NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

April 28, 2022

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

RE: Tower Share Application
230 Guinea Road, Monroe, CT 06468
Latitude: 41.342222
Longitude: -73.276388
Site #: 841294_Crown_Dish

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 230 Guinea Road, Monroe, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 165-foot level of the existing 243-foot self-support tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing fenced compound. Included are plans by Kimley Horn, dated December 20, 2021, Exhibit C. Also included is a structural analysis prepared by Paul J. Ford, dated August 31, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Connecticut Siting Council. Docket No. 114 on January 16, 1990. Please see attached.

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 Ken Kellogg, First Selectman and Rick Shultz, Town Planner for the Town of Monroe, as well as the tower owner (Crown Castle) and property owner (Town of Monroe.).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 243-feet and the Dish Wireless LLC antennas will be located at a centerline height of 165-feet.

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

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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. The combined site operations will result in a total power density of 3.54% as evidenced by Exhibit F.

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

A. Technical Feasibility. The existing tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as 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 tower in Monroe. 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 165-foot level of the existing 243-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit 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 sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Monroe.

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Ken Kellogg, First Selectman & Property Owner
Town Hall
7 Fan Hill Road
Monroe, Connecticut 06468

Rick Shultz, Town Planner
Town Hall
7 Fan Hill Road
Monroe, Connecticut 06468

Crown Castle – Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 114 - An application of SNET Cellular, Inc., for a Certificate of Environmental Compatibility and Public Need for a cellular telephone tower and associated equipment in the Town of Monroe, Connecticut.	:	Connecticut Siting Council January 16, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular telephone facility at the proposed Monroe site, 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 significant either alone or cumulatively with other effects, 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 Section 16-50k of the General Statutes of Connecticut (CGS), be issued to SNET Cellular, Inc. (SNET), for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed site in Monroe, Connecticut.

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

1. All SNET cellular antennas shall extend no higher than 252 feet above ground level (AGL). If the Town of Monroe and SNET reach an agreement to place the Town of Monroe's antennas for public radio station WMNR on the tower, then the tower shall be no higher than 260 feet AGL for the attachment of such town antennas; otherwise the tower shall be no higher than 240 feet AGL. Prior to the raising of the tower from 240 feet AGL to 260 feet AGL, notice of such sharing and raising of the tower shall be provided to the Council.

2. The facility shall be constructed in accordance with the State of Connecticut Basic Building Code.

3. 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 State Agencies. The D&M plan shall include detailed plans for site preparation including a profile and cross-section of the proposed access road, placement of the proposed tower and equipment building within the leased parcel, and erosion and sedimentation control.

4. The Certificate Holder shall comply with any future radio frequency (RF) standard, promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

5. The Certificate Holder or its successor shall provide the Council a recalculated report of power density if and when additional channels over the proposed 45 channels, higher wattage over the proposed 100 watts per channel, or other circumstances in operation cause a change in power density above the levels originally calculated in the application.

6. The Certificate Holder or its successor shall permit public or private entities to share space on the proposed Monroe tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. If this facility does not initially provide, or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years after the completion of any appeal from this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below. A notice of issuance shall be published in the Bridgeport Post and the Monroe Courier.

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 State Agencies.

The parties or intervenors to this proceeding are:

SNET Cellular, Inc. (Applicant)
227 Church Street
New Haven, CT 06506

Peter J. Tyrrell (Its Representative)
SNET Cellular, Inc.
Room 1021
227 Church Street
New Haven, CT 06506

Metro Mobile CTS of (Intervenor)
Fairfield County, Inc.

Micheal W. Riley (Its Representatives)
Vice-President North East Region
Metro Mobile CTS, Inc.
110 East 59th Street
New York, New York 10022

Philip Mayberry, General Manager
David S. Malko
Metro Mobile CTS of
Fairfield County, Inc.
50 Rockland Road
South Norwalk, Connecticut 06854

Paul M. Hancock, General Partner (Party)
Housatonic Cable Vision Company
2 East Street
P.O. Box 1540
New Milford, Connecticut 06766

Howard L. Slater, Esq. (Its Representative)
Bryne, Slater, Sandler,
Shulman, & Rouse, P.C.
330 Main Street
P.O. Box 3216
Hartford, Connecticut 06103
Attn: Jennifer Young Gaudet, Esq.

3945E-8-10

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket 114 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 16 day of January, 1990.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner Peter Boucher Designee: Robert A. Pulito	Yes
Commissioner Leslie Carothers Designee: Brian Emerick	Yes
Harry E. Covey	Yes
Mortimer A. Gelston	Yes
Daniel P. Lynch, Jr.	Absent
Paulann H. Sheets	Absent
William H. Smith	Absent
Colin C. Tait	Absent

Exhibit B

Property Card

230 GUINEA RD

Location	230 GUINEA RD	**Map/Lot**	081/ 008/ 00/ /
Acct#	08100800	**Owner**	MONROE TOWN OF (OPEN SPACE)
Assessment	$16,400	**Appraisal**	$23,400
PID	11950	**Building Count**	1
Survey	1814 C	**Affordable**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$23,400	$23,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$16,400	$16,400

Owner of Record

Owner	MONROE TOWN OF (OPEN SPACE)	**Sale Price**	$0
Co-Owner		**Certificate**	1
Address	7 FAN HILL RD MONROE, CT 06468-1800	**Book & Page**	297/ 119
		Sale Date	10/30/1985
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
MONROE TOWN OF (OPEN SPACE)	$0	1	297/ 119		10/30/1985

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes

Field	Description
Style	Vacant Land
Model	
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	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Wdstv Flues	
Basement Gar.	
Attic	
Basement	
In Law Apt	

Building Photo

(http://images.vgsi.com/photos/MonroeCTPhotos//default.jpg)

Building Layout

(http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/11950_11950.j

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	903
Description	Municipal
Zone	RF2

Land Line Valuation

Size (Acres)	3.02
Appraised Value	$23,400

Neighborhood	Stepney
Alt Land Approved	No
Category	

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$23,400	$23,400
2019	$0	$23,400	$23,400
2018	$0	$24,200	$24,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$16,400	$16,400
2019	$0	$16,400	$16,400
2018	$0	$16,900	$16,900

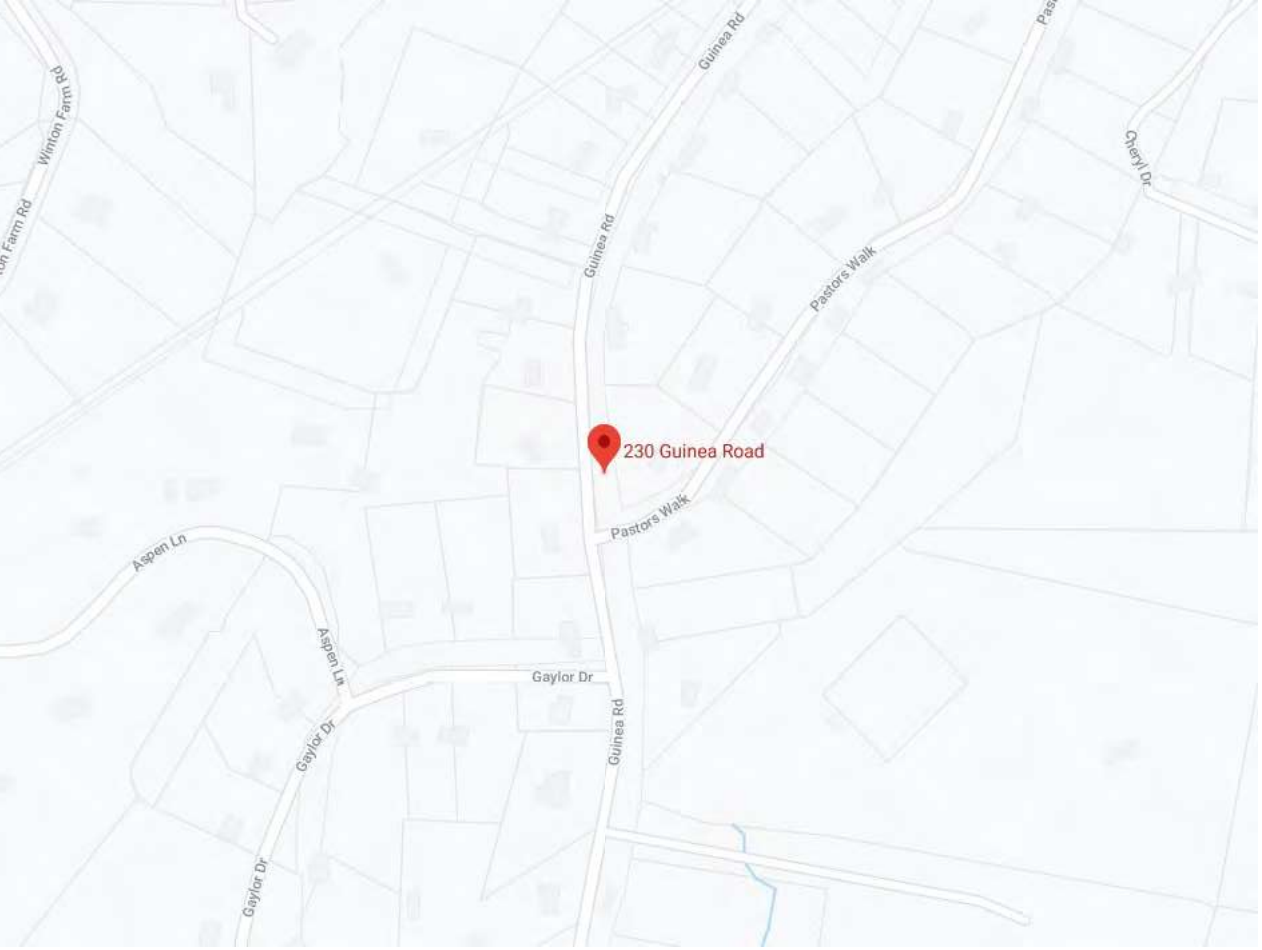

Guinea Rd
Pastors Walk
Cheryl Dr
230 Guinea Road
Pastors Walk
Aspen Ln
Aspen Ln
Gaylor Dr
Gaylor Dr
Guinea Rd
Gaylor Dr

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

NJJER01094A

DISH Wireless L.L.C. SITE ADDRESS:

230 GUINEA RD
MONROE CT 06468

SCOPE OF WORK

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

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

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

SITE INFORMATION

PROPERTY OWNER:	VERIZON WIRELESS
ADDRESS:	PO BOX 2549 ADDISON, TX 75001
TOWER TYPE:	SELF SUPPORT
CROWN CASTLE SITE ID:	841294
CROWN CASTLE APP NUMBER:	548869
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 20' 30.68" N 41.341856° N
LONGITUDE (NAD 83):	73° 16' 28.28" W 73.274522° W
ZONING JURISDICTION:	CONNECTICUT SITTING COUNCIL
ZONING DISTRICT:	RF2
PARCEL NUMBER:	080 013 00
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER CO
TELEPHONE COMPANY:	ATT

PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738
SITE ACQUISITION:	VICTOR NUNEZ (917) 563-3682
CONSTRUCTION MANAGER:	JOSEPH DIPIAZZA JOSEPH.DIPIAZZA@DISH.COM
RF ENGINEER:	MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM

12/20/21
Exp. 01/31/22

CONNECTICUT CODE OF COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD, ROSELAND, NJ 07068:

x GET ON I-280 E FROM LIVINGSTON AVE
x CONTINUE ON I-280 E. TAKE GARDEN STATE PKWY, I-287 E AND CT-15 N TO JEFFERSON ST IN FAIRFIELD. TAKE EXIT 46 FROM CT-15 N
x TAKE CT-59 N TO YOUR DESTINATION IN MONROE

SHEET INDEX

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

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

GENERAL NOTES

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

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

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

VICINITY MAP

NO SCALE

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn
COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT
BRUCE A. BREWER
29510
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	12/20/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE-16707

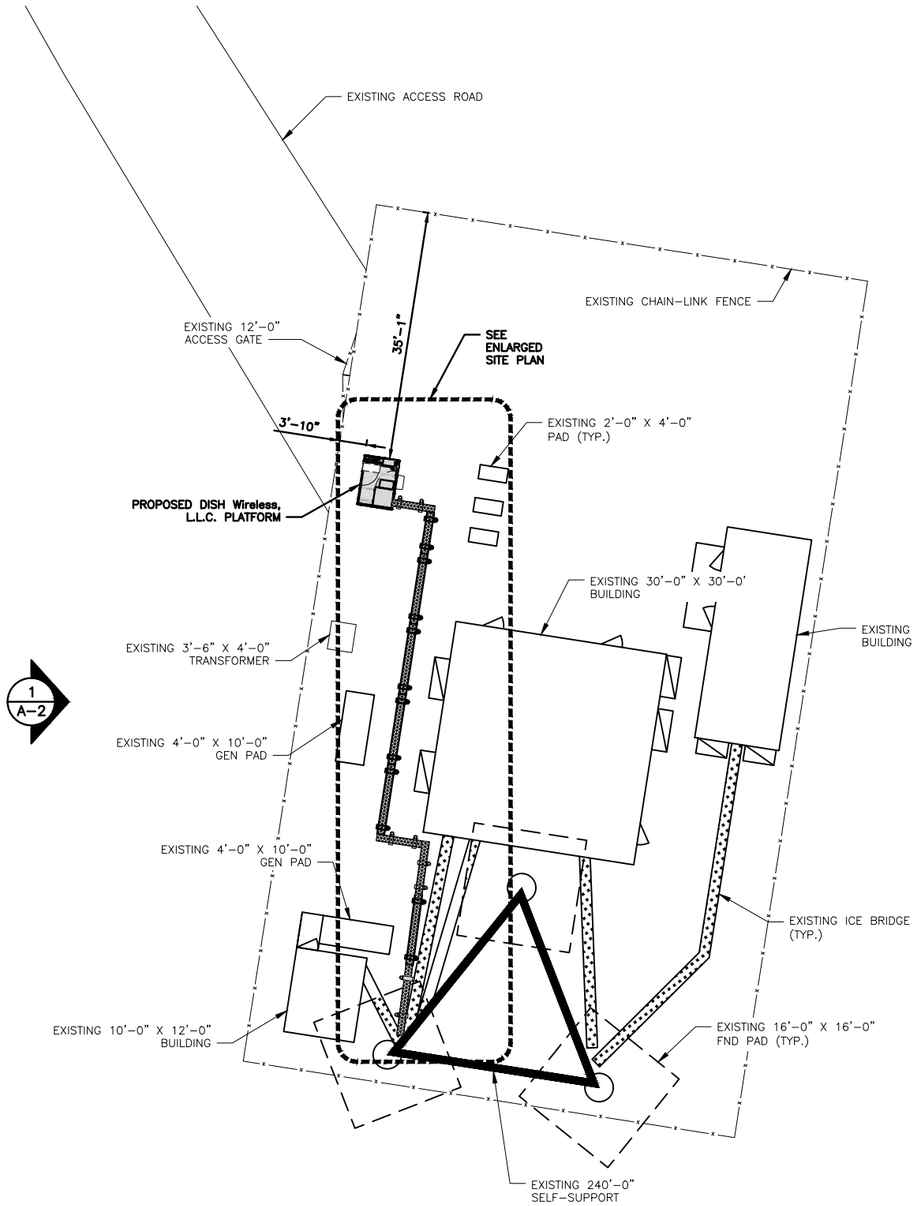
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01094A
230 GUINEA RD
MONROE CT 06468

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



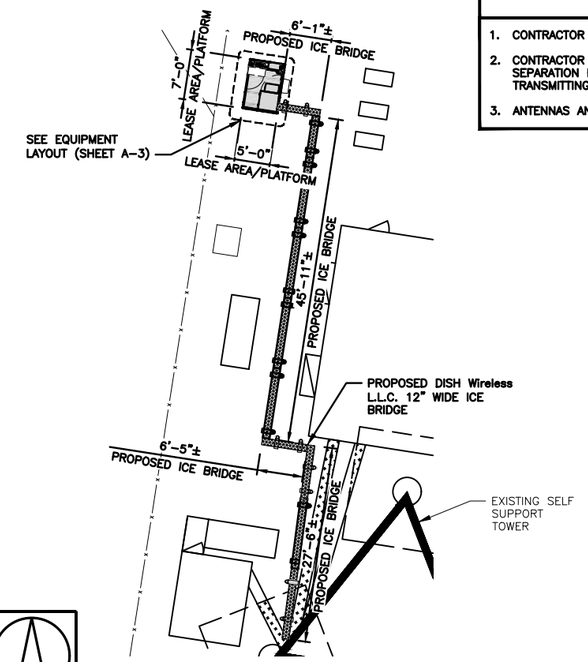
OVERALL SITE PLAN

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



12/20/21
Exp. 01/31/22

ENLARGED SITE PLAN

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

2

OVERALL UTILITY ROUTE PLAN

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT BRIAN K. BREWER 29510 LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	12/20/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE-16707

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01094A
230 GUINEA RD
MONROE CT 06468

SHEET TITLE

OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

PAUL J. FORD & COMPANY

Date: **August 31, 2021**

Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
614-221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	NJJER01094A
	Site Name:	CT-CCI-T-841294
Crown Castle Designation:	**BU Number:**	841294
	Site Name:	MONROE-GUINEA ROAD
	JDE Job Number:	640186
	Work Order Number:	1964282
	Order Number:	548869 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37521-1067.001.8700
Site Data:	**230 GUINEA ROAD, MONROE, Fairfield County, CT**	
	Latitude *41° 20' 30.68"*, Longitude *-73° 16' 28.28"*	
	242.917 Foot - Self Support Tower	

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

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

Respectfully submitted by:

Christina Hedges, PE
Project Manager
chedges@pauljford.com

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

2021.09.01
17:21:04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 242.917 ft Self Support tower designed by Rohn in 1990.

The modifications designed by GPD (Job #: 2009268.80 Rev. A, dated 10/20/2009), have been considered in this analysis. The modifications consist of replacing the diagonal members from 20.3' to 40.7'.

The modifications designed by GPD (Project #: 2014777.841294.04, dated 9/22/2014) were considered in the analysis. They consist of replacing the bent top girts at 242.9', replacing the diagonals from 121.8'-162.2', and replacing the diagonal bolts from 101.6'-121.8' and 162'-182.4'.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
165.0	165.0	1	fujitsu	TA08025-B604	1	1 3/4
		1	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	mounts	Commscope_MTC3975083_Sector_(3)		
		1	raycap	RDIDC-9181-PF-48		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
240.0	240.0	1	tower mounts	Side Arm Mount [SO 303-3]	1	1/2
	238.0	1	decibel	DB806-XC		
		1	kathrein	FMO		
236.0	236.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe	12 4 1	1 5/8 3/4 3/8
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		3	ericsson	RADIO 4449 B5/B12		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 4478 B14		
		3	powerwave tech	7770.00 w/ Mount Pipe		
		6	powerwave tech	LGP13519		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Sector Mount [SM 201-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
215.0	218.0	3	alcatel lucent	B66A RRH4X45	19	1 5/8
		3	alcatel lucent	RRH2X60-700		
		3	andrew	HBXX-6517DS-A2M w/ Mount Pipe		
		3	andrew	LNX-8514DS-A1M w/ Mount Pipe		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
	215.0	1	tower mounts	Sector Mount [SM 503-3]		
	212.0	2	rfs celwave	DB-T1-6Z-8AB-0Z		
201.0	207.0	2	kathrein	OG-4	2	1 1/4
	201.0	2	tower mounts	Side Arm Mount [SO 306-1]		
186.0	188.0	1	andrew	DB589-A	1 2	1/2 7/8
	186.0	1	tower mounts	Side Arm Mount [SO 301-1]		
	184.0	1	andrew	DB589-A		
12.0	12.0	1	scala	TY-840	1	1/2

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	Rohn, C010166, 2/20/21	4841385	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	GPD, 2015777.841294.06, 6/11/15	4468667	CCISITES
4-GEOTECHNICAL REPORTS	GPD, 2015777.841294.07, 6/17/15	4468666	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2009268.80, 10/20/09	4601540	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2009591.00, 1/13/10	4601541	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2014777.841294.01, 9/22/14	5306639	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2015777.841294.05, 6/17/15	5750961	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	244.917 - 224.792	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-13.39	66.58	20.1	Pass
T2	224.792 - 204.625	Leg	Pipe 3.5" x 0.300" (3 EH)	37	-37.89	115.74	32.7	Pass
T3	204.625 - 184.438	Leg	Pipe 4" x 0.318" (3.5 EH)	69	-61.67	131.32	47.0	Pass
T4	184.438 - 164.229	Leg	Pipe 4.5" x 0.337" (4 EH)	90	-87.84	167.14	52.6	Pass
T5	164.229 - 144.021	Leg	Pipe 5.563" x 0.375" (5 EH)	111	-115.19	250.61	46.0	Pass
T6	144.021 - 123.813	Leg	Pipe 5.563" x 0.375" (5 EH)	132	-139.72	209.91	66.6	Pass
T7	123.813 - 103.604	Leg	Pipe 6.625" x 0.432" (6 EH)	147	-166.39	317.44	52.4	Pass
T8	103.604 - 83.3333	Leg	Pipe 6.625" x 0.432" (6 EH)	162	-193.50	317.01	61.0	Pass
T9	83.3333 - 63	Leg	Pipe 6.625" x 0.432" (6 EH)	177	-220.90	316.57	69.8	Pass
T10	63 - 42.6667	Leg	Pipe 8.625" x 0.375" (8 EHS)	192	-252.56	404.12	62.5	Pass
T11	42.6667 - 22.3334	Leg	Pipe 8.625" x 0.375" (8 EHS)	207	-260.78	406.05	64.2	Pass
T12	22.3334 - 2	Leg	Pipe 8.75" x 0.500" (8 EH)	240	-284.77	541.51	52.6	Pass
T1	244.917 - 224.792	Diagonal	L 1.75 x 1.75 x 3/16	11	-2.64	11.77	22.5	Pass
T2	224.792 - 204.625	Diagonal	L 1.75 x 1.75 x 3/16	44	-3.41	6.64	51.3	Pass
T3	204.625 - 184.438	Diagonal	L 2.5 x 2.5 x 3/16	71	-4.30	12.21	35.2	Pass
T4	184.438 - 164.229	Diagonal	L 2.5 x 2.5 x 1/4	92	-5.01	12.04	41.6	Pass
T5	164.229 - 144.021	Diagonal	L 2.5 x 2.5 x 5/16	113	-5.54	11.51	48.1	Pass
T6	144.021 - 123.813	Diagonal	L 3 x 3 x 5/16	134	-6.60	13.72	48.1	Pass
T7	123.813 - 103.604	Diagonal	L 3.5 x 3.5 x 1/4	149	-7.19	15.14	47.5	Pass
T8	103.604 - 83.3333	Diagonal	L 3.5 x 3.5 x 1/4	164	-7.77	12.76	60.9	Pass
T9	83.3333 - 63	Diagonal	L 4 x 4 x 5/16	179	-8.55	19.99	42.8	Pass
T10	63 - 42.6667	Diagonal	L 4 x 4 x 5/16	196	-12.07	18.32	65.9	Pass
T11	42.6667 - 22.3334	Diagonal	Pipe 3.5" x 0.216" (3 STD)	212	-14.93	33.77	44.2	Pass
T12	22.3334 - 2	Diagonal	Pipe 3.5" x 0.216" (3 STD)	245	-13.83	31.82	43.5	Pass
T11	42.6667 -	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	208	-8.21	16.78	48.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
	22.3334							
T12	22.3334 - 2	Horizontal	Pipe 3.5" x 0.216" (3 STD)	241	-7.98	27.27	29.2	Pass
T1	244.917 - 224.792	Top Girt	L 2 x 2 x 1/8	5	-0.03	4.27	0.7	Pass
T2	224.792 - 204.625	Top Girt	L 2 x 2 x 1/8	42	-0.66	4.35	15.1	Pass
T11	42.6667 - 22.3334	Redund Horz 1 Bracing	Rohn 1.5" x 11 ga	226	-4.56	5.81	78.5	Pass
T12	22.3334 - 2	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	253	-4.96	11.84	41.9	Pass
T11	42.6667 - 22.3334	Redund Diag 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	221	-4.15	4.41	94.1	Pass
T12	22.3334 - 2	Redund Diag 1 Bracing	Rohn 2.25" x 14 ga	254	-4.22	4.42	95.4	Pass
T11	42.6667 - 22.3334	Redund Hip 1 Bracing	Rohn 1.5" x 11 ga	233	-0.03	5.17	0.5	Pass
T12	22.3334 - 2	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	266	-0.02	10.62	0.2	Pass
T11	42.6667 - 22.3334	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	234	-0.08	11.11	0.7	Pass
T12	22.3334 - 2	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	267	-0.08	9.99	0.8	Pass
T11	42.6667 - 22.3334	Inner Bracing	Pipe 2.375" x 0.154" (2 STD)	235	-0.01	6.89	0.5	Pass
T12	22.3334 - 2	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	268	-0.02	25.86	0.4	Pass
							Summary	
						Leg (T9)	69.8	Pass
						Diagonal (T10)	65.9	Pass
						Horizontal (T11)	48.9	Pass
						Top Girt (T2)	15.1	Pass
						Redund Horz 1 Bracing (T11)	78.5	Pass
						Redund Diag 1 Bracing (T12)	95.4	Pass
						Redund Hip 1 Bracing (T11)	0.5	Pass
						Redund Hip Diagonal 1 Bracing (T12)	0.8	Pass
						Inner Bracing (T11)	0.5	Pass
						Bolt Checks	67.6	Pass
						RATING =	**95.4**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	42.1	Pass
1	Base Foundation (Structure)	0	44.6	Pass
1	Base Foundation (Soil Interaction)	0	58.9	Pass

Structure Rating (max from all components) =	95.4%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

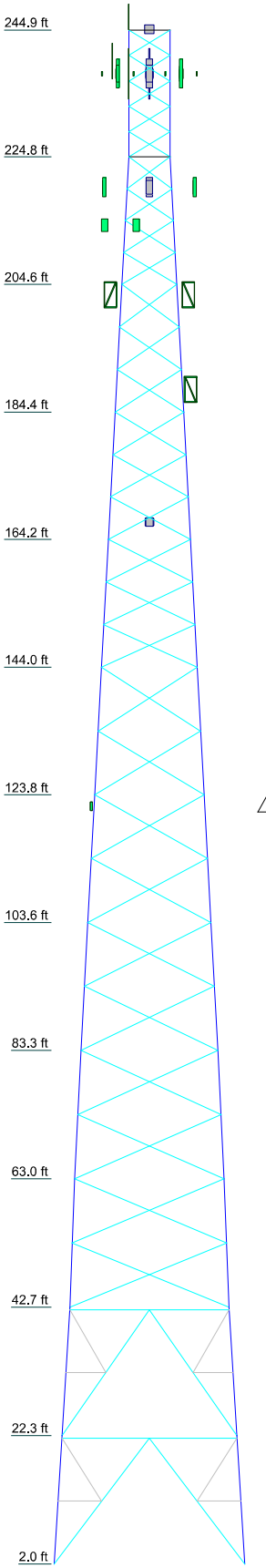
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	E	Pipe 8.625" x 0.375" (8 EHS)		Pipe 6.625" x 0.432" (6 EH)			Pipe 5.563" x 0.375" (5 EH)		D	C	B	A
Leg Grade	A500-50						A572-50					
Diagonals	Pipe 3.5" x 0.216" (3 STD)		L 4 x 4 x 5/16		L 3.5 x 3.5 x 1/4		L 3 x 3 x 5/16	L 2.5 x 2.5 x 5/16	L 2.5 x 2.5 x 1/4	L 2.5 x 2.5 x 3/16	L 1.75 x 1.75 x 3/16	
Diagonal Grade	A618-50		A572-50				A36					
Top Girts					N.A.						L 2 x 2 x 1/8	
Horizontals	F	A					N.A.					
Red. Horizontals	G	Rohn 1.5" x 11 ga					N.A.					
Red. Diagonals	Rohn 2.25" x 14 ga	G					N.A.					
Red. Hips	G	Rohn 1.5" x 11 ga					N.A.					
Inner Bracing	F	H					N.A.					
Face Width (ft)	30.1771	27.6771	25.1771	23.7367	21.59	19.4432	17.2964	15.1496	13.0028	10.8561	8.70928	6.5625
# Panels @ (ft)	1 @ 19.9167		1 @ 19.9167	4 @ 10.1667	2 @ 10.1354	4 @ 10.1042		6 @ 6.73611		3 @ 6.72917	4 @ 5.04167	5 @ 4.025
Weight (K)	36.5	5.9	4.7	4.6	4.2	3.3	3.2	2.7	1.9	1.4	1.1	0.9



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 2.875" x 0.203" (2.5 STD)	E	Pipe 8.75" x 0.500" (8 EH)
B	Pipe 3.5" x 0.300" (3 EH)	F	Pipe 3.5" x 0.216" (3 STD)
C	Pipe 4" x 0.318" (3.5 EH)	G	Pipe 1.9" x 0.145" (1.5 STD)
D	Pipe 4.5" x 0.337" (4 EH)	H	Pipe 2.375" x 0.154" (2 STD)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A500-50	50 ksi	62 ksi
A36	36 ksi	58 ksi	A618-50	50 ksi	70 ksi

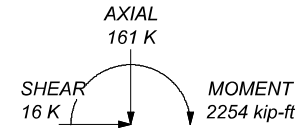
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 95.4%

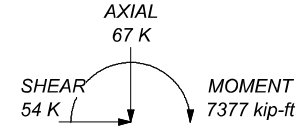
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 305 K
SHEAR: 34 K

UPLIFT: -251 K
SHEAR: 29 K



TORQUE 16 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 57 kip-ft
REACTIONS - 120 mph WIND

Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: **244' SST Monroe CT MONROE-GUINEA ROAD**		
Project: ***BU841294 (PJF37521-1067)***		
Client: Crown Castle, Inc	Drawn by: Chrissy Hedges	App'd:
Code: TIA-222-H	Date: 09/01/21	Scale: NTS
Path: G:\TOWER\375_Crown_Castle\2021\37521-1067_841294_MONROE-GUINEA ROAD\37521-1067.001-8700_SA_1994282\37521-1067.001.eri		Dwg No. E-1

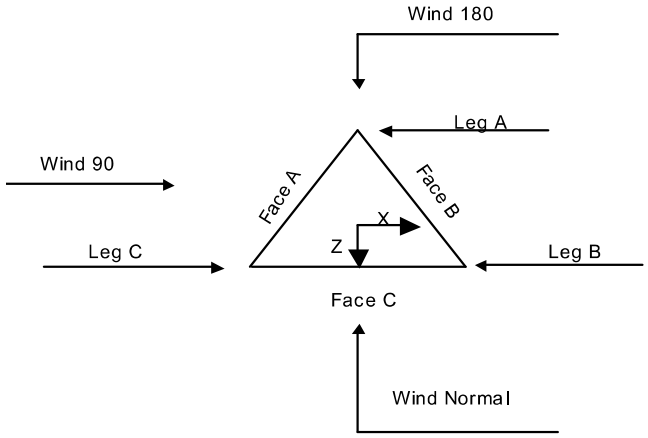
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 244.92 ft above the ground line.
The base of the tower is set at an elevation of 2.00 ft above the ground line.
The face width of the tower is 6.56 ft at the top and 30.18 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Tower base elevation above sea level: 583.00 ft.
- Basic wind speed of 120 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 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.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05
- 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-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H 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	244.92-224.79			6.56	1	20.13
T2	224.79-204.63			6.56	1	20.17
T3	204.63-184.44			8.71	1	20.19
T4	184.44-164.23			10.86	1	20.21
T5	164.23-144.02			13.00	1	20.21
T6	144.02-123.81			15.15	1	20.21
T7	123.81-103.60			17.30	1	20.21
T8	103.60-83.33			19.44	1	20.27
T9	83.33-63.00			21.59	1	20.33
T10	63.00-42.67			23.74	1	20.33
T11	42.67-22.33		K034	25.18	1	20.33
T12	22.33-2.00		L075	27.68	1	20.33

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	244.92-224.79	4.03	X Brace	No	No	0.0000	0.0000
T2	224.79-204.63	5.04	X Brace	No	No	0.0000	0.0000
T3	204.63-184.44	6.73	X Brace	No	No	0.0000	0.0000
T4	184.44-164.23	6.74	X Brace	No	No	0.0000	0.0000
T5	164.23-144.02	6.74	X Brace	No	No	0.0000	0.0000
T6	144.02-123.81	10.10	X Brace	No	No	0.0000	0.0000
T7	123.81-103.60	10.10	X Brace	No	No	0.0000	0.0000
T8	103.60-83.33	10.14	X Brace	No	No	0.0000	0.0000
T9	83.33-63.00	10.17	X Brace	No	No	0.0000	0.0000
T10	63.00-42.67	10.17	X Brace	No	No	0.0000	0.0000
T11	42.67-22.33	19.92	K1 Down	No	Yes	5.0000	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
T12	22.33-2.00	19.92	K1 Down	No	Yes	5.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 244.92-224.79	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A572-50 (50 ksi)	Equal Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T2 224.79-204.63	Pipe	Pipe 3.5" x 0.300" (3 EH)	A572-50 (50 ksi)	Equal Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T3 204.63-184.44	Pipe	Pipe 4" x 0.318" (3.5 EH)	A572-50 (50 ksi)	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T4 184.44-164.23	Pipe	Pipe 4.5" x 0.337" (4 EH)	A572-50 (50 ksi)	Equal Angle	L 2.5 x 2.5 x 1/4	A36 (36 ksi)
T5 164.23-144.02	Pipe	Pipe 5.563" x 0.375" (5 EH)	A572-50 (50 ksi)	Equal Angle	L 2.5 x 2.5 x 5/16	A36 (36 ksi)
T6 144.02-123.81	Pipe	Pipe 5.563" x 0.375" (5 EH)	A572-50 (50 ksi)	Equal Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T7 123.81-103.60	Pipe	Pipe 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Equal Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 ksi)
T8 103.60-83.33	Pipe	Pipe 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Equal Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 ksi)
T9 83.33-63.00	Pipe	Pipe 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Equal Angle	L 4 x 4 x 5/16	A572-50 (50 ksi)
T10 63.00-42.67	Pipe	Pipe 8.625" x 0.375" (8 EHS)	A572-50 (50 ksi)	Equal Angle	L 4 x 4 x 5/16	A572-50 (50 ksi)
T11 42.67-22.33	Pipe	Pipe 8.625" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T12 22.33-2.00	Pipe	Pipe 8.75" x 0.500" (8 EH)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 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 244.92-224.79	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 224.79-204.63	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T11 42.67-22.33	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T12 22.33-2.00	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T11 42.67-22.33	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T12 22.33-2.00	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T11 42.67-22.33	A618-50 (50 ksi)	Horizontal (1)	Pipe	Rohn 1.5" x 11 ga	1
		Diagonal (1)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	1
		Hip (1)	Pipe		1
		Hip Diagonal (1)	Pipe	Rohn 1.5" x 11 ga	1
				Pipe 2.875" x 0.203" (2.5 STD)	
T12 22.33-2.00	A618-50 (50 ksi)	Horizontal (1)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	1
		Diagonal (1)	Pipe		1
		Hip (1)	Pipe	Rohn 2.25" x 14 ga	1
		Hip Diagonal (1)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	1
				Pipe 2.875" x 0.203" (2.5 STD)	

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	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 244.92-224.79	0.00	0.1875	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T2 224.79-204.63	0.00	0.1875	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T3 204.63-184.44	0.00	0.1875	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T4 184.44-164.23	0.00	0.2500	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T5 164.23-144.02	0.00	0.3125	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T6 144.02-123.81	0.00	0.3125	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T7 123.81-103.60	0.00	0.2500	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T8 103.60-83.33	0.00	0.3125	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T9 83.33-63.00	0.00	0.3125	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T10 63.00-42.67	0.00	0.3125	A36 (36 ksi)	1.03	1	1	36.0000	36.0000	36.0000
T11 42.67-22.33	0.00	0.3750	A36 (36 ksi)	1	1.03	1.1	36.0000	36.0000	36.0000
T12 22.33-2.00	0.00	0.3750	A36 (36 ksi)	1	1.03	1.1	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 Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 244.92-224.79	Yes	Yes	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
T2 224.79-204.63	Yes	Yes	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
T3 204.63-184.44	Yes	Yes	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
T4 184.44-164.23	Yes	Yes	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
T5 164.23-144.02	Yes	Yes	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
T6 144.02-123.81	Yes	Yes	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
T7 123.81-103.60	Yes	Yes	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
T8 103.60-83.33	Yes	Yes	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
T9 83.33-63.00	Yes	Yes	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
T10 63.00-42.67	Yes	Yes	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
T11 42.67-22.33	No	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
T12 22.33-2.00	No	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]*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 Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 244.92-224.79	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 224.79-204.63	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 204.63-184.44	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 184.44-164.23	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 164.23-144.02	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 144.02-123.81	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 123.81-103.60	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 103.60-83.33	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 83.33-63.00	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
T10 63.00-42.67	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	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
T11 42.67-22.33	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T12 22.33-2.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

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 244.92-224.79	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 224.79-204.63	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 204.63-184.44	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 184.44-164.23	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 164.23-144.02	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 144.02-123.81	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 123.81-103.60	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 103.60-83.33	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 83.33-63.00	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
T10 63.00-42.67	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
T11 42.67-22.33	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
T12 22.33-2.00	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 244.92-224.79	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 224.79-204.63	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 204.63-184.44	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 184.44-164.23	Flange	1.0000 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 164.23-144.02	Flange	1.0000 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 144.02-123.81	Flange	1.0000 A325N	6	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 123.81-103.60	Flange	1.0000 A325N	6	0.6250 A325X	1	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.
T8 103.60-83.33	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 83.33-63.00	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 63.00-42.67	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 42.67-22.33	Flange	1.0000 A325X	8	0.7500 A325X	3	0.0000 A325X	0	0.0000 A325X	0	0.0000 A325X	0	0.7500 A325X	2	0.6250 A325X	1
T12 22.33-2.00	Flange	1.0000 A325X	0	0.7500 A325X	3	0.0000 A325X	0	0.0000 A325X	0	0.0000 A325X	0	0.7500 A325X	2	0.6250 A325X	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/4" x 2" Climb Ladder Rail	A	No	No	Af (CaAa)	202.00 - 10.00	9.0000	0.5	2	1	0.2500 12.0000	0.2500		4.00
Safety Line 3/8	A	No	No	Ar (CaAa)	202.00 - 10.00	9.0000	0.5	1	1	0.3750	0.3750		0.22
5/8" ladder rung (18" long 12" oc)	A	No	No	Ar (CaAa)	202.00 - 10.00	9.0000	0.5	1	1	0.6250	0.6250		1.56
3/4" lighting conduit (1/2" EMT) ***	A	No	No	Ar (CaAa)	242.00 - 10.00	0.0000	0.48	1	1	0.7060	0.7060		0.30
1.5" flat Cable Ladder Rail	A	No	No	Af (CaAa)	238.00 - 10.00	0.0000	-0.4	2	2	24.0000 1.5000	1.5000		1.80
LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	238.00 - 10.00	0.0000	-0.4	12	4	0.2700 0.5000	1.9800		0.82
FB-L98B-034-XXX(3/8)	A	No	No	Ar (CaAa)	238.00 - 10.00	0.0000	-0.35	1	1	0.3937	0.3937		0.06
WR-VG86ST-BRD (3/4")	A	No	No	Ar (CaAa)	238.00 - 10.00	0.0000	-0.35	4	1	0.7950	0.7740		0.88
AVA5-50(7/8)	A	No	No	Ar (CaAa)	188.00 - 10.00	0.0000	-0.44	2	1	1.0000	1.1020		0.30
LDF4-50A(1/2")	A	No	No	Ar (CaAa)	188.00 - 10.00	0.0000	-0.44	2	2	0.6300	0.6300		0.15
LDF4-50A(1/2") *	A	No	No	Ar (CaAa)	242.00 - 188.00	0.0000	-0.44	1	1	0.6300	0.6300		0.15
LDF6-50A(1-1/4) **	B	No	No	Ar (CaAa)	203.00 - 10.00	0.0000	0.49	2	2	1.0000	1.5500		0.60
1.5" flat Cable Ladder Rail	C	No	No	Af (CaAa)	217.00 - 10.00	0.0000	-0.4	2	2	30.0000 1.5000	1.5000		1.80
AVA7-50 (1-5/8 LOW DENSI. FOAM)	C	No	No	Ar (CaAa)	217.00 - 10.00	0.0000	-0.4	16	10	0.2700 0.5000	1.9800		0.72
HB158-1-08U8-S8F18 (1-5/8") **	A	No	No	Ar (CaAa)	217.00 - 10.00	2.0000	-0.45	3	3	0.2700 0.5000	1.9800		1.70
LDF4-50A(1/2")	B	No	No	Ar (CaAa)	14.00 - 10.00	0.0000	0.45	1	1	0.6300	0.6300		0.15

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement* *ft*	*Face Offset* *in*	*Lateral Offset (Frac FW)*	*#*	*# Per Row*	*Clear Spacing* *in*	*Width or Diameter* *in*	*Perimeter* *in*	*Weight* *plf*
***													
CU12PSM6P 4XXX(1-3/4)	B	No	No	Ar (CaAa)	167.00 - 10.00	0.0000	-0.45	1	1	1.7500	1.7500		2.72

Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft ft ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft²*	*C_AA_A Side* *ft²*	*Weight* *K*
Strobe Light	A	From Leg	0.00	0.0000	245.00	No Ice	1.08	1.08	0.05
			0.00			1/2"	1.68	1.68	0.08
			0.00			Ice	1.87	1.87	0.10
						1" Ice	2.27	2.27	0.17
						2" Ice			
5/8" x 4' Lightning Rod	C	From Leg	0.00	0.0000	245.00	No Ice	0.25	0.25	0.01
			0.00			1/2"	0.66	0.66	0.01
			2.00			Ice	0.97	0.97	0.02
						1" Ice	1.49	1.49	0.03
						2" Ice			
Obstruction light	C	From Leg	0.50	0.0000	122.00	No Ice	0.50	0.50	0.01
			0.00			1/2"	0.83	0.83	0.02
			0.00			Ice	0.96	0.96	0.03
						1" Ice	1.26	1.26	0.06
						2" Ice			
Obstruction light	C	From Leg	0.50	0.0000	122.00	No Ice	0.50	0.50	0.01
			0.00			1/2"	0.83	0.83	0.02
			0.00			Ice	0.96	0.96	0.03
						1" Ice	1.26	1.26	0.06
						2" Ice			
Obstruction light	C	From Leg	0.50	0.0000	122.00	No Ice	0.50	0.50	0.01
			0.00			1/2"	0.83	0.83	0.02
			0.00			Ice	0.96	0.96	0.03
						1" Ice	1.26	1.26	0.06
						2" Ice			
*									
Side Arm Mount [SO 303-3]	B	None		0.0000	242.00	No Ice	7.67	7.67	0.34
						1/2"	11.04	11.04	0.48
						Ice	14.57	14.57	0.65
						1" Ice	22.36	22.36	1.14
						2" Ice			
DB806-XC	C	From Leg	3.00	0.0000	242.00	No Ice	1.14	1.14	0.02
			0.00			1/2"	1.68	1.68	0.03
			-2.00			Ice	2.03	2.03	0.04
						1" Ice	2.75	2.75	0.08
						2" Ice			
FMO	C	From Leg	3.00	0.0000	242.00	No Ice	8.40	8.40	0.01
			0.00			1/2"	8.81	8.81	0.18
			-2.00			Ice	9.24	9.24	0.36
						1" Ice	10.10	10.10	0.75
						2" Ice			
*									
OPA65R-BU6D w/ Mount Pipe	A	From Leg	2.00	0.0000	238.00	No Ice	12.25	6.05	0.09
			0.00			1/2"	13.00	6.71	0.18
			0.00			Ice	13.76	7.39	0.27
						1" Ice	15.34	8.79	0.51
						2" Ice			
OPA65R-BU6D w/ Mount Pipe	B	From Leg	2.00	0.0000	238.00	No Ice	12.25	6.05	0.09
			0.00			1/2"	13.00	6.71	0.18
			0.00			Ice	13.76	7.39	0.27
						1" Ice	15.34	8.79	0.51

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 K
							2" Ice			
OPA65R-BU6D w/ Mount Pipe	C	From Leg	2.00	0.00	0.0000	238.00	No Ice	12.25	6.05	0.09
			0.00				1/2" Ice	13.00	6.71	0.18
			0.00				1" Ice	13.76	7.39	0.27
							2" Ice	15.34	8.79	0.51
7770.00 w/ Mount Pipe	A	From Leg	2.00	0.00	0.0000	238.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			0.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
7770.00 w/ Mount Pipe	B	From Leg	2.00	0.00	0.0000	238.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			0.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
7770.00 w/ Mount Pipe	C	From Leg	2.00	0.00	0.0000	238.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			0.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
DMP65R-BU6D w/ Mount Pipe	A	From Leg	2.00	0.00	0.0000	238.00	No Ice	11.96	5.97	0.11
			0.00				1/2" Ice	12.70	6.63	0.20
			0.00				1" Ice	13.46	7.30	0.30
							2" Ice	15.02	8.69	0.53
DMP65R-BU6D w/ Mount Pipe	B	From Leg	2.00	0.00	0.0000	238.00	No Ice	11.96	5.97	0.11
			0.00				1/2" Ice	12.70	6.63	0.20
			0.00				1" Ice	13.46	7.30	0.30
							2" Ice	15.02	8.69	0.53
DMP65R-BU6D w/ Mount Pipe	C	From Leg	2.00	0.00	0.0000	238.00	No Ice	11.96	5.97	0.11
			0.00				1/2" Ice	12.70	6.63	0.20
			0.00				1" Ice	13.46	7.30	0.30
							2" Ice	15.02	8.69	0.53
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	2.00	0.00	0.0000	238.00	No Ice	9.22	6.25	0.07
			0.00				1/2" Ice	9.98	6.96	0.14
			0.00				1" Ice	10.76	7.70	0.22
							2" Ice	12.36	9.22	0.42
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	2.00	0.00	0.0000	238.00	No Ice	9.22	6.25	0.07
			0.00				1/2" Ice	9.98	6.96	0.14
			0.00				1" Ice	10.76	7.70	0.22
							2" Ice	12.36	9.22	0.42
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	2.00	0.00	0.0000	238.00	No Ice	9.22	6.25	0.07
			0.00				1/2" Ice	9.98	6.96	0.14
			0.00				1" Ice	10.76	7.70	0.22
							2" Ice	12.36	9.22	0.42
(2) LGP13519	A	From Leg	2.00	0.00	0.0000	238.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
							2" Ice	0.62	0.47	0.02
(2) LGP13519	B	From Leg	2.00	0.00	0.0000	238.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
							2" Ice	0.62	0.47	0.02
(2) LGP13519	C	From Leg	2.00	0.00	0.0000	238.00	No Ice	0.29	0.18	0.01
			0.00				1/2" Ice	0.36	0.24	0.01
			0.00				1" Ice	0.44	0.31	0.01
							2" Ice	0.62	0.47	0.02

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 K
						2" Ice			
RRUS 32 B2	A	From Leg	2.00	0.0000	238.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			0.00			1" Ice	3.19	2.05	0.10
						2" Ice	3.68	2.46	0.16
RRUS 32 B2	B	From Leg	2.00	0.0000	238.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			0.00			1" Ice	3.19	2.05	0.10
						2" Ice	3.68	2.46	0.16
RRUS 32 B2	C	From Leg	2.00	0.0000	238.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			0.00			1" Ice	3.19	2.05	0.10
						2" Ice	3.68	2.46	0.16
RRUS 4478 B14	A	From Leg	2.00	0.0000	238.00	No Ice	2.02	1.25	0.06
			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
						2" Ice	2.78	1.89	0.15
RRUS 4478 B14	B	From Leg	2.00	0.0000	238.00	No Ice	2.02	1.25	0.06
			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
						2" Ice	2.78	1.89	0.15
RRUS 4478 B14	C	From Leg	2.00	0.0000	238.00	No Ice	2.02	1.25	0.06
			0.00			1/2" Ice	2.20	1.40	0.08
			0.00			1" Ice	2.39	1.55	0.10
						2" Ice	2.78	1.89	0.15
RADIO 4449 B5/B12	A	From Leg	2.00	0.0000	238.00	No Ice	1.64	1.30	0.07
			0.00			1/2" Ice	1.80	1.45	0.09
			0.00			1" Ice	1.97	1.60	0.11
						2" Ice	2.33	1.92	0.16
RADIO 4449 B5/B12	B	From Leg	2.00	0.0000	238.00	No Ice	1.64	1.30	0.07
			0.00			1/2" Ice	1.80	1.45	0.09
			0.00			1" Ice	1.97	1.60	0.11
						2" Ice	2.33	1.92	0.16
RADIO 4449 B5/B12	C	From Leg	2.00	0.0000	238.00	No Ice	1.64	1.30	0.07
			0.00			1/2" Ice	1.80	1.45	0.09
			0.00			1" Ice	1.97	1.60	0.11
						2" Ice	2.33	1.92	0.16
DC6-48-60-18-8F	A	From Leg	2.00	0.0000	238.00	No Ice	1.21	1.21	0.03
			0.00			1/2" Ice	1.89	1.89	0.05
			0.00			1" Ice	2.11	2.11	0.08
						2" Ice	2.57	2.57	0.14
DC6-48-60-18-8F	C	From Leg	2.00	0.0000	238.00	No Ice	1.21	1.21	0.03
			0.00			1/2" Ice	1.89	1.89	0.05
			0.00			1" Ice	2.11	2.11	0.08
						2" Ice	2.57	2.57	0.14
Sector Mount [SM 201-3]	B	None		0.0000	238.00	No Ice	24.76	24.76	1.08
						1/2" Ice	33.89	33.89	1.52
						1" Ice	43.00	43.00	2.10
						2" Ice	61.44	61.44	3.64
8' x 2" Mount Pipe	A	From Leg	0.00	0.0000	238.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice			
8' x 2" Mount Pipe	C	From Leg	0.00	0.00	0.0000	238.00	No Ice	1.90	1.90	0.03
			0.00				1/2" Ice	2.73	2.73	0.04
			0.00				1" Ice	3.40	3.40	0.06
							2" Ice	4.40	4.40	0.12
*										
Sector Mount [SM 503-3]	B	None			0.0000	217.00	No Ice	30.43	30.43	1.69
							1/2" Ice	43.02	43.02	2.30
							1" Ice	55.43	55.43	3.10
							2" Ice	79.89	79.89	5.27
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.50	4.38	0.10
			0.00				1/2" Ice	5.97	4.84	0.17
			3.00				1" Ice	6.45	5.30	0.25
							2" Ice	7.44	6.26	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.50	4.38	0.10
			0.00				1/2" Ice	5.97	4.84	0.17
			3.00				1" Ice	6.45	5.30	0.25
							2" Ice	7.44	6.26	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.50	4.38	0.10
			0.00				1/2" Ice	5.97	4.84	0.17
			3.00				1" Ice	6.45	5.30	0.25
							2" Ice	7.44	6.26	0.46
LNX-8514DS-A1M w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.56	4.47	0.08
			0.00				1/2" Ice	6.07	4.97	0.17
			3.00				1" Ice	6.59	5.47	0.26
							2" Ice	7.65	6.52	0.49
LNX-8514DS-A1M w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.56	4.47	0.08
			0.00				1/2" Ice	6.07	4.97	0.17
			3.00				1" Ice	6.59	5.47	0.26
							2" Ice	7.65	6.52	0.49
LNX-8514DS-A1M w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	217.00	No Ice	5.56	4.47	0.08
			0.00				1/2" Ice	6.07	4.97	0.17
			3.00				1" Ice	6.59	5.47	0.26
							2" Ice	7.65	6.52	0.49
HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	217.00	No Ice	7.97	5.99	0.08
			0.00				1/2" Ice	8.73	6.72	0.14
			3.00				1" Ice	9.51	7.47	0.21
							2" Ice	11.11	9.02	0.40
HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	217.00	No Ice	7.97	5.99	0.08
			0.00				1/2" Ice	8.73	6.72	0.14
			3.00				1" Ice	9.51	7.47	0.21
							2" Ice	11.11	9.02	0.40
HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	217.00	No Ice	7.97	5.99	0.08
			0.00				1/2" Ice	8.73	6.72	0.14
			3.00				1" Ice	9.51	7.47	0.21
							2" Ice	11.11	9.02	0.40
B66A RRH4X45	A	From Leg	4.00	0.00	0.0000	217.00	No Ice	2.58	1.63	0.07
			0.00				1/2" Ice	2.79	1.81	0.09
			3.00				1" Ice	3.01	2.00	0.11
							2" Ice	3.48	2.40	0.17
B66A RRH4X45	B	From Leg	4.00	0.00	0.0000	217.00	No Ice	2.58	1.63	0.07
			0.00				1/2" Ice	2.79	1.81	0.09
			3.00				Ice	3.01	2.00	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	3.48	2.40	0.17
						2" Ice			
B66A RRH4X45	C	From Leg	4.00	0.0000	217.00	No Ice	2.58	1.63	0.07
			0.00			1/2" Ice	2.79	1.81	0.09
			3.00			1" Ice	3.01	2.00	0.11
						2" Ice	3.48	2.40	0.17
RRH2x60-700	A	From Leg	4.00	0.0000	217.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			3.00			1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
RRH2X60-700	B	From Leg	4.00	0.0000	217.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			3.00			1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
RRH2X60-700	C	From Leg	4.00	0.0000	217.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			3.00			1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
(2) DB-T1-6Z-8AB-0Z	C	From Leg	1.00	0.0000	217.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.07	2.19	0.08
			-3.00			1" Ice	5.35	2.39	0.12
						2" Ice	5.93	2.81	0.21
*									
Side Arm Mount [SO 306-1]	B	From Leg	2.00	0.0000	203.00	No Ice	0.41	2.26	0.04
			0.00			1/2" Ice	0.81	3.83	0.06
			0.00			1" Ice	1.23	5.48	0.09
						2" Ice	2.08	9.37	0.19
Side Arm Mount [SO 306-1]	C	From Leg	2.00	0.0000	203.00	No Ice	0.41	2.26	0.04
			0.00			1/2" Ice	0.81	3.83	0.06
			0.00			1" Ice	1.23	5.48	0.09
						2" Ice	2.08	9.37	0.19
OG-4	B	From Leg	4.00	0.0000	203.00	No Ice	4.31	4.31	0.02
			0.00			1/2" Ice	7.14	7.14	0.06
			6.00			1" Ice	7.86	7.86	0.11
						2" Ice	9.34	9.34	0.23
OG-4	C	From Leg	4.00	0.0000	203.00	No Ice	4.31	4.31	0.02
			0.00			1/2" Ice	7.14	7.14	0.06
			6.00			1" Ice	7.86	7.86	0.11
						2" Ice	9.34	9.34	0.23
*									
Side Arm Mount [SO 301-1]	B	From Leg	1.50	0.0000	188.00	No Ice	0.46	0.91	0.02
			0.00			1/2" Ice	0.65	1.30	0.03
			0.00			1" Ice	0.87	1.71	0.05
						2" Ice	1.41	2.62	0.09
DB589-A	B	From Leg	3.00	0.0000	188.00	No Ice	2.76	2.76	0.01
			0.00			1/2" Ice	4.17	4.17	0.03
			2.00			1" Ice	5.59	5.59	0.06
						2" Ice	8.49	8.49	0.15
DB589-A	B	From Leg	3.00	0.0000	188.00	No Ice	2.76	2.76	0.01
			0.00			1/2" Ice	4.17	4.17	0.03
			-2.00			1" Ice	5.59	5.59	0.06
						2" Ice	8.49	8.49	0.15
*									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.19 2.37 2.76	1.17 1.31 1.46 1.78	0.02 0.04 0.06 0.11
Commscope_MTC3975083_Sector_(3)	A	None		0.0000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.85 34.12 44.39 64.93	23.85 34.12 44.39 64.93	1.26 1.80 2.35 3.43
***									
TY-840	B	From Face	1.00 0.00 0.00	0.0000	14.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.25 0.45 0.65 1.05	0.25 0.45 0.65 1.05	0.00 0.00 0.00 0.01
****									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice

Comb. No.	Description
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 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 K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	283.96	27.41	-15.17
	Max. H_x	18	283.96	27.41	-15.17
	Max. H_z	5	-204.10	-19.83	12.65
	Min. Vert	7	-227.49	-22.77	12.49
	Min. H_x	7	-227.49	-22.77	12.49
	Min. H_z	18	283.96	27.41	-15.17
Leg B	Max. Vert	10	281.86	-27.61	-14.67
	Max. H_x	23	-228.02	23.00	12.04
	Max. H_z	25	-213.74	20.69	13.29
	Min. Vert	23	-228.02	23.00	12.04
	Min. H_x	10	281.86	-27.61	-14.67
	Min. H_z	12	252.21	-23.69	-15.00
Leg A	Max. Vert	2	305.50	0.20	34.18
	Max. H_x	21	16.13	2.64	1.44
	Max. H_z	2	305.50	0.20	34.18
	Min. Vert	15	-251.27	-0.23	-28.86
	Min. H_x	8	22.73	-2.67	2.02
	Min. H_z	15	-251.27	-0.23	-28.86

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	244.917 - 224.792	5.696	39	0.2167	0.0410
T2	224.792 - 204.625	4.779	39	0.2091	0.0370
T3	204.625 - 184.438	3.905	39	0.1916	0.0306
T4	184.438 - 164.229	3.120	39	0.1682	0.0251
T5	164.229 - 144.021	2.438	39	0.1439	0.0209
T6	144.021 - 123.813	1.848	39	0.1238	0.0175
T7	123.813 - 103.604	1.352	39	0.1016	0.0149
T8	103.604 - 83.3333	0.934	39	0.0845	0.0122
T9	83.3333 - 63	0.595	39	0.0664	0.0103
T10	63 - 42.6667	0.329	39	0.0475	0.0084
T11	42.6667 - 22.3334	0.133	39	0.0303	0.0063
T12	22.3334 - 2	0.037	39	0.0129	0.0029

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
245.00	Strobe Light	39	5.696	0.2167	0.0410	386221
242.00	Side Arm Mount [SO 303-3]	39	5.562	0.2159	0.0405	386221
238.00	OPA65R-BU6D w/ Mount Pipe	39	5.379	0.2148	0.0398	279195
217.00	Sector Mount [SM 503-3]	39	4.433	0.2035	0.0347	69622
203.00	Side Arm Mount [SO 306-1]	39	3.838	0.1899	0.0301	48038
188.00	Side Arm Mount [SO 301-1]	39	3.251	0.1726	0.0260	44076
167.00	MX08FRO665-21 w/ Mount Pipe	39	2.526	0.1470	0.0214	55430
122.00	Obstruction light	39	1.311	0.0998	0.0147	65910
14.00	TY-840	39	0.018	0.0071	0.0016	143709

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	244.917 - 224.792	21.580	3	0.8242	0.1554
T2	224.792 - 204.625	18.088	3	0.7957	0.1402
T3	204.625 - 184.438	14.766	3	0.7285	0.1160
T4	184.438 - 164.229	11.785	3	0.6384	0.0950
T5	164.229 - 144.021	9.200	3	0.5452	0.0790
T6	144.021 - 123.813	6.966	3	0.4686	0.0660
T7	123.813 - 103.604	5.089	3	0.3839	0.0564
T8	103.604 - 83.3333	3.513	3	0.3193	0.0462
T9	83.3333 - 63	2.230	3	0.2507	0.0389
T10	63 - 42.6667	1.231	3	0.1794	0.0315
T11	42.6667 -	0.493	2	0.1143	0.0238

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	22.3334				
T12	22.3334 - 2	0.134	2	0.0486	0.0109

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
245.00	Strobe Light	3	21.580	0.8242	0.1554	109240
242.00	Side Arm Mount [SO 303-3]	3	21.070	0.8213	0.1536	109240
238.00	OPA65R-BU6D w/ Mount Pipe	3	20.371	0.8171	0.1509	78969
217.00	Sector Mount [SM 503-3]	3	16.773	0.7742	0.1314	19137
203.00	Side Arm Mount [SO 306-1]	3	14.511	0.7218	0.1141	12970
188.00	Side Arm Mount [SO 301-1]	3	12.281	0.6552	0.0983	11790
167.00	MX08FRO665-21 w/ Mount Pipe	3	9.533	0.5569	0.0810	14485
122.00	Obstruction light	3	4.935	0.3773	0.0555	17290
14.00	TY-840	2	0.065	0.0268	0.0061	38143

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	244.917	Leg	A325N	0.7500	4	2.53	30.10	0.084	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	2.54	6.20	0.410	1.05	Gusset Bearing
		Top Girt	A325N	0.5000	1	0.03	4.13	0.008	1.05	Member Bearing
T2	224.792	Leg	A325N	0.8750	4	7.62	41.56	0.183	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	3.60	6.20	0.581	1.05	Member Bearing
		Top Girt	A325N	0.5000	1	0.66	4.13	0.159	1.05	Member Bearing
T3	204.625	Leg	A325N	0.8750	4	13.11	41.56	0.315	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	4.24	6.20	0.683	1.05	Member Bearing
T4	184.438	Leg	A325N	1.0000	4	18.67	54.52	0.343	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	4.83	8.27	0.584	1.05	Member Bearing
T5	164.229	Leg	A325N	1.0000	4	24.41	54.52	0.448	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	5.54	10.33	0.537	1.05	Gusset Bearing
T6	144.021	Leg	A325N	1.0000	6	19.78	54.52	0.363	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	6.49	13.05	0.497	1.05	Gusset Bearing
T7	123.813	Leg	A325N	1.0000	6	23.52	54.52	0.431	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	6.97	10.44	0.667	1.05	Gusset Bearing
T8	103.604	Leg	A325N	1.0000	6	27.21	54.52	0.499	1.05	Bolt Tension
		Diagonal	A325N	0.7500	1	7.67	15.77	0.486	1.05	Member Bearing
T9	83.3333	Leg	A325N	1.0000	8	23.17	54.52	0.425	1.05	Bolt Tension
		Diagonal	A325N	0.7500	1	8.32	15.77	0.528	1.05	Member Bearing
T10	63	Leg	A325N	1.0000	8	26.43	54.52	0.485	1.05	Bolt Tension
		Diagonal	A325N	0.7500	1	11.19	15.77	0.710	1.05	Gusset Bearing
T11	42.6667	Leg	A325X	1.0000	8	27.07	54.52	0.497	1.05	Bolt Tension
		Diagonal	A325X	0.7500	3	4.98	24.85	0.200	1.05	Bolt Shear
		Horizontal	A325X	0.7500	2	4.10	24.85	0.165	1.05	Bolt Shear
T12	22.3334	Diagonal	A325X	0.7500	3	4.61	24.85	0.185	1.05	Bolt Shear
		Horizontal	A325X	0.7500	2	3.99	24.85	0.160	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	244.917 - 224.792	Pipe 2.875" x 0.203" (2.5 STD)	20.13	4.02	51.0 K=1.00	1.7040	-13.39	63.41	0.211 [1]
T2	224.792 - 204.625	Pipe 3.5" x 0.300" (3 EH)	20.20	5.05	53.3 K=1.00	3.0159	-37.89	110.22	0.344 [1]
T3	204.625 - 184.438	Pipe 4" x 0.318" (3.5 EH)	20.23	6.74	61.9 K=1.00	3.6784	-61.67	125.07	0.493 [1]
T4	184.438 - 164.229	Pipe 4.5" x 0.337" (4 EH)	20.25	6.75	54.8 K=1.00	4.4074	-87.84	159.18	0.552 [1]
T5	164.229 - 144.021	Pipe 5.563" x 0.375" (5 EH)	20.25	6.75	44.0 K=1.00	6.1120	-115.19	238.68	0.483 [1]
T6	144.021 - 123.813	Pipe 5.563" x 0.375" (5 EH)	20.25	10.12	66.1 K=1.00	6.1120	-139.72	199.91	0.699 [1]
T7	123.813 - 103.604	Pipe 6.625" x 0.432" (6 EH)	20.25	10.12	55.3 K=1.00	8.4049	-166.39	302.33	0.550 [1]
T8	103.604 - 83.3333	Pipe 6.625" x 0.432" (6 EH)	20.31	10.15	55.5 K=1.00	8.4049	-193.50	301.91	0.641 [1]
T9	83.3333 - 63	Pipe 6.625" x 0.432" (6 EH)	20.37	10.19	55.7 K=1.00	8.4049	-220.90	301.49	0.733 [1]
T10	63 - 42.6667	Pipe 8.625" x 0.375" (8 EHS)	20.35	10.18	41.8 K=1.00	9.7193	-252.56	384.87	0.656 [1]
T11	42.6667 - 22.3334	Pipe 8.625" x 0.375" (8 EHS)	20.38	9.98	41.0 K=1.00	9.7193	-260.78	386.71	0.674 [1]
T12	22.3334 - 2	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0 K=1.00	12.959 1	-284.77	515.72	0.552 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	244.917 - 224.792	L 1.75 x 1.75 x 3/16	7.70	3.60	125.9 K=1.00	0.6211	-2.64	11.21	0.236 [1]
T2	224.792 - 204.625	L 1.75 x 1.75 x 3/16	9.83	4.80	167.7 K=1.00	0.6211	-3.41	6.32	0.539 [1]
T3	204.625 - 184.438	L 2.5 x 2.5 x 3/16	12.47	6.15	149.0 K=1.00	0.9020	-4.30	11.63	0.370 [1]
T4	184.438 - 164.229	L 2.5 x 2.5 x 1/4	14.33	7.05	172.3 K=1.00	1.1900	-5.01	11.47	0.436 [1]
T5	164.229 - 144.021	L 2.5 x 2.5 x 5/16	16.25	7.95	195.2 K=1.00	1.4600	-5.54	10.97	0.505 [1]
T6	144.021 - 123.813	L 3 x 3 x 5/16	19.57	9.69	197.5 K=1.00	1.7800	-6.60	13.06	0.505 [1]
T7	123.813 - 103.604	L 3.5 x 3.5 x 1/4	21.44	10.59	183.1 K=1.00	1.6900	-7.19	14.42	0.499 [1]
T8	103.604 - 83.3333	L 3.5 x 3.5 x 1/4	23.37	11.54	199.5 K=1.00	1.6900	-7.77	12.15	0.639 [1]
T9	83.3333 - 63	L 4 x 4 x 5/16	25.33	12.52	190.0 K=1.00	2.4000	-8.55	19.03	0.449 [1]
T10	63 - 42.6667	L 4 x 4 x 5/16	26.82	13.08	198.4 K=1.00	2.4000	-12.07	17.44	0.692 [1]
T11	42.6667 - 22.3334	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1 K=1.00	2.2285	-14.93	32.16	0.464 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	22.3334 - 2	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9 K=1.00	2.2285	-13.83	30.30	0.456 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Pipe 2.875" x 0.203" (2.5 STD)	25.23	12.25	155.2 K=1.00	1.7040	-8.21	15.98	0.514 [1]
T12	22.3334 - 2	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2 K=1.00	2.2285	-7.98	25.97	0.307 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	244.917 - 224.792	L 2 x 2 x 1/8	6.56	6.11	184.6 K=1.00	0.4844	-0.03	4.07	0.007 [1]
T2	224.792 - 204.625	L 2 x 2 x 1/8	6.56	6.06	183.0 K=1.00	0.4844	-0.66	4.14	0.159 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Rohn 1.5" x 11 ga	6.31	5.95	145.7 K=1.00	0.5202	-4.56	5.53	0.825 [1]
T12	22.3334 - 2	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6 K=1.00	0.7995	-4.96	11.27	0.440 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Pipe 1.9" x 0.145" (1.5 STD)	11.48	10.75	207.3 K=1.00	0.7995	-4.15	4.20	0.988 [1]
T12	22.3334 - 2	Rohn 2.25" x 14 ga	11.80	11.12	174.0	0.5651	-4.22	4.21	1.002 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
					K=1.00				

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	42.6667 - 22.3334	Rohn 1.5" x 11 ga	6.31	6.31	154.5 K=1.00	0.5202	-0.03	4.92	0.005 [1]
T12	22.3334 - 2	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.93	133.6 K=1.00	0.7995	-0.02	10.12	0.002 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	42.6667 - 22.3334	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7 K=1.00	1.7040	-0.08	10.58	0.008 [1]
T12	22.3334 - 2	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2 K=1.00	1.7040	-0.08	9.51	0.008 [1]

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T11	42.6667 - 22.3334	Pipe 2.375" x 0.154" (2 STD)	12.61	12.61	192.3 K=1.00	1.0745	-0.01	6.56	0.002 [1]
T12	22.3334 - 2	Pipe 3.5" x 0.216" (3 STD)	13.86	13.86	143.0 K=1.00	2.2285	-0.02	24.63	0.001 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	244.917 -	Pipe 2.875" x 0.203" (2.5	20.13	4.02	51.0	1.7040	10.11	76.68	0.132 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	224.792	STD)							
T2	224.792 - 204.625	Pipe 3.5" x 0.300" (3 EH)	20.20	5.05	53.3	3.0159	30.48	135.72	0.225 [1]
T3	204.625 - 184.438	Pipe 4" x 0.318" (3.5 EH)	20.23	6.74	61.9	3.6784	52.42	165.53	0.317 [1]
T4	184.438 - 164.229	Pipe 4.5" x 0.337" (4 EH)	20.25	6.75	54.8	4.4074	74.70	198.34	0.377 [1]
T5	164.229 - 144.021	Pipe 5.563" x 0.375" (5 EH)	20.25	6.75	44.0	6.1120	97.65	275.04	0.355 [1]
T6	144.021 - 123.813	Pipe 5.563" x 0.375" (5 EH)	20.25	10.12	66.1	6.1120	118.65	275.04	0.431 [1]
T7	123.813 - 103.604	Pipe 6.625" x 0.432" (6 EH)	20.25	10.12	55.3	8.4049	141.09	378.22	0.373 [1]
T8	103.604 - 83.3333	Pipe 6.625" x 0.432" (6 EH)	20.31	10.15	55.5	8.4049	163.27	378.22	0.432 [1]
T9	83.3333 - 63	Pipe 6.625" x 0.432" (6 EH)	20.37	10.19	55.7	8.4049	185.40	378.22	0.490 [1]
T10	63 - 42.6667	Pipe 8.625" x 0.375" (8 EHS)	20.35	10.18	41.8	9.7193	211.41	437.37	0.483 [1]
T11	42.6667 - 22.3334	Pipe 8.625" x 0.375" (8 EHS)	20.38	0.42	1.7	9.7193	219.96	437.37	0.503 [1]
T12	22.3334 - 2	Pipe 8.75" x 0.500" (8 EH)	20.38	0.42	1.7	12.959 1	237.17	583.16	0.407 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	244.917 - 224.792	L 1.75 x 1.75 x 3/16	7.70	3.60	82.9	0.3779	2.54	16.44	0.155 [1]
T2	224.792 - 204.625	L 1.75 x 1.75 x 3/16	9.38	4.57	104.5	0.3779	3.60	16.44	0.219 [1]
T3	204.625 - 184.438	L 2.5 x 2.5 x 3/16	12.47	6.15	96.4	0.5886	4.24	25.60	0.165 [1]
T4	184.438 - 164.229	L 2.5 x 2.5 x 1/4	14.33	7.05	111.6	0.7753	4.83	33.73	0.143 [1]
T5	164.229 - 144.021	L 2.5 x 2.5 x 5/16	16.25	7.95	127.2	0.9485	5.54	41.26	0.134 [1]
T6	144.021 - 123.813	L 3 x 3 x 5/16	19.57	9.69	127.9	1.1592	6.49	50.43	0.129 [1]
T7	123.813 - 103.604	L 3.5 x 3.5 x 1/4	21.44	10.59	117.9	1.1269	6.97	49.02	0.142 [1]
T8	103.604 - 83.3333	L 3.5 x 3.5 x 1/4	23.37	11.54	128.5	1.1034	7.52	53.79	0.140 [1]
T9	83.3333 - 63	L 4 x 4 x 5/16	25.33	12.52	122.5	1.5949	8.32	69.38	0.120 [1]
T10	63 - 42.6667	L 4 x 4 x 5/16	26.15	12.75	124.7	1.5949	11.19	69.38	0.161 [1]
T11	42.6667 - 22.3334	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1	2.2285	13.14	100.28	0.131 [1]
T12	22.3334 - 2	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9	2.2285	12.27	100.28	0.122 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Pipe 2.875" x 0.203" (2.5 STD)	25.23	12.25	155.2	1.7040	7.44	76.68	0.097 [1]
T12	22.3334 - 2	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2	2.2285	7.39	100.28	0.074 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	244.917 - 224.792	L 2 x 2 x 1/8	6.56	6.11	121.2	0.3047	0.03	13.25	0.002 [1]
T2	224.792 - 204.625	L 2 x 2 x 1/8	6.56	6.06	120.2	0.3047	0.66	13.25	0.050 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Rohn 1.5" x 11 ga	6.31	5.95	145.7	0.5202	4.56	23.41	0.195 [1]
T12	22.3334 - 2	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6	0.7995	4.96	35.98	0.138 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Pipe 1.9" x 0.145" (1.5 STD)	11.48	10.75	207.3	0.7995	4.15	35.98	0.115 [1]
T12	22.3334 - 2	Rohn 2.25" x 14 ga	11.80	11.12	174.0	0.5651	4.22	25.43	0.166 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Rohn 1.5" x 11 ga	6.31	6.31	154.5	0.5202	0.01	23.41	0.001 [1]
T12	22.3334 - 2	Pipe 1.9" x 0.145" (1.5	6.93	6.93	133.6	0.7995	0.01	35.98	0.000 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		STD)							

[1] $P_u / \phi P_n$ controls

Redundant Hip Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	42.6667 - 22.3334	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7	1.7040	0.07	76.68	0.001 [1]
T12	22.3334 - 2	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2	1.7040	0.07	76.68	0.001 [1]

[1] $P_u / \phi P_n$ controls

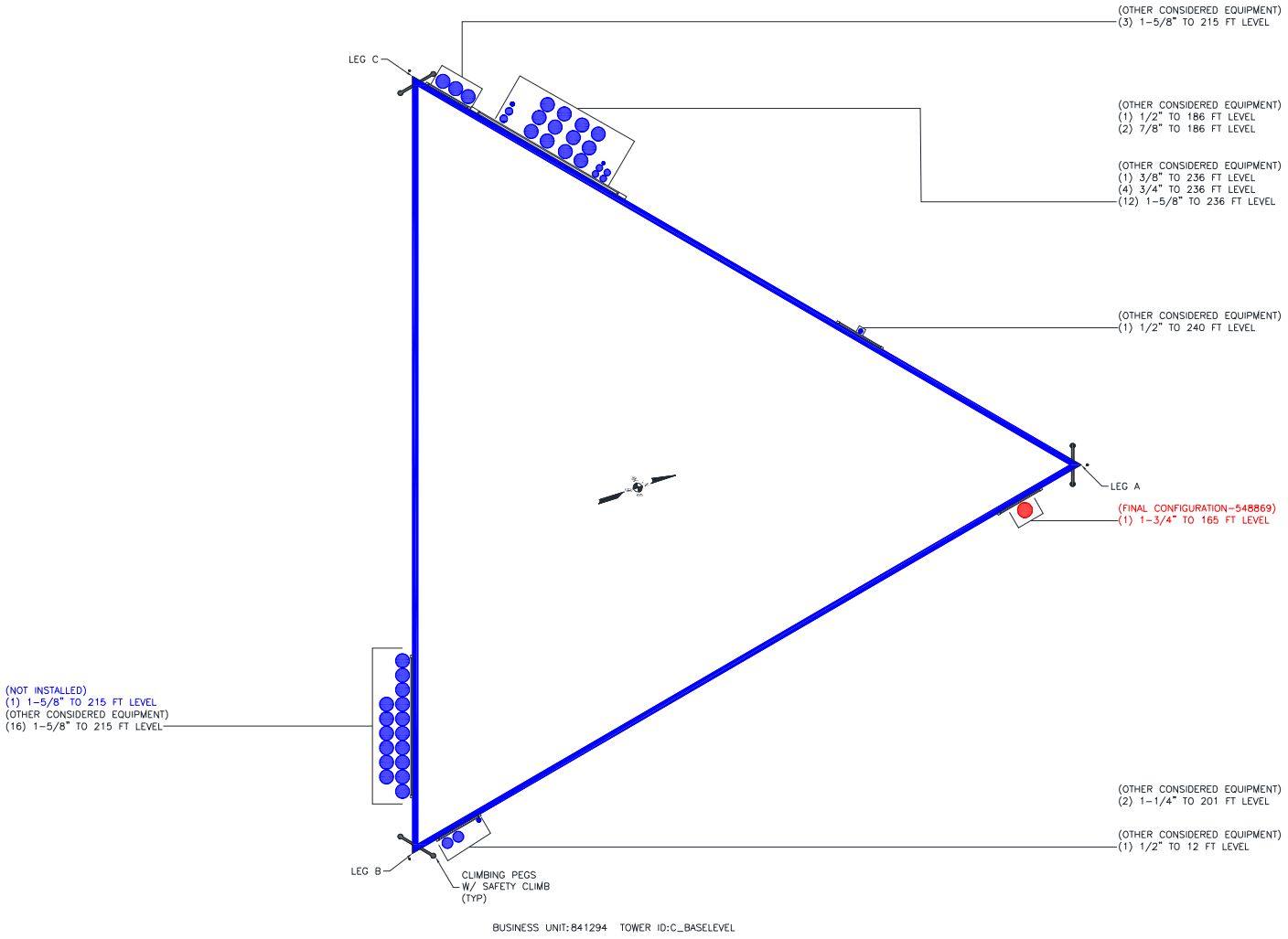
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	244.917 - 224.792	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-13.39	66.58	20.1	Pass
T2	224.792 - 204.625	Leg	Pipe 3.5" x 0.300" (3 EH)	37	-37.89	115.74	32.7	Pass
T3	204.625 - 184.438	Leg	Pipe 4" x 0.318" (3.5 EH)	69	-61.67	131.32	47.0	Pass
T4	184.438 - 164.229	Leg	Pipe 4.5" x 0.337" (4 EH)	90	-87.84	167.14	52.6	Pass
T5	164.229 - 144.021	Leg	Pipe 5.563" x 0.375" (5 EH)	111	-115.19	250.61	46.0	Pass
T6	144.021 - 123.813	Leg	Pipe 5.563" x 0.375" (5 EH)	132	-139.72	209.91	66.6	Pass
T7	123.813 - 103.604	Leg	Pipe 6.625" x 0.432" (6 EH)	147	-166.39	317.44	52.4	Pass
T8	103.604 - 83.3333	Leg	Pipe 6.625" x 0.432" (6 EH)	162	-193.50	317.01	61.0	Pass
T9	83.3333 - 63	Leg	Pipe 6.625" x 0.432" (6 EH)	177	-220.90	316.57	69.8	Pass
T10	63 - 42.6667	Leg	Pipe 8.625" x 0.375" (8 EHS)	192	-252.56	404.12	62.5	Pass
T11	42.6667 - 22.3334	Leg	Pipe 8.625" x 0.375" (8 EHS)	207	-260.78	406.05	64.2	Pass
T12	22.3334 - 2	Leg	Pipe 8.75" x 0.500" (8 EH)	240	-284.77	541.51	52.6	Pass
T1	244.917 - 224.792	Diagonal	L 1.75 x 1.75 x 3/16	11	-2.64	11.77	22.5	Pass
T2	224.792 - 204.625	Diagonal	L 1.75 x 1.75 x 3/16	44	-3.41	6.64	51.3	Pass
T3	204.625 - 184.438	Diagonal	L 2.5 x 2.5 x 3/16	71	-4.30	12.21	35.2	Pass
T4	184.438 - 164.229	Diagonal	L 2.5 x 2.5 x 1/4	92	-5.01	12.04	41.6	Pass
T5	164.229 - 144.021	Diagonal	L 2.5 x 2.5 x 5/16	113	-5.54	11.51	48.1	Pass
T6	144.021 - 123.813	Diagonal	L 3 x 3 x 5/16	134	-6.60	13.72	48.1	Pass
T7	123.813 - 103.604	Diagonal	L 3.5 x 3.5 x 1/4	149	-7.19	15.14	47.5	Pass
T8	103.604 - 83.3333	Diagonal	L 3.5 x 3.5 x 1/4	164	-7.77	12.76	60.9	Pass
T9	83.3333 - 63	Diagonal	L 4 x 4 x 5/16	179	-8.55	19.99	42.8	Pass
T10	63 - 42.6667	Diagonal	L 4 x 4 x 5/16	196	-12.07	18.32	65.9	Pass
T11	42.6667 -	Diagonal	Pipe 3.5" x 0.216" (3 STD)	212	-14.93	33.77	44.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	22.3334							
T12	22.3334 - 2	Diagonal	Pipe 3.5" x 0.216" (3 STD)	245	-13.83	31.82	43.5	Pass
T11	42.6667 - 22.3334	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	208	-8.21	16.78	48.9	Pass
T12	22.3334 - 2	Horizontal	Pipe 3.5" x 0.216" (3 STD)	241	-7.98	27.27	29.2	Pass
T1	244.917 - 224.792	Top Girt	L 2 x 2 x 1/8	5	-0.03	4.27	0.7	Pass
T2	224.792 - 204.625	Top Girt	L 2 x 2 x 1/8	42	-0.66	4.35	15.1	Pass
T11	42.6667 - 22.3334	Redund Horz 1 Bracing	Rohn 1.5" x 11 ga	226	-4.56	5.81	78.5	Pass
T12	22.3334 - 2	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	253	-4.96	11.84	41.9	Pass
T11	42.6667 - 22.3334	Redund Diag 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	221	-4.15	4.41	94.1	Pass
T12	22.3334 - 2	Redund Diag 1 Bracing	Rohn 2.25" x 14 ga	254	-4.22	4.42	95.4	Pass
T11	42.6667 - 22.3334	Redund Hip 1 Bracing	Rohn 1.5" x 11 ga	233	-0.03	5.17	0.5	Pass
T12	22.3334 - 2	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	266	-0.02	10.62	0.2	Pass
T11	42.6667 - 22.3334	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	234	-0.08	11.11	0.7	Pass
T12	22.3334 - 2	Redund Hip Diagonal 1 Bracing	Pipe 2.875" x 0.203" (2.5 STD)	267	-0.08	9.99	0.8	Pass
T11	42.6667 - 22.3334	Inner Bracing	Pipe 2.375" x 0.154" (2 STD)	235	-0.01	6.89	0.5	Pass
T12	22.3334 - 2	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	268	-0.02	25.86	0.4	Pass
							Summary	
						Leg (T9)	69.8	Pass
						Diagonal (T10)	65.9	Pass
						Horizontal (T11)	48.9	Pass
						Top Girt (T2)	15.1	Pass
						Redund Horz 1 Bracing (T11)	78.5	Pass
						Redund Diag 1 Bracing (T12)	95.4	Pass
						Redund Hip 1 Bracing (T11)	0.5	Pass
						Redund Hip Diagonal 1 Bracing (T12)	0.8	Pass
						Inner Bracing (T11)	0.5	Pass
						Bolt Checks	67.6	Pass
						RATING =	**95.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 215 FT LEVEL
LEG C
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 186 FT LEVEL
(2) 7/8" TO 186 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 236 FT LEVEL
(4) 3/4" TO 236 FT LEVEL
(12) 1-5/8" TO 236 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 240 FT LEVEL
LEG A
(FINAL CONFIGURATION-548869)
(1) 1-3/4" TO 165 FT LEVEL
(NOT INSTALLED)
(1) 1-5/8" TO 215 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(16) 1-5/8" TO 215 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-1/4" TO 201 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 12 FT LEVEL
LEG B
CLIMBING PEGS
W/ SAFETY CLIMB
(TYP)
BUSINESS UNIT:841294 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	841294
Site Name	Monroe Guinea Road
Order #	548869 Rev 0

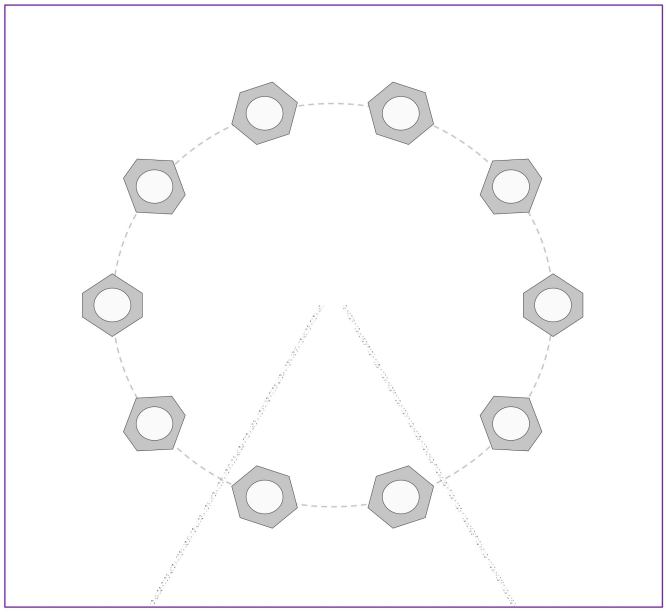
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0.75

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	305.50	251.27
Shear Force (kips)	34.18	28.86

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(10) 1" ø bolts (A354-BC N; Fy=109 ksi, Fu=125 ksi)

l_{ar} (in): 0.75

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 25.13	ϕPn_t = 56.81	**Stress Rating**
Vu = 2.89	ϕVn = 36.82	**42.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Drilled Pier Foundation

BU # :	841294
Site Name:	Monroe-Guinea Rd
Order Number:	548869, Rev 0
TIA-222 Revison:	H
Tower Type:	Self Support

Report File:

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)		
Axial Force (kips)	305	251
Shear Force (kips)	34	29

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	20	ft
Ext. Above Grade	2	ft
Pier Section 1		
From 2' above grade to 20' below grade		
Pier Diameter	3.5	ft
Rebar Quantity	12	
Rebar Size	9	
Clear Cover to Ties	5.5	in
Tie Size	3	
Tie Spacing	18	in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	11.46	11.46
Soil Safety Factor	23.31	27.32
Max Moment (kip-ft)	333.55	284.50
Rating*	*5.4%*	*4.6%*
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	669.22	446.15
End Bearing (kips)	432.95	-
Weight of Concrete (kips)	38.10	28.57
Total Capacity (kips)	1102.17	474.72
Axial (kips)	343.10	251.00
Rating*	*29.6%*	*50.4%*
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	11.76	10.66
Critical Moment (kip-ft)	333.02	281.19
Critical Moment Capacity	1028.55	614.67
Rating*	*30.8%*	*43.6%*
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	16.73	16.73
Critical Shear (kip)	63.30	53.99
Critical Shear Capacity	206.22	97.90
Rating*	*29.2%*	*52.5%*

Structural Foundation Rating*	**52.5%**
Soil Interaction Rating*	**50.4%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	N/A
# of Layers	4

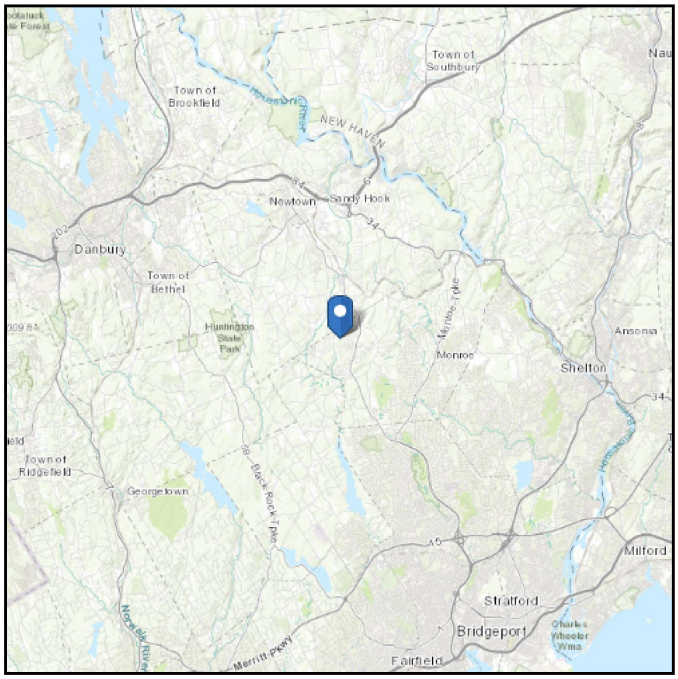
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	1.75	1.75	120	150		0	0.000	0.000	0.00	0.00			Cohesionless
2	1.75	3.5	1.75	120	150		34	0.000	0.000	0.60	0.40			Cohesionless
3	3.5	7	3.5	120	150		34	0.000	0.000	0.60	0.40			Cohesionless
4	7	20	13	150	150	10		4.500	4.500	6.00	4.00	60		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 583.08 ft (NAVD 88)
Latitude: 41.341856
Longitude: -73.274522



Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Accessed: Tue Aug 31 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

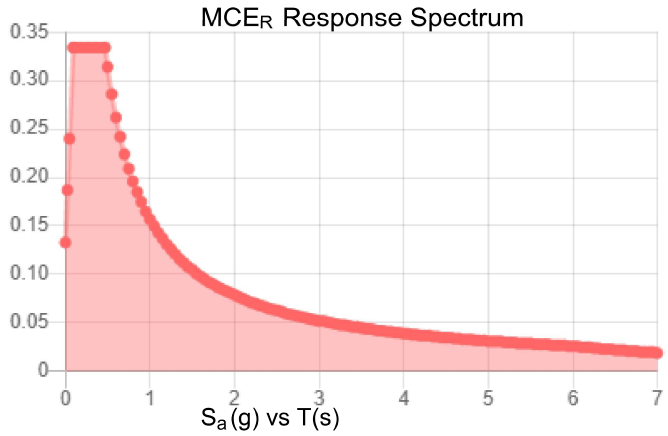
Seismic

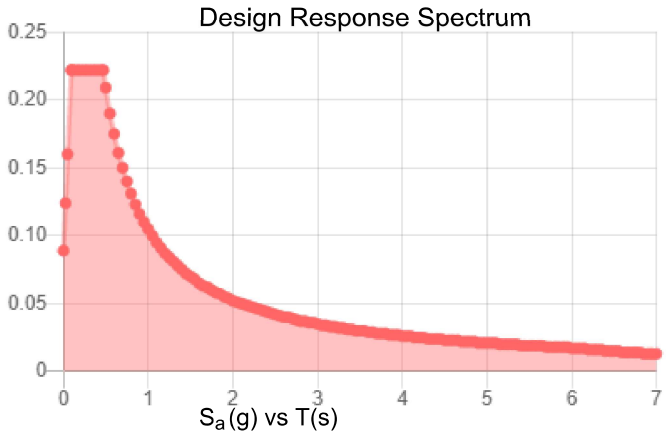
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.209	S_{DS} :	0.222
S_1 :	0.065	S_{D1} :	0.105
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.113
S_{MS} :	0.334	PGA_M :	0.177
S_{M1} :	0.157	F_{PGA} :	1.575
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Aug 31 2021

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

Ice

Results:

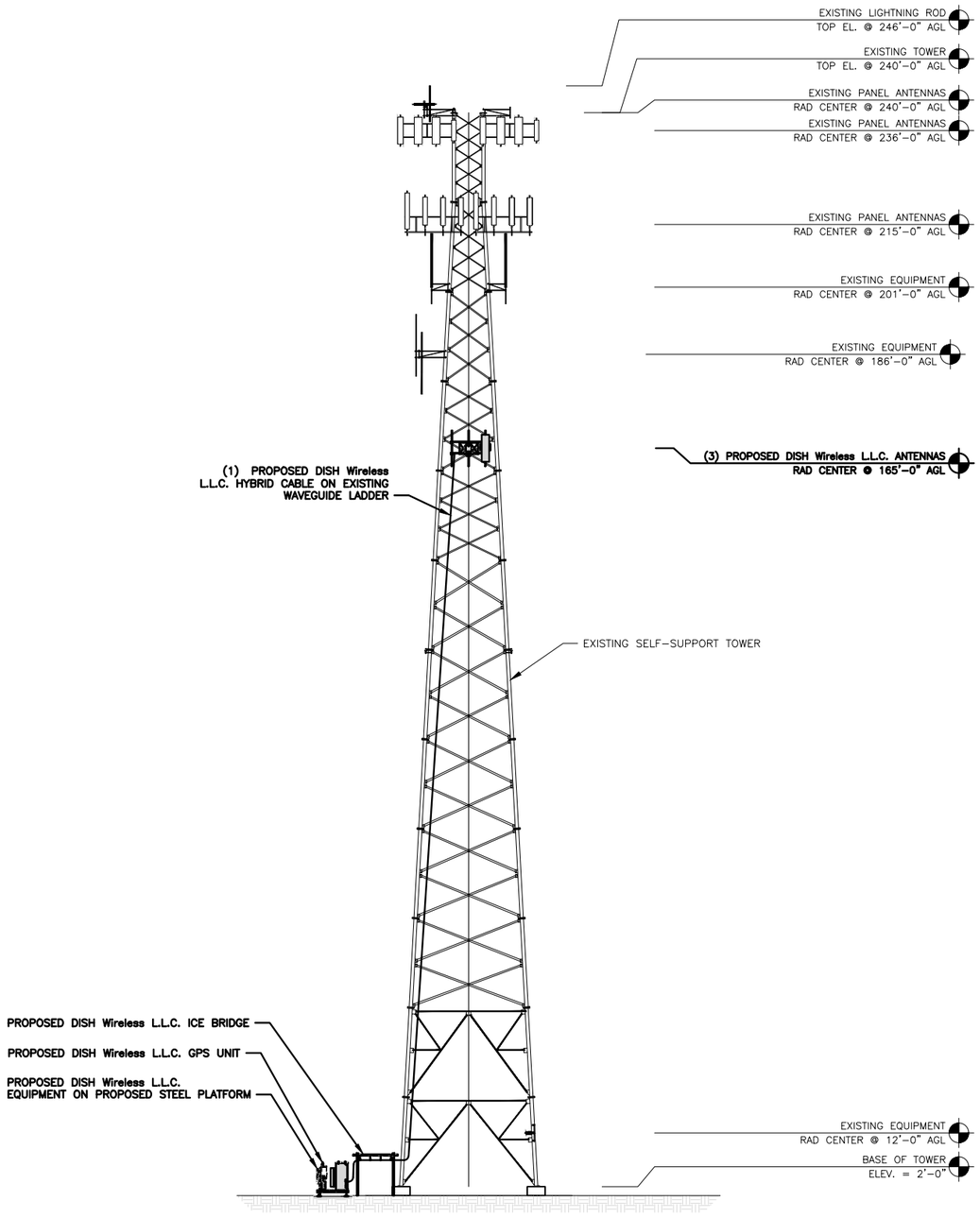
Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 31 2021

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

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

NOTES

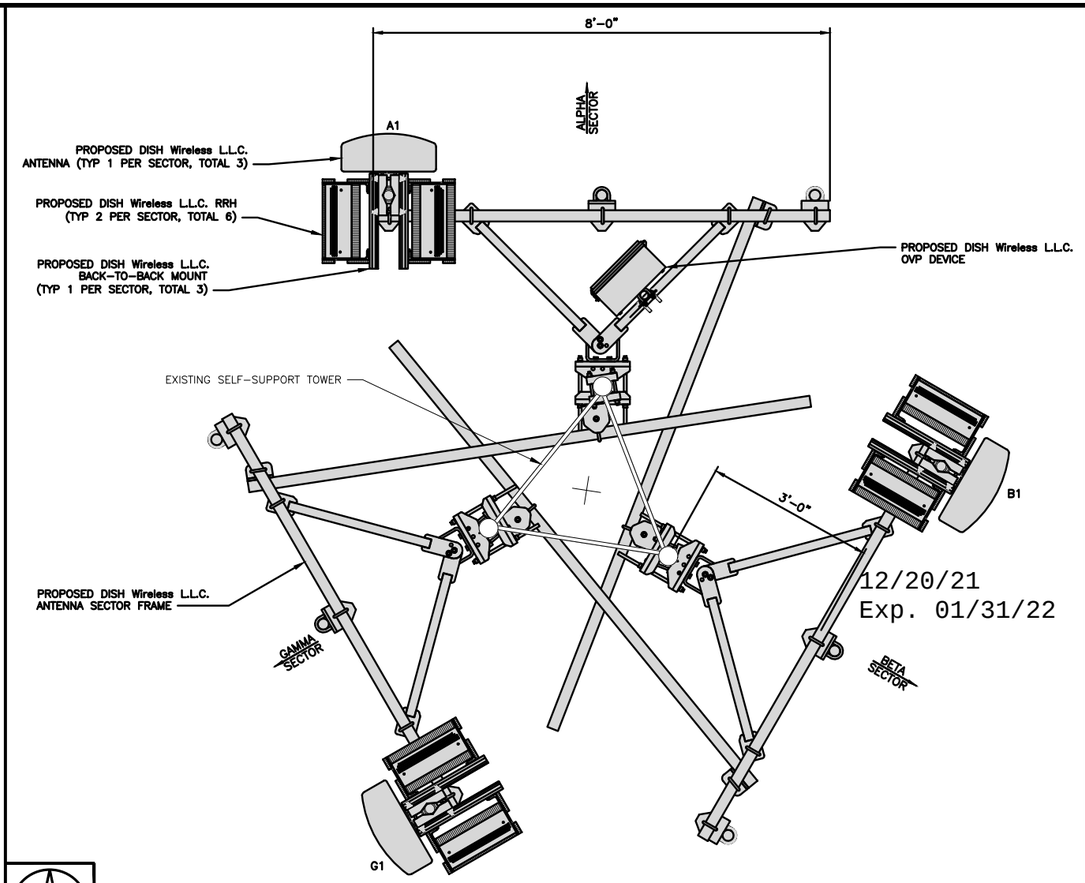
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED WEST ELEVATION

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	0°	165'-0"	(1) HIGH-CAPACITY HYBRID CABLE (280'-0" LONG)
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	120°	165'-0"	
GAMMA	G1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	240°	165'-0"	

SECTOR	POSITION	OVP			
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)
ALPHA	A1	PROPOSED	RAYCAP – RDIDC-9181-PF-48	5G	18.98" x 14.39" x 8.15"

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	G1	FUJITSU – TA08025-B604	5G
	G1	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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT
BRIAN J. BRENNER
29510
LICENSED PROFESSIONAL ENGINEER

12/20/21
Exp. 01/31/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	12/20/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE-16707

DISH Wireless L.L.C.
PROJECT INFORMATION

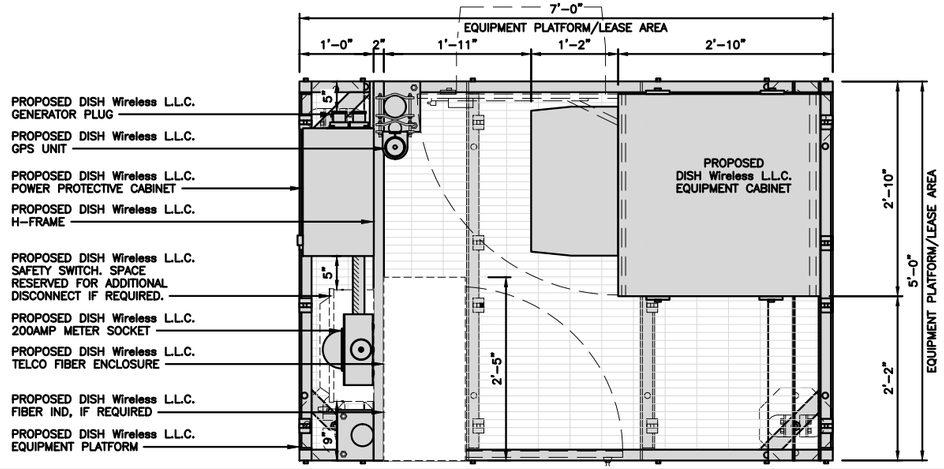
NJJER01094A
230 GUINEA RD
MONROE CT 06468

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



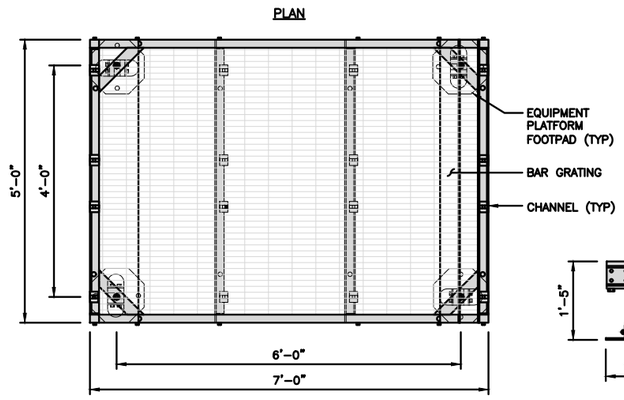
PLATFORM EQUIPMENT PLAN

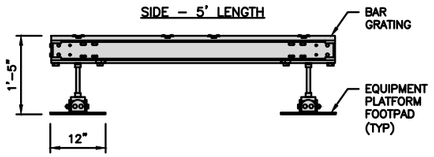
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

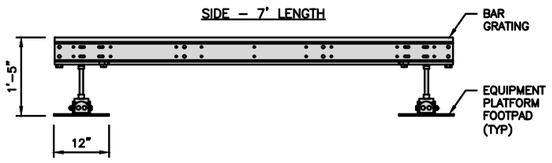
1

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

NOTE:
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
2. PLATFORM TO BE LEVEL WITHIN 1"





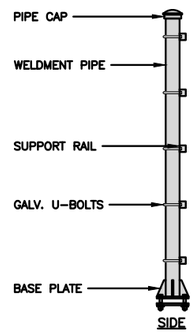


PLATFORM DETAIL

NO SCALE

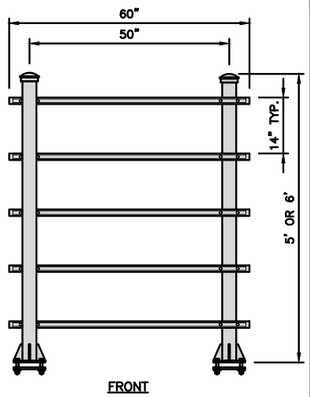
2

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



SIDE

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



FRONT

H-FRAME DETAIL

NO SCALE

3

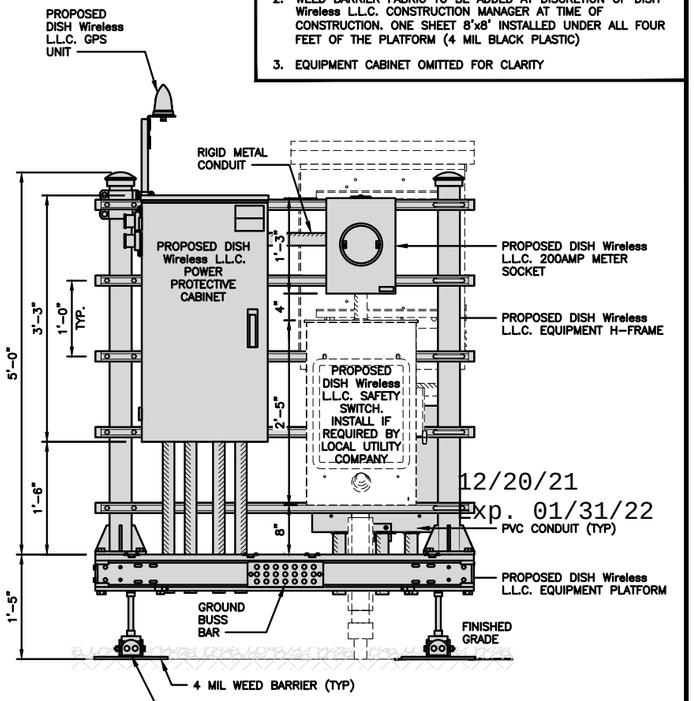
NOT USED

NO SCALE

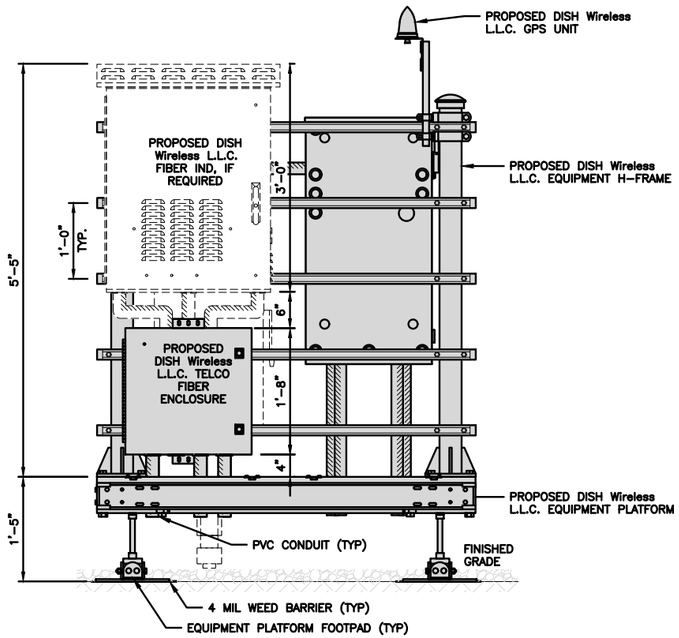
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn
COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT
BRADLEY M. BRENNER
29510
LICENSED PROFESSIONAL ENGINEER

12/20/21
Exp. 01/31/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	12/20/2021	ISSUED FOR CONSTRUCTION

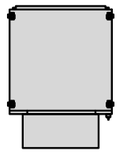
A&E PROJECT NUMBER
KHCLE-16707

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01094A
230 GUINEA RD
MONROE CT 06468

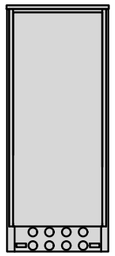
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

ENERSYS HEX 20000059996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HEATER	800W
TOTAL WEIGHT (EMPTY)	376 lbs



PLAN



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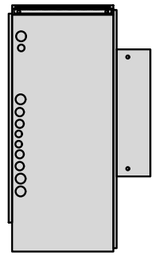

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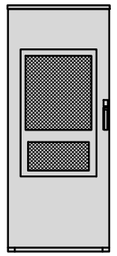
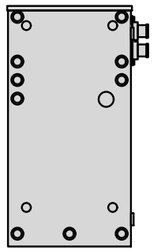


FRONT

CABINET DETAIL | NO SCALE | 1

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

TOP



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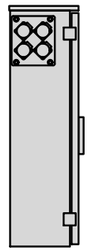

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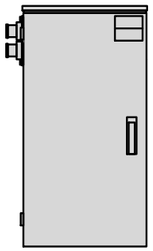

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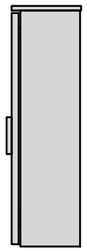
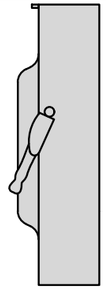


SIDE

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

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875

TOP



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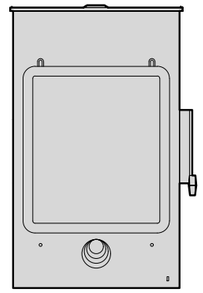
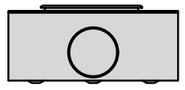


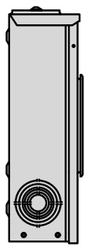
FRONT

SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



PLAN



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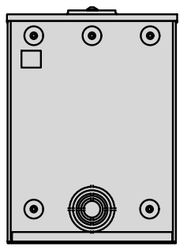

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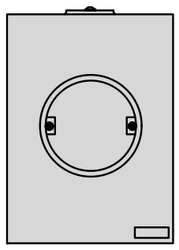
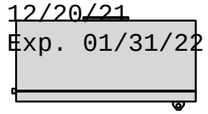


FRONT

METER SOCKET DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



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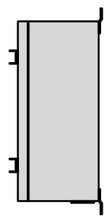

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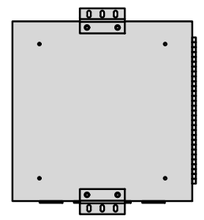

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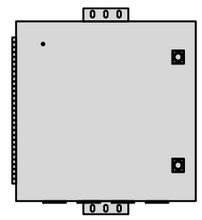
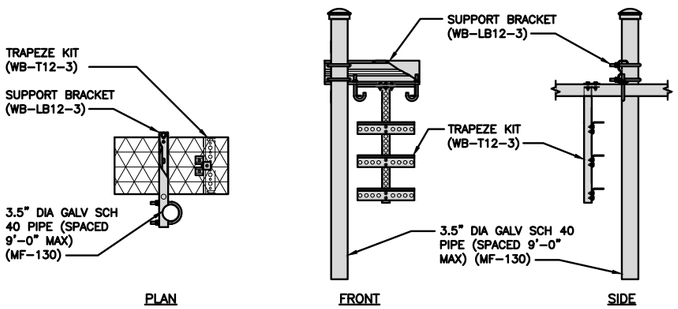


FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

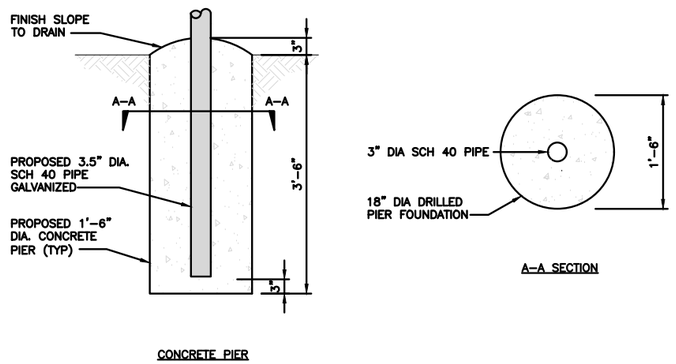
COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



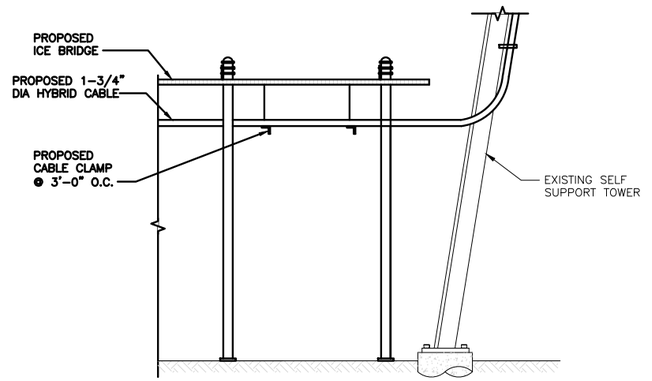
PLAN FRONT SIDE

ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT
BRIAN K. BREWER
29510
LICENSED PROFESSIONAL ENGINEER

12/20/21
Exp. 01/31/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

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KHCLE-16707

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01094A
230 GUINEA RD
MONROE CT 06468

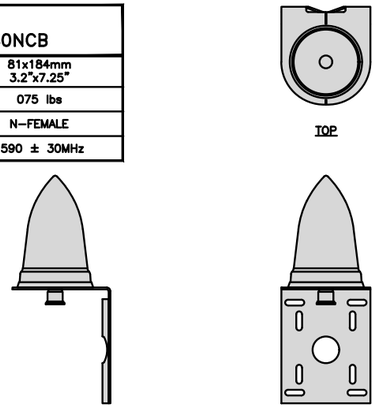
SHEET TITLE

EQUIPMENT DETAILS

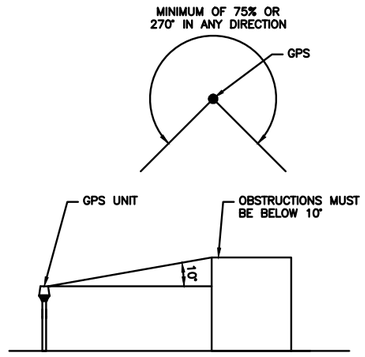
SHEET NUMBER

A-4

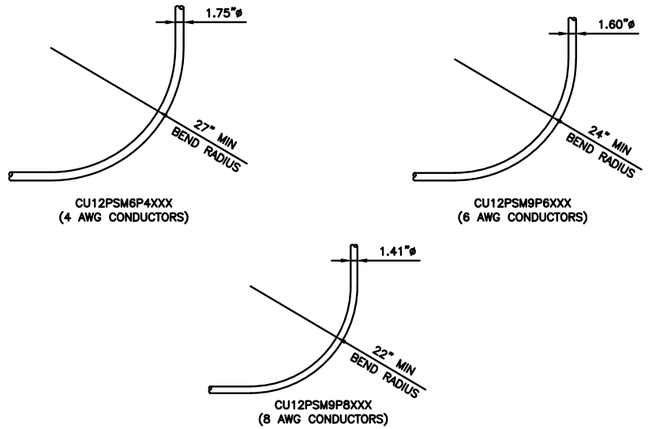
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

12/20/21
Exp. 01/31/22

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
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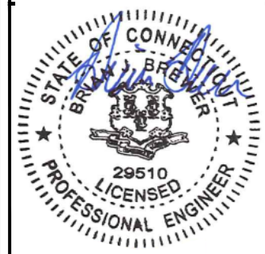

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230 GUINEA RD
MONROE CT 06468

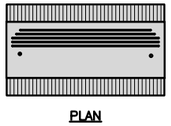
SHEET TITLE

EQUIPMENT DETAILS

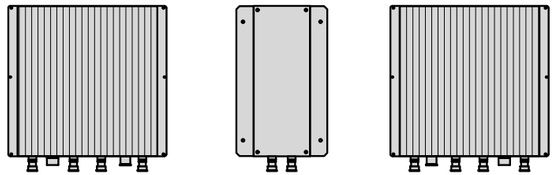
SHEET NUMBER

A-5

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



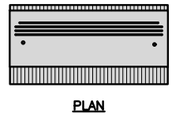
PLAN



BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



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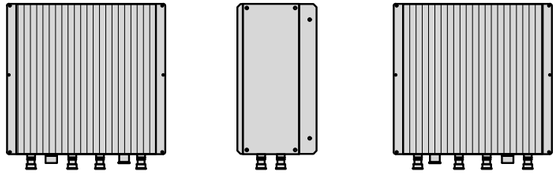
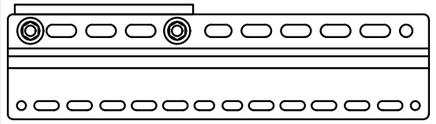


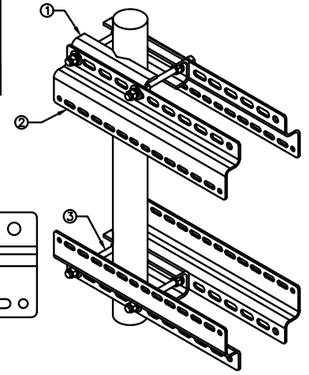
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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



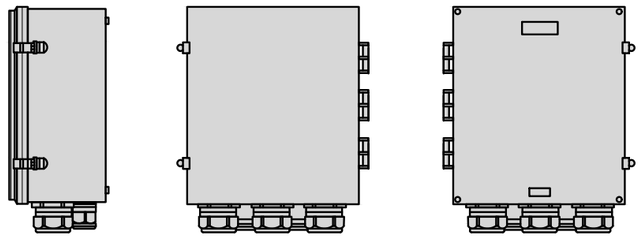


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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

PLAN

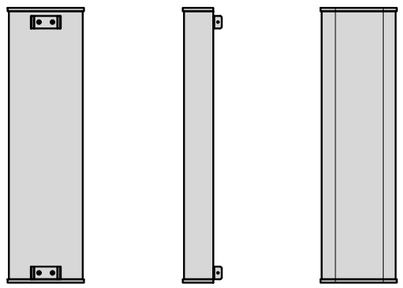


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 5

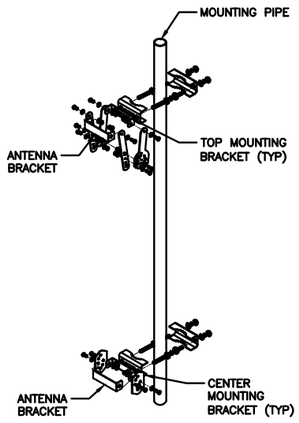
12/20/21
Exp. 01/31/22

NOT USED | NO SCALE | 6

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

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

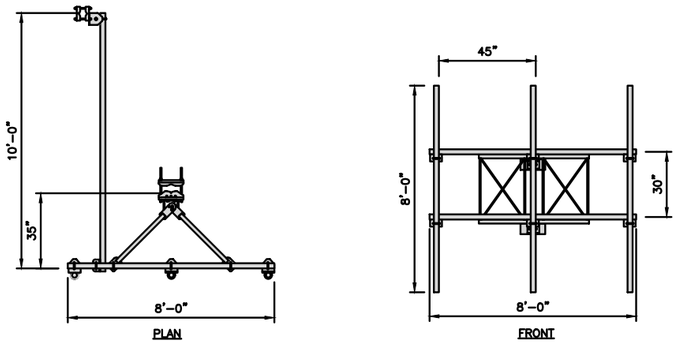
ANTENNA BRACKET NOT PART OF KIT



ANTENNA BRACKET DETAIL | NO SCALE | 7

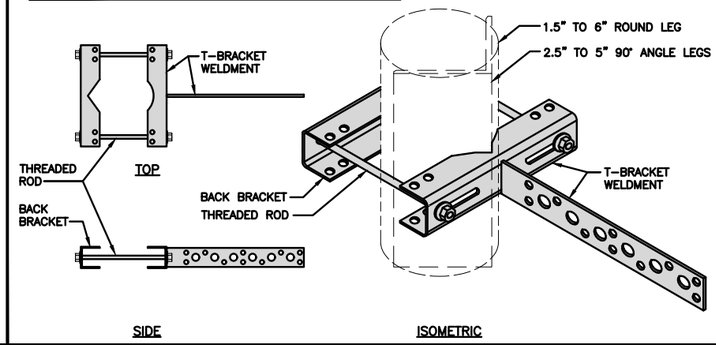
COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



ANTENNA FRAME DETAIL | NO SCALE | 8

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 9

dish wireless.

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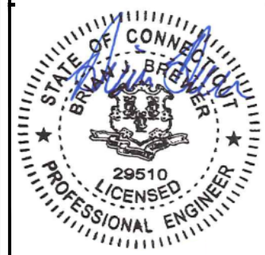

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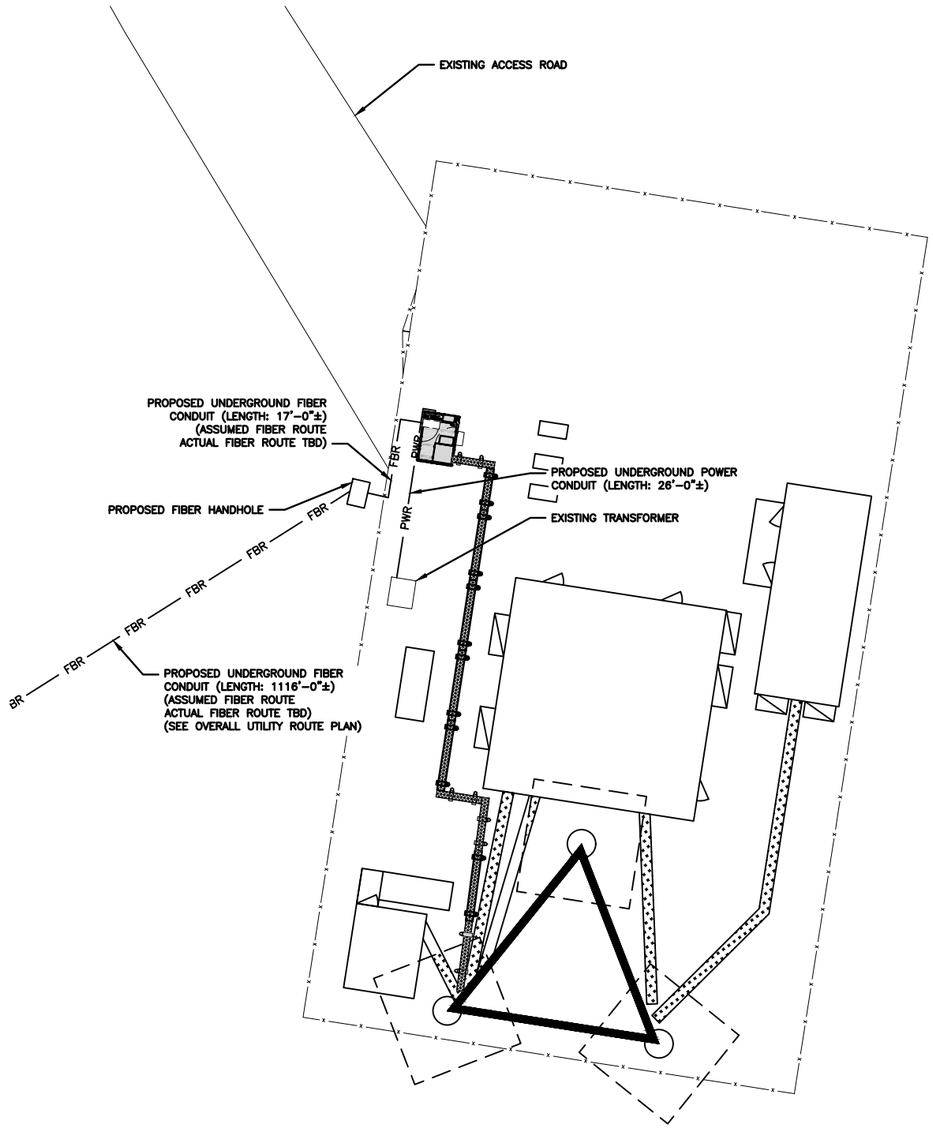
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

12' 8' 4' 0 10' 20'
3/32"=1'–0"

1

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

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

12/20/21
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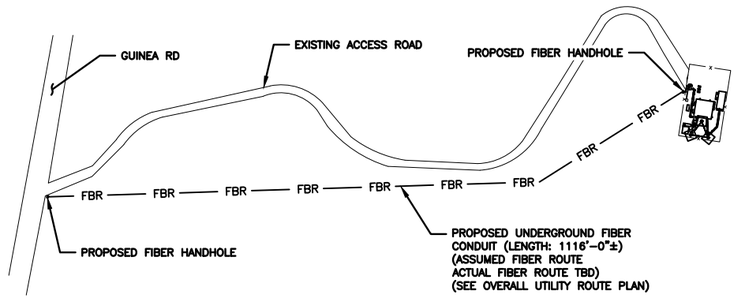
ELECTRICAL NOTES

NO SCALE

2



OVERALL UTILITY ROUTE PLAN

128' 64' 0 128' 256'
1/128"=1'–0"

3

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn
COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT BRIAN K. BRENNER 29510 LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	12/20/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE–16707

DISH Wireless L.L.C.
PROJECT INFORMATION

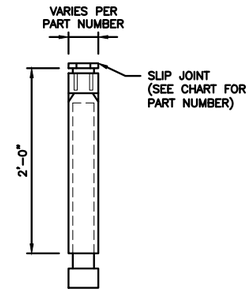
NJJER01094A
230 GUINEA RD
MONROE CT 06468

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"

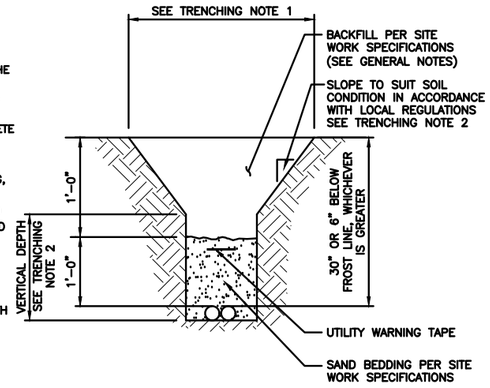


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

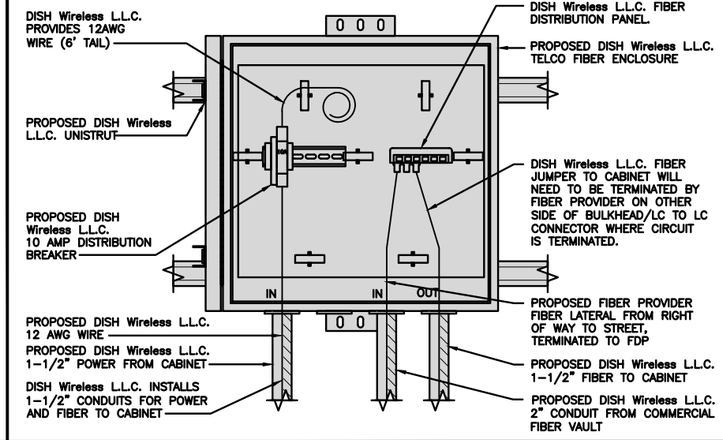
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

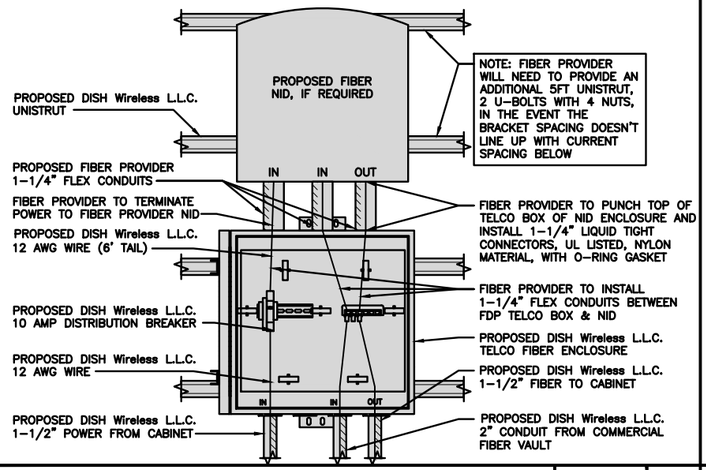
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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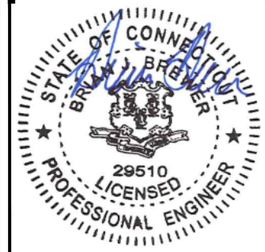

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XQD	MCK	MCK

RFDS REV #: 3

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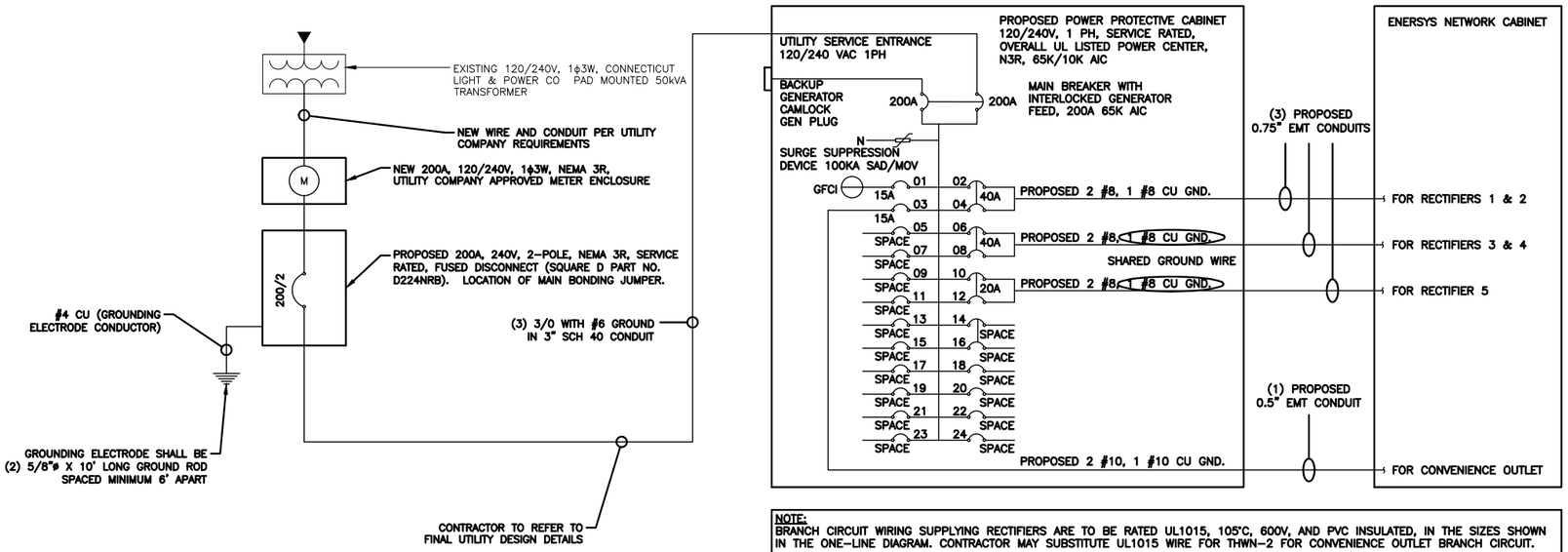
PROJECT INFORMATION

NJJER01094A
230 GUINEA RD
MONROE CT 06468

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

BREAKERS REQUIRED:
(2) 40A, 2P BREAKER - SQUARE D P/N:QO240
(1) 20A, 2P BREAKER - SQUARE D P/N:QO220
(1) 20A, 1P BREAKER - SQUARE D P/N:QO120

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

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

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

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

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

RECTIFIER CONDUCTORS (3 CONDUITS): USING UL1015, CU.

#8 - 0.0552 SQ. IN X 2 =	0.1103 SQ. IN
#8 - 0.0131 SQ. IN X 1 =	0.0131 SQ. IN <BARE GROUND
TOTAL	= 0.1234 SQ. IN

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

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

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

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

12/20/21
Exp. 01/31/22

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	15A	3	B	4			3840	RECTIFIERS 1 & 2
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
-SPACE-				7	B	8			3840	RECTIFIER 3 & 4
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
-SPACE-				11	B	12			1920	RECTIFIER 5
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			9680		9680		VOLTAGE AMPS			
			81		81		AMPS			
			81				MAX AMPS			
			102				MAX 125%			

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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STATE OF CONNECTICUT — BRIAN K. BREWER — 29510 — LICENSED PROFESSIONAL ENGINEER

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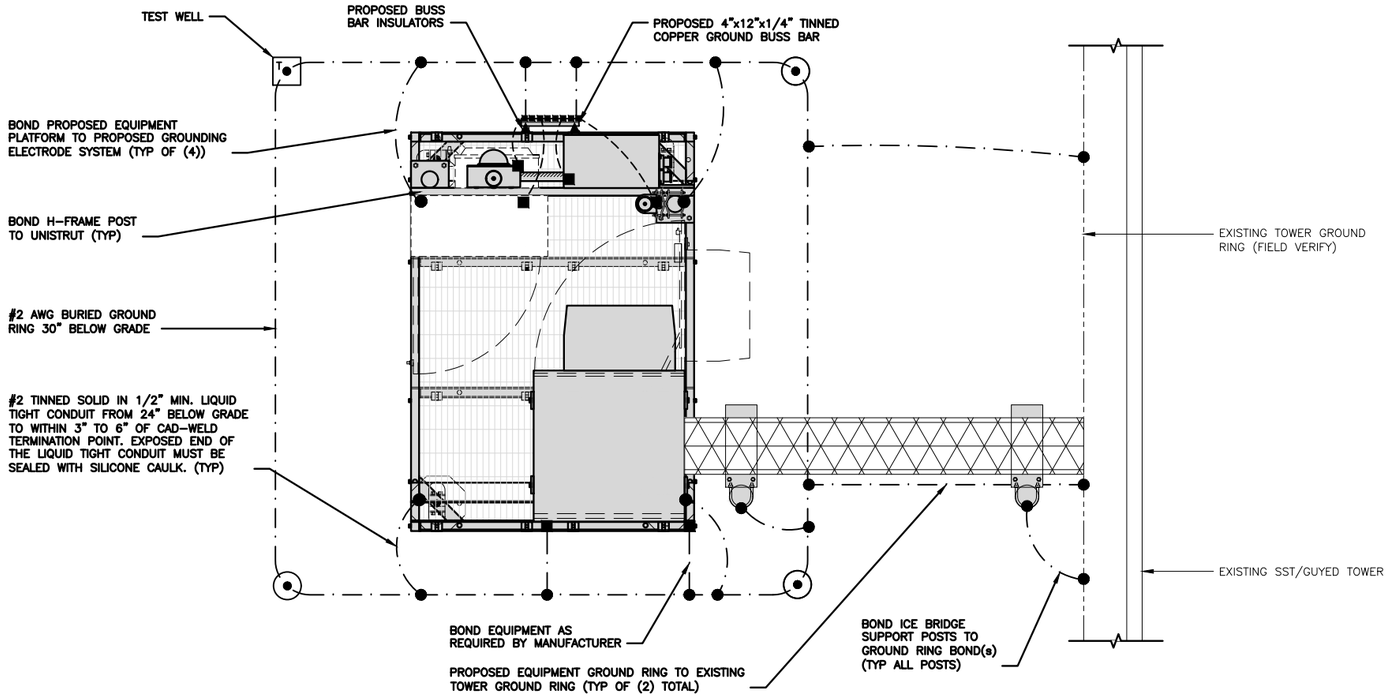
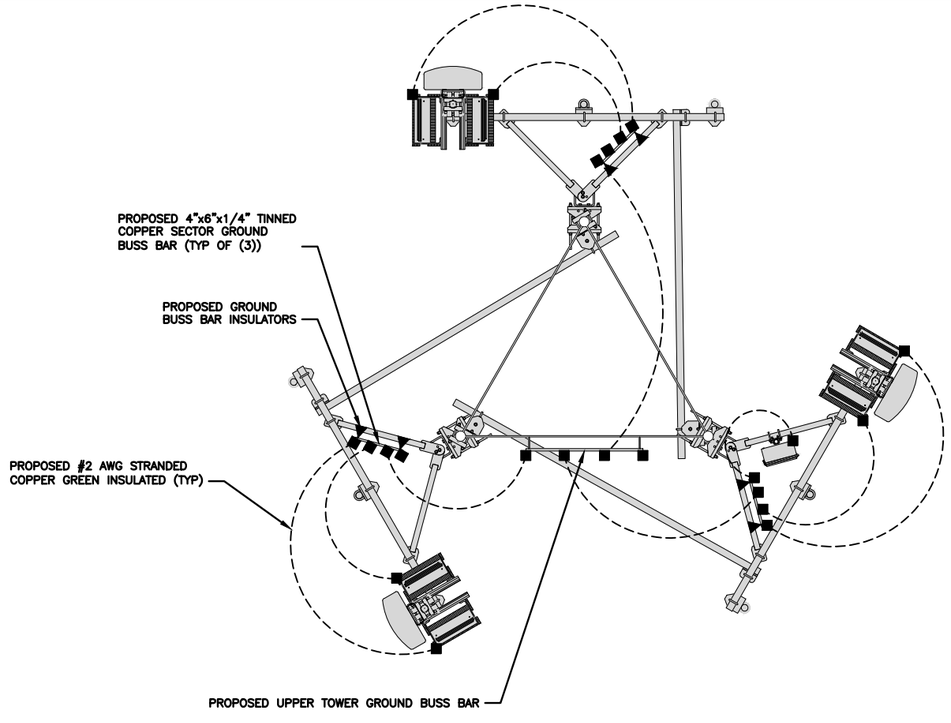
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01094A
230 GUINEA RD
MONROE CT 06468

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

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

GROUNDING KEY NOTES | NO SCALE | 3

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5701 SOUTH SANTA FE DRIVE
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STATE OF CONNECTICUT BRIAN K. BREWER 29510 LICENSED PROFESSIONAL ENGINEER
12/20/21
Exp. 01/31/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

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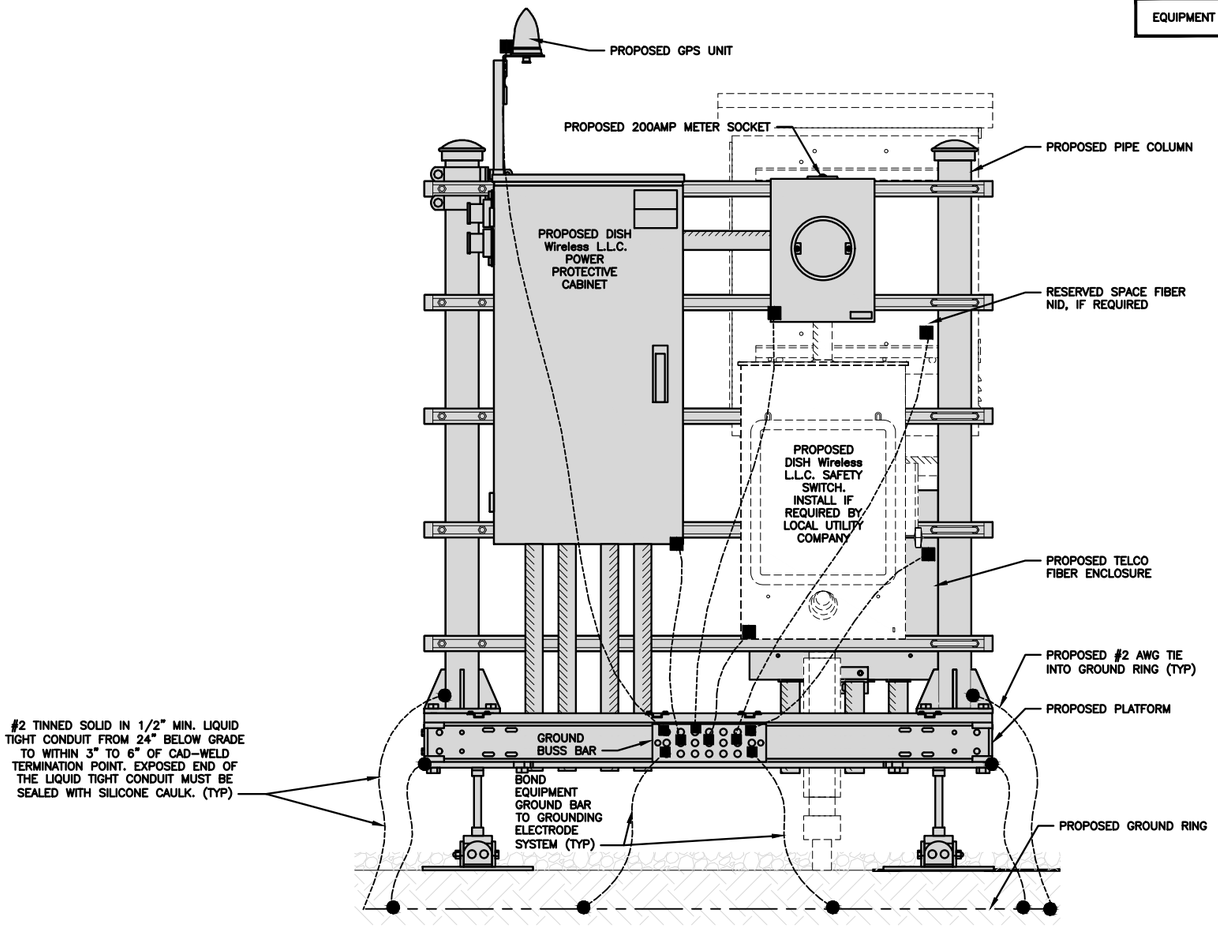
230 GUINEA RD
MONROE CT 06468

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

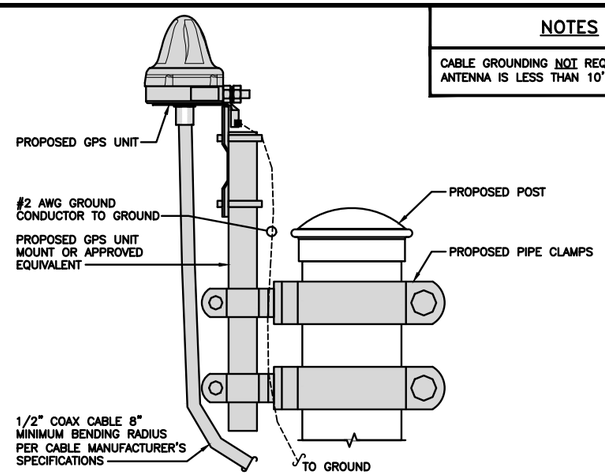
EQUIPMENT CABINET OMITTED FOR CLARITY



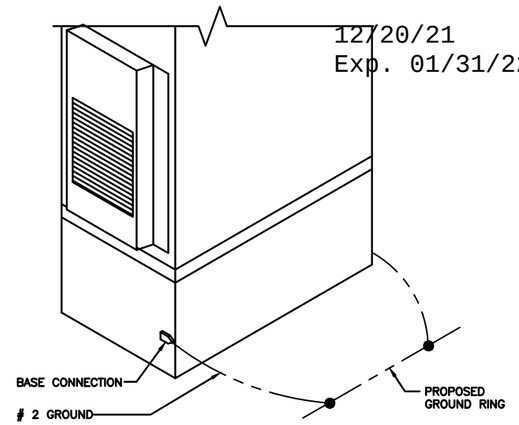
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

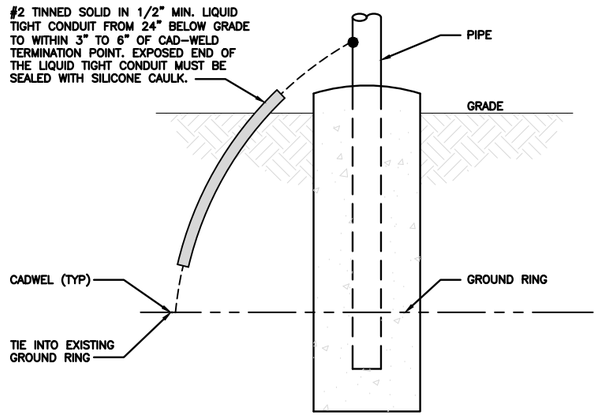
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



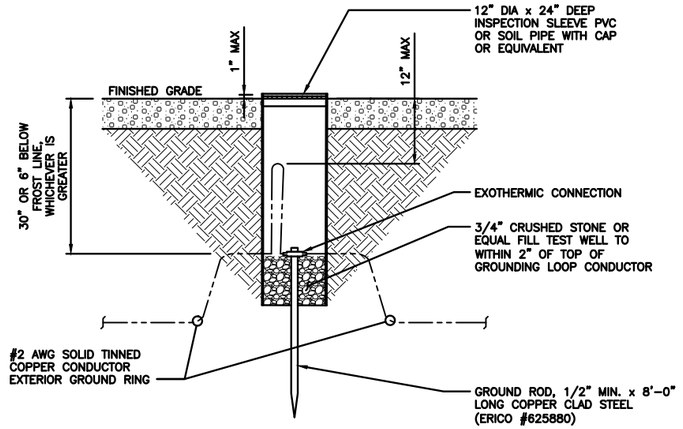
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



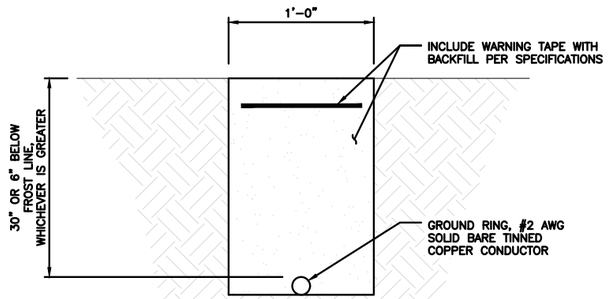
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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SHEET TITLE

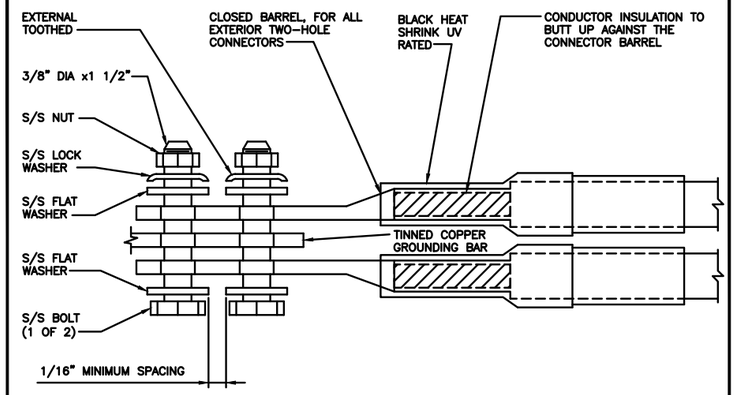
GROUNDING DETAILS

SHEET NUMBER

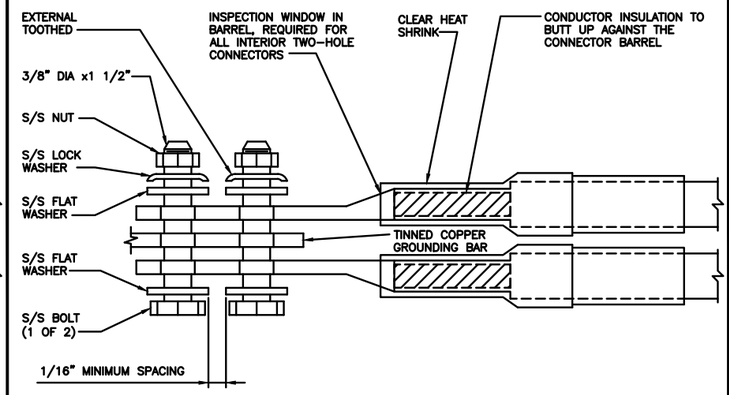
G-2

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).

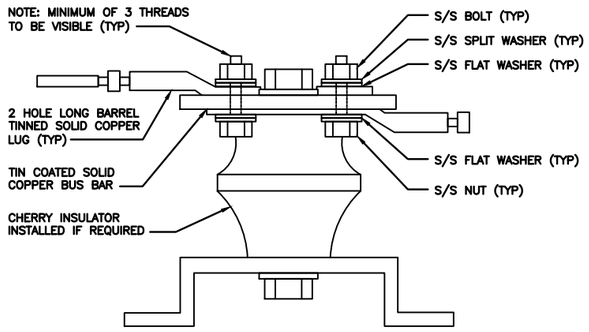
TYPICAL GROUNDING NOTES | NO SCALE | 1



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

12/20/21
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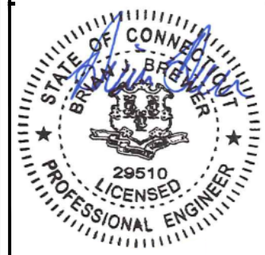

DRAWN BY:	CHECKED BY:	APPROVED BY:
XQD	MCK	MCK

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER
KHCLE-16707

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01094A
230 GUINEA RD
MONROE CT 06468

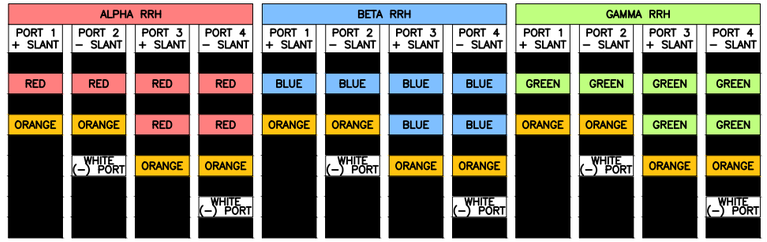
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

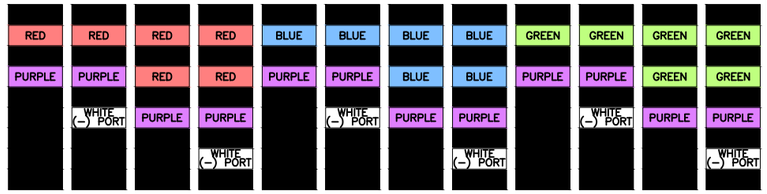
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



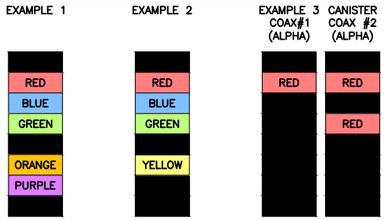
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.

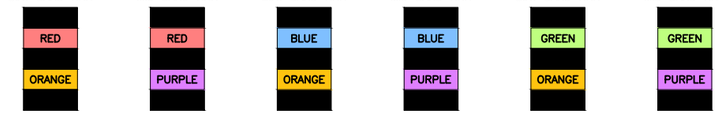


FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

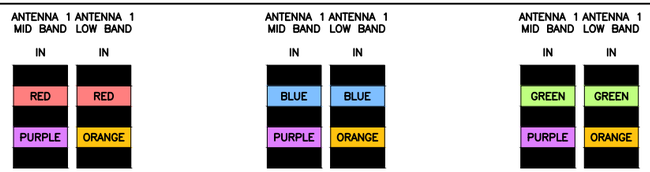
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

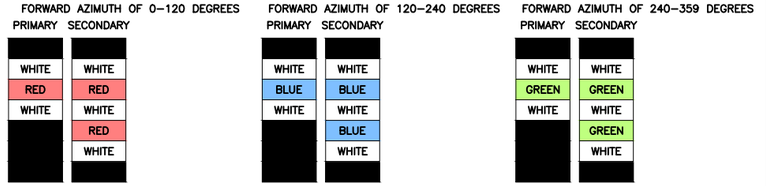
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.



LOW BANDS (N71+N26) OPTIONAL – (N29): ORANGE

AWS (N66+N70+H–BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER		2

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NOT USED		3

RF CABLE COLOR CODES		1

NOT USED		4

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SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X X X X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W W W W W

UNDERGROUND POWER — UGP UGP UGP UGP UGP

UNDERGROUND TELCO — UGT UGT UGT UGT UGT

OVERHEAD POWER — OHP OHP OHP OHP

OVERHEAD TELCO — OHT OHT OHT OHT

UNDERGROUND TELCO/POWER — UGT/P UGT/P UGT/P UGT/P

ABOVE GROUND POWER — AGP AGP AGP AGP AGP

ABOVE GROUND TELCO — AGT AGT AGT AGT AGT

ABOVE GROUND TELCO/POWER — AGT/P AGT/P AGT/P AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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STATE OF CONNECTICUT · BRIAN J. BRENNER · 29510 · LICENSED PROFESSIONAL ENGINEER

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MONROE CT 06468

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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DISH Wireless L.L.C.
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230 GUINEA RD
MONROE CT 06468

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Exhibit E

Mount Analysis

Date: **March 14, 2022**

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network Equipment Change-Out**	
	Carrier Site Number:	NJJER01094A
	Carrier Site Name:	CT-CCI-T-841294
Crown Castle Designation:	**BU Number:**	841294
	Site Name:	Monroe-Guinea Road
	JDE Job Number:	640186
	Order Number:	548869 Rev. 2
Engineering Firm Designation:	**Trylon Report Designation:**	204654
Site Data:	**230 Guinea Road, Monroe, County Fairfield, CT, 06468**	
	Latitude 41°20'30.68" Longitude -73°16'28.28"	
Structure Information:	**Tower Height & Type:**	**244.9 ft Self Support**
	Mount Elevation:	**165.0 ft**
	Mount Width & Type:	**8.0 ft Sector Frame**

Trylon is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of Dish Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Frame **Sufficient***

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Adrian Marin

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Sector Frame, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.215
Seismic S_1:	0.065
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
165.0	165.0	3	JMA Wireless	MX08FRO665-21	8.0 ft Sector Frame **[Commscope MTC3975083]**
		3	Fujitsu	TA08025-B604	
		3	Fujitsu	TA08025-B605	
		1	Raycap	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	548869, Rev. 2	CCI Sites
Structural Analysis Report	Paul J. Ford and Company	10010124	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC3975083	Trylon

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP7	165.0	10.4	Pass
	Horizontal(s)	H1		16.3	Pass
	Standoff(s)	M2		28.0	Pass
	Bracing(s)	M29		40.8	Pass
	Vertical(s)	M24		51.4	Pass
	Tieback(s)	M71		11.1	Pass
	Mount Connection(s)	-		25.9	Pass

Structure Rating (max from all components) =	51.4%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.
3) Rating per TIA-222-H, Section 15.5

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[3]	Notes
N94A	Proposed	598.8	Leg	Pipe 4.5" x 0.337" (4 EH)	7,959.0	1

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

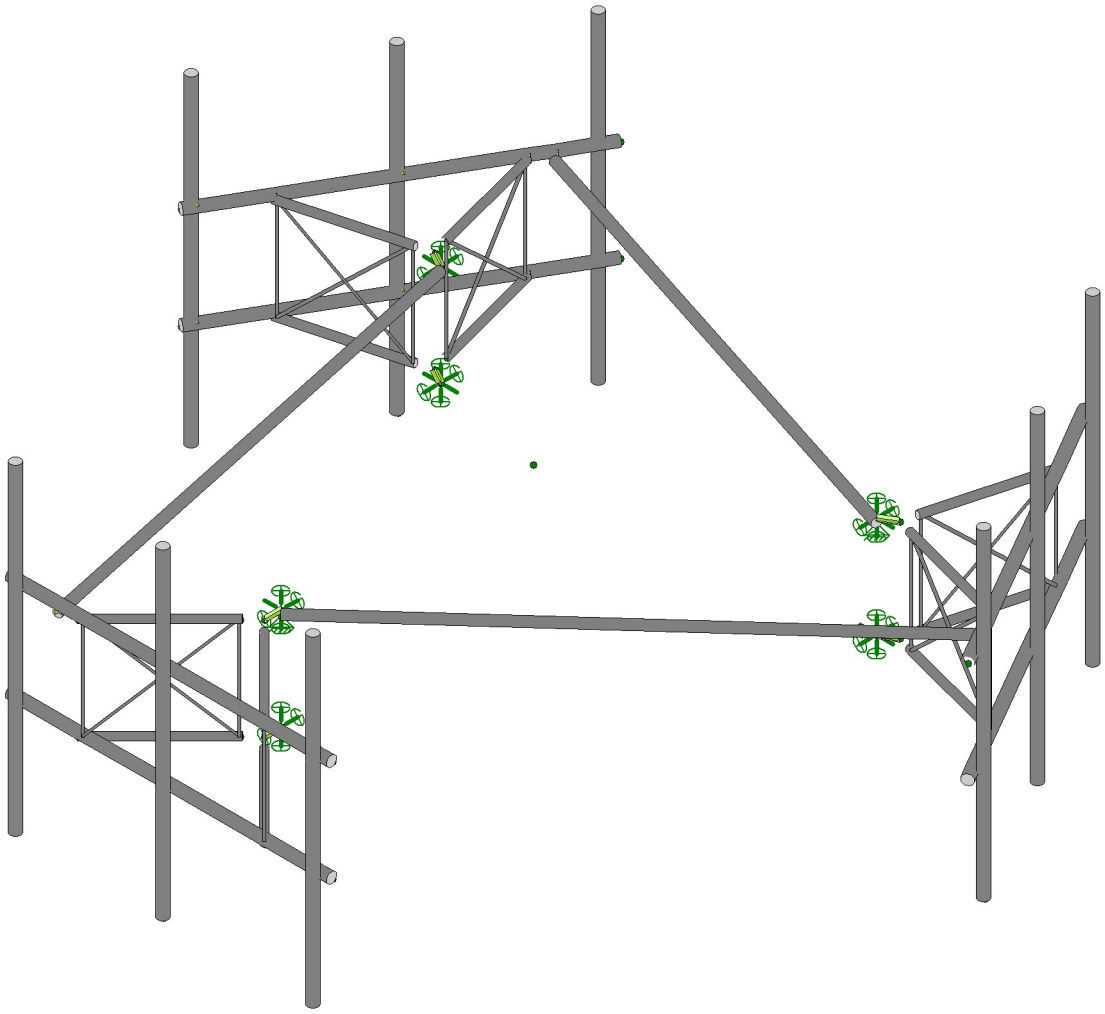
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MTC3975083.
2. In order to install the tieback on the tower leg a new 2.375" O.D, sch.40, 14-ft long pipe will be needed on each sector. Tieback connection point needs to be within 25% ends of the tower leg.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	841294	SK - 1
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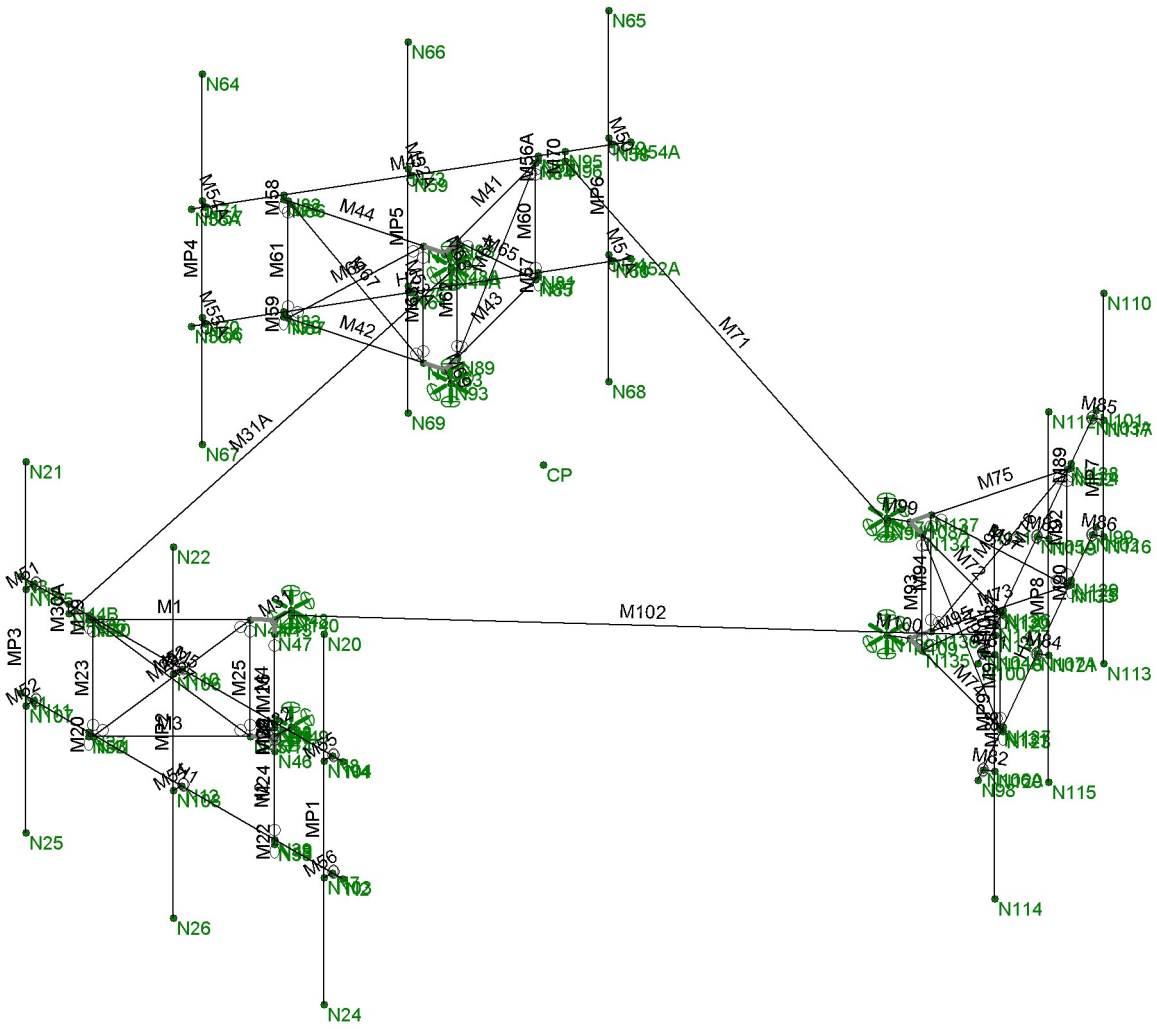
204654		841294_loaded.r3d



Envelope Only Solution

Trylon	841294	SK - 2
AM		Mar 14, 2022 at 3:11 PM
204654		841294_loaded.r3d

APPENDIX B

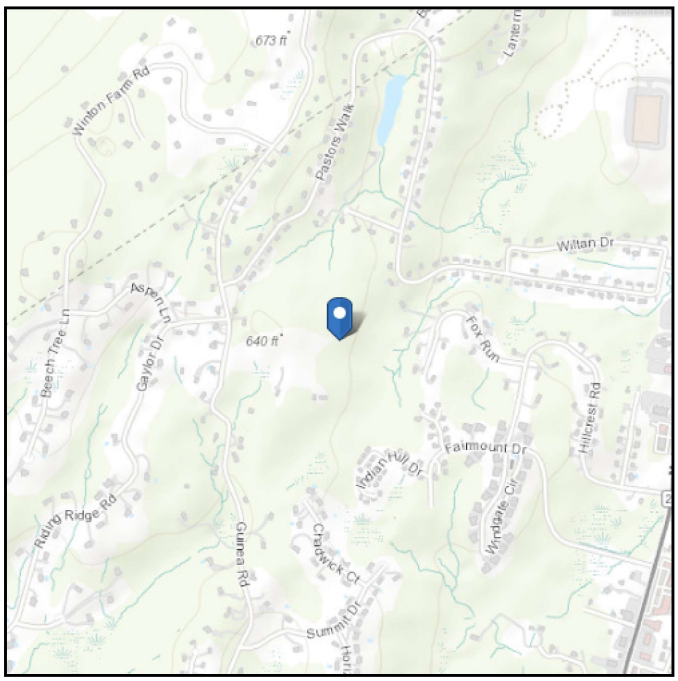
SOFTWARE INPUT CALCULATIONS

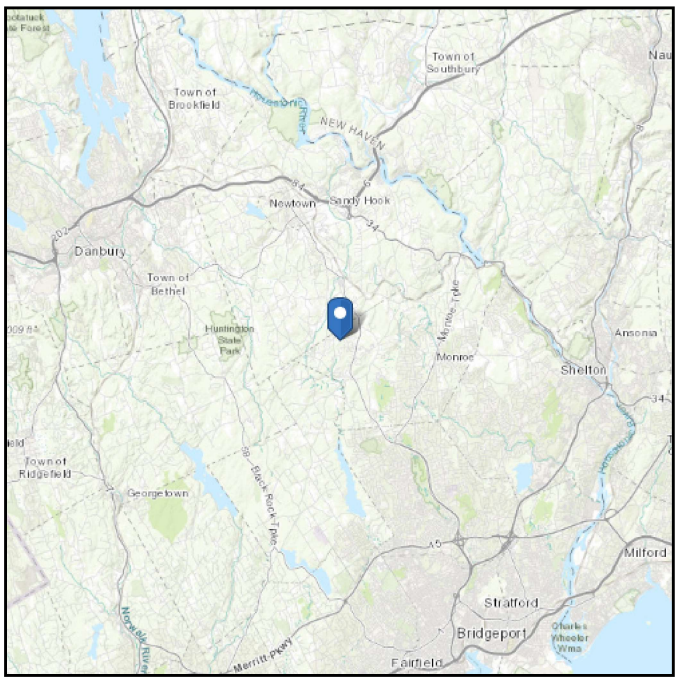
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 583.08 ft (NAVD 88)
Latitude: 41.341856
Longitude: -73.274522





Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph

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

Date Accessed: Mon Mar 14 2022

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

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

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

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Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	204654
Carrier Site ID:	NJJER01094A
Carrier Site Name:	CT-CCI-T-841294

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	Connecticut State Building
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	165.0	ft.
Number of Sectors:	3	--
Structure Type:	Self Support Tower	--
Structure Height:	244.9	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	583.08	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.14	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	42.42	psf
Ground Elevation Factor (K_e):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	6.99	psf
Mount Ice Thickness (t_{iz}):	1.76	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	76.36	psf
Round Member Pressure:	45.82	psf
Ice Wind Pressure:	7.55	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.215	g
1 Second Accel (S_1):	0.065	g
Short Period Des. (S_{DS}):	0.23	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.11	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
MX08FRO665-21	3	165	No Ice	8.01	3.21	82.50
--	--	--	w/ Ice	9.62	4.62	290.16
TA08025-B605	3	165	No Ice	1.96	1.13	75.00
--	--	--	w/ Ice	2.40	1.48	76.10
TA08025-B604	3	165	No Ice	1.96	0.98	63.90
--	--	--	w/ Ice	2.40	1.32	71.45
RDIDC-9181-PF-48	1	165	No Ice	2.01	1.17	21.85
--	--	--	w/ Ice	2.45	1.53	75.01
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	165	1.00	1.14	0.95	1.76	42.42	6.79
TA08025-B605	3	165	1.00	1.14	0.95	1.76	42.42	6.79
TA08025-B604	3	165	1.00	1.14	0.95	1.76	42.42	6.79
RDIDC-9181-PF-48	1	165	1.00	1.14	0.95	1.76	42.42	6.79

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	3	No Ice	305.84	168.38	260.02	122.56	260.02	168.38
--	--	w/ Ice	58.78	35.88	51.14	28.24	51.14	35.88
TA08025-B605	3	No Ice	74.97	51.09	67.01	43.13	67.01	51.09
--	--	w/ Ice	14.64	10.44	13.24	9.04	13.24	10.44
TA08025-B604	3	No Ice	74.97	46.84	65.59	37.46	65.59	46.84
--	--	w/ Ice	14.64	9.70	12.99	8.05	12.99	9.70
RDIDC-9181-PF-48	1	No Ice	76.82	52.66	68.76	44.60	68.76	52.66
--	--	w/ Ice	14.97	10.77	13.57	9.36	13.57	10.77
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
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		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

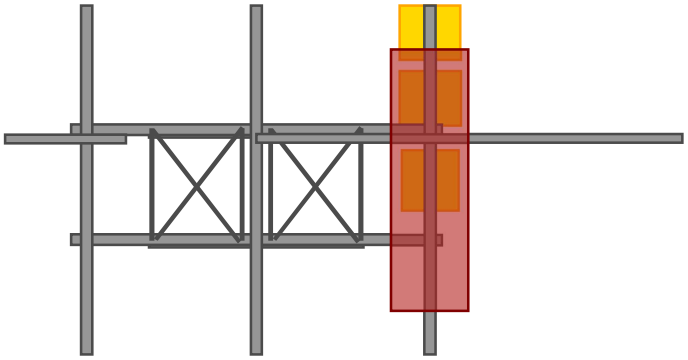
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	3	165	82.5	11.35
TA08025-B605	3	165	75	10.32
TA08025-B604	3	165	63.9	8.79
RDIDC-9181-PF-48	1	165	21.85	3.01

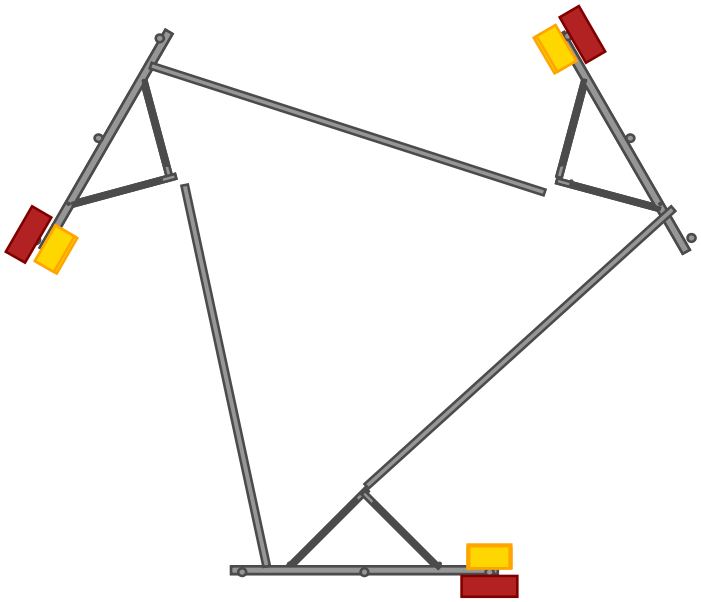
ELEVATION VIEW



MP3 MP2 MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
MX08FRO665-21	3	165	MP1/MP4/MP7	0/120/240
TA08025-B605	3	165	MP1/MP4/MP7	0/120/240
TA08025-B604	3	165	MP1/MP4/MP7	0/120/240
RDIDC-9181-PF-48	1	165	MP1	0

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr. C - 46	29000	11154	.3	.65	.49	46	1.3	62	1.4
9	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.3	65	1.4

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design ...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE 2.5	PIPE 2.5	Beam	None	A500 Gr. C - 46	Typical	1.61	1.45	1.45	2.89
2	PIPE 1.5	PIPE 1.5	Beam	None	A500 Gr. C - 46	Typical	.749	.293	.293	.586
3	PIPE 2.0	PIPE 2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
4	SR 5/8	SR 5/8	Beam	None	A529 Gr. 50	Typical	.307	.007	.007	.015
5	PIPE_3.0	PIPE_3.0	Beam	None	A500 Gr. C - 46	Typical	2.07	2.85	2.85	5.69

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design ...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	SR 1/2"	SR 1/2"	Beam	None	A529 Gr. 50	Typical	.196	.003	.003	.006

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8C U1.25X057	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N13						
2	N14						
3	N48	Reaction	Reaction	Reaction	Reaction		Reaction
4	N49	Reaction	Reaction	Reaction	Reaction		Reaction
5	N44A	Reaction	Reaction	Reaction			
6	N47A	Reaction	Reaction	Reaction	Reaction		Reaction
7	N48A	Reaction	Reaction	Reaction	Reaction		Reaction
8	N62						
9	N63						
10	N93	Reaction	Reaction	Reaction	Reaction		Reaction
11	N94	Reaction	Reaction	Reaction			
12	N108A						
13	N109						
14	N139	Reaction	Reaction	Reaction	Reaction		Reaction
15	N140	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL			-1		13			
2	Structure Wind X	WLX						93		
3	Structure Wind Y	WLY						93		
4	Wind Load 0 AZI	WLX					26			
5	Wind Load 30 AZI	None					26			
6	Wind Load 45 AZI	None					26			
7	Wind Load 60 AZI	None					26			
8	Wind Load 90 AZI	WLY					26			
9	Wind Load 120 AZI	None					26			
10	Wind Load 135 AZI	None					26			
11	Wind Load 150 AZI	None					26			
12	Ice Weight	OL1					13	93		
13	Ice Structure Wind X	OL2						93		
14	Ice Structure Wind Y	OL3						93		
15	Ice Wind Load 0 AZI	OL2					26			
16	Ice Wind Load 30 AZI	None					26			
17	Ice Wind Load 45 AZI	None					26			
18	Ice Wind Load 60 AZI	None					26			
19	Ice Wind Load 90 AZI	OL3					26			
20	Ice Wind Load 120 AZI	None					26			
21	Ice Wind Load 135 AZI	None					26			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
22	Ice Wind Load 150 AZ I	None					26			
23	Seismic Load X	ELX	-.138				13			
24	Seismic Load Y	ELY		-.138			13			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (...	None					1			
35	Maintenance Load 2 (...	None					1			
36	Maintenance Load 3 (...	None					1			
37	Maintenance Load 4 (...	None					1			
38	Maintenance Load 5 (...	None					1			
39	Maintenance Load 6 (...	None					1			
40	Maintenance Load 7 (...	None					1			
41	Maintenance Load 8 (...	None					1			
42	Maintenance Load 9 (...	None					1			

Load Combinations

	Description	Sol..	P.D..	S.R..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1...	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1...	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1...	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1...	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1...	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1...	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1...	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1...	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1...	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1...	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1...	Yes	Y		DL	.9	2	-1	3		4	-1														

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
27	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1...	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1...	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1...	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1...	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1...	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2S...	Yes	Y		DL	1.246	23	1	24																	
51	(1.2+0.2S...	Yes	Y		DL	1.246	23	.866	24	.5																
52	(1.2+0.2S...	Yes	Y		DL	1.246	23	.707	24	.707																
53	(1.2+0.2S...	Yes	Y		DL	1.246	23	.5	24	.866																
54	(1.2+0.2S...	Yes	Y		DL	1.246	23		24	1																
55	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.5	24	.866																
56	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.707	24	.707																
57	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.866	24	.5																
58	(1.2+0.2S...	Yes	Y		DL	1.246	23	-1	24																	
59	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.866	24	-.5																
60	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.707	24	-.707																
61	(1.2+0.2S...	Yes	Y		DL	1.246	23	-.5	24	-.866																
62	(1.2+0.2S...	Yes	Y		DL	1.246	23		24	-1																
63	(1.2+0.2S...	Yes	Y		DL	1.246	23	.5	24	-.866																
64	(1.2+0.2S...	Yes	Y		DL	1.246	23	.707	24	-.707																
65	(1.2+0.2S...	Yes	Y		DL	1.246	23	.866	24	-.5																
66	(0.9-0.2Sd...	Yes	Y		DL	.854	23	1	24																	
67	(0.9-0.2Sd...	Yes	Y		DL	.854	23	.866	24	.5																
68	(0.9-0.2Sd...	Yes	Y		DL	.854	23	.707	24	.707																
69	(0.9-0.2Sd...	Yes	Y		DL	.854	23	.5	24	.866																
70	(0.9-0.2Sd...	Yes	Y		DL	.854	23		24	1																
71	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.5	24	.866																
72	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.707	24	.707																
73	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.866	24	.5																
74	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-1	24																	
75	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.866	24	-.5																
76	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.707	24	-.707																
77	(0.9-0.2Sd...	Yes	Y		DL	.854	23	-.5	24	-.866																
78	(0.9-0.2Sd...	Yes	Y		DL	.854	23		24	-1																

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
79	(0.9-0.2Sd..	Yes	Y		DL	.854	23	.5	24	-.866																
80	(0.9-0.2Sd..	Yes	Y		DL	.854	23	.707	24	-.707																
81	(0.9-0.2Sd..	Yes	Y		DL	.854	23	.866	24	-.5																
82	1.2DL + 1...	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1...	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1...	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1...	Yes	Y		DL	1.2	31	1.5																		
89	1.2DL + 1...	Yes	Y		DL	1.2	32	1.5																		
90	1.2DL + 1...	Yes	Y		DL	1.2	33	1.5																		
91	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058												
92	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058												
93	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058												
94	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058												
95	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058												
96	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	.05	9	.058												
97	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	.041	10	.058												
98	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058												
99	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.058	3		4	-.058												
100	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.029	5	-.058												
101	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	-.041	6	-.058												
102	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	-.05	7	-.058												
103	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2		3	-.058	8	-.058												
104	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.058												
105	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.041	10	-.058												
106	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.029	11	-.058												
107	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058												
108	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058												
109	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058												
110	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058												
111	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058												
112	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	.05	9	.058												
113	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	.041	10	.058												
114	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058												
115	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.058	3		4	-.058												
116	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.029	5	-.058												
117	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	-.041	6	-.058												
118	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	-.05	7	-.058												
119	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2		3	-.058	8	-.058												
120	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.058												
121	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.041	10	-.058												
122	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.029	11	-.058												
123	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058												
124	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058												
125	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058												
126	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058												
127	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058												
128	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	.05	9	.058												
129	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	.041	10	.058												
130	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058												

Load Combinations (Continued)

	Description	Sol..	P..	D..	S..	R..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
131	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	-.058	3		4	-.058											
132	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	-.05	3	-.029	5	-.058											
133	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	-.041	3	-.041	6	-.058											
134	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	-.029	3	-.05	7	-.058											
135	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2		3	-.058	8	-.058											
136	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	.029	3	-.05	9	-.058											
137	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	.041	3	-.041	10	-.058											
138	1.2DL + 1...	Yes	Y				DL	1.2	36	1.5	2	.05	3	-.029	11	-.058											
139	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.058	3		4	.058											
140	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.05	3	.029	5	.058											
141	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.041	3	.041	6	.058											
142	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.029	3	.05	7	.058											
143	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2		3	.058	8	.058											
144	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.029	3	.05	9	.058											
145	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.041	3	.041	10	.058											
146	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.05	3	.029	11	.058											
147	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.058	3		4	-.058											
148	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058											
149	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058											
150	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058											
151	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2		3	-.058	8	-.058											
152	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.029	3	-.05	9	-.058											
153	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.041	3	-.041	10	-.058											
154	1.2DL + 1...	Yes	Y				DL	1.2	37	1.5	2	.05	3	-.029	11	-.058											
155	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.058	3		4	.058											
156	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.05	3	.029	5	.058											
157	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.041	3	.041	6	.058											
158	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.029	3	.05	7	.058											
159	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2		3	.058	8	.058											
160	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.029	3	.05	9	.058											
161	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.041	3	.041	10	.058											
162	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.05	3	.029	11	.058											
163	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.058	3		4	-.058											
164	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058											
165	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058											
166	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058											
167	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2		3	-.058	8	-.058											
168	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.029	3	-.05	9	-.058											
169	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.041	3	-.041	10	-.058											
170	1.2DL + 1...	Yes	Y				DL	1.2	38	1.5	2	.05	3	-.029	11	-.058											
171	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	.058	3		4	.058											
172	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	.05	3	.029	5	.058											
173	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	.041	3	.041	6	.058											
174	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	.029	3	.05	7	.058											
175	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2		3	.058	8	.058											
176	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.029	3	.05	9	.058											
177	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.041	3	.041	10	.058											
178	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.05	3	.029	11	.058											
179	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.058	3		4	-.058											
180	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058											
181	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058											
182	1.2DL + 1...	Yes	Y				DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058											

Load Combinations (Continued)

	Description	Sol..	P..	D..	S..	R..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
183	1.2DL + 1...	Yes	Y			DL	1.2	39	1.5	2		3	-.058	8	-.058													
184	1.2DL + 1...	Yes	Y			DL	1.2	39	1.5	2	.029	3	-.05	9	-.058													
185	1.2DL + 1...	Yes	Y			DL	1.2	39	1.5	2	.041	3	-.041	10	-.058													
186	1.2DL + 1...	Yes	Y			DL	1.2	39	1.5	2	.05	3	-.029	11	-.058													
187	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.058	3		4	.058													
188	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.05	3	.029	5	.058													
189	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.041	3	.041	6	.058													
190	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.029	3	.05	7	.058													
191	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2		3	.058	8	.058													
192	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.029	3	.05	9	.058													
193	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.041	3	.041	10	.058													
194	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.05	3	.029	11	.058													
195	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.058	3		4	-.058													
196	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.05	3	-.029	5	-.058													
197	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.041	3	-.041	6	-.058													
198	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	-.029	3	-.05	7	-.058													
199	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2		3	-.058	8	-.058													
200	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.029	3	-.05	9	-.058													
201	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.041	3	-.041	10	-.058													
202	1.2DL + 1...	Yes	Y			DL	1.2	40	1.5	2	.05	3	-.029	11	-.058													
203	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.058	3		4	.058													
204	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.05	3	.029	5	.058													
205	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.041	3	.041	6	.058													
206	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.029	3	.05	7	.058													
207	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2		3	.058	8	.058													
208	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.029	3	.05	9	.058													
209	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.041	3	.041	10	.058													
210	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.05	3	.029	11	.058													
211	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.058	3		4	-.058													
212	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.05	3	-.029	5	-.058													
213	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.041	3	-.041	6	-.058													
214	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	-.029	3	-.05	7	-.058													
215	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2		3	-.058	8	-.058													
216	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.029	3	-.05	9	-.058													
217	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.041	3	-.041	10	-.058													
218	1.2DL + 1...	Yes	Y			DL	1.2	41	1.5	2	.05	3	-.029	11	-.058													
219	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.058	3		4	.058													
220	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.05	3	.029	5	.058													
221	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.041	3	.041	6	.058													
222	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.029	3	.05	7	.058													
223	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2		3	.058	8	.058													
224	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.029	3	.05	9	.058													
225	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.041	3	.041	10	.058													
226	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.05	3	.029	11	.058													
227	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.058	3		4	-.058													
228	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.05	3	-.029	5	-.058													
229	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.041	3	-.041	6	-.058													
230	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	-.029	3	-.05	7	-.058													
231	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2		3	-.058	8	-.058													
232	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.029	3	-.05	9	-.058													
233	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.041	3	-.041	10	-.058													
234	1.2DL + 1...	Yes	Y			DL	1.2	42	1.5	2	.05	3	-.029	11	-.058													

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N48	max	684.829	18	607.485	94	944.51	42	561.006	138	0	234	262.489	96
2		min	-2277.698	41	-1320.031	134	231.434	67	-235.068	98	0	1	-544.664	136
3	N49	max	2101.204	34	1309.476	127	881.134	34	28.129	36	0	234	571.063	129
4		min	164.769	26	-595.198	103	224.168	75	-27.065	13	0	1	-287.267	32
5	N44A	max	611.976	25	163.934	24	81.216	48	0	234	0	234	0	234
6		min	-614.972	33	-164.54	32	18.39	71	0	1	0	1	0	1
7	N47A	max	2095.346	233	851.926	22	1116.722	199	801.264	199	0	234	250.775	198
8		min	-139.225	24	-1414.972	199	156.605	22	47.601	22	0	1	-666.822	222
9	N48A	max	1442.124	140	1836.551	36	1389.547	40	-258.747	19	0	234	377.45	139
10		min	-706.684	27	-532.678	29	362.061	66	-1043.947	42	0	1	-537.013	179
11	N93	max	522.418	171	-185.843	22	612.994	154	21.37	175	0	234	565.742	171
12		min	-1415.726	147	-1701.893	183	55.438	179	-264.788	167	0	1	-370.097	147
13	N94	max	130.27	11	540.015	11	81.153	42	0	234	0	234	0	234
14		min	-129.119	19	-536.025	19	18.396	66	0	1	0	1	0	1
15	N139	max	-137.285	187	1372.904	191	930.59	49	496.827	49	0	234	687.114	230
16		min	-2074.019	227	-72.937	30	200.902	30	78.556	199	0	1	-268.269	21
17	N140	max	396.2	6	398.38	30	81.131	37	0	234	0	234	0	234
18		min	-394.625	30	-399.924	6	18.397	77	0	1	0	1	0	1
19	Totals:	max	2711.034	2	2565.421	6	5513.395	35						
20		min	-2711.031	26	-2565.421	14	1386.268	74						

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

	Member	Shape	Code Check	Loc...		Shear Check	Loc...		...	phi*P ...	phi*P ...	phi*M...	phi*M.....		Eqn
1	M24	SR 5/8	.540	17...	42	.014	30....		17	1728....	13815	134.4	134.4	1	H1-1a
2	M92	SR 5/8	.538	26.....		.014	0		5	1728....	13815	134.4	134.4	1	H1-1a
3	M94	SR 5/8	.523	24.....		.001	30....		3	1728....	13815	134.4	134.4	1	H1-1a
4	M61	SR 5/8	.445	28.....		.013	30....		9	1728....	13815	134.4	134.4	1	H1-1a
5	M29	SR 1/2"	.429	22...	36	.016	0		49	344.5...	8835....	73.632	73.632	1	H1-1a
6	M60	SR 5/8	.401	24.....		.014	30....		17	1728....	13815	134.4	134.4	1	H1-1a
7	M97	SR 1/2"	.400	22...	38	.007	0		6	344.5...	8835....	73.632	73.632	1	H1-1a
8	M62	SR 5/8	.399	26.....		.001	30....		2	1728....	13815	134.4	134.4	1	H1-1a
9	M23	SR 5/8	.395	26...	98	.015	30....		9	1728....	13815	134.4	134.4	1	H1-1a
10	M26	SR 5/8	.388	17...	42	.001	30....		17	1728....	13815	134.4	134.4	1	H1-1a
11	M25	SR 5/8	.361	17...	42	.001	30....		9	1728....	13815	134.4	134.4	1	H1-1a
12	M96	SR 1/2"	.344	24.....		.012	0		43	344.5...	8835....	73.632	73.632	1	H1-1a
13	M66	SR 1/2"	.342	22...	34	.008	0		42	344.5...	8835....	73.632	73.632	1	H1-1a
14	M91	SR 5/8	.326	30.....		.014	0		13	1728....	13815	134.4	134.4	1	H1-1a
15	M73	PIPE 1.5	.294	34.....		.096	.725		...	23772...	31008...	1452....	1452....	1	H1-1b
16	M2	PIPE 1.5	.294	34...	49	.165	.725		34	23772...	31008...	1452....	1452....	1	H1-1b
17	M75	PIPE 1.5	.283	34.....		.101	34....		...	23772...	31008...	1452....	1452....	1	H1-1b
18	M1	PIPE 1.5	.273	34...	42	.148	34....		97	23772...	31008...	1452....	1452....	1	H1-1b
19	M3	PIPE 1.5	.268	34...	48	.124	.725		92	23772...	31008...	1452....	1452....	1	H1-1b
20	M4	PIPE 1.5	.266	34...	42	.209	34....		...	23772...	31008...	1452....	1452....	1	H1-1b
21	M65	SR 1/2"	.250	22.....		.007	0		11	344.5...	8835....	73.632	73.632	1	H1-1a
22	M28	SR 1/2"	.249	22.....		.013	44....		38	344.5...	8835....	73.632	73.632	1	H1-1a
23	M43	PIPE 1.5	.222	34.....		.076	34....		...	23772...	31008...	1452....	1452....	1	H1-1b
24	M41	PIPE 1.5	.215	34.....		.071	34....		...	23772...	31008...	1452....	1452....	1	H1-1b
25	H1	PIPE 2.5	.172	76	...	.057	76		...	45255...	66654	4726.5	4726.5	...	H1-1b
26	M42	PIPE 1.5	.171	1.0.....		.103	.725		...	23772...	31008...	1452....	1452....	...	H1-1b

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	...	Shear Check	Loc...	...	phi*P ...	phi*P ...	phi*M...	phi*M.....	Eqn
27	H2	PIPE_2.5	.168	76	...	.056	76	...	45255...	66654	4726.5	4726.5	...	H1-1b
28	H3	PIPE_2.5	.167	76	...	.056	76	...	45255...	66654	4726.5	4726.5	...	H1-1b
29	M5	PIPE_2.5	.161	76	...	.067	20	17	45255...	66654	4726.5	4726.5	...	H1-1b
30	M76	PIPE_2.5	.157	76	...	.065	20	6	45255...	66654	4726.5	4726.5	...	H1-1b
31	M45	PIPE_2.5	.157	76	...	.063	20	11	45255...	66654	4726.5	4726.5	...	H1-1b
32	M74	PIPE_1.5	.128	1.0...	....	.088	34....	42	23772...	31008...	1452....	1452....	....	H1-1b
33	M44	PIPE_1.5	.123	1.0...	....	.182	34....	...	23772...	31008...	1452....	1452....	....	H1-1b
34	M71	PIPE_2.0	.117	74....	34	.007	0	42	6384....	42228	2459....	2459....	....	H1-1b
35	M31A	PIPE_2.0	.116	74....	39	.007	148...	46	6384....	42228	2459....	2459....	....	H1-1b
36	M102	PIPE_2.0	.116	74....	45	.007	148...	44	6384....	42228	2459....	2459....	....	H1-1b
37	MP4	PIPE_2.5	.110	33	5	.029	33	6	33487...	66654	4726.5	4726.5	1	H1-1b
38	MP7	PIPE_2.5	.110	33	15	.028	33	16	33487...	66654	4726.5	4726.5	...	H1-1b
39	MP1	PIPE_2.5	.109	33	10	.025	33	11	33487...	66654	4726.5	4726.5	...	H1-1b
40	M72	PIPE_1.5	.092	1.0...	....	.145	34....	...	23772...	31008...	1452....	1452....	....	H1-1b
41	M93	SR 5/8	.080	30....	34	.001	30....	11	1728....	13815	134.4	134.4	1	H1-1...
42	M63	SR 5/8	.065	30....	....	.001	30....	10	1728....	13815	134.4	134.4	1	H1-1...
43	MP2	PIPE_2.5	.012	63	...	.037	33	17	33487...	66654	4726.5	4726.5	...	H1-1...
44	MP3	PIPE_2.5	.012	63	...	.038	33	17	33487...	66654	4726.5	4726.5	...	H1-1...
45	MP6	PIPE_2.5	.012	63	...	.034	33	11	33487...	66654	4726.5	4726.5	1	H1-1...
46	MP9	PIPE_2.5	.012	63	...	.036	33	6	33487...	66654	4726.5	4726.5	...	H1-1...
47	MP8	PIPE_2.5	.012	63	...	.035	33	5	33487...	66654	4726.5	4726.5	1	H1-1...
48	MP5	PIPE_2.5	.012	63	...	.033	33	10	33487...	66654	4726.5	4726.5	...	H1-1...
49	M95	SR 1/2"	.009	0	...	.010	0	42	344.5...	8835....	73.632	73.632	1	H1-1...
50	M64	SR 1/2"	.003	0	...	.002	0	6	344.5...	8835....	73.632	73.632	1	H1-1...
51	M27	SR 1/2"	.000	0	...	.007	44....	...	344.5...	8835....	73.632	73.632	1	H1-1a
52	M30	SR 1/2"	.000	0	...	.000	0	...	344.5...	8835....	73.632	73.632	1	H1-1a
53	M67	SR 1/2"	.000	0	...	.000	0	...	344.5...	8835....	73.632	73.632	1	H1-1a
54	M98	SR 1/2"	.000	0	...	.000	0	...	344.5...	8835....	73.632	73.632	1	H1-1a

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	phi*V...	phi*V...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

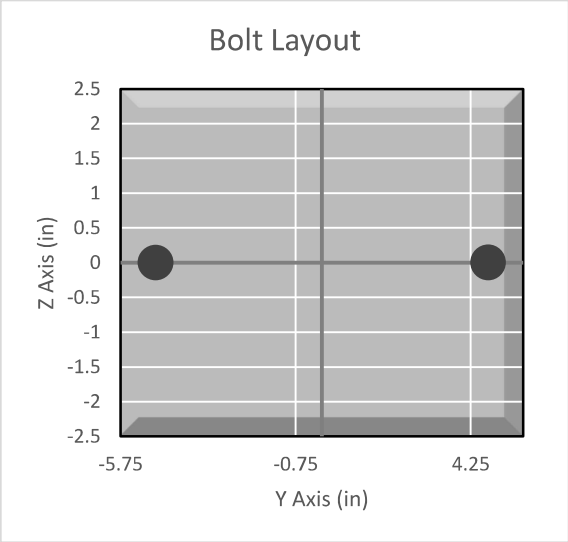
Analysis date: 14/03/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	204654
Carrier Site ID:	NJJER01094A
Carrier Site Name:	CT-CCI-T-841294

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.625	in
Grade:	SAE J429 Gr.	--
Yield Strength (Fy):	57	ksi
Ultimate Strength (Fu):	74	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	9.5	in



Connection Description
Standoff to Tower

Bolt Check*		
Tensile Capacity (ϕT_n):	12543.1	lbs
Shear Capacity (ϕV_n):	8513.6	lbs
Tension Force (T_u):	0.0	lbs
Shear Force (V_u):	1459.0	lbs
Tension Usage:	0.0%	--
Shear Usage:	16.3%	--
Interaction:	16.3%	Pass
Controlling Member:	M68	--
Controlling LC:	178	--

**Rating per TIA-222-H Section 15.5*

Slip Check*		
Sliding Capacity (ϕR_{ns}):	6547.2	lbs
Torsion Capacity (ϕR_{nr}):	2591.6	lb-ft
Sliding Force (V_{us}):	597.5	lbs
Torsional Force (T_{ur}):	666.4	lb-ft
Sliding Usage:	8.7%	--
Torsion Usage:	24.5%	--
Interaction:	26.0%	Pass
Controlling Member:	M99	--
Controlling LC:	220	--

**Rating per TIA-222-H Section 15.5*

Trylon

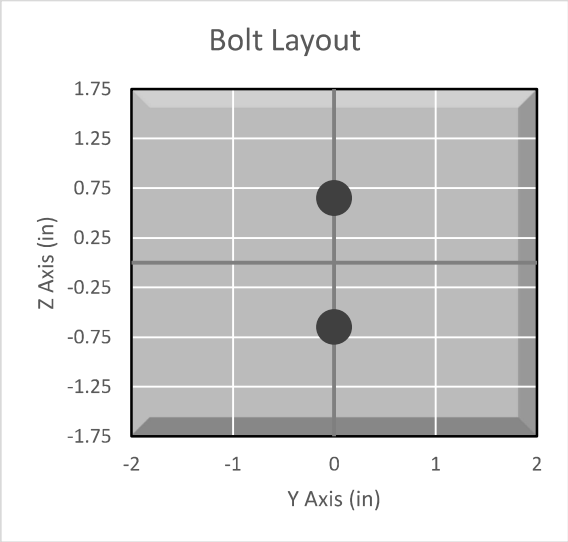
Analysis date: 14/03/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	204654
Carrier Site ID:	NJJER01094A
Carrier Site Name:	CT-CCI-T-841294

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	Yes	--
Connection Pipe Size:	9.5	in



Connection Description
Standoff to Tower

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	5531.0	lbs
Shear Force (V_u):	490.5	lbs
Tension Usage:	25.9%	--
Shear Usage:	3.4%	--
Interaction:	25.9%	Pass
Controlling Member:	M31	--
Controlling LC:	138	--

**Rating per TIA-222-H Section 15.5*

APPENDIX E

SUPPLEMENTAL DRAWINGS

NOTES:

1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENT INFO :https://www.cs-pat.com

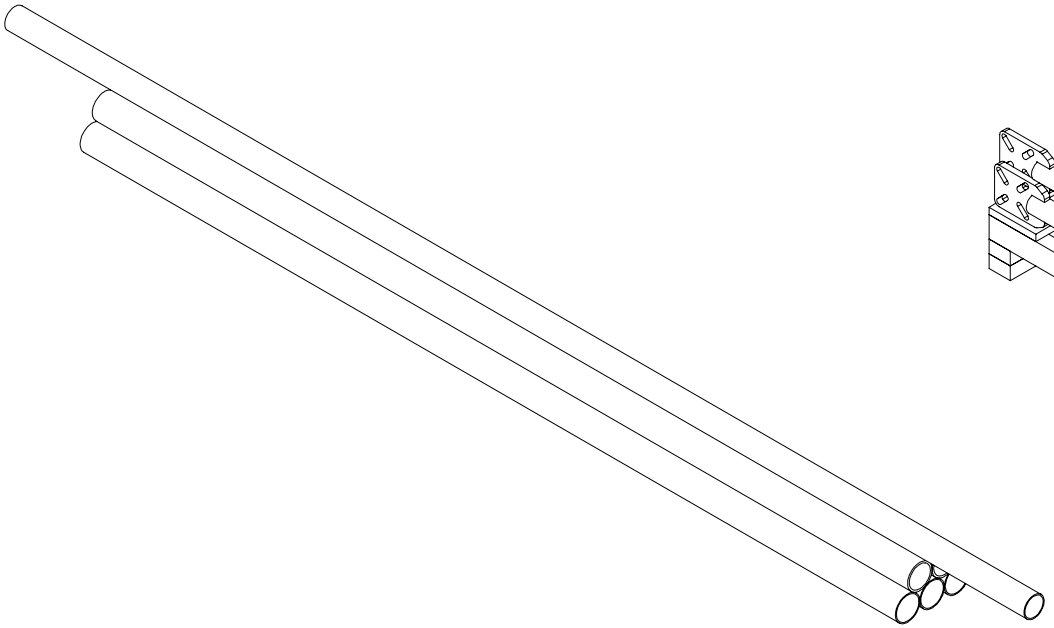
2.0 DESIGN NOTES

3.0 MANUFACTURING/SPECIAL REQUIREMENTS
- 3.1 TIGHTEN ALL BOLTS SECURING FLAT PLATES BY THE TURN-OF-NUT METHOD. TIGHTEN ALL U-BOLTS USING TURN-OF-NUT METHOD WITH ATTENTION TO LEAVE EQUAL DISTANCE AND EQUAL FORCE ON EACH LEG OF THE U-BOLT.

4.0 TEST

5.0 PACKAGING
- 5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005
- 5.2 PRINTED DOCUMENT TO BE PLACED INSIDE POLYBAG AND THEN IN SHIPPING CONTAINER
- 5.3 EXTRA HARDWARE MAY BE SUPPLIED, BAGGED AND SHIPPED.

REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10191PC	NEW RELEASED.	RJC	3/17/2021
B	14462PC	UPDATED PALLET60X32 WAS 48X32 AND WOOD CRATE CR171407 WAS CR2080A	MS1288	8/26/2021
C	40140041CMO	DELETED NOTE 2.1; UPDATED NOTE 3.1; UPDATED MODEL; ADDED NOTES FOR TOWER LEG IN SHEET 3	YX1027	12/17/2021



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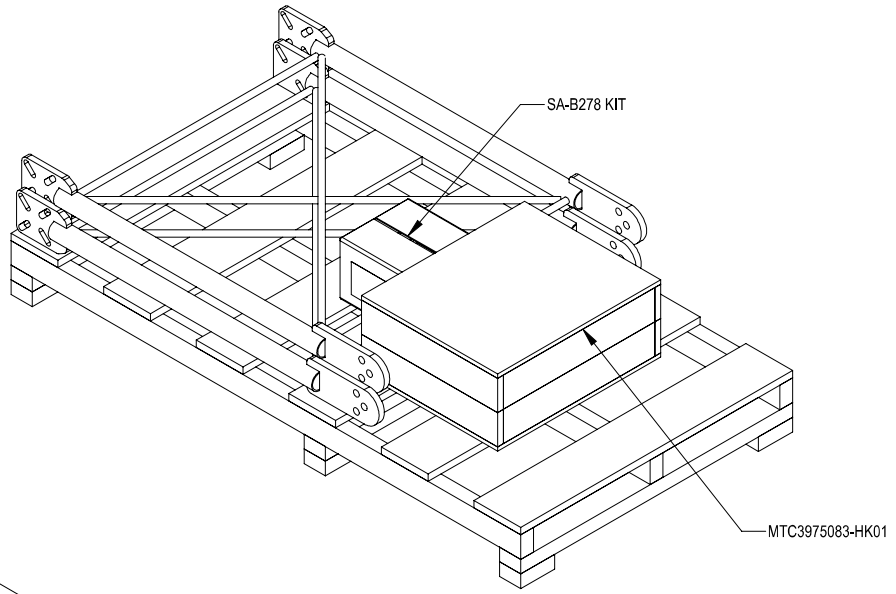


MTC3975083-PK01

DENSITY		lbs/in³
MASS	352.136	lbs
VOLUME	3288.712	in³
SURFACE AREA	19715.555	in²
HEIGHT		
LENGTH		
WIDTH		

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
0 PLACE X ± .25 | 2 PLACE .XX ± 0.06
1 PLACE .X ± 0.12 | ANGLES ± 2°

SAP MATERIAL MASTER: MTC3975083

FINISH: GALV A123

MATERIAL: SEE BOM

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y 14.5M-1994

	NAME	DATE
CE	XZ1054	03/02/2021
RW	YX1027	12/16/2021
AD	BCROSS	12/17/2021
RE	BCROSS	12/17/2021

ECN 10191PC

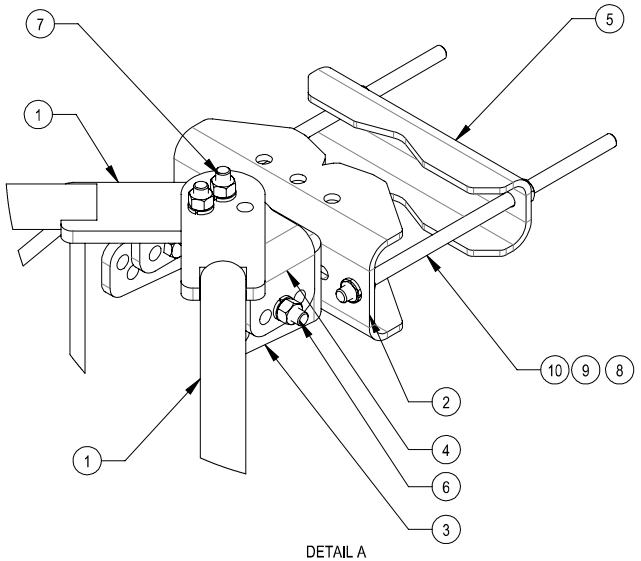
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SCALE: 1:8

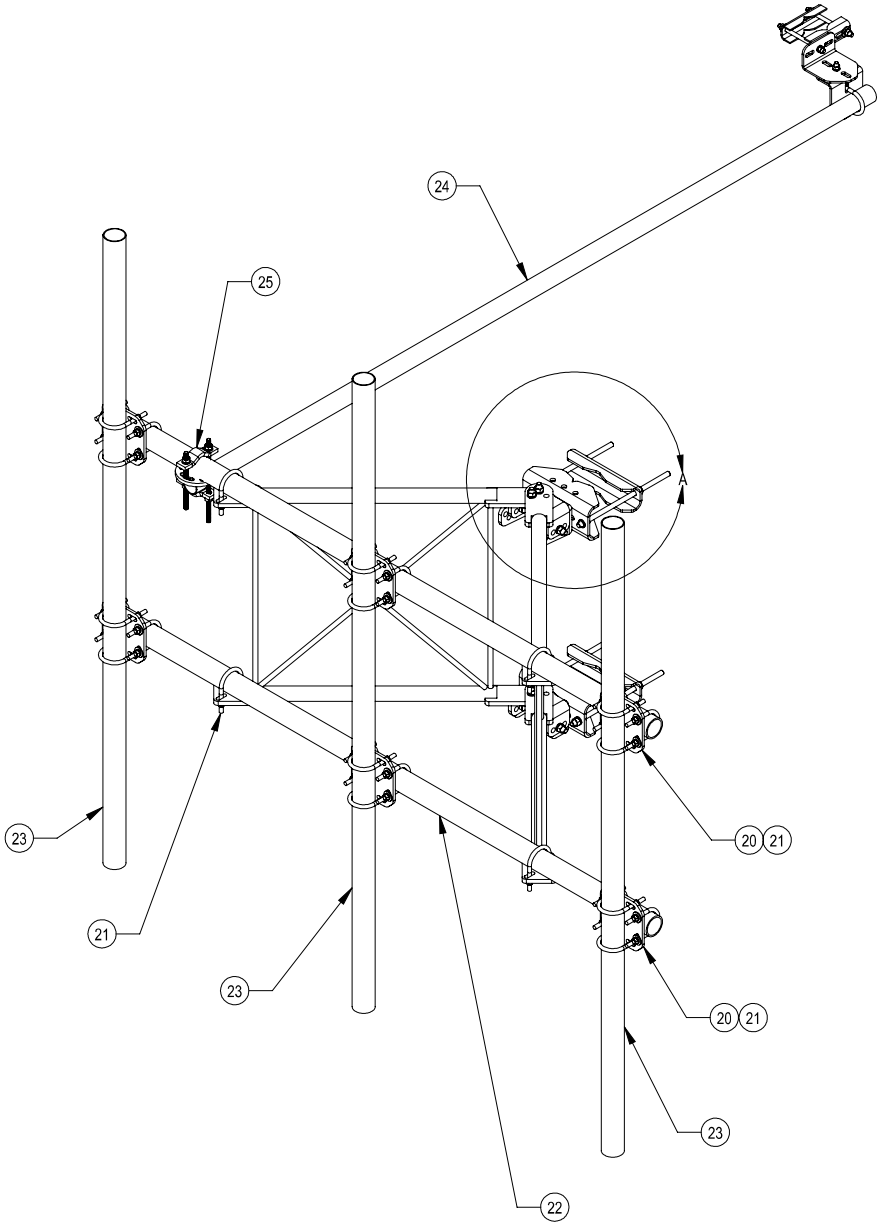
DOCUMENT NO.: MTC3975083

SIZE	Auth Group	INSL	MODEL			DRAWING			SHEET
			VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C			00	RE	B	00	RE	C	1 OF 7

NOTES:



DETAIL A
SCALE 1 : 4



BOM IS FOR REFERENCE ONLY, PART NUBMER SUBSTITUTIONS MAY BE MADE

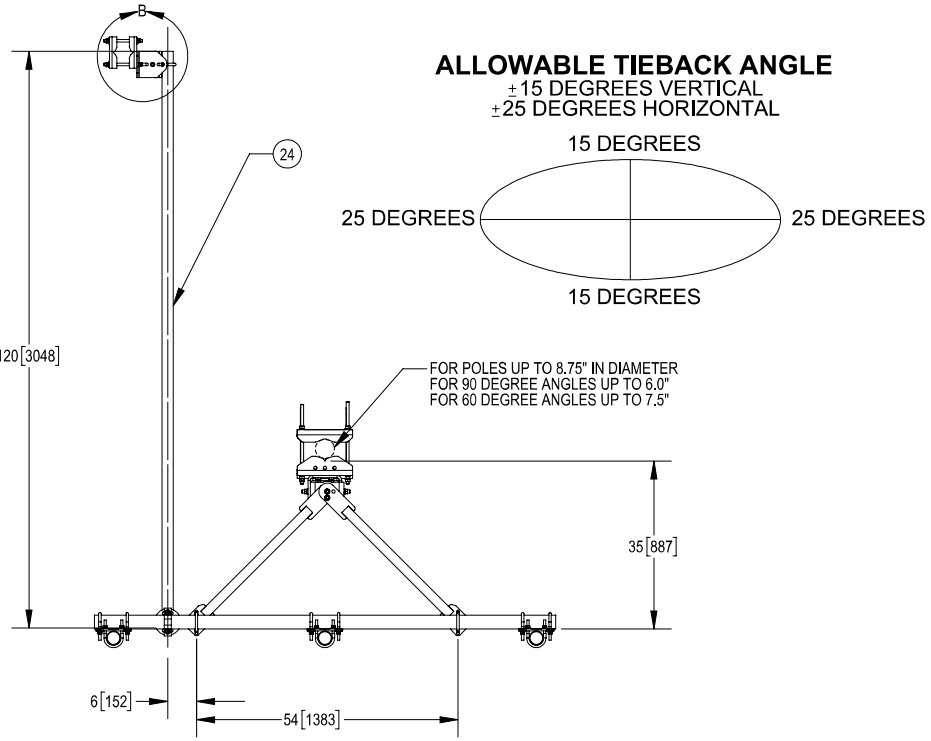
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	NOTE NO.
1	SFV01	WELDMENT, SF-V STANDOFF ARM	2	
2	MTC397522	CLAMP, FRONT MOUNTING	2	
3	SFV03	SFV TAPER BRACKET	1	
4	SFV02	SFV AZIMUTH BRACKET	3	
5	MTC397521	CLAMP, BACK	2	
6	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	
7	GB-05305	5/8" X 3" GALV BOLT KIT	4	
8	GWL-05	5/8" GALV LOCK WASHER	8	
9	GN-05	5/8" GALV HEX NUT	12	
10	MT-382-16	5/8" X 16" GALV THREADED ROD	4	
11	GWF04A	1/2" GALV FLAT WASHER (A325)	6	
12	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	1	
13	XAU01	ANGLE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	2	
14	SAB01	FORMED CLAMP	2	
15	MT-379-8	1/2" X 8" GALV THREADED ROD	2	
16	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	1	
17	GWF-04	1/2" GALV FLAT WASHER	52	
18	GWL-04	1/2" GALV LOCK WASHER	41	
19	GN-04	1/2" GALV HEX NUT	41	
20	XPU01	PLATE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	6	
21	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	28	
22	MT54696	Ø2.875" O.D. X 96 PIPE	2	
23	MT54696120	Ø2.88" X 96" GALV PIPE	3	
24	MT-651-120	2.375" OD X 120" PIPE	1	
25	XP-R	CROSSOVER PLATE, ROUND, UP TO 3.5" OD	1	

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

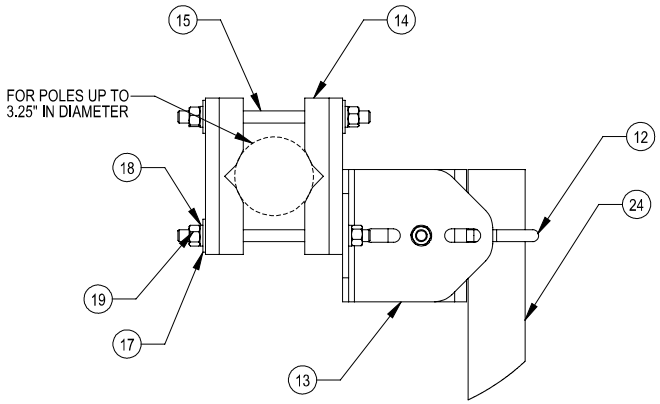
SIZE	SCALE	DOCUMENT NO.			
C	1:12	MTC3975083			
		DRAWING			SHEET
		VERSION	STATUS	REVISION	
		02	RE	C	2 OF 7

NOTES:

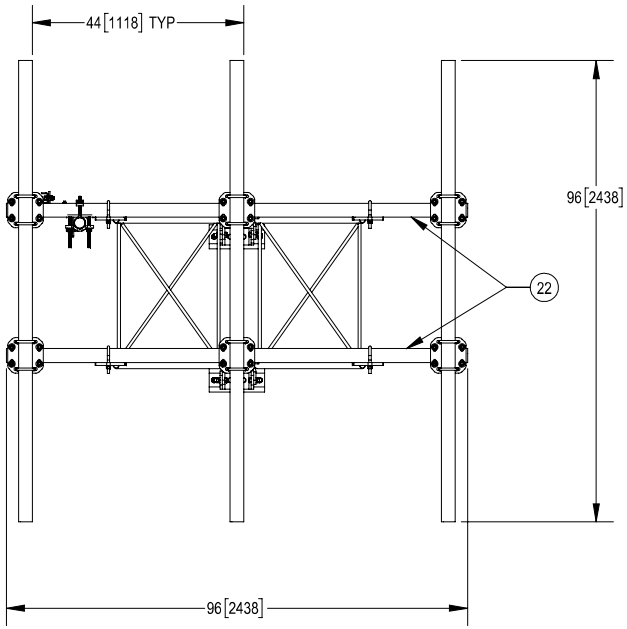


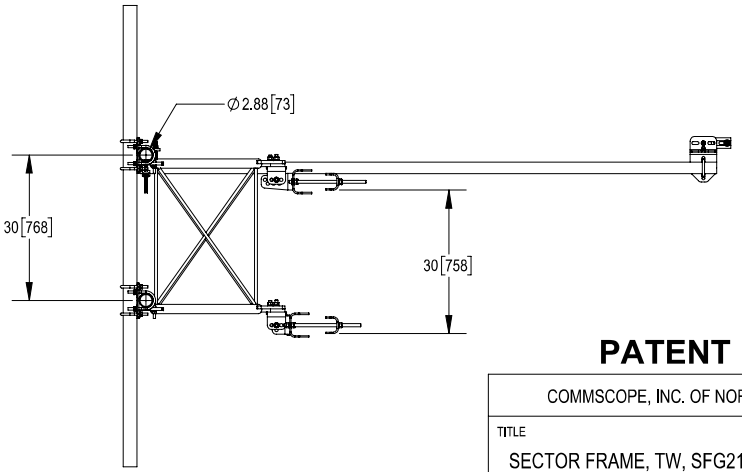
ALLOWABLE TIEBACK ANGLE

±15 DEGREES VERTICAL
±25 DEGREES HORIZONTAL



DETAIL B
SCALE 1 : 4



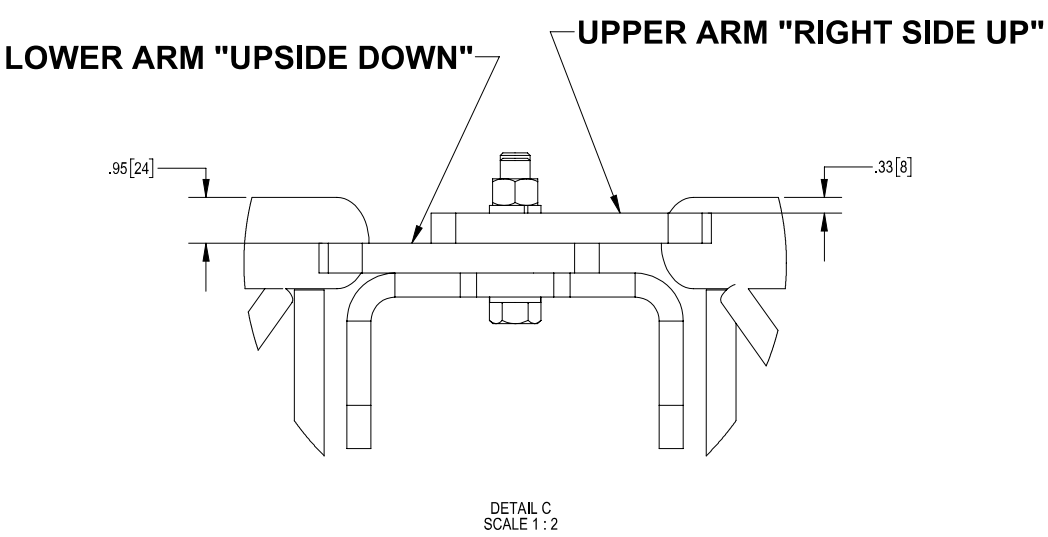


PATENT PENDING

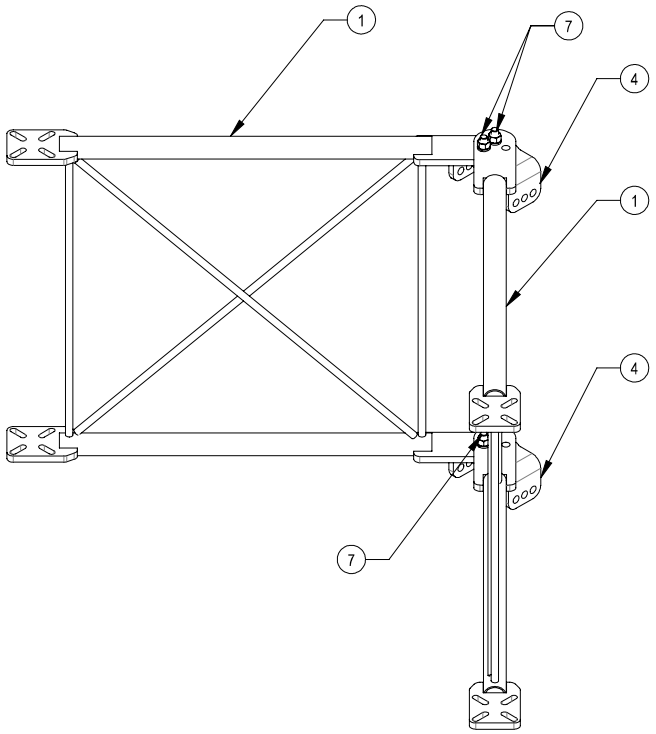
COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE: C	SCALE: 1:20	DOCUMENT NO.: MTC3975083	
		DRAWING VERSION: 02	STATUS: RE
		REVISION: C	SHEET: 3 OF 7

NOTES:

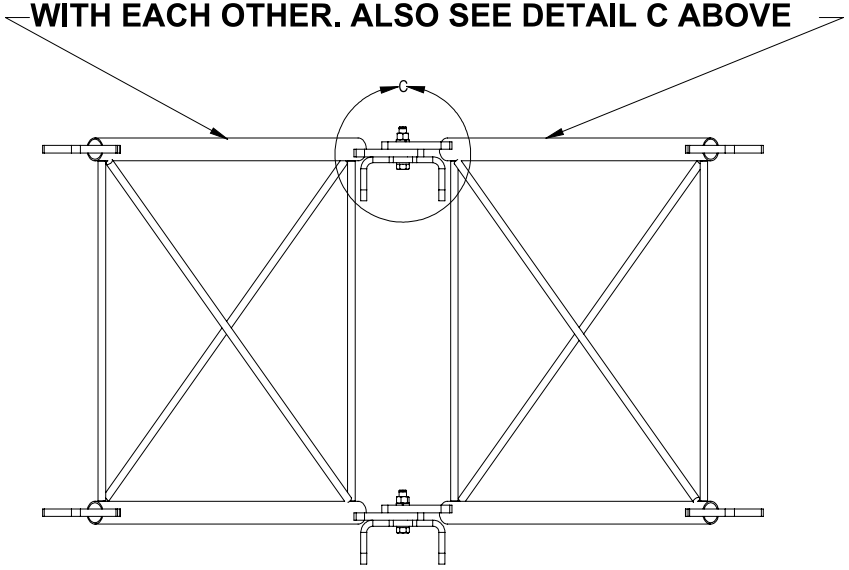
STEP1: ATTACH STANDOFF ARMS (SFV01) TO AZIMUTH BRACKETS (SFV02) USING BOLT KITS (GB-05305)

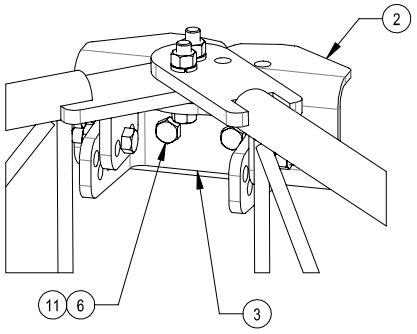


DETAIL C
SCALE 1 : 2



STANDOFF ARM ORIENTATION IS CRITICAL!
WHEN ASSEMBLED, ARMS SHOULD BE LEVEL WITH EACH OTHER. ALSO SEE DETAIL C ABOVE





ISO ROTATED VIEW

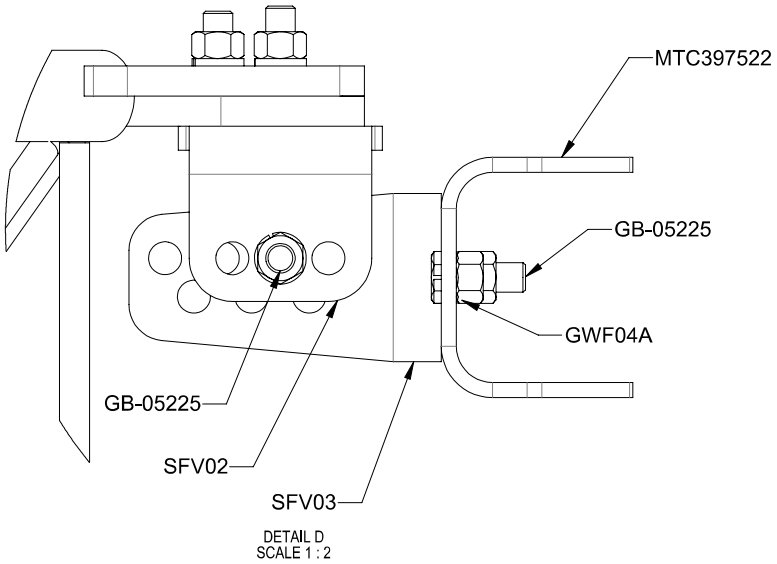
PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE: C	SCALE: 1:8	DOCUMENT NO.: MTC3975083	
		DRAWING: VERSION 02 / STATUS RE / REVISION C	SHEET: 4 OF 7

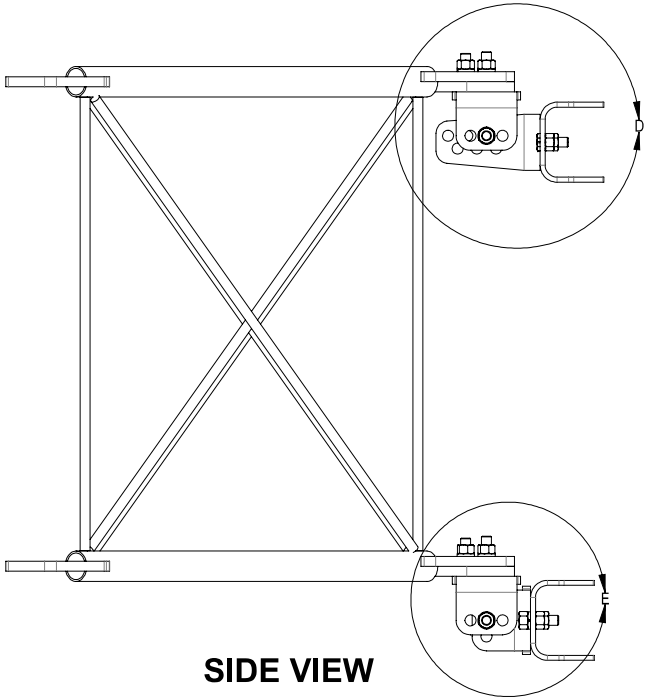
NOTES:

STEP 2A: ON TOP, ATTACH TAPER BRACKET (SFV03) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). SEE ISO ROTATED VIEW. ATTACH TAPER BRACKET (SFV03) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS (GB-05225).

STEP 2B: ON BOTTOM, ATTACH AZIMUTH BRACKET (SFV02) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). ATTACH AZIMUTH BRACKET (SFV02) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS(GB-05225).

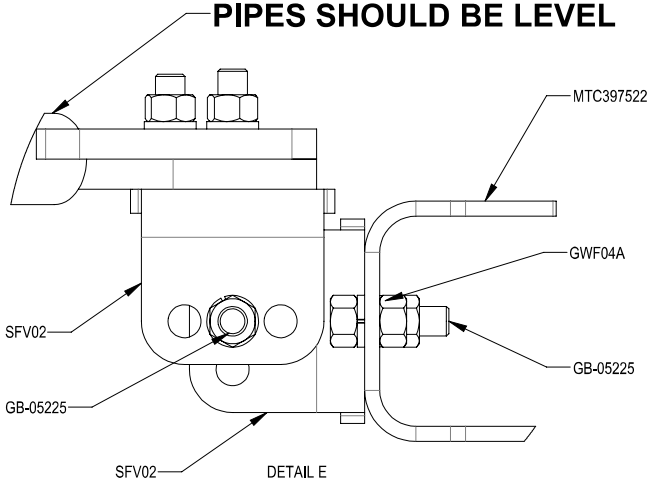


DETAIL D
SCALE 1 : 2

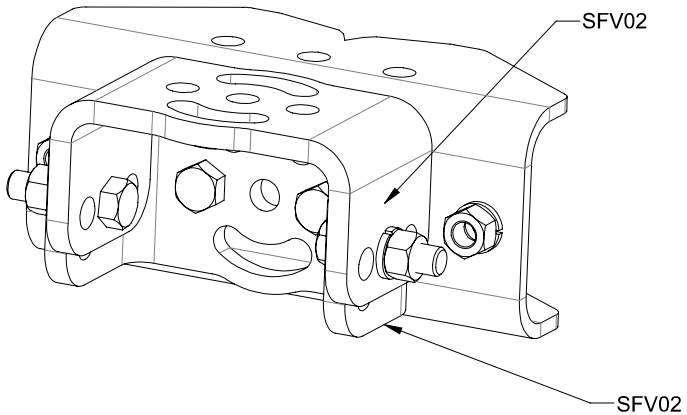


SIDE VIEW

STANDOFF ARM ORIENTATION IS CRITICAL! WHEN ASSEMBLED, PIPES SHOULD BE LEVEL



DETAIL E
SCALE 1 : 2



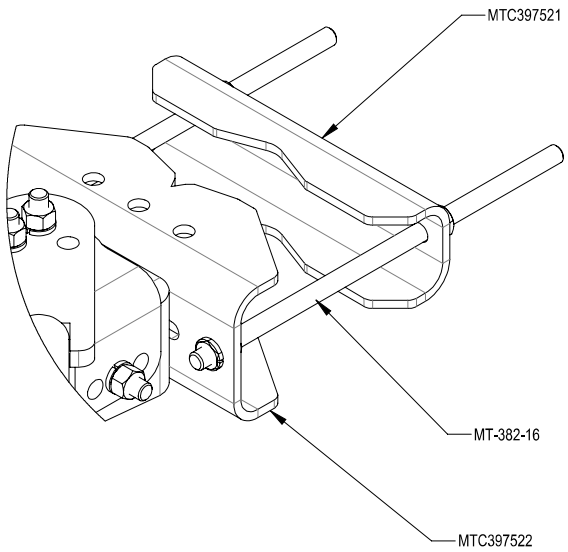
ISO ROTATED VIEW

PATENT PENDING

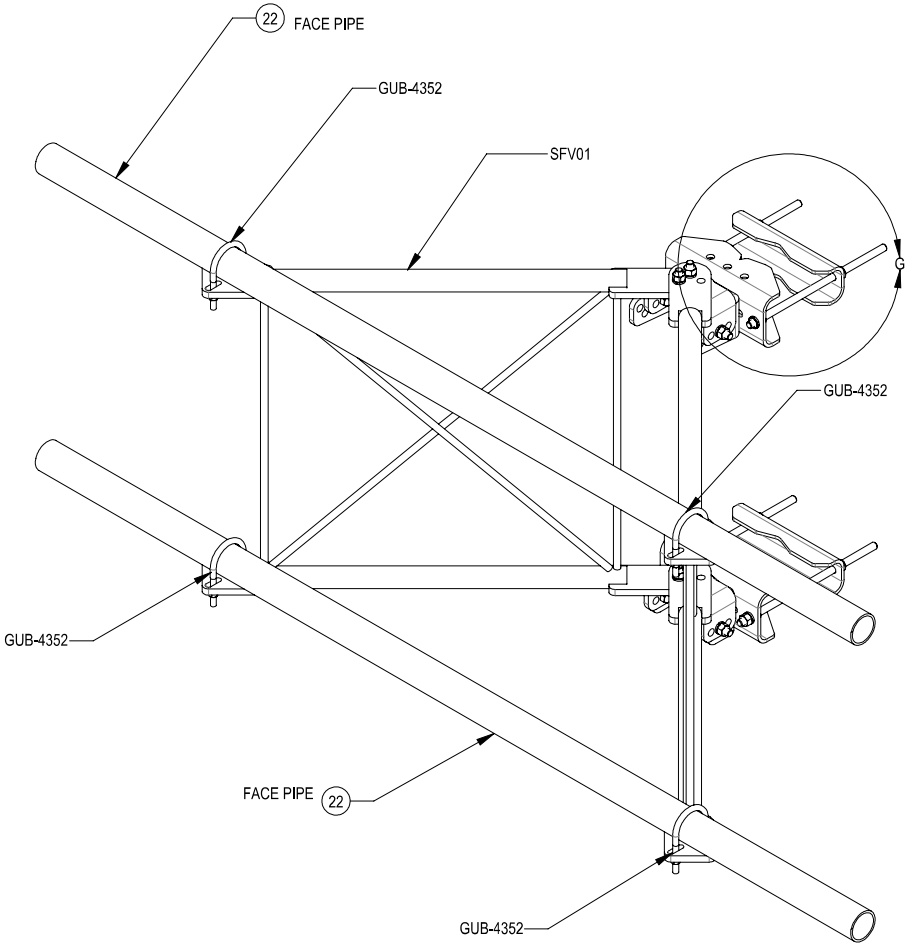
COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE: C	SCALE: 1:4	DOCUMENT NO.: MTC3975083	
		DRAWING VERSION: 02 / STATUS: RE / REVISION: C	SHEET: 5 OF 7

NOTES:

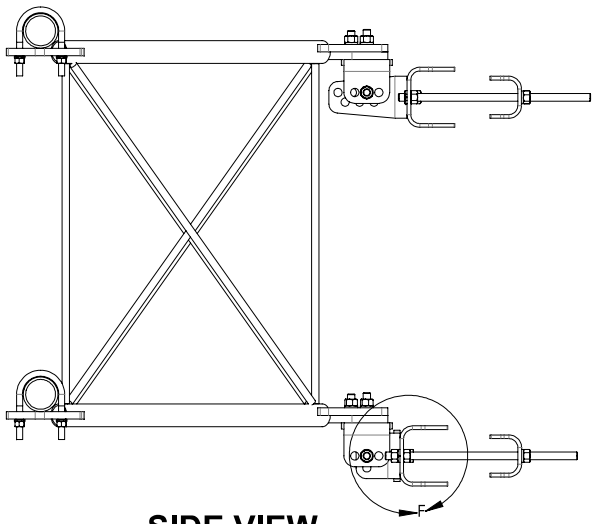
STEP 3: ATTACH FACE PIPES TO STANDOFF ARMS (SFV01) USING U-BOLTS (GUB-4240).



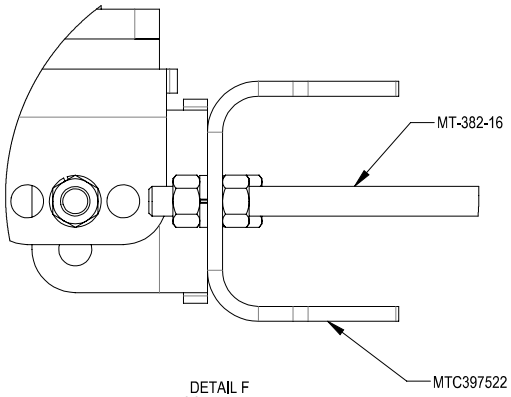
DETAIL G
SCALE 1 : 3



ISO VIEW



SIDE VIEW



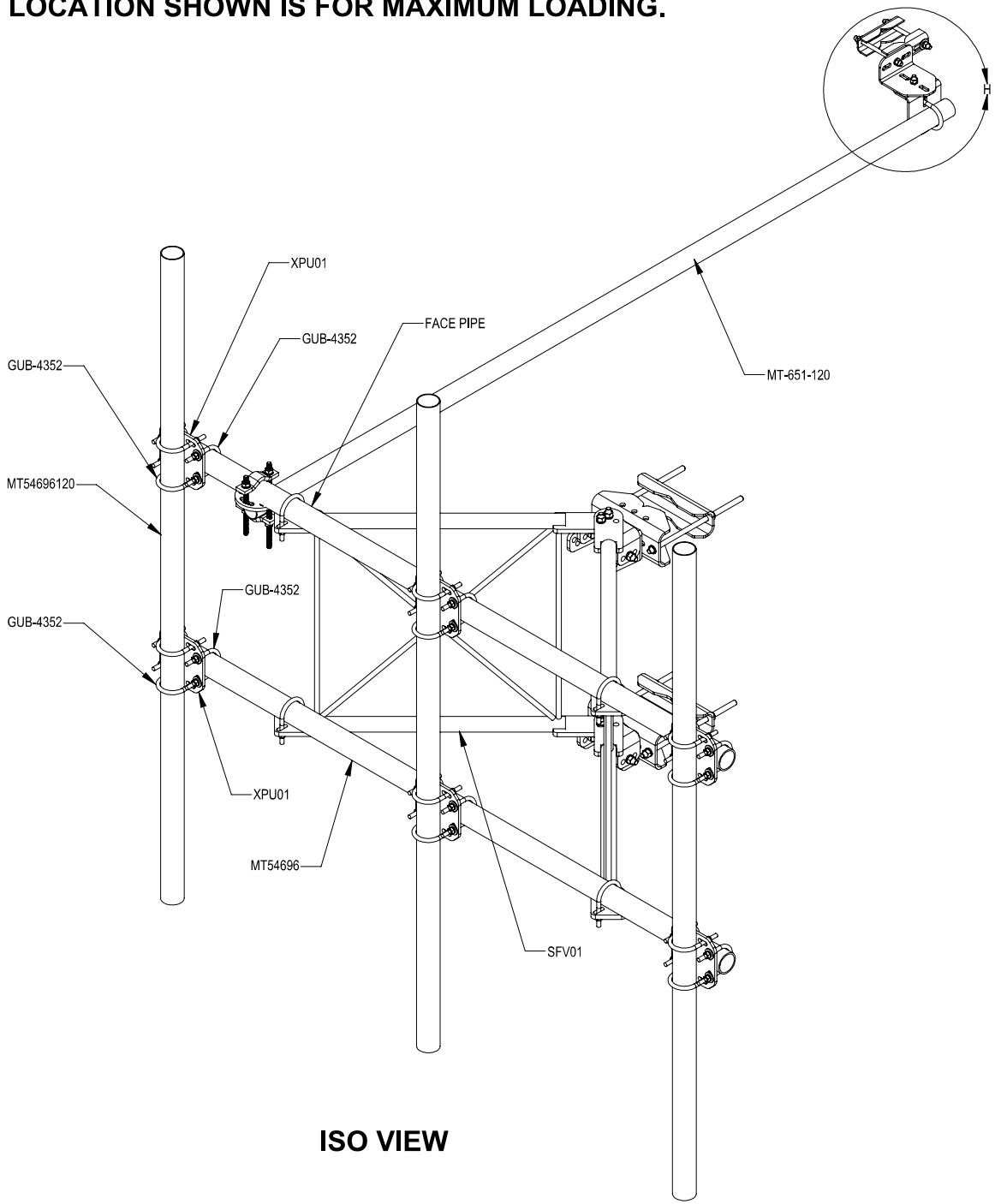
DETAIL F
SCALE 1 : 2

PATENT PENDING

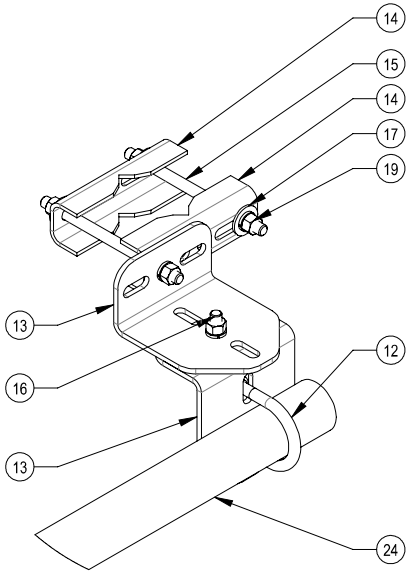
COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE: C	SCALE: 1:8	DOCUMENT NO.: MTC3975083	
		DRAWING: VERSION 02 / STATUS RE / REVISION C	SHEET: 6 OF 7

NOTES:

STEP 4: ATTACH ANTENNA PIPES & TIE BACK PIPE (MT-651-120) TO FACE PIPES USING CROSSOVER BRACKETS (XAU01) AND U-BOLTS (GUB-4240). LOCATION SHOWN IS FOR MAXIMUM LOADING.



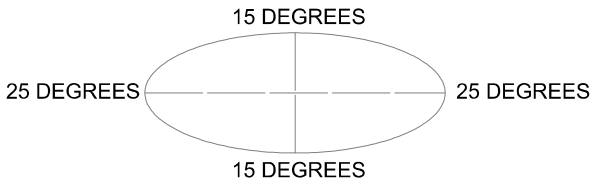
ISO VIEW



DETAIL H
SCALE 1 : 4

ALLOWABLE TIEBACK ANGLE

±15 DEGREES VERTICAL
±25 DEGREES HORIZONTAL



PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE: C	SCALE: 1:10	DOCUMENT NO.: MTC3975083	
		DRAWING: VERSION 02 / STATUS RE / REVISION C	SHEET: 7 OF 7

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: NJJER01094A

841294
230 Guinea Road
Monroe, Connecticut 06468

April 27, 2022

EBI Project Number: 6222002989

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**3.54%**

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

April 27, 2022

Attn: Dish Wireless

Emissions Analysis for Site: NJJER01094A - 841294

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **230 Guinea Road** in **Monroe, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 230 Guinea Road in Monroe, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

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

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

7) The antenna mounting height centerline of the proposed antennas is 165 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	2,529.88	ERP (W):	2,529.88	ERP (W):	2,529.88
Antenna A1 MPE %:	**0.46%**	Antenna B1 MPE %:	**0.46%**	Antenna C1 MPE %:	**0.46%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.46%
PageNet	0.2%
RAW Mobile Data	0.01%
Nextel	0.25%
CL&P	0.09%
Verizon	1.24%
AT&T	1.29%
Site Total MPE % :	3.54%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.46%
Dish Wireless Sector B Total:	0.46%
Dish Wireless Sector C Total:	0.46%
Site Total MPE % :	3.54%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	112.10	165.0	0.64	600 MHz n71	400	0.16%
Dish Wireless 1900 MHz n70	4	245.22	165.0	1.39	1900 MHz n70	1000	0.14%
Dish Wireless 2190 MHz n66	4	275.14	165.0	1.57	2190 MHz n66	1000	0.16%
						Total:	**0.46%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish Wireless facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.46%
Sector B:	0.46%
Sector C:	0.46%
Dish Wireless Maximum MPE % (Sector A):	0.46%
Site Total:	3.54%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.54%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Exhibit G

Letter of Authorization

1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

Phone: (862) 226-6914
www.crowncastle.com

Crown Castle 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
Crown Castle telecommunications site at:
88 MAIN STREET, MONROE, CT 06468

T-MOBILE USA TOWER LLC ("Crown Castle") hereby authorizes DISH NETWORK, 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:

Crown Site ID/Name:	**826053/Monroe-1/Rt 25**
Customer Site ID:	**NJJER01091A/CT-CCI-T-826053**
Site Address:	**88 Main Street, Monroe, CT 06468**

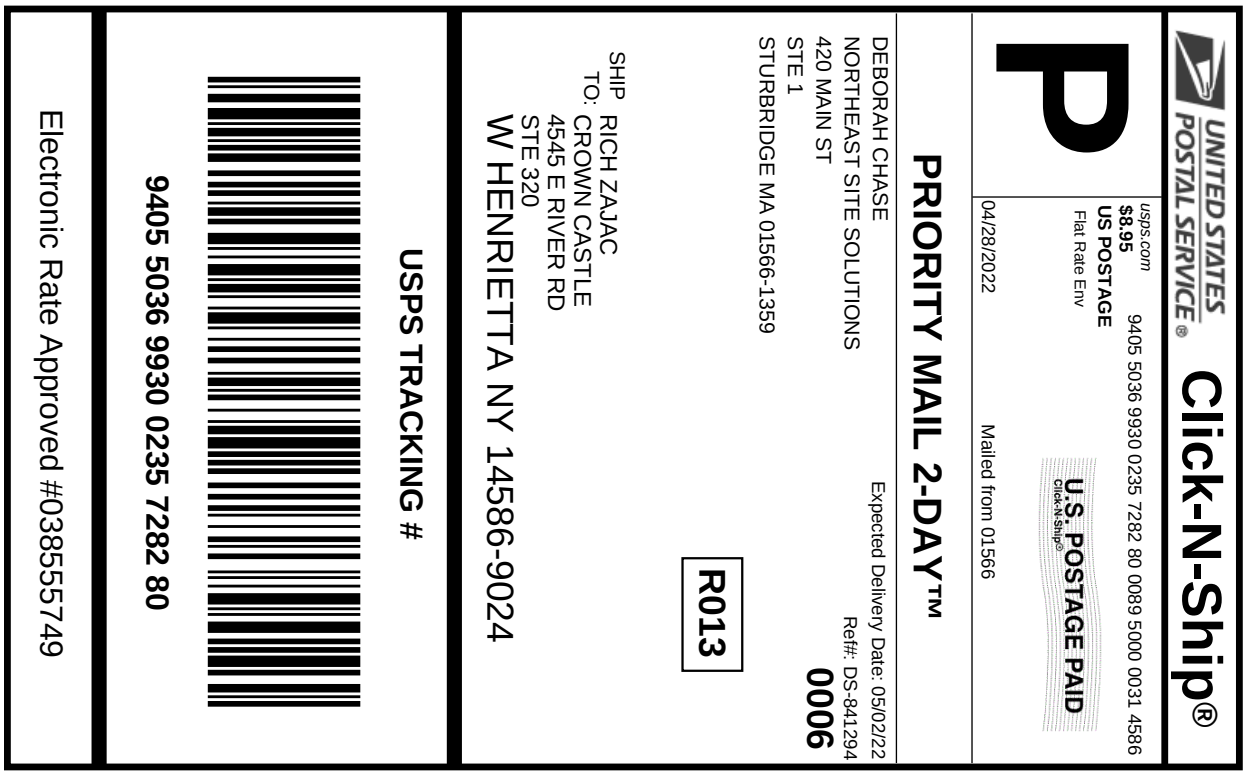
Crown Castle

By: _____ Date: 04/28/2022

Robin Cannizzaro
Real Estate Specialist

Exhibit H

Recipient Mailings



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Print Date:	04/28/2022
Ship Date:	04/28/2022
Expected Delivery Date:	05/02/2022

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

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

Ref#: DS-841294

To: RICH ZAJAC
CROWN CASTLE
4545 E RIVER RD
STE 320
W HENRIETTA NY 14586-9024

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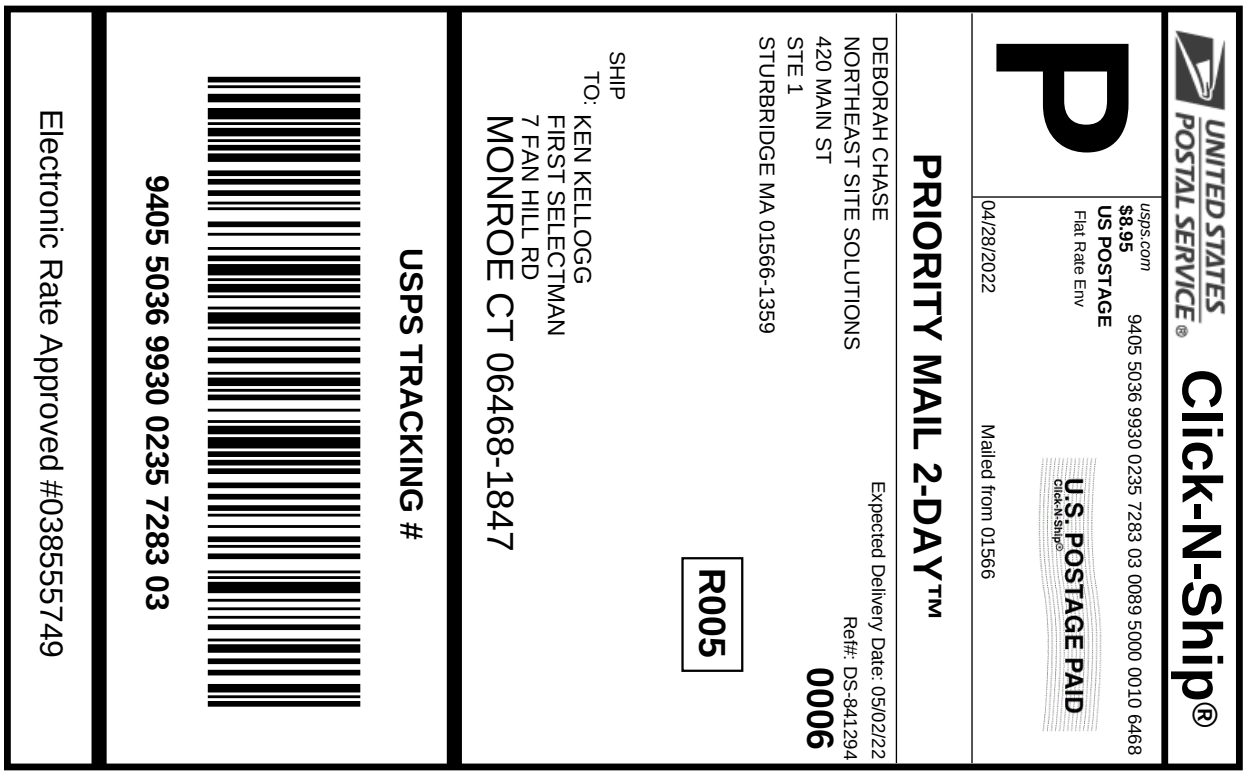

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0235 7283 03

Trans. #:	562381010
Print Date:	04/28/2022
Ship Date:	04/28/2022
Expected Delivery Date:	05/02/2022

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

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

Ref#: DS-841294

To: KEN KELLOGG
FIRST SELECTMAN
7 FAN HILL RD
MONROE CT 06468-1847

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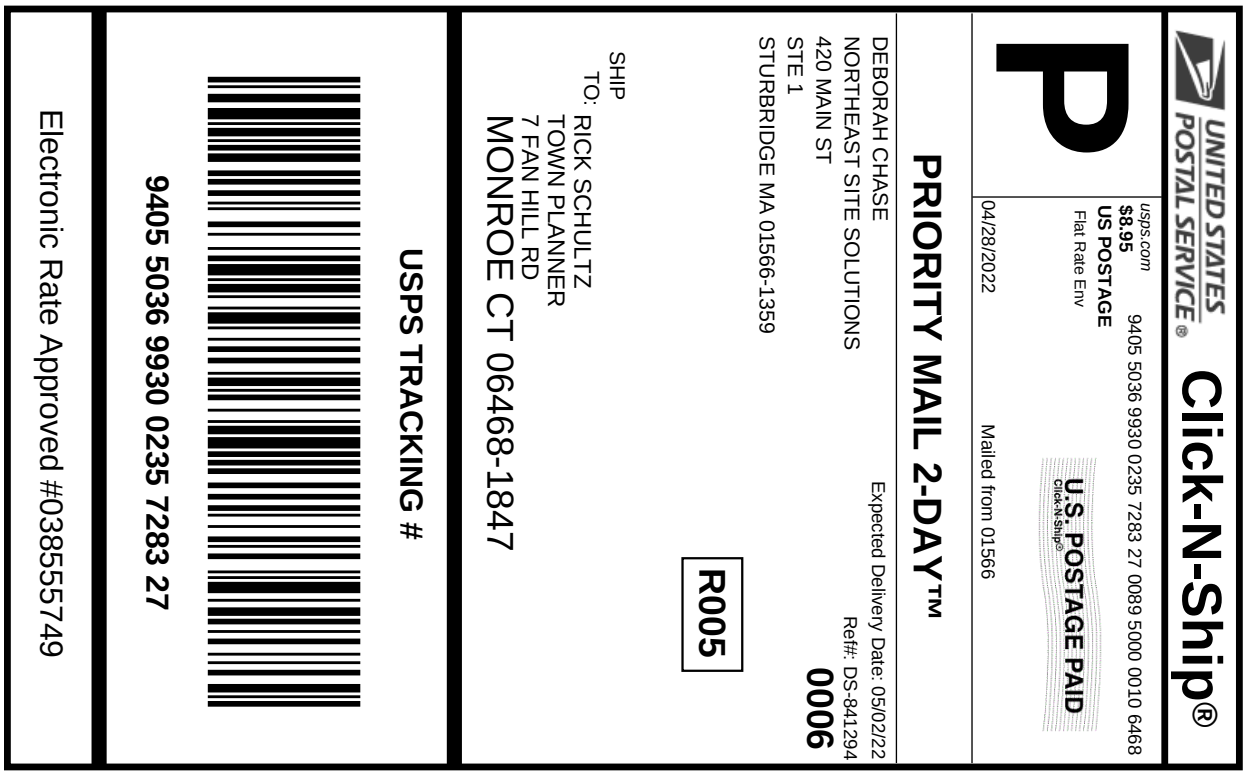

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Click-N-Ship® Label Record

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9405 5036 9930 0235 7283 27

Trans. #:	562381010
Print Date:	04/28/2022
Ship Date:	04/28/2022
Expected Delivery Date:	05/02/2022

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

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

Ref#: DS-841294

To: RICK SCHULTZ
TOWN PLANNER
7 FAN HILL RD
MONROE CT 06468-1847

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841294 crum DBL

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Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 1.90 oz Acceptance Date: Thu 04/28/2022 Tracking #: 9405 5036 9930 0235 7282 80	1		$0.00
Prepaid Mail Monroe, CT 06468 Weight: 0 lb 9.40 oz Acceptance Date: Thu 04/28/2022 Tracking #: 9405 5036 9930 0235 7283 27	1		$0.00
Prepaid Mail Monroe, CT 06468 Weight: 0 lb 9.50 oz Acceptance Date: Thu 04/28/2022 Tracking #: 9405 5036 9930 0235 7283 03	1		$0.00

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