Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastsitesolutions.com

February 3, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
2 Arbor Crossing, East Lyme, CT
Latitude: 41.3663 N
Longitude: -72.2423 W
Site#: BOBOS00076A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 2 Arbor Crossing, East Lyme, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 66-foot level of the existing 105-foot silo, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated February 2, 2022, Exhibit C. Also included is a structural analysis prepared by TowerCo, dated October 19, 2021 confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Docket No. 463A on December 22, 2016. Please see attached Exhibit A.

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 Mark C. Nickerson, First Selectman, Gary A. Goeschel II, Director of Planning, as well as the property owner Orchards at East Lyme Inc and TowerCo, tower owner.

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 modifications will not result in an increase in the height of the existing structure. The top of the silo is 105-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 66-feet.

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

3.The proposed modification will not increase the 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 density of 37.97% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa 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 silo has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

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 silo in East Lyme. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 66-foot level of the existing 105-foot silo would have an insignificant visual impact on the area around the silo. 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 F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

E. Public Safety Concerns. As discussed above, the silo 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 silo. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through East Lyme.

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com

Attachments
Cc:
Mark C. Nickerson, First Selectman
Town of East Lyme
PO Box 519
108 Pennsylvania Ave
Niantic, CT 06357

Gary A. Goeschel II, Director of Planning
Town of East Lyme
PO Box 519
108 Pennsylvania Ave
Niantic, CT 06357

Orchards at East Lyme Inc, Property Owner
150 Eugene Oneill Dr
New London, CT 06320

TowerCo, Tower Owners
5000 Valleystone Dr.
Cary, NC 27519

Exhibit A

Original Facility Approval

DOCKET NO. 463A – American Towers, LLC and New Cingular Wireless PCS, LLC amended application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 351A Boston Post Road, East Lyme, Connecticut or for the construction, maintenance and operation of a telecommunications facility at an alternative site located at 2 Arbor Crossing, East Lyme, Connecticut pursuant to Connecticut General Statutes §4-181a(a).	}	Connecticut
	}	Siting
	}	Council
		December 22, 2016

Decision and Order

Pursuant to Connecticut General Statutes §16-50p, §22a-19 and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation 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 New Cingular Wireless PCS, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 2 Arbor Crossing, East Lyme, Connecticut. The Council denies Certification of the proposed site located at 351A Boston Post Road, East Lyme, Connecticut.

Unless otherwise approved by the Council, 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 faux silo at a height of 105 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

2. 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 East Lyme 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) final site plan(s) for development of the facility to include specifications for the faux silo tower that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code, tower foundation, antennas, equipment compound including, but not limited to, fencing, radio equipment, access road, utility line, emergency backup generator, and landscaping ;
    b) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
    c) provisions for tree clearing restrictions as recommended by the Department of Energy and Environmental Protection and/or the United States Fish and Wildlife Service to protect listed bat species; and
    d) hours of construction.

3. Prior to the commencement of operation, the Certificate Holder shall 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 base of the facility, 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.

4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. 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.

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service 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. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 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 East Lyme.

8. 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 within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. 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.

11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the faux silo tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated September 29, 2016, and notice of issuance published in The Day.

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.

Exhibit B

Property Card

2 ARBOR CROSSING

Location	2 ARBOR CROSSING	**Mblu**	29.1/ 167/ / /
Acct#	009061	**Owner**	ORCHARDS AT EAST LYME INC
Assessment	$321,090	**Appraisal**	$458,700
PID	100909	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$458,700	$0	$458,700
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$321,090	$0	$321,090

Owner of Record

Owner	ORCHARDS AT EAST LYME INC	**Sale Price**	$0
Co-Owner		**Certificate**	
		Book & Page	722/731

Address	C/O NORTHEAST PROPERTY GROUP 150 EUGENE ONEILL DR NEW LONDON, CT 06320	**Sale Date**	10/28/2005
		Instrument	03

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ORCHARD WOODS AT EAST LYME LLC	$0		0674/0231	04	06/23/2004
ORCHARD WOODS ASSOC LP	$0		0472/0513		03/01/1999

Building Information

Building 1 : Section 1

Year Built: 2006
Living Area: 1,922
Replacement Cost: $370,905
Building Percent Good: 96
Replacement Cost Less Depreciation: $356,100

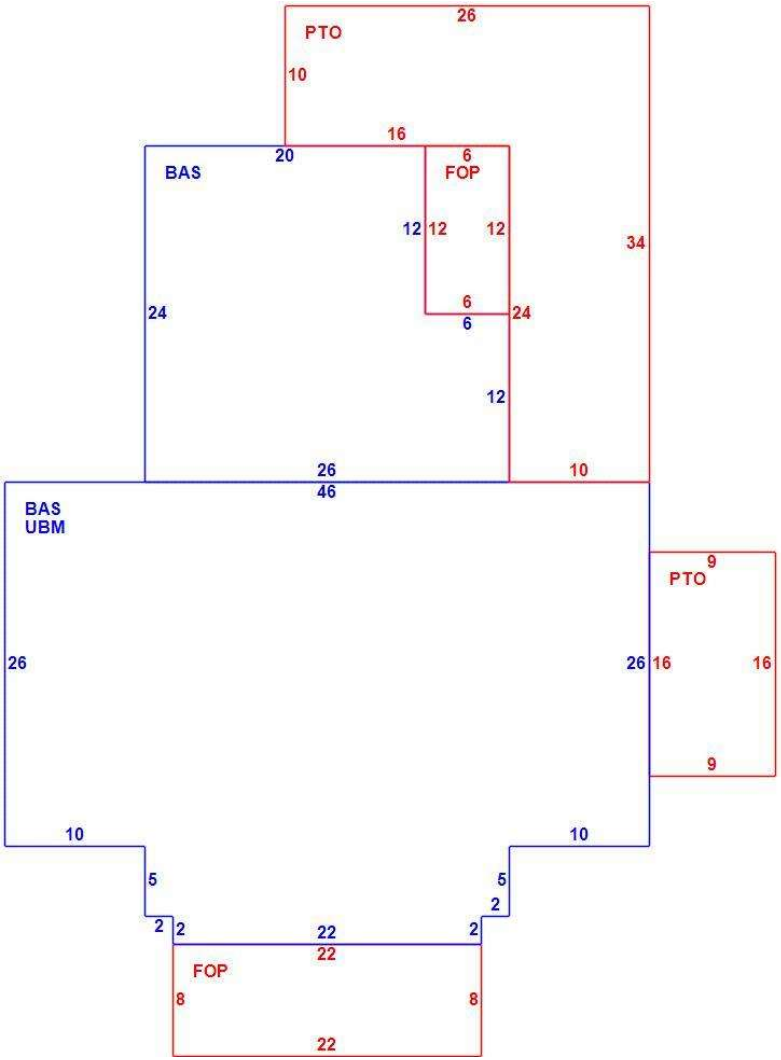
Building Attributes	
Field	**Description**
Style:	Clubs/Lodges
Model	Commercial
Grade	Good
Stories:	1
Occupancy	1.00

Building Photo

(http://images.vgsi.com/photos2/EastLymeCTPhotos//\01\01\29\49.JPG)

Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Plastered
Interior Wall 2	
Interior Floor 1	Slate
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	RECREATION M94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	8000
Heat/AC	HEAT/AC PKGS
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	0.00
% Comn Wall	

Building Layout



(ParcelSketch.ashx?pid=100909&bid=9451)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,922	1,922
FOP	Porch, Open, Finished	248	0
PTO	Patio	644	0

UBM	Basement, Unfinished	1,370	0
		4,184	1,922

Building 2 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style:	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	

Building Photo

(http://images.vgsi.com/photos2/EastLymeCTPhotos//default.jpg)

Building Layout

(ParcelSketch.ashx?pid=100909&bid=103377)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Cndtn	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
FPL	FIREPLACE	1.00 UNITS	$1,300	1

Land

Land Use

Use Code 8000

Land Line Valuation

Size (Acres) 5.22

Description	RECREATION M94	**Frontage**	
Zone	R40	**Depth**	
Neighborhood	0055	**Assessed Value**	$0
Alt Land Appr	No	**Appraised Value**	$0
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			4800.00 S.F.	$13,000	1
TEN	TENNIS COURT			7200.00 S.F.	$18,000	1
SPL3	GUNITE			1800.00 S.F.	$36,000	1
BHS2	CMM BTH HSE GD			966.00 S.F.	$24,200	1
PAT1	PATIO-AVG			4024.00 S.F.	$10,100	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$458,700	$0	$458,700
2019	$458,700	$0	$458,700
2018	$458,700	$0	$458,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$321,090	$0	$321,090
2019	$321,090	$0	$321,090

2018	$321,090	$0	$321,090

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

2 Arbor Crossing

9/11/2016 5:45:01 PM

1:2052
1"=171'

TOWN OF EAST LYME CONNECTICUT

Exhibit C

Construction Drawings

DISH WIRELESS, LLC. SITE ID:

BOBOS00076A

DISH WIRELESS, LLC. SITE ADDRESS:

2 ARBOR CROSSING
EAST LYME, CT 06333

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

SHEET INDEX

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	ORCHARDS AT EAST LYME INC
ADDRESS:	2 ARBOR CROSSING EAST LYME, CT 06333
TOWER TYPE:	SILO TOWER
TOWER CO SITE ID:	N/A
TOWER APP NUMBER:	N/A
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41°21'58.7" N 41.3663 N
LONGITUDE (NAD 83):	72°14'32.3" W -72.2423 W
ZONING JURISDICTION:	CITY OF EAST LYME
ZONING DISTRICT:	R40
PARCEL NUMBER:	100909
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

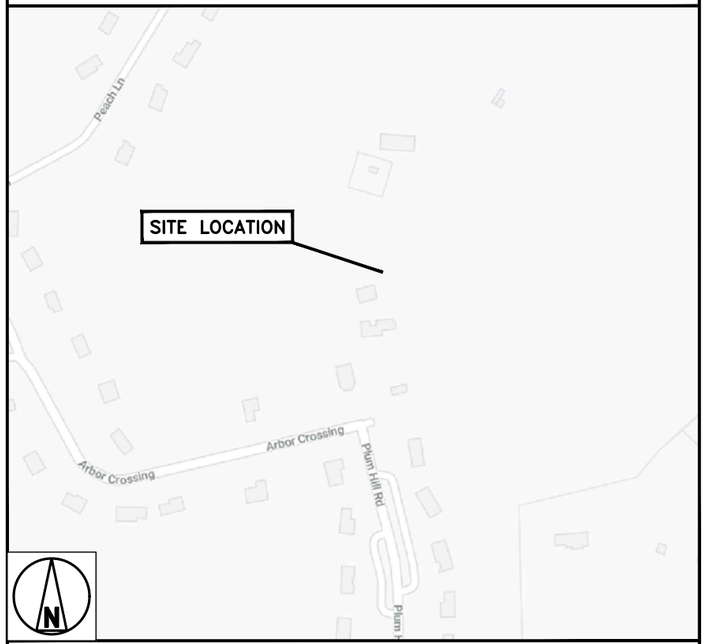
APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	TOWERCO
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	MATT BANDLE TBD
CONSTRUCTION MANAGER:	JAVIER SOTO (303) 706-4617
RF ENGINEER:	BOSSENER CHARLES TBD

DIRECTIONS

DIRECTIONS FROM CHESTER CHARTER AIRPORT:

HEAD NORTHWEST ON CHESTER AIRPORT TOWARD CT-145 / WINTHROP RD, TURN RIGHT ONTO CT-145 / WINTHROP RD, TURN RIGHT ONTO CT-148 / W MAIN ST, TAKE THE RAMP ON THE RIGHT FOR CT-9 SOUTH AND HEAD TOWARD OLD SAYBROOK, TAKE THE RAMP ON THE LEFT FOR I-95 NORTH / US-1 NORTH AND HEAD TOWARD NEW LONDON / PROVIDENCE, AT EXIT 71, HEAD ON THE RAMP RIGHT AND FOLLOW SIGNS FOR FOUR MILE RIVER RD, TURN RIGHT ONTO FOUR MILE RIVER RD, TURN RIGHT ONTO US-1 N / BOSTON POST RD TURN LEFT ONTO PLUM HILL, TURN LEFT ONTO ARBOR CROSSING, THEN IMMEDIATELY TURN RIGHT ONTO PUMPKIN GROVE, ARRIVE AT 2 ARBOR CROSSING EAST LYME, CT 06333

VICINITY MAP



N

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
2500 W. HIGGINS RD. SUITE 500 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED
PROFESSIONAL ENGINEER
02/02/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	9/29/21	ISSUED FOR PERMIT
1	02/02/22	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

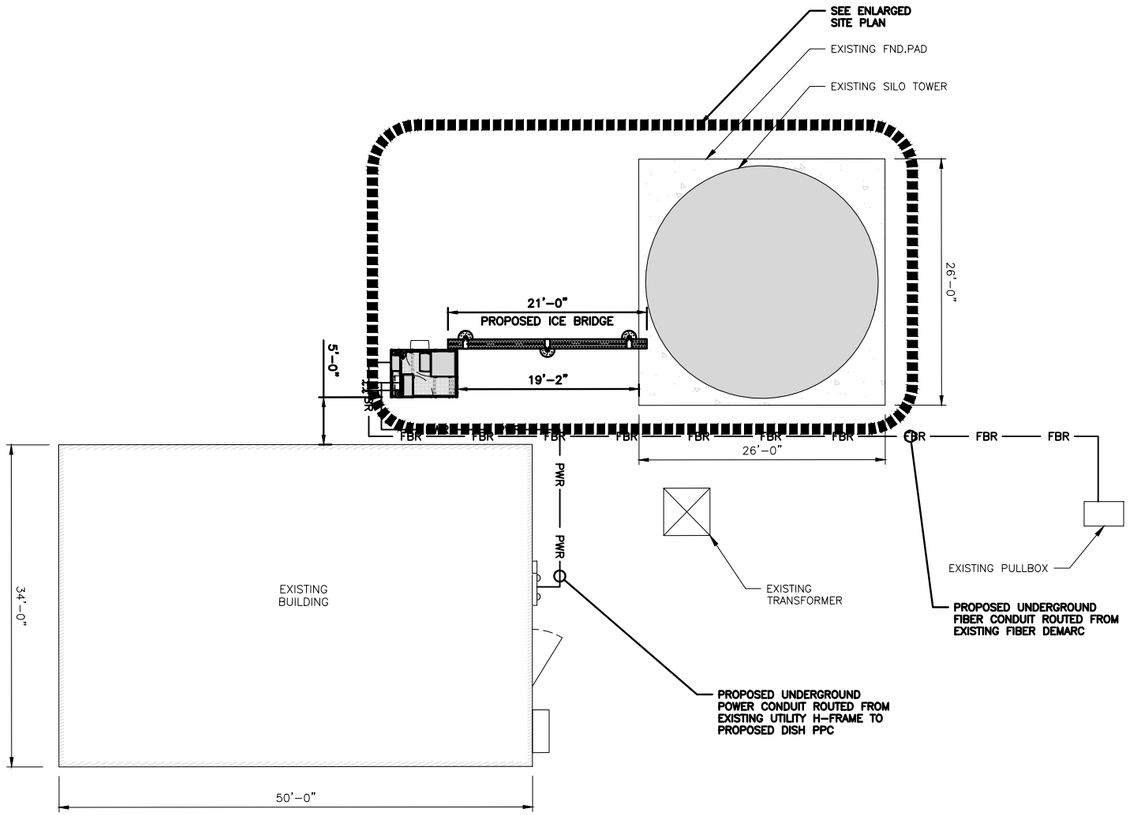
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



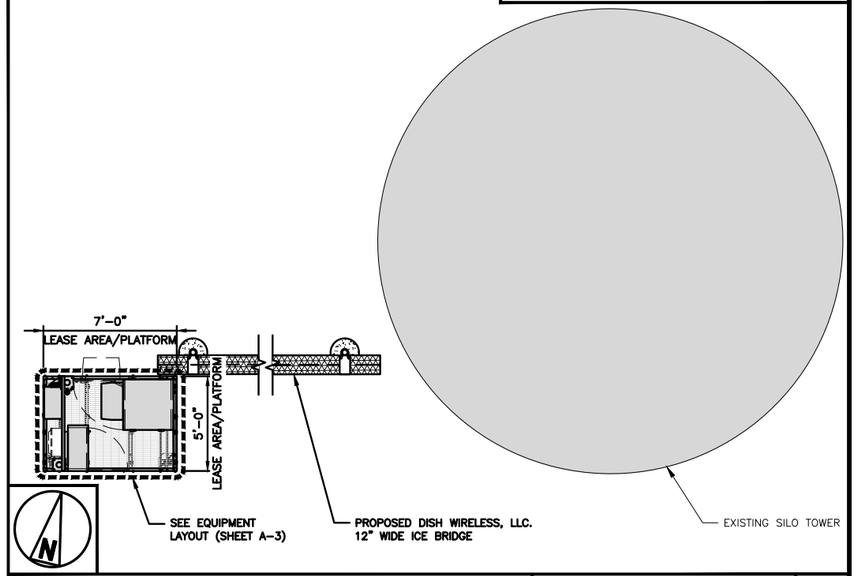
COMPOUND PLAN

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

1

NOTES

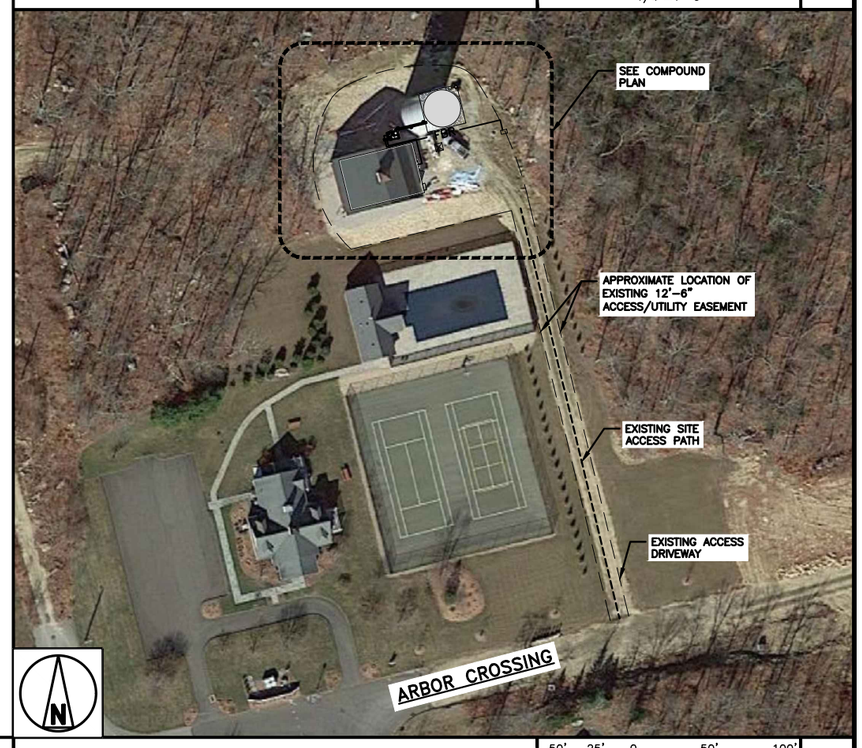
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

2



SITE PLAN

50' 25' 0 50' 100'
1"=50'

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
2500 W. HIGGINS RD. SUITE 500 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
02/02/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	9/29/21	ISSUED FOR PERMIT
1	02/02/22	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

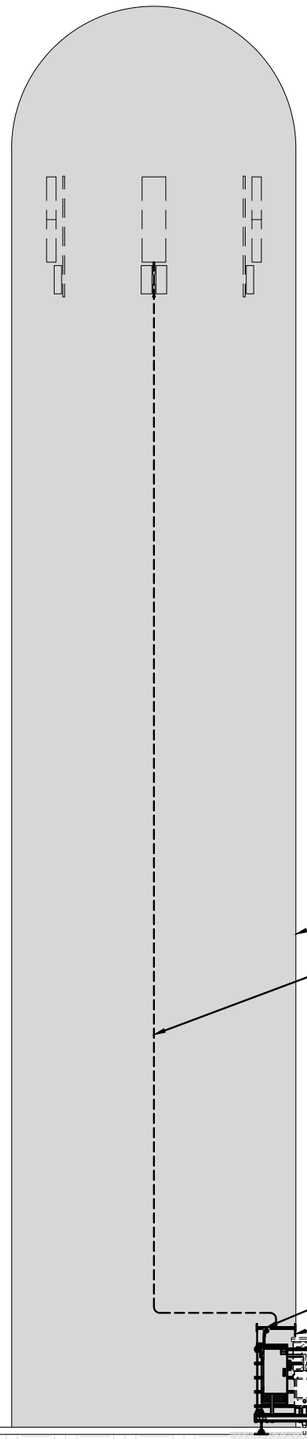
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

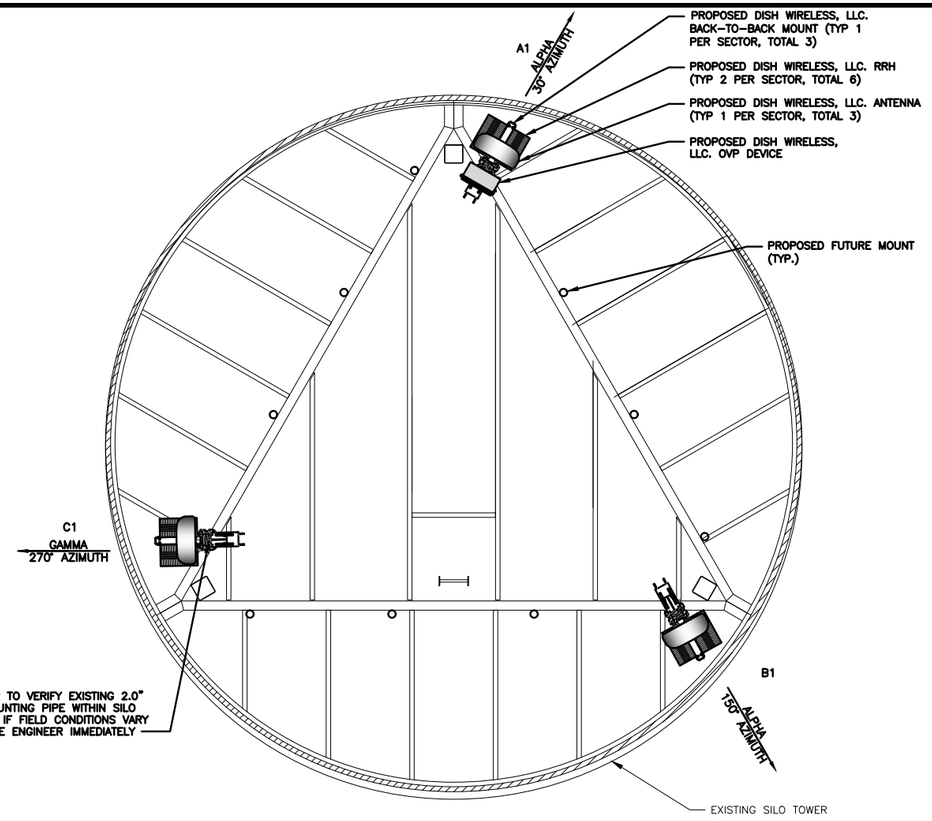
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. BASED ON THE MOUNT ANALYSIS COMPLETED BY INFINIGY DATED 07/27/2021. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY TOWERCO DATED: 05/26/21



PROPOSED SOUTH WEST ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	30°	66'-0"	(1) HIGH-CAPACITY HYBRID CABLE (115' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	150°	66'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	270°	66'-0"	

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B604	5G
	A1	FUJITSU – TA08025-B605	5G
BETA	B1	FUJITSU – TA08025-B604	5G
	B1	FUJITSU – TA08025-B605	5G
GAMMA	C1	FUJITSU – TA08025-B604	5G
	C1	FUJITSU – TA08025-B605	5G

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
02/02/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	9/29/21	ISSUED FOR PERMIT
1	02/02/22	REVISED PER COMMENTS

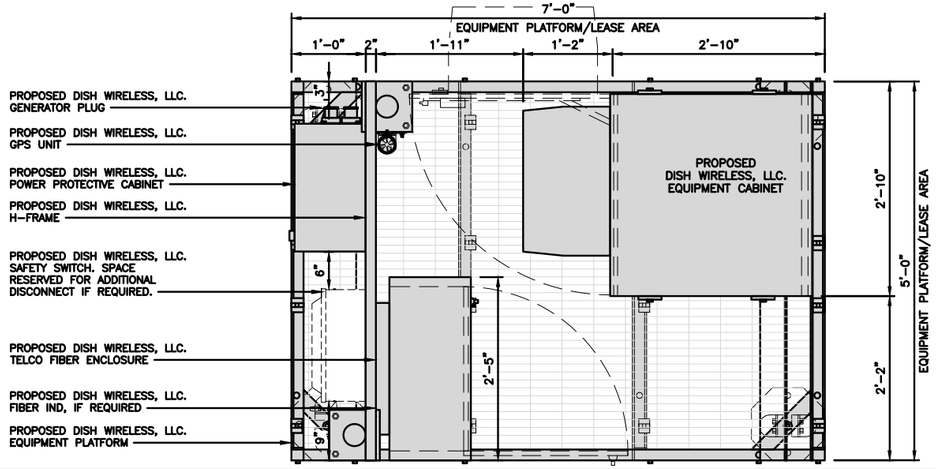
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2

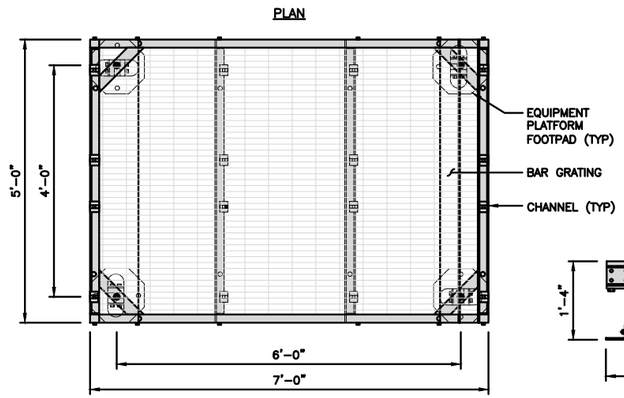


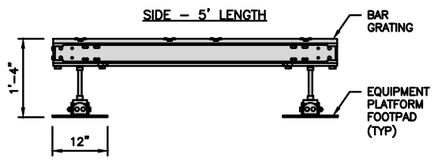
PLATFORM EQUIPMENT PLAN

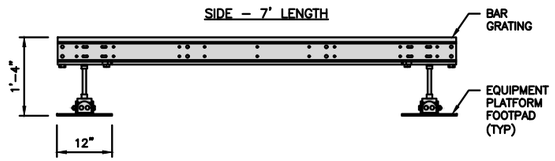
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

1

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





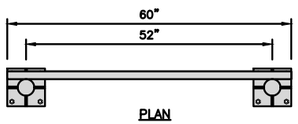


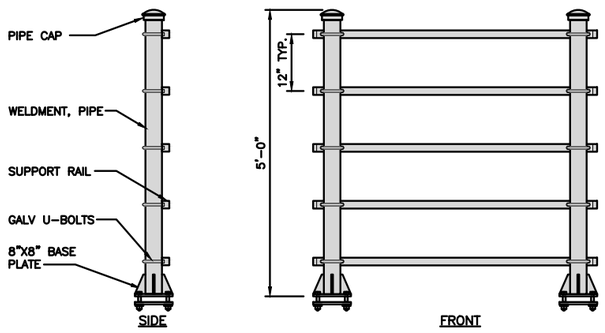
PLATFORM DETAIL

NO SCALE

2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS





H-FRAME DETAIL

NO SCALE

3

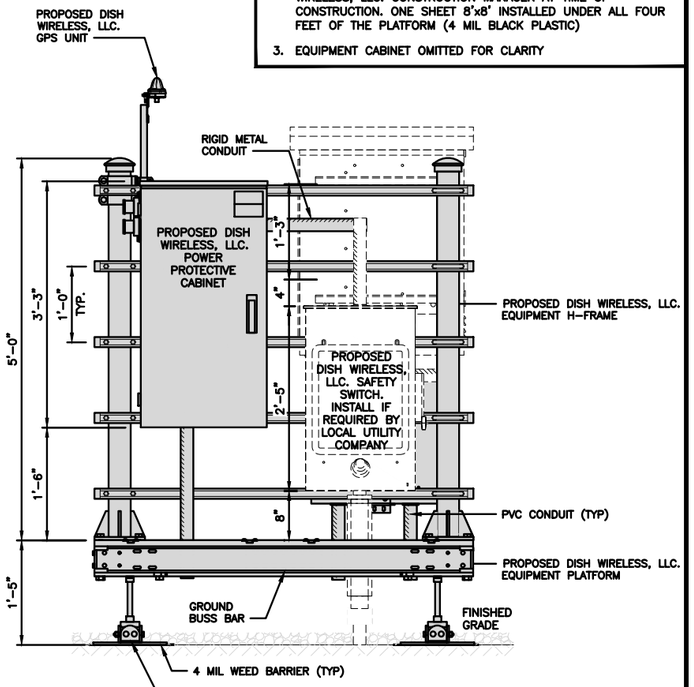
NOT USED

NO SCALE

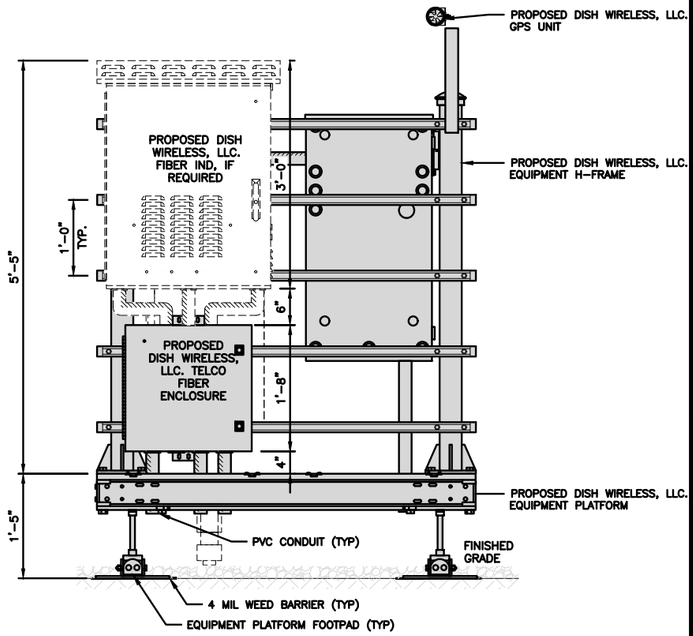
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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02/02/202

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 0

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

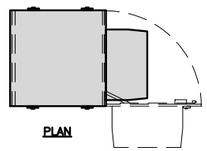
2 ARBOR CROSSING
EAST LYME, CT 06333

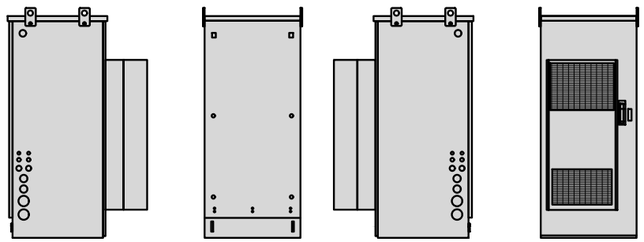
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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

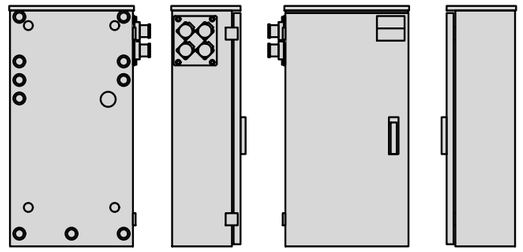




CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

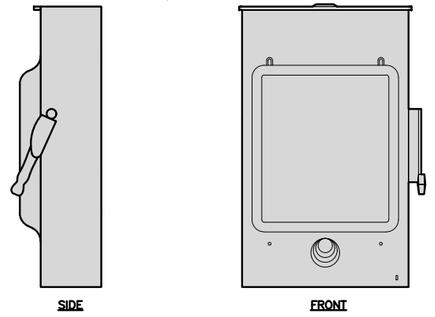
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



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

SQUARE D SAFETY SWITCHES D224NRB

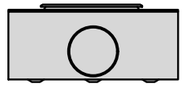
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

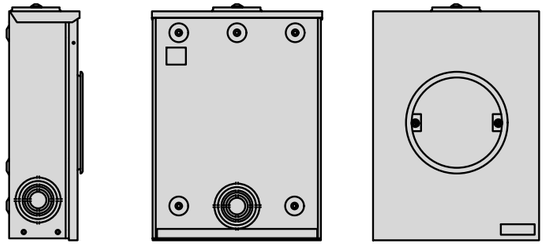


SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

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

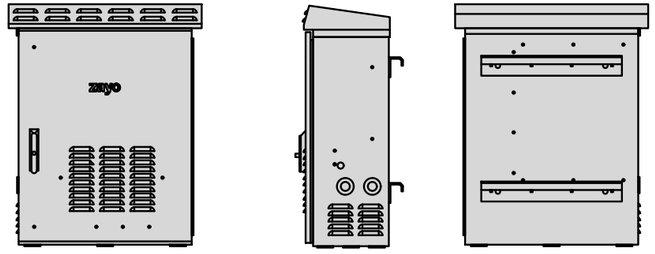




METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU CABINET ("LIT" SITES)

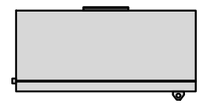
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

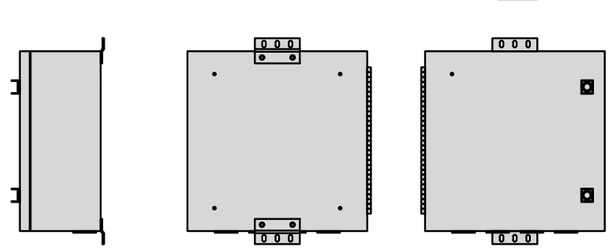


NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

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



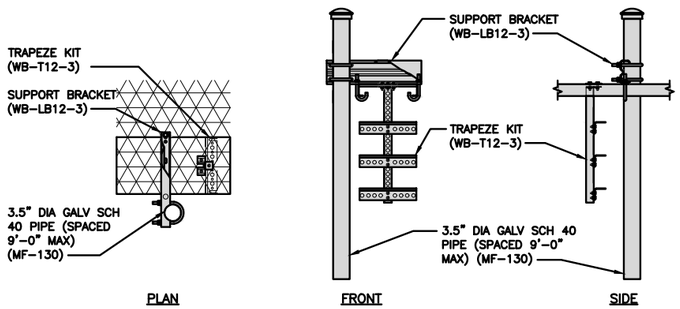


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

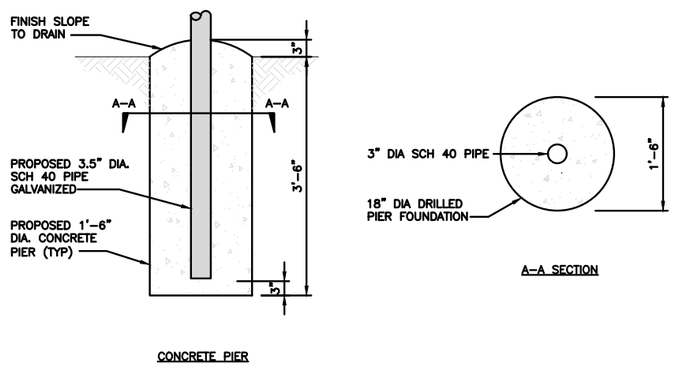
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

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

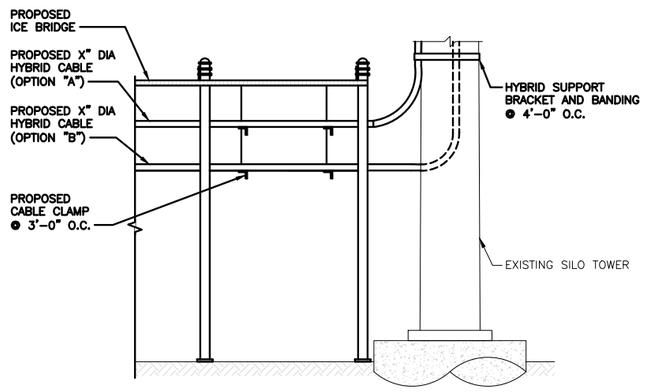
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
2039–Z5555C

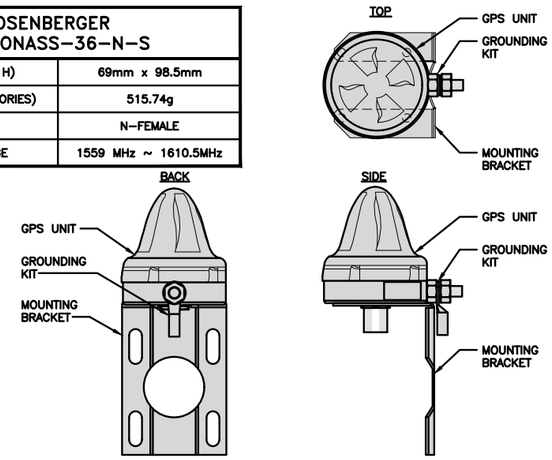
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

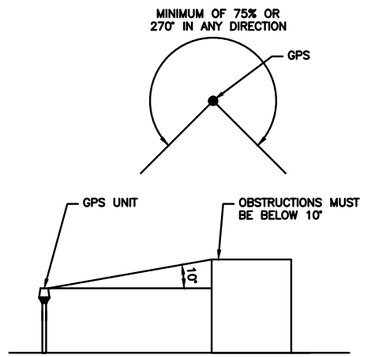
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

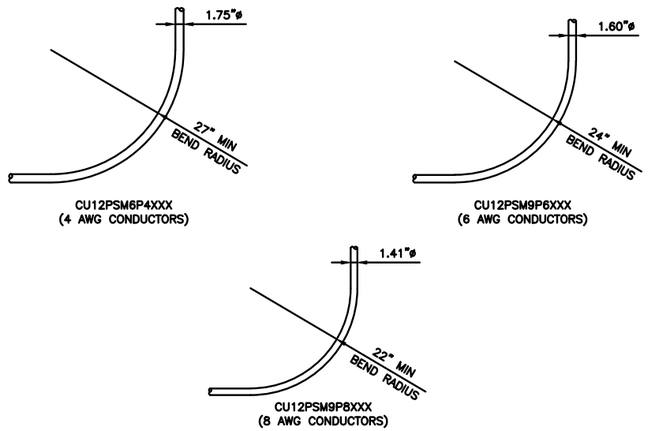
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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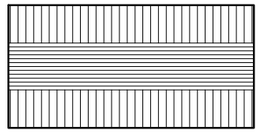
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

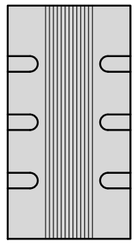
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

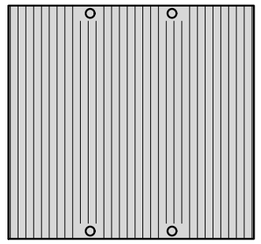
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



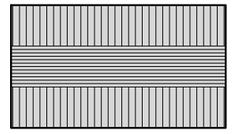
SIDE



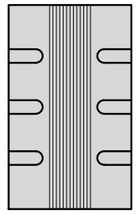
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

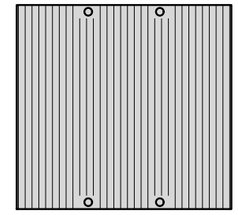
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

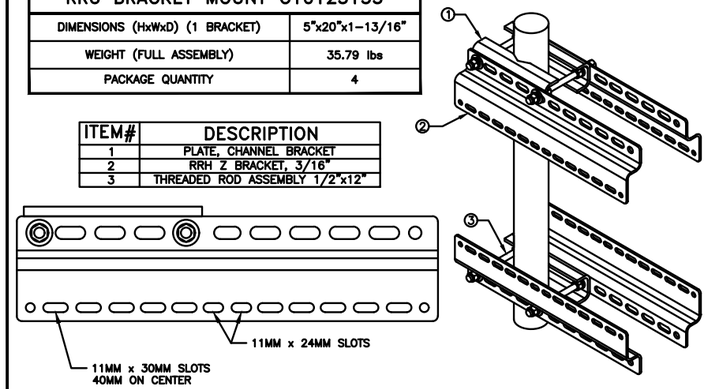


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

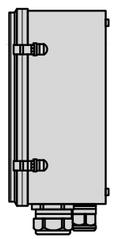
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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

PLAN



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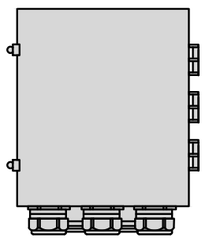

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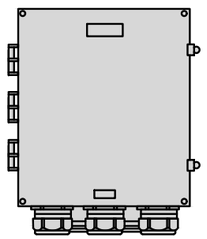
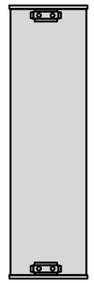


FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 4

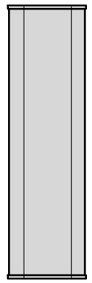
JMA WIRELESS MX08FRO665-20 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK

SIDE



FRONT

ANTENNA DETAIL | NO SCALE | 5

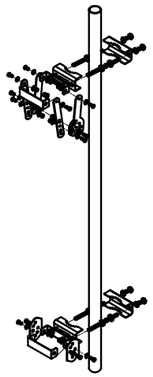
NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

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

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

ANTENNA BRACKET NOT PART OF KIT



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

NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
02/02/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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1	02/02/22	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

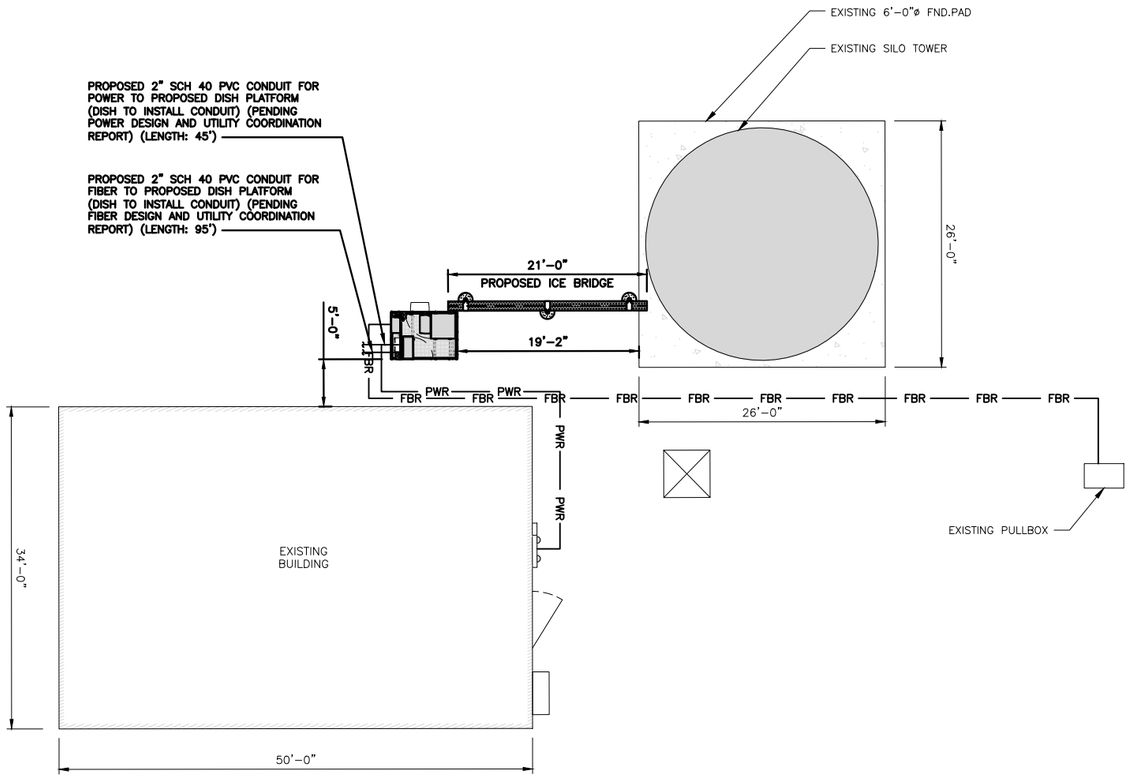
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

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

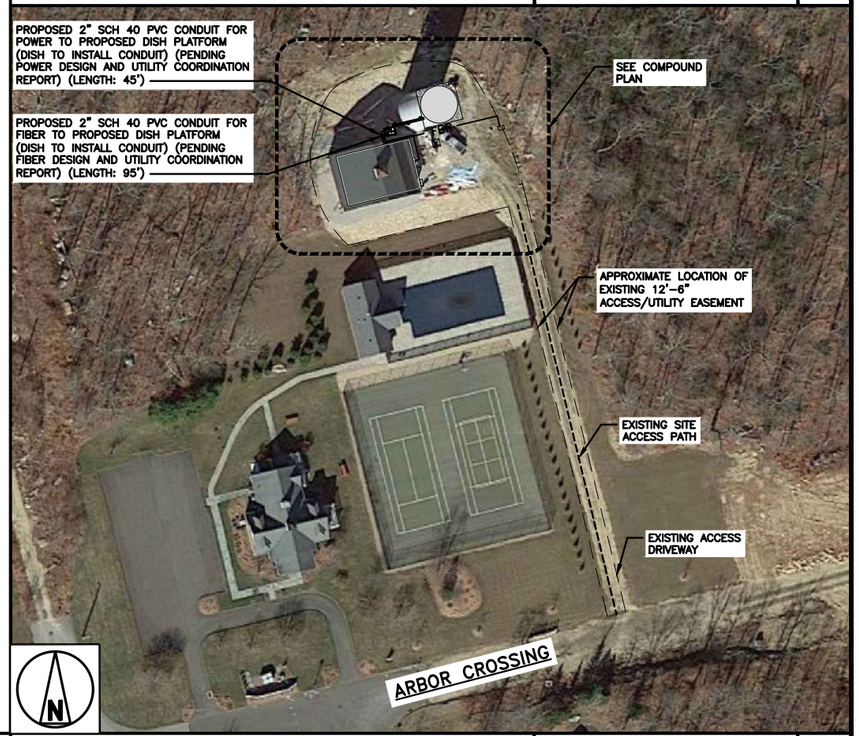
1

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

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

ELECTRICAL NOTES

2



OVERALL UTILITY ROUTE PLAN

50' 25' 0 50' 100'
1"=50'

3

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

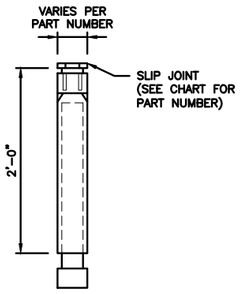
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

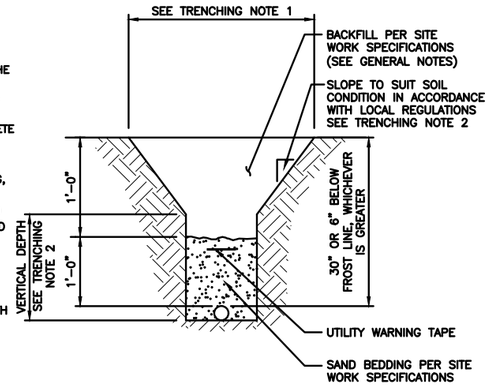


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

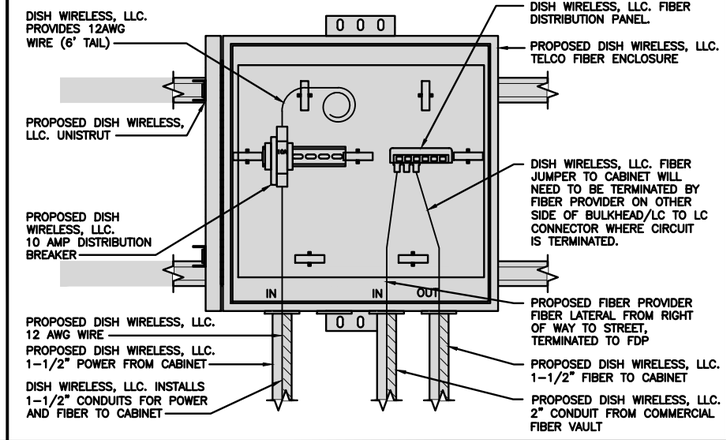
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

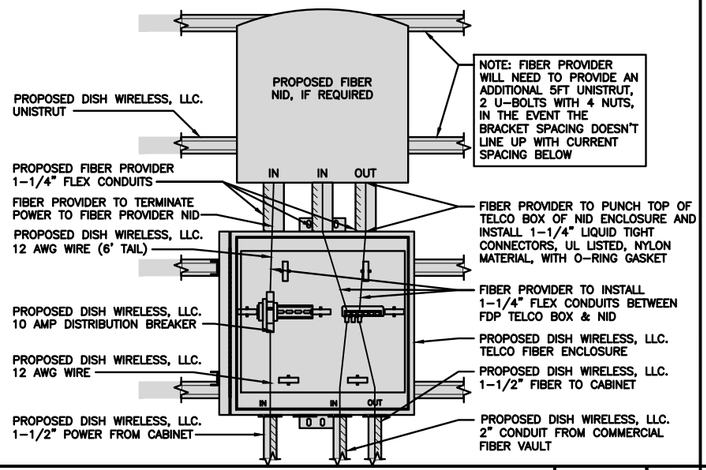
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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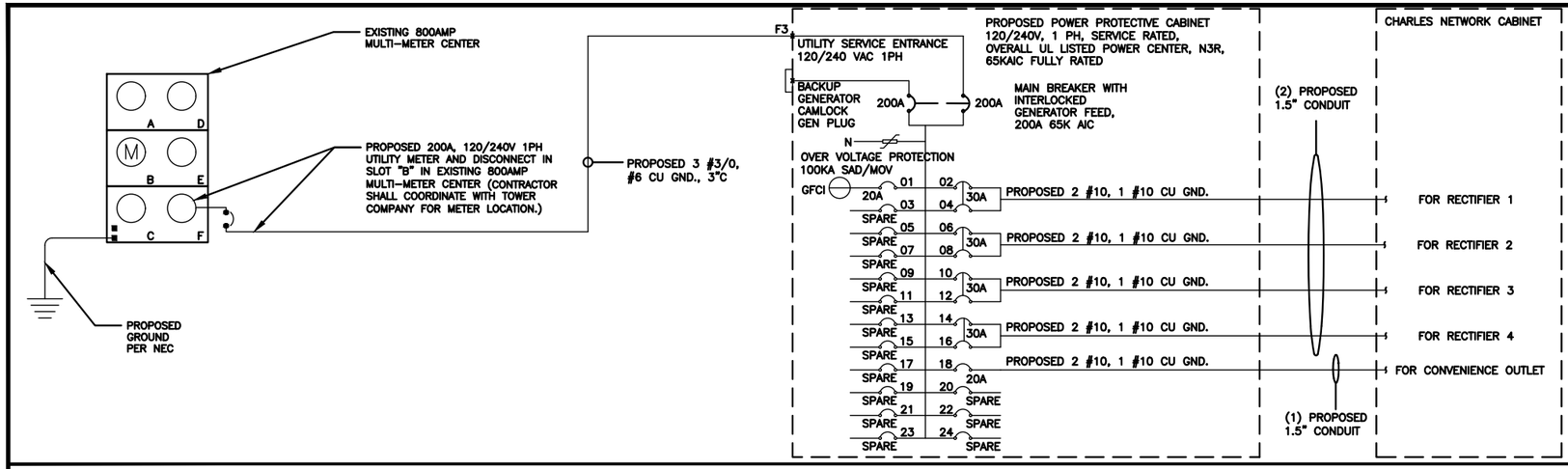
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



NOTES

THERE ARE A TOTAL OF (10) CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. ADJUSTABLE FACTOR OF 50% PER NEC TABLE 310.15(B)(3)(a) SHALL APPLY.

#10 FOR 15A/1P BREAKER: 0.5 x 40A = 15.0A
#8 FOR 20A-25A/2P BREAKER: 0.5 x 55A = 27.5A

CONDUIT SIZING: ASSUME 1.5" EMT
AT 40% FILL PER NEC 358, TABLE 4 – 0.814A SQ. IN AREA

WIRES: USING THWN-2, CU. (INCLUDING 3 GROUND WIRES)
#6 – 0.0507 SQ. IN X 8 = 0.4056 SQ. IN
#8 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#10 – 0.0211 SQ. IN X 4 = 0.0844 SQ. IN <GROUND
#12 – 0.0133 SQ. IN X 1 = 0.0133 SQ. IN <GROUND
TOTAL = 0.5765 SQ. IN

1.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OR (15) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

CONDUIT SIZING: ASSUME 3.0" SCH 40 PVC
AT 40% FILL PER NEC 352,TABLE 4 – 1.216A SQ. IN AREA

WIRES: USING THHN, CU. (INCLUDING 2 GROUND WIRES)
#3/0 – 0.1318 SQ. IN X 3 = 0.3954 SQ. IN
#2 – 0.0521 SQ. IN X 1 = 0.0521 SQ. IN
TOTAL = 0.4475 SQ. IN

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

(CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE — NO SCALE — 1

PROPOSED PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
–SPARE–				1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
–SPARE–				3	B	4			2880	
–SPARE–				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
–SPARE–				7	B	8			2880	
–SPARE–				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
–SPARE–				11	B	12			2880	
–SPARE–				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
–SPARE–				15	B	16			2880	
–SPARE–				17	A	18	20A	1920		CHARLES GFCI OUTLET
–SPARE–				19	B	20				–SPARE–
–SPARE–				21	A	22				–SPARE–
–SPARE–				23	B	24				–SPARE–
VOLT AMPS								13440	11520	

200A MCB, 1ϕ, 3W, 120/240V	L1	L2		
MB RATING: 65,000 AIC	13440	11520	VOLT AMPS	
	140	96	AMPS	
	140		MAX AMPS	
	175		MAX 125%	

PANEL SCHEDULE
(CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE — NO SCALE — 2

NOT USED — NO SCALE — 3

FAULT CALCULATIONS — NO SCALE — 4

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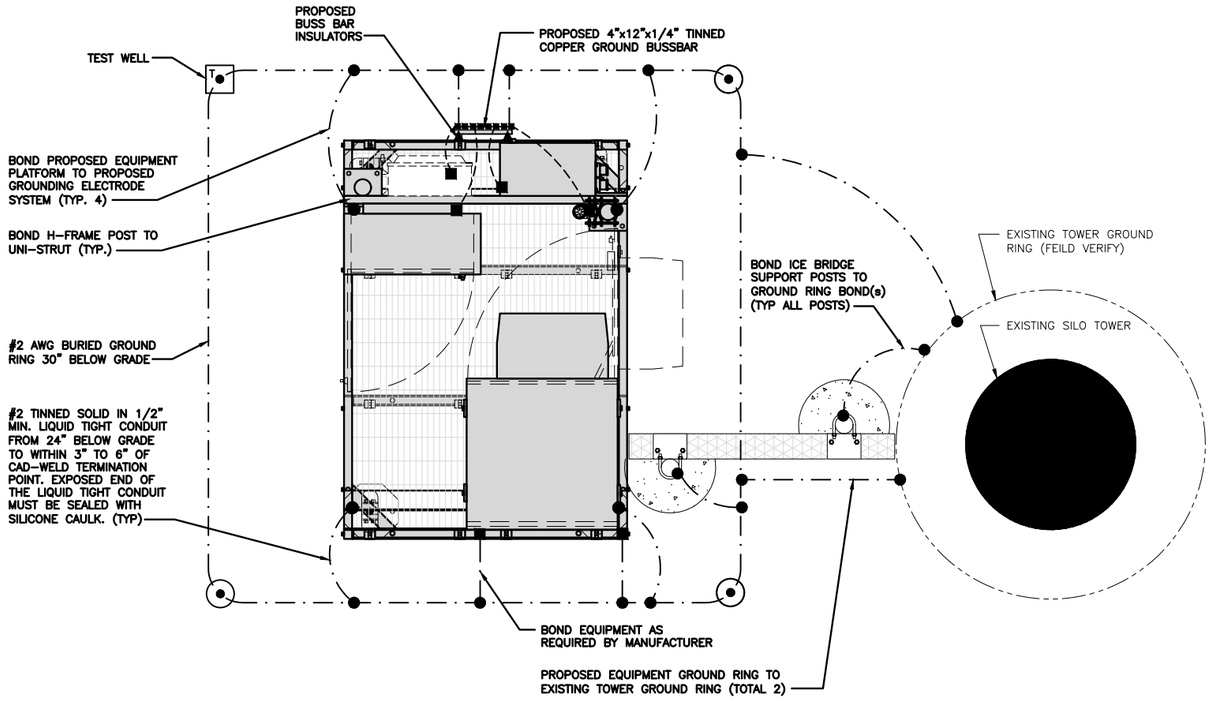
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

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

SHEET NUMBER
E-3

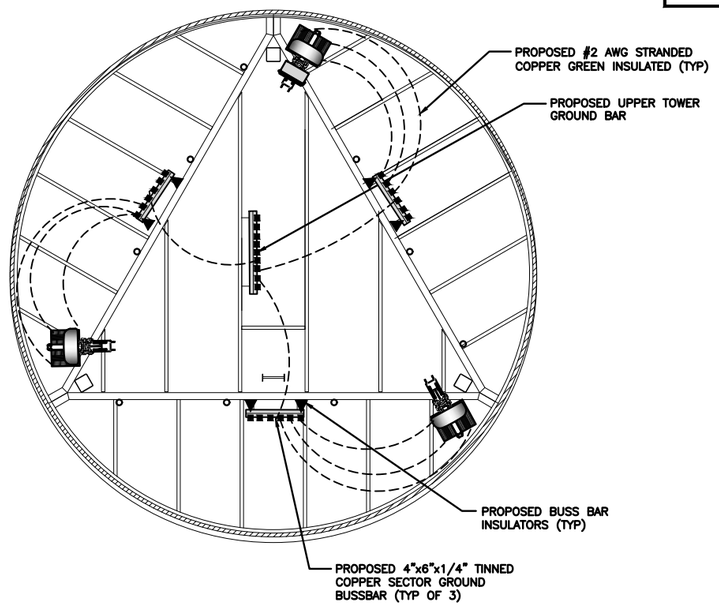


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

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, LLC. 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.

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

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

(L) 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.

(M) 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.

(N) 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

(P) 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.

(Q) 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

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

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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LICENSED PROFESSIONAL ENGINEER
02/02/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	9/29/21	ISSUED FOR PERMIT
1	02/02/22	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

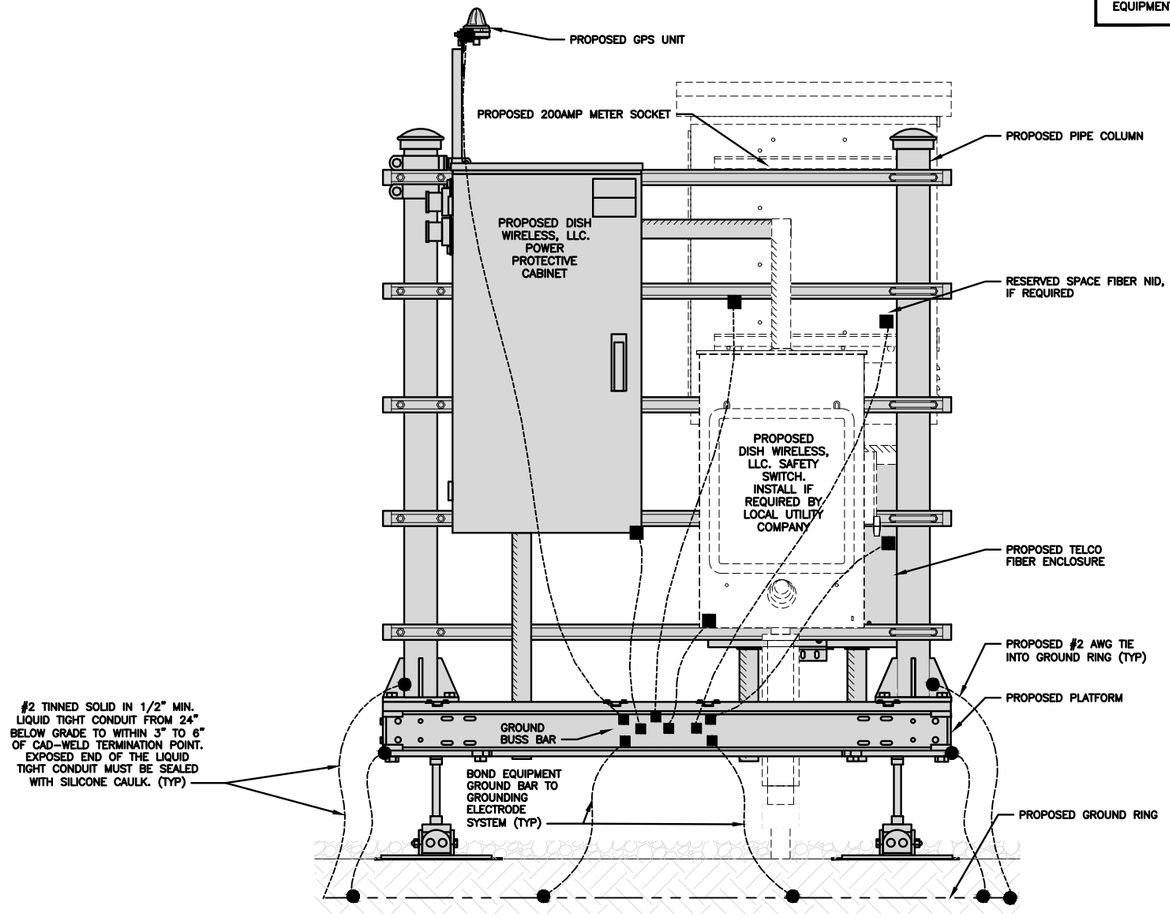
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

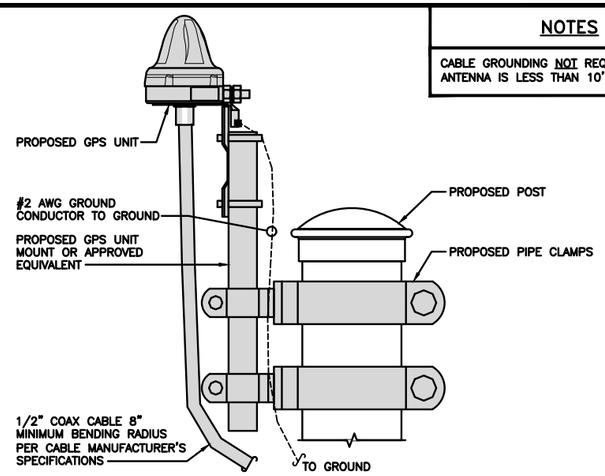
EQUIPMENT CABINET OMITTED FOR CLARITY



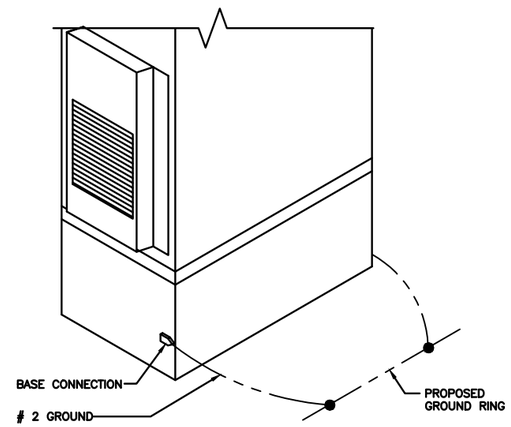
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

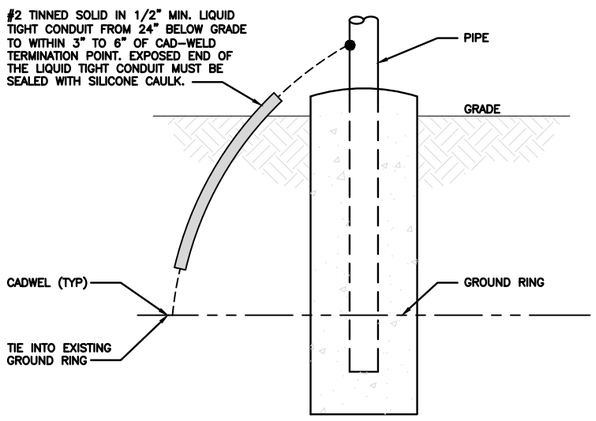
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



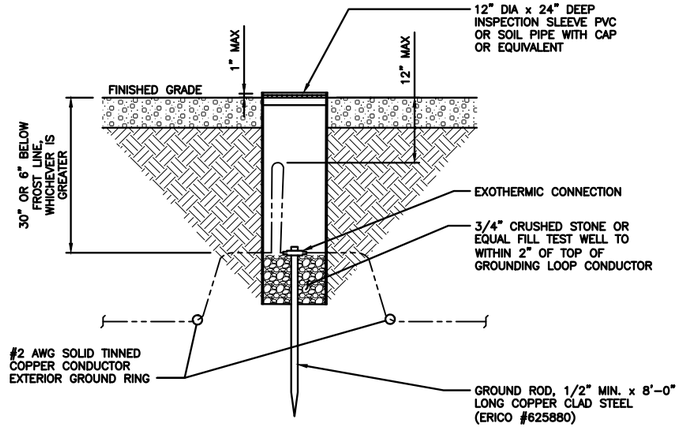
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



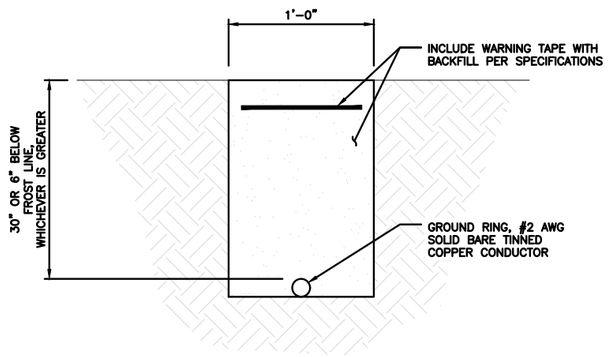
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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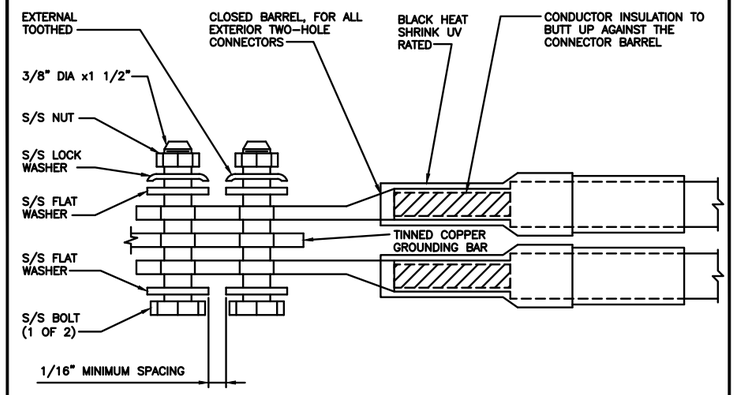
EAST LYME, CT 06333

SHEET TITLE
GROUNDING DETAILS

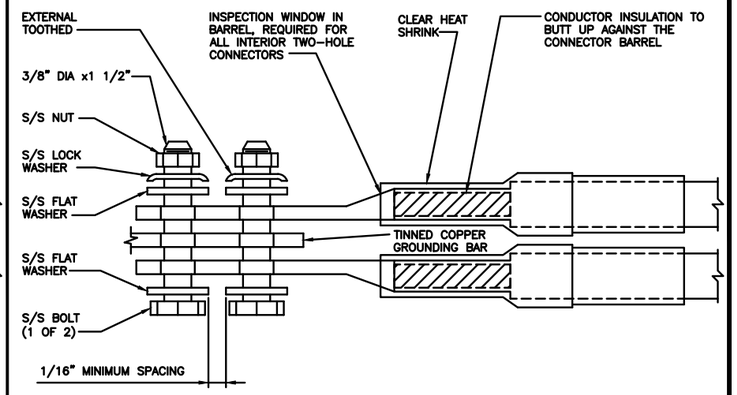
SHEET NUMBER
G-2

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

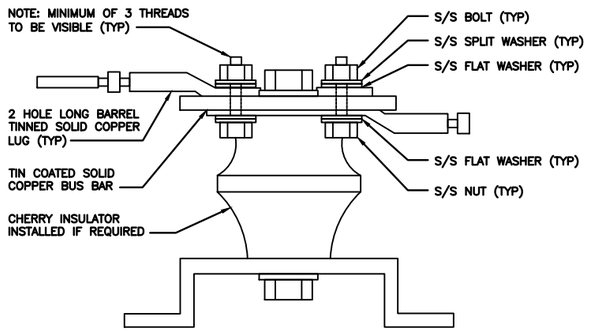
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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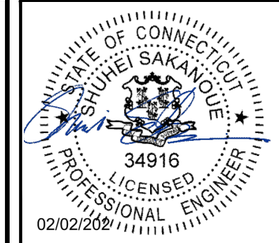

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SHEET TITLE
GROUNDING DETAILS

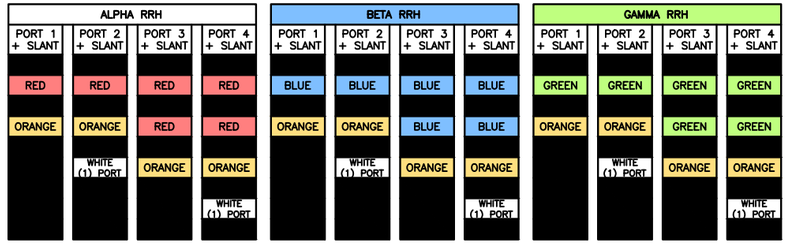
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

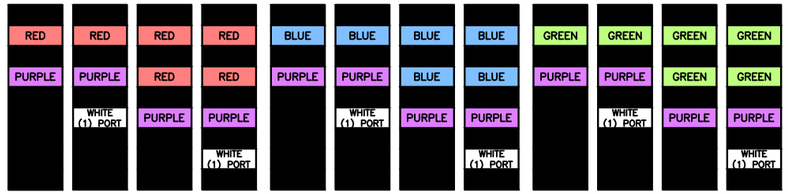
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

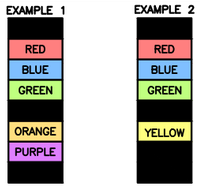


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM LONG WITH FREQUENCY BANDS

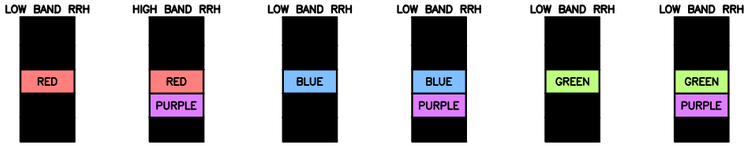
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



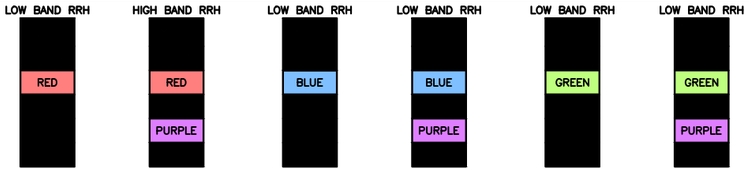
HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

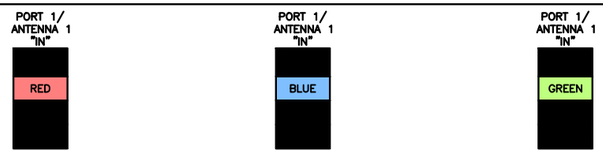


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



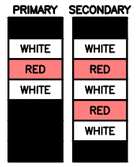
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

MICROWAVE CABINETS WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S.



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71–N28)
OPTIONAL – (N29)
ORANGE

AWS
(N65+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANTRRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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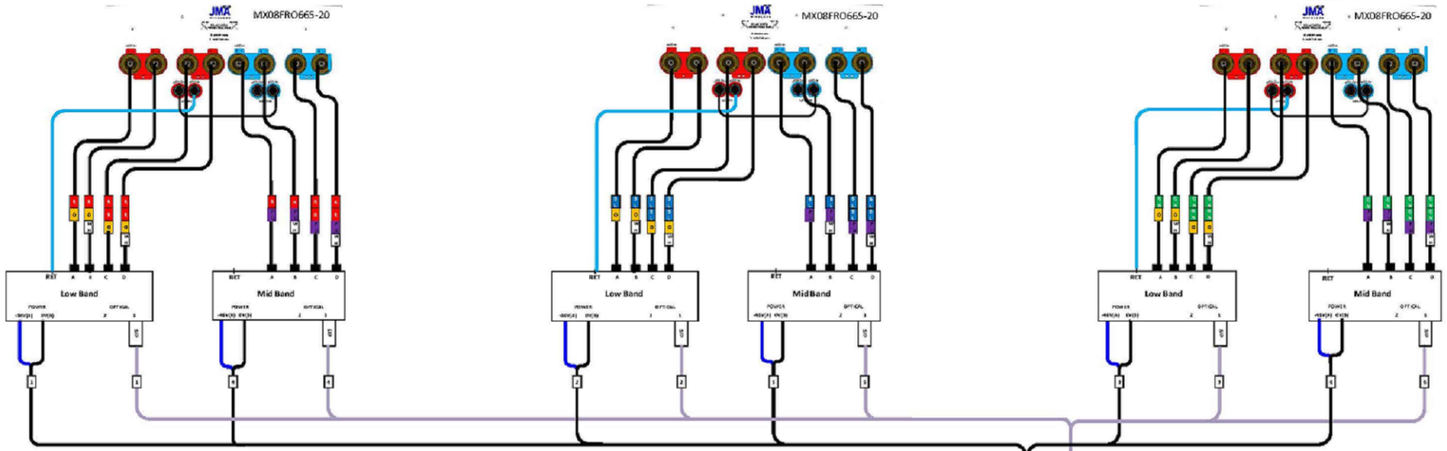
EAST LYME, CT 06333

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1



Fiber Patch Panel

Bottom Row	Pair 1	Pair 2	Pair 3	Pair 10	Open	Open
Middle Row	Pair 4	Pair 5	Pair 6	Pair 11	Open	Open
Top Row	Pair 7	Pair 8	Pair 9	Pair 12	Open	Open

CSR NCS540

Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed VM
11	Te0/0/0/11	Fixed VM
12	Te0/0/0/12	Fixed VM
13	Te0/0/0/13	Fixed VM
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/019	SM1 - Data 1
20	Te0/0/020	SM1 - Data 2
21	Te0/0/021	SM2 - Data 1
22	Te0/0/022	SM2 - Data 2
23	Te0/0/023	Reserved Uplink (EDC, LDC)
24	Te0/0/024	Blank/Future
25	Te0/0/025	Blank/Future
26	Te0/0/026	Fiber NIU
27	Te0/0/027	Fiber NIU
28	Te0/0/028	Blank/Future
29	Te0/0/029	Blank/Future

top

bottom

Bottom OVP Layout

Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open

Bottom OVP
Specific OVP model number detailed in RFDS

Quantity	Job	ISDV NO	DWG NO	REV	
9-Jan-2021	SHEET	Rone		SHEET	3

5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)

PLUMBING DIAGRAM | NO SCALE | 1

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SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, LLC.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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34916
LICENSED PROFESSIONAL ENGINEER
02/02/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	9/29/21	ISSUED FOR PERMIT
1	02/02/22	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

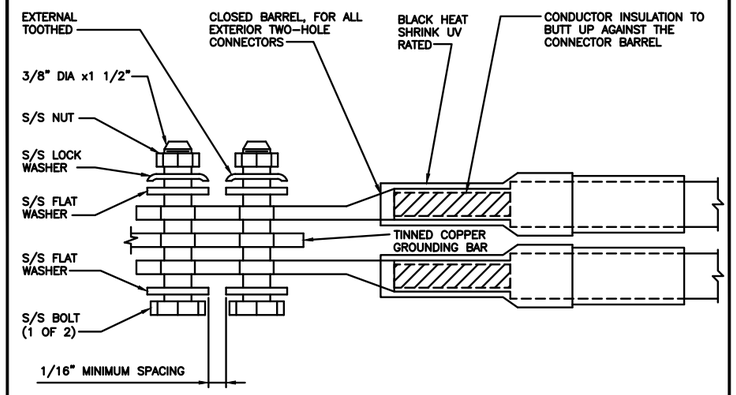
2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
GENERAL NOTES

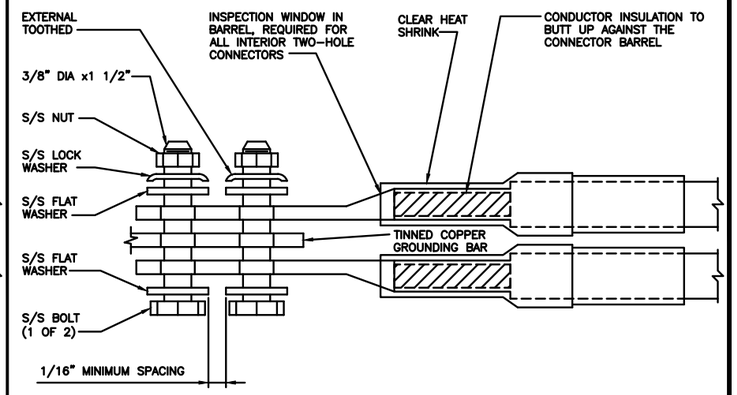
SHEET NUMBER
GN-2

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).

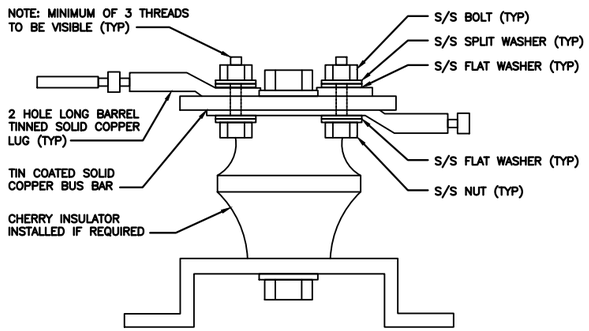
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00076A

2 ARBOR CROSSING
EAST LYME, CT 06333

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

PASS
(Tower, 80% capacity)
(Foundation, 92% capacity)

October 19, 2021

Stephen Rambeau
Director of Engineering
TowerCo
5000 Valleystone Drive
Cary, NC 27519

Subject	**Rigorous Structural Analysis**
Carrier Designation	**Dish Wireless, Colocation** **Site Number: BOBOS00076A**
TowerCo Designation	**Site Number: CT0025** **Site Name: East Lyme Relo** **JIRA Ticket: ENG-34607**
Engineering Firm Designation	**Delta Oaks Group Project: STR21-11848-10** **Delta Oaks Group Site Number: 07-02012**
Site Data	**2 Arbor Crossing, East Lyme, New London County, CT 06333** **Latitude: N 41.3663°±; Longitude: W 72.2423°±** **Elevation: 340-ft±, Topography Category: 1;** **Exposure Category: "C"; Risk Category: "II";** **105-ft Self-Supporting Silo Structure**

Dear Stephen Rambeau,

To your request, we present our rigorous structural analysis. Our work indicates that with the proposed appurtenance configuration, the tower and foundation **will** satisfy the structural strength requirements of ANSI/TIA-222-G, *Structural Standard for Antenna Supporting Structures and Antennas* and *2018 Connecticut State Building Code/2015 International Building Code* / ASCE 7-10 for:

- V_{ult} = 135-mph / V_{asd} = 105-mph three-second gust basic wind speed [per Eqn. 16-33 of the 2015 IBC]
- 50-mph three-second gust basic wind speed with 3/4-in radial ice
- Earthquake design parameters and loading, per USGS Ground Motion Parameter Calculator (ASCE 7-10) and industry standard, respectively, including:
  - S_s = 0.161, S_1 = 0.058

Delta Oaks Group appreciates the opportunity to be of service to TowerCo. Please do not hesitate to contact us if you have any questions or require any additional information.

Sincerely,

Rick Emerson

Rick Emerson, EI
Structural Engineer II

Reviewed By: CH

STATE OF CONNECTICUT
MICHAEL L. LASSITER
No. 25064
LICENSED
PROFESSIONAL ENGINEER

Michael L. Lassiter

Michael L. Lassiter, SE, PE
Chief Structural Engineer, Vice President
CT PE License PEN.0025064

Table 1: Existing, Proposed and Reserved Appurtenance Configuration

Elevation (AGL, ft)	Carrier	Mount	Equipment	Feedlines	Location
95[1]	AT&T [Existing]	(1) Platform Mount	(9) CCI HPA65R-BU6AA-K (3) KMW EPBQ654L8H6-L2 (3) Ericsson RRUS B14 4478 (3) Ericsson RRUS32 (6) Ericsson RRUS-12 (6) Ericsson RRUS-11 (3) Ericsson RRUS-E2 (3) Raycap DC12-48-60-0-25E (3) Fiber Management Boxes	(6) DC Cables (1) Fiber Trunk	Inside
86[3]	Verizon [Existing]	(1) Platform Mount	(6) Commscope NHH-65B-R2B (3) Samsung MT6407-77A (3) Samsung B2/B66A RRH-BR049 (3) Samsung B5/B13 RRH-BR04 (1) Commscope FE-16148-OVP-B12	(1) 12x24 Hybrid	Inside
66[2]	***Dish Wireless [Proposed]***	***(1) Platform Mount***	***(3) JMA MX08FRO665-20_V0F (3) Fujitsu TA08025-B605 (3) Fujitsu A08025-B604 (1) Raycap RDIDC-9181-PF-48***	***(1) 1.6" Hybrid***	***Inside***

1. Existing AT&T loading per previous construction drawings dated 03/07/2017 stamped "As-Built by JDH Contracting.
2. Proposed Dish Wireless loading per colocation tenant application dated 10/11/2021 via JIRA Ticket# ENG-34607.
3. Existing Verizon loading per colocation tenant application dated 06/11/2021 via JIRA Ticket# ENG-34079. Verizon mount per correspondence with TowerCo.

Table 2: Serviceability Requirements: Limit State Deformations[1]

Elevation (AGL, ft)	Equipment	Twist (deg)[2]	Sway (deg)[2]	Deflection (in)	Deflection Limit (in)[3]	Result
91.25	Structure	0.0047	0.0336	0.548	37.8	O. K.

1. See program output for supporting details.
2. Per TIA-222-G Section 2.8.2.1 rotation about the vertical axis (twist) or any horizontal axis (sway) of the structure shall not exceed 4 degrees.
3. Per TIA-222-G Section 2.8.2.2 horizontal displacement shall not exceed 3% of the height of the structure.

Table 3: Tower Structure Results, Percent Capacity Utilized[1]

Structural Component	Capacity	Result
Legs	59	O. K.
Diagonals	**80**	**O. K.**
Girts	16	O. K.
Bolts	**80**	**O. K.**

1. Detailed results and capacities available in the TNX Tower output attached. Percent utilized less than 105% is considered acceptable.

Table 4: Foundation Results, Percent Capacity Utilized

Component	Percent Utilized	Result
Max Utilization – Soil	**92**	**O. K.**
Max Utilization –Structure	42	O. K.

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. Delta Oaks Group ("DOG") has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed based on industry standards.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 SF, and coax equal to the number of existing antennas without reserve.
11. Unless otherwise noted, documents reviewed and used in this structural analysis were provided by CLIENT.
12. The proposed coax shall be installed per the attached coax layout plan, Sheet QP-P.
13. Leg A is determined per best industry practice.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and DOG should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

Delta Oaks Group ("DOG") has not necessarily performed a detailed site visit to the tower to verify the member sizes or antenna/coax loading. Even if a site visit was performed, it is possible that the tower configuration, components, and/or loading has been modified since said site visit. Therefore, if the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation, nor does this report replace a full tower inspection. The tower and foundations are assumed to be in good condition, twist free, and plumb and are also assumed to have been properly fabricated, erected, and maintained.

The engineering services rendered by DOG in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This report does not include an analysis of the fabrication of the structure (including welding). As it is not feasible to attain all the detailed information necessary to perform a thorough analysis of every structural sub-component and connection of an existing tower, DOG provides a limited scope of service that does not verify the adequacy of every weld, plate connection detail, etc. Therefore, the purpose of this report is to assess the capacity of the major tower components regarding the addition of appurtenances, usually accompanied by transmission lines, to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from DOG, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work.

DOG makes no warranties, expressed and/or implied, in connection with this report and disclaim any liability arising from material, fabrication, and erection of this tower.

Attachments:

- Document Research Report
- Program Input and Output – Wind
- Silo Wind Pressure Calculation
- Foundation Calculations
- Tenant Application

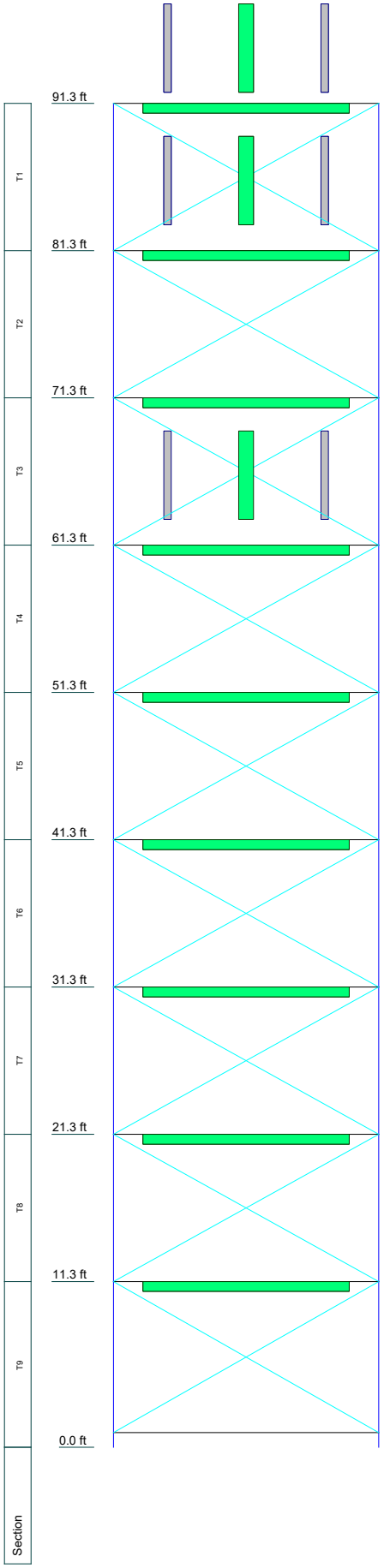
Document Research Report

Project #: STR21-11848-10
Site ID: CT0025
Site Name: East Lyme Relo

Doc ID	Document Name	Issued By	Issued To	Issue Date	Description
3007630	3007630_CT0025 East Lyme Relo - Tape Drop				Tape Drop Photo
19-05533.JF	19-05533 East Lyme Relo CT0025	Delta Oaks Group	Delta Oaks Group		Job Folder
0702012.SD	0702012 Site Documents	TowerCo	Delta Oaks Group		Site Documents Folder
3007631	3007631_CT0025 East Lyme Relo - Stealth Tower (Silo)				Photo of Silo
2117371	2117371_CT0025 East Lyme Relo - Geotechnical Report_04-17-17	Atlantic Consulting & Engineering, LLC	Centek Engineering Inc.	4/17/2017	Geotechnical Report
2113400	2113400_CT0025 Stealth Silo Tower and Foundation Design Calculations 04-25-2017	Vector Engineering	SAI Communications & Stealth Concealment Solutions	4/25/2017	Silo Tower Foundation Calculations
2113399	2113399_CT0025 Stealth Silo Tower and Foundation Design Drawings 04-25-2017	Vector Engineers	Stealth Go Unnoticed	4/25/2017	Silo Tower and Foundation Design Drawings
2117372	2117372_CT0025 1A Survey 06-20-17	Centek Engineering Inc.	AT&T Mobility	6/20/2017	1A Survey
2117473	2117473_CT0025 East Lyme Relo - Opinion Letter 1A Cords (FAAFCC, State Filing & Lighting are Not required. No AM Issues) 02-13-18	Federal Communication Commission	TowerCo	2/13/2018	1A Cords Letter
2118297	2118297_CT0025 East Lyme Relo - ATT BTS Collo Application 4-3-18	TowerCo	New Cingular Wireless	4/3/2018	Colocation Application
3000761	3000761_CT0025 East Lyme Relo - ATT Site Sublease 4-23-19	New Cingular Wireless PCS, LLC	TowerCo 2013 LLC	4/23/2018	Site Sublease
2124966	2124966_CT0025 East Lyme Relo - NSB - CD REV 7_18.05.17 (SS)	Centek Engineering	AT&T	5/17/2018	Construction Drawings REV7
3001046	3001046_CT0025 Notice of Rent Commencement ATT	TowerCo	AT&T Mobility Tower Asset Group	4/30/2019	Initial Rent Commencement Notice

Document Research Report

Doc ID	Document Name	Issued By	Issued To	Issue Date	Description
3005438	3005438_CT0025 East Lyme Relo - ATT Emergency Power Generator Agreement 9-4-19	TowerCo 2013 LLC	New Cingular Wireless PCS LLC	9/4/2019	ATT Emergency Power Generator Agreement
3007629	3007629_CT0025 East Lyme Relo - TowerCo Height Verification Form 11-15-19	TowerCo		11/15/2019	Hieght Verification Form
19-05533	ENG-30364	TowerCo	Delta Oaks Group	12/2/2019	CT0025 - Create Tower Profile + SSR For New Tower 'East Lyme Relo'
19-05533	ENG-30365	TowerCo	Delta Oaks Group	12/2/2019	CT0025 - Create Site Plan For New Tower 'East Lyme Relo
STR19-05533-20	CT0025_20191204_SP.pdf	Delta Oaks Group	TowerCo	12/4/2019	Site Plan
STR19-05533-04	CT0025_20191217_TP.pdf	Delta Oaks Group	TowerCo	12/17/2019	Tower Profile
ENG-33868	CT0025 Dish Colo SA + SSR + TP + SP	TowerCo	Delta Oaks Group	5/3/2021	CT0025 Dish Colo SA + SSR + TP + SP
ENG-34079	CT0025 Verizon Colo SA + SSR + TP	TowerCo	Delta Oaks Group	6/23/2021	CT0025 Verizon Colo SA + SSR + TP



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
Cannister Section (Tower)	99
(3) CCI HPA65R-BU6AA-K (ATI)	95
(3) CCI HPA65R-BU6AA-K (ATI)	95
KMW EPBQ654L8H6-L2 (ATI)	95
KMW EPBQ654L8H6-L2 (ATI)	95
KMW EPBQ654L8H6-L2 (ATI)	95
Ericsson RRUS-B14 4478 (ATI)	95
Ericsson RRUS-B14 4478 (ATI)	95
Ericsson RRUS-B14 4478 (ATI)	95
Ericsson RRUS32 (ATT) (ATI)	95
Ericsson RRUS32 (ATT) (ATI)	95
Ericsson RRUS32 (ATT) (ATI)	95
(2) Ericsson RRUS-12 (ATI)	95
(2) Ericsson RRUS-12 (ATI)	95
(2) Ericsson RRUS-12 (ATI)	95
(2) Ericsson RRUS-11 (ATI)	95
(2) Ericsson RRUS-11 (ATI)	95
(2) Ericsson RRUS-11 (ATI)	95
Ericsson RRUS-E2 (ATI)	95
Ericsson RRUS-E2 (ATI)	95
Ericsson RRUS-E2 (ATI)	95
Raycap DC6-48-60-18-8F (ATI)	95
(3) CCI HPA65R-BU6AA-K (ATI)	95
Platform (Tower)	91.25
Cannister Section (Tower)	87
(2) Commscope NHH-65B-R2B w/ MP (Verizon)	86
(2) Commscope NHH-65B-R2B w/ MP (Verizon)	86
(2) Commscope NHH-65B-R2B w/ MP (Verizon)	86
Samsung MT6407-77A (Verizon)	86
Samsung MT6407-77A (Verizon)	86
Samsung MT6407-77A (Verizon)	86
Samsung B5/B13 RRH-BR04C (Verizon)	86
Samsung B5/B13 RRH-BR04C (Verizon)	86
Samsung B5/B13 RRH-BR04C (Verizon)	86

TYPE	ELEVATION
Samsung B2/B66A RRH-BR049 (Verizon)	86
Samsung B2/B66A RRH-BR049 (Verizon)	86
Samsung B2/B66A RRH-BR049 (Verizon)	86
Commscope FE-16148-OVP-B12 (Verizon)	86
Platform (Tower)	81.25
Cannister Section (Tower)	76
Platform (Tower)	71.25
JMA MX08FRO665-20_V0F (Dish Wireless)	66
JMA MX08FRO665-20_V0F (Dish Wireless)	66
JMA MX08FRO665-20_V0F (Dish Wireless)	66
Cannister Section (Tower)	66
Fujitsu TA08025-B605 (Dish Wireless)	66
Fujitsu TA08025-B605 (Dish Wireless)	66
Fujitsu TA08025-B605 (Dish Wireless)	66
Fujitsu A08025-B604 (Dish Wireless)	66
Fujitsu A08025-B604 (Dish Wireless)	66
Fujitsu A08025-B604 (Dish Wireless)	66
Raycap RDIDC-9181-PF-48 (Dish Wireless)	66
Platform (Tower)	61.25
Cannister Section (Tower)	56
Platform (Tower)	51.25
Cannister Section (Tower)	46
Platform (Tower)	41.25
Cannister Section (Tower)	36
Platform (Tower)	31.25
Cannister Section (Tower)	26
Platform (Tower)	21.25
Cannister Section (Tower)	16
Platform (Tower)	11.25
Cannister Sections (Tower)	5.5

DELTA OAKS GROUP
CLIENT FOCUSED -- EMPLOYEE DRIVEN

Delta Oaks Group
4904 Professional Ct., 2nd Floor
Raleigh, NC 27609
Phone: (919)-342-8247
FAX:

Job: ***CT0025-East Lyme Relo***			
Project: ***ENG-34607***			
Client: Towerco	Drawn by: RE	App'd:	
Code: TIA-222-G	Date: 10/19/21	Scale: NTS	
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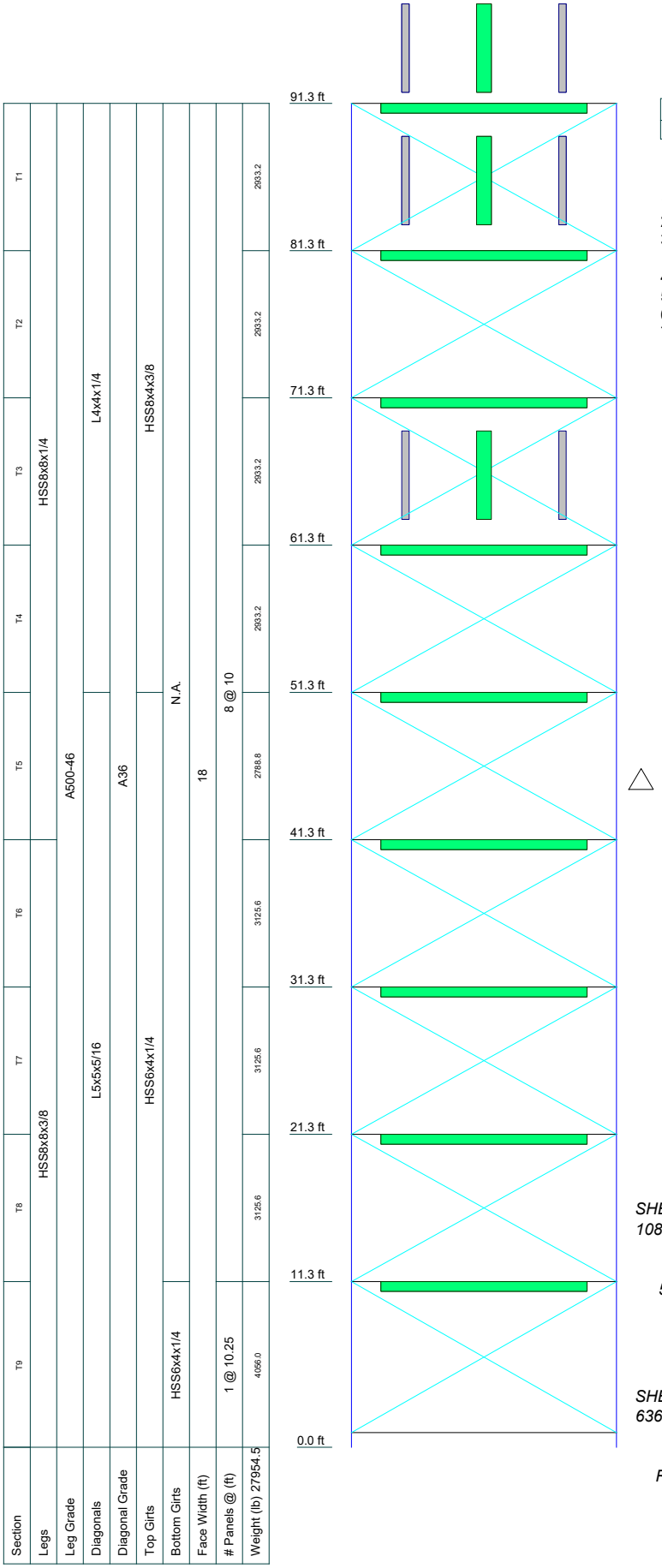

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-46	46 ksi	62 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 80.2%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 254605 lb
SHEAR: 26864 lb

UPLIFT: -208854 lb
SHEAR: 26246 lb

AXIAL
172165 lb

SHEAR
10811 lb

MOMENT
659076 lb-ft

TORQUE 23134 lb-ft
50 mph WIND - 0.7500 in ICE

AXIAL
77971 lb

SHEAR
63637 lb

MOMENT
3563747 lb-ft

TORQUE 38237 lb-ft
REACTIONS - 105 mph WIND

DELTA OAKS GROUP
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Job: ***CT0025-East Lyme Relo***			
Project: ***ENG-34607***			
Client: Towerco	Drawn by: RE	App'd:	
Code: TIA-222-G	Date: 10/19/21	Scale: NTS	
Path: C:\Users\remerson\OneDrive - Delta Oaks Group\Desktop\Active Models\CT0025\CT0025.eri		Dwg No. E-1	

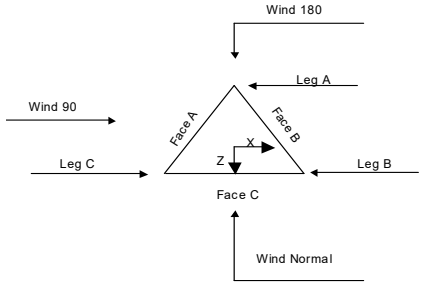
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 91.25 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 18.00 ft at the top and 18.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	√ Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	√ SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
√ SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	91.25-81.25			18.00	1	10.00
T2	81.25-71.25			18.00	1	10.00
T3	71.25-61.25			18.00	1	10.00
T4	61.25-51.25			18.00	1	10.00
T5	51.25-41.25			18.00	1	10.00
T6	41.25-31.25			18.00	1	10.00
T7	31.25-21.25			18.00	1	10.00
T8	21.25-11.25			18.00	1	10.00
T9	11.25-0.00			18.00	1	11.25

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	91.25-81.25	10.00	X Brace	No	No	0.0000	0.0000
T2	81.25-71.25	10.00	X Brace	No	No	0.0000	0.0000
T3	71.25-61.25	10.00	X Brace	No	No	0.0000	0.0000
T4	61.25-51.25	10.00	X Brace	No	No	0.0000	0.0000
T5	51.25-41.25	10.00	X Brace	No	No	0.0000	0.0000
T6	41.25-31.25	10.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	31.25-21.25	10.00	X Brace	No	No	0.0000	0.0000
T8	21.25-11.25	10.00	X Brace	No	No	0.0000	0.0000
T9	11.25-0.00	10.25	X Brace	No	No	0.0000	12.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 91.25-81.25	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T2 81.25-71.25	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T3 71.25-61.25	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T4 61.25-51.25	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T5 51.25-41.25	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T6 41.25-31.25	Tube	HSS8x8x3/8	A500-46 (46 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T7 31.25-21.25	Tube	HSS8x8x3/8	A500-46 (46 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T8 21.25-11.25	Tube	HSS8x8x3/8	A500-46 (46 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)
T9 11.25-0.00	Tube	HSS8x8x3/8	A500-46 (46 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 91.25-81.25	Tube	HSS8x4x3/8	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T2 81.25-71.25	Tube	HSS8x4x3/8	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T3 71.25-61.25	Tube	HSS8x4x3/8	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T4 61.25-51.25	Tube	HSS8x4x3/8	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T5 51.25-41.25	Tube	HSS6x4x1/4	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T6 41.25-31.25	Tube	HSS6x4x1/4	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T7 31.25-21.25	Tube	HSS6x4x1/4	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T8 21.25-11.25	Tube	HSS6x4x1/4	A500-46 (46 ksi)	Solid Round		A36 (36 ksi)
T9 11.25-0.00	Tube	HSS6x4x1/4	A500-46 (46 ksi)	Tube	HSS6x4x1/4	A500-46 (46 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 91.25-81.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T2 81.25-71.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T3 71.25-61.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T4 61.25-51.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T5 51.25-41.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T6 41.25-31.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T7 31.25-21.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T8 21.25-11.25	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000
T9 11.25-0.00	0.00	0.0000	A36 (36 ksi)	0	0	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
91.25-81.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
81.25-71.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
71.25-61.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
61.25-51.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
51.25-41.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
41.25-31.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
31.25-21.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
21.25-11.25				1		1	1	1	1	1	1	1	1	1	1	1	1
T9 11.25-0.00	Yes	No	1	1		1	1	1	1	1	1	1	1	1	1	1	1
				1		1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 91.25-81.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 81.25-71.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 71.25-61.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 61.25-51.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 51.25-41.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 41.25-31.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 31.25-21.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 21.25-11.25	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 11.25-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 91.25-81.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 81.25-71.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 71.25-61.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 61.25-51.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 51.25-41.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 41.25-31.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 31.25-21.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 21.25-11.25	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 11.25-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 91.25-81.25	Flange	0.7500 A325N	8	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 81.25-71.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 71.25-61.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 61.25-51.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 51.25-41.25	Flange	0.7500 A325N	8	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T6 41.25-31.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 31.25-21.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 21.25-11.25	Flange	0.7500 A325N	0	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 11.25-0.00	Flange	1.2500 A325N	8	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft²/ft	Weight plf
5/8 (AT&T)	C	No	No	CaAa (Out Of Face)	91.25 - 0.00	-0.5000	0	8	No Ice	0.09	0.27
									1/2" Ice	0.19	1.11
									1" Ice	0.29	2.55
5/8" FIBER (AT&T)	C	No	No	CaAa (Out Of Face)	91.25 - 0.00	-0.5000	0	2	No Ice	0.06	0.08
									1/2" Ice	0.16	0.77
									1" Ice	0.26	2.07
3/8 RET (AT&T)	C	No	No	CaAa (Out Of Face)	91.25 - 0.00	-0.5000	0	1	No Ice	0.04	0.08
									1/2" Ice	0.14	0.65
									1" Ice	0.24	1.84
*** 1-5/8 Hybrid (DISH Wireless)	C	No	No	CaAa (Out Of Face)	66.00 - 0.00	-0.2500	0	1	No Ice	0.20	0.82
									1/2" Ice	0.30	2.33
									1" Ice	0.40	4.46
*** 12x24 Hybriflex (Verizon)	C	No	No	CaAa (Out Of Face)	86.00 - 0.00	0.2500	0	1	No Ice	0.19	3.20
									1/2" Ice	0.29	4.67
									1" Ice	0.39	6.74

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T1	91.25-81.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.552	39.20
T2	81.25-71.25	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.550	56.00
T3	71.25-61.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.490	59.90
T4	61.25-51.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.530	64.20
T5	51.25-41.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.530	64.20
T6	41.25-31.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.530	64.20
T7	31.25-21.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.530	64.20
T8	21.25-11.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.530	64.20
T9	11.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	14.096	72.22

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	91.25-81.25	A	1.651	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	47.449	646.01
T2	81.25-71.25	A	1.631	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	49.695	690.38
T3	71.25-61.25	A	1.608	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	51.617	716.20
T4	61.25-51.25	A	1.582	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	53.666	742.62
T5	51.25-41.25	A	1.551	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	52.869	723.31
T6	41.25-31.25	A	1.514	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	51.898	699.80
T7	31.25-21.25	A	1.466	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	50.648	669.52
T8	21.25-11.25	A	1.397	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	48.863	626.30
T9	11.25-0.00	A	1.257	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	50.857	604.97

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	91.25-81.25	-108.0000	62.3538	-108.0000	62.3538
T2	81.25-71.25	-108.0000	62.3538	-108.0000	62.3538
T3	71.25-61.25	-108.0000	62.3538	-108.0000	62.3538
T4	61.25-51.25	-108.0000	62.3538	-108.0000	62.3538
T5	51.25-41.25	-108.0000	62.3538	-108.0000	62.3538
T6	41.25-31.25	-108.0000	62.3538	-108.0000	62.3538
T7	31.25-21.25	-108.0000	62.3538	-108.0000	62.3538
T8	21.25-11.25	-108.0000	62.3538	-108.0000	62.3538
T9	11.25-0.00	-108.0000	62.3538	-108.0000	62.3538

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(3) CCI HPA65R-BU6AA-K (AT&T)	A	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	41.60 41.60 41.60
(3) CCI HPA65R-BU6AA-K (AT&T)	B	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	41.60 41.60 41.60
(3) CCI HPA65R-BU6AA-K (AT&T)	C	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	41.60 41.60 41.60
KMW EPBQ654L8H6-L2 (AT&T)	A	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.00 73.00 73.00
KMW EPBQ654L8H6-L2 (AT&T)	B	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.00 73.00 73.00
KMW EPBQ654L8H6-L2 (AT&T)	C	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.00 73.00 73.00
Ericsson RRUS-B14 4478 (AT&T)	A	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	59.00 59.00 59.00
Ericsson RRUS-B14 4478 (AT&T)	B	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	59.00 59.00 59.00
Ericsson RRUS-B14 4478 (AT&T)	C	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	59.00 59.00 59.00
Ericsson RRUS32 (AT&T) (AT&T)	A	From Face	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	60.00 60.00 60.00
Ericsson RRUS32 (AT&T) (AT&T)	B	From Face	1.00 0.00	0.0000	95.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	60.00 60.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1" Ice	0.00	0.00	60.00
Ericsson RRUS32 (AT&T)	C	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	60.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	60.00
			0.00				1" Ice	0.00	0.00	60.00
(2) Ericsson RRUS-12	A	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	80.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	80.00
			0.00				1" Ice	0.00	0.00	80.00
(2) Ericsson RRUS-12	B	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	80.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	80.00
			0.00				1" Ice	0.00	0.00	80.00
(2) Ericsson RRUS-12	C	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	80.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	80.00
			0.00				1" Ice	0.00	0.00	80.00
(2) Ericsson RRUS-11	A	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	55.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	55.00
			0.00				1" Ice	0.00	0.00	55.00
(2) Ericsson RRUS-11	B	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	55.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	55.00
			0.00				1" Ice	0.00	0.00	55.00
(2) Ericsson RRUS-11	C	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	55.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	55.00
			0.00				1" Ice	0.00	0.00	55.00
Ericsson RRUS-E2	A	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	60.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	60.00
			0.00				1" Ice	0.00	0.00	60.00
Ericsson RRUS-E2	B	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	60.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	60.00
			0.00				1" Ice	0.00	0.00	60.00
Ericsson RRUS-E2	C	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	60.00
(AT&T)			0.00				1/2" Ice	0.00	0.00	60.00
			0.00				1" Ice	0.00	0.00	60.00
Raycap DC6-48-60-18-8F	A	From Face	1.00	0.0000	95.00		No Ice	0.00	0.00	18.90
(AT&T)			0.00				1/2" Ice	0.00	0.00	18.90
			0.00				1" Ice	0.00	0.00	18.90
***										
JMA MX08FRO665-20_V0F	A	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	54.00
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	54.00
			0.00				1" Ice	0.00	0.00	54.00
JMA MX08FRO665-20_V0F	B	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	54.00
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	54.00
			0.00				1" Ice	0.00	0.00	54.00
JMA MX08FRO665-20_V0F	C	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	54.00
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	54.00
			0.00				1" Ice	0.00	0.00	54.00
Fujitsu TA08025-B605	A	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	74.95
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	74.95
			0.00				1" Ice	0.00	0.00	74.95
Fujitsu TA08025-B605	B	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	74.95
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	74.95
			0.00				1" Ice	0.00	0.00	74.95
Fujitsu TA08025-B605	C	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	74.95
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	74.95
			0.00				1" Ice	0.00	0.00	74.95
Fujitsu A08025-B604	A	From Leg	1.00	0.0000	66.00		No Ice	0.00	0.00	63.93
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	63.93
			0.00				1" Ice	0.00	0.00	63.93
Fujitsu A08025-B604	B	From Leg	1.00	0.0000	66.00		No Ice	0.00	0.00	63.93

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	63.93
			0.00				1" Ice	0.00	0.00	63.93
Fujitsu A08025-B604	C	From Leg	1.00	0.0000	66.00		No Ice	0.00	0.00	63.93
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	63.93
			0.00				1" Ice	0.00	0.00	63.93
Raycap RDIDC-9181-PF-48	A	From Face	1.00	0.0000	66.00		No Ice	0.00	0.00	21.85
(Dish Wireless)			0.00				1/2" Ice	0.00	0.00	21.85
			0.00				1" Ice	0.00	0.00	21.85
***										
Platform	C	None			0.0000	11.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	21.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	31.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	41.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	51.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	61.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	71.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	81.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
Platform	C	None			0.0000	91.25	No Ice	0.00	0.00	1800.00
(Tower)							1/2" Ice	0.00	0.00	1800.00
							1" Ice	0.00	0.00	1800.00
***										
Cannister Section	C	None			0.0000	99.00	No Ice	195.00	195.00	1884.96
(Tower)							1/2" Ice	195.65	195.65	4089.12
							1" Ice	196.30	196.30	6293.28
Cannister Section	C	None			0.0000	87.00	No Ice	195.00	195.00	1884.96
(Tower)							1/2" Ice	195.65	195.65	4089.12
							1" Ice	196.30	196.30	6293.28
Cannister Section	C	None			0.0000	76.00	No Ice	162.50	162.50	1570.80
(Tower)							1/2" Ice	163.04	163.04	3407.60
							1" Ice	163.58	163.58	5244.40
Cannister Section	C	None			0.0000	66.00	No Ice	162.50	162.50	1570.80
(Tower)							1/2" Ice	163.04	163.04	3407.60
							1" Ice	163.58	163.58	5244.40
Cannister Section	C	None			0.0000	56.00	No Ice	162.50	162.50	1570.80
(Tower)							1/2" Ice	163.04	163.04	3407.60
							1" Ice	163.58	163.58	5244.40
Cannister Section	C	None			0.0000	46.00	No Ice	162.50	162.50	1570.80
(Tower)							1/2" Ice	163.04	163.04	3407.60
							1" Ice	163.58	163.58	5244.40
Cannister Section	C	None			0.0000	36.00	No Ice	162.50	162.50	1570.80
(Tower)							1/2" Ice	163.04	163.04	3407.60

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1" Ice	163.58	163.58	5244.40
Cannister Section (Tower)	C	None		0.0000	26.00	No Ice	162.50	162.50	1570.80
						1/2" Ice	163.04	163.04	3407.60
						1" Ice	163.58	163.58	5244.40
Cannister Section (Tower)	C	None		0.0000	16.00	No Ice	162.50	162.50	1570.80
						1/2" Ice	163.04	163.04	3407.60
						1" Ice	163.58	163.58	5244.40
Cannister Sections (Tower)	C	None		0.0000	5.50	No Ice	178.75	178.75	1727.88
						1/2" Ice	179.35	179.35	3748.36
						1" Ice	179.94	179.94	5768.84
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(2) Commscope NHH-65B-R2B w/ MP (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	72.90 72.90 72.90
(2) Commscope NHH-65B-R2B w/ MP (Verizon)	B	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	72.90 72.90 72.90
(2) Commscope NHH-65B-R2B w/ MP (Verizon)	C	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	72.90 72.90 72.90
Samsung MT6407-77A (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	101.70 101.70 101.70
Samsung MT6407-77A (Verizon)	B	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	101.70 101.70 101.70
Samsung MT6407-77A (Verizon)	C	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	101.70 101.70 101.70
Samsung B5/B13 RRH-BR04C (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	70.00 70.00 70.00
Samsung B5/B13 RRH-BR04C (Verizon)	B	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	70.00 70.00 70.00
Samsung B5/B13 RRH-BR04C (Verizon)	C	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	70.00 70.00 70.00
Samsung B2/B66A RRH-BR049 (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.00 84.00 84.00
Samsung B2/B66A RRH-BR049 (Verizon)	B	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.00 84.00 84.00
Samsung B2/B66A RRH-BR049 (Verizon)	C	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.00 84.00 84.00
Commscope FE-16148-OVP-B12 (Verizon)	A	From Face	1.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	15.21 15.21 15.21
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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	254604.80	23264.75	-13432.05
	Max. H_x	20	224036.82	24478.97	-4229.11
	Max. H_z	3	-94249.53	-3807.32	19352.24
	Min. Vert	7	-208330.78	-22708.85	13110.85
	Min. H_x	9	-177762.80	-23923.07	3907.91
	Min. H_z	14	140523.55	4363.22	-19673.44
Leg B	Max. Vert	10	253906.78	-23793.76	-12508.66
	Max. H_x	21	-178286.31	23924.61	3910.58
	Max. H_z	3	-94773.04	4870.99	17515.25
	Min. Vert	23	-208854.29	23241.46	12193.69
	Min. H_x	8	223338.80	-24476.92	-4225.55
	Min. H_z	14	139825.53	-5423.30	-17830.22
Leg A	Max. Vert	2	253946.82	-1064.18	26860.55
	Max. H_x	21	19338.24	15312.99	272.65
	Max. H_z	2	253946.82	-1064.18	26860.55
	Min. Vert	15	-208824.26	1060.59	-26224.38
	Min. H_x	8	25784.32	-15316.58	363.53
	Min. H_z	15	-208824.26	1060.59	-26224.38

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	64975.74	-0.00	0.00	2675.79	5235.16	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	77970.89	-0.00	-63637.16	-3553490.46	6282.20	-33113.93
0.9 Dead+1.6 Wind 0 deg - No Ice	58478.17	-0.00	-63637.16	-3554293.20	4711.65	-33113.93
1.2 Dead+1.6 Wind 30 deg - No Ice	77970.89	31818.58	-55111.39	-3076982.83	-1772068.51	-19118.34
0.9 Dead+1.6 Wind 30 deg - No Ice	58478.17	31818.58	-55111.39	-3077785.57	-1773639.06	-19118.34
1.2 Dead+1.6 Wind 60 deg - No Ice	77970.89	55111.39	-31818.58	-1775139.76	-3073911.58	0.00
0.9 Dead+1.6 Wind 60 deg - No Ice	58478.17	55111.39	-31818.58	-1775942.50	-3075482.13	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice	77970.89	63637.16	0.00	3210.94	-3550419.22	19118.34
0.9 Dead+1.6 Wind 90 deg - No Ice	58478.17	63637.16	0.00	2408.21	-3551989.77	19118.34
1.2 Dead+1.6 Wind 120 deg - No Ice	77970.89	55111.39	31818.58	1781561.65	-3073911.58	33113.94
0.9 Dead+1.6 Wind 120 deg - No Ice	58478.17	55111.39	31818.58	1780758.91	-3075482.13	33113.94
1.2 Dead+1.6 Wind 150 deg - No Ice	77970.89	31818.58	55111.39	3083404.72	-1772068.51	38236.68
0.9 Dead+1.6 Wind 150 deg - No Ice	58478.17	31818.58	55111.39	3082601.98	-1773639.06	38236.68
1.2 Dead+1.6 Wind 180 deg - No Ice	77970.89	-0.00	63637.16	3559912.35	6282.20	33113.93
0.9 Dead+1.6 Wind 180 deg - No Ice	58478.17	-0.00	63637.16	3559109.62	4711.65	33113.93
1.2 Dead+1.6 Wind 210 deg - No Ice	77970.89	-31818.58	55111.39	3083404.72	1784632.90	19118.34
0.9 Dead+1.6 Wind 210 deg - No Ice	58478.17	-31818.58	55111.39	3082601.98	1783062.35	19118.34

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
1.2 Dead+1.6 Wind 240 deg - No Ice	77970.89	-55111.39	31818.58	1781561.65	3086475.98	-0.00
0.9 Dead+1.6 Wind 240 deg - No Ice	58478.17	-55111.39	31818.58	1780758.91	3084905.43	-0.00
1.2 Dead+1.6 Wind 270 deg - No Ice	77970.89	-63637.16	0.00	3210.94	3562983.61	-19118.34
0.9 Dead+1.6 Wind 270 deg - No Ice	58478.17	-63637.16	0.00	2408.21	3561413.06	-19118.34
1.2 Dead+1.6 Wind 300 deg - No Ice	77970.89	-55111.39	-31818.58	-1775139.76	3086475.98	-33113.94
0.9 Dead+1.6 Wind 300 deg - No Ice	58478.17	-55111.39	-31818.58	-1775942.50	3084905.43	-33113.94
1.2 Dead+1.6 Wind 330 deg - No Ice	77970.89	-31818.58	-55111.39	-3076982.83	1784632.90	-38236.68
0.9 Dead+1.6 Wind 330 deg - No Ice	58478.17	-31818.58	-55111.39	-3077785.57	1783062.35	-38236.68
1.2 Dead+1.0 Ice+1.0 Temp	172165.04	-0.00	0.00	32157.63	56419.33	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	172165.04	-0.00	-10811.35	-561978.55	56419.33	-20034.24
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	172165.04	5405.67	-9362.90	-482379.40	-240648.77	-11566.78
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	172165.04	9362.90	-5405.67	-264910.46	-458117.70	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	172165.04	10811.35	0.00	32157.63	-537716.86	11566.78
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	172165.04	9362.90	5405.67	329225.73	-458117.70	20034.24
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	172165.04	5405.67	9362.90	546694.67	-240648.77	23133.55
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	172165.04	-0.00	10811.35	626293.82	56419.33	20034.24
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	172165.04	-5405.67	9362.90	546694.67	353487.42	11566.78
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	172165.04	-9362.90	5405.67	329225.73	570956.36	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	172165.04	-10811.35	0.00	32157.63	650555.52	-11566.78
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	172165.04	-9362.90	-5405.67	-264910.46	570956.36	-20034.24
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	172165.04	-5405.67	-9362.90	-482379.40	353487.42	-23133.55
Dead+Wind 0 deg - Service	64975.74	-0.00	-12987.17	-723181.64	5235.16	-6757.95
Dead+Wind 30 deg - Service	64975.74	6493.59	-11247.22	-625935.19	-357693.55	-3901.70
Dead+Wind 60 deg - Service	64975.74	11247.22	-6493.59	-360252.93	-623375.81	0.00
Dead+Wind 90 deg - Service	64975.74	12987.17	0.00	2675.79	-720622.27	3901.70
Dead+Wind 120 deg - Service	64975.74	11247.22	6493.59	365604.50	-623375.81	6757.95
Dead+Wind 150 deg - Service	64975.74	6493.59	11247.22	631286.76	-357693.55	7803.40
Dead+Wind 180 deg - Service	64975.74	-0.00	12987.17	728533.22	5235.16	6757.95
Dead+Wind 210 deg - Service	64975.74	-6493.59	11247.22	631286.76	368163.88	3901.70
Dead+Wind 240 deg - Service	64975.74	-11247.22	6493.59	365604.50	633846.14	-0.00
Dead+Wind 270 deg - Service	64975.74	-12987.17	0.00	2675.79	731092.60	-3901.70
Dead+Wind 300 deg - Service	64975.74	-11247.22	-6493.59	-360252.93	633846.14	-6757.95
Dead+Wind 330 deg - Service	64975.74	-6493.59	-11247.22	-625935.19	368163.88	-7803.40

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-64975.74	0.00	0.00	64975.74	-0.00	0.000%
2	0.00	-77970.89	-63637.15	0.00	77970.89	63637.16	0.000%
3	0.00	-58478.17	-63637.15	0.00	58478.17	63637.16	0.000%
4	31818.57	-77970.89	-55111.39	-31818.58	77970.89	55111.39	0.000%
5	31818.57	-58478.17	-55111.39	-31818.58	58478.17	55111.39	0.000%
6	55111.39	-77970.89	-31818.57	-55111.39	77970.89	31818.58	0.000%
7	55111.39	-58478.17	-31818.57	-55111.39	58478.17	31818.58	0.000%
8	63637.15	-77970.89	0.00	-63637.16	77970.89	-0.00	0.000%
9	63637.15	-58478.17	0.00	-63637.16	58478.17	-0.00	0.000%
10	55111.39	-77970.89	31818.57	-55111.39	77970.89	-31818.58	0.000%
11	55111.39	-58478.17	31818.57	-55111.39	58478.17	-31818.58	0.000%
12	31818.57	-77970.89	55111.39	-31818.58	77970.89	-55111.39	0.000%
13	31818.57	-58478.17	55111.39	-31818.58	58478.17	-55111.39	0.000%
14	0.00	-77970.89	63637.15	0.00	77970.89	-63637.16	0.000%
15	0.00	-58478.17	63637.15	0.00	58478.17	-63637.16	0.000%
16	-31818.57	-77970.89	55111.39	31818.58	77970.89	-55111.39	0.000%
17	-31818.57	-58478.17	55111.39	31818.58	58478.17	-55111.39	0.000%
18	-55111.39	-77970.89	31818.57	55111.39	77970.89	-31818.58	0.000%
19	-55111.39	-58478.17	31818.57	55111.39	58478.17	-31818.58	0.000%
20	-63637.15	-77970.89	0.00	63637.16	77970.89	-0.00	0.000%
21	-63637.15	-58478.17	0.00	63637.16	58478.17	-0.00	0.000%
22	-55111.39	-77970.89	-31818.57	55111.39	77970.89	31818.58	0.000%
23	-55111.39	-58478.17	-31818.57	55111.39	58478.17	31818.58	0.000%
24	-31818.57	-77970.89	-55111.39	31818.58	77970.89	55111.39	0.000%
25	-31818.57	-58478.17	-55111.39	31818.58	58478.17	55111.39	0.000%
26	0.00	-172165.04	0.00	0.00	172165.04	-0.00	0.000%
27	0.00	-172165.04	-10811.34	0.00	172165.04	10811.35	0.000%
28	5405.67	-172165.04	-9362.90	-5405.67	172165.04	9362.90	0.000%
29	9362.90	-172165.04	-5405.67	-9362.90	172165.04	5405.67	0.000%
30	10811.34	-172165.04	0.00	-10811.35	172165.04	-0.00	0.000%
31	9362.90	-172165.04	5405.67	-9362.90	172165.04	-5405.67	0.000%
32	5405.67	-172165.04	9362.90	-5405.67	172165.04	-9362.90	0.000%
33	-0.00	-172165.04	10811.34	0.00	172165.04	-10811.35	0.000%
34	-5405.67	-172165.04	9362.90	5405.67	172165.04	-9362.90	0.000%
35	-9362.90	-172165.04	5405.67	9362.90	172165.04	-5405.67	0.000%
36	-10811.34	-172165.04	0.00	10811.35	172165.04	-0.00	0.000%
37	-9362.90	-172165.04	-5405.67	9362.90	172165.04	5405.67	0.000%
38	-5405.67	-172165.04	-9362.90	5405.67	172165.04	9362.90	0.000%
39	-0.00	-64975.74	-12987.17	0.00	64975.74	12987.17	0.000%
40	6493.59	-64975.74	-11247.22	-6493.59	64975.74	11247.22	0.000%
41	11247.22	-64975.74	-6493.59	-11247.22	64975.74	6493.59	0.000%
42	12987.17	-64975.74	0.00	-12987.17	64975.74	-0.00	0.000%
43	11247.22	-64975.74	6493.59	-11247.22	64975.74	-6493.59	0.000%
44	6493.59	-64975.74	11247.22	-6493.59	64975.74	-11247.22	0.000%
45	0.00	-64975.74	12987.17	0.00	64975.74	-12987.17	0.000%
46	-6493.59	-64975.74	11247.22	6493.59	64975.74	-11247.22	0.000%
47	-11247.22	-64975.74	6493.59	11247.22	64975.74	-6493.59	0.000%
48	-12987.17	-64975.74	0.00	12987.17	64975.74	-0.00	0.000%
49	-11247.22	-64975.74	-6493.59	11247.22	64975.74	6493.59	0.000%
50	-6493.59	-64975.74	-11247.22	6493.59	64975.74	11247.22	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	91.25 - 81.25	0.548	47	0.0336	0.0047
T2	81.25 - 71.25	0.473	47	0.0331	0.0047
T3	71.25 - 61.25	0.397	47	0.0322	0.0044
T4	61.25 - 51.25	0.321	47	0.0304	0.0041
T5	51.25 - 41.25	0.248	47	0.0276	0.0036
T6	41.25 - 31.25	0.184	47	0.0236	0.0031
T7	31.25 - 21.25	0.128	47	0.0198	0.0026
T8	21.25 - 11.25	0.079	47	0.0149	0.0019
T9	11.25 - 0	0.041	47	0.0087	0.0013

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
99.00	Cannister Section	47	0.548	0.0336	0.0047	809644
95.00	(3) CCI HPA65R-BU6AA-K	47	0.548	0.0336	0.0047	809644
91.25	Platform	47	0.548	0.0336	0.0047	809644
87.00	Cannister Section	47	0.516	0.0334	0.0047	809644
86.00	(2) Commscope NHH-65B-R2B w/ MP	47	0.509	0.0334	0.0047	771124
81.25	Platform	47	0.473	0.0331	0.0047	510356
76.00	Cannister Section	47	0.433	0.0327	0.0046	Inf
71.25	Platform	47	0.397	0.0322	0.0044	Inf
66.00	JMA MX08FRO665-20_V0F	47	0.357	0.0313	0.0043	Inf
61.25	Platform	47	0.321	0.0304	0.0041	Inf
56.00	Cannister Section	47	0.282	0.0291	0.0038	169633
51.25	Platform	47	0.248	0.0276	0.0036	99468
46.00	Cannister Section	47	0.213	0.0255	0.0033	126953
41.25	Platform	47	0.184	0.0236	0.0031	196938
36.00	Cannister Section	47	0.154	0.0216	0.0029	215927
31.25	Platform	47	0.128	0.0198	0.0026	183232
26.00	Cannister Section	47	0.101	0.0174	0.0022	109437
21.25	Platform	47	0.079	0.0149	0.0019	89111
16.00	Cannister Section	47	0.058	0.0118	0.0016	172525
11.25	Platform	47	0.041	0.0087	0.0013	Inf
5.50	Cannister Sections	47	0.020	0.0044	0.0007	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	91.25 - 81.25	2.669	18	0.1632	0.0231
T2	81.25 - 71.25	2.306	18	0.1612	0.0228
T3	71.25 - 61.25	1.936	18	0.1565	0.0218
T4	61.25 - 51.25	1.567	18	0.1478	0.0200
T5	51.25 - 41.25	1.208	18	0.1342	0.0174
T6	41.25 - 31.25	0.900	18	0.1146	0.0153
T7	31.25 - 21.25	0.624	18	0.0963	0.0127
T8	21.25 - 11.25	0.384	18	0.0724	0.0095
T9	11.25 - 0	0.198	18	0.0424	0.0062

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
99.00	Cannister Section	18	2.669	0.1632	0.0231	166061
95.00	(3) CCI HPA65R-BU6AA-K	18	2.669	0.1632	0.0231	166061
91.25	Platform	18	2.669	0.1632	0.0231	166061
87.00	Cannister Section	18	2.515	0.1625	0.0230	166061
86.00	(2) Commscope NHH-65B-R2B w/ MP	18	2.479	0.1623	0.0230	158161
81.25	Platform	18	2.306	0.1612	0.0228	104811
76.00	Cannister Section	18	2.112	0.1591	0.0223	384649
71.25	Platform	18	1.936	0.1565	0.0218	262624
66.00	JMA MX08FRO665-20_V0F	18	1.742	0.1524	0.0209	657741
61.25	Platform	18	1.567	0.1478	0.0200	321433
56.00	Cannister Section	18	1.375	0.1416	0.0187	34909
51.25	Platform	18	1.208	0.1342	0.0174	20417
46.00	Cannister Section	18	1.040	0.1241	0.0163	26104
41.25	Platform	18	0.900	0.1146	0.0153	40654
36.00	Cannister Section	18	0.751	0.1052	0.0140	44615
31.25	Platform	18	0.624	0.0963	0.0127	37788
26.00	Cannister Section	18	0.491	0.0845	0.0110	22480
21.25	Platform	18	0.384	0.0724	0.0095	18292
16.00	Cannister Section	18	0.282	0.0575	0.0079	35723
11.25	Platform	18	0.198	0.0424	0.0062	600610
5.50	Cannister Sections	18	0.097	0.0215	0.0033	439762

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	HSS8x8x1/4	10.00	10.00	38.1 K=1.00	7.1000	-11873.60	266601.00	0.045 [1] ✔
T2	81.25 - 71.25	HSS8x8x1/4	10.00	10.00	38.1 K=1.00	7.1000	-24356.30	266601.00	0.091 [1] ✔
T3	71.25 - 61.25	HSS8x8x1/4	10.00	10.00	38.1 K=1.00	7.1000	-41609.10	266601.00	0.156 [1] ✔
T4	61.25 - 51.25	HSS8x8x1/4	10.00	10.00	38.1 K=1.00	7.1000	-62777.60	266601.00	0.235 [1] ✔
T5	51.25 - 41.25	HSS8x8x1/4	10.00	10.00	38.1 K=1.00	7.1000	-87277.20	266601.00	0.327 [1] ✔
T6	41.25 - 31.25	HSS8x8x3/8	10.00	10.00	38.7 K=1.00	10.4000	-117296.00	389277.00	0.301 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	31.25 - 21.25	HSS8x8x3/8	10.00	10.00	38.7 K=1.00	10.4000	-150263.00	389277.00	0.386 [1] ✔
T8	21.25 - 11.25	HSS8x8x3/8	10.00	10.00	38.7 K=1.00	10.4000	-185994.00	389277.00	0.478 [1] ✔
T9	11.25 - 0	HSS8x8x3/8	11.25	1.00	3.9 K=1.00	10.4000	-254605.00	430126.00	0.592 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	L4x4x1/4	20.59	9.65	139.6 K=0.96	1.9400	-4775.49	22476.80	0.212 [1] ✔
T2	81.25 - 71.25	L4x4x1/4	20.59	9.65	139.6 K=0.96	1.9400	-8073.48	22476.80	0.359 [1] ✔
T3	71.25 - 61.25	L4x4x1/4	20.59	9.65	139.6 K=0.96	1.9400	-10688.20	22476.80	0.476 [1] ✔
T4	61.25 - 51.25	L4x4x1/4	20.59	9.65	139.6 K=0.96	1.9400	-13235.90	22476.80	0.589 [1] ✔
T5	51.25 - 41.25	L5x5x5/16	20.59	9.65	117.4 K=1.01	3.0300	-16242.00	47047.00	0.345 [1] ✔
T6	41.25 - 31.25	L5x5x5/16	20.59	9.65	117.4 K=1.01	3.0300	-18210.10	47047.00	0.387 [1] ✔
T7	31.25 - 21.25	L5x5x5/16	20.59	9.65	117.4 K=1.01	3.0300	-20892.20	47047.00	0.444 [1] ✔
T8	21.25 - 11.25	L5x5x5/16	20.59	9.65	117.4 K=1.01	3.0300	-21820.00	47047.00	0.464 [1] ✔
T9	11.25 - 0	L5x5x5/16	20.71	9.71	117.9 K=1.01	3.0300	-28699.20	46747.00	0.614 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	HSS8x4x3/8	18.00	17.33	129.2 K=1.00	7.5800	-1769.46	102597.00	0.017 [1] ✔
T2	81.25 - 71.25	HSS8x4x3/8	18.00	17.33	129.2 K=1.00	7.5800	-421.86	102597.00	0.004 [1] ✔
T3	71.25 - 61.25	HSS8x4x3/8	18.00	17.33	129.2 K=1.00	7.5800	-720.69	102597.00	0.007 [1] ✔
T4	61.25 - 51.25	HSS8x4x3/8	18.00	17.33	129.2	7.5800	-1087.34	102597.00	0.011 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				✔
T5	51.25 - 41.25	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-1511.69	58201.40	0.026 [1] ✔
T6	41.25 - 31.25	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-2031.62	58201.40	0.035 [1] ✔
T7	31.25 - 21.25	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-2602.63	58201.40	0.045 [1] ✔
T8	21.25 - 11.25	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-3505.60	58201.40	0.060 [1] ✔
T9	11.25 - 0	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-4409.88	58201.40	0.076 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	11.25 - 0	HSS6x4x1/4	18.00	17.33	129.2 K=1.00	4.3000	-9046.52	58201.40	0.155 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	HSS8x8x1/4	10.00	10.00	38.1	7.1000	4266.69	293940.00	0.015 [1] ✔
T2	81.25 - 71.25	HSS8x8x1/4	10.00	10.00	38.1	7.1000	13686.40	293940.00	0.047 [1] ✔
T3	71.25 - 61.25	HSS8x8x1/4	10.00	10.00	38.1	7.1000	26426.00	293940.00	0.090 [1] ✔
T4	61.25 - 51.25	HSS8x8x1/4	10.00	10.00	38.1	7.1000	43020.30	293940.00	0.146 [1] ✔
T5	51.25 - 41.25	HSS8x8x1/4	10.00	10.00	38.1	7.1000	63798.80	293940.00	0.217 [1] ✔
T6	41.25 - 31.25	HSS8x8x3/8	10.00	10.00	38.7	10.4000	88875.90	430560.00	0.206 [1] ✔
T7	31.25 - 21.25	HSS8x8x3/8	10.00	10.00	38.7	10.4000	117474.00	430560.00	0.273 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	21.25 - 11.25	HSS8x8x3/8	10.00	10.00	38.7	10.4000	148648.00	430560.00	0.345 [1] ✔
T9	11.25 - 0	HSS8x8x3/8	11.25	1.00	3.9	10.4000	208884.00	430560.00	0.485 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	L4x4x1/4	20.59	9.65	95.2	1.2909	4421.57	56155.80	0.079 [1] ✔
T2	81.25 - 71.25	L4x4x1/4	20.59	9.65	95.2	1.2909	7513.75	56155.80	0.134 [1] ✔
T3	71.25 - 61.25	L4x4x1/4	20.59	9.65	95.2	1.2909	9904.37	56155.80	0.176 [1] ✔
T4	61.25 - 51.25	L4x4x1/4	20.59	9.65	95.2	1.2909	12360.80	56155.80	0.220 [1] ✔
T5	51.25 - 41.25	L5x5x5/16	20.59	9.65	75.8	2.0674	14823.50	89932.90	0.165 [1] ✔
T6	41.25 - 31.25	L5x5x5/16	20.59	9.65	75.8	2.0674	17223.00	89932.90	0.192 [1] ✔
T7	31.25 - 21.25	L5x5x5/16	20.59	9.65	75.8	2.0674	19639.30	89932.90	0.218 [1] ✔
T8	21.25 - 11.25	L5x5x5/16	20.59	9.65	75.8	2.0674	20495.70	89932.90	0.228 [1] ✔
T9	11.25 - 0	L5x5x5/16	20.71	9.71	76.2	2.0674	26783.80	89932.90	0.298 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	91.25 - 81.25	HSS8x4x3/8	18.00	17.33	129.2	7.5800	1891.73	313812.00	0.006 [1] ✔
T2	81.25 - 71.25	HSS8x4x3/8	18.00	17.33	129.2	7.5800	1082.63	313812.00	0.003 [1] ✔
T3	71.25 - 61.25	HSS8x4x3/8	18.00	17.33	129.2	7.5800	1441.53	313812.00	0.005 [1] ✔
T4	61.25 - 51.25	HSS8x4x3/8	18.00	17.33	129.2	7.5800	1897.31	313812.00	0.006 [1] ✔
T5	51.25 - 41.25	HSS6x4x1/4	18.00	17.33	129.2	4.3000	2963.82	178020.00	0.017 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	41.25 - 31.25	HSS6x4x1/4	18.00	17.33	129.2	4.3000	3862.89	178020.00	0.022 [1] ✓
T7	31.25 - 21.25	HSS6x4x1/4	18.00	17.33	129.2	4.3000	3864.31	178020.00	0.022 [1] ✓
T8	21.25 - 11.25	HSS6x4x1/4	18.00	17.33	129.2	4.3000	5633.31	178020.00	0.032 [1] ✓
T9	11.25 - 0	HSS6x4x1/4	18.00	17.33	129.2	4.3000	5564.12	178020.00	0.031 [1] ✓

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	11.25 - 0	HSS6x4x1/4	18.00	17.33	129.2	4.3000	12094.90	178020.00	0.068 [1] ✓

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	91.25 - 81.25	Leg	HSS8x8x1/4	1	-11873.60	266601.00	4.5	Pass
T2	81.25 - 71.25	Leg	HSS8x8x1/4	13	-24356.30	266601.00	9.1	Pass
T3	71.25 - 61.25	Leg	HSS8x8x1/4	25	-41609.10	266601.00	15.6	Pass
T4	61.25 - 51.25	Leg	HSS8x8x1/4	37	-62777.60	266601.00	23.5	Pass
T5	51.25 - 41.25	Leg	HSS8x8x1/4	49	-87277.20	266601.00	32.7	Pass
T6	41.25 - 31.25	Leg	HSS8x8x3/8	61	-117296.00	389277.00	30.1	Pass
T7	31.25 - 21.25	Leg	HSS8x8x3/8	73	-150263.00	389277.00	38.6	Pass
T8	21.25 - 11.25	Leg	HSS8x8x3/8	85	-185994.00	389277.00	47.8	Pass
T9	11.25 - 0	Leg	HSS8x8x3/8	97	-254605.00	430126.00	59.2	Pass
T1	91.25 - 81.25	Diagonal	L4x4x1/4	11	-4775.49	22476.80	21.2	Pass
T2	81.25 - 71.25	Diagonal	L4x4x1/4	23	-8073.48	22476.80	35.9	Pass
T3	71.25 - 61.25	Diagonal	L4x4x1/4	35	-10688.20	22476.80	47.6	Pass
T4	61.25 - 51.25	Diagonal	L4x4x1/4	47	-13235.90	22476.80	58.9	Pass
T5	51.25 - 41.25	Diagonal	L5x5x5/16	59	-16242.00	47047.00	34.5 45.4 (b)	Pass
T6	41.25 - 31.25	Diagonal	L5x5x5/16	71	-18210.10	47047.00	38.7 50.9 (b)	Pass
T7	31.25 - 21.25	Diagonal	L5x5x5/16	83	-20892.20	47047.00	44.4 58.4 (b)	Pass
T8	21.25 - 11.25	Diagonal	L5x5x5/16	95	-21820.00	47047.00	46.4 61.0 (b)	Pass
T9	11.25 - 0	Diagonal	L5x5x5/16	111	-28699.20	46747.00	61.4 80.2 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	91.25 - 81.25	Top Girt	HSS8x4x3/8	5	-1769.46	102597.00	1.7	Pass
T2	81.25 - 71.25	Top Girt	HSS8x4x3/8	17	-419.90	102597.00	0.7	Pass
T3	71.25 - 61.25	Top Girt	HSS8x4x3/8	30	-720.69	102597.00	0.7	Pass
T4	61.25 - 51.25	Top Girt	HSS8x4x3/8	42	-1087.34	102597.00	1.1	Pass
T5	51.25 - 41.25	Top Girt	HSS6x4x1/4	54	-1511.69	58201.40	2.6	Pass
T6	41.25 - 31.25	Top Girt	HSS6x4x1/4	66	-2031.62	58201.40	3.5	Pass
T7	31.25 - 21.25	Top Girt	HSS6x4x1/4	78	-2602.63	58201.40	4.5	Pass
T8	21.25 - 11.25	Top Girt	HSS6x4x1/4	89	-3505.60	58201.40	6.0	Pass
T9	11.25 - 0	Top Girt	HSS6x4x1/4	102	-4409.88	58201.40	7.6	Pass
T9	11.25 - 0	Bottom Girt	HSS6x4x1/4	104	-9046.52	58201.40	15.5	Pass
							Summary	
							Leg (T9) 59.2	Pass
							Diagonal (T9) 80.2	Pass
							Top Girt (T9) 7.6	Pass
							Bottom Girt (T9) 15.5	Pass
							Bolt Checks 80.2	Pass
							RATING = 80.2	**Pass**

Project No:	STR21-10300-02
Date:	07/12/2021
By:	RE

Calculation of Drag Coefficient for Canister:

Input - TOWER PARAMETERS

$h := 105 \cdot ft$ = height of structure (ft)

$V := 105 \cdot mph$ = Three second gust basic wind speed per TIA-222-G

$Exp := "C"$ = Exposure Category (2.6.5.1)

$Topo := 1$ = Topographic Category

$H := 1 \cdot ft$ = height of crest above surrounding terrain

$Structure_{class} := "II"$ = Structure class per Table 2-1 "Classification of Structures" choose: (I,II,III)

$D := 300 \cdot in$ = diameter at section

$spine := 0 \cdot in$ = internal spine diameter

$n_c := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

$n_s := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

Input - SECTION PARAMETERS

$z_1 := 11 \cdot ft$ = Height at top of tower section

$z_2 := 0 \cdot ft$ = Height at bottom of tower section

$z := mean(z_1, z_2)$ = Height above average ground level to midpoint of section

Output - Velocity Pressure Coefficient, Kz (2.6.5.2)

Per Table 2-4 from TIA-222-G

$$\alpha := \begin{cases} 7.0 & \text{if } Exp = "B" \\ 9.5 & \text{if } Exp = "C" \\ 11.5 & \text{if } Exp = "D" \end{cases} \qquad \alpha = 9.5$$

$$z_g := \begin{cases} 1200 \cdot ft & \text{if } Exp = "B" \\ 900 \cdot ft & \text{if } Exp = "C" \\ 700 \cdot ft & \text{if } Exp = "D" \end{cases} \qquad z_g = 274.32\,m$$

$$K_{zmin} := \begin{cases} 0.70 & \text{if } Exp = "B" \\ 0.85 & \text{if } Exp = "C" \\ 1.03 & \text{if } Exp = "D" \end{cases} \qquad K_{zmin} = 0.85$$

$$K_z := 2.01 \cdot \left(\frac{z}{z_g}\right)^{\frac{2}{\alpha}}$$

$K_z := if(K_z < K_{zmin}, K_{zmin}, K_z)$ $K_z := if(K_z > 2.01, 2.01, K_z)$ $K_z = 0.85$

Output - Topographic Factor, Kzt (2.6.6.4)

$$K_t := \begin{pmatrix} 1 & \text{if Topo} = 1 \\ 0.43 & \text{if Topo} = 2 \\ 0.53 & \text{if Topo} = 3 \\ 0.72 & \text{if Topo} = 4 \end{pmatrix} \qquad K_t = 1$$

$$K_e := \begin{cases} 0.90 & \text{if Exp} = \text{"B"} \\ 1.00 & \text{if Exp} = \text{"C"} \\ 1.10 & \text{if Exp} = \text{"D"} \end{cases} \qquad K_e = 1$$

$$f := \begin{pmatrix} 1.0 & \text{if Topo} = 1 \\ 1.25 & \text{if Topo} = 2 \\ 2.00 & \text{if Topo} = 3 \\ 1.50 & \text{if Topo} = 4 \end{pmatrix} \qquad f = 1$$

$$K_h := e^{\frac{f \cdot z}{H}} \qquad K_h = 244.692$$

$$K_{zt} := \begin{bmatrix} 1 & \text{if Topo} = 1 \\ \left(1 + \frac{K_e \cdot K_t}{K_h}\right)^2 & \text{if Topo} > 1 \end{bmatrix} \qquad K_{zt} = 1$$

Output - Importance Factor, I (Table 2-3)

$$I := \begin{cases} 0.87 & \text{if Structure}_{class} = \text{"I"} \\ 1.00 & \text{if Structure}_{class} = \text{"II"} \\ 1.15 & \text{if Structure}_{class} = \text{"III"} \end{cases} \qquad I = 1$$

Note: For Wind Load without Ice

Output - Velocity Coefficient for round, tubular and polygonal members (canister), C, (Table 2-7)

$$c := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot D \cdot \frac{1}{mph \cdot ft} \qquad c = 2.42 \times 10^3$$

$$C_F := \begin{cases} 1.2 & \text{if } (c < 32) \\ \frac{25.8}{c^{0.885}} & \text{if } (32 < c < 64) \\ 0.65 & \text{if } (c > 64) \end{cases} \qquad C_F = 0.65$$

Output - Velocity Coefficient for round, tubular and polygonal members (spine), C, (Table 2-7)

$$c_{spine} := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot spine \cdot \frac{1}{mph \cdot ft} \qquad c_{spine} = 0$$

$$C_{Fspine} := \begin{cases} 1.2 & \text{if } (c_{spine} < 32) \\ \dfrac{38.4}{c_{spine}^{1.0}} & \text{if } (32 < c_{spine} < 64) \\ 0.6 & \text{if } (c_{spine} > 64) \end{cases}$$

$C_{Fspine} = 1.2$

Output - Effective Area to Input into RISA Tower

$EPA_s := [C_F \cdot D \cdot (z_1 - z_2)] - [C_{Fspine} \cdot spine \cdot (z_1 - z_2)]$

$EPA_s = 178.75 \cdot ft^2$

$ice := 0.5 \cdot in$

$EPA_{ice} := [C_F \cdot (D + 2ice) \cdot (z_1 - z_2)] - [C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)]$

$EPA_{ice} = 179.346 \cdot ft^2$

$ice := 1.0 \cdot in$

$EPA_{ice} := [C_F \cdot (D + 2ice) \cdot (z_1 - z_2)] - [C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)]$

$EPA_{ice} = 179.942 \cdot ft^2$

Project No: STR21-10300-02
Date: 07/12/2021
By: RE

Calculation of Drag Coefficient for Canister:

Input - TOWER PARAMETERS

$h := 105 \cdot ft$ = height of structure (ft)

$V := 105 \cdot mph$ = Three second gust basic wind speed per TIA-222-G

$Exp := "C"$ = Exposure Category (2.6.5.1)

$Topo := 1$ = Topographic Category

$H := 1 \cdot ft$ = height of crest above surrounding terrain

$Structure_{class} := "II"$ = Structure class per Table 2-1 "Classification of Structures" choose: (I,II,III)

$D := 300 \cdot in$ = diameter at section

$spine := 0 \cdot in$ = internal spine diameter

$n_c := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

$n_s := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

Input - SECTION PARAMETERS

$z_1 := 21 \cdot ft$ = Height at top of tower section

$z_2 := 11 \cdot ft$ = Height at bottom of tower section

$z := mean(z_1, z_2)$ = Height above average ground level to midpoint of section

Output - Velocity Pressure Coefficient, Kz (2.6.5.2)

Per Table 2-4 from TIA-222-G

$$\alpha := \begin{cases} 7.0 & \text{if } Exp = "B" \\ 9.5 & \text{if } Exp = "C" \\ 11.5 & \text{if } Exp = "D" \end{cases} \qquad \alpha = 9.5$$

$$z_g := \begin{cases} 1200 \cdot ft & \text{if } Exp = "B" \\ 900 \cdot ft & \text{if } Exp = "C" \\ 700 \cdot ft & \text{if } Exp = "D" \end{cases} \qquad z_g = 274.32\,m$$

$$K_{zmin} := \begin{cases} 0.70 & \text{if } Exp = "B" \\ 0.85 & \text{if } Exp = "C" \\ 1.03 & \text{if } Exp = "D" \end{cases} \qquad K_{zmin} = 0.85$$

$$K_z := 2.01 \cdot \left(\frac{z}{z_g}\right)^{\frac{2}{\alpha}}$$

$K_z := if(K_z < K_{zmin}, K_{zmin}, K_z)$ $K_z := if(K_z > 2.01, 2.01, K_z)$ $K_z = 0.86$

Output - Topographic Factor, Kzt (2.6.6.4)

$$K_t := \begin{pmatrix} 1 & \text{if Topo} = 1 \\ 0.43 & \text{if Topo} = 2 \\ 0.53 & \text{if Topo} = 3 \\ 0.72 & \text{if Topo} = 4 \end{pmatrix} \qquad K_t = 1$$

$$K_e := \begin{cases} 0.90 & \text{if Exp} = \text{"B"} \\ 1.00 & \text{if Exp} = \text{"C"} \\ 1.10 & \text{if Exp} = \text{"D"} \end{cases} \qquad K_e = 1$$

$$f := \begin{pmatrix} 1.0 & \text{if Topo} = 1 \\ 1.25 & \text{if Topo} = 2 \\ 2.00 & \text{if Topo} = 3 \\ 1.50 & \text{if Topo} = 4 \end{pmatrix} \qquad f = 1$$

$$K_h := e^{\frac{f \cdot z}{H}} \qquad K_h = 8.886 \times 10^{6}$$

$$K_{zt} := \begin{bmatrix} 1 & \text{if Topo} = 1 \\ \left(1 + \frac{K_e \cdot K_t}{K_h}\right)^2 & \text{if Topo} > 1 \end{bmatrix} \qquad K_{zt} = 1$$

Output - Importance Factor, I (Table 2-3)

$$I := \begin{cases} 0.87 & \text{if Structure}_{class} = \text{"I"} \\ 1.00 & \text{if Structure}_{class} = \text{"II"} \\ 1.15 & \text{if Structure}_{class} = \text{"III"} \end{cases} \qquad I = 1$$

Note: For Wind Load without Ice

Output - Velocity Coefficient for round, tubular and polygonal members (canister), C, (Table 2-7)

$$c := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot D \cdot \frac{1}{mph \cdot ft} \qquad c = 2.435 \times 10^{3}$$

$$C_F := \begin{cases} 1.2 & \text{if } (c < 32) \\ \frac{25.8}{c^{0.885}} & \text{if } (32 < c < 64) \\ 0.65 & \text{if } (c > 64) \end{cases} \qquad C_F = 0.65$$

Output - Velocity Coefficient for round, tubular and polygonal members (spine), C, (Table 2-7)

$$c_{spine} := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot spine \cdot \frac{1}{mph \cdot ft} \qquad c_{spine} = 0$$

$$C_{Fspine} := \begin{cases} 1.2 & \text{if } (c_{spine} < 32) \\ \dfrac{38.4}{c_{spine}^{1.0}} & \text{if } (32 < c_{spine} < 64) \\ 0.6 & \text{if } (c_{spine} > 64) \end{cases}$$

$C_{Fspine} = 1.2$

Output - Effective Area to Input into RISA Tower

$EPA_s := \left[C_F \cdot D \cdot (z_1 - z_2)\right] - \left[C_{Fspine} \cdot spine \cdot (z_1 - z_2)\right]$

$EPA_s = 162.5 \cdot ft^2$

$ice := 0.5 \cdot in$

$EPA_{ice} := \left[C_F \cdot (D + 2ice) \cdot (z_1 - z_2)\right] - \left[C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)\right]$

$EPA_{ice} = 163.042 \cdot ft^2$

$ice := 1.0 \cdot in$

$EPA_{ice} := \left[C_F \cdot (D + 2ice) \cdot (z_1 - z_2)\right] - \left[C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)\right]$

$EPA_{ice} = 163.583 \cdot ft^2$

Project No: STR21-10300-02
Date: 07/12/2021
By: RE

Calculation of Drag Coefficient for Canister:

Input - TOWER PARAMETERS

$h := 105 \cdot ft$ = height of structure (ft)

$V := 105 \cdot mph$ = Three second gust basic wind speed per TIA-222-G

$Exp := "C"$ = Exposure Category (2.6.5.1)

$Topo := 1$ = Topographic Category

$H := 1 \cdot ft$ = height of crest above surrounding terrain

$Structure_{class} := "II"$ = Structure class per Table 2-1 "Classification of Structures" choose: (I,II,III)

$D := 300 \cdot in$ = diameter at section

$spine := 0 \cdot in$ = internal spine diameter

$n_c := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

$n_s := "Round"$ = Number of Sides for canister, Choose (Round, 18, 16,12,8)

Input - SECTION PARAMETERS

$z_1 := 93 \cdot ft$ = Height at top of tower section

$z_2 := 81 \cdot ft$ = Height at bottom of tower section

$z := mean(z_1, z_2)$ = Height above average ground level to midpoint of section

Output - Velocity Pressure Coefficient, Kz (2.6.5.2)

Per Table 2-4 from TIA-222-G

$$\alpha := \begin{cases} 7.0 & \text{if } Exp = "B" \\ 9.5 & \text{if } Exp = "C" \\ 11.5 & \text{if } Exp = "D" \end{cases} \qquad \alpha = 9.5$$

$$z_g := \begin{cases} 1200 \cdot ft & \text{if } Exp = "B" \\ 900 \cdot ft & \text{if } Exp = "C" \\ 700 \cdot ft & \text{if } Exp = "D" \end{cases} \qquad z_g = 274.32\,m$$

$$K_{zmin} := \begin{cases} 0.70 & \text{if } Exp = "B" \\ 0.85 & \text{if } Exp = "C" \\ 1.03 & \text{if } Exp = "D" \end{cases} \qquad K_{zmin} = 0.85$$

$$K_z := 2.01 \cdot \left(\frac{z}{z_g}\right)^{\frac{2}{\alpha}}$$

$K_z := if(K_z < K_{zmin}, K_{zmin}, K_z)$ $K_z := if(K_z > 2.01, 2.01, K_z)$ $K_z = 1.229$

Output - Topographic Factor, Kzt (2.6.6.4)

$$K_t := \begin{pmatrix} 1 & \text{if Topo} = 1 \\ 0.43 & \text{if Topo} = 2 \\ 0.53 & \text{if Topo} = 3 \\ 0.72 & \text{if Topo} = 4 \end{pmatrix} \qquad K_t = 1$$

$$K_e := \begin{cases} 0.90 & \text{if Exp} = \text{"B"} \\ 1.00 & \text{if Exp} = \text{"C"} \\ 1.10 & \text{if Exp} = \text{"D"} \end{cases} \qquad K_e = 1$$

$$f := \begin{pmatrix} 1.0 & \text{if Topo} = 1 \\ 1.25 & \text{if Topo} = 2 \\ 2.00 & \text{if Topo} = 3 \\ 1.50 & \text{if Topo} = 4 \end{pmatrix} \qquad f = 1$$

$$K_h := e^{\frac{f \cdot z}{H}} \qquad K_h = 6.076 \times 10^{37}$$

$$K_{zt} := \begin{bmatrix} 1 & \text{if Topo} = 1 \\ \left(1 + \frac{K_e \cdot K_t}{K_h}\right)^2 & \text{if Topo} > 1 \end{bmatrix} \qquad K_{zt} = 1$$

Output - Importance Factor, I (Table 2-3)

$$I := \begin{cases} 0.87 & \text{if Structure}_{class} = \text{"I"} \\ 1.00 & \text{if Structure}_{class} = \text{"II"} \\ 1.15 & \text{if Structure}_{class} = \text{"III"} \end{cases} \qquad I = 1$$

Note: For Wind Load without Ice

Output - Velocity Coefficient for round, tubular and polygonal members (canister), C, (Table 2-7)

$$c := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot D \cdot \frac{1}{mph \cdot ft} \qquad c = 2.91 \times 10^3$$

$$C_F := \begin{cases} 1.2 & \text{if } (c < 32) \\ \frac{25.8}{c^{0.885}} & \text{if } (32 < c < 64) \\ 0.65 & \text{if } (c > 64) \end{cases} \qquad C_F = 0.65$$

Output - Velocity Coefficient for round, tubular and polygonal members (spine), C, (Table 2-7)

$$c_{spine} := \left(I \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot spine \cdot \frac{1}{mph \cdot ft} \qquad c_{spine} = 0$$

$$C_{Fspine} := \begin{cases} 1.2 & \text{if } (c_{spine} < 32) \\ \dfrac{38.4}{c_{spine}^{1.0}} & \text{if } (32 < c_{spine} < 64) \\ 0.6 & \text{if } (c_{spine} > 64) \end{cases}$$

$C_{Fspine} = 1.2$

Output - Effective Area to Input into RISA Tower

$EPA_s := [C_F \cdot D \cdot (z_1 - z_2)] - [C_{Fspine} \cdot spine \cdot (z_1 - z_2)]$

$EPA_s = 195 \cdot ft^2$

$ice := 0.5 \cdot in$

$EPA_{ice} := [C_F \cdot (D + 2ice) \cdot (z_1 - z_2)] - [C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)]$

$EPA_{ice} = 195.65 \cdot ft^2$

$ice := 1.0 \cdot in$

$EPA_{ice} := [C_F \cdot (D + 2ice) \cdot (z_1 - z_2)] - [C_{Fspine} \cdot (spine) \cdot (z_1 - z_2)]$

$EPA_{ice} = 196.3 \cdot ft^2$

SST Unit Base Foundation

Site # :	CT0025
Site Name:	East Lyme Relo
Project #:	STR21-10300-02
TIA-222 Revision:	G

Top & Bot. Pad Rein. Different?:	✓
Tower Centroid Offset?:	
Block Foundation?:	✓
Rectangular Pad?:	

Superstructure Analysis Reactions

Global Moment, **M**:	3563.75	ft-kips
Global Axial, **P**:	77.97	kips
Global Shear, **V**:	63.64	kips
Leg Compression, $\mathbf{P_{comp}}$:	254.6	kips
Leg Comp. Shear, $\mathbf{V_{u\_comp}}$:	26.86	kips
Leg Uplift, $\mathbf{P_{uplift}}$:	208.85	kips
Leg Uplift. Shear, $\mathbf{V_{u\_uplift}}$:	26.25	kips
Tower Height, **H**:	91.25	ft
Base Face Width, **BW**:	18	ft
BP Dist. Above Fdn, $\mathbf{bp_{dist}}$:	2	in
Anchor Bolt Circle, **BC**:	15.25	in

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	82.13	63.64	**77.5%**	**Pass**
Bearing Pressure (ksf)	9.21	3.79	**41.1%**	**Pass**
*Overturning (kip*ft)*	4095.50	3765.28	**91.9%**	**Pass**
*Pad Flexure (kip*ft)*	3715.59	1557.14	**41.9%**	**Pass**
Pad Shear - 1-way (kips)	932.37	281.61	**30.2%**	**Pass**
Pad Shear - Comp 2-way (ksi)	0.190	0.052	**27.3%**	**Pass**

Soil Rating:	**91.9%**
Structural Rating:	**41.9%**

Pad Properties

Depth, **D**:	2.75	ft
Pad Width, $\mathbf{W_1}$:	26.00	ft
Pad Thickness, **T**:	3.00	ft
Pad Rebar Size (Top dir.2), $\mathbf{Sp_{top2}}$:	8	
Pad Rebar Quantity (Top dir. 2), $\mathbf{mp_{top2}}$:	26	
Pad Rebar Size (Bottom dir. 2), $\mathbf{Sp_2}$:	8	
Pad Rebar Quantity (Bottom dir. 2), $\mathbf{mp_2}$:	34	
Pad Clear Cover, $\mathbf{cc_{pad}}$:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	100	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:		degrees
SPT Blow Count, $\mathbf{N_{blows}}$:		
Base Friction, μ:	0.3	
Neglected Depth, **N**:	0.0	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<-- Toggle between Gross and Net

Colocation Application

RETURN THIS APPLICATION TO: (E-MAIL IS PREFERRED)			*Application Fee: (Please contact TowerCo)*
TowerCo			Date Rec by TowerCo:
5000 Valleystone Dr., Ste. 200	**e-mail:**	colocation@towerco.com	Revision Dates:
Cary, NC 27519	**office:**	**919-469-5559**	TowerCo Site Name:
Attn: Colocation	**fax:**	**919-469-5530**	TowerCo Site Number:

TOWERCO SITE INFORMATION

Latitude:	41.3663				Existing Structure Type:	Stealth
Longitude:	-72.2423				Existing Structure Height (ft. AGL):	85’
Site Address:	2 Arbor Crossing, East Lyme, CT 06333				County: New London	State: CT

APPLICANT INFORMATION

Applicant (Carrier):	DISH Wireless LLC	Primary Contact Name:	Mai Conaway
Applicant Site Name:		Company Name:	Northeast Site Solutions
Applicant Site Number: BOBOS00076A		Primary Contact Number:	(410) 409-3822
Req. Date For Receipt of Agreement:		Primary Contact Fax:	(413) 521-0558
Proposed Installation Date:		Primary Contact Address:	1053 Farmington Avenue Farmington, CT 06032
Proposed ON AIR Date:			
Applicant Entity Name on SA:	**DISH Wireless LLC**	Primary Contact Email:	mai@northeastsitesolutions.com
Notice Address for Lease:	5701 South Sante Fe Blvd. Littleton, CO 80120		
Billing Address:	5701 South Sante Fe Blvd. Littleton, CO 80120		

ADDITIONAL CARRIER INFORMATION

Leasing Contact Name/Number/Email	Jeanne Cottrell, 203-927-4317, jean.cottrell@dish.com
RF Contact Name/Number/E mail	Jared Robinson, 978-855-5870, jared.robinson@dish.com
Legal Review Contact Name/Number:	Michael Lawton, 617-930-1191, michael.lawrton@dish.com
Zoning Contact Name/Number	Denis Sabo, 203-435-3640, denise@northeastsitesolutions.com
Construction Contact Name/Number:	Javier Soto, 617-839-6514, javier.soto@dish.com
Site Tech Contact Name/Number:	
Emergency Contact Name/Number:	

ANTENNAS

	Sector 1	**Sector 2**	**Sector 3**	**AUX /Other**
Desired Rad Center (ft AGL)	66’	66’	66’	66’
Antenna Quantity	1	1	1	1
Antenna Manufacturer	JMA	JMA	JMA	Raycap
Antenna Model (Attach Spec Sheet)	MX08FRO665-20_V0F	MX08FRO665-20_V0F	MX08FRO665-20_V0F	RDIDC-9181-PF-48
Antenna Weight (lbs per antenna)	54	54	54	21.85
Antenna Dimensions (HxWxD) (in)	72.0" x 20.0" x 8.0"	72.0" x 20.0" x 8.0"	72.0" x 20.0" x 8.0"	16" x 14" x 8"
ERP (watts)	15059.631	15059.631	15059.631	
Antenna Gain (dB)				
Orientation/Azimuth (Degrees)	0	120	240	
RRU Quantity	1	1	1	
RRU Manufacturer & Model	Fujitsu, TA08025-B605	Fujitsu, TA08025-B605	Fujitsu, TA08025-B605	
RRU Dimensions (HxWxD) (in)	15.75 x 14.96 x 9.06	15.75 x 14.96 x 9.06	15.75 x 14.96 x 9.06	
RRU Weight	74.95	74.95	74.95	
RRU Quantity	1	1	1	

TowerCo

Colocation Application

RRU Manufacturer & Model	Fujitsu A08025-B604	Fujitsu A08025-B604	Fujitsu A08025-B604	
RRU Dimensions (HxWxD) (in)	63.93	63.93	63.93	
Surge Suppressor Dimensions (HxWxD)				
Surge Suppressor Weight				
TMA Quantity				
TMA Manufacturer & Model				
TMA Dimensions (HxWxD)				
TMA Weight				
RET Quantity				
RET Manufacturer and Model				
RET Dimensions (HxWxD)				
RET Weight				
Mount Type /Mfg /Model (Attach spec sheet)				
Tower Mount Mounting Height				
Coax Cables Quantity ***(Please specify "PER ANTENNA" or "PER SECTOR" for all coax / lines)***				
Diameter of Coax Cables (in)				
Hybrid Fiber/Power Cables Quantity	1			
Diameter of Hybrid Fiber/Power Cables (in)	1.60"			
RET Control Cable Quantity				
RET Control Cable Diameter				
Transmit Frequency (MHz)				
Receive Frequency (MHz)				
Type of Service (i.e. LTE, CDMA,GSM)				
Is FirstNet being added to this site? ☐ ***YES*** ☒ ***NO***				

GROUND SPACE REQUIREMENTS

Equipment Enclosure Type:	_1_ BTS Cabinets/Number of BTS Cabinets: __ Outdoor Shelter __ Other:
Total Leased Area Dimensions (WxD) (ft)	5'x7'
Cabinet/BTS/Shelter Dimensions (HxWxD)(ft):	32x32.1x74
Concrete Pad Dimensions (WxD)(ft):	
Cabinet/Shelter Manufacturer/Model:	Charles(Amphenol) -H/EX

POWER REQUIREMENTS

AC Power:	Required Voltage and Total Amperage:

GENERATOR INFORMATION

Generator Ground Space Requirement (HxWxD) (ft):	5'x7'	Fuel Type: __ Propane ___ Diesel	
Fuel Tank Size (Gallons):		Fuel Tank Location: Attached Separate None	
Capacity (KW):			

ADDITIONAL INFORMATION/COMMENTS

TowerCo

Colocation Application

- Ground lessor consent may be required as a condition to the execution of your lease.
- Modifications to the tower site may be subject to local zoning approval.
- If available, attach manufacturer's equipment specifications for antennas, mounts, cabinets, shelters, etc.
- When requesting ground space, do not include a buffer around your desired physical footprint. TowerCo , at its sole discretion, will provide a non-exclusive buffer between your installation and other proposed and/or existing tenants to allow for access and maintenance

Exhibit E

Mount Analysis

INFINIGY
FROM ZERO TO INFINIGY
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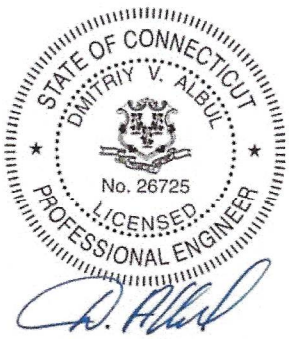
1033 WATERVLIET SHAKER RD ALBANY, NY 12205

Mount Analysis Report

October 6, 2021

Dish Wireless Site Number	BOBOS00076A
Infinigy Job Number	2039-Z5555-C
Client	Northeast Site Solution
Carrier	Dish Wireless
Site Location	2 Arbor Crossing, East Lyme, CT 06333 41.3663 N NAD83 72.2423 W NAD83
Mount Centerline EL.	66 ft
Mount Classification	Mount Pipes
Structural Usage Ratio	**7%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA and ASCE code requirements. The proposed antenna mounts for the proposed carrier are therefore deemed **adequate** to support the final loading configuration as listed in this report.



10-06-21

Dmitriy Albul, P.E.
Engineering Consultant to Infinigy

Contents

Introduction

Infinigy Engineering has been requested to perform a mount analysis of proposed antenna mount from the Dish Wireless equipment. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 19.0.1 analysis software.

Supporting Documentation

Stealth Enclosure Drawings	Stealth Concealment Solutions, INC Job No. AT16-00207W-33R2, dated April 25, 2017
Construction Drawings	Infinigy Engineering PLLC, Job No. 2039-Z5555-C, dated June 2, 2021
RF Design Sheet	Dish Wireless, dated February 15, 2021

Analysis Code Requirements

Wind Speed	135 mph (3-second Gust, Vult.)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 0.75" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2018 Connecticut Building Code (2015 IBC)
Structure Class	II
Exposure Category	C
Topographic Method	Method 2
Topographic Category	1
Spectral Response	S_s=0.164, S_1=0.059
Site Class	D – Stiff Soil (Assumed)
HMSL	339.02 ft.

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed antenna mounts are therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Dmitriy Albul, P.E.
Professional Engineer | Engineering Consultant to Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
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www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
66.0	66.0	-	-	3	JMA MX08FRO665-21	Dish Wireless
			-	3	Fujitsu TA08025-B605	
			-	3	Fujitsu TA08025-B604	
			-	1	Raycap RDIDC-9181-PF-48	

***Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.**

Structure Usages

Mount Pipes	2%	Pass
U-bolts	7%	Pass
Rating	**7%**	Pass

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

INFINIGY

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Date:	10/6/2021
Site Name:	BOBOS00076A
Project Engineer:	DVA
Project No:	2039-Z5555C
Customer:	Northeast Site Solutions
Carrier:	Dish Wireless

Building Code:	2015	
ASCE Standard:	ASCE 7-10	
TIA Standard:	G	
Mount Type:	Pipe	
	Proposed	
Mount Centerline:	66	ft
Superstructure Height:	105	ft
Structure Type:	Other Chimney/Tank/Similar	

Factors	
Gh:	1.000
K_{zmin}:	0.850
K_z:	1.160
K_d:	0.950
K_{zt}:	1.000
Ka:	0.900
I wind:	1.000
I ice:	1.000

q_z:	30.84	psf
Surface Wind Pressure:	0.00	psf

Site Information		
Exposure Category:	C	
Risk Category:	II	
Ultimate Wind Speed:	135	mph
Design Wind Speed:	105	mph
Ice Thickness:	0.75	in
Ice Wind Speed:	50.0	mph
Escalated Ice Thickness:	1.61	in
Topographic Method:	2	
Topographic Category:	1	

Run Seismic?	Yes
Site Soil:	D (Default)
Short-Period Accel. (Ss):	0.1640
1-Second Accel. (S1):	0.0590
Short-Period Design (SDS):	0.1750
1-Second Design (SD1):	0.0940
Short-Period Coeff. (Fa):	1.6000
1-Second Coeff. (Fv):	2.4000
Cs	0.0875
Cs min	0.0300
Amplification Factor (ap):	1.00
Response Mod. (Rp):	2.50
Overstrength (Ωo):	1.00

Service Wind:	30.0	mph
Lm (man live load) =	250.0	lb
Lv (man live load) =	0.0	lb

ELEVATION VIEW

PLAN VIEW

Table 1. Equipment Specifications and Wind Pressure

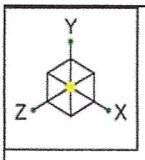
Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA_A	EPA_T	$EPA_{A\ w/\ ice}$	$EPA_{T\ w/\ ice}$	q_z	$q_{z\ ice}$	$q_{z\ live}$
JMA WIRELESS	MX08FRO665-20	66	1	54.00	72	20	8	8.01	3.21	8.80	3.90	30.84	7.05	2.54
FUJITSU	TA08025-B605	66	1	74.95	15.75	14.96	9.06	1.86	1.16	2.72	1.87	30.84	7.05	2.54
FUJITSU	TA08025-B604	66	1	63.93	15.75	14.96	7.87	1.86	1.01	2.72	1.70	30.84	7.05	2.54
RAYCAP	RDIDC-9181-PF-48	68	1	21.85	16	14	8	1.77	1.05	2.62	1.74	31.03	7.09	2.55

Table 2. Equipment Wind and Seismic Loads

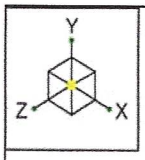
Manufacturer	Model	Wind Load (F_A), lb		Wind Load Ice Case (F_A), lb			Wind Load Service Case		Seismic
JMA WIRELESS	MX08FRO665-20	222	89	56	25	279	18	7	4.7
FUJITSU	TA08025-B605	52	32	17	12	50	4	3	6.6
FUJITSU	TA08025-B604	52	28	17	11	49	4	2	5.6
RAYCAP	RDIDC-9181-PF-48	50	29	17	11	47	4	2	1.9

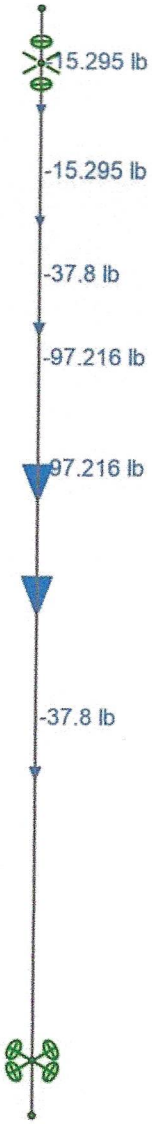
Table 3. Member Capacities

Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Mount Pipes	PIPE_2.0	7.32	1.67	0.94	2%	0%	2%	2%



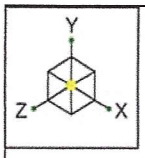
Infinigy Engineering, PLLC	BOBOS00076A	SK-1
DVA		Aug 06, 2021
2039-Z5555C	Mount Pipe Model	BOBOS00076A.R3D

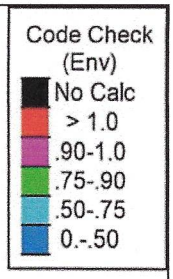




Loads: LC 1, 1.4DL
Envelope Only Solution

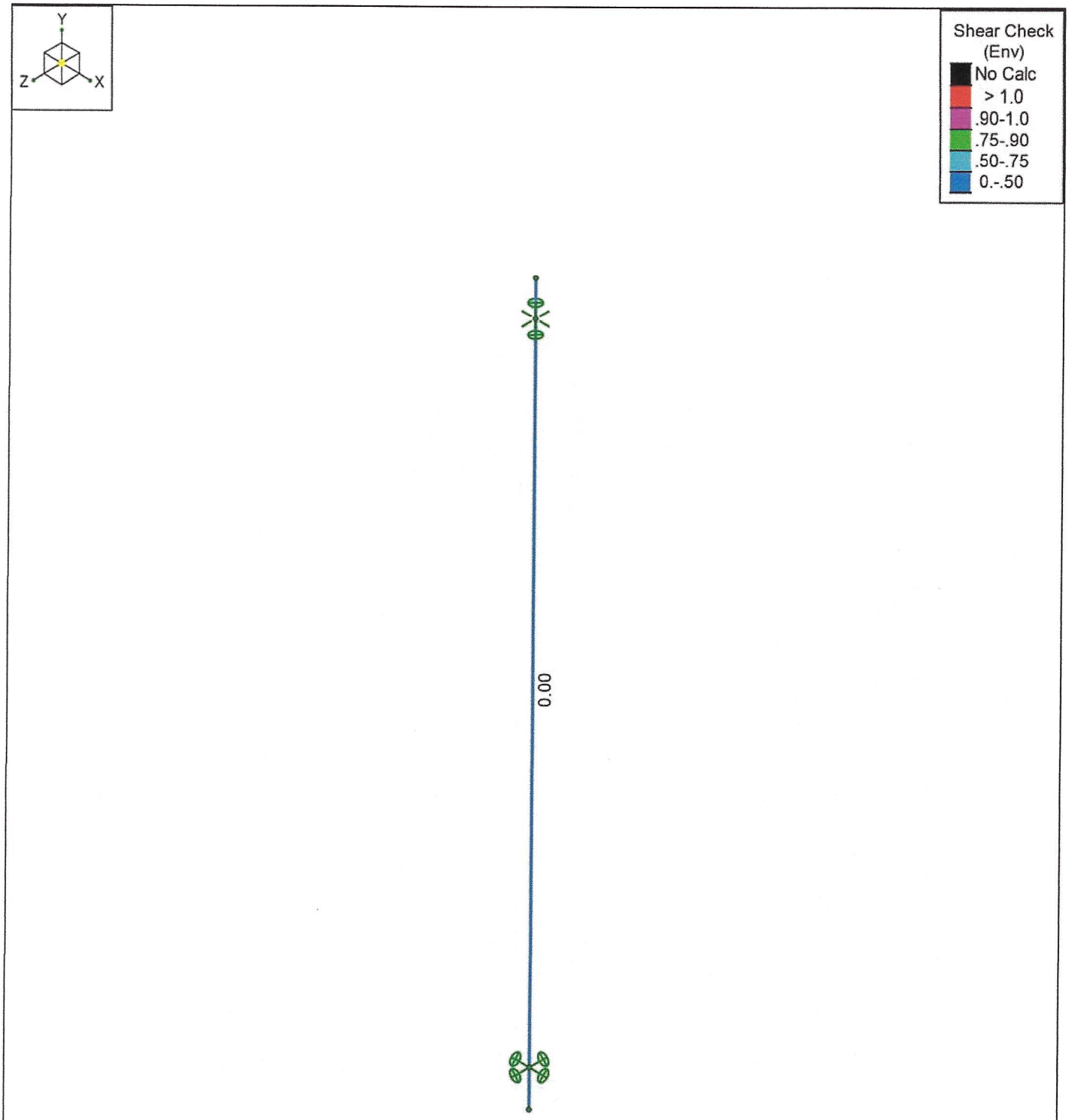
Infinigy Engineering, PLLC	BOBOS00076A	SK-4
DVA		Aug 06, 2021
2039-Z5555C	Controlling Load Case	BOBOS00076A.R3D





Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOBOS00076A	SK-5
DVA		Aug 06, 2021
2039-Z5555C	Member Bending Check	BOBOS00076A.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOBOS00076A	SK-6
DVA		Aug 06, 2021
2039-Z5555C	Member Shear Check	BOBOS00076A.R3D

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI S100-12: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-12: ASD
Temperature	< 100F
Concrete	ACI 318-11
Masonry	ACI 530-11: Strength
Aluminum	AA ADM1-10: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_oZ	1
Ω_oX	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	Mount Pipes	Column	Pipe	A53 Gr.B	Typical

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A53 Gr.B	PIPE_2.0	1	120	0.035
3	Total HR Steel		1	120	0.035

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Self Weight	DL		-1		8	
14	Ice Weight	OL1				8	1
27	Seismic Load X	ELX			-0.088	8	
28	Seismic Load Z	ELZ	-0.088			8	
29	Service Live Loads	LL					
30	Maintenance Load 1	LL				1	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4				
2	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.235	27	1	28	
3	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.235	27	0.866	28	0.5
4	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.235	27	0.5	28	0.866
5	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.235	27		28	1
6	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.235	27	-0.5	28	0.866
7	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.235	27	-0.866	28	0.5
8	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.235	27	-1	28	
9	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.235	27	-0.866	28	-0.5
10	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.235	27	-0.5	28	-0.866
11	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.235	27		28	-1
12	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.235	27	0.5	28	-0.866
13	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.235	27	0.866	28	-0.5
14	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.865	27	1	28	
15	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.865	27	0.866	28	0.5
16	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.865	27	0.5	28	0.866
17	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.865	27		28	1
18	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.865	27	-0.5	28	0.866
19	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.865	27	-0.866	28	0.5
20	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.865	27	-1	28	
21	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.865	27	-0.866	28	-0.5
22	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.865	27	-0.5	28	-0.866
23	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.865	27		28	-1
24	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.865	27	0.5	28	-0.866
25	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.865	27	0.866	28	-0.5
26	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0	Yes	Y	1	1	2	0.082	29	1.5
27	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30	Yes	Y	1	1	3	0.082	29	1.5
28	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60	Yes	Y	1	1	4	0.082	29	1.5
29	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90	Yes	Y	1	1	5	0.082	29	1.5
30	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120	Yes	Y	1	1	6	0.082	29	1.5
31	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150	Yes	Y	1	1	7	0.082	29	1.5
32	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180	Yes	Y	1	1	8	0.082	29	1.5
33	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210	Yes	Y	1	1	9	0.082	29	1.5
34	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240	Yes	Y	1	1	10	0.082	29	1.5
35	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270	Yes	Y	1	1	11	0.082	29	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
36	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300	Yes	Y	1	1	12	0.082	29	1.5
37	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330	Yes	Y	1	1	13	0.082	29	1.5
38	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.132
39	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.132
40	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.132
41	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.132
42	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.132
43	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.132
44	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.132
45	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.132
46	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.132
47	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.132
48	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.132
49	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.132

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-in]	LC	MY [lb-in]	LC	MZ [lb-in]	LC
1	N3	max	2.325	15	186.503	1	2.325	16	0	49	0	49	0	49
2		min	-2.325	21	115.232	14	-2.325	22	0	1	0	1	0	1
3	N4	max	4.309	3	162.711	1	4.309	4	104.072	4	0	49	104.072	9
4		min	-4.309	9	100.532	14	-4.309	10	-104.072	10	0	1	-104.072	3
5	Totals:	max	6.633	15	349.214	1	6.633	16						
6		min	-6.633	21	215.764	14	-6.633	22						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn
1	M1	PIPE_2.0	0.016	6.25	1	0.001	6.25	10	9836.597	32130	22459.5	22459.5	1	H1-1b*

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	8/6/2021
Site:	*BOBOS00076A*
Engineer:	*DVA*
Project No:	*2039-Z5555-C*
Connection Location:	*Plate Connection*

Bolt Capacity Equation	TIA-222-H	
Connection Type	Steel	
U-Bolt	Yes	
Bolt Size, **d**	1/2	in
Threads per Inch, **n**	13	
Steel Grade	A325	
Bolt Ultimate Tensile Stress, F_u	120	ksi
Threads Exclusion	N	
Shear Plane	1	

Net Bolt Cross-Sectional Area, **An**	0.142	in^2
Gross Bolt Cross-Sectional Area, **Ag**	0.196	in^2
Tensile Steel Strength (per bolt), φR_{nt}	12771	lbs
Shear Steel Strength (per bolt), φR_{nv}	8836	lbs

INFINIGY

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BOLT CONNECTION CALCULATION

BOLT GROUP CHECK

Date:	10/6/2021
Contractor:	Infinigy Engineering, LLC
Site:	BOBOS00076A
Engineer:	DVA
Project No:	2039-Z5555-C
Connection Location:	Plate Connection

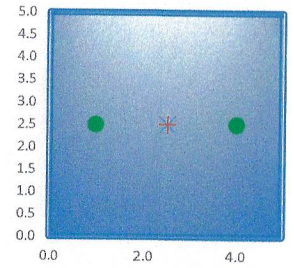
Loads Properties

Controlling LC:	1				
Load Point Number:	N4				
X-Coordinate (in.)	2.50				
Y-Coordinate (in.)	2.50				
Z-Coordinate (in.)	1.20				
Shear Load, Px (lbs)	0.000	0	0	0	0
Shear Load, Py (lbs)	-163.000	0	0	0	0
Axial Load, Pz (lbs)	0.000	0	0	0	0
Moment, Mx (lb-in)	0.000	0	0	0	0
Moment, My (lb-in)	0.000	0	0	0	0
Moment, Mz (lb-in)	0.000	0	0	0	0

Member Properties

	X	Y
Start Coordinates:	0.0	0.0
Dimentions:	5.0	5.0

Bolt Group Pattern



Number of Bolts: 2

No.	Bolt Type	Bolt Coordinates Xo (in)	Yo (in)	Bolt Loads Axial (lbs)	Shear (lbs)	Steel Bolt Usage Tension	Shear	Combined	Max. Capacity
1	Main Type	1.00	2.50	39.12	81.50	0.3%	0.9%	0.9%	0.9%
2	Main Type	4.00	2.50	39.12	81.50	0.3%	0.9%	0.9%	0.9%

Bolt Group Properties:

Xc =	2.50	in.
Yc =	2.50	in.
Ic.y =	0.88	in.^2
Ic.x =	0.00	in.^2
Ic.xy =	0.88	in.^2

Loads at Center of Gravity of Bolt Group:

Pz =	0.00	lbs
Px =	0.00	lbs
Py =	-163.00	lbs
Mx =	195.60	lb-in
My =	0.00	lb-in
Mz =	0.00	lb-in

Total Capacity of Bolt Group: 0.9%

U-bolt Connection	Yes
Sliding Axis	Y
No. of U-Bolt Connections	1

No.	Load Point Number	No. U-Bolts	Bolt Diameter	Steel Grade	Pipe Diameter	Sliding Force, lb	Torsional Moment, lb-in	Sliding Strength, lb	Combined
1	N4	1	0.5	A307	2.375	163.00	0.00	2356.19	6.9%

Total Capacity of U-Bolt Connection: 6.9%

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOBOS00076A

TWC - Arbor Crossing
2 Arbor Crossing
East Lyme, CT 06333

October 11, 2021

Fox Hill Telecom Project Number: 210621

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**37.97 %**

Fox Hill Telecom

October 11, 2021

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS00076A – TWC - Arbor Crossing**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **2 Arbor Crossing, East Lyme, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at **2 Arbor Crossing, East Lyme, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	600 MHz	4	61.5
5G	1900 MHz (PCS)	4	40
5G	2100 MHz (AWS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	66
B	1	JMA MX08FRO665-21	66
C	1	JMA MX08FRO665-21	66

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	22.55
						Sector A Composite MPE%	**22.55**
Antenna B1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	22.55
						Sector B Composite MPE%	**22.55**
Antenna C1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	22.55
						Sector C Composite MPE%	**22.55**

Table 3: Dish Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**22.55 %**
AT&T	8.54 %
T-Mobile	6.88 %
Site Total MPE %:	**37.97 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	22.55 %
Dish Sector B Total:	22.55 %
Dish Sector C Total:	22.55 %
Site Total:	37.97 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish 600 MHz 5G	4	858.77	66	34.30	600 MHz	400	8.58%
Dish 1900 MHz (PCS) 5G	4	1,648.39	66	65.85	1900 MHz (PCS)	1000	6.58%
Dish 2100 MHz (AWS) 5G	4	1,849.52	66	73.88	2100 MHz (AWS)	1000	7.39%
						Total:	**22.55%**

Table 6: Dish Maximum Sector MPE Power Values

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 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 Sector	Power Density Value (%)
Sector A:	22.55 %
Sector B:	22.55 %
Sector C:	22.55 %
Dish Maximum Total (per sector):	22.55 %
Site Total:	37.97 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **37.97 %** 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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

TowerCo

TOWERCO 2013 LLC - Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Tower Share Application
TOWERCO 2013 LLC - telecommunications site at:
2 ARBOR CROSSING, EAST LYME, CT 06333

TOWERCO 2013 LLC ("TowerCo") hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

TowerCo ID/Name: CT0025
Customer Site ID: BOBOS00076A / TWC - Arbor Crossing
Site Address: 2 ARBOR CROSSING, EAST LYME, CT 06333

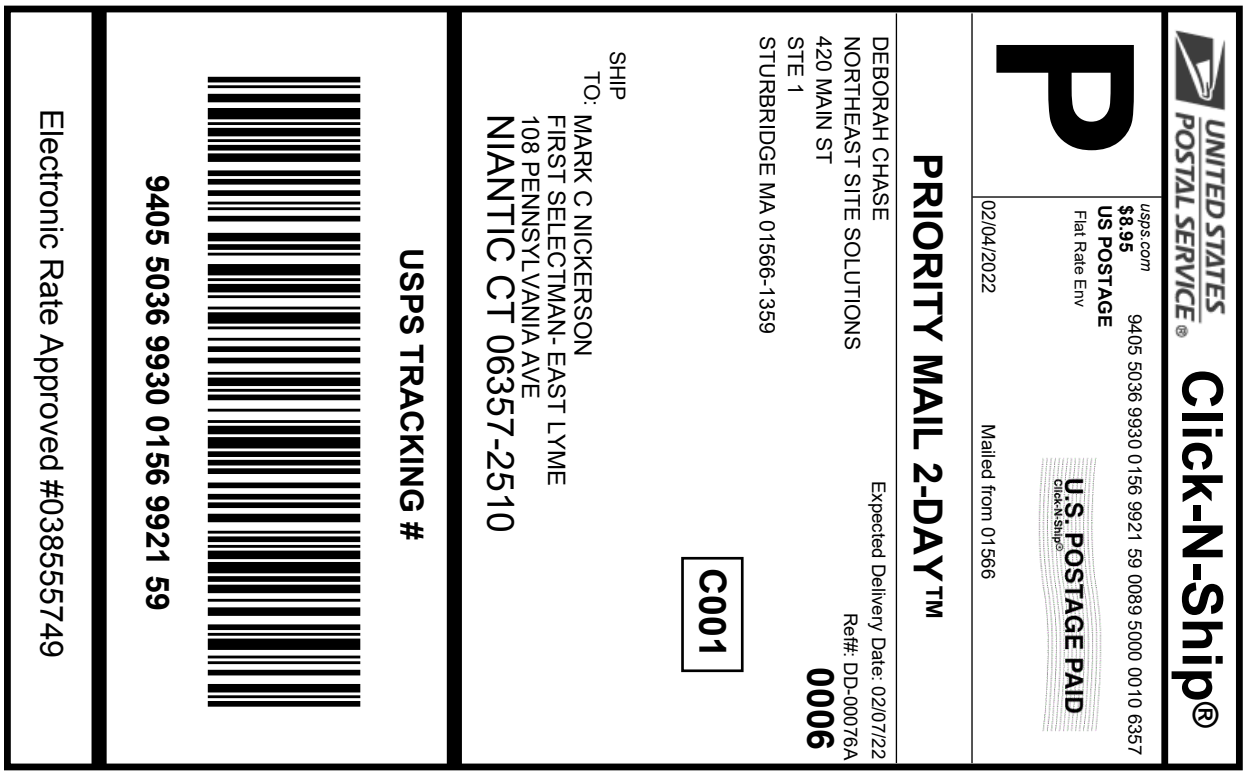
TOWERCO 2013 LLC

By: _____ Date: ~~9/../2021~~ 12/02/21
Name: DAVID HOCKEY
Title: DIRECTOR OF ZONING

5000 Valleystone Dr.
Suite 200
Cary, NC 27519
address
919.653.5700
main
919.469.5530
fax
info@towerco.com
email
towerco.com
website

Exhibit H

Recipient Mailings



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Trans. #:	555820935
Print Date:	02/04/2022
Ship Date:	02/04/2022
Expected Delivery Date:	02/07/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00076A

To: MARK C NICKERSON
FIRST SELECTMAN- EAST LYME
108 PENNSYLVANIA AVE
NIANTIC CT 06357-2510

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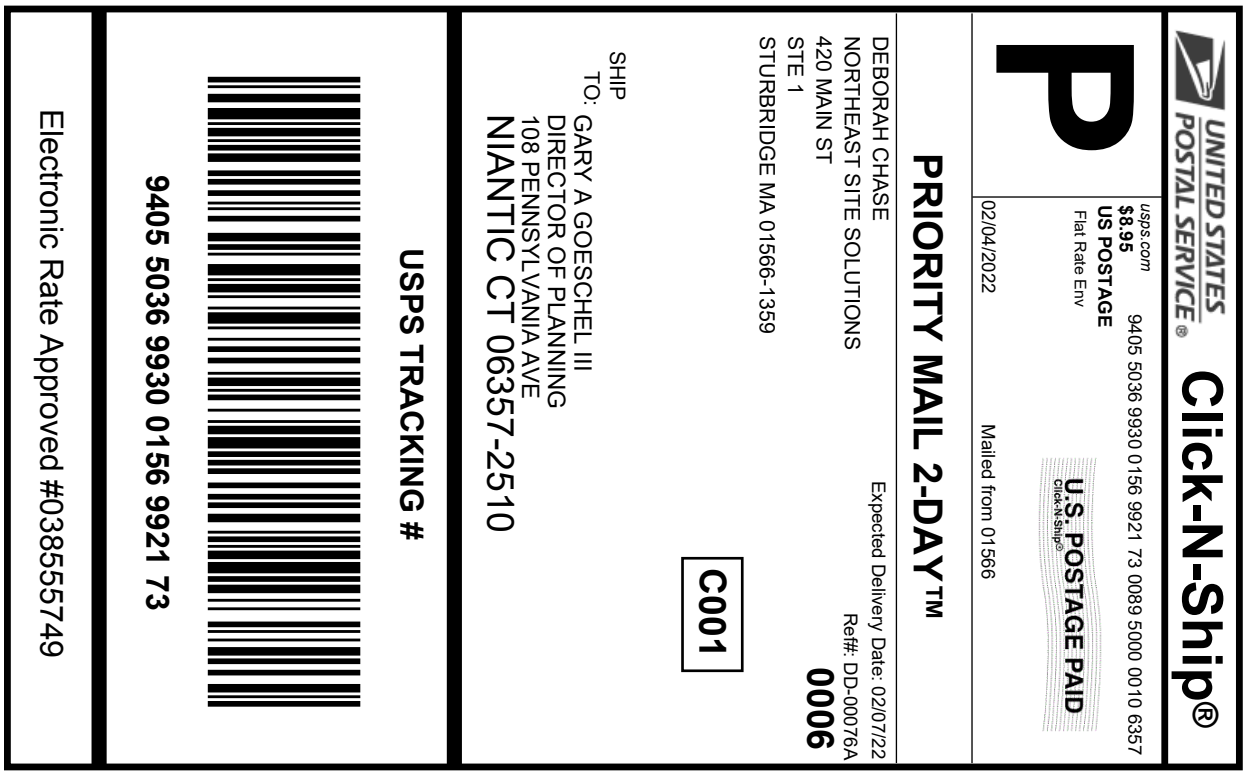

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Ship Date:	02/04/2022
Expected Delivery Date:	02/07/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00076A

To: GARY A GOESCHEL III
DIRECTOR OF PLANNING
108 PENNSYLVANIA AVE
NIANTIC CT 06357-2510

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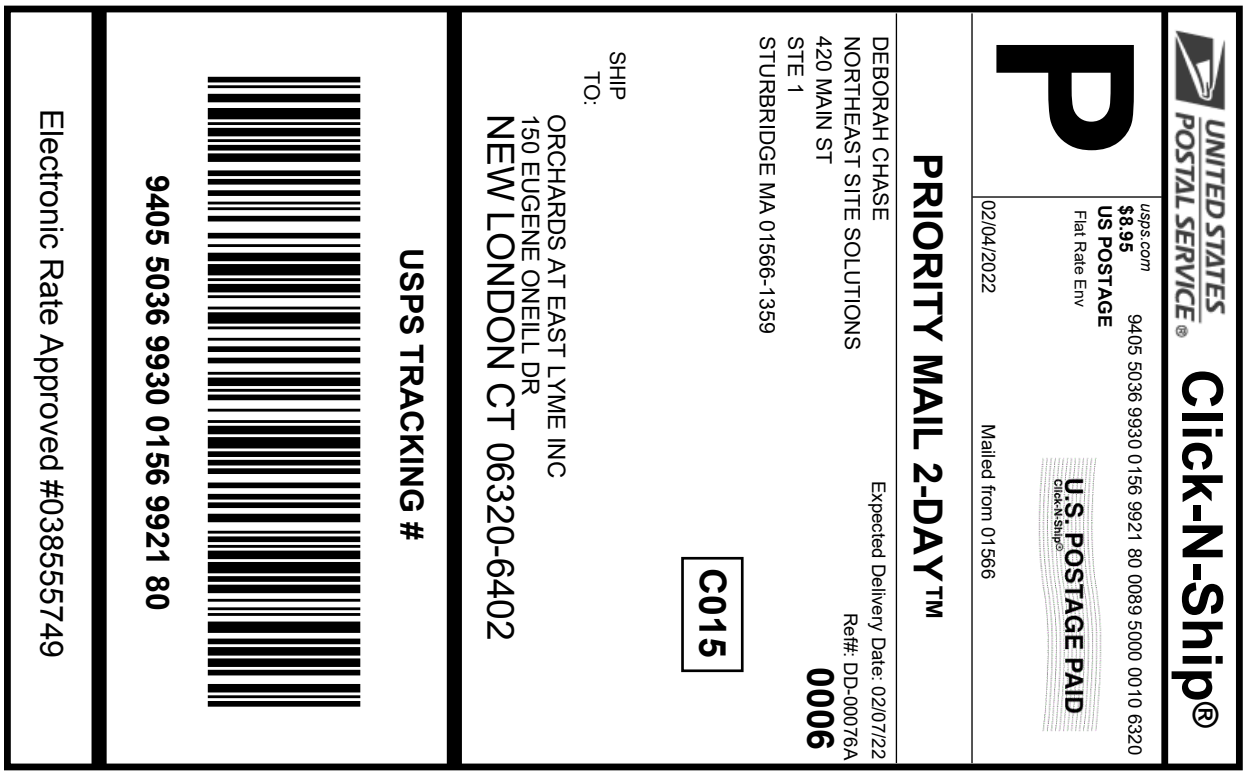

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Expected Delivery Date:	02/07/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00076A

To: ORCHARDS AT EAST LYME INC
150 EUGENE ONEILL DR
NEW LONDON CT 06320-6402

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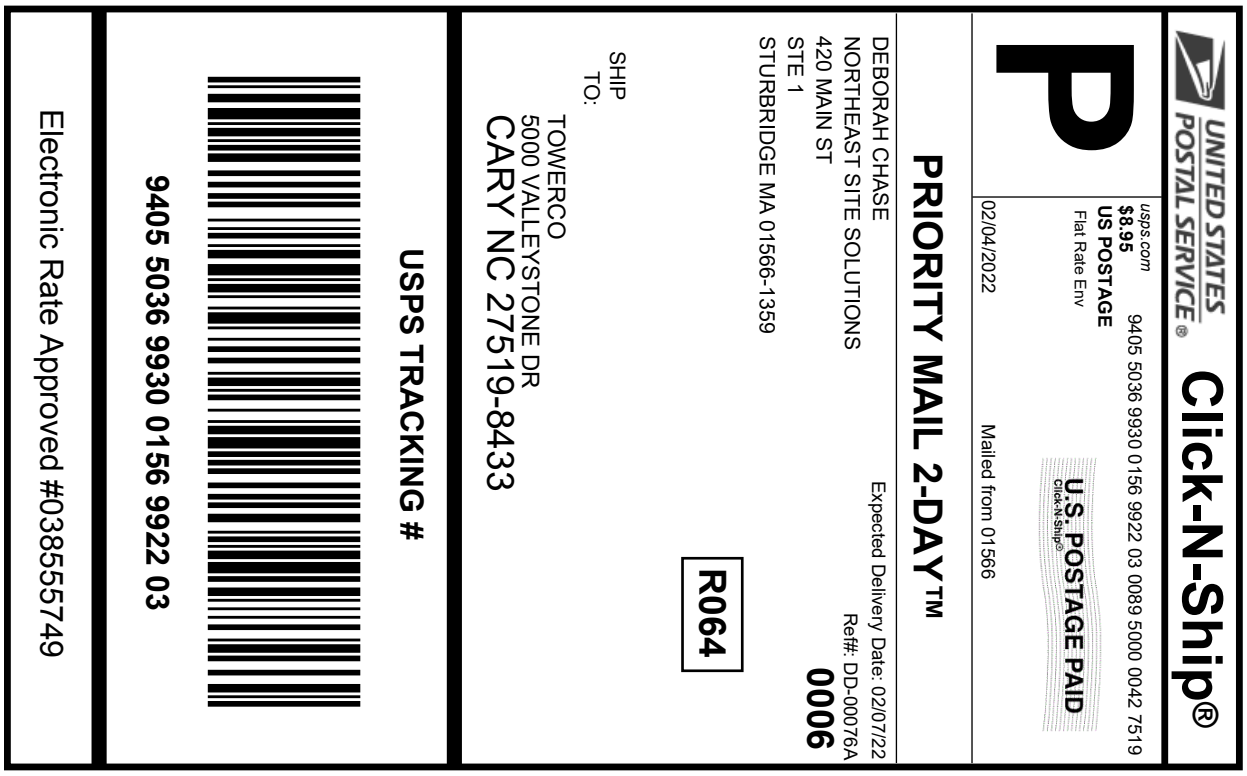

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Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00076A

To: TOWERCO
5000 VALLEYSTONE DR
CARY NC 27519-8433

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