificate of Occupancy or Compliance (CO) attached (required)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Zoning Manager Approval: *D E Borchardt* Date 10/22/08
 Diane E. Borchardt, AICP



TOWN OF GROTON

PLANNING AND DEVELOPMENT SERVICES
Inspection Services

134 Groton Long Point Road
Groton, Connecticut 06340-4873
Telephone (860) 446-5982
Fax (860) 446-5978

October 20, 2008

To Whom It May Concern:

SUBJECT: 237 Sandy Hollow Road, Groton, CT; PIN #: 261909065371 E

The use of the cell tower and associated equipment at 237 Sandy Hollow Road, Groton, CT at this time with temporary power is acceptable to this office. A Certificate of Use will be issued upon connection of permanent power.

If you have any questions regarding the above please contact me.

Sincerely,

Kevin A. Quinn
Manager of Inspection Services

KAQ:lg



Town of Groton BUILDING/ZONING PERMIT APPLICATION

FAX MEMO
DATE: 9-9-08 FAX # 310-253
TO: Fred Garrison
FROM: [unclear]
SUBJECT: [unclear]

Please Print

(office use only)

Permit No. BPOB-380
 Fees: Bldg. 80 Zon. 10 C.O. 16-20 State 4.40 Total \$850.60
 Estimated Cost: \$80,000
 Address of Building: 237 Sandy Hollow RD
 Zone: Commercial PIN: _____ Ph. #: _____
 Owner: MCF Communications
 Address: TURKPIKE ST N. ANDOVER Ph. #: _____
 Contractor: NORTH EAST TOWERS Ph. #: 401-524-6439
 Address: 179 BRICKYARD RD, FARMINGTON CT.
 Nature of Proposed Work and Use: CELL TOWER per Submitted plans

Plans: _____ Type of Construction: _____ Size: _____
 No. of Stories: _____ No. of Rooms: 0 No. of Baths: 0
 Fireplace(s): 0 Garage: 0 Bay(s) _____ No. of Units: 0

ZPOB-185 ZONING PERMIT

(To be filled out in conjunction with a building permit involving any new structure, addition to an existing structure, or change of use.)

Flood Hazard District: _____ HDC #: _____ 25A #: _____
 Site Plan Approval #: _____ Special Zoning Permit #: _____
 Wetlands: _____ Coastal Area Management: _____
 Site Suitability #: _____ Sewer #: _____ A2 Survey: Site plan
 _____ 9-9-08
 Zoning Official Date

CERTIFICATION: I hereby certify that: I am the owner of record of the named property or that the proposed work is authorized by the owner of record and/or I have been authorized to make this application as an authorized agent, and we agree to conform to all applicable laws, codes, regulations and ordinances. All information contained within is true and accurate to the best of my knowledge and belief.

Guy Daniels 401-524-6439 # 900747
 Print Name in Ink Phone # Lic. #
[Signature] 8-17-08
 Signature (in INK) of Owner/Authorized Agent Date
[Signature] 9-9-08
 Building Official Completed Application Received Date

This permit shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance. Refunds will be subject to the refund policy.

DOCKET NO. 343 - MCF Communications bg, Inc and }
Omnipoint Communications, Inc. application for a Certificate of }
Environmental Compatibility and Public Need for the }
construction, maintenance and operation of a telecommunications }
facility located at 237 Sandy Hollow Road, Groton, Connecticut. }

Connecticut

Siting

Council

March 26, 2008

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to MCF Communications bg, Inc and Omnipoint Communications, Inc., hereinafter referred to as the Certificate Holders, for a telecommunications facility at 237 Sandy Hollow Road, Groton, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile and other entities, both public and private, but such tower shall not exceed a height of 130 feet above ground level. The height at the top of the antennas shall not exceed 130 feet above ground level.
2. The tower shall be installed 60 feet north of the proposed compound.
3. The equipment compound shall be located within a 35-foot by 50-foot fenced area.
4. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Groton for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

5. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Groton public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.
9. Any request for extension of the time period referred to in Condition 8 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Groton. Any proposed modifications to this Decision and Order shall likewise be so served.
10. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.
12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Day, the Norwich Bulletin and The Groton Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant

MCF Communications bj, Inc and Omnipoint
Communications, Inc

Its Representative

Julie Kohler, Esq.
Carrie Larson, Esq.
Cohen and Wolf, P.C
1115 Broad Street
Bridgeport, CT 06604

Intervenor

Charles E. Stevens
12 Stony Hill Drive
Mystic, CT 06355-1636

EXHIBIT 7

EME Report

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

Dish Wireless Existing Facility

Site ID: BOBOS00054A

**BOBOS00054A
237 Sandy Hollow Road
Groton, Connecticut 06340**

October 19, 2021

EBI Project Number: 6221005695

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.96%

October 19, 2021

Dish Wireless

Emissions Analysis for Site: BOBOS00054A - BOBOS00054A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **237 Sandy Hollow Road in Groton, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 237 Sandy Hollow Road in Groton, 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 107 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):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 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 AI MPE %:	2.32%	Antenna BI MPE %:	2.32%	Antenna CI MPE %:	2.32%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	2.32%
T-Mobile	3.94%
Verizon	0.31%
Metro PCS	0.39%
Site Total MPE % :	6.96%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	2.32%
Dish Wireless Sector B Total:	2.32%
Dish Wireless Sector C Total:	2.32%
Site Total MPE % :	6.96%

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	107.0	3.15	600 MHz n71	400	0.79%
Dish Wireless 1900 MHz n70	4	542.70	107.0	7.65	1900 MHz n70	1000	0.77%
Dish Wireless 2190 MHz n66	4	542.70	107.0	7.65	2190 MHz n66	1000	0.77%
						Total:	2.32%

• 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:	2.32%
Sector B:	2.32%
Sector C:	2.32%
Dish Wireless Maximum MPE % (Sector A):	2.32%
Site Total:	6.96%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **6.96%** 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 130 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT11561-A

Customer Site Name: Groton 2, CT

Carrier Name: Dish Wireless (App#: 163264, V1)

Carrier Site ID / Name: BOBOS00054A / 0

Site Location: 237 Sandy Hollow Road

Groton, Connecticut

New London County

Latitude: 41.369510

Longitude: -71.982463

Analysis Result:

Max Structural Usage: 53.6% [Pass]

Max Foundation Usage: 38.0% [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 130 ft Nudd Corporation 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	Fred. A. Nudd Corp. Monopole shaft data Dated 05-09-2008. Drawing No 208-13077-1. Monopole previous structural report prepared by FDH Engineering, Inc. Dated 06-17-2015. Project No 15BORZ1400 Rev 1.
Foundation Drawing	Monopole original foundation drawings prepared by Fred. A. Nudd Corp. Dated 05-09-2008. Drawing No 208-13077-1.
Geotechnical Report	Monopole geotechnical report prepared by FDH Engineering, Inc. Dated 03-26-2014. Project No 1424W71600.
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:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_5 = 0.16$, $S_1 = 0.058$

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	127.0	3	Ericsson Air 21 B2A/B4P - Panel	Platform w/ Hand Rails	(9) 1 5/8" (3) 1.9" Fiber	T-Mobile
2		3	Ericsson Air 21 B4A/B2P - Panel			
3		3	RFS APXVAALL24_43-U-NA20 - Panel			
4		3	Ericsson KRY 112 144/1 TMAs			
5		3	Ericsson 4449 B71 + B85 RRU's			
6	120.0	4	Commscope HBX-6513DS-A1M - Panel	Low Profile Platform (Valmont RMQP) w/ Modifications	(2) 1 5/8" Fiber	Verizon
7		2	Samsung MT6407-77A - Panel			
8		2	Samsung B2/B66A RRH-BR049 (RFV01U-D1A) RRU's			
9		2	Raycap DB-C1-12C-24AB-0Z OVP Box			

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
10	107.0	3	JMA Wireless MX08FRO665-21 Panel	Commscope MC-PK8-DSH Platform w/HRK	(1) 1.6" Hybrid	Dish Wireless
11		3	Fujitsu TA08025-B605 RRU			
12		3	Fujitsu TA08025-B604 RRU			
13		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:	53.6%	47.5%	27.5%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1981.8	20.8	48.9

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 0.7288 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 53.65% at 90.0ft

Structure: CT11561-A-SBA
Site Name: Groton 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)

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

7/9/2021



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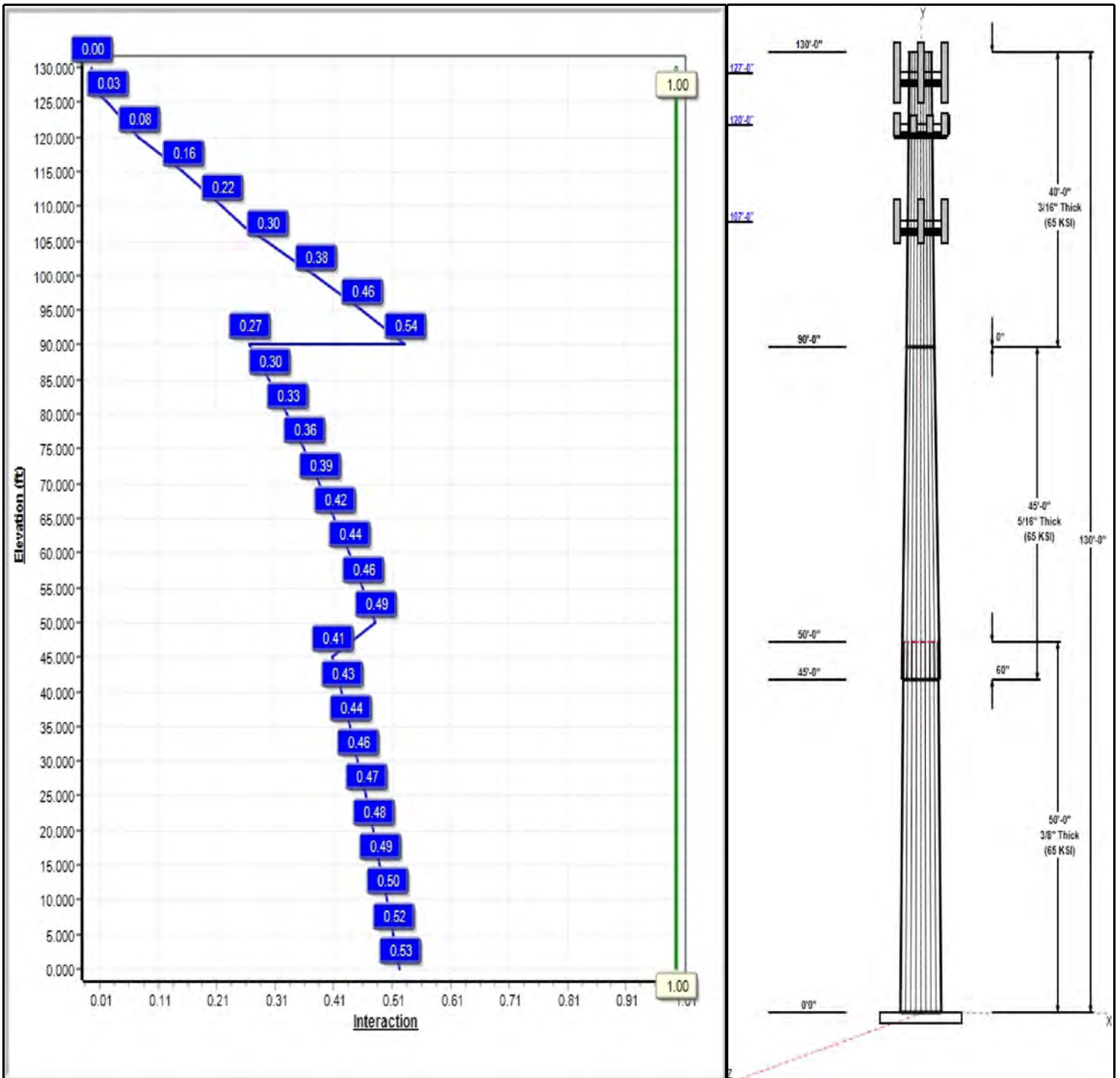
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Iterations: 22

Load Case : 1.2D + 1.6W 105 mph Wind



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Structure: CT11561-A-SBA

Type: Tapered
Site Name: Groton 2, CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18942

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	50.00	38.53	48.00	0.375		0.18942	65
2	45.00	31.58	40.10	0.313	Slip	0.18942	65
3	40.00	24.00	31.58	0.188	Butt	0.18942	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
127.00	127.00	3	Ericsson Air 21 B2A/B4P	T-Mobile
127.00	127.00	3	Ericsson Air 21 B4A/B2P	T-Mobile
127.00	127.00	3	RFS	T-Mobile
127.00	127.00	3	Ericsson KRY 112 144/1	T-Mobile
127.00	127.00	3	Ericsson 4449 B71 + B85	T-Mobile
127.00	127.00	1	Platform w/ Hand Rails	T-Mobile
120.00	120.00	4	Commscope	Verizon
120.00	120.00	2	Samsung MT6407-77A	Verizon
120.00	120.00	2	Samsung B2/B66A	Verizon
120.00	120.00	2	Raycap	Verizon
120.00	120.00	1	Low Profile Platform	Verizon
120.00	122.50	1	Support Rail Kit	Verizon
107.00	107.00	3	MX08FRO665-21	Dish Wireless
107.00	107.00	1	MC-PK8-DSH	Dish Wireless
107.00	107.00	3	TA08025-B605	Dish Wireless
107.00	107.00	3	TA08025-B604	Dish Wireless
107.00	107.00	1	RDIDC-9181-PF-48	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	127.00	Inside	1 5/8" Coax	T-Mobile
3.00	127.00	Inside	1.9" Fiber	T-Mobile
3.00	120.00	Inside	1 5/8" Fiber	Verizon
3.00	107.00	Inside	1.6" Hybrid	Dish Wireless

Anchor Bolts

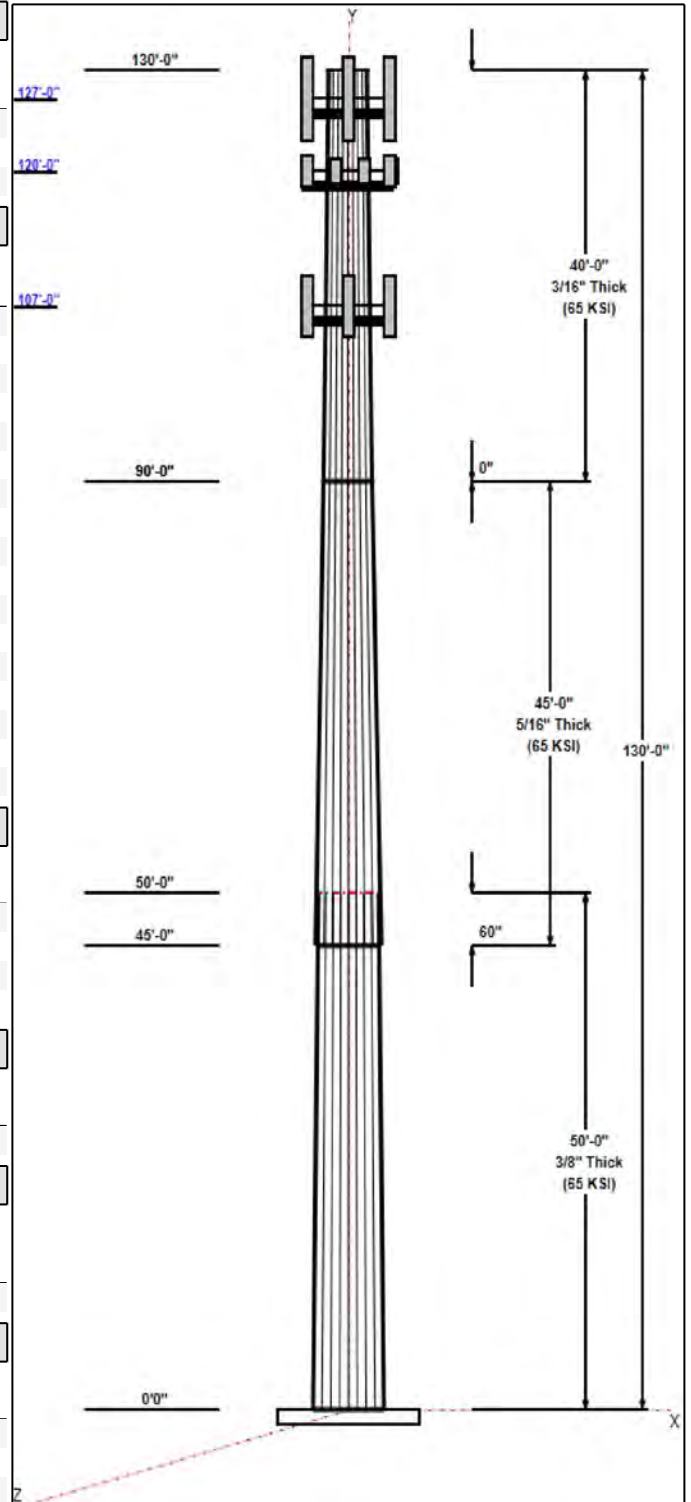
Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" A193 B7	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	60.0	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	1981.8	20.8	30.9
0.9D + 1.6W 105 mph Wind	1965.1	20.7	23.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	487.8	5.2	48.9
1.2D + 1.0E	109.8	1.0	30.9
0.9D + 1.0E	108.8	1.0	23.2
1.0D + 1.0W 60 mph Wind	402.4	4.2	25.7

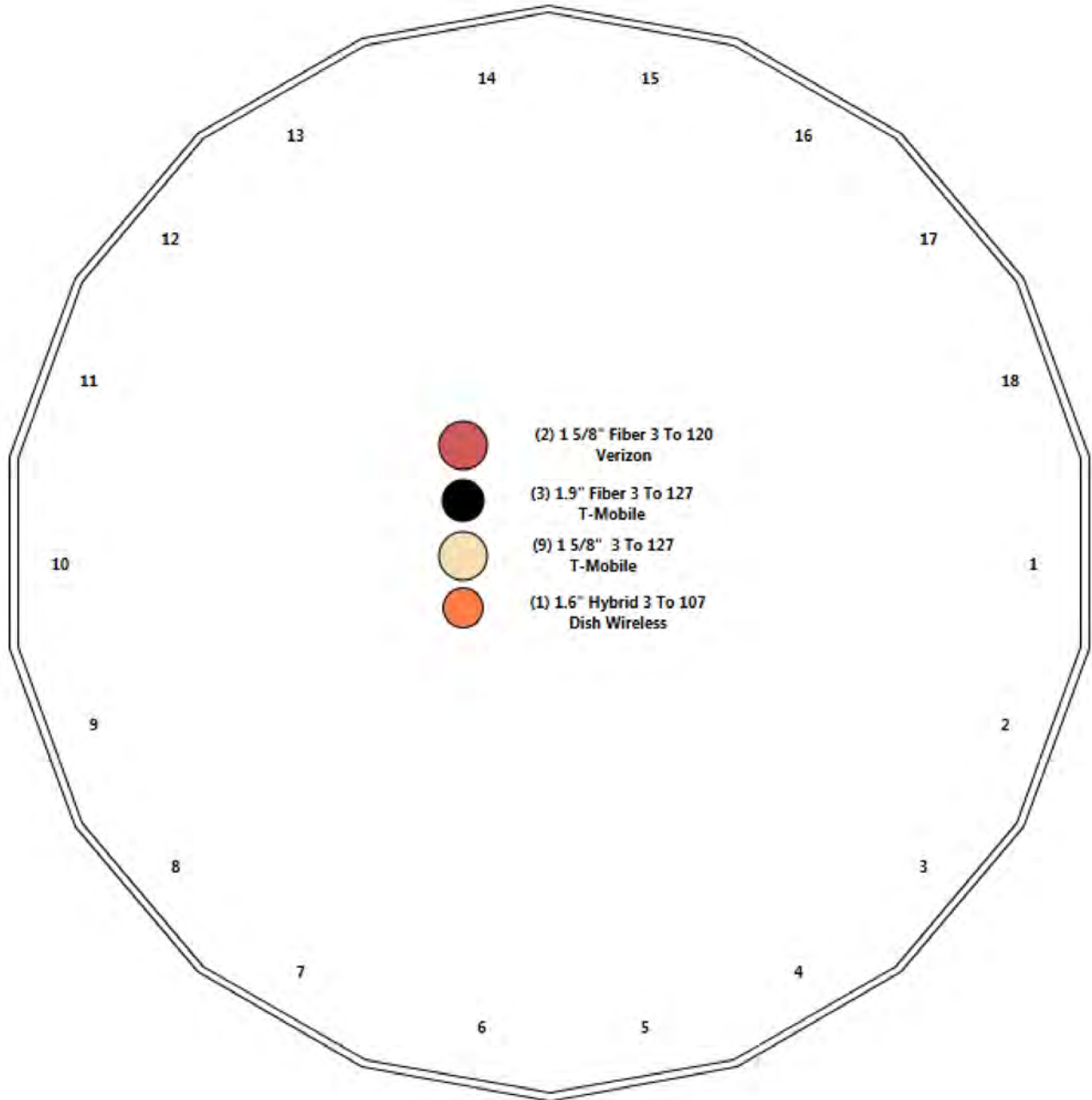


Structure: CT11561-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Groton 2, CT
Height: 130.00 (ft)

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Shaft Properties

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	50.000	0.3750	65		0.00	8,685
2	18	45.000	0.3125	65	Slip	60.00	5,396
3	18	40.000	0.1875	65	Flange	0.00	2,236
Total Shaft Weight:							16,316

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	48.00	0.00	56.68	16243.54	21.16	128.00	38.53	50.00	45.41	8352.00	16.71	102.7	0.189423
2	40.10	45.00	39.46	7893.43	21.22	128.32	31.58	90.00	31.01	3829.53	16.41	101.0	0.189423
3	31.58	90.00	18.68	2325.39	28.28	168.41	24.00	130.00	14.17	1015.22	21.16	128.0	0.189423

Load Summary

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	127.00	Ericsson Air 21 B2A/B4P	3	91.50	6.04	0.85	255.27	7.109	0.85	0.00	0.00
2	127.00	Ericsson Air 21 B4A/B2P	3	90.30	6.04	0.85	254.07	7.109	0.85	0.00	0.00
3	127.00	RFS APXVAALL24_43-U-NA20	3	122.80	20.24	0.72	542.58	22.108	0.72	0.00	0.00
4	127.00	Ericsson KRY 112 144/1 TMAs	3	11.00	0.35	0.60	21.60	0.749	0.60	0.00	0.00
5	127.00	Ericsson 4449 B71 + B85 RRU's	3	75.00	1.95	0.67	154.84	2.529	0.67	0.00	0.00
6	127.00	Platform w/ Hand Rails	1	2000.00	40.00	1.00	4059.69	60.597	1.00	0.00	0.00
7	120.00	Commscope HBX-6513DS-A1M	4	6.20	1.58	0.77	45.69	2.637	0.77	0.00	0.00
8	120.00	Samsung MT6407-77A	2	87.10	4.69	0.70	201.62	5.631	0.70	0.00	0.00
9	120.00	Samsung B2/B66A RRH-BR049	2	84.40	1.88	0.67	158.87	2.429	0.67	0.00	0.00
10	120.00	Raycap DB-C1-12C-24AB-0Z OVP	2	32.00	4.06	0.67	274.01	4.795	0.67	0.00	0.00
11	120.00	Low Profile Platform (Valmont	1	1500.00	25.00	1.00	2780.03	44.627	1.00	0.00	0.00
12	120.00	Support Rail Kit (VZWSMART-PLK1)	1	261.72	6.75	1.00	565.46	13.201	1.00	0.00	2.50
13	107.00	MX08FRO665-21	3	64.50	12.49	0.74	345.71	13.906	0.74	0.00	0.00
14	107.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3358.77	83.255	1.00	0.00	0.00
15	107.00	TA08025-B605	3	75.00	1.96	0.67	125.57	2.502	0.67	0.00	0.00
16	107.00	TA08025-B604	3	63.90	1.96	0.67	112.85	2.502	0.67	0.00	0.00
17	107.00	RDIDC-9181-PF-48	1	21.85	2.01	1.00	73.21	2.559	1.00	0.00	0.00
Totals:			39	7,724.37			17,726.32				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	127.00	(9) 1 5/8" Coax	0.00	Inside
3.00	127.00	(3) 1.9" Fiber	0.00	Inside
3.00	120.00	(2) 1 5/8" Fiber	0.00	Inside
3.00	107.00	(1) 1.6" Hybrid	0.00	Inside

Shaft Section Properties

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
0.00		0.3750	48.000	56.684	16243.5	21.16	128.00	76.5	666.5	0.0
5.00		0.3750	47.053	55.556	15293.6	20.71	125.47	77.0	640.2	954.8
10.00		0.3750	46.106	54.429	14381.4	20.27	122.95	77.6	614.4	935.6
15.00		0.3750	45.159	53.302	13506.2	19.82	120.42	78.1	589.1	916.5
20.00		0.3750	44.212	52.175	12667.3	19.38	117.90	78.6	564.3	897.3
25.00		0.3750	43.264	51.047	11863.9	18.93	115.37	79.1	540.1	878.1
30.00		0.3750	42.317	49.920	11095.1	18.49	112.85	79.7	516.4	858.9
35.00		0.3750	41.370	48.793	10360.3	18.04	110.32	80.2	493.3	839.7
40.00		0.3750	40.423	47.666	9658.7	17.60	107.79	80.7	470.6	820.6
45.00	Bot - Section 2	0.3750	39.476	46.538	8989.5	17.15	105.27	81.2	448.5	801.4
50.00	Top - Section 1	0.3125	39.154	38.524	7343.1	20.68	125.29	0.0	0.0	1445.6
55.00		0.3125	38.207	37.585	6818.9	20.15	122.26	77.7	351.5	647.5
60.00		0.3125	37.260	36.646	6320.3	19.61	119.23	78.3	334.1	631.5
65.00		0.3125	36.312	35.706	5846.6	19.08	116.20	79.0	317.1	615.5
70.00		0.3125	35.365	34.767	5397.2	18.54	113.17	79.6	300.6	599.5
75.00		0.3125	34.418	33.827	4971.4	18.01	110.14	80.2	284.5	583.5
80.00		0.3125	33.471	32.888	4568.6	17.48	107.11	80.8	268.8	567.5
85.00		0.3125	32.524	31.949	4188.2	16.94	104.08	81.5	253.6	551.6
90.00	Top - Section 2	0.3125	31.577	31.009	3829.5	16.41	101.05	82.1	238.9	535.6
90.00	Bot - Section 3	0.1875	31.577	18.680	2325.4	27.34	168.41	68.1	145.0	
95.00		0.1875	30.630	18.116	2121.2	27.39	163.36	69.2	136.4	313.0
100.00		0.1875	29.683	17.553	1929.3	26.50	158.31	70.2	128.0	303.4
105.00		0.1875	28.736	16.989	1749.3	25.61	153.26	71.3	119.9	293.8
107.00		0.1875	28.357	16.764	1680.6	25.26	151.24	71.7	116.7	114.9
110.00		0.1875	27.788	16.425	1581.0	24.72	148.21	72.3	112.1	169.4
115.00		0.1875	26.841	15.862	1423.7	23.83	143.15	73.4	104.5	274.7
120.00		0.1875	25.894	15.298	1277.3	22.94	138.10	74.4	97.2	265.1
125.00		0.1875	24.947	14.735	1141.2	22.05	133.05	75.5	90.1	255.5
127.00		0.1875	24.568	14.509	1089.7	21.69	131.03	75.9	87.4	99.5
130.00		0.1875	24.000	14.171	1015.2	21.16	128.00	76.5	83.3	146.4

16316.4

Wind Loading - Shaft

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Page: 7
	Struct Class: II	

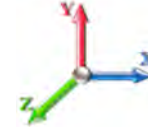


Load Case: 1.2D + 1.6W 105 mph Wind

Iterations 22

Dead Load Factor 1.20

Wind Load Factor 1.60



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	0.70	18.769	20.65	356.82	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	18.769	20.65	349.78	0.650	0.000	5.00	20.108	13.07	431.8	0.0	1145.8
10.00		1.00	0.70	18.769	20.65	342.74	0.650	0.000	5.00	19.707	12.81	423.2	0.0	1122.8
15.00		1.00	0.70	18.769	20.65	335.70	0.650	0.000	5.00	19.307	12.55	414.5	0.0	1099.8
20.00		1.00	0.70	18.769	20.65	328.66	0.650	0.000	5.00	18.906	12.29	405.9	0.0	1076.7
25.00		1.00	0.70	18.769	20.65	321.62	0.650	0.000	5.00	18.505	12.03	397.3	0.0	1053.7
30.00		1.00	0.70	18.785	20.66	314.71	0.650	0.000	5.00	18.105	11.77	389.1	0.0	1030.7
35.00		1.00	0.73	19.631	21.59	314.51	0.650	0.000	5.00	17.704	11.51	397.6	0.0	1007.7
40.00		1.00	0.76	20.394	22.43	313.23	0.650	0.000	5.00	17.303	11.25	403.7	0.0	984.7
45.00	Bot - Section 2	1.00	0.79	21.092	23.20	311.08	0.650	0.000	5.00	16.902	10.99	407.8	0.0	961.7
50.00	Top - Section 1	1.00	0.81	21.737	23.91	308.22	0.650	0.000	5.00	16.766	10.90	416.9	0.0	1734.8
55.00		1.00	0.83	22.337	24.57	309.84	0.650	0.000	5.00	16.365	10.64	418.2	0.0	776.9
60.00		1.00	0.85	22.899	25.19	305.94	0.650	0.000	5.00	15.965	10.38	418.2	0.0	757.8
65.00		1.00	0.87	23.429	25.77	301.59	0.650	0.000	5.00	15.564	10.12	417.2	0.0	738.6
70.00		1.00	0.89	23.930	26.32	296.85	0.650	0.000	5.00	15.163	9.86	415.1	0.0	719.4
75.00		1.00	0.91	24.406	26.85	291.76	0.650	0.000	5.00	14.763	9.60	412.2	0.0	700.2
80.00		1.00	0.93	24.861	27.35	286.36	0.650	0.000	5.00	14.362	9.34	408.5	0.0	681.1
85.00		1.00	0.94	25.295	27.82	280.68	0.650	0.000	5.00	13.961	9.07	404.0	0.0	661.9
90.00	Top - Section 2	1.00	0.96	25.711	28.28	274.74	0.650	0.000	5.00	13.560	8.81	398.9	0.0	642.7
95.00		1.00	0.97	26.112	28.72	268.56	0.650	0.000	5.00	13.160	8.55	393.1	0.0	375.6
100.00		1.00	0.99	26.497	29.15	262.17	0.650	0.000	5.00	12.759	8.29	386.8	0.0	364.1
105.00		1.00	1.00	26.869	29.56	255.58	0.650	0.000	5.00	12.358	8.03	379.9	0.0	352.6
107.00	Appurtenance(s)	1.00	1.01	27.014	29.72	252.89	0.650	0.000	2.00	4.831	3.14	149.3	0.0	137.8
110.00		1.00	1.02	27.229	29.95	248.81	0.650	0.000	3.00	7.126	4.63	222.0	0.0	203.3
115.00		1.00	1.03	27.577	30.33	241.86	0.650	0.000	5.00	11.557	7.51	364.6	0.0	329.6
120.00	Appurtenance(s)	1.00	1.04	27.914	30.71	234.75	0.650	0.000	5.00	11.156	7.25	356.3	0.0	318.1
125.00		1.00	1.05	28.242	31.07	227.48	0.650	0.000	5.00	10.755	6.99	347.5	0.0	306.6
127.00	Appurtenance(s)	1.00	1.06	28.370	31.21	224.54	0.650	0.000	2.00	4.190	2.72	136.0	0.0	119.4
130.00		1.00	1.07	28.560	31.42	220.08	0.650	0.000	3.00	6.165	4.01	201.4	0.0	175.7
Totals:									130.00			10,316.8		19,579.7

Discrete Appurtenance Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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	127.00	Ericsson 4449 B71 + B85	3	28.370	31.207	0.50	0.75	2.94	270.00	0.000	0.000	146.78	0.00	0.00
2	127.00	Ericsson KRY 112 144/1	3	28.370	31.207	0.45	0.75	0.47	39.60	0.000	0.000	23.59	0.00	0.00
3	127.00	RFS	3	28.370	31.207	0.54	0.75	32.79	442.08	0.000	0.000	1637.18	0.00	0.00
4	127.00	Ericsson Air 21 B4A/B2P	3	28.370	31.207	0.64	0.75	11.55	325.08	0.000	0.000	576.78	0.00	0.00
5	127.00	Ericsson Air 21 B2A/B4P	3	28.370	31.207	0.64	0.75	11.55	329.40	0.000	0.000	576.78	0.00	0.00
6	127.00	Platform w/ Hand Rails	1	28.370	31.207	1.00	1.00	40.00	2400.00	0.000	0.000	1997.25	0.00	0.00
7	120.00	Support Rail Kit	1	28.079	30.887	1.00	1.00	6.75	314.06	0.000	2.500	333.58	0.00	833.95
8	120.00	Low Profile Platform	1	27.914	30.706	1.00	1.00	25.00	1800.00	0.000	0.000	1228.22	0.00	0.00
9	120.00	Raycap	2	27.914	30.706	0.50	0.75	4.08	76.80	0.000	0.000	200.46	0.00	0.00
10	120.00	Samsung B2/B66A	2	27.914	30.706	0.50	0.75	1.89	202.56	0.000	0.000	92.82	0.00	0.00
11	120.00	Samsung MT6407-77A	2	27.914	30.706	0.52	0.75	4.92	209.04	0.000	0.000	241.94	0.00	0.00
12	120.00	Commscope	4	27.914	30.706	0.58	0.75	3.65	29.76	0.000	0.000	179.31	0.00	0.00
13	107.00	RDIDC-9181-PF-48	1	27.014	29.716	1.00	1.00	2.01	26.22	0.000	0.000	95.57	0.00	0.00
14	107.00	TA08025-B604	3	27.014	29.716	0.50	0.75	2.95	230.04	0.000	0.000	140.48	0.00	0.00
15	107.00	TA08025-B605	3	27.014	29.716	0.50	0.75	2.95	270.00	0.000	0.000	140.48	0.00	0.00
16	107.00	MC-PK8-DSH	1	27.014	29.716	1.00	1.00	37.59	2072.40	0.000	0.000	1787.23	0.00	0.00
17	107.00	MX08FRO665-21	3	27.014	29.716	0.55	0.75	20.80	232.20	0.000	0.000	988.75	0.00	0.00
Totals:									9,269.24			10,387.20		

Total Applied Force Summary

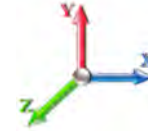
Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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		431.76	1179.24	0.00	0.00
10.00		423.15	1206.41	0.00	0.00
15.00		414.55	1183.39	0.00	0.00
20.00		405.94	1160.38	0.00	0.00
25.00		397.34	1137.36	0.00	0.00
30.00		389.06	1114.35	0.00	0.00
35.00		397.58	1091.33	0.00	0.00
40.00		403.70	1068.32	0.00	0.00
45.00		407.84	1045.30	0.00	0.00
50.00		416.92	1818.42	0.00	0.00
55.00		418.19	860.59	0.00	0.00
60.00		418.22	841.41	0.00	0.00
65.00		417.15	822.23	0.00	0.00
70.00		415.11	803.05	0.00	0.00
75.00		412.18	783.87	0.00	0.00
80.00		408.46	764.69	0.00	0.00
85.00		404.00	745.51	0.00	0.00
90.00		398.86	726.34	0.00	0.00
95.00		393.10	459.27	0.00	0.00
100.00		386.76	447.76	0.00	0.00
105.00		379.87	436.25	0.00	0.00
107.00	(11) attachments	3301.81	3002.14	0.00	0.00
110.00		221.99	249.87	0.00	0.00
115.00		364.59	407.24	0.00	0.00
120.00	(12) attachments	2632.59	3027.96	0.00	833.95
125.00		347.49	371.74	0.00	0.00
127.00	(16) attachments	5094.34	3951.64	0.00	0.00
130.00		201.42	175.66	0.00	0.00
Totals:		20,703.98	30,881.73	0.00	833.95

Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 105 mph Wind	Iterations 22
Dead Load Factor 1.20	
Wind Load Factor 1.60	

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.85	-20.75	0.00	-1981.7	0.00	1981.78	3903.36	1951.68	7638.46	3824.91	0.00	0.000	0.000	0.526
5.00	-29.61	-20.40	0.00	-1878.0	0.00	1878.04	3851.93	1925.96	7386.73	3698.85	0.09	-0.169	0.000	0.516
10.00	-28.35	-20.06	0.00	-1776.0	0.00	1776.02	3799.43	1899.71	7137.04	3573.82	0.36	-0.339	0.000	0.505
15.00	-27.11	-19.72	0.00	-1675.7	0.00	1675.72	3745.86	1872.93	6889.51	3449.88	0.81	-0.510	0.000	0.493
20.00	-25.89	-19.38	0.00	-1577.1	0.00	1577.13	3691.24	1845.62	6644.27	3327.07	1.43	-0.681	0.000	0.481
25.00	-24.71	-19.04	0.00	-1480.2	0.00	1480.24	3635.55	1817.78	6401.45	3205.48	2.24	-0.853	0.000	0.469
30.00	-23.54	-18.70	0.00	-1385.0	0.00	1385.05	3578.80	1789.40	6161.16	3085.16	3.22	-1.024	0.000	0.456
35.00	-22.40	-18.35	0.00	-1291.5	0.00	1291.54	3520.99	1760.49	5923.54	2966.17	4.39	-1.196	0.000	0.442
40.00	-21.29	-17.99	0.00	-1199.7	0.00	1199.79	3462.11	1731.06	5688.70	2848.58	5.73	-1.367	0.000	0.427
45.00	-20.20	-17.61	0.00	-1109.8	0.00	1109.85	3402.17	1701.09	5456.79	2732.45	7.26	-1.537	0.000	0.412
50.00	-18.35	-17.20	0.00	-1021.7	0.00	1021.79	2672.34	1336.17	4264.27	2135.31	8.96	-1.706	0.000	0.486
55.00	-17.45	-16.81	0.00	-935.81	0.00	935.81	2628.44	1314.22	4091.13	2048.60	10.83	-1.872	0.000	0.464
60.00	-16.57	-16.41	0.00	-851.77	0.00	851.77	2583.48	1291.74	3919.82	1962.82	12.89	-2.059	0.000	0.441
65.00	-15.71	-16.02	0.00	-769.71	0.00	769.71	2537.45	1268.73	3750.46	1878.02	15.15	-2.241	0.000	0.416
70.00	-14.88	-15.61	0.00	-689.63	0.00	689.63	2490.36	1245.18	3583.19	1794.26	17.59	-2.419	0.000	0.390
75.00	-14.07	-15.21	0.00	-611.57	0.00	611.57	2442.21	1221.10	3418.12	1711.60	20.22	-2.590	0.000	0.363
80.00	-13.29	-14.80	0.00	-535.52	0.00	535.52	2392.99	1196.50	3255.39	1630.11	23.02	-2.755	0.000	0.334
85.00	-12.52	-14.39	0.00	-461.52	0.00	461.52	2342.71	1171.36	3095.11	1549.86	25.99	-2.910	0.000	0.303
90.00	-11.78	-13.99	0.00	-389.54	0.00	389.54	2291.37	1145.69	2937.41	1470.89	29.11	-3.054	0.000	0.270
90.00	-11.78	-13.99	0.00	-389.54	0.00	389.54	1145.45	572.73	1480.17	741.18	29.11	-3.054	0.000	0.536
95.00	-11.31	-13.60	0.00	-319.61	0.00	319.61	1127.97	563.98	1413.34	707.72	32.38	-3.186	0.000	0.462
100.00	-10.84	-13.22	0.00	-251.61	0.00	251.61	1109.42	554.71	1346.59	674.30	35.82	-3.378	0.000	0.383
105.00	-10.41	-12.84	0.00	-185.49	0.00	185.49	1089.82	544.91	1280.05	640.97	39.45	-3.539	0.000	0.299
107.00	-7.61	-9.36	0.00	-159.82	0.00	159.82	1081.68	540.84	1253.52	627.69	40.94	-3.595	0.000	0.262
110.00	-7.36	-9.14	0.00	-131.73	0.00	131.73	1069.15	534.57	1213.84	607.82	43.23	-3.669	0.000	0.224
115.00	-6.96	-8.76	0.00	-86.04	0.00	86.04	1047.42	523.71	1148.08	574.89	47.12	-3.767	0.000	0.157
120.00	-4.11	-5.93	0.00	-41.42	0.00	41.42	1024.62	512.31	1082.91	542.26	51.10	-3.831	0.000	0.081
125.00	-3.76	-5.56	0.00	-11.76	0.00	11.76	1000.76	500.38	1018.44	509.98	55.13	-3.861	0.000	0.027
127.00	-0.16	-0.21	0.00	-0.64	0.00	0.64	990.92	495.46	992.88	497.18	56.75	-3.864	0.000	0.001
130.00	0.00	-0.20	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	59.18	-3.864	0.000	0.000

Wind Loading - Shaft

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Page: 11
	Struct Class: II	



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	0.70	18.769	20.65	356.82	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	18.769	20.65	349.78	0.650	0.000	5.00	20.108	13.07	431.8	0.0	859.3
10.00		1.00	0.70	18.769	20.65	342.74	0.650	0.000	5.00	19.707	12.81	423.2	0.0	842.1
15.00		1.00	0.70	18.769	20.65	335.70	0.650	0.000	5.00	19.307	12.55	414.5	0.0	824.8
20.00		1.00	0.70	18.769	20.65	328.66	0.650	0.000	5.00	18.906	12.29	405.9	0.0	807.6
25.00		1.00	0.70	18.769	20.65	321.62	0.650	0.000	5.00	18.505	12.03	397.3	0.0	790.3
30.00		1.00	0.70	18.785	20.66	314.71	0.650	0.000	5.00	18.105	11.77	389.1	0.0	773.0
35.00		1.00	0.73	19.631	21.59	314.51	0.650	0.000	5.00	17.704	11.51	397.6	0.0	755.8
40.00		1.00	0.76	20.394	22.43	313.23	0.650	0.000	5.00	17.303	11.25	403.7	0.0	738.5
45.00	Bot - Section 2	1.00	0.79	21.092	23.20	311.08	0.650	0.000	5.00	16.902	10.99	407.8	0.0	721.2
50.00	Top - Section 1	1.00	0.81	21.737	23.91	308.22	0.650	0.000	5.00	16.766	10.90	416.9	0.0	1301.1
55.00		1.00	0.83	22.337	24.57	309.84	0.650	0.000	5.00	16.365	10.64	418.2	0.0	582.7
60.00		1.00	0.85	22.899	25.19	305.94	0.650	0.000	5.00	15.965	10.38	418.2	0.0	568.3
65.00		1.00	0.87	23.429	25.77	301.59	0.650	0.000	5.00	15.564	10.12	417.2	0.0	553.9
70.00		1.00	0.89	23.930	26.32	296.85	0.650	0.000	5.00	15.163	9.86	415.1	0.0	539.6
75.00		1.00	0.91	24.406	26.85	291.76	0.650	0.000	5.00	14.763	9.60	412.2	0.0	525.2
80.00		1.00	0.93	24.861	27.35	286.36	0.650	0.000	5.00	14.362	9.34	408.5	0.0	510.8
85.00		1.00	0.94	25.295	27.82	280.68	0.650	0.000	5.00	13.961	9.07	404.0	0.0	496.4
90.00	Top - Section 2	1.00	0.96	25.711	28.28	274.74	0.650	0.000	5.00	13.560	8.81	398.9	0.0	482.0
95.00		1.00	0.97	26.112	28.72	268.56	0.650	0.000	5.00	13.160	8.55	393.1	0.0	281.7
100.00		1.00	0.99	26.497	29.15	262.17	0.650	0.000	5.00	12.759	8.29	386.8	0.0	273.1
105.00		1.00	1.00	26.869	29.56	255.58	0.650	0.000	5.00	12.358	8.03	379.9	0.0	264.5
107.00	Appurtenance(s)	1.00	1.01	27.014	29.72	252.89	0.650	0.000	2.00	4.831	3.14	149.3	0.0	103.4
110.00		1.00	1.02	27.229	29.95	248.81	0.650	0.000	3.00	7.126	4.63	222.0	0.0	152.5
115.00		1.00	1.03	27.577	30.33	241.86	0.650	0.000	5.00	11.557	7.51	364.6	0.0	247.2
120.00	Appurtenance(s)	1.00	1.04	27.914	30.71	234.75	0.650	0.000	5.00	11.156	7.25	356.3	0.0	238.6
125.00		1.00	1.05	28.242	31.07	227.48	0.650	0.000	5.00	10.755	6.99	347.5	0.0	229.9
127.00	Appurtenance(s)	1.00	1.06	28.370	31.21	224.54	0.650	0.000	2.00	4.190	2.72	136.0	0.0	89.6
130.00		1.00	1.07	28.560	31.42	220.08	0.650	0.000	3.00	6.165	4.01	201.4	0.0	131.7
Totals:									130.00			10,316.8		14,684.8

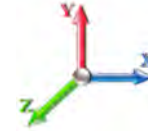
Discrete Appurtenance Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense 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

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	127.00	Ericsson 4449 B71 + B85	3	28.370	31.207	0.50	0.75	2.94	202.50	0.000	0.000	146.78	0.00	0.00
2	127.00	Ericsson KRY 112 144/1	3	28.370	31.207	0.45	0.75	0.47	29.70	0.000	0.000	23.59	0.00	0.00
3	127.00	RFS	3	28.370	31.207	0.54	0.75	32.79	331.56	0.000	0.000	1637.18	0.00	0.00
4	127.00	Ericsson Air 21 B4A/B2P	3	28.370	31.207	0.64	0.75	11.55	243.81	0.000	0.000	576.78	0.00	0.00
5	127.00	Ericsson Air 21 B2A/B4P	3	28.370	31.207	0.64	0.75	11.55	247.05	0.000	0.000	576.78	0.00	0.00
6	127.00	Platform w/ Hand Rails	1	28.370	31.207	1.00	1.00	40.00	1800.00	0.000	0.000	1997.25	0.00	0.00
7	120.00	Support Rail Kit	1	28.079	30.887	1.00	1.00	6.75	235.55	0.000	2.500	333.58	0.00	833.95
8	120.00	Low Profile Platform	1	27.914	30.706	1.00	1.00	25.00	1350.00	0.000	0.000	1228.22	0.00	0.00
9	120.00	Raycap	2	27.914	30.706	0.50	0.75	4.08	57.60	0.000	0.000	200.46	0.00	0.00
10	120.00	Samsung B2/B66A	2	27.914	30.706	0.50	0.75	1.89	151.92	0.000	0.000	92.82	0.00	0.00
11	120.00	Samsung MT6407-77A	2	27.914	30.706	0.52	0.75	4.92	156.78	0.000	0.000	241.94	0.00	0.00
12	120.00	Commscope	4	27.914	30.706	0.58	0.75	3.65	22.32	0.000	0.000	179.31	0.00	0.00
13	107.00	RDIDC-9181-PF-48	1	27.014	29.716	1.00	1.00	2.01	19.67	0.000	0.000	95.57	0.00	0.00
14	107.00	TA08025-B604	3	27.014	29.716	0.50	0.75	2.95	172.53	0.000	0.000	140.48	0.00	0.00
15	107.00	TA08025-B605	3	27.014	29.716	0.50	0.75	2.95	202.50	0.000	0.000	140.48	0.00	0.00
16	107.00	MC-PK8-DSH	1	27.014	29.716	1.00	1.00	37.59	1554.30	0.000	0.000	1787.23	0.00	0.00
17	107.00	MX08FRO665-21	3	27.014	29.716	0.55	0.75	20.80	174.15	0.000	0.000	988.75	0.00	0.00
Totals:									6,951.93			10,387.20		

Total Applied Force Summary

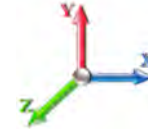
Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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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		431.76	884.43	0.00	0.00
10.00		423.15	904.81	0.00	0.00
15.00		414.55	887.54	0.00	0.00
20.00		405.94	870.28	0.00	0.00
25.00		397.34	853.02	0.00	0.00
30.00		389.06	835.76	0.00	0.00
35.00		397.58	818.50	0.00	0.00
40.00		403.70	801.24	0.00	0.00
45.00		407.84	783.98	0.00	0.00
50.00		416.92	1363.81	0.00	0.00
55.00		418.19	645.44	0.00	0.00
60.00		418.22	631.06	0.00	0.00
65.00		417.15	616.67	0.00	0.00
70.00		415.11	602.29	0.00	0.00
75.00		412.18	587.90	0.00	0.00
80.00		408.46	573.52	0.00	0.00
85.00		404.00	559.14	0.00	0.00
90.00		398.86	544.75	0.00	0.00
95.00		393.10	344.45	0.00	0.00
100.00		386.76	335.82	0.00	0.00
105.00		379.87	327.19	0.00	0.00
107.00	(11) attachments	3301.81	2251.60	0.00	0.00
110.00		221.99	187.40	0.00	0.00
115.00		364.59	305.43	0.00	0.00
120.00	(12) attachments	2632.59	2270.97	0.00	833.95
125.00		347.49	278.81	0.00	0.00
127.00	(16) attachments	5094.34	2963.73	0.00	0.00
130.00		201.42	131.75	0.00	0.00
Totals:		20,703.98	23,161.30	0.00	833.95

Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



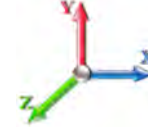
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Load Case: 0.9D + 1.6W 105 mph Wind

Iterations 22

Dead Load Factor 0.90

Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.13	-20.74	0.00	-1965.1	0.00	1965.14	3903.36	1951.68	7638.46	3824.91	0.00	0.000	0.000	0.520
5.00	-22.19	-20.37	0.00	-1861.4	0.00	1861.45	3851.93	1925.96	7386.73	3698.85	0.09	-0.168	0.000	0.509
10.00	-21.22	-20.01	0.00	-1759.6	0.00	1759.60	3799.43	1899.71	7137.04	3573.82	0.36	-0.336	0.000	0.498
15.00	-20.28	-19.64	0.00	-1659.5	0.00	1659.58	3745.86	1872.93	6889.51	3449.88	0.80	-0.505	0.000	0.487
20.00	-19.36	-19.29	0.00	-1561.3	0.00	1561.35	3691.24	1845.62	6644.27	3327.07	1.42	-0.675	0.000	0.475
25.00	-18.46	-18.93	0.00	-1464.9	0.00	1464.92	3635.55	1817.78	6401.45	3205.48	2.22	-0.845	0.000	0.462
30.00	-17.57	-18.58	0.00	-1370.2	0.00	1370.25	3578.80	1789.40	6161.16	3085.16	3.19	-1.015	0.000	0.449
35.00	-16.71	-18.22	0.00	-1277.3	0.00	1277.34	3520.99	1760.49	5923.54	2966.17	4.35	-1.184	0.000	0.435
40.00	-15.86	-17.84	0.00	-1186.2	0.00	1186.24	3462.11	1731.06	5688.70	2848.58	5.68	-1.353	0.000	0.421
45.00	-15.04	-17.46	0.00	-1097.0	0.00	1097.02	3402.17	1701.09	5456.79	2732.45	7.19	-1.522	0.000	0.406
50.00	-13.64	-17.05	0.00	-1009.7	0.00	1009.71	2672.34	1336.17	4264.27	2135.31	8.87	-1.688	0.000	0.478
55.00	-12.95	-16.65	0.00	-924.48	0.00	924.48	2628.44	1314.22	4091.13	2048.60	10.73	-1.853	0.000	0.456
60.00	-12.29	-16.25	0.00	-841.25	0.00	841.25	2583.48	1291.74	3919.82	1962.82	12.77	-2.037	0.000	0.434
65.00	-11.64	-15.84	0.00	-760.01	0.00	760.01	2537.45	1268.73	3750.46	1878.02	15.00	-2.217	0.000	0.409
70.00	-11.00	-15.44	0.00	-680.79	0.00	680.79	2490.36	1245.18	3583.19	1794.26	17.41	-2.393	0.000	0.384
75.00	-10.39	-15.03	0.00	-603.61	0.00	603.61	2442.21	1221.10	3418.12	1711.60	20.01	-2.562	0.000	0.357
80.00	-9.80	-14.62	0.00	-528.45	0.00	528.45	2392.99	1196.50	3255.39	1630.11	22.78	-2.724	0.000	0.328
85.00	-9.22	-14.22	0.00	-455.34	0.00	455.34	2342.71	1171.36	3095.11	1549.86	25.71	-2.877	0.000	0.298
90.00	-8.67	-13.81	0.00	-384.26	0.00	384.26	2291.37	1145.69	2937.41	1470.89	28.80	-3.020	0.000	0.265
90.00	-8.67	-13.81	0.00	-384.26	0.00	384.26	1145.45	572.73	1480.17	741.18	28.80	-3.020	0.000	0.527
95.00	-8.30	-13.42	0.00	-315.20	0.00	315.20	1127.97	563.98	1413.34	707.72	32.04	-3.150	0.000	0.453
100.00	-7.95	-13.04	0.00	-248.09	0.00	248.09	1109.42	554.71	1346.59	674.30	35.44	-3.338	0.000	0.376
105.00	-7.63	-12.66	0.00	-182.88	0.00	182.88	1089.82	544.91	1280.05	640.97	39.02	-3.497	0.000	0.293
107.00	-5.57	-9.23	0.00	-157.56	0.00	157.56	1081.68	540.84	1253.52	627.69	40.50	-3.553	0.000	0.256
110.00	-5.38	-9.00	0.00	-129.88	0.00	129.88	1069.15	534.57	1213.84	607.82	42.76	-3.626	0.000	0.219
115.00	-5.09	-8.63	0.00	-84.86	0.00	84.86	1047.42	523.71	1148.08	574.89	46.61	-3.722	0.000	0.153
120.00	-2.99	-5.85	0.00	-40.88	0.00	40.88	1024.62	512.31	1082.91	542.26	50.54	-3.785	0.000	0.078
125.00	-2.74	-5.49	0.00	-11.61	0.00	11.61	1000.76	500.38	1018.44	509.98	54.52	-3.815	0.000	0.026
127.00	-0.12	-0.21	0.00	-0.63	0.00	0.63	990.92	495.46	992.88	497.18	56.12	-3.818	0.000	0.001
130.00	0.00	-0.20	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	58.52	-3.818	0.000	0.000

Wind Loading - Shaft

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



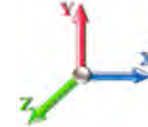
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 21

Dead Load Factor 1.20

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	21.143	25.37	118.8	375.8	1521.5
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	20.817	24.98	116.9	395.6	1518.3
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	20.462	24.55	115.0	404.2	1503.9
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	20.095	24.11	112.9	407.9	1484.6
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	19.721	23.67	110.8	408.7	1462.4
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	19.343	23.21	108.8	407.6	1438.3
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	18.961	22.75	111.4	405.2	1412.9
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	18.577	22.29	113.4	401.8	1386.5
45.00	Bot - Section 2	1.00	0.79	4.783	5.26	0.00	1.200	1.547	5.00	18.192	21.83	114.8	397.5	1359.2
50.00	Top - Section 1	1.00	0.81	4.929	5.42	0.00	1.200	1.564	5.00	18.069	21.68	117.6	398.7	2133.5
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	5.00	17.681	21.22	118.2	393.3	1170.3
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	17.292	20.75	118.5	387.5	1145.2
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	16.902	20.28	118.5	381.2	1119.8
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	16.511	19.81	118.3	374.5	1093.9
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	5.00	16.119	19.34	117.8	367.6	1067.8
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	15.728	18.87	117.0	360.3	1041.4
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	15.335	18.40	116.1	352.8	1014.7
90.00	Top - Section 2	1.00	0.96	5.830	6.41	0.00	1.200	1.658	5.00	14.942	17.93	115.0	345.1	987.8
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	5.00	14.549	17.46	113.7	337.2	712.8
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	5.00	14.155	16.99	112.3	329.1	693.2
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	5.00	13.762	16.51	110.7	320.8	673.4
107.00	Appurtenance(s)	1.00	1.01	6.126	6.74	0.00	1.200	1.687	2.00	5.394	6.47	43.6	127.0	264.8
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	3.00	7.972	9.57	65.0	187.4	390.7
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	12.973	15.57	107.1	303.7	633.3
120.00	Appurtenance(s)	1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	12.578	15.09	105.1	294.9	613.0
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	12.183	14.62	103.0	286.0	592.6
127.00	Appurtenance(s)	1.00	1.06	6.433	7.08	0.00	1.200	1.716	2.00	4.762	5.71	40.4	113.0	232.4
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	3.00	7.025	8.43	60.1	166.2	341.9
Totals:									130.00			2,940.7		29,010.2

Discrete Appurtenance Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 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	127.00	Ericsson 4449 B71 + B85	3	6.433	7.076	0.50	0.75	3.81	509.52	0.000	0.000	26.98	0.00	0.00
2	127.00	Ericsson KRY 112 144/1	3	6.433	7.076	0.45	0.75	1.01	62.11	0.000	0.000	7.15	0.00	0.00
3	127.00	RFS	3	6.433	7.076	0.54	0.75	35.81	1701.41	0.000	0.000	253.44	0.00	0.00
4	127.00	Ericsson Air 21 B4A/B2P	3	6.433	7.076	0.64	0.75	13.60	816.38	0.000	0.000	96.22	0.00	0.00
5	127.00	Ericsson Air 21 B2A/B4P	3	6.433	7.076	0.64	0.75	13.60	820.70	0.000	0.000	96.22	0.00	0.00
6	127.00	Platform w/ Hand Rails	1	6.433	7.076	1.00	1.00	60.60	3859.69	0.000	0.000	428.81	0.00	0.00
7	120.00	Support Rail Kit	1	6.367	7.004	1.00	1.00	13.20	879.53	0.000	2.500	92.46	0.00	231.15
8	120.00	Low Profile Platform	1	6.330	6.963	1.00	1.00	44.63	2780.03	0.000	0.000	310.73	0.00	0.00
9	120.00	Raycap	2	6.330	6.963	0.50	0.75	4.82	533.22	0.000	0.000	33.55	0.00	0.00
10	120.00	Samsung B2/B66A	2	6.330	6.963	0.50	0.75	2.44	351.50	0.000	0.000	17.00	0.00	0.00
11	120.00	Samsung MT6407-77A	2	6.330	6.963	0.52	0.75	5.91	395.29	0.000	0.000	41.17	0.00	0.00
12	120.00	Commscope	4	6.330	6.963	0.58	0.75	6.09	147.30	0.000	0.000	42.41	0.00	0.00
13	107.00	RDIDC-9181-PF-48	1	6.126	6.738	1.00	1.00	2.56	99.43	0.000	0.000	17.25	0.00	0.00
14	107.00	TA08025-B604	3	6.126	6.738	0.50	0.75	3.77	340.58	0.000	0.000	25.42	0.00	0.00
15	107.00	TA08025-B605	3	6.126	6.738	0.50	0.75	3.77	383.90	0.000	0.000	25.42	0.00	0.00
16	107.00	MC-PK8-DSH	1	6.126	6.738	1.00	1.00	83.25	3331.17	0.000	0.000	561.00	0.00	0.00
17	107.00	MX08FRO665-21	3	6.126	6.738	0.55	0.75	23.15	874.23	0.000	0.000	156.02	0.00	0.00
Totals:									17,885.97			2,231.23		

Total Applied Force Summary

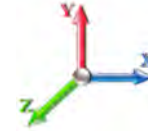
Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 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		118.78	1554.99	0.00	0.00
10.00		116.95	1601.96	0.00	0.00
15.00		114.95	1587.56	0.00	0.00
20.00		112.89	1568.23	0.00	0.00
25.00		110.79	1546.05	0.00	0.00
30.00		108.76	1521.98	0.00	0.00
35.00		111.41	1496.56	0.00	0.00
40.00		113.40	1470.10	0.00	0.00
45.00		114.85	1442.84	0.00	0.00
50.00		117.56	2217.17	0.00	0.00
55.00		118.21	1253.93	0.00	0.00
60.00		118.52	1228.88	0.00	0.00
65.00		118.53	1203.41	0.00	0.00
70.00		118.26	1177.59	0.00	0.00
75.00		117.76	1151.45	0.00	0.00
80.00		117.03	1125.03	0.00	0.00
85.00		116.11	1098.36	0.00	0.00
90.00		115.00	1071.45	0.00	0.00
95.00		113.71	796.46	0.00	0.00
100.00		112.27	776.82	0.00	0.00
105.00		110.68	757.02	0.00	0.00
107.00	(11) attachments	828.71	5327.55	0.00	0.00
110.00		64.98	437.25	0.00	0.00
115.00		107.08	710.92	0.00	0.00
120.00	(12) attachments	642.41	5777.51	0.00	231.15
125.00		102.99	657.78	0.00	0.00
127.00	(16) attachments	949.25	8028.25	0.00	0.00
130.00		60.05	341.87	0.00	0.00
Totals:		5,171.89	48,928.96	0.00	231.15

Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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

Iterations 21

Dead Load Factor 1.20
Wind Load Factor 1.00



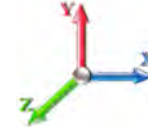
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-48.93	-5.19	0.00	-487.82	0.00	487.82	3903.36	1951.68	7638.46	3824.91	0.00	0.000	0.000	0.140
5.00	-47.37	-5.10	0.00	-461.87	0.00	461.87	3851.93	1925.96	7386.73	3698.85	0.02	-0.042	0.000	0.137
10.00	-45.76	-5.02	0.00	-436.35	0.00	436.35	3799.43	1899.71	7137.04	3573.82	0.09	-0.083	0.000	0.134
15.00	-44.17	-4.93	0.00	-411.26	0.00	411.26	3745.86	1872.93	6889.51	3449.88	0.20	-0.125	0.000	0.131
20.00	-42.60	-4.85	0.00	-386.59	0.00	386.59	3691.24	1845.62	6644.27	3327.07	0.35	-0.167	0.000	0.128
25.00	-41.05	-4.76	0.00	-362.35	0.00	362.35	3635.55	1817.78	6401.45	3205.48	0.55	-0.209	0.000	0.124
30.00	-39.53	-4.68	0.00	-338.53	0.00	338.53	3578.80	1789.40	6161.16	3085.16	0.79	-0.251	0.000	0.121
35.00	-38.03	-4.59	0.00	-315.15	0.00	315.15	3520.99	1760.49	5923.54	2966.17	1.08	-0.293	0.000	0.117
40.00	-36.55	-4.49	0.00	-292.22	0.00	292.22	3462.11	1731.06	5688.70	2848.58	1.41	-0.335	0.000	0.113
45.00	-35.11	-4.39	0.00	-269.77	0.00	269.77	3402.17	1701.09	5456.79	2732.45	1.78	-0.376	0.000	0.109
50.00	-32.89	-4.28	0.00	-247.81	0.00	247.81	2672.34	1336.17	4264.27	2135.31	2.20	-0.417	0.000	0.128
55.00	-31.63	-4.18	0.00	-226.40	0.00	226.40	2628.44	1314.22	4091.13	2048.60	2.66	-0.458	0.000	0.123
60.00	-30.40	-4.07	0.00	-205.50	0.00	205.50	2583.48	1291.74	3919.82	1962.82	3.16	-0.503	0.000	0.116
65.00	-29.20	-3.97	0.00	-185.14	0.00	185.14	2537.45	1268.73	3750.46	1878.02	3.71	-0.547	0.000	0.110
70.00	-28.02	-3.86	0.00	-165.31	0.00	165.31	2490.36	1245.18	3583.19	1794.26	4.30	-0.589	0.000	0.103
75.00	-26.87	-3.75	0.00	-146.03	0.00	146.03	2442.21	1221.10	3418.12	1711.60	4.94	-0.630	0.000	0.096
80.00	-25.74	-3.63	0.00	-127.30	0.00	127.30	2392.99	1196.50	3255.39	1630.11	5.63	-0.669	0.000	0.089
85.00	-24.64	-3.52	0.00	-109.14	0.00	109.14	2342.71	1171.36	3095.11	1549.86	6.35	-0.706	0.000	0.081
90.00	-23.57	-3.40	0.00	-91.55	0.00	91.55	2291.37	1145.69	2937.41	1470.89	7.11	-0.740	0.000	0.073
90.00	-23.57	-3.40	0.00	-91.55	0.00	91.55	1145.45	572.73	1480.17	741.18	7.11	-0.740	0.000	0.144
95.00	-22.77	-3.29	0.00	-74.53	0.00	74.53	1127.97	563.98	1413.34	707.72	7.90	-0.771	0.000	0.126
100.00	-21.99	-3.19	0.00	-58.06	0.00	58.06	1109.42	554.71	1346.59	674.30	8.73	-0.816	0.000	0.106
105.00	-21.24	-3.07	0.00	-42.13	0.00	42.13	1089.82	544.91	1280.05	640.97	9.61	-0.853	0.000	0.085
107.00	-15.92	-2.17	0.00	-35.98	0.00	35.98	1081.68	540.84	1253.52	627.69	9.97	-0.865	0.000	0.072
110.00	-15.49	-2.10	0.00	-29.47	0.00	29.47	1069.15	534.57	1213.84	607.82	10.52	-0.882	0.000	0.063
115.00	-14.78	-1.99	0.00	-18.95	0.00	18.95	1047.42	523.71	1148.08	574.89	11.45	-0.904	0.000	0.047
120.00	-9.01	-1.26	0.00	-8.77	0.00	8.77	1024.62	512.31	1082.91	542.26	12.41	-0.918	0.000	0.025
125.00	-8.35	-1.14	0.00	-2.48	0.00	2.48	1000.76	500.38	1018.44	509.98	13.37	-0.924	0.000	0.013
127.00	-0.34	-0.07	0.00	-0.20	0.00	0.20	990.92	495.46	992.88	497.18	13.76	-0.925	0.000	0.001
130.00	0.00	-0.06	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	14.34	-0.925	0.000	0.000

Seismic Segment Forces (Factored)

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Page: 19



Load Case: 1.2D + 1.0E						Iterations 20
Gust Response Factor	1.10			Sds	0.13	Ss 0.16
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.07	S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.41	SA	0.03	Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		954.82	0.00	0.04	0.02	11.74	
10.00		935.64	0.01	0.06	0.03	16.43	
15.00		916.46	0.03	0.07	0.04	18.32	
20.00		897.28	0.04	0.07	0.04	19.02	
25.00		878.10	0.07	0.07	0.04	19.28	
30.00		858.92	0.10	0.07	0.04	19.42	
35.00		839.74	0.14	0.07	0.03	19.49	
40.00		820.57	0.18	0.07	0.03	19.35	
45.00	Bot - Section 2	801.39	0.23	0.06	0.02	18.72	
50.00	Top - Section 1	1445.6	0.28	0.05	0.01	31.75	
55.00		647.46	0.34	0.04	0.01	12.16	
60.00		631.48	0.40	0.02	0.01	8.39	
65.00		615.49	0.47	-0.01	0.01	3.39	
70.00		599.51	0.55	-0.03	0.01	-2.16	
75.00		583.53	0.63	-0.06	0.02	-7.16	
80.00		567.55	0.72	-0.09	0.03	-10.52	
85.00		551.56	0.81	-0.11	0.06	-11.60	
90.00	Top - Section 2	535.58	0.91	-0.12	0.09	-10.26	
95.00		313.02	1.01	-0.11	0.14	-3.98	
100.00		303.43	1.12	-0.06	0.20	-0.53	
105.00		293.84	1.23	0.04	0.28	4.06	
107.00	Appurtenance(s)	2473.9	1.28	0.09	0.32	52.70	
110.00		169.40	1.35	0.20	0.39	5.75	
115.00		274.67	1.48	0.45	0.52	16.12	
120.00	Appurtenance(s)	2458.6	1.61	0.81	0.68	216.78	
125.00		255.49	1.75	1.31	0.89	31.30	
127.00	Appurtenance(s)	3271.3	1.80	1.56	0.98	450.17	
130.00		146.39	1.89	1.98	1.14	23.68	
Totals:		24,040.8				971.8	Total Wind: 20,704.0

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

Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E							Iterations 20
Gust Response Factor	1.10				Sds	0.13	Ss 0.16
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.07		S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.41	SA	0.03	Seismic Importance Factor	1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.88	-1.02	0.00	-109.76	0.00	109.76	3903.36	1951.68	7638.46	3824.91	0.00	0.00	0.00	0.037
5.00	-29.70	-1.01	0.00	-104.66	0.00	104.66	3851.93	1925.96	7386.73	3698.85	0.01	-0.01	0.036	
10.00	-28.50	-1.00	0.00	-99.60	0.00	99.60	3799.43	1899.71	7137.04	3573.82	0.02	-0.02	0.035	
15.00	-27.31	-0.99	0.00	-94.59	0.00	94.59	3745.86	1872.93	6889.51	3449.88	0.04	-0.03	0.035	
20.00	-26.15	-0.97	0.00	-89.65	0.00	89.65	3691.24	1845.62	6644.27	3327.07	0.08	-0.04	0.034	
25.00	-25.01	-0.96	0.00	-84.79	0.00	84.79	3635.55	1817.78	6401.45	3205.48	0.13	-0.05	0.033	
30.00	-23.90	-0.94	0.00	-80.01	0.00	80.01	3578.80	1789.40	6161.16	3085.16	0.18	-0.06	0.033	
35.00	-22.81	-0.92	0.00	-75.32	0.00	75.32	3520.99	1760.49	5923.54	2966.17	0.25	-0.07	0.032	
40.00	-21.74	-0.91	0.00	-70.70	0.00	70.70	3462.11	1731.06	5688.70	2848.58	0.32	-0.08	0.031	
45.00	-20.69	-0.89	0.00	-66.17	0.00	66.17	3402.17	1701.09	5456.79	2732.45	0.41	-0.09	0.030	
50.00	-18.88	-0.86	0.00	-61.72	0.00	61.72	2672.34	1336.17	4264.27	2135.31	0.51	-0.10	0.036	
55.00	-18.01	-0.85	0.00	-57.43	0.00	57.43	2628.44	1314.22	4091.13	2048.60	0.62	-0.11	0.035	
60.00	-17.17	-0.84	0.00	-53.19	0.00	53.19	2583.48	1291.74	3919.82	1962.82	0.74	-0.12	0.034	
65.00	-16.35	-0.84	0.00	-48.99	0.00	48.99	2537.45	1268.73	3750.46	1878.02	0.87	-0.13	0.033	
70.00	-15.55	-0.84	0.00	-44.79	0.00	44.79	2490.36	1245.18	3583.19	1794.26	1.01	-0.14	0.031	
75.00	-14.76	-0.84	0.00	-40.59	0.00	40.59	2442.21	1221.10	3418.12	1711.60	1.17	-0.15	0.030	
80.00	-14.00	-0.84	0.00	-36.38	0.00	36.38	2392.99	1196.50	3255.39	1630.11	1.33	-0.16	0.028	
85.00	-13.25	-0.84	0.00	-32.17	0.00	32.17	2342.71	1171.36	3095.11	1549.86	1.51	-0.18	0.026	
90.00	-12.53	-0.84	0.00	-27.96	0.00	27.96	2291.37	1145.69	2937.41	1470.89	1.70	-0.19	0.024	
90.00	-12.53	-0.84	0.00	-27.96	0.00	27.96	1145.45	572.73	1480.17	741.18	1.70	-0.19	0.049	
95.00	-12.07	-0.84	0.00	-23.75	0.00	23.75	1127.97	563.98	1413.34	707.72	1.90	-0.20	0.044	
100.00	-11.62	-0.84	0.00	-19.54	0.00	19.54	1109.42	554.71	1346.59	674.30	2.11	-0.21	0.039	
105.00	-11.18	-0.84	0.00	-15.31	0.00	15.31	1089.82	544.91	1280.05	640.97	2.34	-0.22	0.034	
107.00	-8.18	-0.78	0.00	-13.63	0.00	13.63	1081.68	540.84	1253.52	627.69	2.43	-0.23	0.029	
110.00	-7.93	-0.77	0.00	-11.30	0.00	11.30	1069.15	534.57	1213.84	607.82	2.58	-0.23	0.026	
115.00	-7.52	-0.75	0.00	-7.45	0.00	7.45	1047.42	523.71	1148.08	574.89	2.83	-0.24	0.020	
120.00	-4.50	-0.52	0.00	-3.68	0.00	3.68	1024.62	512.31	1082.91	542.26	3.09	-0.25	0.011	
125.00	-4.13	-0.49	0.00	-1.06	0.00	1.06	1000.76	500.38	1018.44	509.98	3.35	-0.25	0.006	
127.00	-0.18	-0.02	0.00	-0.07	0.00	0.07	990.92	495.46	992.88	497.18	3.45	-0.25	0.000	
130.00	0.00	-0.02	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	3.61	-0.25	0.000	

Seismic Segment Forces (Factored)

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E						Iterations 20
Gust Response Factor	1.10			Sds	0.13	Ss 0.16
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.07	S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.41	SA	0.03	Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		954.82	0.00	0.04	0.02	11.74	
10.00		935.64	0.01	0.06	0.03	16.43	
15.00		916.46	0.03	0.07	0.04	18.32	
20.00		897.28	0.04	0.07	0.04	19.02	
25.00		878.10	0.07	0.07	0.04	19.28	
30.00		858.92	0.10	0.07	0.04	19.42	
35.00		839.74	0.14	0.07	0.03	19.49	
40.00		820.57	0.18	0.07	0.03	19.35	
45.00	Bot - Section 2	801.39	0.23	0.06	0.02	18.72	
50.00	Top - Section 1	1445.6	0.28	0.05	0.01	31.75	
55.00		647.46	0.34	0.04	0.01	12.16	
60.00		631.48	0.40	0.02	0.01	8.39	
65.00		615.49	0.47	-0.01	0.01	3.39	
70.00		599.51	0.55	-0.03	0.01	-2.16	
75.00		583.53	0.63	-0.06	0.02	-7.16	
80.00		567.55	0.72	-0.09	0.03	-10.52	
85.00		551.56	0.81	-0.11	0.06	-11.60	
90.00	Top - Section 2	535.58	0.91	-0.12	0.09	-10.26	
95.00		313.02	1.01	-0.11	0.14	-3.98	
100.00		303.43	1.12	-0.06	0.20	-0.53	
105.00		293.84	1.23	0.04	0.28	4.06	
107.00	Appurtenance(s)	2473.9	1.28	0.09	0.32	52.70	
110.00		169.40	1.35	0.20	0.39	5.75	
115.00		274.67	1.48	0.45	0.52	16.12	
120.00	Appurtenance(s)	2458.6	1.61	0.81	0.68	216.78	
125.00		255.49	1.75	1.31	0.89	31.30	
127.00	Appurtenance(s)	3271.3	1.80	1.56	0.98	450.17	
130.00		146.39	1.89	1.98	1.14	23.68	
Totals:		24,040.8				971.8	Total Wind: 20,704.0

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

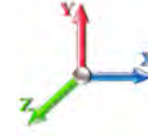
Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E						Iterations 20
Gust Response Factor	1.10		Sds	0.13		Ss 0.16
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.07	S1 0.06
Wind Load Factor	0.00	Structure Frequency (f1)	0.41	SA	0.03	Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.16	-1.02	0.00	-108.77	0.00	108.77	3903.36	1951.68	7638.46	3824.91	0.00	0.00	0.00	0.034
5.00	-22.28	-1.01	0.00	-103.67	0.00	103.67	3851.93	1925.96	7386.73	3698.85	0.00	-0.01	0.034	
10.00	-21.37	-1.00	0.00	-98.61	0.00	98.61	3799.43	1899.71	7137.04	3573.82	0.02	-0.02	0.033	
15.00	-20.48	-0.98	0.00	-93.62	0.00	93.62	3745.86	1872.93	6889.51	3449.88	0.04	-0.03	0.033	
20.00	-19.61	-0.97	0.00	-88.71	0.00	88.71	3691.24	1845.62	6644.27	3327.07	0.08	-0.04	0.032	
25.00	-18.76	-0.95	0.00	-83.87	0.00	83.87	3635.55	1817.78	6401.45	3205.48	0.12	-0.05	0.031	
30.00	-17.92	-0.93	0.00	-79.12	0.00	79.12	3578.80	1789.40	6161.16	3085.16	0.18	-0.06	0.031	
35.00	-17.11	-0.92	0.00	-74.46	0.00	74.46	3520.99	1760.49	5923.54	2966.17	0.24	-0.07	0.030	
40.00	-16.30	-0.90	0.00	-69.88	0.00	69.88	3462.11	1731.06	5688.70	2848.58	0.32	-0.08	0.029	
45.00	-15.52	-0.88	0.00	-65.39	0.00	65.39	3402.17	1701.09	5456.79	2732.45	0.41	-0.09	0.028	
50.00	-14.16	-0.85	0.00	-60.99	0.00	60.99	2672.34	1336.17	4264.27	2135.31	0.50	-0.10	0.034	
55.00	-13.51	-0.84	0.00	-56.74	0.00	56.74	2628.44	1314.22	4091.13	2048.60	0.61	-0.11	0.033	
60.00	-12.88	-0.83	0.00	-52.55	0.00	52.55	2583.48	1291.74	3919.82	1962.82	0.73	-0.12	0.032	
65.00	-12.26	-0.83	0.00	-48.39	0.00	48.39	2537.45	1268.73	3750.46	1878.02	0.86	-0.13	0.031	
70.00	-11.66	-0.83	0.00	-44.24	0.00	44.24	2490.36	1245.18	3583.19	1794.26	1.00	-0.14	0.029	
75.00	-11.07	-0.83	0.00	-40.09	0.00	40.09	2442.21	1221.10	3418.12	1711.60	1.15	-0.15	0.028	
80.00	-10.50	-0.83	0.00	-35.94	0.00	35.94	2392.99	1196.50	3255.39	1630.11	1.32	-0.16	0.026	
85.00	-9.94	-0.83	0.00	-31.78	0.00	31.78	2342.71	1171.36	3095.11	1549.86	1.50	-0.17	0.025	
90.00	-9.39	-0.83	0.00	-27.63	0.00	27.63	2291.37	1145.69	2937.41	1470.89	1.68	-0.18	0.023	
90.00	-9.39	-0.83	0.00	-27.63	0.00	27.63	1145.45	572.73	1480.17	741.18	1.68	-0.18	0.045	
95.00	-9.05	-0.83	0.00	-23.47	0.00	23.47	1127.97	563.98	1413.34	707.72	1.88	-0.19	0.041	
100.00	-8.71	-0.83	0.00	-19.31	0.00	19.31	1109.42	554.71	1346.59	674.30	2.09	-0.21	0.036	
105.00	-8.39	-0.83	0.00	-15.15	0.00	15.15	1089.82	544.91	1280.05	640.97	2.31	-0.22	0.031	
107.00	-6.14	-0.77	0.00	-13.49	0.00	13.49	1081.68	540.84	1253.52	627.69	2.41	-0.22	0.027	
110.00	-5.95	-0.76	0.00	-11.19	0.00	11.19	1069.15	534.57	1213.84	607.82	2.55	-0.23	0.024	
115.00	-5.64	-0.75	0.00	-7.37	0.00	7.37	1047.42	523.71	1148.08	574.89	2.80	-0.24	0.018	
120.00	-3.37	-0.52	0.00	-3.64	0.00	3.64	1024.62	512.31	1082.91	542.26	3.05	-0.24	0.010	
125.00	-3.09	-0.49	0.00	-1.05	0.00	1.05	1000.76	500.38	1018.44	509.98	3.31	-0.25	0.005	
127.00	-0.13	-0.02	0.00	-0.07	0.00	0.07	990.92	495.46	992.88	497.18	3.41	-0.25	0.000	
130.00	0.00	-0.02	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	3.57	-0.25	0.000	

Wind Loading - Shaft

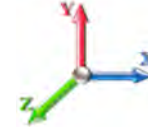
Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 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	0.70	6.129	6.74	203.90	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	199.87	0.650	0.000	5.00	20.108	13.07	88.1	0.0	954.8
10.00		1.00	0.70	6.129	6.74	195.85	0.650	0.000	5.00	19.707	12.81	86.4	0.0	935.6
15.00		1.00	0.70	6.129	6.74	191.83	0.650	0.000	5.00	19.307	12.55	84.6	0.0	916.5
20.00		1.00	0.70	6.129	6.74	187.80	0.650	0.000	5.00	18.906	12.29	82.8	0.0	897.3
25.00		1.00	0.70	6.129	6.74	183.78	0.650	0.000	5.00	18.505	12.03	81.1	0.0	878.1
30.00		1.00	0.70	6.134	6.75	179.83	0.650	0.000	5.00	18.105	11.77	79.4	0.0	858.9
35.00		1.00	0.73	6.410	7.05	179.72	0.650	0.000	5.00	17.704	11.51	81.1	0.0	839.7
40.00		1.00	0.76	6.659	7.33	178.99	0.650	0.000	5.00	17.303	11.25	82.4	0.0	820.6
45.00	Bot - Section 2	1.00	0.79	6.887	7.58	177.76	0.650	0.000	5.00	16.902	10.99	83.2	0.0	801.4
50.00	Top - Section 1	1.00	0.81	7.098	7.81	176.13	0.650	0.000	5.00	16.766	10.90	85.1	0.0	1445.6
55.00		1.00	0.83	7.294	8.02	177.05	0.650	0.000	5.00	16.365	10.64	85.3	0.0	647.5
60.00		1.00	0.85	7.477	8.22	174.82	0.650	0.000	5.00	15.965	10.38	85.4	0.0	631.5
65.00		1.00	0.87	7.650	8.42	172.34	0.650	0.000	5.00	15.564	10.12	85.1	0.0	615.5
70.00		1.00	0.89	7.814	8.60	169.63	0.650	0.000	5.00	15.163	9.86	84.7	0.0	599.5
75.00		1.00	0.91	7.969	8.77	166.72	0.650	0.000	5.00	14.763	9.60	84.1	0.0	583.5
80.00		1.00	0.93	8.118	8.93	163.63	0.650	0.000	5.00	14.362	9.34	83.4	0.0	567.5
85.00		1.00	0.94	8.260	9.09	160.39	0.650	0.000	5.00	13.961	9.07	82.4	0.0	551.6
90.00	Top - Section 2	1.00	0.96	8.396	9.24	156.99	0.650	0.000	5.00	13.560	8.81	81.4	0.0	535.6
95.00		1.00	0.97	8.526	9.38	153.47	0.650	0.000	5.00	13.160	8.55	80.2	0.0	313.0
100.00		1.00	0.99	8.652	9.52	149.81	0.650	0.000	5.00	12.759	8.29	78.9	0.0	303.4
105.00		1.00	1.00	8.774	9.65	146.05	0.650	0.000	5.00	12.358	8.03	77.5	0.0	293.8
107.00	Appurtenance(s)	1.00	1.01	8.821	9.70	144.51	0.650	0.000	2.00	4.831	3.14	30.5	0.0	114.9
110.00		1.00	1.02	8.891	9.78	142.18	0.650	0.000	3.00	7.126	4.63	45.3	0.0	169.4
115.00		1.00	1.03	9.005	9.91	138.20	0.650	0.000	5.00	11.557	7.51	74.4	0.0	274.7
120.00	Appurtenance(s)	1.00	1.04	9.115	10.03	134.14	0.650	0.000	5.00	11.156	7.25	72.7	0.0	265.1
125.00		1.00	1.05	9.222	10.14	129.99	0.650	0.000	5.00	10.755	6.99	70.9	0.0	255.5
127.00	Appurtenance(s)	1.00	1.06	9.264	10.19	128.31	0.650	0.000	2.00	4.190	2.72	27.8	0.0	99.5
130.00		1.00	1.07	9.326	10.26	125.76	0.650	0.000	3.00	6.165	4.01	41.1	0.0	146.4
Totals:									130.00			2,105.5		16,316.4

Discrete Appurtenance Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II

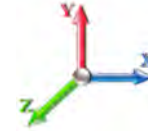


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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 21

Dead Load Factor 1.00
Wind Load Factor 1.00



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	127.00	Ericsson 4449 B71 + B85	3	9.264	10.190	0.50	0.75	2.94	225.00	0.000	0.000	29.95	0.00	0.00
2	127.00	Ericsson KRY 112 144/1	3	9.264	10.190	0.45	0.75	0.47	33.00	0.000	0.000	4.81	0.00	0.00
3	127.00	RFS	3	9.264	10.190	0.54	0.75	32.79	368.40	0.000	0.000	334.12	0.00	0.00
4	127.00	Ericsson Air 21 B4A/B2P	3	9.264	10.190	0.64	0.75	11.55	270.90	0.000	0.000	117.71	0.00	0.00
5	127.00	Ericsson Air 21 B2A/B4P	3	9.264	10.190	0.64	0.75	11.55	274.50	0.000	0.000	117.71	0.00	0.00
6	127.00	Platform w/ Hand Rails	1	9.264	10.190	1.00	1.00	40.00	2000.00	0.000	0.000	407.60	0.00	0.00
7	120.00	Support Rail Kit	1	9.169	10.086	1.00	1.00	6.75	261.72	0.000	2.500	68.08	0.00	170.19
8	120.00	Low Profile Platform	1	9.115	10.026	1.00	1.00	25.00	1500.00	0.000	0.000	250.66	0.00	0.00
9	120.00	Raycap	2	9.115	10.026	0.50	0.75	4.08	64.00	0.000	0.000	40.91	0.00	0.00
10	120.00	Samsung B2/B66A	2	9.115	10.026	0.50	0.75	1.89	168.80	0.000	0.000	18.94	0.00	0.00
11	120.00	Samsung MT6407-77A	2	9.115	10.026	0.52	0.75	4.92	174.20	0.000	0.000	49.37	0.00	0.00
12	120.00	Commscope	4	9.115	10.026	0.58	0.75	3.65	24.80	0.000	0.000	36.59	0.00	0.00
13	107.00	RDIDC-9181-PF-48	1	8.821	9.703	1.00	1.00	2.01	21.85	0.000	0.000	19.50	0.00	0.00
14	107.00	TA08025-B604	3	8.821	9.703	0.50	0.75	2.95	191.70	0.000	0.000	28.67	0.00	0.00
15	107.00	TA08025-B605	3	8.821	9.703	0.50	0.75	2.95	225.00	0.000	0.000	28.67	0.00	0.00
16	107.00	MC-PK8-DSH	1	8.821	9.703	1.00	1.00	37.59	1727.00	0.000	0.000	364.74	0.00	0.00
17	107.00	MX08FRO665-21	3	8.821	9.703	0.55	0.75	20.80	193.50	0.000	0.000	201.79	0.00	0.00

Totals: 7,724.37

2,119.84

Total Applied Force Summary

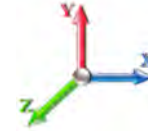
Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 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		88.11	982.70	0.00	0.00
10.00		86.36	1005.34	0.00	0.00
15.00		84.60	986.16	0.00	0.00
20.00		82.85	966.98	0.00	0.00
25.00		81.09	947.80	0.00	0.00
30.00		79.40	928.62	0.00	0.00
35.00		81.14	909.44	0.00	0.00
40.00		82.39	890.27	0.00	0.00
45.00		83.23	871.09	0.00	0.00
50.00		85.09	1515.35	0.00	0.00
55.00		85.34	717.16	0.00	0.00
60.00		85.35	701.18	0.00	0.00
65.00		85.13	685.19	0.00	0.00
70.00		84.72	669.21	0.00	0.00
75.00		84.12	653.23	0.00	0.00
80.00		83.36	637.25	0.00	0.00
85.00		82.45	621.26	0.00	0.00
90.00		81.40	605.28	0.00	0.00
95.00		80.23	382.72	0.00	0.00
100.00		78.93	373.13	0.00	0.00
105.00		77.52	363.54	0.00	0.00
107.00	(11) attachments	673.84	2501.78	0.00	0.00
110.00		45.30	208.22	0.00	0.00
115.00		74.41	339.37	0.00	0.00
120.00	(12) attachments	537.26	2523.30	0.00	170.19
125.00		70.92	309.79	0.00	0.00
127.00	(16) attachments	1039.66	3293.03	0.00	0.00
130.00		41.11	146.39	0.00	0.00
Totals:		4,225.30	25,734.78	0.00	170.19

Calculated Forces

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 21

Dead Load Factor 1.00
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.73	-4.23	0.00	-402.42	0.00	402.42	3903.36	1951.68	7638.46	3824.91	0.00	0.000	0.000	0.112
5.00	-24.75	-4.16	0.00	-381.26	0.00	381.26	3851.93	1925.96	7386.73	3698.85	0.02	-0.034	0.000	0.110
10.00	-23.74	-4.09	0.00	-360.46	0.00	360.46	3799.43	1899.71	7137.04	3573.82	0.07	-0.069	0.000	0.107
15.00	-22.75	-4.01	0.00	-340.03	0.00	340.03	3745.86	1872.93	6889.51	3449.88	0.16	-0.103	0.000	0.105
20.00	-21.78	-3.94	0.00	-319.96	0.00	319.96	3691.24	1845.62	6644.27	3327.07	0.29	-0.138	0.000	0.102
25.00	-20.83	-3.87	0.00	-300.25	0.00	300.25	3635.55	1817.78	6401.45	3205.48	0.45	-0.173	0.000	0.099
30.00	-19.90	-3.80	0.00	-280.89	0.00	280.89	3578.80	1789.40	6161.16	3085.16	0.65	-0.208	0.000	0.097
35.00	-18.99	-3.73	0.00	-261.89	0.00	261.89	3520.99	1760.49	5923.54	2966.17	0.89	-0.243	0.000	0.094
40.00	-18.10	-3.65	0.00	-243.25	0.00	243.25	3462.11	1731.06	5688.70	2848.58	1.16	-0.277	0.000	0.091
45.00	-17.23	-3.57	0.00	-224.99	0.00	224.99	3402.17	1701.09	5456.79	2732.45	1.47	-0.312	0.000	0.087
50.00	-15.71	-3.49	0.00	-207.11	0.00	207.11	2672.34	1336.17	4264.27	2135.31	1.82	-0.346	0.000	0.103
55.00	-14.99	-3.41	0.00	-189.66	0.00	189.66	2628.44	1314.22	4091.13	2048.60	2.20	-0.380	0.000	0.098
60.00	-14.29	-3.33	0.00	-172.61	0.00	172.61	2583.48	1291.74	3919.82	1962.82	2.62	-0.418	0.000	0.093
65.00	-13.60	-3.25	0.00	-155.97	0.00	155.97	2537.45	1268.73	3750.46	1878.02	3.07	-0.455	0.000	0.088
70.00	-12.93	-3.17	0.00	-139.73	0.00	139.73	2490.36	1245.18	3583.19	1794.26	3.57	-0.491	0.000	0.083
75.00	-12.28	-3.08	0.00	-123.91	0.00	123.91	2442.21	1221.10	3418.12	1711.60	4.10	-0.525	0.000	0.077
80.00	-11.64	-3.00	0.00	-108.49	0.00	108.49	2392.99	1196.50	3255.39	1630.11	4.67	-0.559	0.000	0.071
85.00	-11.02	-2.92	0.00	-93.50	0.00	93.50	2342.71	1171.36	3095.11	1549.86	5.27	-0.590	0.000	0.065
90.00	-10.41	-2.83	0.00	-78.91	0.00	78.91	2291.37	1145.69	2937.41	1470.89	5.91	-0.619	0.000	0.058
90.00	-10.41	-2.83	0.00	-78.91	0.00	78.91	1145.45	572.73	1480.17	741.18	5.91	-0.619	0.000	0.116
95.00	-10.03	-2.76	0.00	-64.74	0.00	64.74	1127.97	563.98	1413.34	707.72	6.57	-0.646	0.000	0.100
100.00	-9.65	-2.68	0.00	-50.96	0.00	50.96	1109.42	554.71	1346.59	674.30	7.27	-0.685	0.000	0.084
105.00	-9.29	-2.60	0.00	-37.57	0.00	37.57	1089.82	544.91	1280.05	640.97	8.00	-0.717	0.000	0.067
107.00	-6.80	-1.90	0.00	-32.37	0.00	32.37	1081.68	540.84	1253.52	627.69	8.31	-0.729	0.000	0.058
110.00	-6.59	-1.85	0.00	-26.68	0.00	26.68	1069.15	534.57	1213.84	607.82	8.77	-0.744	0.000	0.050
115.00	-6.25	-1.77	0.00	-17.43	0.00	17.43	1047.42	523.71	1148.08	574.89	9.56	-0.764	0.000	0.036
120.00	-3.73	-1.20	0.00	-8.40	0.00	8.40	1024.62	512.31	1082.91	542.26	10.37	-0.777	0.000	0.019
125.00	-3.42	-1.13	0.00	-2.38	0.00	2.38	1000.76	500.38	1018.44	509.98	11.18	-0.783	0.000	0.008
127.00	-0.15	-0.04	0.00	-0.13	0.00	0.13	990.92	495.46	992.88	497.18	11.51	-0.783	0.000	0.000
130.00	0.00	-0.04	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	12.00	-0.783	0.000	0.000

Final Analysis Summary

Structure: CT11561-A-SBA	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 27



Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	20.8	0.00	30.85	0.00	0.00	1981.78
0.9D + 1.6W 105 mph Wind	20.7	0.00	23.13	0.00	0.00	1965.14
1.2D + 1.0Di + 1.0Wi 50 mph Wind	5.2	0.00	48.93	0.00	0.00	487.82
1.2D + 1.0E	1.0	0.00	30.88	0.00	0.00	109.76
0.9D + 1.0E	1.0	0.00	23.16	0.00	0.00	108.77
1.0D + 1.0W 60 mph Wind	4.2	0.00	25.73	0.00	0.00	402.42

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	-11.78	-13.99	0.00	-389.54	0.00	-389.54	2291.37	1145.6	2937.41	1470.89	90.00	0.536
0.9D + 1.6W 105 mph Wind	-8.67	-13.81	0.00	-384.26	0.00	-384.26	2291.37	1145.6	2937.41	1470.89	90.00	0.527
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-23.57	-3.40	0.00	-91.55	0.00	-91.55	2291.37	1145.6	2937.41	1470.89	90.00	0.144
1.2D + 1.0E	-12.53	-0.84	0.00	-27.96	0.00	-27.96	2291.37	1145.6	2937.41	1470.89	90.00	0.049
0.9D + 1.0E	-9.39	-0.83	0.00	-27.63	0.00	-27.63	2291.37	1145.6	2937.41	1470.89	90.00	0.045
1.0D + 1.0W 60 mph Wind	-10.41	-2.83	0.00	-78.91	0.00	-78.91	2291.37	1145.6	2937.41	1470.89	90.00	0.116

Base Plate Summary

Structure: CT11561-A-SB	Code: EIA/TIA-222-G	7/9/2021
Site Name: Groton 2, CT	Exposure: B	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: C - Very Dense Soil	
Gh: 1.1	Topography: 1	Struct Class: II
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Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 50.00	Bolt Circle: 54.00
Moment (kip-ft): 2188.80	Width (in): 60.00	Number Bolts: 12.00
Axial (kip): 27.80	Style: Round	Bolt Type: 2.25" A193 B7
Shear (kip): 22.70	Polygon Sides: 0.00	Bolt Diameter (in): 2.25
Analysis (1.2D + 1.6W)	Clip Length (in): 0.00	Yield (ksi): 105.00
Moment (kip-ft): 1981.78	Effective Len (in): 23.42	Ultimate (ksi): 125.00
Axial (kip): 30.85	Moment (kip-in): 452.63	Arrangement: Radial
Shear (kip): 20.75	Allow Stress (ksi): 67.50	Cluster Dist (in): 0.00
	Applied Stress (ksi): 18.23	Start Angle (deg): 30.00
	Stress Ratio: 0.27	Compression
		Force (kip): 150.88
		Allowable (kip): 325.00
		Ratio: 0.47
		Tension
		Force (kip): 142.72
		Allowable (kip): 325.00
		Ratio: 0.45



Monopole Mat Foundation Design

Date

7/9/2021

Customer Name:	Dish Wireless	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	130
Site Number:	CT11561-A-SBA	Engineer Name:	D. Zhou
Engr. Number:	111941	Engineer Login ID:	

Foundation Info Obtained from:

Mapping Operation

Structure Type:

Monopole

Analysis or Design?

Analysis

Base Reactions (Factored):

Axial Load (Kips):	30.9	Shear Force (Kips):	20.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1981.8

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	8.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft.):	2.50
Length of Pad (ft.):	23	Width of Pad (ft.):	23

Mods required -Yes/No?: No

Final Length of pad (ft) 23.0 Final width of pad (ft): 23.0

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	42	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): 24 Qty. of Rebar in Pad (W): 24

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L): 16 Qty. of Rebar in Pad (W): 16

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

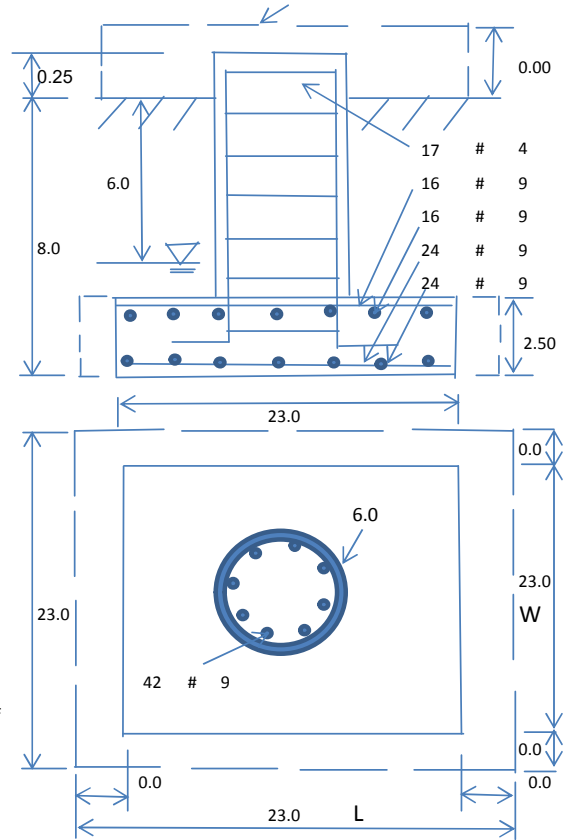
Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	47.6	Pcf
Water Table B.G.S. (ft):	6.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:		Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	Angle from Top of Pad: 30
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00	Angle from Bottm of Pad: 25

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	2753.99	Total Dry Soil Weight (Kips):	302.94
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	302.94	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	427.08	Total Dry Concrete Weight (Kips):	64.06
Total Buoyant Concrete Volume (cu. Ft.):	1058.00	Total Buoyant Concrete Weight (Kips):	92.68
Total Effective Concrete Weight (Kips):	156.74	Total Vertical Load on Base (Kips):	490.58

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2107	< Allowable Factored Soil Bearing (psf):	22500	0.09	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	5113.1	> Design Factored Momont (kips-ft):	1953	0.38	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.62				OK!



Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.00	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	5713.0	> Design Factored Moment (Mu, Kips-F	2101.4	0.37	OK!
Calculated Shear Capacity (Kips):	616.7	> Design Factored Shear (Kips):	20.8	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	2268.0	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7124.2	> Design Factored Axial Load (Pu Kips):	30.9	0.00	OK!
Moment & Axial Strength Combination:	0.37	OK! Check Tie Spacing (Design/Required):	0.5	0.5	OK!
Pier Reinforcement Ratio:	0.010	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	692.2	> One-Way Factored Shear (L-D. Kips):	192.8	0.28	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	692.2	> One-Way Factored Shear (W-D., Kips)	192.8	0.28	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	665.8	> One-Way Factored Shear (C-C, Kips):	182.6	0.27	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0033	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0033		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2772.4	> Moment at Bottom (L-Dir. K-Ft):	1003.0	0.36	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2772.4	> Moment at Bottom (W-Dir. K-Ft):	1003.0	0.36	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3894.2	> Moment at Bottom (C-C Dir. K-Ft):	1418.4	0.36	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0022	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0022		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	1866.7	> Moment at the top (L-Dir K-Ft):	295.2	0.16	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1866.7	> Moment at the top (W-Dir K-Ft):	295.2	0.16	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	2628.1	> Moment at the top (C-C Dir. K-Ft):	276.3	0.11	OK!

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

Moment transferred by punching shear:	792.7	k-ft.	Max. factored shear stress v_{u_CD} :	3.4	Psi
Max. factored shear stress v_{u_AB} :	9.3	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	9.3	Psi	Check Usage of Punching Shear Capacity:	0.05	OK!

EXHIBIT 9

Antenna Mount Analysis



July 23, 2021

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towersupport@btgrp.com

Subject: **Appurtenance Mount Analysis Report**

Carrier Designation: **Dish Wireless Co-Locate**
Site Number: BOBOS00054A
Site Name: N/A

SBA Network Services Designation: **Site Number:** CT11561-A
Site Name: Groton 2, CT
Application Number: 163264, v1

Engineering Firm Designation: **B+T Group Project Number:** 149458.003.01

Site Data: **237 Sandy Hollow Road, Groton, CT, 06340, New London County**
Latitude 41.36951°, Longitude -71.98246 °
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

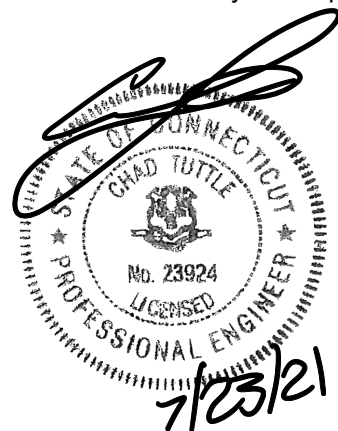
Sufficient Capacity
(Passing at 56.1%)

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 B 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: Erik Perez

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



Chad E. Tuttle, P.E.

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1) INTRODUCTION

The mount consists of Commscope platform mount (Part #MC-PK8-DSH) at 107 ft., attached to monopole at 237 Sandy Hollow Road, Groton, CT, 06340, 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 B, 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 30° 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	107	1	3	JMA Wireless MX08FRO665-21	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		--	1	Raycap RDIDC-9181-PF-48	3

Note:

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

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
Colo App	Proposed Loading	Date: 06/24/2021	SBA Network Services, LLC.
RFDS		Date: 06/09/2021	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

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

Manufacturers drawing were used to create the model.

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

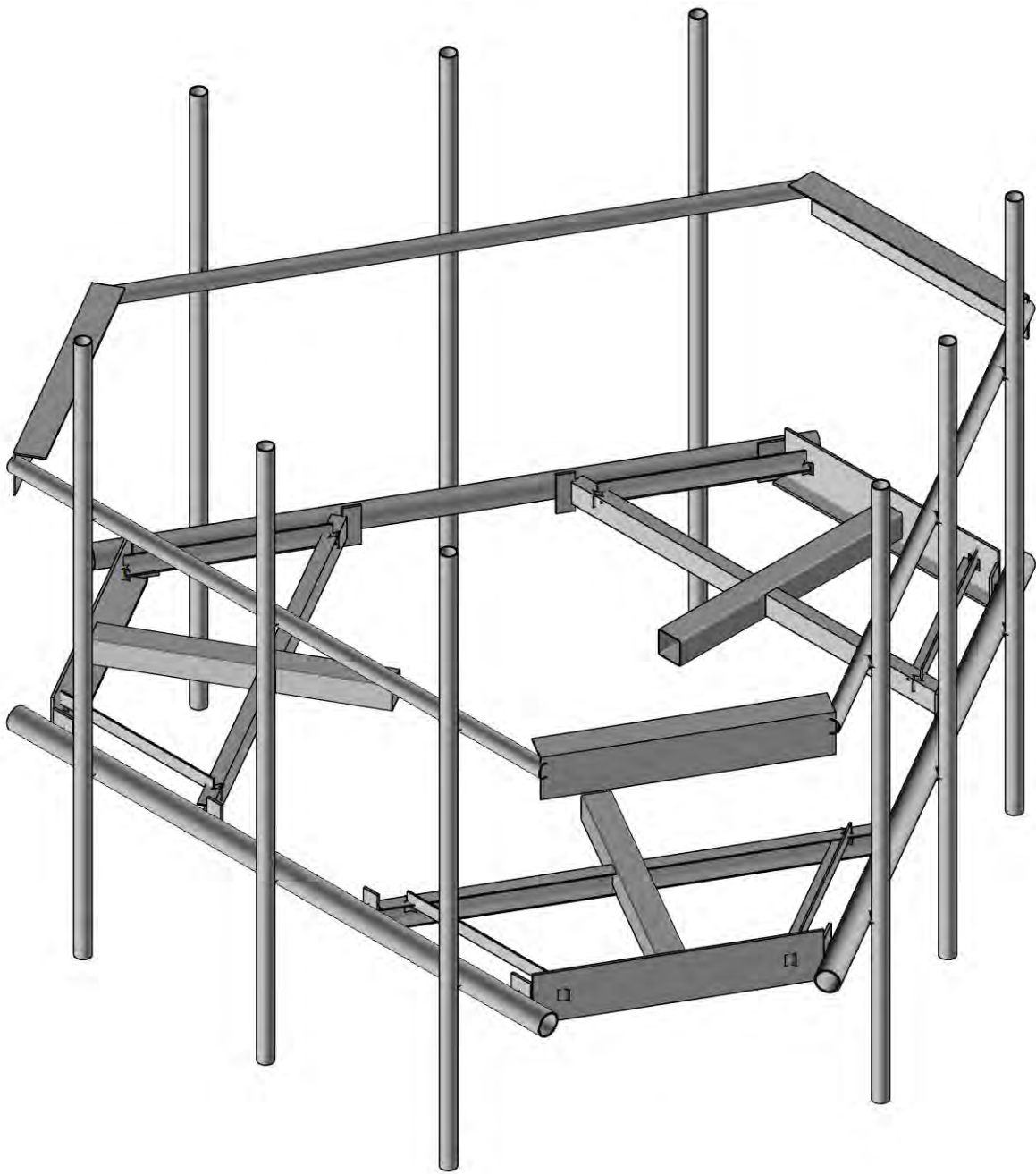
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Face Horizontals	107	10.2	Pass
-	Support Rails	107	52.8	Pass
-	Support Tubes	107	56.1	Pass
-	Support Channels	107	37.5	Pass
-	Support Angles	107	42.0	Pass
-	Mount Pipes	107	42.9	Pass
-	Connection Plates	107	20.6	Pass
-	Connection Angles	107	26.6	Pass
-	Connection Bolts	107	29.5	Pass

5) RECOMMENDATIONS

The Commscope platform mount (Part #MC-PK8-DSH) has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-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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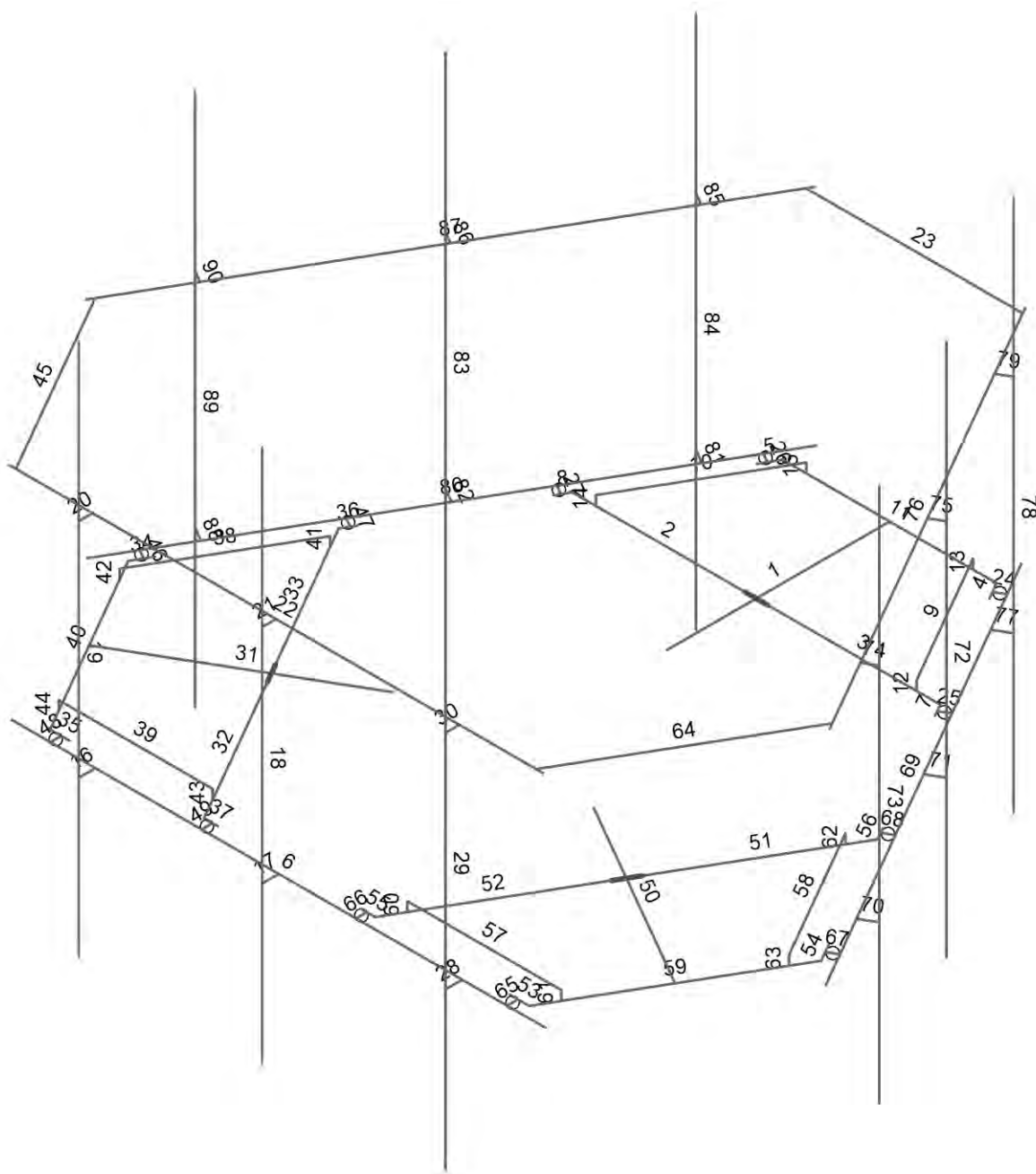
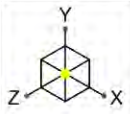
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CT11561-A - Groton 2, CT

SK-1

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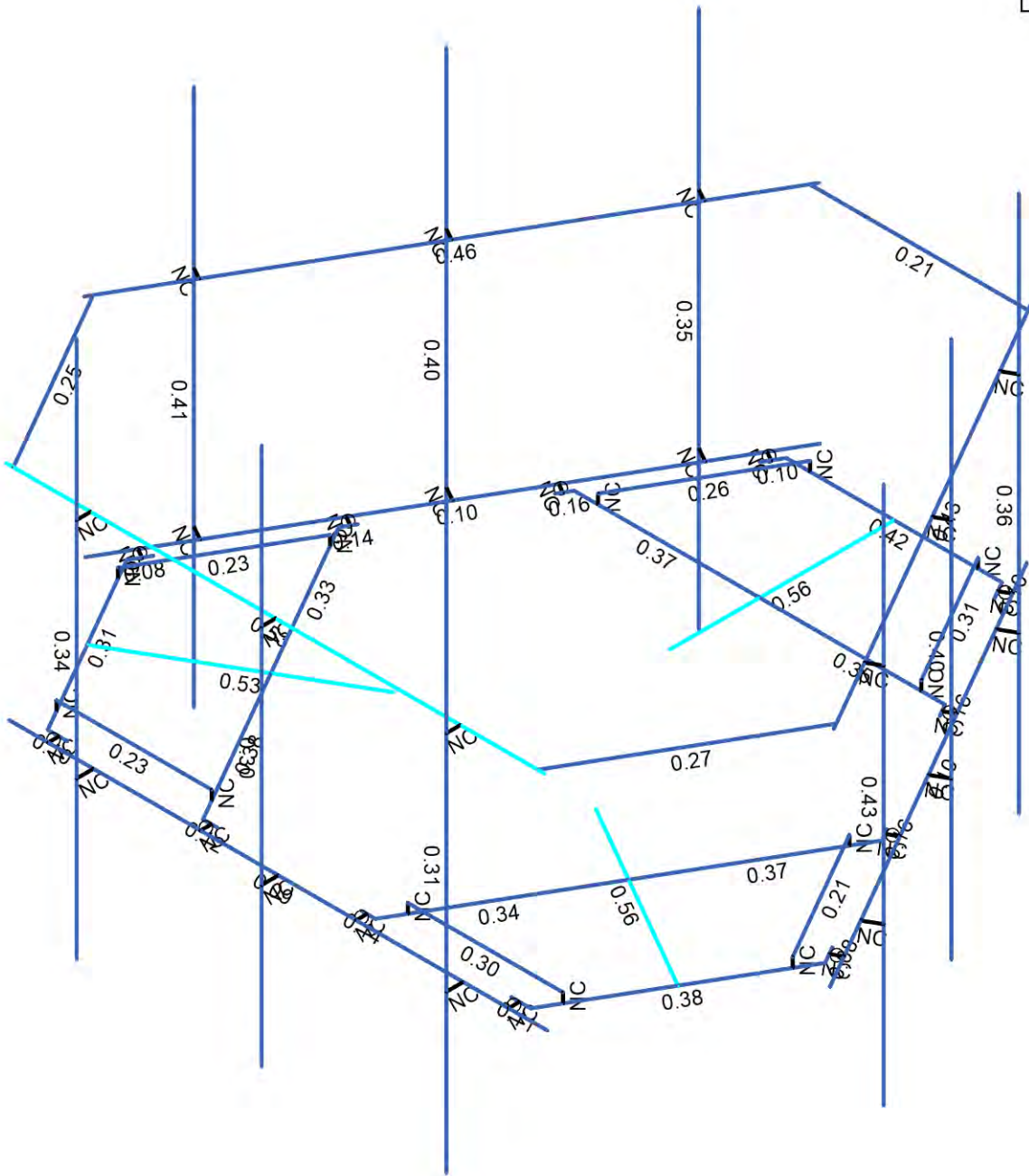
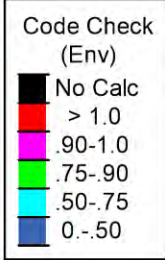
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CT11561-A - Groton 2, CT

SK-2

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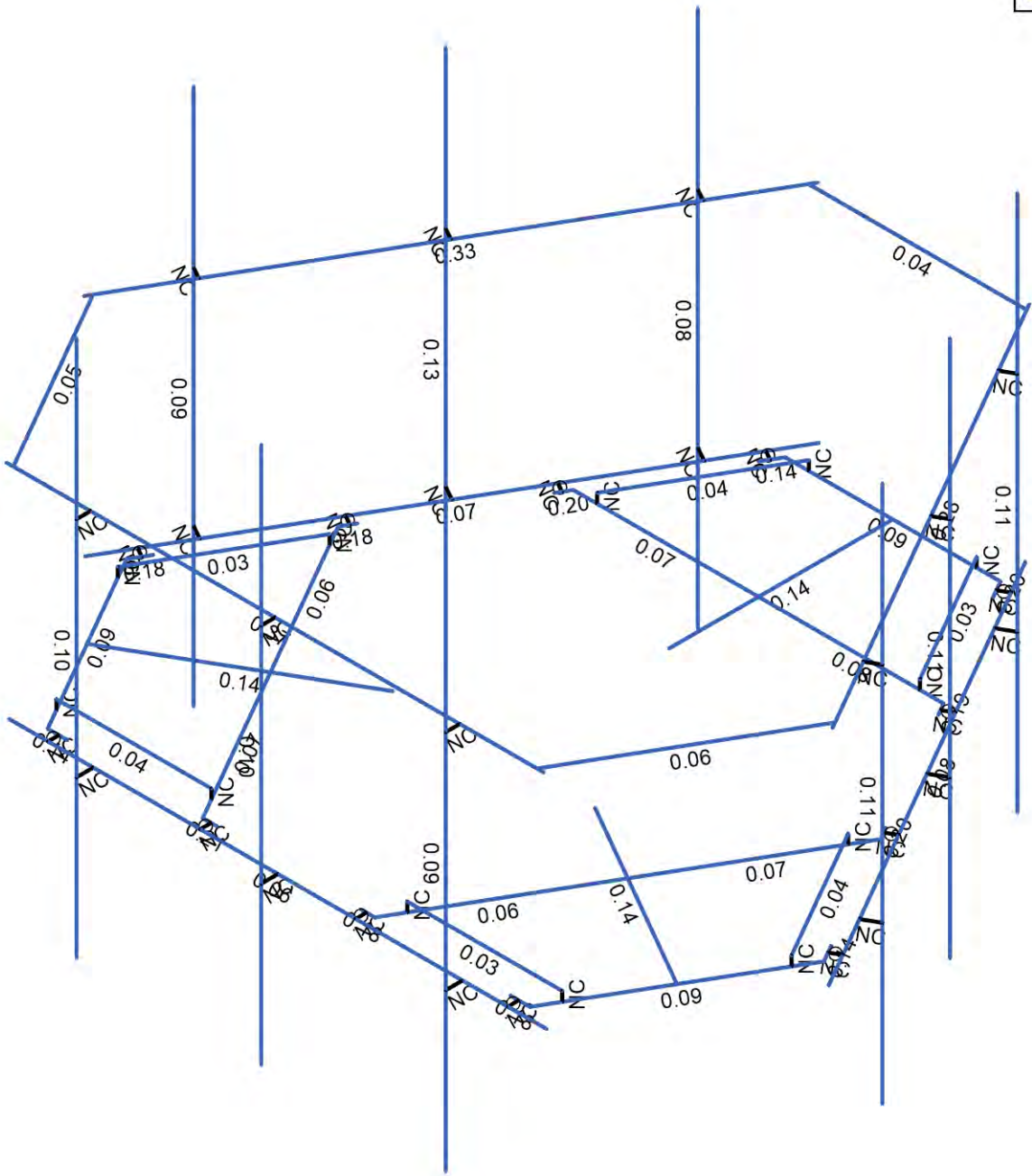
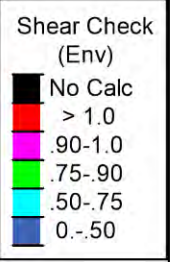


Member Code Checks Displayed (Enveloped)
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CT11561-A - Groton 2, CT

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Member Shear Checks Displayed (Enveloped)
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CT11561-A - Groton 2, CT

SK-5

Jul 22, 2021

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Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	MF-H1	PIPE 3.0	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

Member Primary Data (Continued)

Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
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
46	46	63	62	RIGID	None	None	RIGID	Typical
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
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36
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
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	



Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
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			
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		
28	BLC 1 Transient Area Loads	None				9	
29	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	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



Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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
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

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	-0.169	%15
2	29	Z	-0.169	%85
3	29	Z	-0.053	%20
4	29	Z	-0.053	%50
5	29	Z	0	0
6	89	Z	-0.169	%15
7	89	Z	-0.169	%85
8	89	Z	-0.053	%20
9	89	Z	-0.053	%50
10	89	Z	0	0
11	78	Z	-0.169	%15
12	78	Z	-0.169	%85
13	78	Z	-0.053	%20
14	78	Z	-0.053	%50
15	78	Z	0	0
16	31	Z	-0.054	%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	-0.068	%15
2	29	X	-0.068	%85
3	29	X	-0.032	%20
4	29	X	-0.028	%50
5	29	X	0	0
6	89	X	-0.068	%15
7	89	X	-0.068	%85
8	89	X	-0.032	%20
9	89	X	-0.028	%50
10	89	X	0	0
11	78	X	-0.068	%15
12	78	X	-0.068	%85
13	78	X	-0.032	%20
14	78	X	-0.028	%50
15	78	X	0	0
16	31	X	-0.03	%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	-0.046	%15
2	29	Z	-0.046	%85
3	29	Z	-0.018	%20
4	29	Z	-0.018	%50
5	29	Z	0	0
6	89	Z	-0.046	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	89	Z	-0.046	%85
8	89	Z	-0.018	%20
9	89	Z	-0.018	%50
10	89	Z	0	0
11	78	Z	-0.046	%15
12	78	Z	-0.046	%85
13	78	Z	-0.018	%20
14	78	Z	-0.018	%50
15	78	Z	0	0
16	31	Z	-0.018	%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	-0.023	%15
2	29	X	-0.023	%85
3	29	X	-0.012	%20
4	29	X	-0.011	%50
5	29	X	0	0
6	89	X	-0.023	%15
7	89	X	-0.023	%85
8	89	X	-0.012	%20
9	89	X	-0.011	%50
10	89	X	0	0
11	78	X	-0.023	%15
12	78	X	-0.023	%85
13	78	X	-0.012	%20
14	78	X	-0.011	%50
15	78	X	0	0
16	31	X	-0.012	%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	-0.014	%15
2	29	Z	-0.014	%85
3	29	Z	-0.004	%20
4	29	Z	-0.004	%50
5	29	Z	0	0
6	89	Z	-0.014	%15
7	89	Z	-0.014	%85
8	89	Z	-0.004	%20
9	89	Z	-0.004	%50
10	89	Z	0	0
11	78	Z	-0.014	%15
12	78	Z	-0.014	%85
13	78	Z	-0.004	%20

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	78	Z	-0.004	%50
15	78	Z	0	0
16	31	Z	-0.004	%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	-0.006	%15
2	29	X	-0.006	%85
3	29	X	-0.003	%20
4	29	X	-0.002	%50
5	29	X	0	0
6	89	X	-0.006	%15
7	89	X	-0.006	%85
8	89	X	-0.003	%20
9	89	X	-0.002	%50
10	89	X	0	0
11	78	X	-0.006	%15
12	78	X	-0.006	%85
13	78	X	-0.003	%20
14	78	X	-0.002	%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	-0.144	%15
2	29	Y	-0.144	%85
3	29	Y	-0.052	%20
4	29	Y	-0.05	%50
5	29	Y	0	0
6	89	Y	-0.144	%15
7	89	Y	-0.144	%85
8	89	Y	-0.052	%20
9	89	Y	-0.05	%50
10	89	Y	0	0
11	78	Y	-0.144	%15
12	78	Y	-0.144	%85
13	78	Y	-0.052	%20
14	78	Y	-0.05	%50
15	78	Y	0	0
16	31	Y	-0.052	%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	-0.013	-0.013	0	%100
2	2	Z	-0.011	-0.011	0	%100
3	3	Z	-0.011	-0.011	0	%100
4	4	Z	-0.016	-0.016	0	%100
5	5	Z	-0.016	-0.016	0	%100
6	6	Z	-0.01	-0.01	0	%100
7	7	Z	-0.016	-0.016	0	%100
8	8	Z	-0.016	-0.016	0	%100
9	9	Z	-0.007	-0.007	0	%100
10	10	Z	-0.007	-0.007	0	%100
11	11	Z	-0.022	-0.022	0	%100
12	18	Z	-0.006	-0.006	0	%100
13	19	Z	-0.006	-0.006	0	%100
14	22	Z	-0.006	-0.006	0	%100
15	23	Z	-0.02	-0.02	0	%100
16	29	Z	-0.006	-0.006	0	%100
17	31	Z	-0.013	-0.013	0	%100
18	32	Z	-0.011	-0.011	0	%100
19	33	Z	-0.011	-0.011	0	%100
20	34	Z	-0.016	-0.016	0	%100
21	35	Z	-0.016	-0.016	0	%100
22	36	Z	-0.016	-0.016	0	%100
23	37	Z	-0.016	-0.016	0	%100
24	38	Z	-0.007	-0.007	0	%100
25	39	Z	-0.007	-0.007	0	%100
26	40	Z	-0.022	-0.022	0	%100
27	45	Z	-0.02	-0.02	0	%100
28	50	Z	-0.013	-0.013	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, %)]
29	51	Z	-0.011	-0.011	0	%100
30	52	Z	-0.011	-0.011	0	%100
31	53	Z	-0.016	-0.016	0	%100
32	54	Z	-0.016	-0.016	0	%100
33	55	Z	-0.016	-0.016	0	%100
34	56	Z	-0.016	-0.016	0	%100
35	57	Z	-0.007	-0.007	0	%100
36	58	Z	-0.007	-0.007	0	%100
37	59	Z	-0.022	-0.022	0	%100
38	64	Z	-0.02	-0.02	0	%100
39	69	Z	-0.01	-0.01	0	%100
40	72	Z	-0.006	-0.006	0	%100
41	73	Z	-0.006	-0.006	0	%100
42	76	Z	-0.006	-0.006	0	%100
43	78	Z	-0.006	-0.006	0	%100
44	80	Z	-0.01	-0.01	0	%100
45	83	Z	-0.006	-0.006	0	%100
46	84	Z	-0.006	-0.006	0	%100
47	87	Z	-0.006	-0.006	0	%100
48	89	Z	-0.006	-0.006	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	-0.013	-0.013	0	%100
2	2	X	-0.011	-0.011	0	%100
3	3	X	-0.011	-0.011	0	%100
4	4	X	-0.016	-0.016	0	%100
5	5	X	-0.016	-0.016	0	%100
6	6	X	-0.01	-0.01	0	%100
7	7	X	-0.016	-0.016	0	%100
8	8	X	-0.016	-0.016	0	%100
9	9	X	-0.007	-0.007	0	%100
10	10	X	-0.007	-0.007	0	%100
11	11	X	-0.022	-0.022	0	%100
12	18	X	-0.006	-0.006	0	%100
13	19	X	-0.006	-0.006	0	%100
14	22	X	-0.006	-0.006	0	%100
15	23	X	-0.02	-0.02	0	%100
16	29	X	-0.006	-0.006	0	%100
17	31	X	-0.013	-0.013	0	%100
18	32	X	-0.011	-0.011	0	%100
19	33	X	-0.011	-0.011	0	%100
20	34	X	-0.016	-0.016	0	%100
21	35	X	-0.016	-0.016	0	%100
22	36	X	-0.016	-0.016	0	%100
23	37	X	-0.016	-0.016	0	%100
24	38	X	-0.007	-0.007	0	%100
25	39	X	-0.007	-0.007	0	%100
26	40	X	-0.022	-0.022	0	%100
27	45	X	-0.02	-0.02	0	%100
28	50	X	-0.013	-0.013	0	%100
29	51	X	-0.011	-0.011	0	%100
30	52	X	-0.011	-0.011	0	%100
31	53	X	-0.016	-0.016	0	%100
32	54	X	-0.016	-0.016	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, %)]
33	55	X	-0.016	-0.016	0	%100
34	56	X	-0.016	-0.016	0	%100
35	57	X	-0.007	-0.007	0	%100
36	58	X	-0.007	-0.007	0	%100
37	59	X	-0.022	-0.022	0	%100
38	64	X	-0.02	-0.02	0	%100
39	69	X	-0.01	-0.01	0	%100
40	72	X	-0.006	-0.006	0	%100
41	73	X	-0.006	-0.006	0	%100
42	76	X	-0.006	-0.006	0	%100
43	78	X	-0.006	-0.006	0	%100
44	80	X	-0.01	-0.01	0	%100
45	83	X	-0.006	-0.006	0	%100
46	84	X	-0.006	-0.006	0	%100
47	87	X	-0.006	-0.006	0	%100
48	89	X	-0.006	-0.006	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	-0.006	-0.006	0	%100
2	2	Z	-0.006	-0.006	0	%100
3	3	Z	-0.006	-0.006	0	%100
4	4	Z	-0.011	-0.011	0	%100
5	5	Z	-0.011	-0.011	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.014	-0.014	0	%100
8	8	Z	-0.014	-0.014	0	%100
9	9	Z	-0.005	-0.005	0	%100
10	10	Z	-0.005	-0.005	0	%100
11	11	Z	-0.008	-0.008	0	%100
12	18	Z	-0.002	-0.002	0	%100
13	19	Z	-0.002	-0.002	0	%100
14	22	Z	-0.002	-0.002	0	%100
15	23	Z	-0.007	-0.007	0	%100
16	29	Z	-0.002	-0.002	0	%100
17	31	Z	-0.006	-0.006	0	%100
18	32	Z	-0.006	-0.006	0	%100
19	33	Z	-0.006	-0.006	0	%100
20	34	Z	-0.011	-0.011	0	%100
21	35	Z	-0.011	-0.011	0	%100
22	36	Z	-0.014	-0.014	0	%100
23	37	Z	-0.014	-0.014	0	%100
24	38	Z	-0.005	-0.005	0	%100
25	39	Z	-0.005	-0.005	0	%100
26	40	Z	-0.008	-0.008	0	%100
27	45	Z	-0.007	-0.007	0	%100
28	50	Z	-0.006	-0.006	0	%100
29	51	Z	-0.006	-0.006	0	%100
30	52	Z	-0.006	-0.006	0	%100
31	53	Z	-0.011	-0.011	0	%100
32	54	Z	-0.011	-0.011	0	%100
33	55	Z	-0.014	-0.014	0	%100
34	56	Z	-0.014	-0.014	0	%100
35	57	Z	-0.005	-0.005	0	%100
36	58	Z	-0.005	-0.005	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, %)]
37	59	Z	-0.008	-0.008	0	%100
38	64	Z	-0.007	-0.007	0	%100
39	69	Z	-0.002	-0.002	0	%100
40	72	Z	-0.002	-0.002	0	%100
41	73	Z	-0.002	-0.002	0	%100
42	76	Z	-0.002	-0.002	0	%100
43	78	Z	-0.002	-0.002	0	%100
44	80	Z	-0.002	-0.002	0	%100
45	83	Z	-0.002	-0.002	0	%100
46	84	Z	-0.002	-0.002	0	%100
47	87	Z	-0.002	-0.002	0	%100
48	89	Z	-0.002	-0.002	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	-0.006	-0.006	0	%100
2	2	X	-0.006	-0.006	0	%100
3	3	X	-0.006	-0.006	0	%100
4	4	X	-0.011	-0.011	0	%100
5	5	X	-0.011	-0.011	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.014	-0.014	0	%100
8	8	X	-0.014	-0.014	0	%100
9	9	X	-0.005	-0.005	0	%100
10	10	X	-0.005	-0.005	0	%100
11	11	X	-0.008	-0.008	0	%100
12	18	X	-0.002	-0.002	0	%100
13	19	X	-0.002	-0.002	0	%100
14	22	X	-0.002	-0.002	0	%100
15	23	X	-0.007	-0.007	0	%100
16	29	X	-0.002	-0.002	0	%100
17	31	X	-0.006	-0.006	0	%100
18	32	X	-0.006	-0.006	0	%100
19	33	X	-0.006	-0.006	0	%100
20	34	X	-0.011	-0.011	0	%100
21	35	X	-0.011	-0.011	0	%100
22	36	X	-0.014	-0.014	0	%100
23	37	X	-0.014	-0.014	0	%100
24	38	X	-0.005	-0.005	0	%100
25	39	X	-0.005	-0.005	0	%100
26	40	X	-0.008	-0.008	0	%100
27	45	X	-0.007	-0.007	0	%100
28	50	X	-0.006	-0.006	0	%100
29	51	X	-0.006	-0.006	0	%100
30	52	X	-0.006	-0.006	0	%100
31	53	X	-0.011	-0.011	0	%100
32	54	X	-0.011	-0.011	0	%100
33	55	X	-0.014	-0.014	0	%100
34	56	X	-0.014	-0.014	0	%100
35	57	X	-0.005	-0.005	0	%100
36	58	X	-0.005	-0.005	0	%100
37	59	X	-0.008	-0.008	0	%100
38	64	X	-0.007	-0.007	0	%100
39	69	X	-0.002	-0.002	0	%100
40	72	X	-0.002	-0.002	0	%100



Company : B+T Group
 Designer : KR
 Job Number : 149458.003.01
 Model Name : CT11561-A - Groton 2, CT

7/22/2021
 8:04:23 PM
 Checked By : _____

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, %)]
41	73	X	-0.002	-0.002	0	%100
42	76	X	-0.002	-0.002	0	%100
43	78	X	-0.002	-0.002	0	%100
44	80	X	-0.002	-0.002	0	%100
45	83	X	-0.002	-0.002	0	%100
46	84	X	-0.002	-0.002	0	%100
47	87	X	-0.002	-0.002	0	%100
48	89	X	-0.002	-0.002	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	-0.0009	-0.0009	0	%100
3	3	Z	-0.0009	-0.0009	0	%100
4	4	Z	-0.001	-0.001	0	%100
5	5	Z	-0.001	-0.001	0	%100
6	6	Z	-0.0004	-0.0004	0	%100
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.001	-0.001	0	%100
9	9	Z	-0.0006	-0.0006	0	%100
10	10	Z	-0.0006	-0.0006	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	-0.0009	-0.0009	0	%100
19	33	Z	-0.0009	-0.0009	0	%100
20	34	Z	-0.001	-0.001	0	%100
21	35	Z	-0.001	-0.001	0	%100
22	36	Z	-0.001	-0.001	0	%100
23	37	Z	-0.001	-0.001	0	%100
24	38	Z	-0.0006	-0.0006	0	%100
25	39	Z	-0.0006	-0.0006	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	-0.0009	-0.0009	0	%100
30	52	Z	-0.0009	-0.0009	0	%100
31	53	Z	-0.001	-0.001	0	%100
32	54	Z	-0.001	-0.001	0	%100
33	55	Z	-0.001	-0.001	0	%100
34	56	Z	-0.001	-0.001	0	%100
35	57	Z	-0.0006	-0.0006	0	%100
36	58	Z	-0.0006	-0.0006	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	64	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0004	-0.0004	0	%100
40	72	Z	-0.0003	-0.0003	0	%100
41	73	Z	-0.0003	-0.0003	0	%100
42	76	Z	-0.0003	-0.0003	0	%100
43	78	Z	-0.0003	-0.0003	0	%100
44	80	Z	-0.0004	-0.0004	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, %)]
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	-0.0009	-0.0009	0	%100
3	3	X	-0.0009	-0.0009	0	%100
4	4	X	-0.001	-0.001	0	%100
5	5	X	-0.001	-0.001	0	%100
6	6	X	-0.0004	-0.0004	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.001	-0.001	0	%100
9	9	X	-0.0006	-0.0006	0	%100
10	10	X	-0.0006	-0.0006	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	-0.0009	-0.0009	0	%100
19	33	X	-0.0009	-0.0009	0	%100
20	34	X	-0.001	-0.001	0	%100
21	35	X	-0.001	-0.001	0	%100
22	36	X	-0.001	-0.001	0	%100
23	37	X	-0.001	-0.001	0	%100
24	38	X	-0.0006	-0.0006	0	%100
25	39	X	-0.0006	-0.0006	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	-0.0009	-0.0009	0	%100
30	52	X	-0.0009	-0.0009	0	%100
31	53	X	-0.001	-0.001	0	%100
32	54	X	-0.001	-0.001	0	%100
33	55	X	-0.001	-0.001	0	%100
34	56	X	-0.001	-0.001	0	%100
35	57	X	-0.0006	-0.0006	0	%100
36	58	X	-0.0006	-0.0006	0	%100
37	59	X	-0.002	-0.002	0	%100
38	64	X	-0.002	-0.002	0	%100
39	69	X	-0.0004	-0.0004	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	-0.0004	-0.0004	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	-0.015	-0.015	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	-0.009	-0.009	0	%100
10	10	Y	-0.009	-0.009	0	%100
11	11	Y	-0.02	-0.02	0	%100
12	18	Y	-0.008	-0.008	0	%100
13	19	Y	-0.008	-0.008	0	%100
14	22	Y	-0.008	-0.008	0	%100
15	23	Y	-0.02	-0.02	0	%100
16	29	Y	-0.008	-0.008	0	%100
17	31	Y	-0.015	-0.015	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	-0.009	-0.009	0	%100
25	39	Y	-0.009	-0.009	0	%100
26	40	Y	-0.02	-0.02	0	%100
27	45	Y	-0.02	-0.02	0	%100
28	50	Y	-0.015	-0.015	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	-0.009	-0.009	0	%100
36	58	Y	-0.009	-0.009	0	%100
37	59	Y	-0.02	-0.02	0	%100
38	64	Y	-0.02	-0.02	0	%100
39	69	Y	-0.011	-0.011	0	%100
40	72	Y	-0.008	-0.008	0	%100
41	73	Y	-0.008	-0.008	0	%100
42	76	Y	-0.008	-0.008	0	%100
43	78	Y	-0.008	-0.008	0	%100
44	80	Y	-0.011	-0.011	0	%100
45	83	Y	-0.008	-0.008	0	%100
46	84	Y	-0.008	-0.008	0	%100
47	87	Y	-0.008	-0.008	0	%100
48	89	Y	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads)

Member	Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	10	Y	-0.02	-0.026	1.27	2.309
2	57	Y	-0.014	-0.02	0	2.078
3	58	Y	0.0006163	-0.016	0	1.155

Member Distributed Loads (BLC 28 : 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, %)]
4	58	Y	-0.016	-0.035	1.155 2.309
5	38	Y	-0.035	-0.016	0 1.155
6	38	Y	-0.016	0.0006163	1.155 2.309
7	39	Y	-0.018	-0.016	0.231 2.309
8	9	Y	-0.014	-0.016	0 2.078
9	10	Y	-0.014	-0.02	0.231 1.27

Member Distributed Loads (BLC 29 : 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	-0.028	-0.013	0 1.155
2	38	Y	-0.013	0.0004965	1.155 2.309
3	39	Y	-0.014	-0.013	0.231 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	-0.011	-0.016	0 2.078
8	58	Y	0.0004931	-0.013	0 1.155
9	58	Y	-0.013	-0.028	1.155 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	104	101	102	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	104	101	102	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*s ² /ft, k*s ² *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*s ² /ft, k*s ² *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*s ² /ft, k*s ² *ft)]
1	46	L	Y	-0.5
2	127	L	Y	-0.5



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

Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s ² /ft, k*s ² *ft)]
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	1.264	5	1.986	38	1.501	2	4.154	14	1.269	11	0.473	85
2 min	-1.268	23	-0.528	8	-1.598	20	-1.748	8	-1.272	17	-0.263	55
3 53 max	1.263	5	2.034	42	1.645	14	0.592	13	1.613	3	0.902	12
4 min	-1.343	23	-0.261	12	-1.592	8	-1.749	42	-1.613	21	-3.654	42
5 82 max	1.19	17	1.95	46	1.803	14	0.657	3	1.628	7	3.292	46
6 min	-1.107	11	-0.289	4	-1.76	8	-2.276	45	-1.631	25	-0.971	4
7 Totals: max	3.706	5	5.444	44	4.937	2						
8 min	-3.706	23	1.589	2	-4.937	20						

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

Member	Shape	Code Check	Loc [ft]	LC	Shear	Check	Loc [ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1 1	HSS4X4X2	0.561	0	25	0.137	0	y	49	70.173	73.278	8.24	8.24	1.945	H1-1b	
2 2	C3.38x2.06x.188	0.375	2.592	39	0.066	0.351	y	41	38.433	43.394	1.694	4.483	1.636	H1-1b	
3 3	C3.38x2.06x.188	0.348	0	25	0.077	2.241	z	20	38.433	43.394	1.694	4.483	1.591	H1-1b	
4 4	PL3/8"x6	0.098	0.164	19	0.198	0	y	14	68.856	72.9	0.57	9.113	2.764	H1-1b	
5 5	PL3/8"x6	0.1	0	15	0.139	0	y	50	68.856	72.9	0.57	9.113	1.966	H1-1b	
6 6	PIPE 3.0	0.088	2.833	21	0.056	4	y	17	46.291	65.205	5.749	5.749	1.736	H1-1b	
7 7	PL3/8"x6	0.164	0.208	20	0.185	0.208	y	38	70.733	72.9	0.57	9.113	1.37	H1-1b	
8 8	PL3/8"x6	0.159	0	25	0.205	0	y	39	70.733	72.9	0.57	9.113	2.903	H1-1b	
9 9	L2x2x4	0.31	0	20	0.031	2.309	y	59	23.349	30.586	0.691	1.577	1.5	H2-1	
10 10	L2x2x4	0.262	2.309	20	0.041	2.309	y	40	23.349	30.586	0.691	1.577	1.5	H2-1	
11 11	L7.63x2.5x6	0.42	1.604	8	0.088	1.604	y	75	73.845	118.523	1.798	13.721	1.242	H2-1	
12 18	PIPE 2.0	0.304	5.583	17	0.098	5.583	y	18	14.916	32.13	1.872	1.872	3	H1-1b	
13 19	PIPE 2.0	0.336	2.333	22	0.102	5.583	y	21	14.916	32.13	1.872	1.872	3	H1-1b	
14 22	PIPE 2.0	0.528	6.75	14	0.368	7.833	y	14	14.916	32.13	1.872	1.872	2.587	H3-6	
15 23	L6.63x4.33x.25	0.213	3.25	6	0.042	3.25	z	24	49.975	86.751	2.311	6.976	1.5	H2-1	
16 29	PIPE 2.0	0.308	5.583	18	0.095	5.583	y	20	14.916	32.13	1.872	1.872	3	H1-1b	
17 31	HSS4X4X2	0.529	0	19	0.14	0	y	41	70.173	73.278	8.24	8.24	1.983	H1-1b	
18 32	C3.38x2.06x.188	0.375	2.592	43	0.067	0.351	y	45	38.433	43.394	1.694	4.483	1.636	H1-1b	
19 33	C3.38x2.06x.188	0.33	0	45	0.064	2.241	y	60	38.433	43.394	1.703	4.483	1.645	H1-1b	
20 34	PL3/8"x6	0.076	0.164	22	0.179	0	y	79	68.856	72.9	0.57	9.113	2.51	H1-1b	
21 35	PL3/8"x6	0.101	0	19	0.138	0	y	54	68.856	72.9	0.57	9.113	1.842	H1-1b	
22 36	PL3/8"x6	0.14	0.208	19	0.184	0.208	y	42	70.733	72.9	0.57	9.113	2.531	H1-1b	
23 37	PL3/8"x6	0.125	0	17	0.206	0	y	43	70.733	72.9	0.57	9.113	2.99	H1-1b	
24 38	L2x2x4	0.232	0	23	0.031	0	y	51	23.349	30.586	0.691	1.577	1.5	H2-1	
25 39	L2x2x4	0.228	2.309	25	0.041	0	y	44	23.349	30.586	0.691	1.577	1.5	H2-1	
26 40	L7.63x2.5x6	0.31	1.604	12	0.088	1.604	y	80	73.845	118.523	1.798	13.801	1.26	H2-1	
27 45	L6.63x4.33x.25	0.251	0	2	0.045	0	y	15	49.975	86.751	2.311	6.976	1.5	H2-1	
28 50	HSS4X4X2	0.559	0	21	0.139	0	y	45	70.173	73.278	8.24	8.24	1.944	H1-1b	
29 51	C3.38x2.06x.188	0.366	2.592	47	0.067	0.351	y	49	38.433	43.394	1.694	4.483	1.634	H1-1b	
30 52	C3.38x2.06x.188	0.343	0	21	0.065	2.241	z	15	38.433	43.394	1.694	4.483	1.592	H1-1b	
31 53	PL3/8"x6	0.11	0.164	15	0.181	0	y	82	68.856	72.9	0.57	9.113	2.633	H1-1b	
32 54	PL3/8"x6	0.078	0	23	0.137	0	y	57	68.856	72.9	0.57	9.113	1.837	H1-1b	
33 55	PL3/8"x6	0.137	0.085	14	0.183	0.208	y	45	70.733	72.9	0.57	9.113	1.459	H1-1b	
34 56	PL3/8"x6	0.162	0	21	0.204	0	y	47	70.733	72.9	0.57	9.113	2.886	H1-1b	
35 57	L2x2x4	0.304	0	15	0.031	2.309	y	55	23.349	30.586	0.691	1.577	1.5	H2-1	
36 58	L2x2x4	0.214	2.309	16	0.041	2.309	y	48	23.349	30.586	0.691	1.577	1.5	H2-1	
37 59	L7.63x2.5x6	0.378	1.604	3	0.087	1.604	y	83	73.845	118.523	1.798	14.12	1.333	H2-1	
38 64	L6.63x4.33x.25	0.266	3.25	2	0.056	3.25	z	20	49.975	86.751	2.311	6.976	1.5	H2-1	



Company : B+T Group
 Designer : KR
 Job Number : 149458.003.01
 Model Name : CT11561-A - Groton 2, CT

7/22/2021
 8:04:23 PM
 Checked By : _____

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
39	69	PIPE 3.0	0.102	4	14	0.076	4	21	46.291	65.205	5.749	5.749	1.675	H1-1b
40	72	PIPE 2.0	0.4	5.583	21	0.107	5.583	21	14.916	32.13	1.872	1.872	3	H1-1b
41	73	PIPE 2.0	0.429	2.333	14	0.105	5.583	25	14.916	32.13	1.872	1.872	3	H1-1b
42	76	PIPE 2.0	0.429	1.25	25	0.283	1.25	25	14.916	32.13	1.872	1.872	2.249	H3-6
43	78	PIPE 2.0	0.359	5.583	21	0.109	5.583	14	14.916	32.13	1.872	1.872	3	H1-1b
44	80	PIPE 3.0	0.099	4	14	0.072	2.917	25	46.291	65.205	5.749	5.749	1.467	H1-1b
45	83	PIPE 2.0	0.395	5.583	25	0.129	5.583	14	14.916	32.13	1.872	1.872	3	H1-1b
46	84	PIPE 2.0	0.345	5.583	19	0.076	5.583	17	14.916	32.13	1.872	1.872	3	H1-1b
47	87	PIPE 2.0	0.461	6.75	21	0.326	7.833	21	14.916	32.13	1.872	1.872	2.575	H3-6
48	89	PIPE 2.0	0.412	5.583	14	0.085	5.583	18	14.916	32.13	1.872	1.872	3	H1-1b

APPENDIX B

(Additional Calculations)

PROJECT			
SUBJECT	Platform Mount Analysis		
DATE	07/22/21	PAGE	1 OF 1



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

B+T GRP

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.501	k
Vertical Shear	:	1.986	k
Horizontal Shear	:	1.264	k
Torsion	:	0.473	k.ft
Moment from Horizontal Forces	:	1.269	k.ft
Moment from Vertical Forces	:	4.154	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in ²
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.35	k
Force from Horz. Moment	:	2.30	k
Force from Vert. Moment	:	7.52	k
Shear Load / Bolt	:	0.59	k
Tension Load / Bolt	:	0.38	k
Resultant from Moments / Bolt	:	3.93	k

Bolt Checks

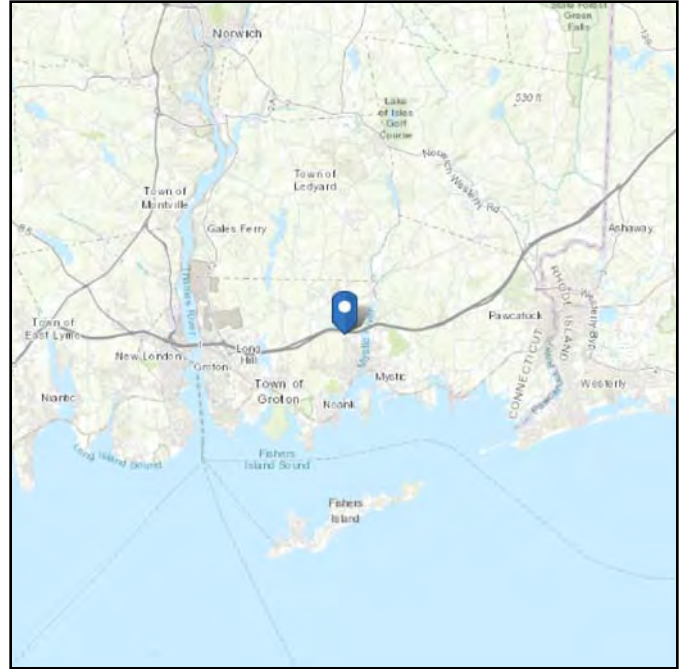
Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	20.79%		OKAY
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	8.72%		OKAY
Unity Check, Combined	:	29.51%		OKAY
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	1.70%		OKAY

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 107.83 ft (NAVD 88)
Latitude: 41.3695
Longitude: -71.9825

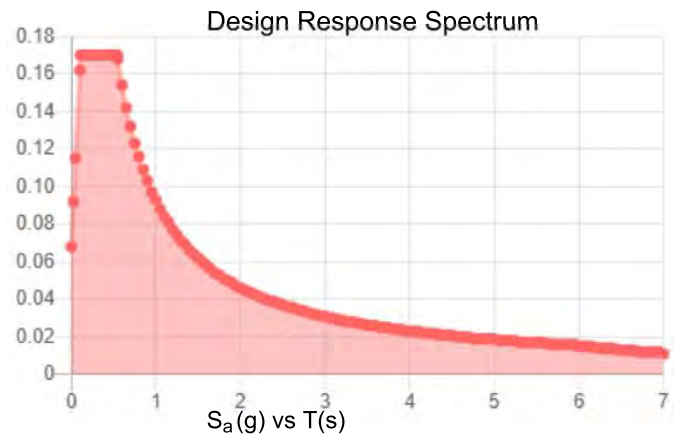
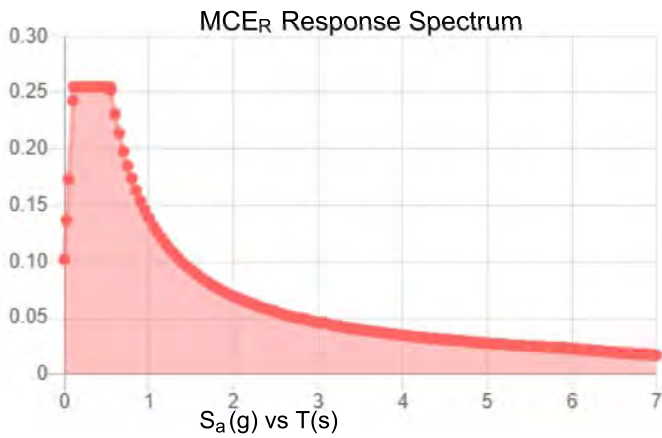


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.16	S_{DS} :	0.17
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.079
S_{MS} :	0.255	PGA _M :	0.127
S_{M1} :	0.139	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu Jul 22 2021

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Thu Jul 22 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

EXHIBIT 10

Construction Drawings



DISH Wireless L.L.C. SITE ID:

BOBOS00054A

DISH Wireless L.L.C. SITE ADDRESS:

**237 SANDY HOLLOW RD
GROTON, CT 06340**



By Stephen Roth at 2:48:02 PM, 8/27/2021

NOTE:
THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION REMOVAL AND/OR REPLACEMENT OF THE TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR 1.61000 (B)(7).

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 FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER: MYSTIC RIVER AMBULANCE ASSOC
 ADDRESS: P.O. BOX 64
 W MYSTIC, CT 06388

TOWER TYPE: MONOPOLE

TOWER CO SITE ID: CT11561-A

TOWER APP NUMBER: 163264

COUNTY: NEW LONDON

LATITUDE (NAD 83): 41° 22' 10.2" N
 41.36951044 N

LONGITUDE (NAD 83): 71° 58' 56.9" W
 71.98246322 W

ZONING JURISDICTION: CT SITING COUNCIL

ZONING DISTRICT: RS-20

PARCEL NUMBER: 261909065371

OCCUPANCY GROUP: U

CONSTRUCTION TYPE: II-B

POWER COMPANY: CONNECTICUT LIGHT & POWER

TELEPHONE COMPANY: XFINITY

PROJECT DIRECTORY

APPLICANT: DISH Wireless L.L.C.
 5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120

TOWER OWNER: SBA COMMUNICATIONS 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: JAVIER SOTO
 JAVIER.SOTO@DISH.COM

RF ENGINEER: ARVIN SEBASTIAN
 ARVIN.SEBASTIAN@DISH.COM



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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



8/12/21

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

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

DRAWN BY: RMC
 CHECKED BY: RMC
 APPROVED BY: MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	7/27/21	ISSUED FOR REVIEW
0	8/12/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149458.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

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



DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:
 CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT TAKE I-91 S, CT-2 E AND I-395 S TO CT-32 S IN WATERFORD. TAKE EXIT 5 FROM I-395 S CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON. USE THE RIGHT 2 LANES TO MERGE WITH I-91 S TOWARD HARTFORD. USE THE LEFT LANE TO TAKE EXIT 30 TO MERGE WITH I-84 E. TAKE EXIT 55 FOR CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E AND CONTINUE ONTO CT-2 E. KEEP LEFT AT THE Y JUNCTION TO STAY ON CT-2 E. FOLLOW SIGNS FOR 2 E TAKE EXIT 28S FOR I-395 S/CT-2A S TOWARD NEW HAVEN, MERGE WITH CT-2A E/I-395 S CONTINUE TO FOLLOW I-395 S. USE THE LEFT LANE TO TAKE EXIT 5 TO MERGE WITH CT-32 S TOWARD NEW LONDON, GET ON I-95 N/US-1 N IN NEW LONDON, MERGE WITH CT-32 S USE THE RIGHT LANE TO MERGE WITH I-95 N/US-1 N VIA THE RAMP TO GROTON/PROVIDENCE. FOLLOW I-95 N TO STATE HWY 614 IN GROTON. TAKE EXIT 89 FROM I-95 N MERGE WITH I-95 N/US-1 N CONTINUE TO FOLLOW I-95 N KEEP RIGHT TO STAY ON I-95 N. TAKE EXIT 89 FOR ALLYN STREET CONTINUE ON STATE HWY 614. DRIVE TO SANDY HOLLOW RD, TURN RIGHT ONTO STATE HWY 614 (SIGNS FOR MYSTIC) TURN RIGHT ONTO SANDY HOLLOW RD. ARRIVE AT BOBOS00054A.

VICINITY MAP



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.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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



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

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TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
RMC	RMC	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	7/27/21	ISSUED FOR REVIEW
0	8/12/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149458.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

SHEET TITLE
SITE SURVEY

SHEET NUMBER

LS1

Sandy Hollow Road

Public - Asphalt Pavement

N 90°00'00" W (514.65' Dd. & Used)
(Basis of Bearing)

N 90°00'00" W 134.52'

S 01°57'19" W
(14.75' Dd. & Used)

P.O.C.-EASEMENTS

20' Access & Utility Easement

4,498 Square Feet
0.1033 Acres

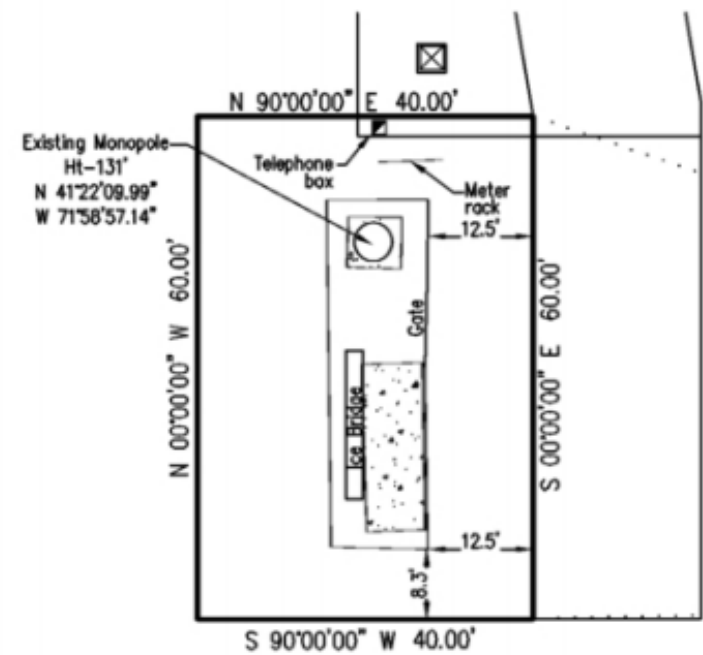
Parent Parcel

Mystic River Ambulance Association
Book 518 page 656
APN: 261909065371

Lease Area

2,400 Square Feet
0.055 Acres
~ See Detail ~

(12) (15)
ELECTRIC DISTRIBUTION
EASEMENT
MAP No. S28-75



Lease Area Detail
1" = 20'



N 01°57'19" E 279.94'
(278.15' Dd.)

Allyn Street
Public - Asphalt Pavement

S 89°17'48" W 360.98'
(356.40' Dd.)

N 89°17'48" E 82.55' Mad.
Drill Hole Fd. & Used

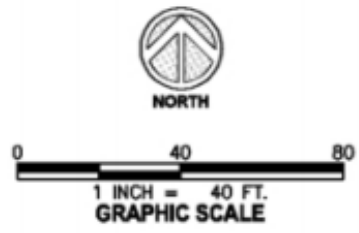
S 86°59'01" E
(80.38' Dd. & Used)

S 86°02'15" E
42.02'
(40.02' Dd.)
Iron Pipe Fd. & Used

Now or Formerly:
Linda W. & Pamela C. Miller
Book 653 Page 593
APN: 261909064020

Now or Formerly
Allison Johnson
Book 1041 Page 1046
APN: 261909056920

Now or Formerly
Charles E. & Marilyn H. Stevens
Book 557 Page 368
APN: 261909067044



AS-BUILT SURVEY
237 Sandy Hollow Road
Groton, CT 06355
Site ID# CT11561-A Site Name: Groton 2, CT

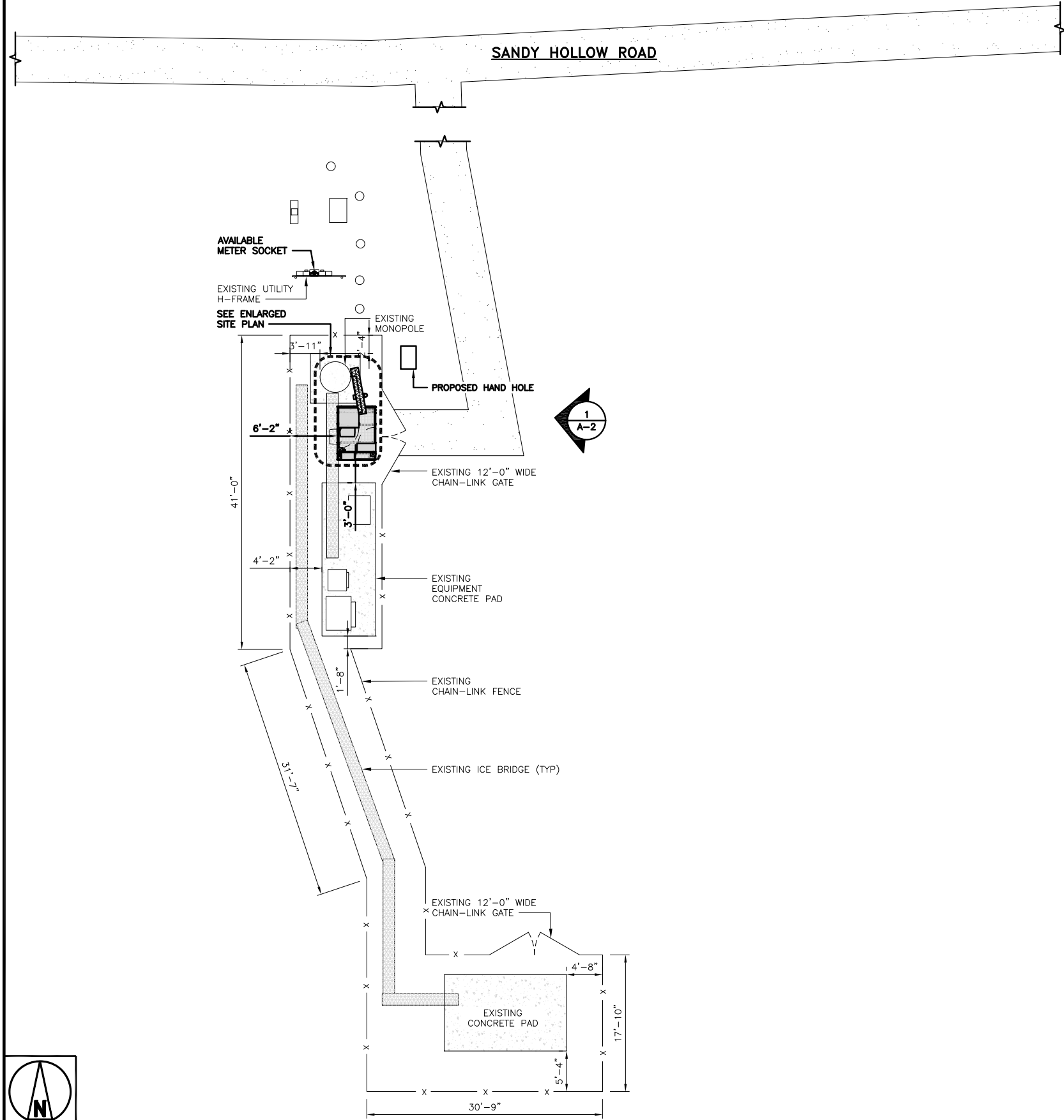
Millman Surveying, Inc.
1742 Georgetown Road, Suite H
Hudson, Ohio 44236
Phone: (800) 520-1010
www.millmansurveying.com

Drawn By: LKC Project Manager: MR
Date: 11/17/10 Scale: As Shown
Checked: WFO Sheet: 2 of 2
MSI Project No. 21142

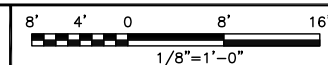


NOTES

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



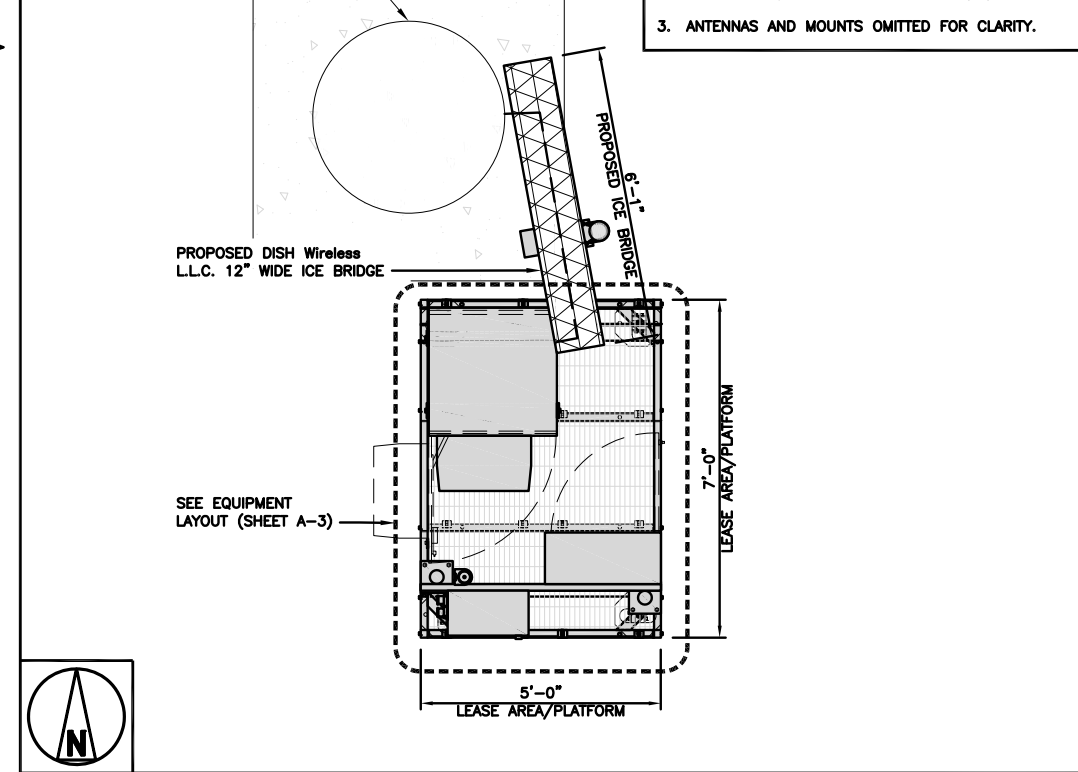
OVERALL SITE PLAN



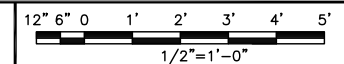
1

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



2

NOT USED

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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



8/12/21

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Expires 2/10/22

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RMC	RMC	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	7/27/21	ISSUED FOR REVIEW
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A&E PROJECT NUMBER
149458.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

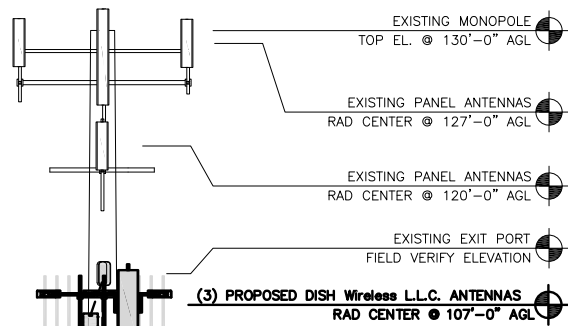
BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

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.



(1) PROPOSED DISH Wireless L.L.C. HYBRID CABLE ROUTED INSIDE POLE

PROPOSED DISH Wireless L.L.C. ICE BRIDGE

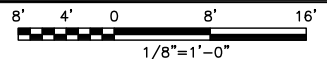
PROPOSED DISH Wireless L.L.C. EQUIPMENT ON PROPOSED STEEL PLATFORM

PROPOSED DISH Wireless L.L.C. GPS UNIT

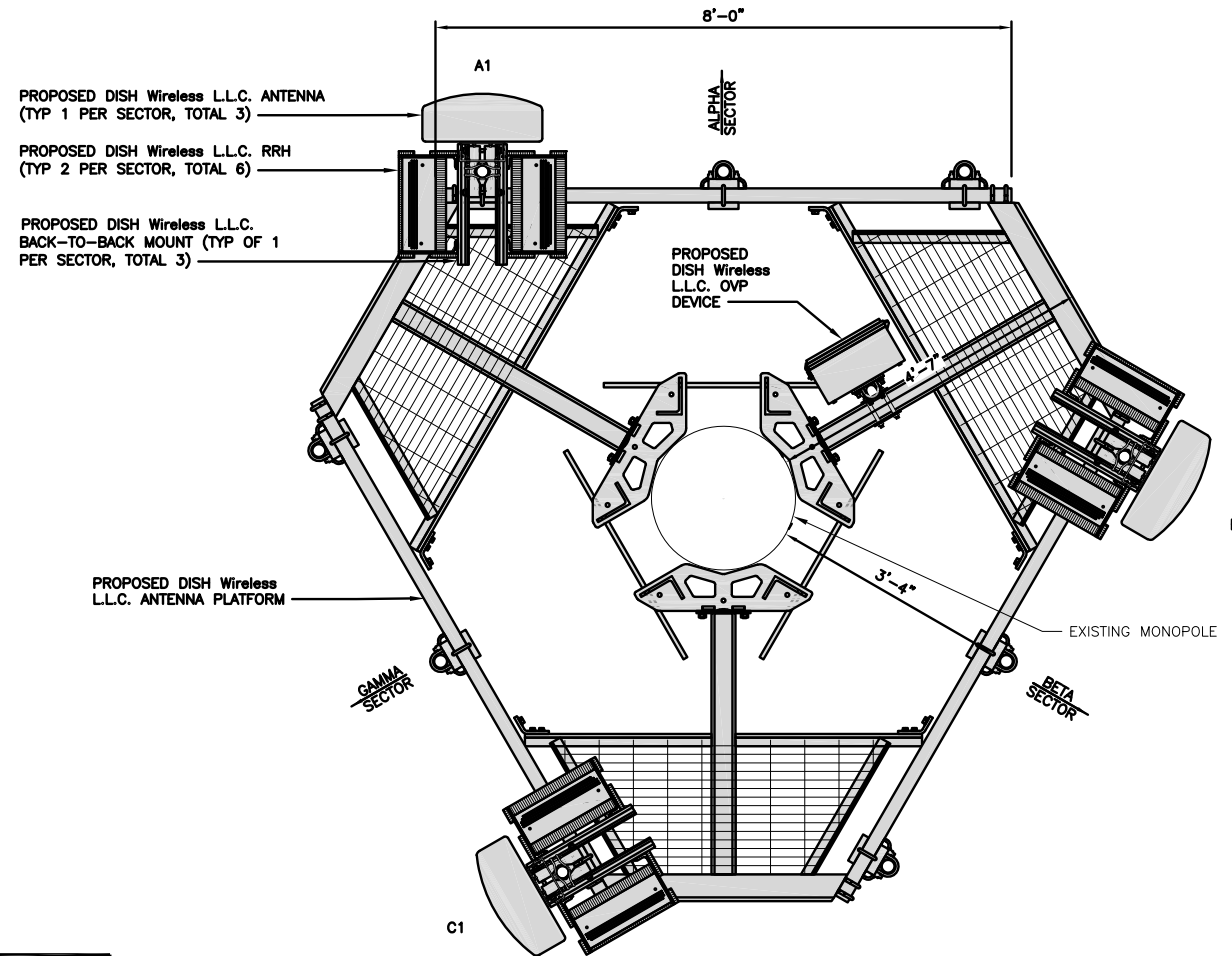
EXISTING ENTRY PORT

EXISTING MONOPOLE BOTTOM EL. @ 6\"/>

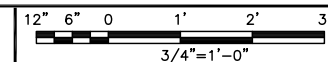
PROPOSED EAST ELEVATION



1



ANTENNA LAYOUT



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 WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	0°	107'-0"	(1) HIGH-CAPACITY HYBRID CABLE (140' LONG)
BETA	B1	PROPOSED	JMA WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	120°	107'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS-MX08FR0665-21	5G	72.0" x 20.0"	240°	107'-0"	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU-TA08025-B605	5G	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.
	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	

ANTENNA SCHEDULE

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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DRAWN BY: CHECKED BY: APPROVED BY:

RMC RMC MDW

RFDS REV #: 0

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149458.001.01

DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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SUITE 300
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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

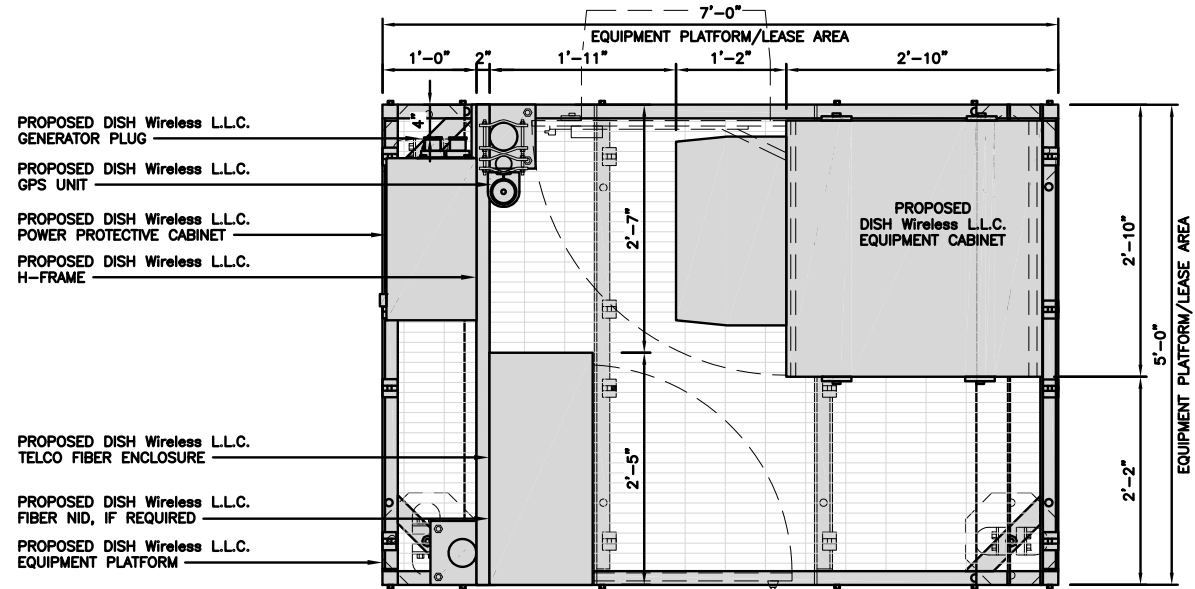
SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER

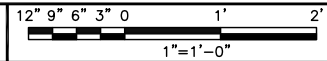
A-3

NOTES

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



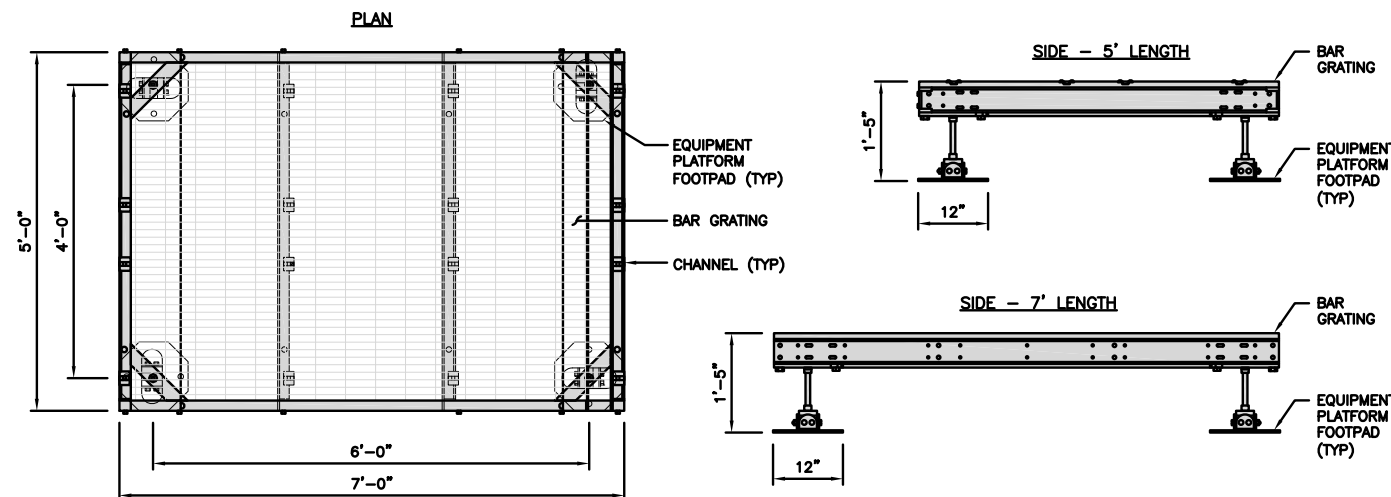
PLATFORM EQUIPMENT PLAN



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"



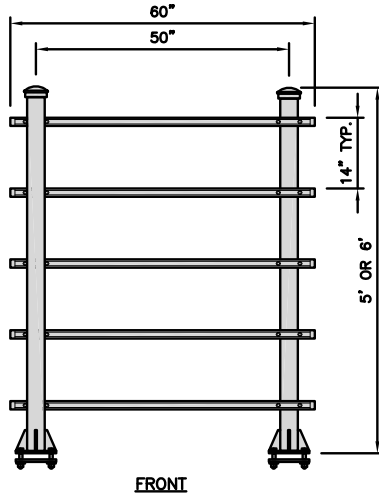
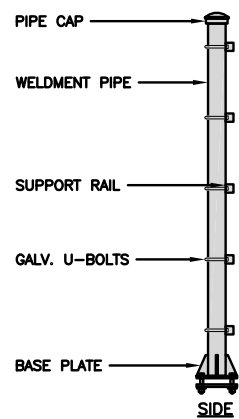
PLATFORM DETAIL

NO SCALE

2

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

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



H-FRAME DETAIL

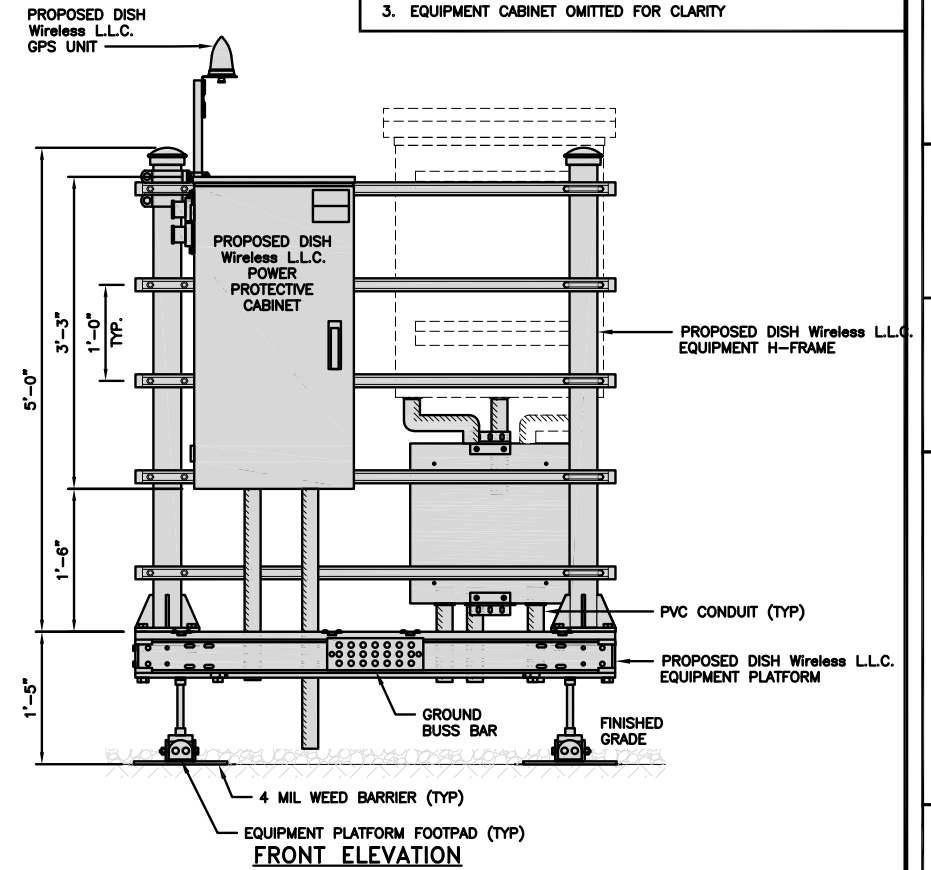
NO SCALE

3

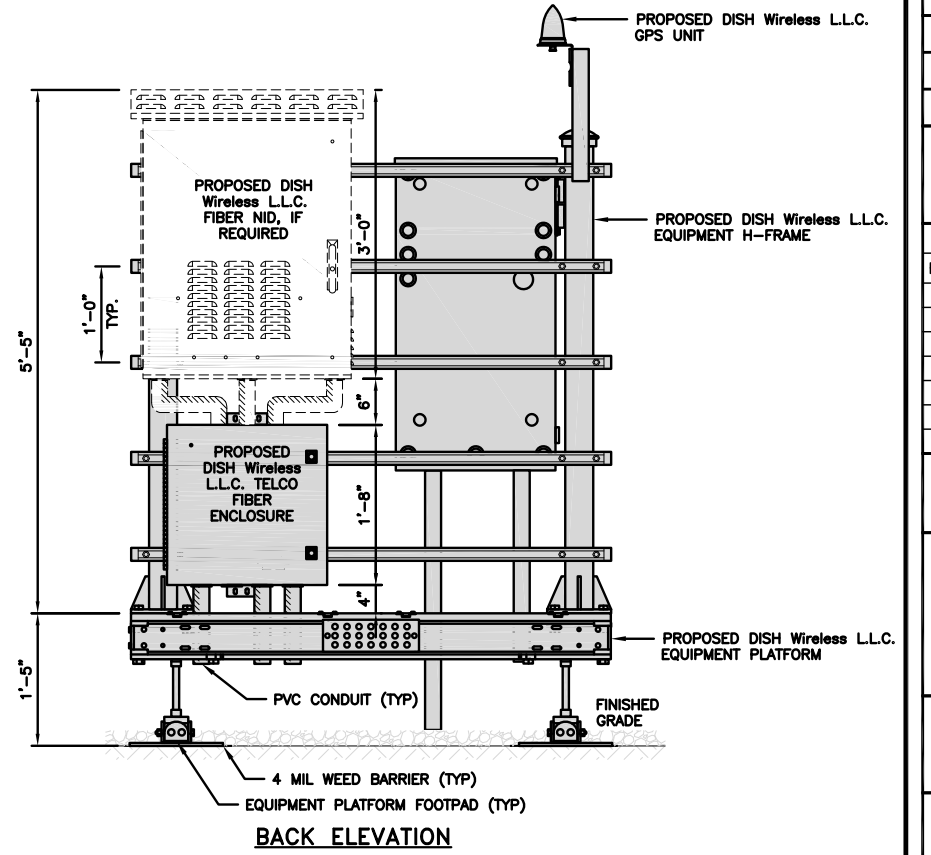
NOT USED

NO SCALE

4

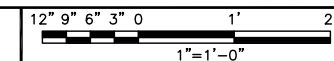


FRONT ELEVATION

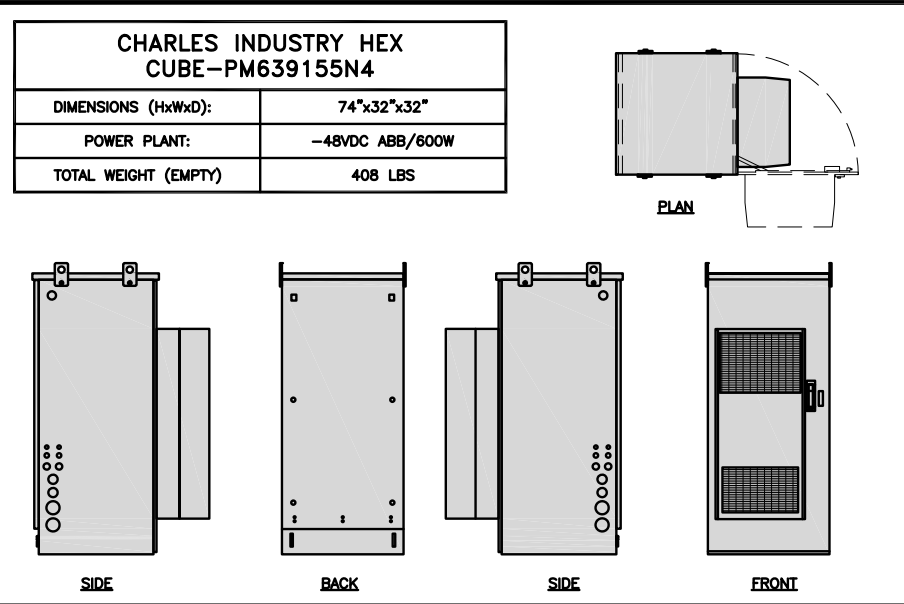


BACK ELEVATION

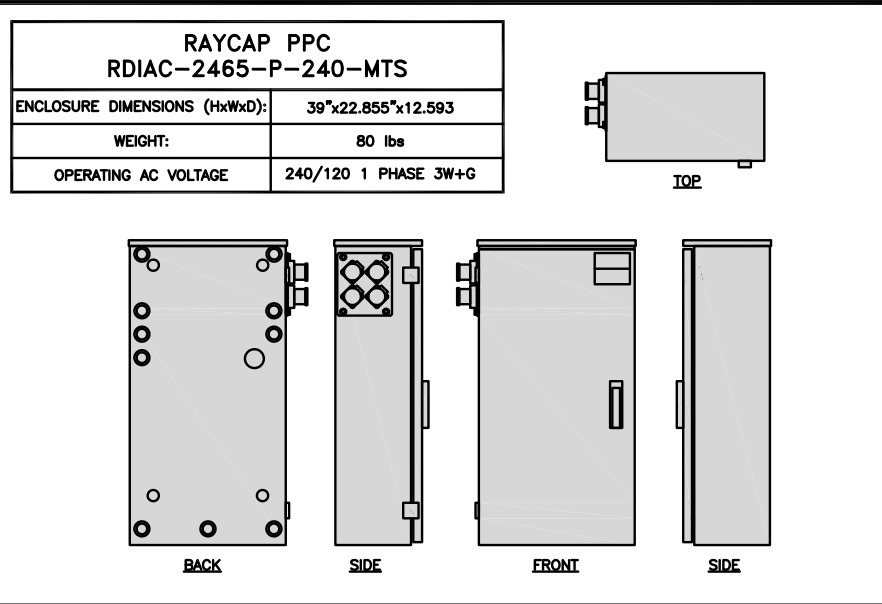
H-FRAME EQUIPMENT ELEVATION



5



CABINET DETAIL NO SCALE 1



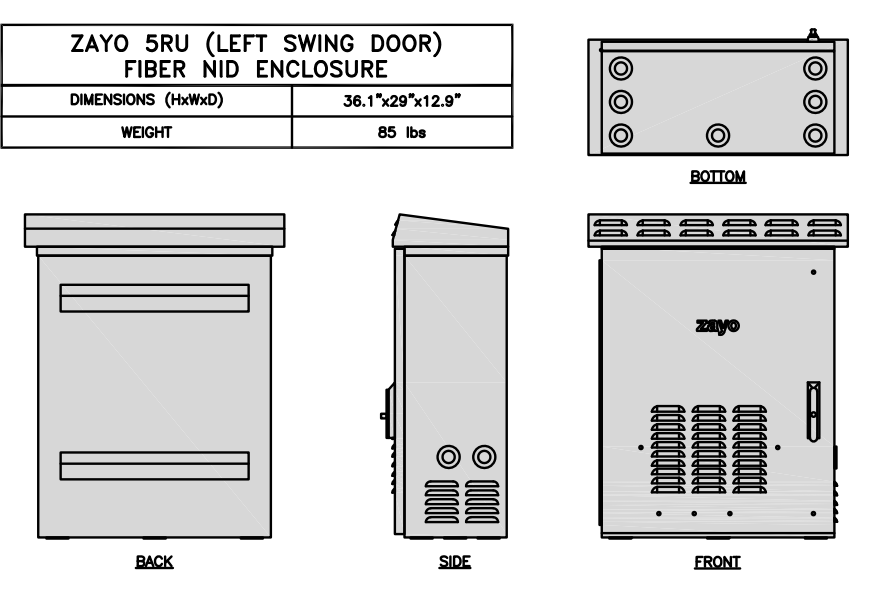
POWER PROTECTION CABINET (PPC) DETAIL NO SCALE 2

NOT USED

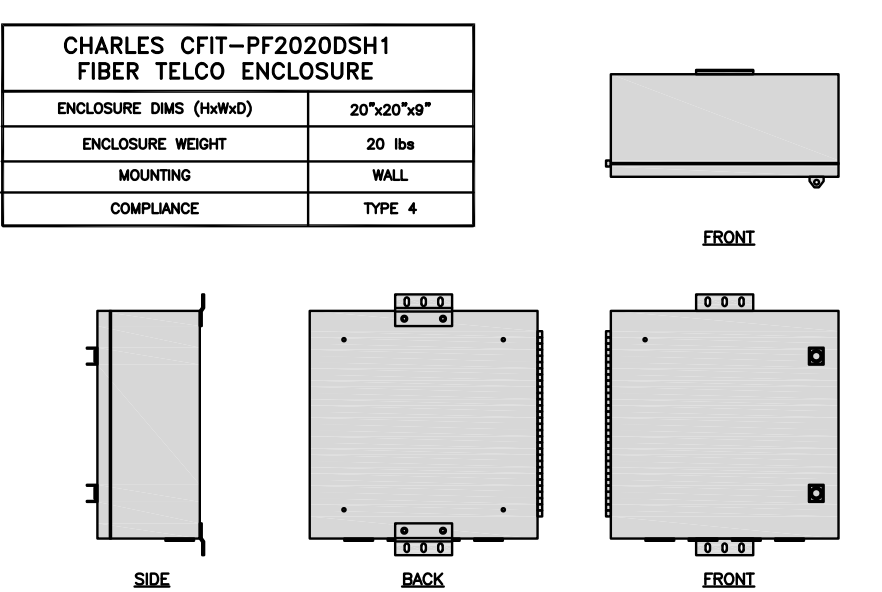
NO SCALE 3

NOT USED

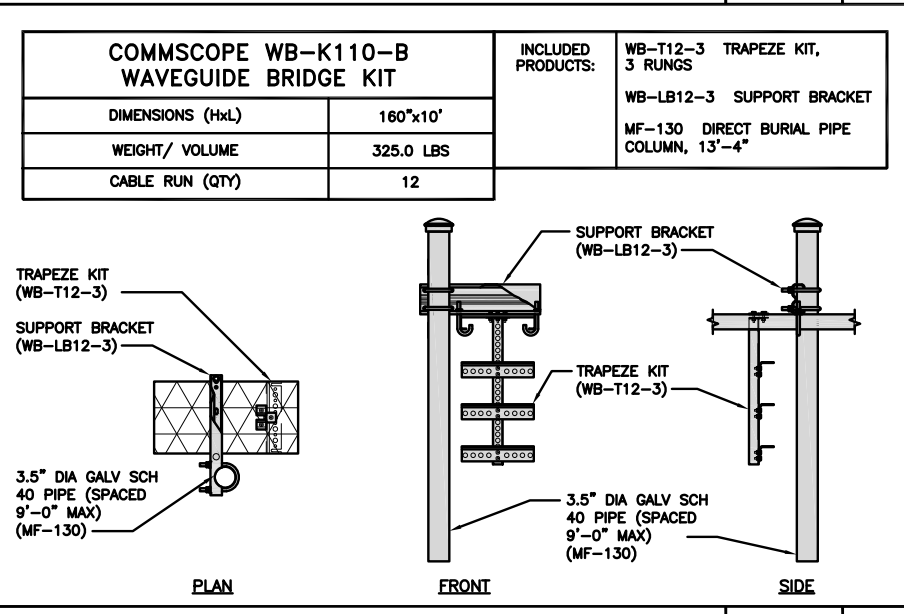
NO SCALE 4



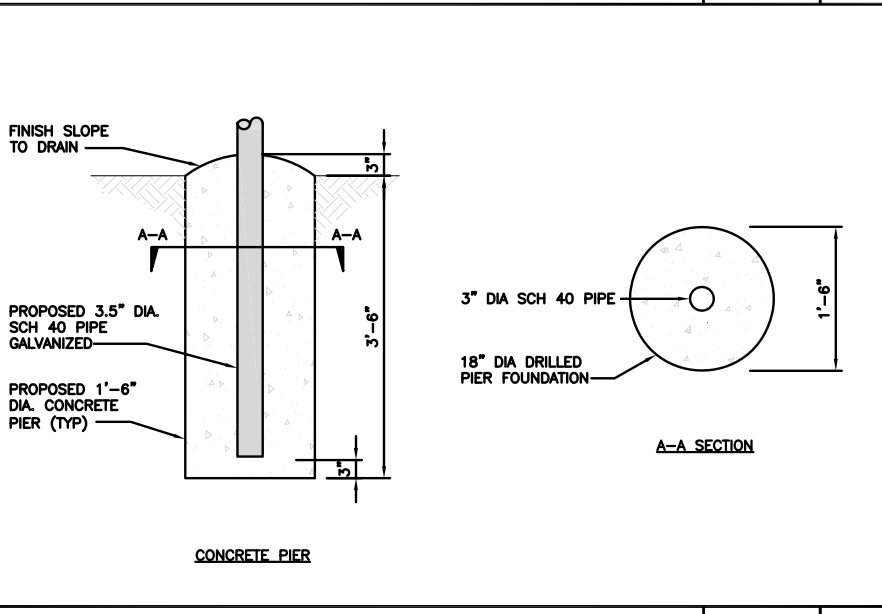
FIBER NID ENCLOSURE DETAIL NO SCALE 5



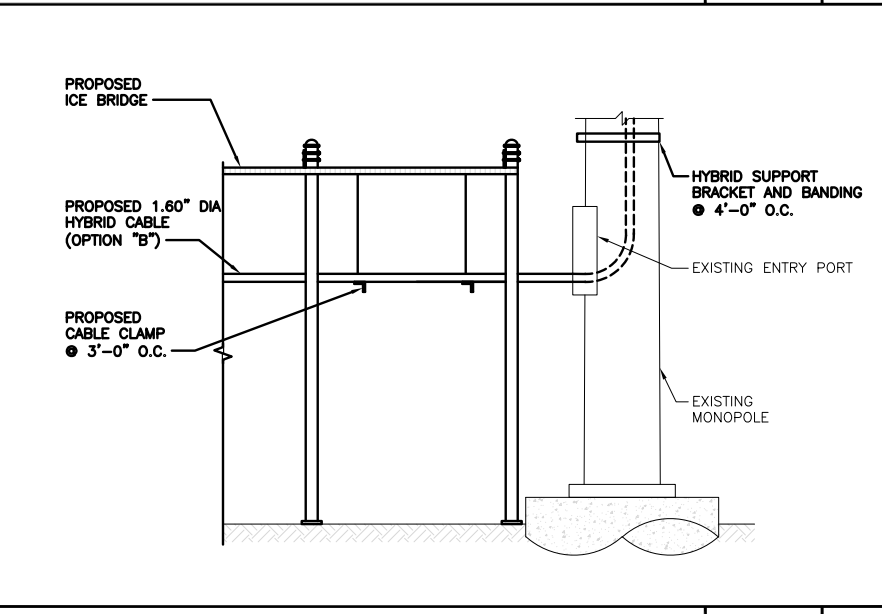
FIBER TELCO ENCLOSURE DETAIL NO SCALE 6



ICE BRIDGE DETAIL NO SCALE 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL NO SCALE 8



HYBRID CABLE RUN NO SCALE 9

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

1717 S. BOULDER
SUITE 300
TULSA, OK 74119
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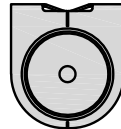
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

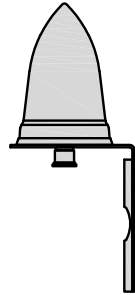
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

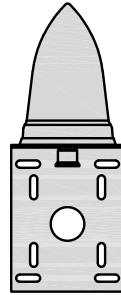
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



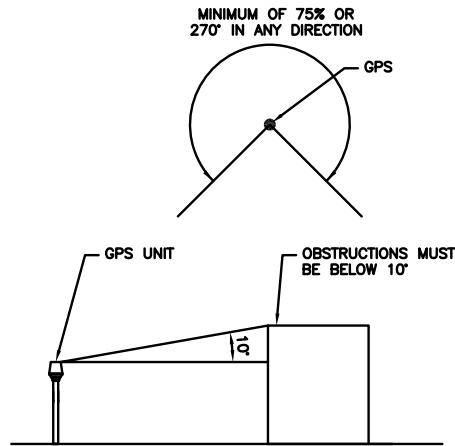
TOP



BACK



SIDE



GPS DETAIL

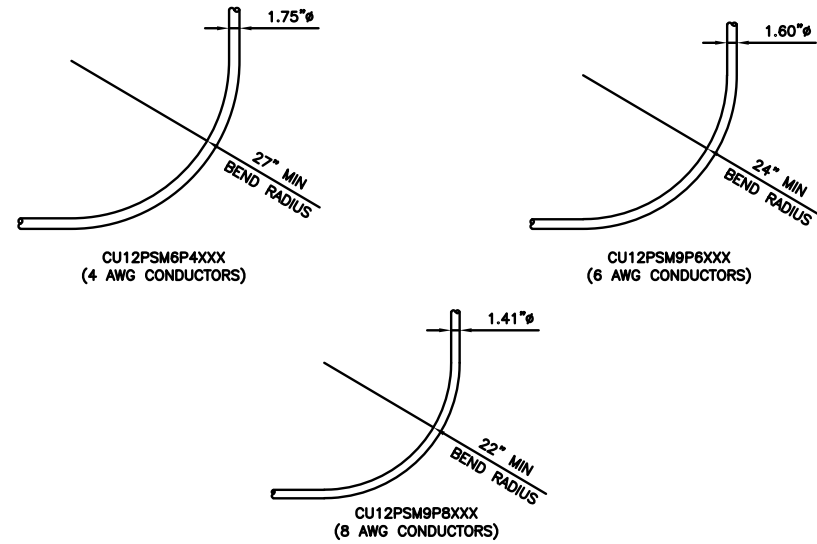
NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUS

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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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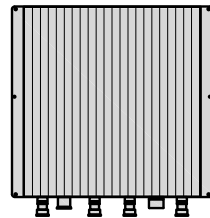
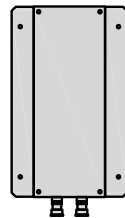
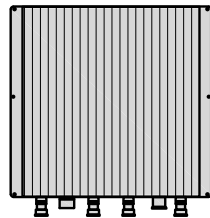
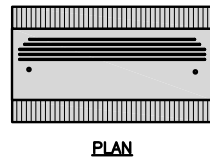
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

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



BACK

SIDE

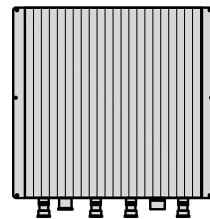
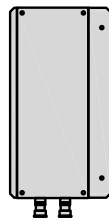
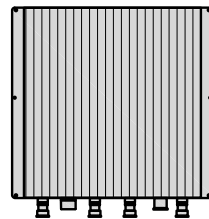
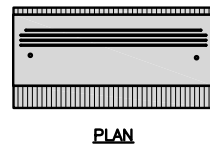
FRONT

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



BACK

SIDE

FRONT

RRH DETAIL

NO SCALE

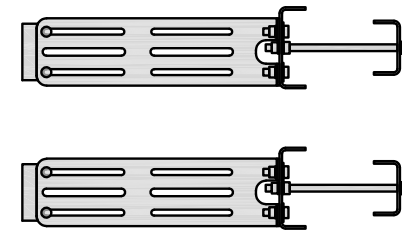
2

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

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



PLAN



SIDE

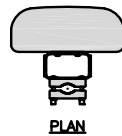
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL

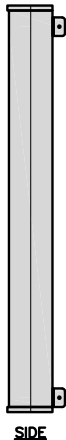
NO SCALE

3

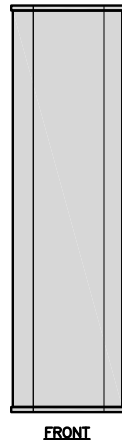
JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN



SIDE



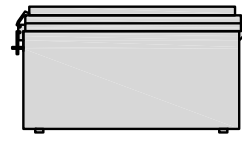
FRONT

ANTENNA DETAIL

NO SCALE

4

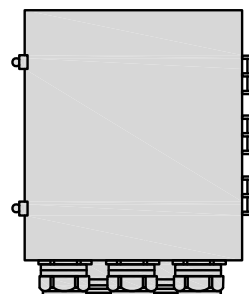
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



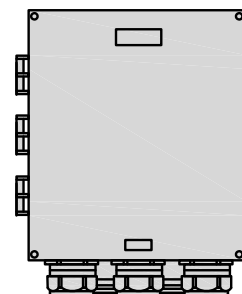
PLAN



SIDE



BACK



FRONT

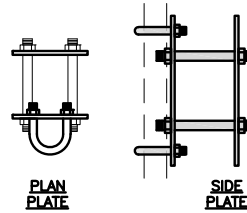
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

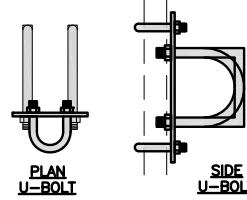
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



PLAN
U-BOLT

SIDE
U-BOLT



PLAN
U-BOLT

SIDE
U-BOLT

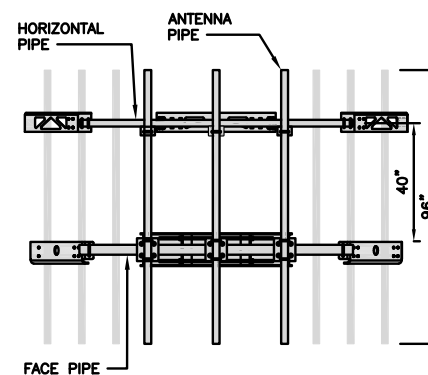
RRH/OVP MOUNT DETAIL

NO SCALE

8

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

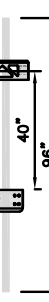
NOTE:
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FACE PIPE

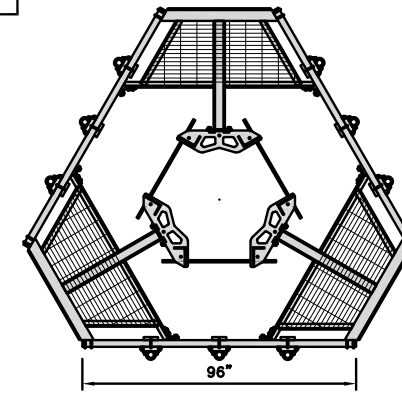
HORIZONTAL
PIPE

ANTENNA
PIPE



40"

96"



96"

ANTENNA PLATFORM DETAIL

NO SCALE

9



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RMC RMC MDW

RFDS REV #: 0

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
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0	8/12/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149458.001.01

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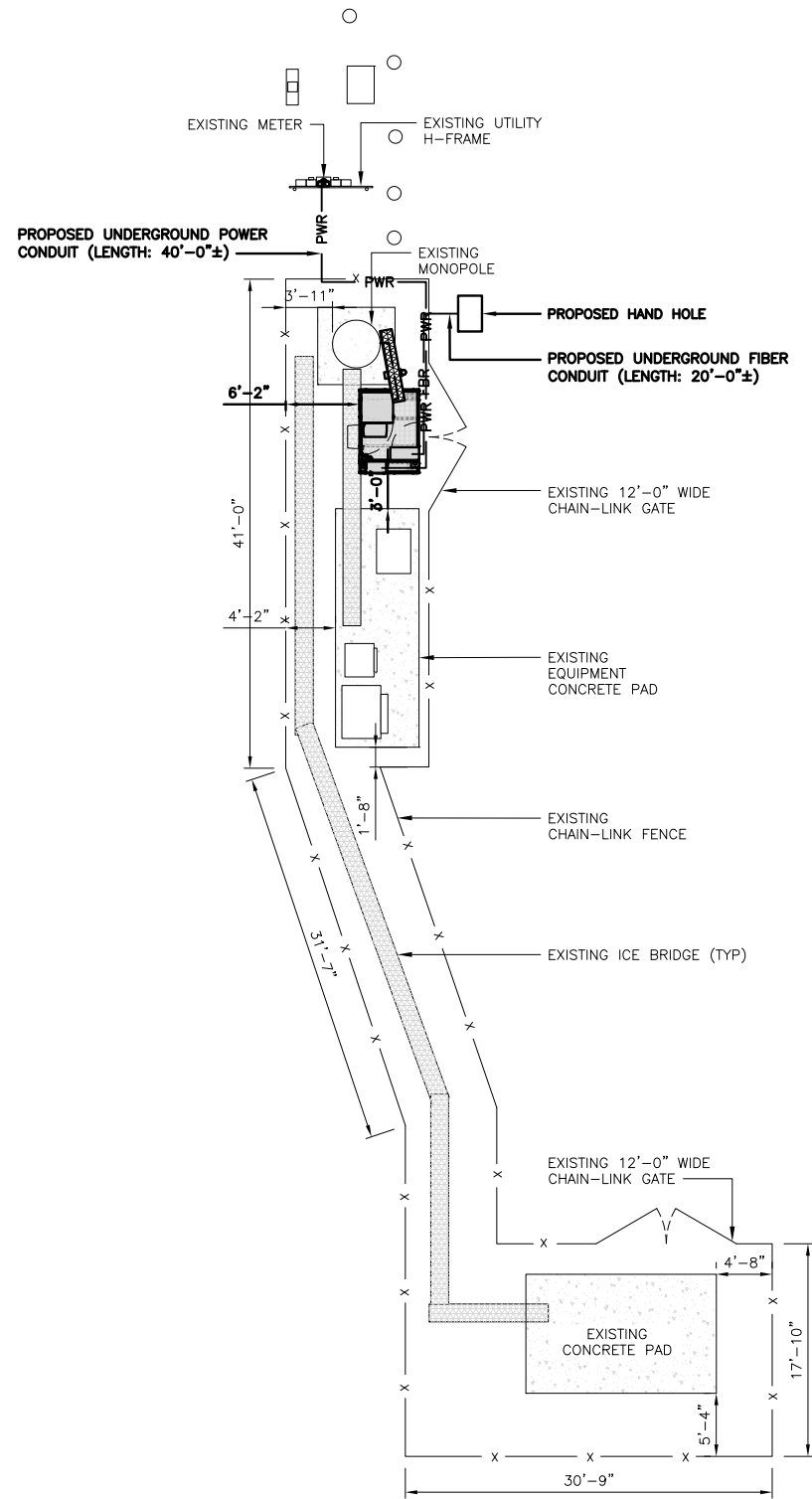
BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6

FINAL POWER OR FIBER DESIGN
NOT AVAILABLE AT TIME OF ISSUE



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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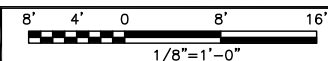
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SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

E-1

UTILITY ROUTE PLAN



1

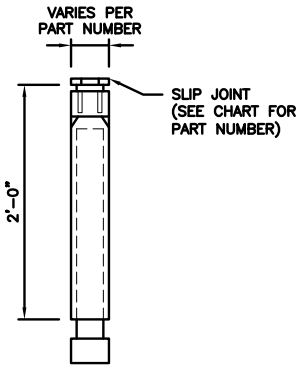
ELECTRICAL NOTES

NO SCALE

2

CARLON EXPANSION FITTINGS

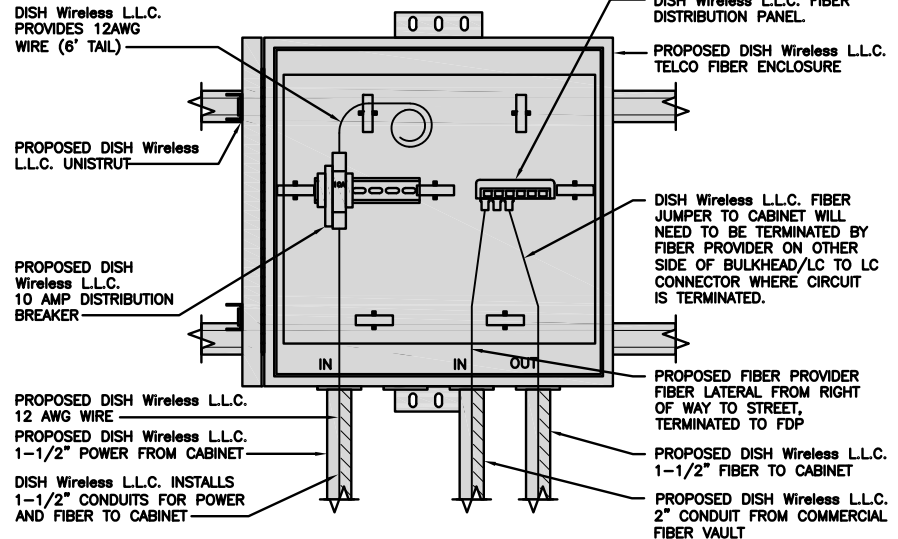
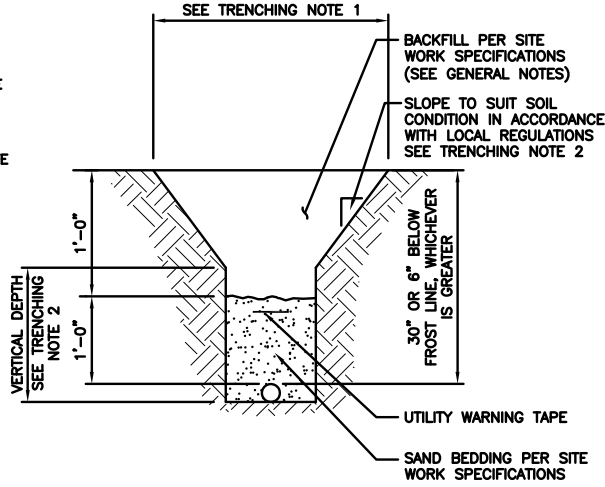
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

TRENCHING NOTES

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



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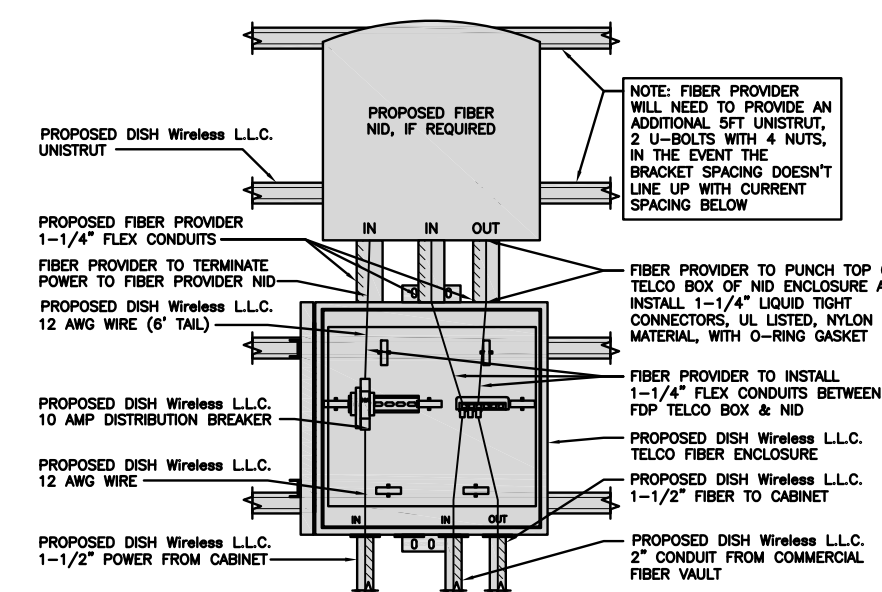
SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER
E-2

EXPANSION JOINT DETAIL NO SCALE 1

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

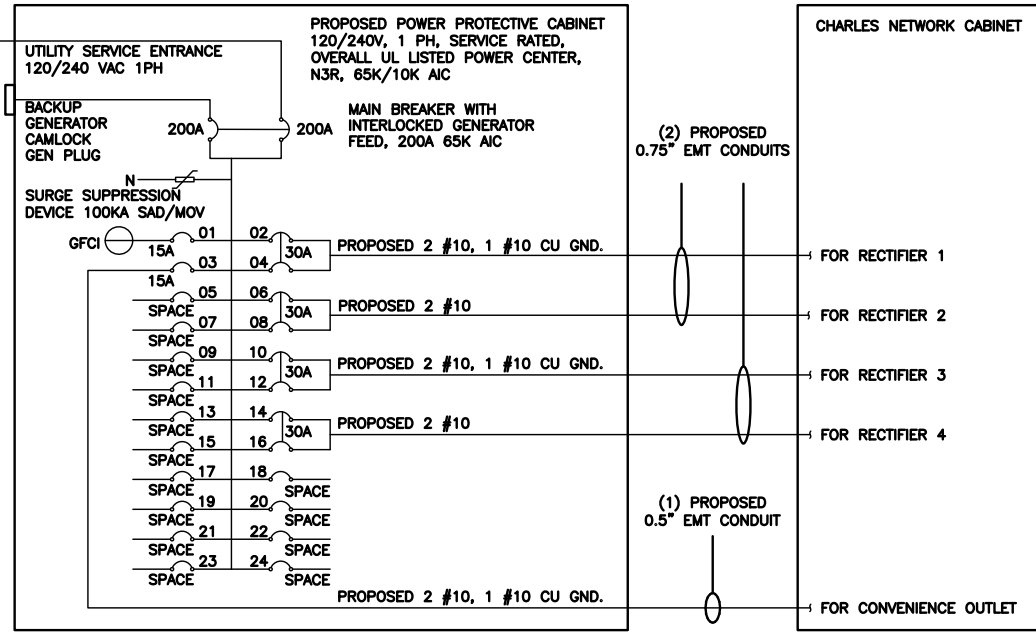
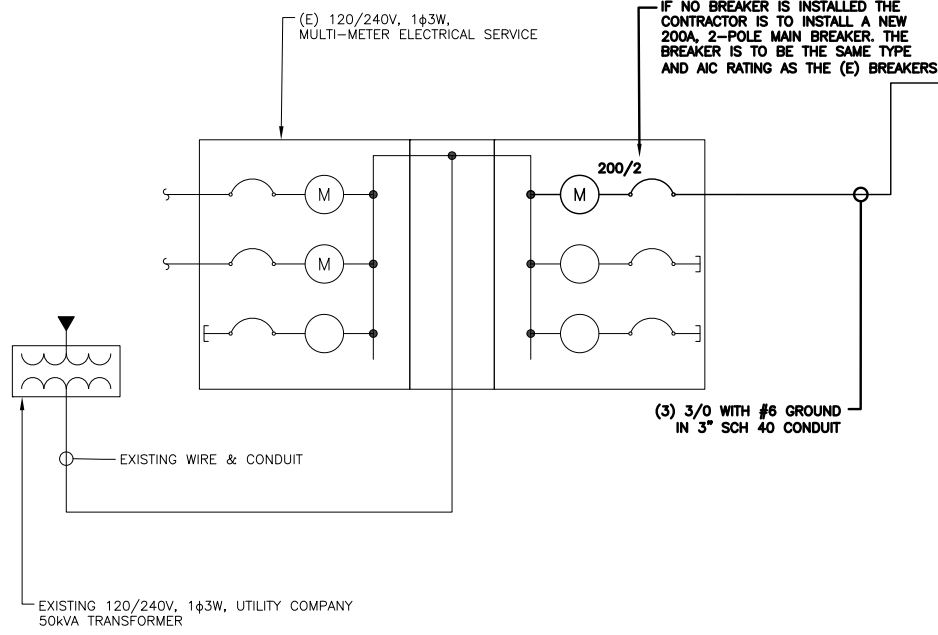
NOT USED NO SCALE 5

NOT USED NO SCALE 6

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9



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:Q0230
(1) 15A, 1P BREAKER - SQUARE D P/N:Q0115

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)(g) 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)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED	
	L1	L2						L1	L2		
PPC GFCI OUTLET	180	180	15A	1	A	2	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1	
CHARLES GFCI OUTLET			15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1	
-SPACE-				5	A	6	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2	
-SPACE-				7	B	8	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2	
-SPACE-				9	A	10	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3	
-SPACE-				11	B	12	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3	
-SPACE-				13	A	14	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4	
-SPACE-				15	B	16	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4	
-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						
				98	98						
				98							
				123							

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3



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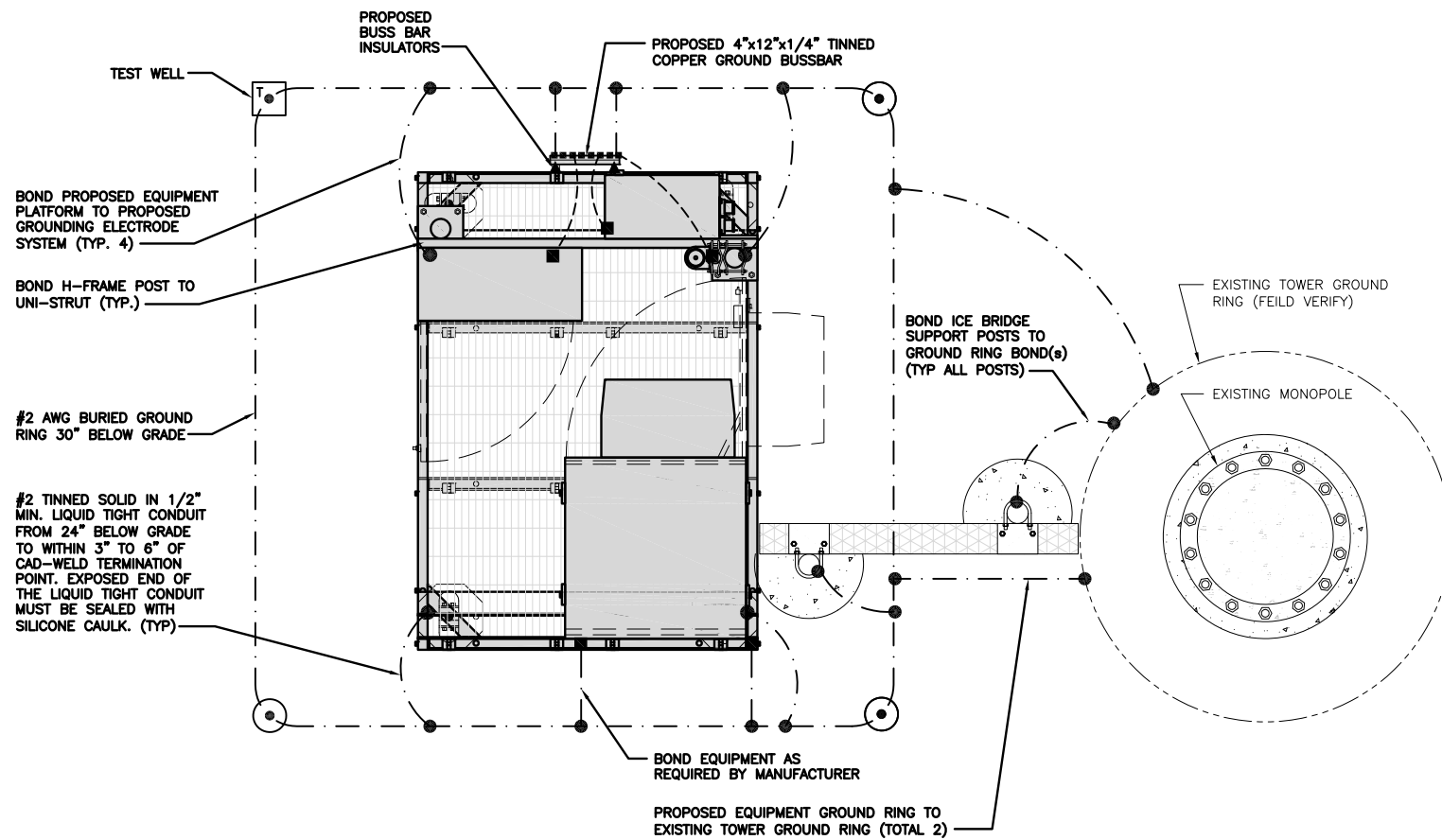
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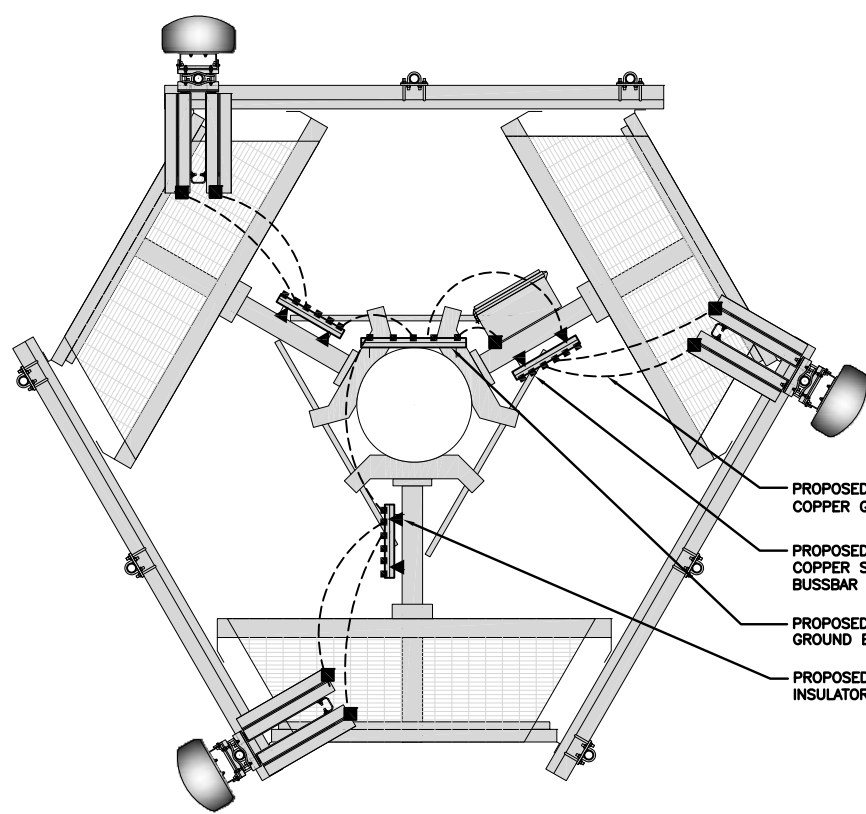
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT
CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- ▬ GROUND BUS BAR
- GROUND ROD
- T 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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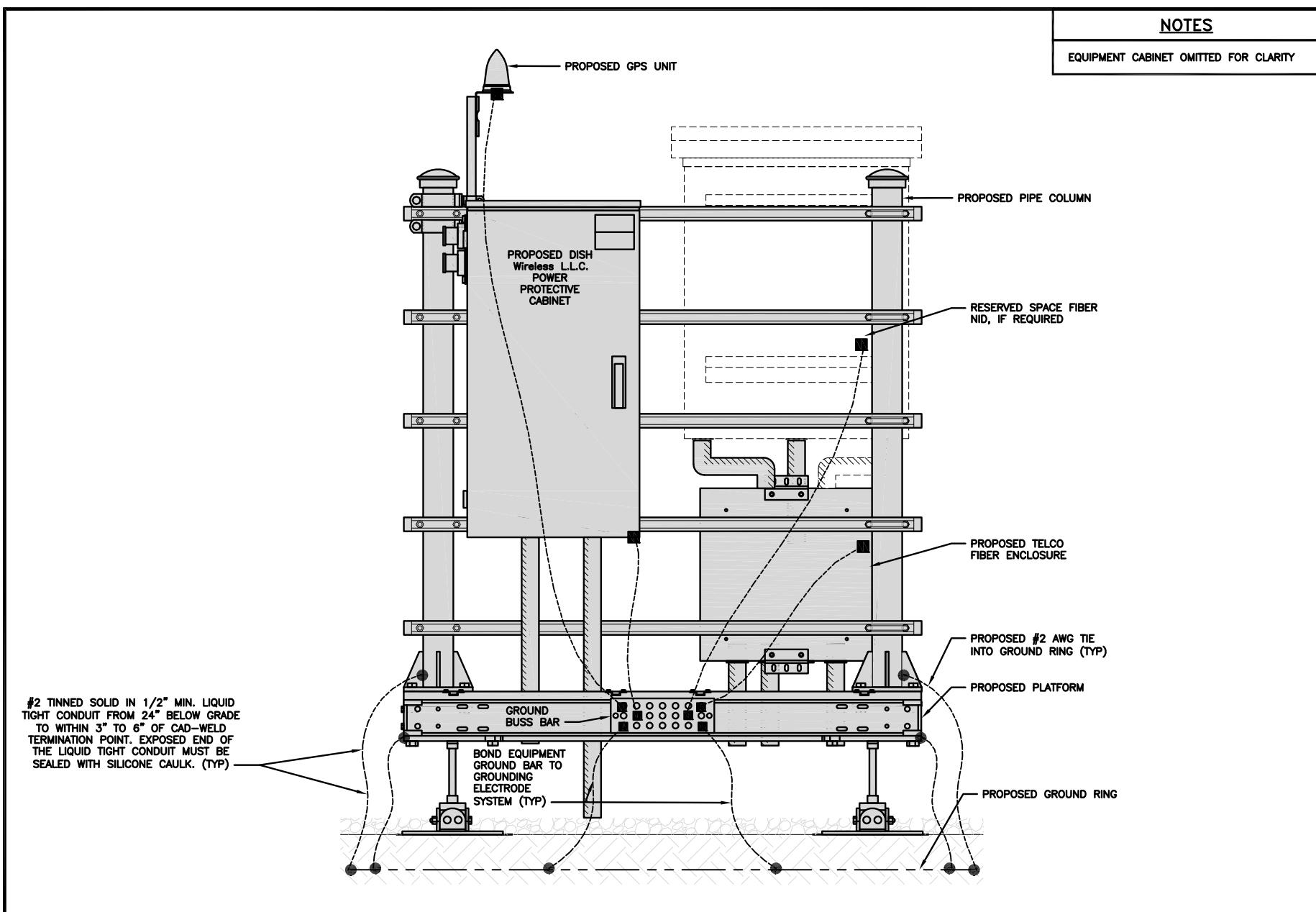
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GROUNDING PLANS
AND NOTES

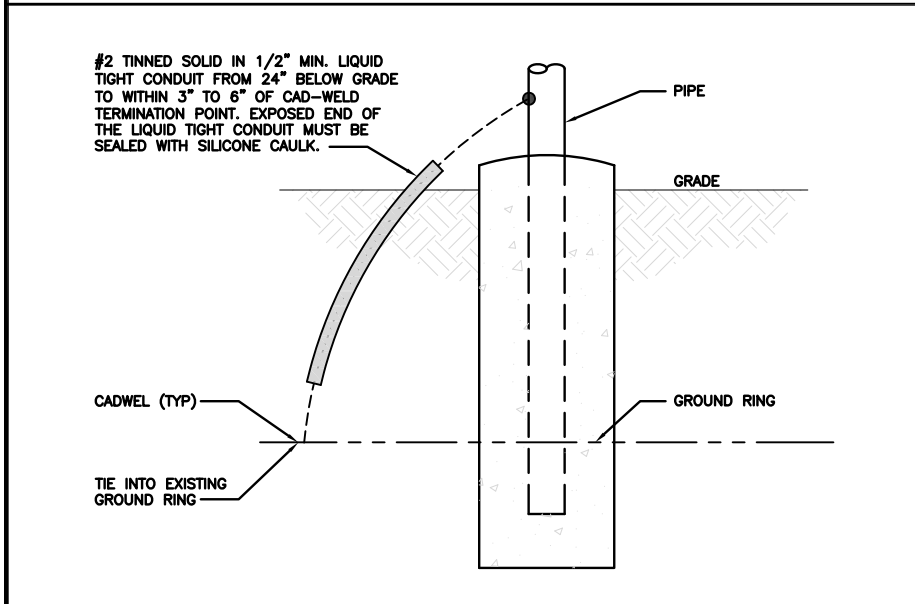
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G-1



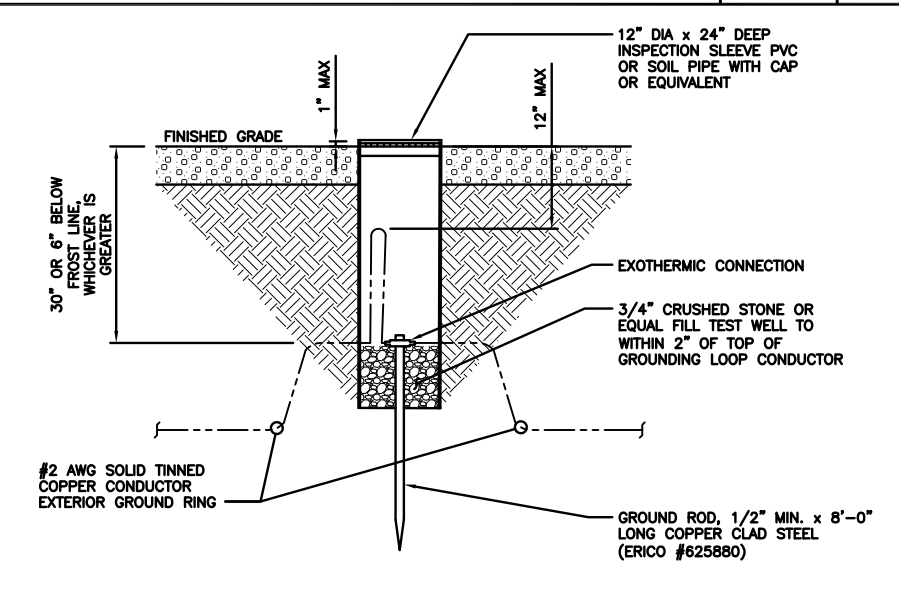
H-FRAME GROUNDING DETAIL

NO SCALE 1



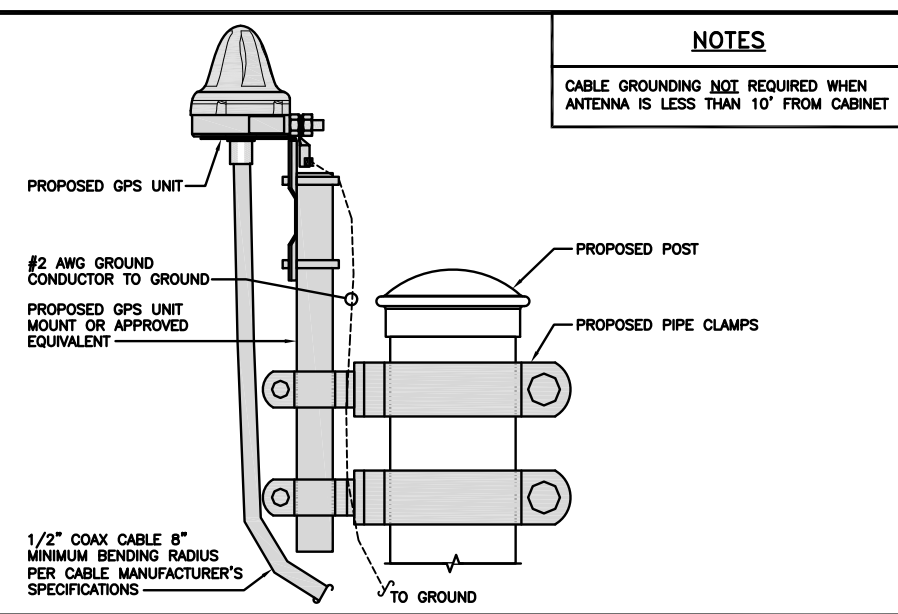
TRANSITIONING GROUND DETAIL

NO SCALE 4



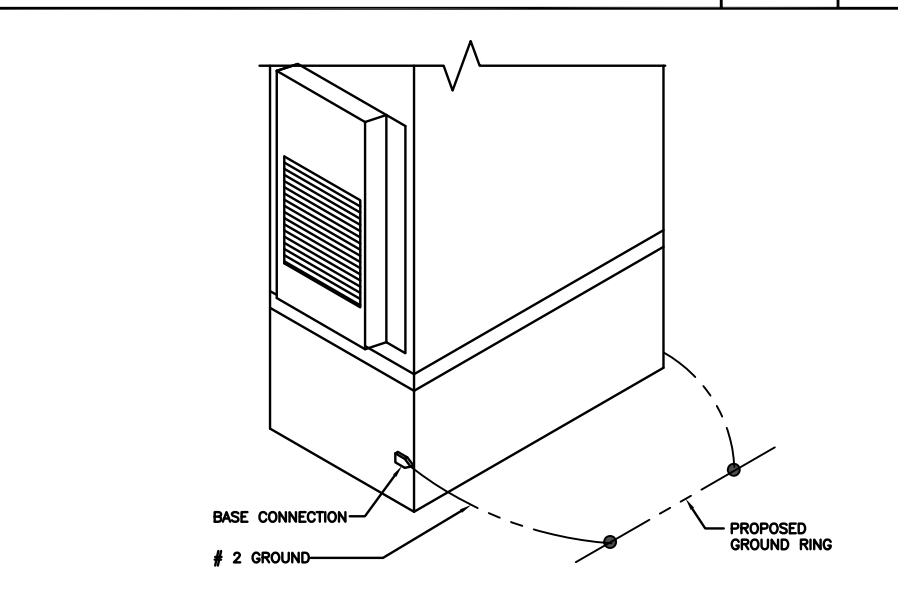
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



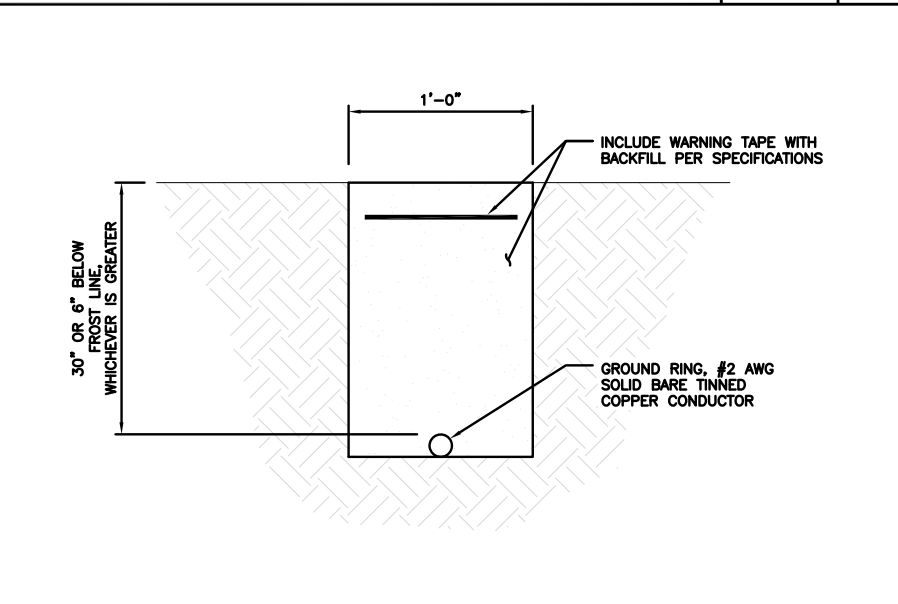
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



OUTDOOR CABINET GROUNDING

NO SCALE 3



TYPICAL GROUND RING TRENCH

NO SCALE 6

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY

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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



8051 CONGRESS AVENUE
BOCA RATON, FL 33487



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RFDS REV #: 0

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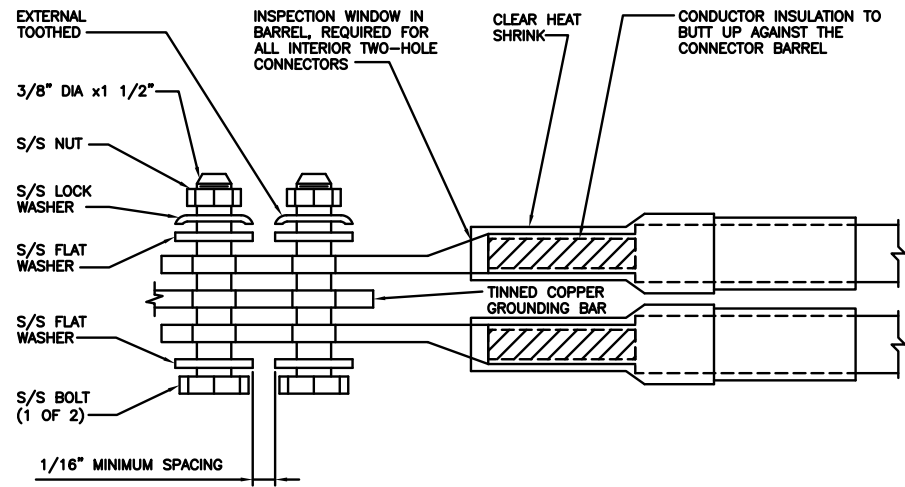
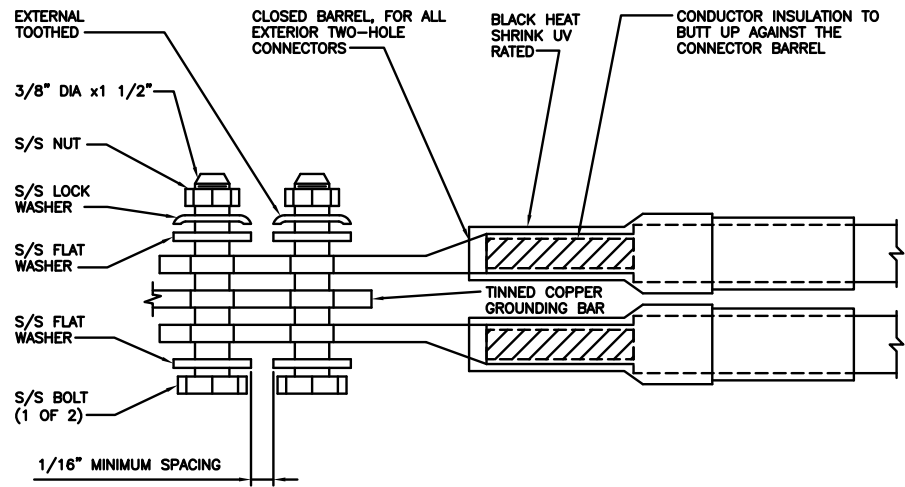
A&E PROJECT NUMBER
149458.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

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

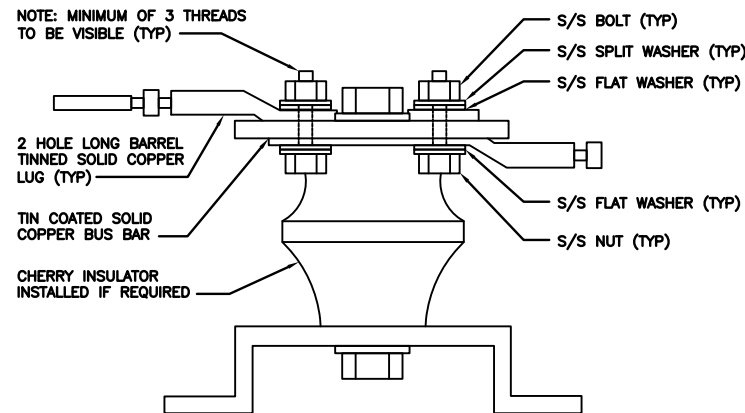
NO SCALE 1

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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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)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH -
(AWS BANDS N66+N70)

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

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

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	
ORANGE	YELLOW	ORANGE
PURPLE		PURPLE

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

RET MOTORS AT ANTENNAS

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

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

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES

NOTES

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

LOW BANDS (N71+N26)
OPTIONAL - (N29)



CBRS TECH
(3 GHz)



AWS
(N66+N70+H-BLOCK)



NEGATIVE SLANT PORT
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



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8/12/21

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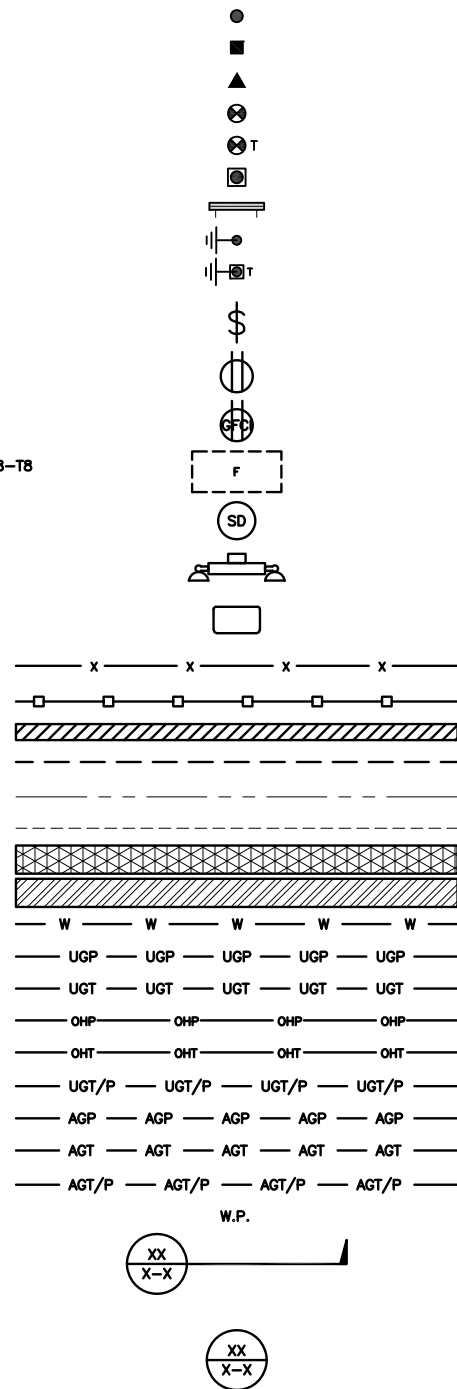
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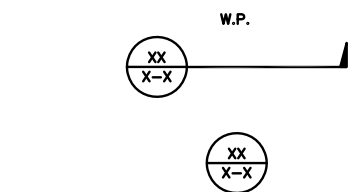
SHEET TITLE
RF
CABLE COLOR CODES

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

ABBREVIATIONS



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DISH Wireless L.L.C.
 PROJECT INFORMATION
 BOBOS00054A
 237 SANDY HOLLOW RD
 GROTON, CT 06340

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

- 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.
- "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.
- 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.
- 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).
- 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."
- 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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:

- 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
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



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RMC RMC MDW

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CONSTRUCTION DOCUMENTS

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

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.



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RMC	RMC	MDW

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00054A
237 SANDY HOLLOW RD
GROTON, CT 06340

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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