NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

May 24, 2022

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

RE: Tower Share Application
69 Guinea Road, Stamford, CT 06903
Latitude: 41.101777
Longitude: -73.594847
Site #: 806953_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 69 Guinea Road, Stamford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 129-foot level of the existing 160-foot monopole 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 compound. Included are plans by Kimley Horn, dated November 10, 2021, Exhibit C. Also included is a structural analysis prepared by Black & Veatch, dated August 25, 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. 180 on April 2, 1998. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Mayor Caroline Simmons and James Lunney III, Chief Zoning Enforcement Officer for the City of Stamford, as well as the tower owner (Crown Castle) and property owner (Girl Scouts of Connecticut).

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 160-feet and the Dish Wireless LLC antennas will be located at a center line height of 129-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 15.74% 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 monopole 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 monopole tower in Stamford. 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 129-foot level of the existing 160-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit 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 Stamford.

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: Mayor Caroline Simmons, Elected Official
Stamford Government Center
10th Floor
888 Washington Boulevard
Stamford, CT 06901

James Lunney III, Chief Zoning Enforcement Officer
Stamford Government Center
7th Floor
888 Washington Boulevard
Stamford, CT 06901

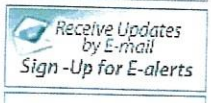
Girl Scouts of Connecticut, Property Owner
340 Washington Street
Hartford, CT 06106

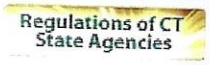
Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Filing Guides
Meetings & Minutes
Public Participation
Audio Link to New Britain Hearing Rooms
Programs & Services
Telecommunications Database
Maps
Publications
Other Resources
Statutes & Regulations
Frequently Asked Questions





Melanie Bachman,
Executive Director

DOCKET NO. 180 - Cellco Partnership d/b/a Bell Atlantic Mobile application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications tower and associated equipment located immediately north of the Merritt Parkway off Guinea Road (prime and alternate one sites), or 141 Den Road (alternate two site) in Stamford, Connecticut.

Connecticut Siting Council

April 2, 1998

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications tower and equipment buildings at the proposed prime site in Stamford, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic Mobile (BAM) for the construction, operation, and maintenance of a telecommunications tower, associated equipment, and buildings at the proposed prime site, located within a 28-acre parcel at Guinea Road, Stamford, Connecticut. We find the effects on scenic resources and adjacent land uses of the first alternate site and second alternate site to be significant, and therefore deny certification of these sites.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of BAM, Springwich Cellular Limited Partnership (Springwich), Sprint PCS (Sprint), and Nextel Communications of the Mid-Atlantic, Inc. (Nextel); and such tower shall not exceed a height of 160 feet above ground level (AGL).

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: adjustment of the tower location within the leased parcel to protect a nearby stream and minimize grade; a final site plan(s) for site development to include the location and specifications for the tower foundation, antennas, equipment buildings, emergency generator and fuel tank, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; provisions for the tower finish that may include painting; and provisions for the prevention and containment of spills and/or other discharge into surface water and ground water bodies.

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

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

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

6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

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 effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 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, and notice of issuance shall be published in The Hartford Courant and Stamford Advocate.

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

The parties and intervenors to this proceeding are:

APPLICANT Bell Atlantic Mobile	**ITS REPRESENTATIVE** Kenneth C. Baldwin, Esq. Brian C. S. Freeman, Esq. Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 Mr. David S. Malko, P.E. Jennifer Young Gaudet Bell Atlantic Mobile 20 Alexander Drive Wallingford, CT 06492
INTERVENORS Sprint Spectrum, L.P. d/b/a Sprint PCS	**ITS REPRESENTATIVE** Elias A. Alexiades John W. Knuff Harris, Beach & Wilcox, LLP 147 North Broad Street Milford, CT 06460
Nextel Communications of the Mid-Atlantic, Inc.d/b/a Nextel Communications	Christopher B. Fisher, Esq. Cuddy, Feder & Worby, Esq. 90 Maple Avenue White Plains, NY 10601
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. General Counsel 500 Enterprise Drive Rocky Hill, CT 06067-3900
PARTIES Charles H. Nobs, Maurice Lucas, and Ben and Myrna Raphan	**ITS REPRESENTATIVE** Jeffrey J. Mirman, Esq. Levy & Droney, P.C. P.O. Box 887 Farmington, CT 06034

Exhibit B

Property Card

69 GUINEA ROAD

Location 69 GUINEA ROAD

Mblu 002/ 6848/ / /

Acct# 002-6848

Owner GIRL SCOUTS OF CONNECTICUT INC

Assessment $1,028,420

Appraisal $1,469,120

PID 24323

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	$461,570	$1,007,550	$1,469,120

Assessment			
Valuation Year	Improvements	Land	Total
2020	$323,130	$705,290	$1,028,420

Owner of Record

Owner GIRL SCOUTS OF CONNECTICUT INC
Co-Owner
Address 340 WASHINGTON STREET
HARTFORD, CT 06106-3317

Sale Price $0
Book & Page 9322/0308
Sale Date 04/16/2008
Instrument 25

Ownership History

Ownership History				
Owner	Sale Price	Book & Page	Instrument	Sale Date
GIRL SCOUTS OF CONNECTICUT INC	$0	9322/0308	25	04/16/2008
GIRL SCOUT COUNCIL SW CT INC	$0	4405/0321		05/12/1995
SOUTHWESTERN CT GIRL SCT	$0	1035/0131	25	12/29/1964

Building Information

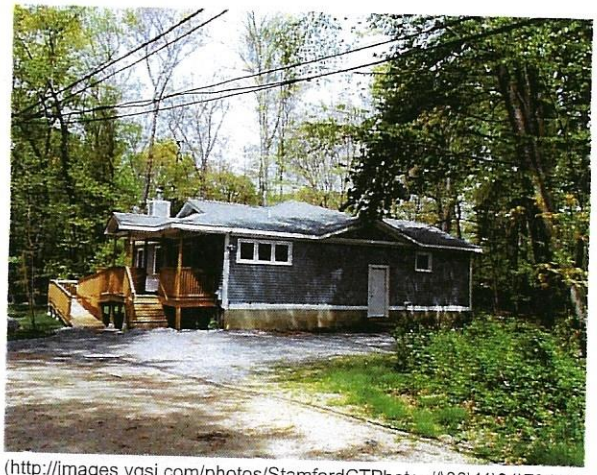
Building 1 : Section 1

Year Built: 1963
Living Area: 1,960

Building Attributes

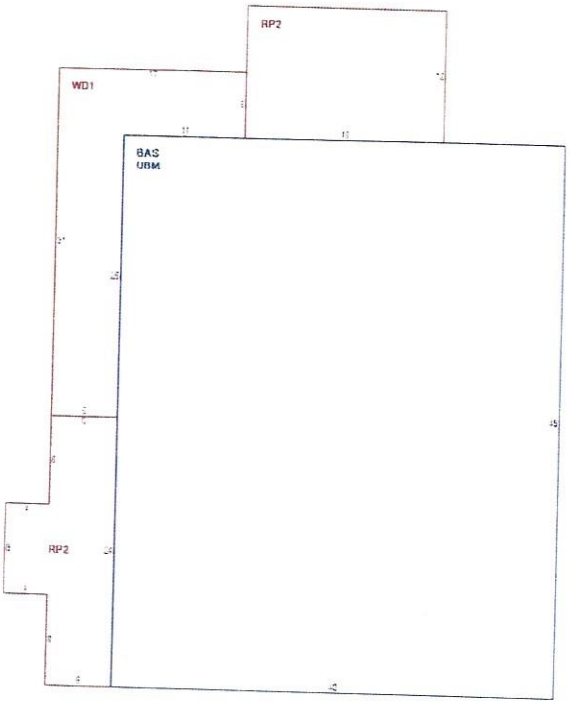
Field	Description
Style:	Ranch
Model	Residential
Grade:	C+
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Cement fiberbd
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Electric
Heat Type:	Electr Basebrd
AC Type:	Central
Total Bedrooms:	00
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	3
Total Rooms:	4
Bath Style:	Average
Kitchen Style:	Typical
Fireplace Msnry.	
Fpl. Gas/Prefab	1
Fpl. Outdoor	
Fpl. Addnl. Open	
Bsmt. Garage	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo



(http://images.vgsi.com/photos/StamfordCTPhotos/\00\11\94\79.jpg)

Building Layout



(ParcelSketch.ashx?pid=24323&bid=24323)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,960	1,960
RP2	Porch Covered	392	0
UBM	Basement, Unfinished	1,960	0
WD1	Deck, Wood	252	0
		4,564	1,960

Extra Features

Extra Features	Legend

Code	Description	Size	Value	Bldg #
RP2	Porch Coverd	1056.00 S.F	$28,050	1
RP2	Porch Coverd	756.00 S.F	$20,080	1
RP2	Porch Coverd	672.00 S.F	$17,850	1
RP2	Porch Coverd	216.00 S.F	$5,740	1
RP2	Porch Coverd	176.00 S.F	$4,670	1

Land

Land Use

Use Code	901
Description	Exmpt Res MDL-01
Zone	RA3
Neighborhood	1100
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	16.86
Depth	
Assessed Value	$705,290
Appraised Value	$1,007,550

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FC1	Shed Wood			240.00 S.F.	$2,880	1
MS1	Misc Structure			528.00 S.F.	$3,170	1
WD1	Wood Deck			252.00 S.F.	$5,480	1
CEL1	Cell Tower			1.00 SITES	$146,250	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$461,570	$1,007,550	$1,469,120
2018	$461,570	$1,007,550	$1,469,120
2017	$461,570	$1,007,550	$1,469,120

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$323,130	$705,290	$1,028,420
2018	$323,130	$705,290	$1,028,420
2017	$323,130	$705,290	$1,028,420

69 Guinea Rd

69 Guinea Rd

Directions Save Nearby Send to your phone Share

69 Guinea Rd, Stamford, CT 06903

Exhibit C

Construction Drawings

dish wireless.

DISH Wireless L.L.C. SITE ID:

NJJER01089A

DISH Wireless L.L.C. SITE ADDRESS:

69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

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

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

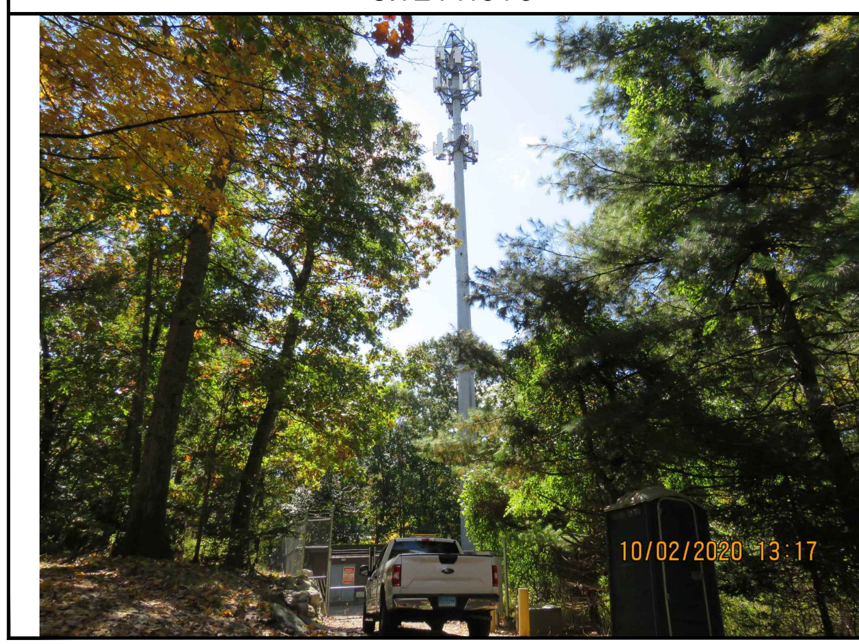
SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- DISH Wireless, L.L.C. TO USE EXISTING EMPTY METER SOCKET 'G'

SITE PHOTO



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

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	GIRL SCOUTS OF CONNECTICUT INC
ADDRESS:	340 WASHINGTON STREET HARTFORD, CT 06106-3317
TOWER TYPE:	MONOPOLE
CROWN CASTLE SITE ID:	806953
CROWN CASTLE APP NUMBER:	548687
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41°06'06.3" N 41.101750° N
LONGITUDE (NAD 83):	73°35'40.0" W 73.594444° W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	RA3
PARCEL NUMBER:	24323
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER CO
TELEPHONE COMPANY:	LIGHTOWER

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:	MICHAEL NARDUCCI MICHAEL.NARDUCCI@DISH.COM
RF ENGINEER:	MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM

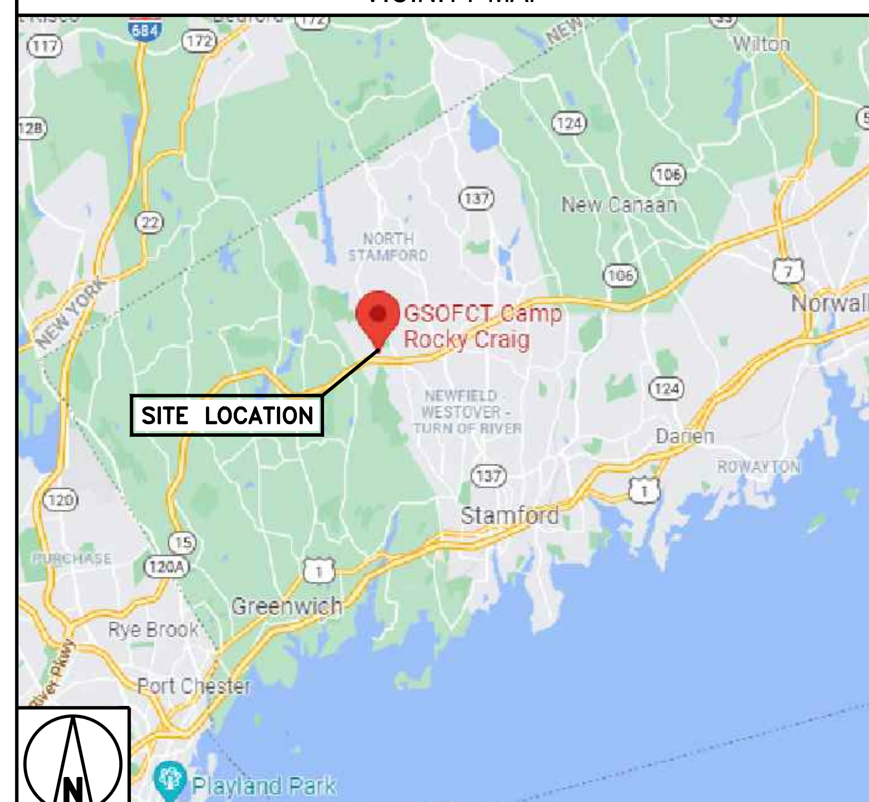
11/12/21
Exp. 01/31/21

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD, ROSELAND, NJ 07068:

- GET ON I-280 E FROM LIVINGSTON AVE
- CONTINUE ON I-280 E. TAKE I-95 N, I-87 N, HUTCHINSON RIVER PKWY N AND CT-15 N TO DEN RD IN STAMFORD. TAKE EXIT 33 FROM CT-15 N
- TAKE ROXBURY RD AND RIVERBANK RD TO GUINEA RD

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	11/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE-16706

DISH Wireless L.L.C. PROJECT INFORMATION

NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE

TITLE SHEET

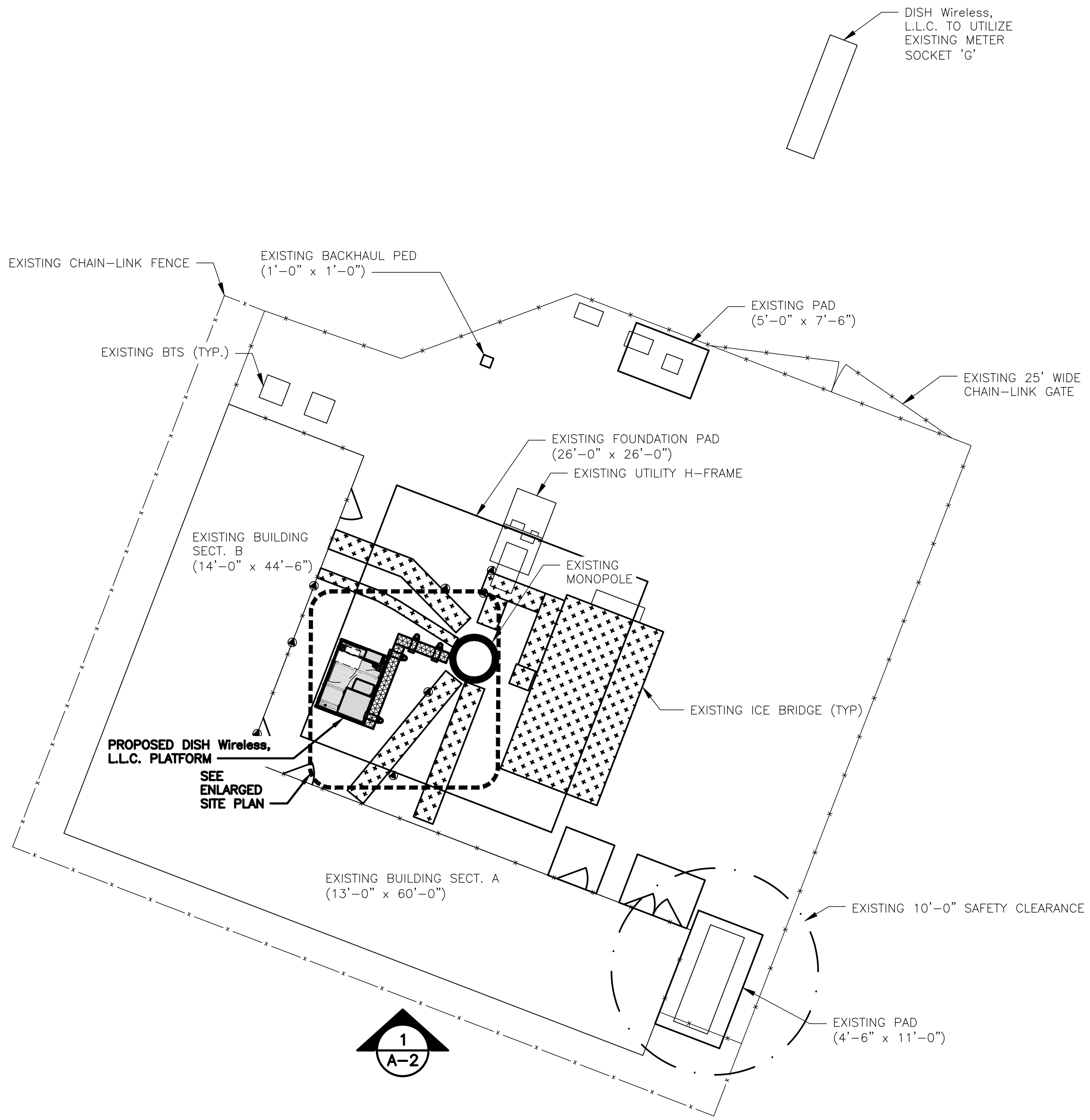
SHEET NUMBER

T-1

DISH Wireless L.L.C. TEMPLATE VERSION 44 - 10/01/2021

NOTES

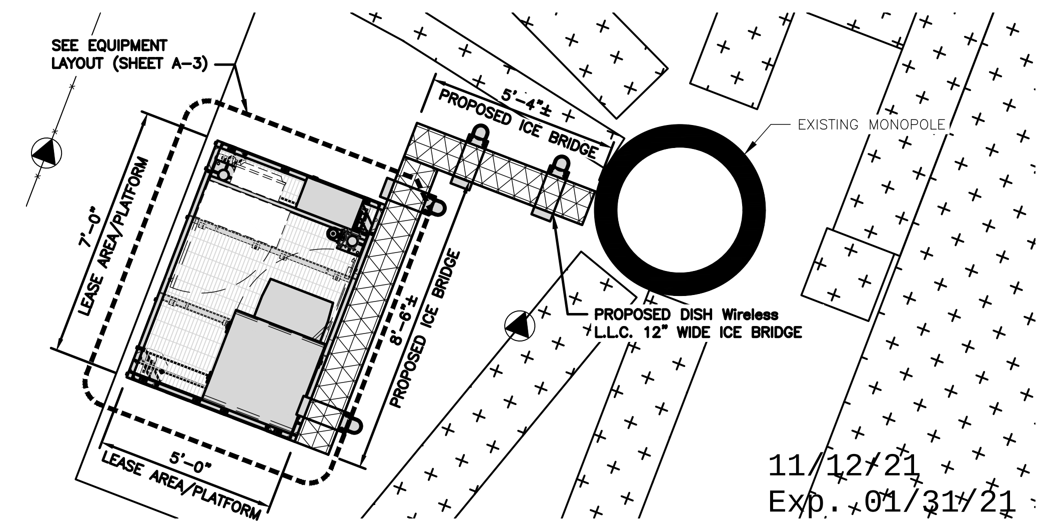
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



OVERALL SITE PLAN — 8' 4' 0 8' 16' — 1/8"=1'-0" — 1

NOTES

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



ENLARGED SITE PLAN — 12" 6" 0 1' 2' 3' 4' 5' 6' 7' — 3/8"=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 BREWER — 29510 — LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	11/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE-16706

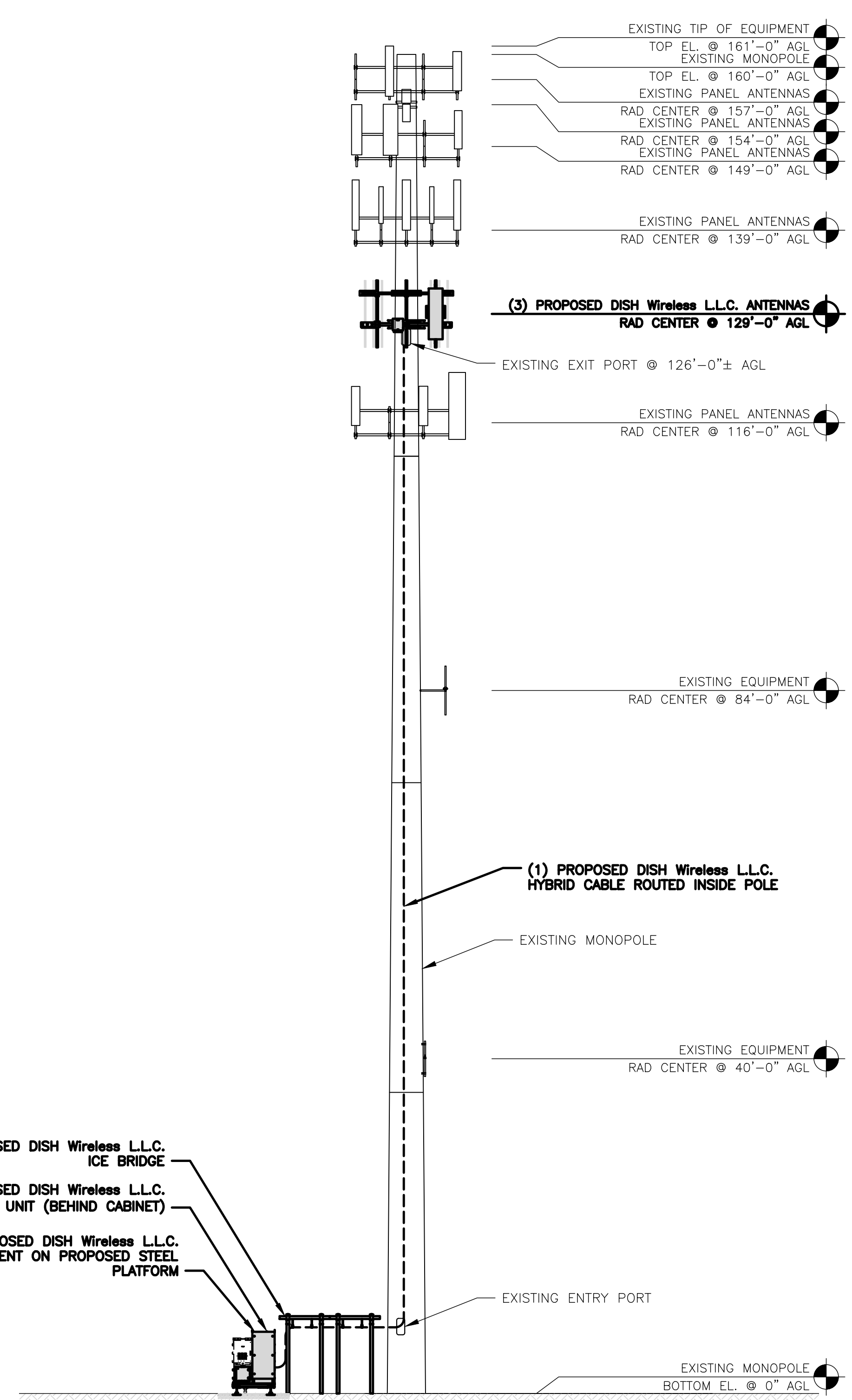
DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

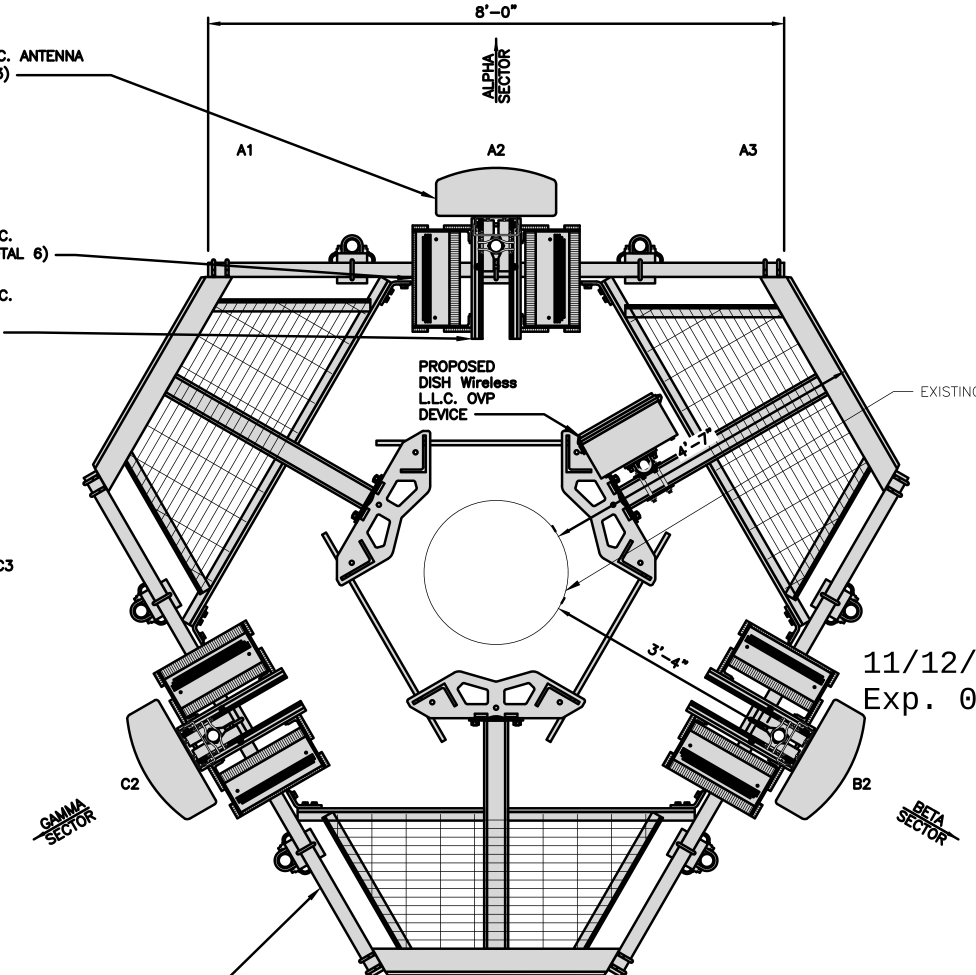
SHEET NUMBER
A-1

NOTES

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



PROPOSED SOUTH ELEVATION — 3/32"=1'-0" — 1



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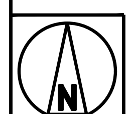

ANTENNA LAYOUT — 3/4"=1'-0" — 2

SECTOR POS.	ANTENNA: EXISTING OR PROPOSED	ANTENNA: MANUFACTURER – MODEL NUMBER	ANTENNA: TECH	ANTENNA: AZIMUTH	ANTENNA: RAD CENTER	TRANSMISSION CABLE: FEED LINE TYPE AND LENGTH	RRH: MANUFACTURER – MODEL NUMBER	RRH: TECH	RRH: POS.	OVP: MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (170'-0" LONG)	FUJITSU – TA08025-B604	5G	A2	RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	JMA – MX08FRO665-20	5G	0°	129'-0"		FUJITSU – TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FRO665-20	5G	120°	129'-0"		FUJITSU – TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FRO665-20	5G	240°	129'-0"		FUJITSU – TA08025-B605	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

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

ANTENNA SCHEDULE — NO SCALE — 3

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn
COA #: PEC.0000738
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RALEIGH, NC 27601

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

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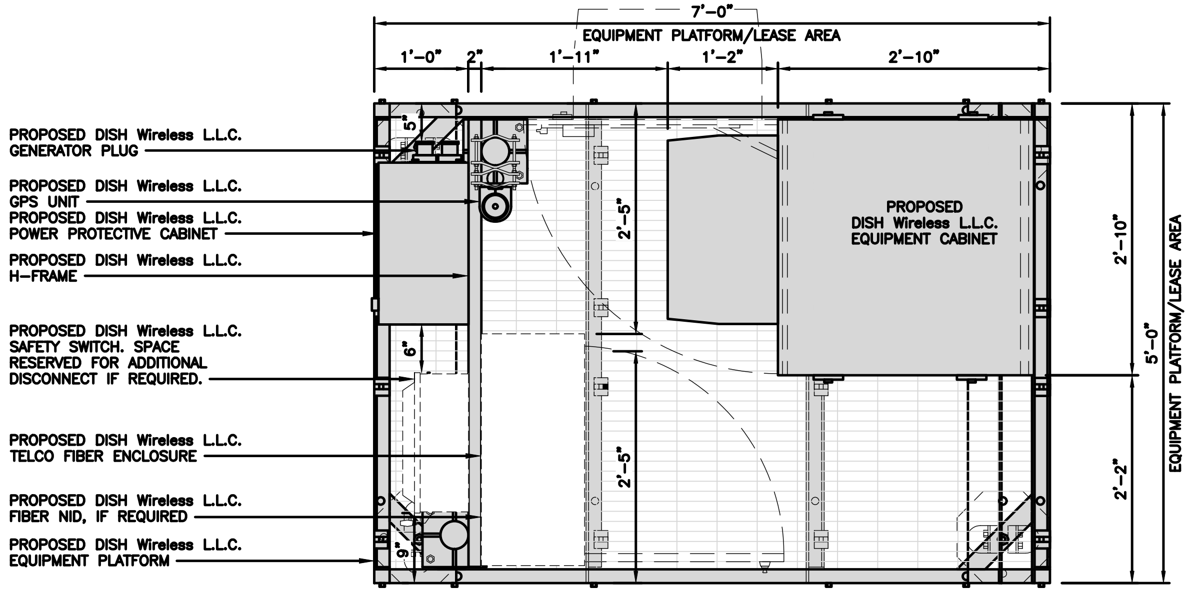
A&E PROJECT NUMBER
KHCLE-16706

DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



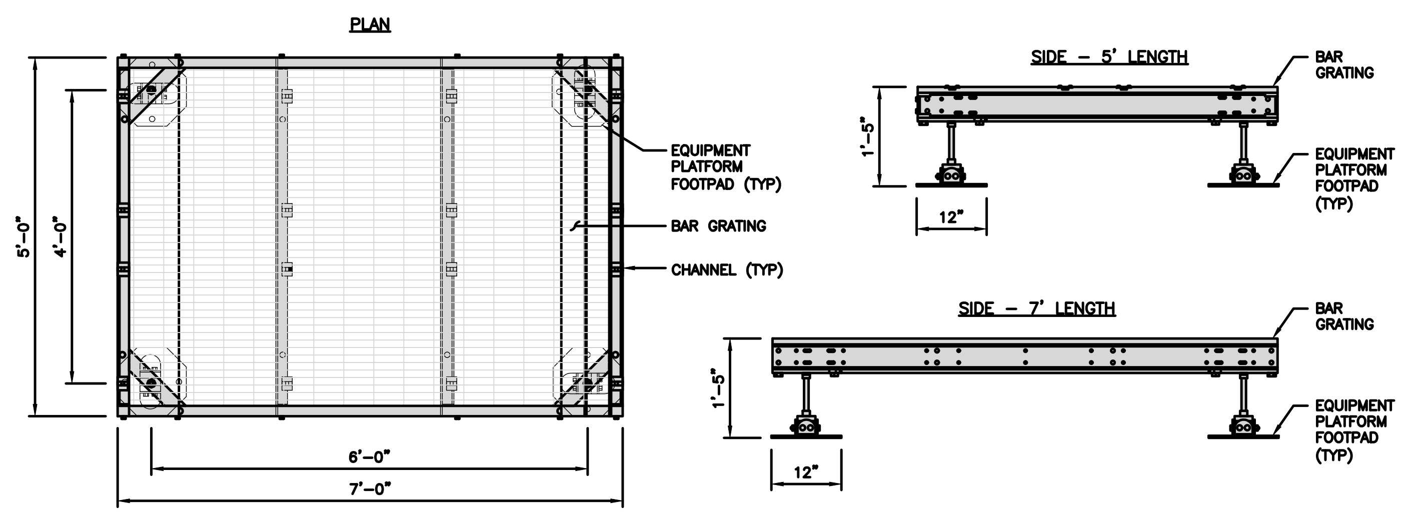
PLATFORM EQUIPMENT PLAN

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'



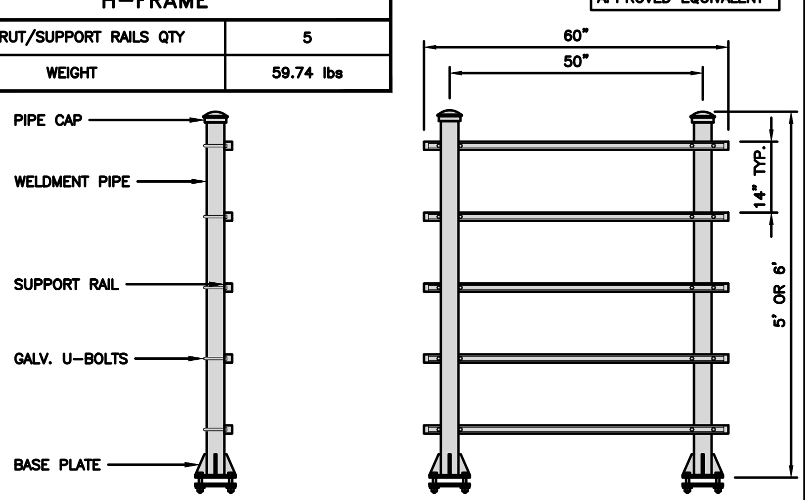
PLATFORM DETAIL

NO SCALE

2

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

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



H-FRAME DETAIL

NO SCALE

3

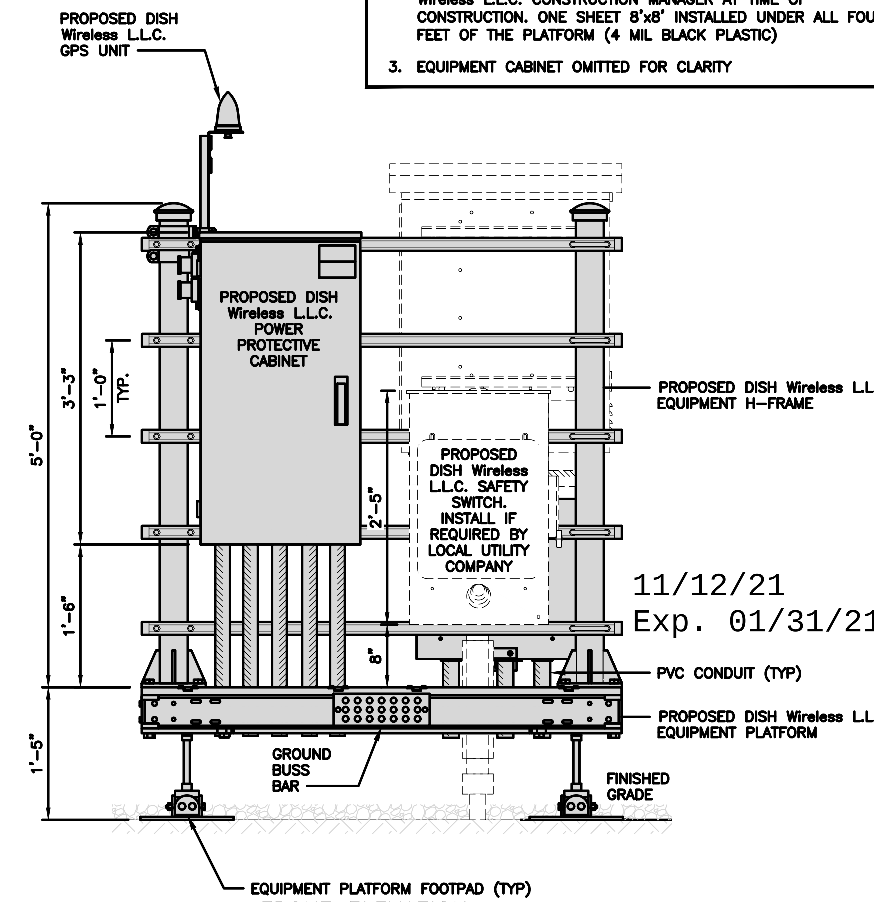
NOT USED

NO SCALE

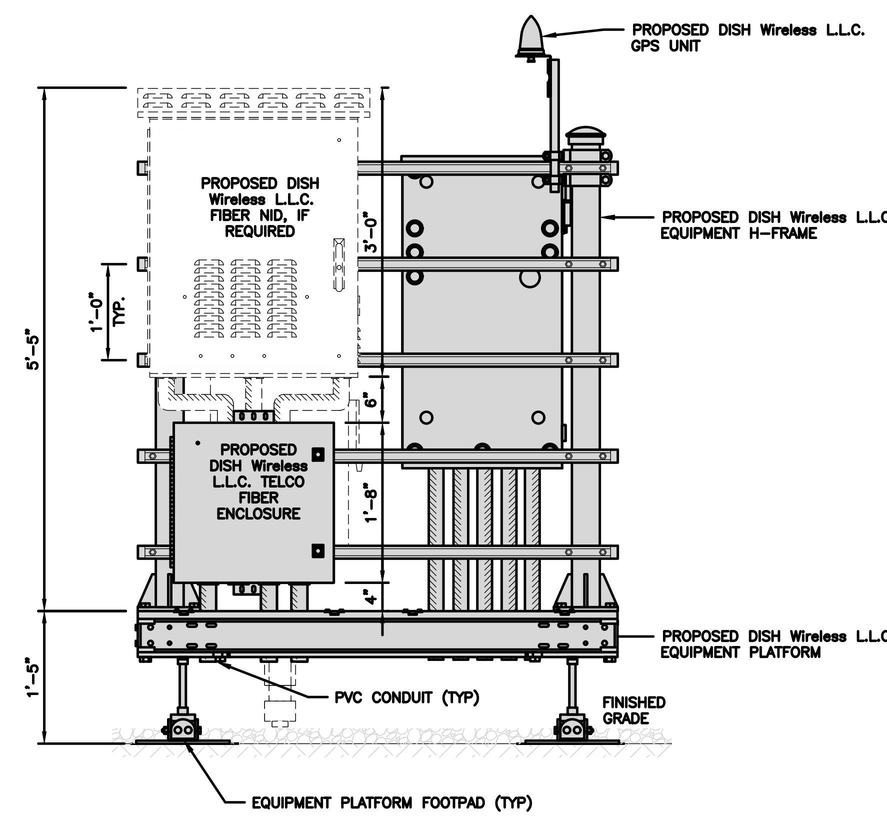
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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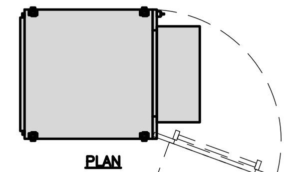
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

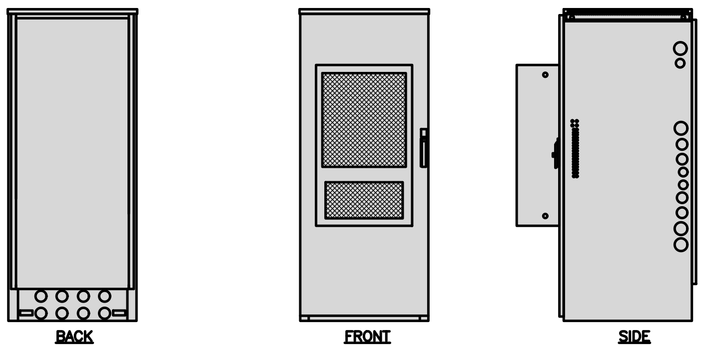
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

1 — CABINET DETAIL (NO SCALE)

ENERSYS HEX CABINET 2000005996	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	376 lbs
HEATER	800W
POWER SYSTEM	–48V ALPHA/600A

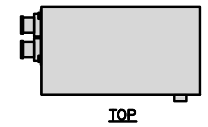


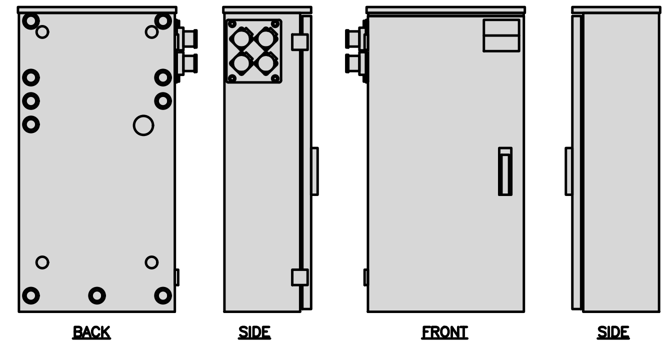


CABINET DETAIL | NO SCALE | 1

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

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

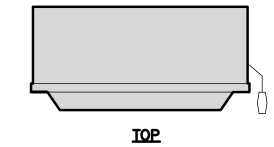


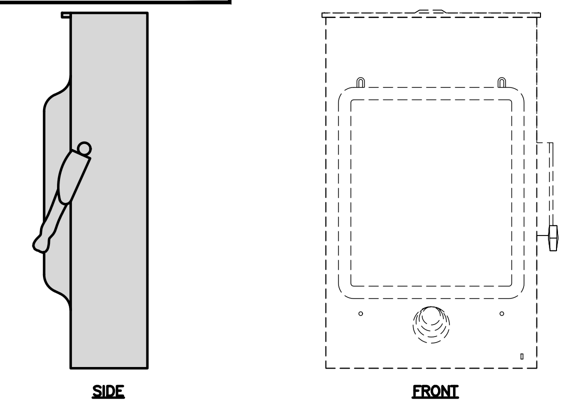


POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

3 — SAFETY SWITCH DETAIL (NO SCALE)

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





SAFETY SWITCH DETAIL | NO SCALE | 3

4 — NOT USED (NO SCALE)

NOT USED | NO SCALE | 4

5 — NOT USED (NO SCALE)

NOT USED | NO SCALE | 5

6 — FIBER TELCO ENCLOSURE DETAIL (NO SCALE)

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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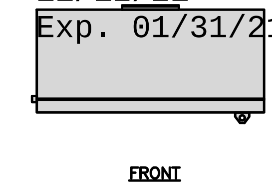
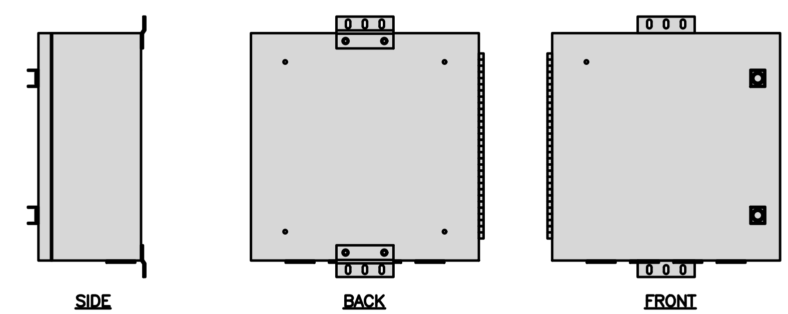


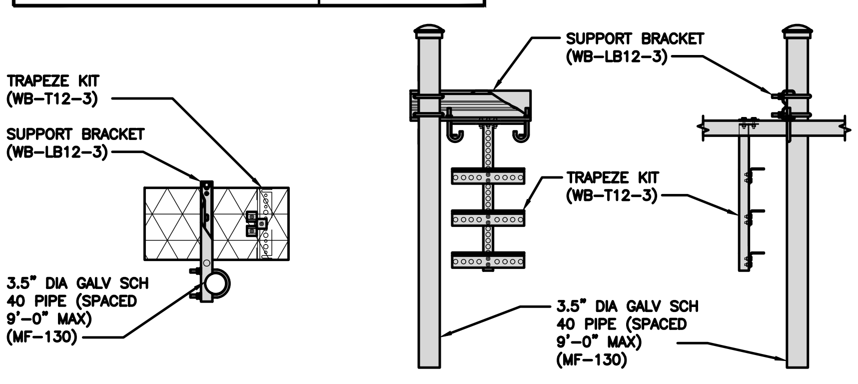


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

7 — ICE BRIDGE DETAIL (NO SCALE)

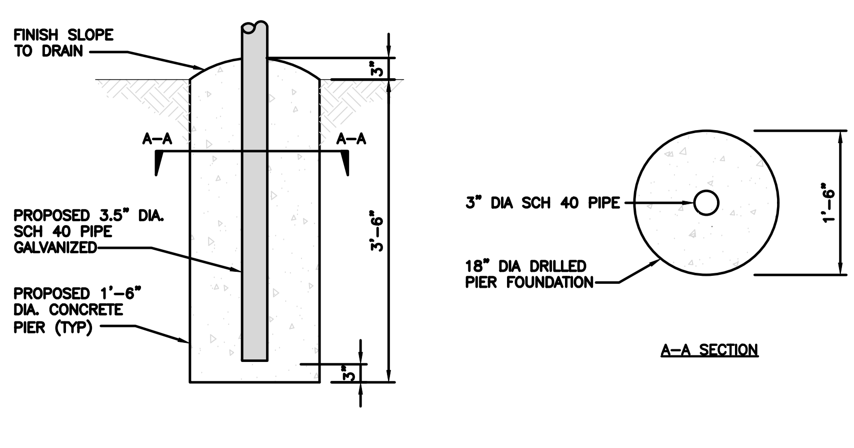
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



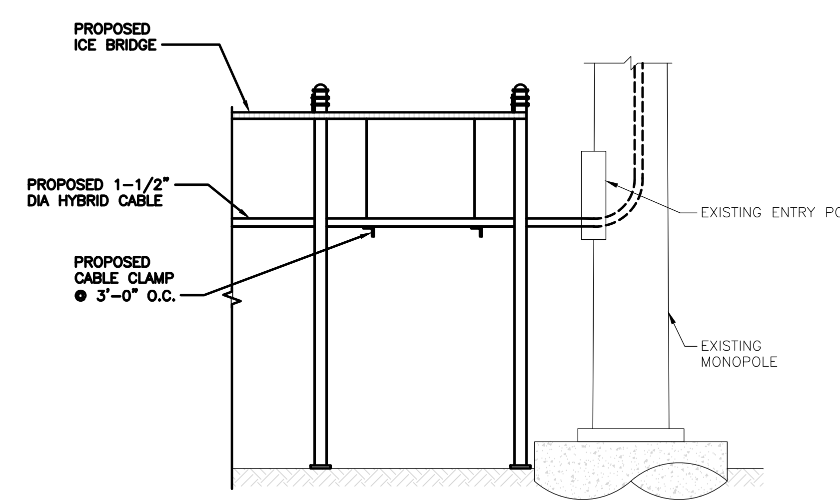
ICE BRIDGE DETAIL | NO SCALE | 7

8 — TYPICAL ICE BRIDGE CONCRETE PIER DETAIL (NO SCALE)



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8

9 — HYBRID CABLE RUN (NO SCALE)



HYBRID CABLE RUN | NO SCALE | 9

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LITTLETON, CO 80120

Kimley»Horn
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421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

STATE OF CONNECTICUT · BRIAN BREWER · 29510 · LICENSED PROFESSIONAL ENGINEER

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RFDS REV #: –––

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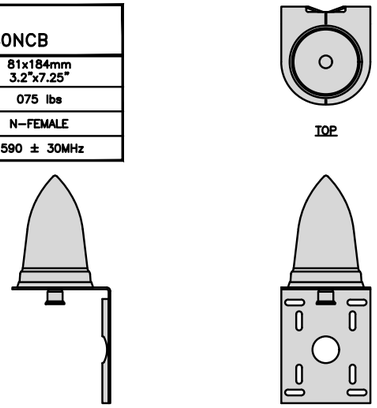
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

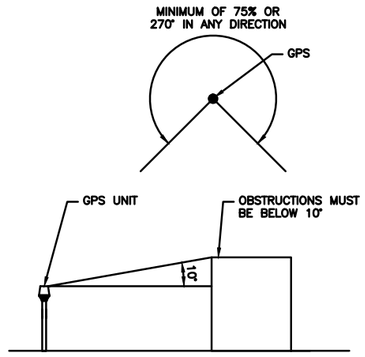
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

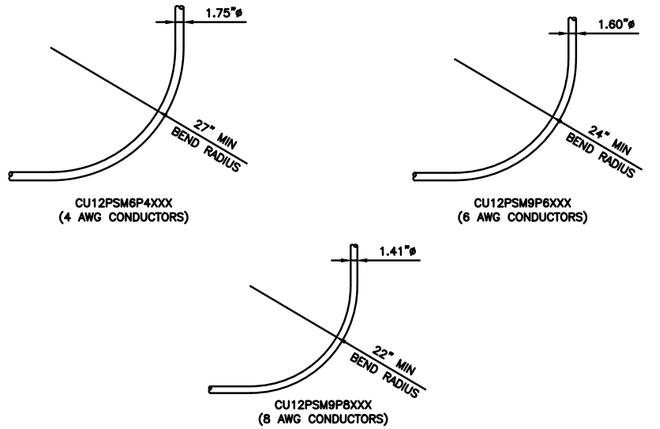
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

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Exp. 01/31/21

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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LITTLETON, CO 80120

Kimley»Horn

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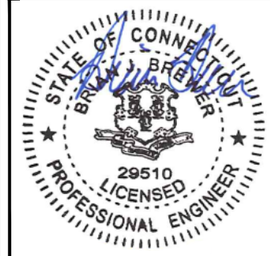

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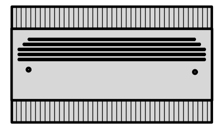
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

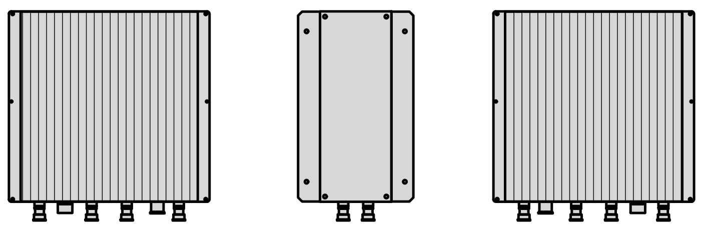
SHEET TITLE
EQUIPMENT DETAILS

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

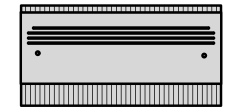


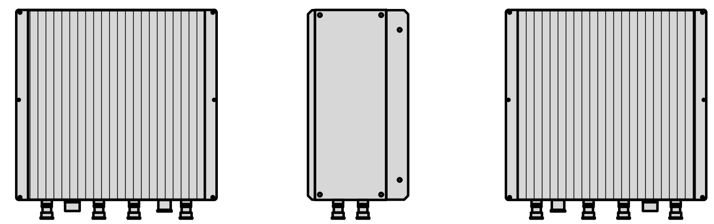


RRH DETAIL | NO SCALE | 1

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



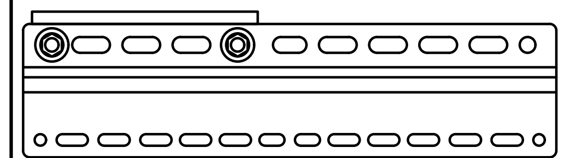


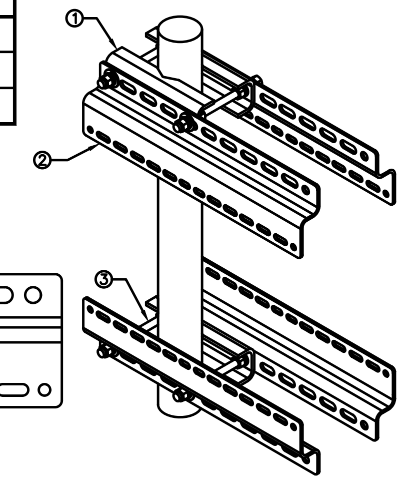
RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155

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

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



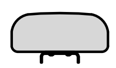


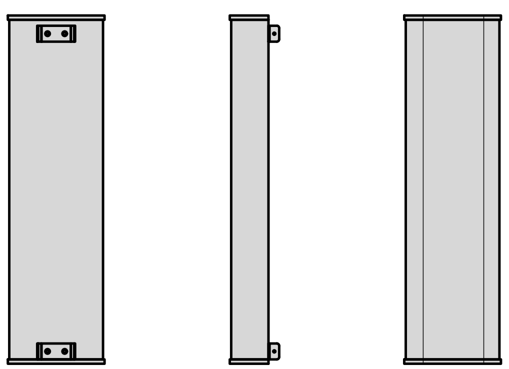
NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA WIRELESS MX08FRO665-21 ANTENNA

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





ANTENNA DETAIL | NO SCALE | 4

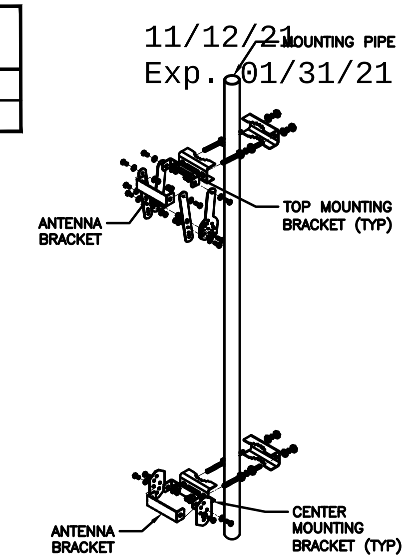
NOT USED | NO SCALE | 5

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

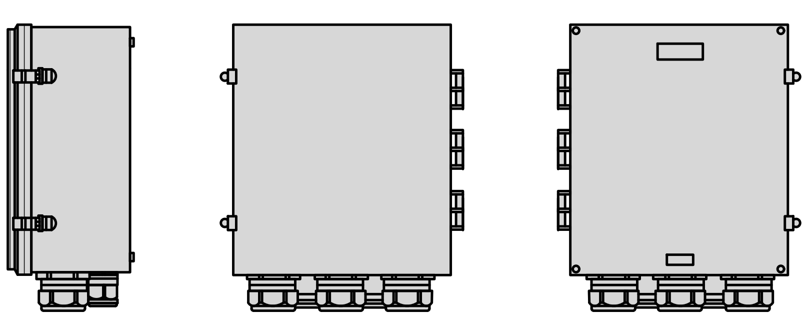
ANTENNA BRACKET NOT PART OF KIT



ANTENNA BRACKET DETAIL | NO SCALE | 6

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

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

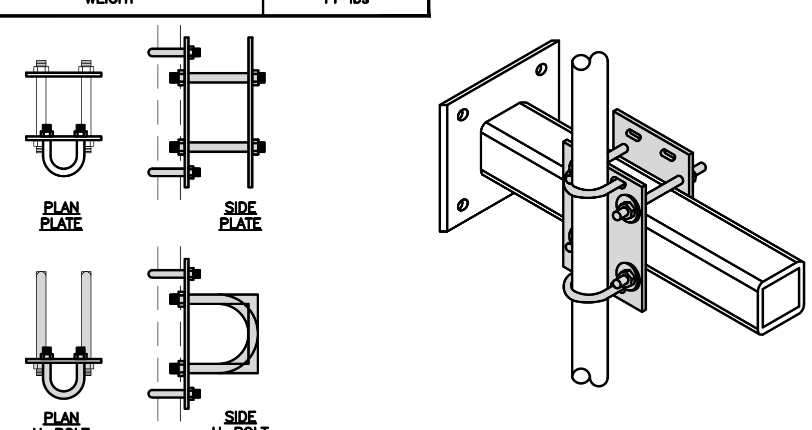


SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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

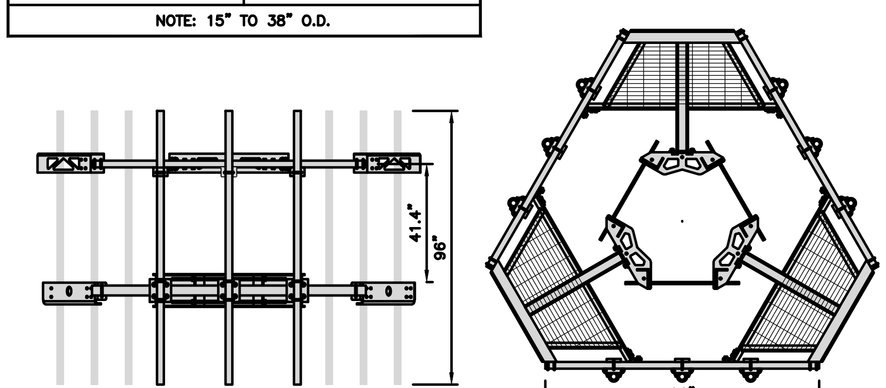


RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH

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

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



ANTENNA PLATFORM DETAIL | NO SCALE | 9

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A&E PROJECT NUMBER
KHCLE-16706

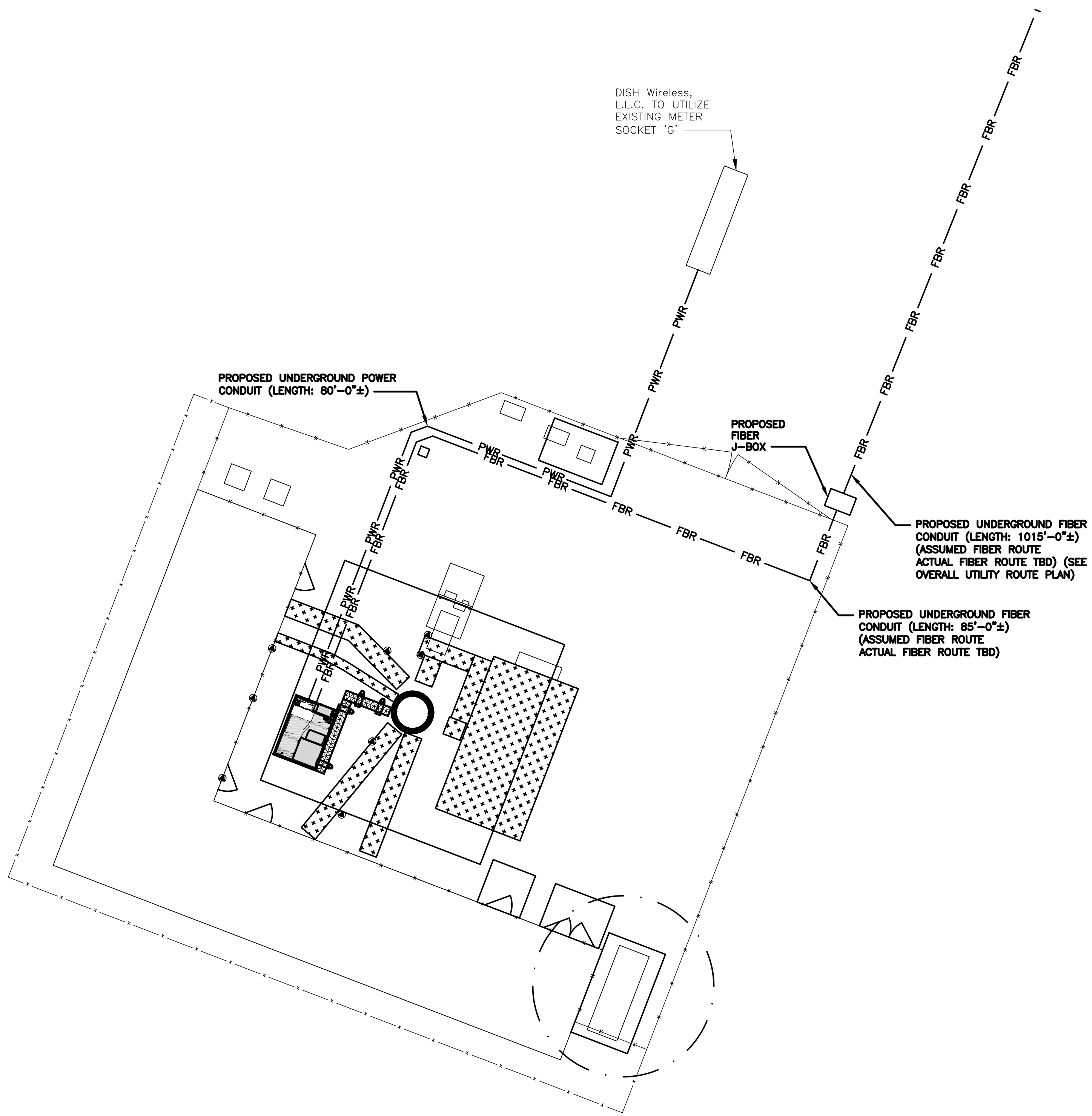
DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

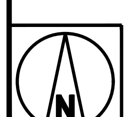
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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





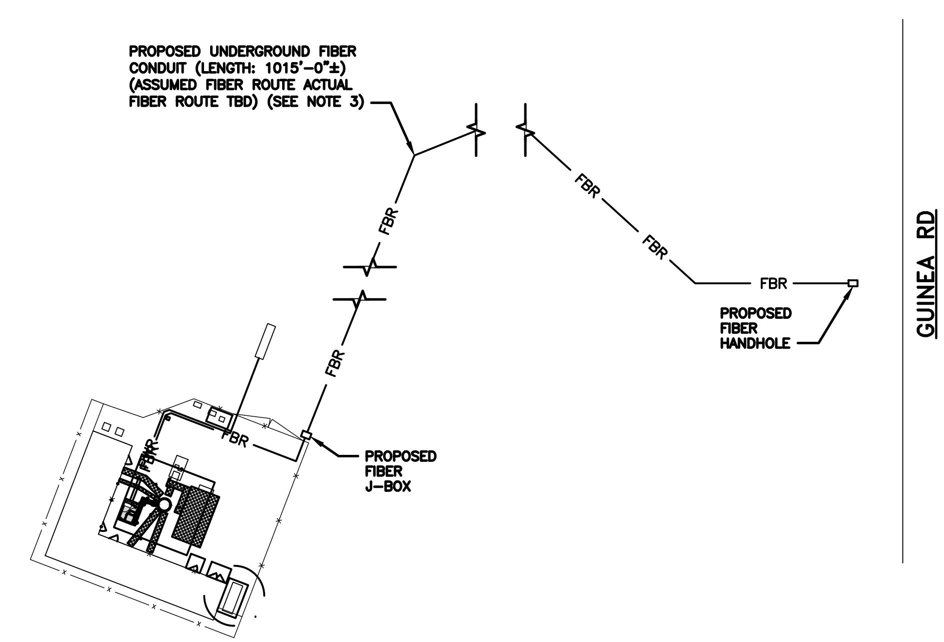
UTILITY ROUTE PLAN — 8' 4' 0 8' 16' — 1/8"=1'-0" — 1

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

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

11/12/21
Exp. 01/31/21

ELECTRICAL NOTES — NO SCALE — 2



OVERALL UTILITY ROUTE PLAN — 32' 24' 16' 8' 0 32' 64' — 1/32"=1'-0" — 3

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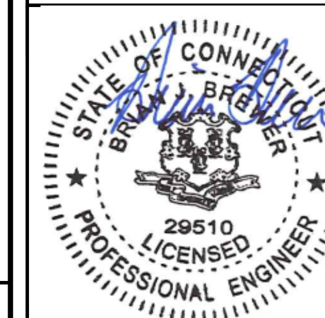
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

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



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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DISH Wireless L.L.C.
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SHEET TITLE

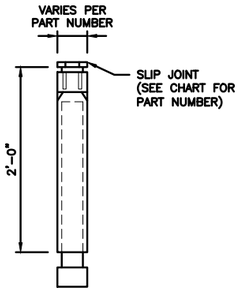
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

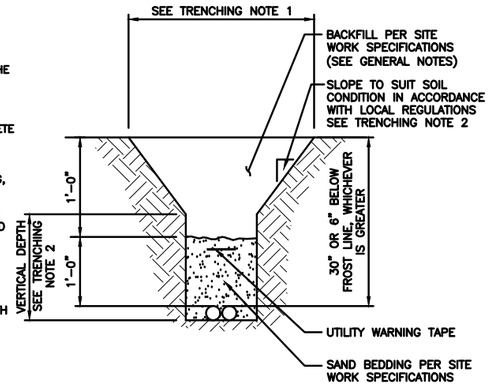


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

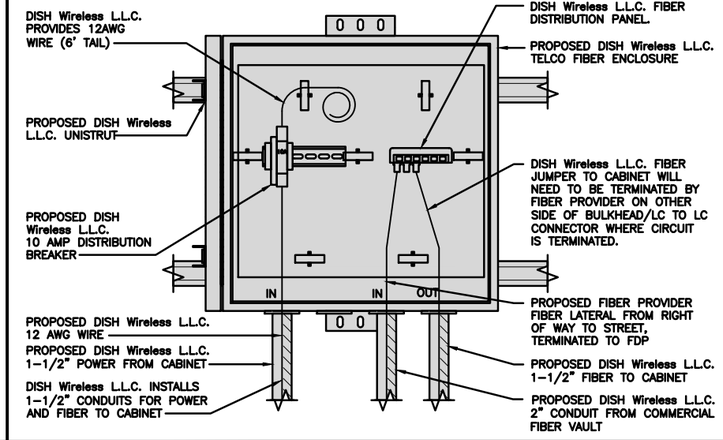
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

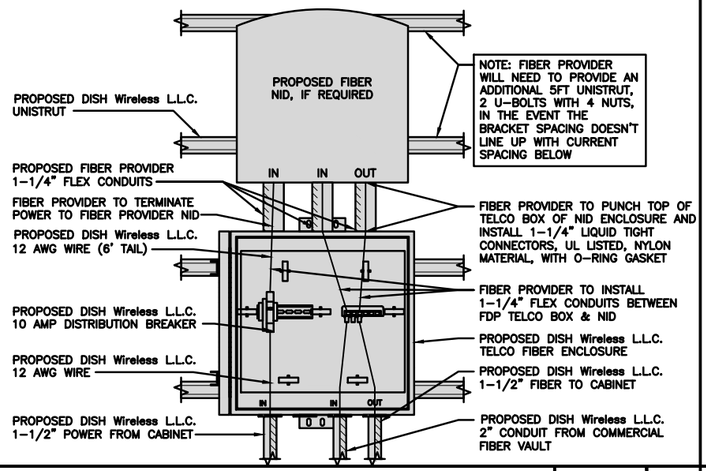
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

11/12/21
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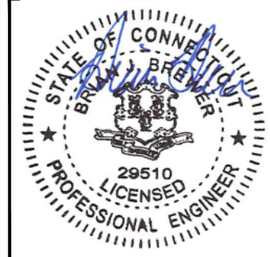

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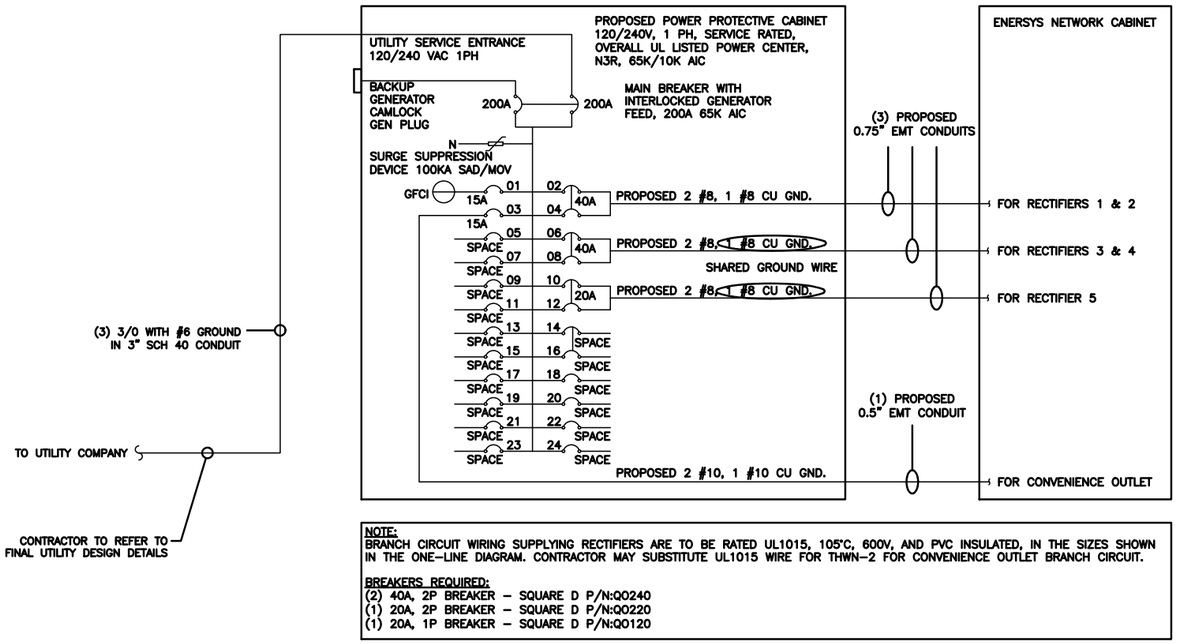
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

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.

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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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5701 SOUTH SANTA FE DRIVE
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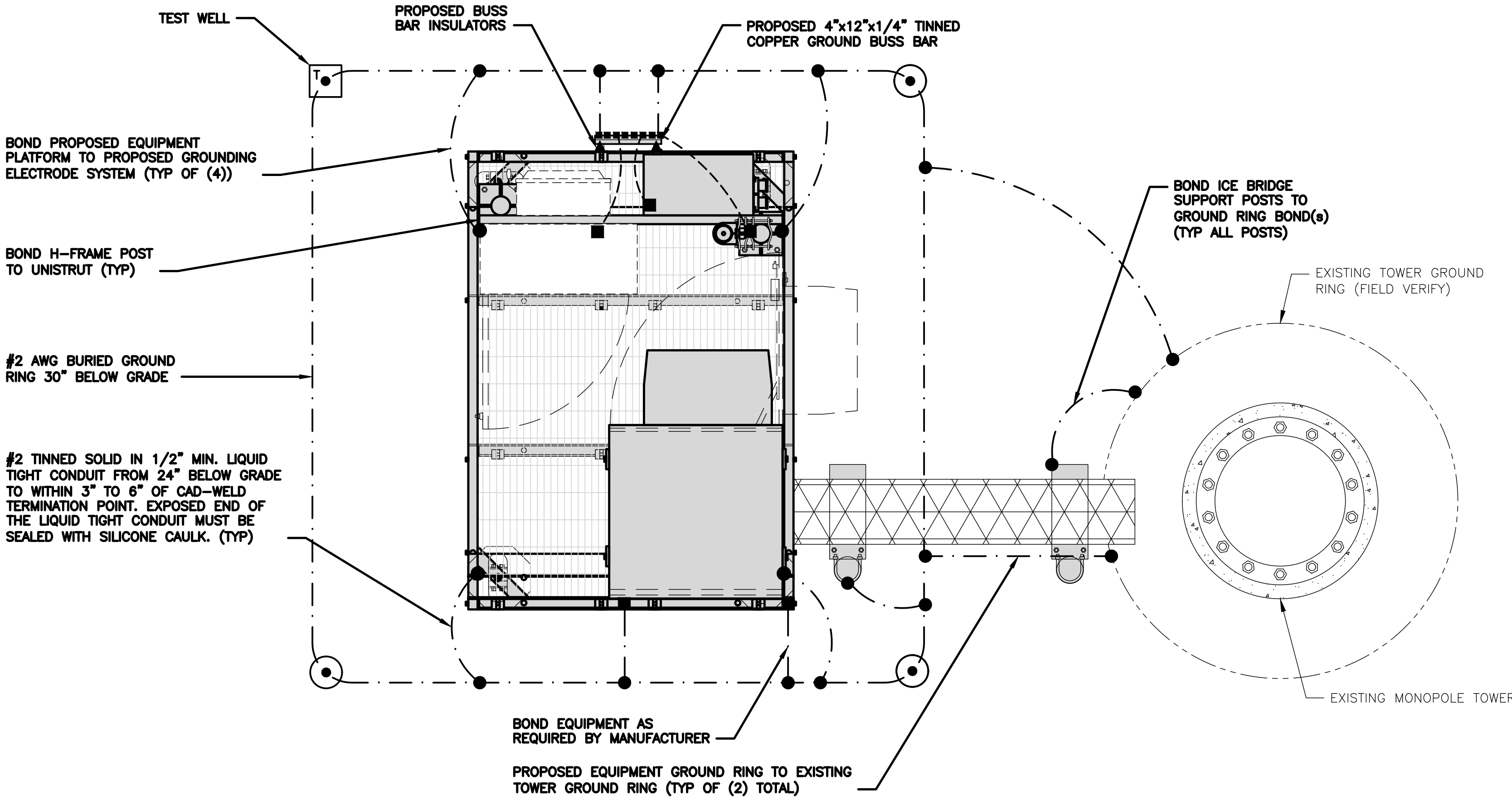
STAMFORD, CT 06903

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

SHEET NUMBER
E-3

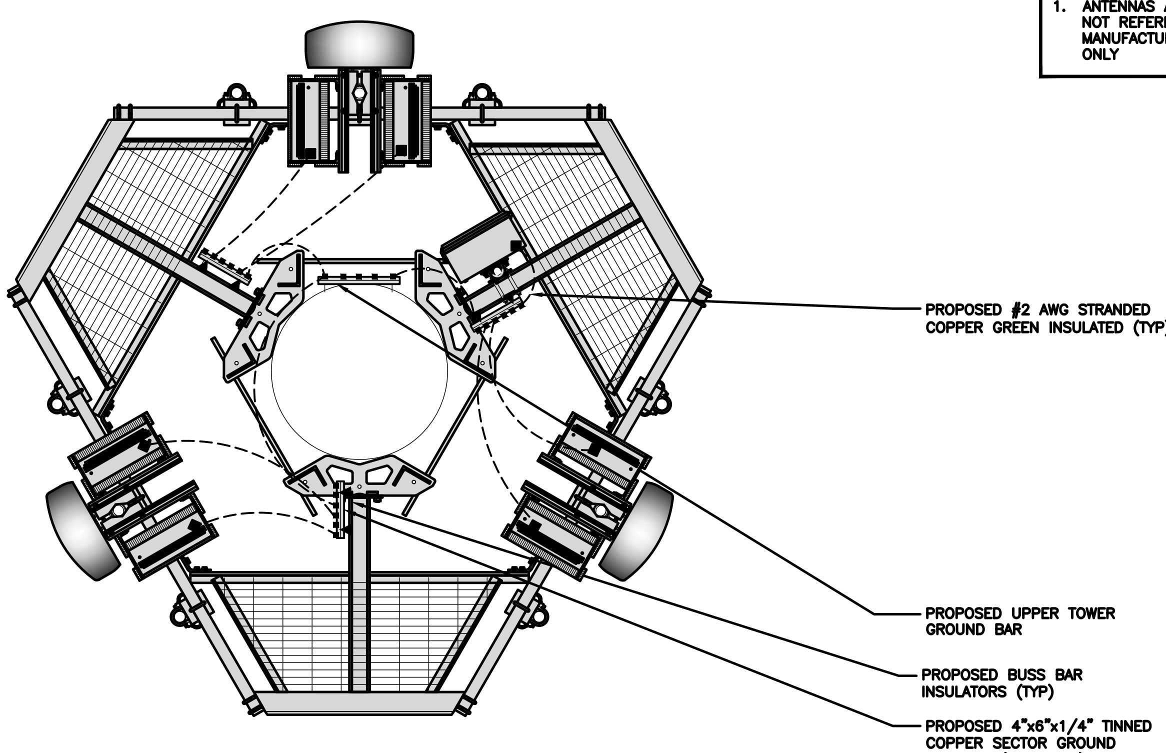


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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GROUNDING KEY NOTES

NO SCALE 3

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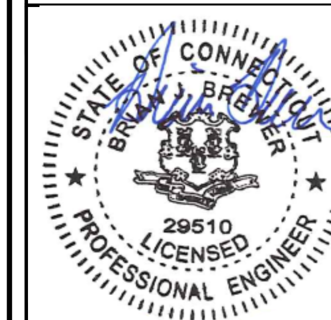

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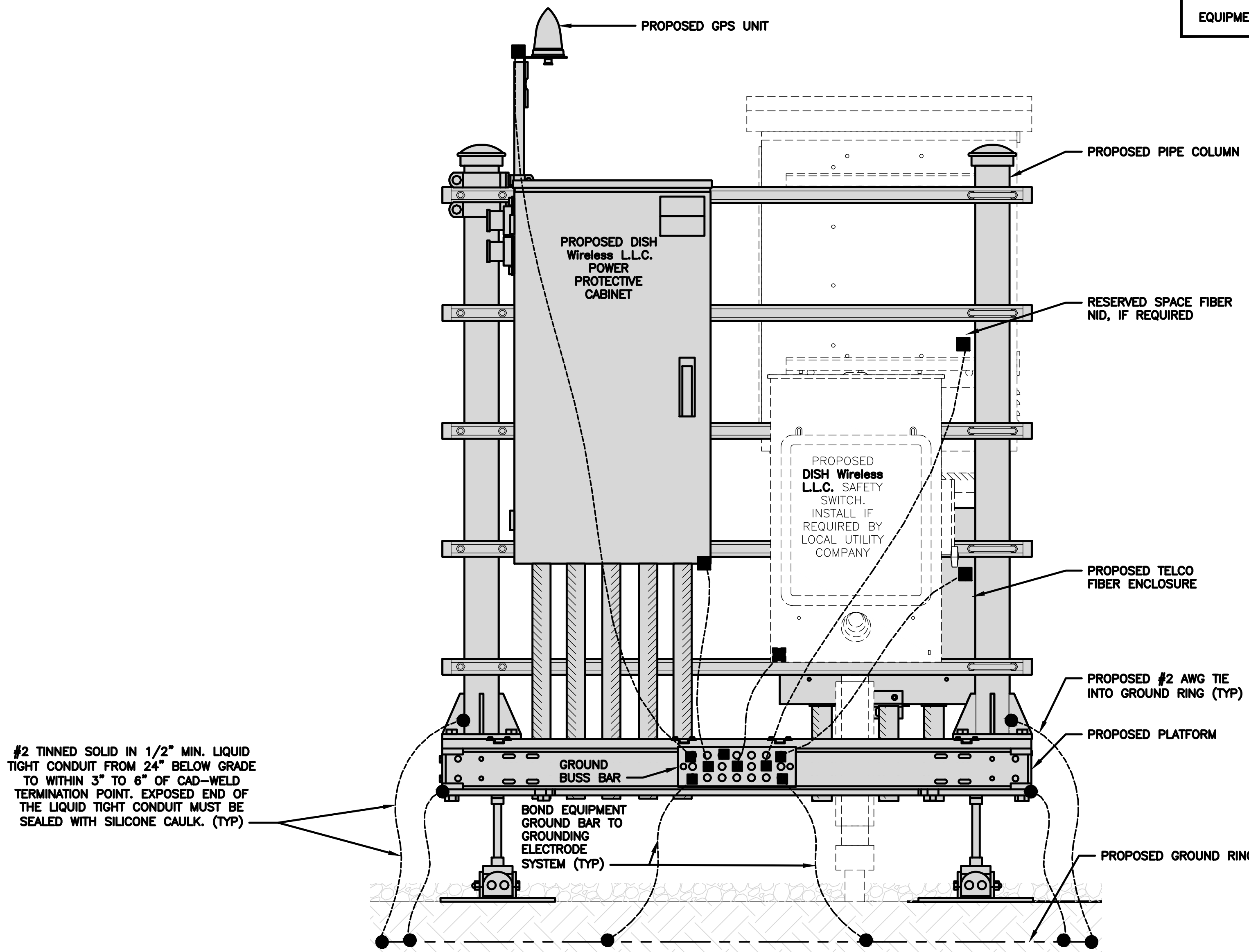
SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

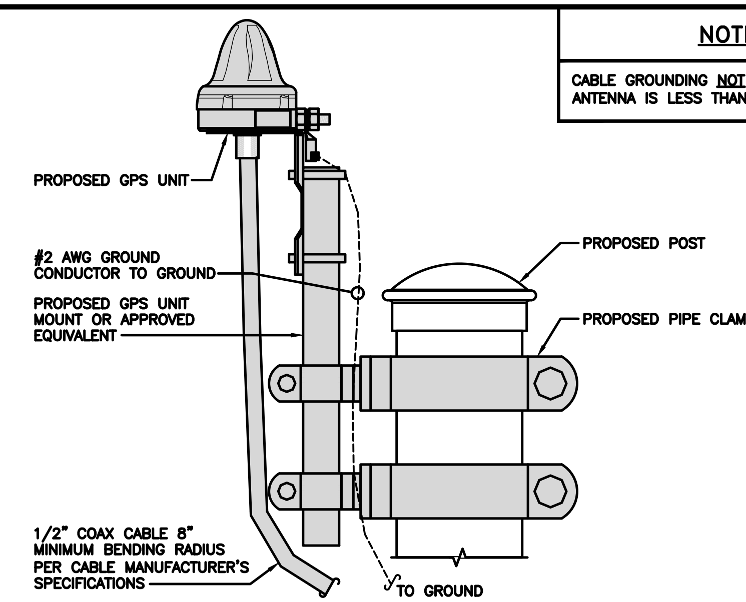
EQUIPMENT CABINET OMITTED FOR CLARITY



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

11/12/21
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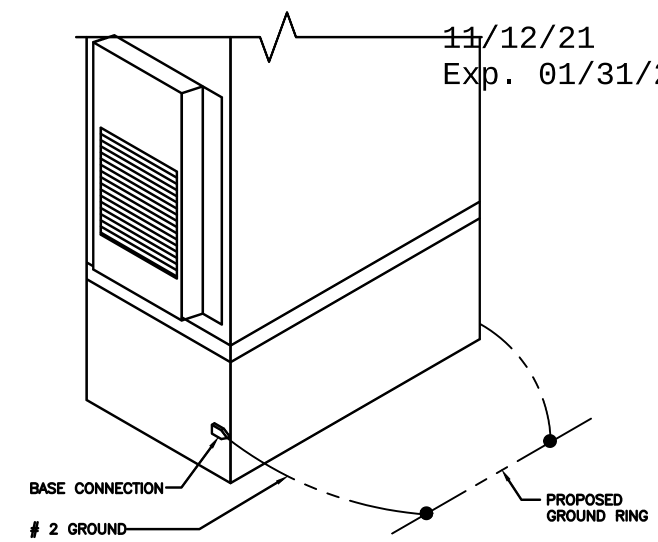
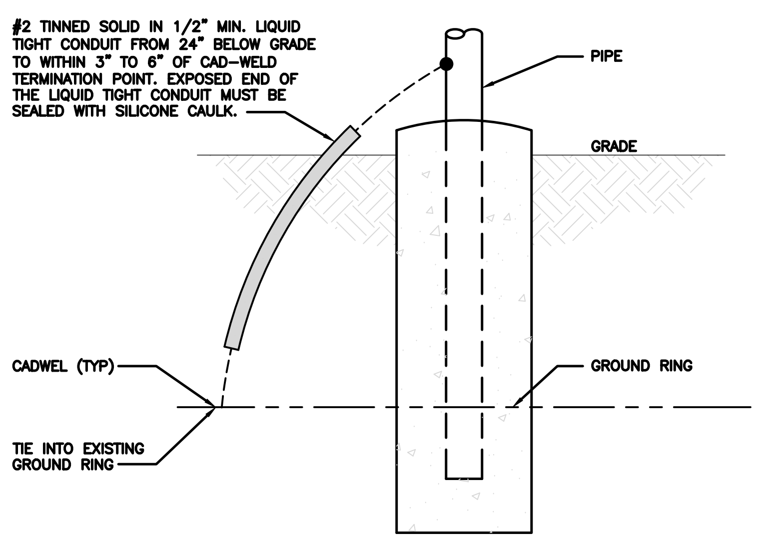
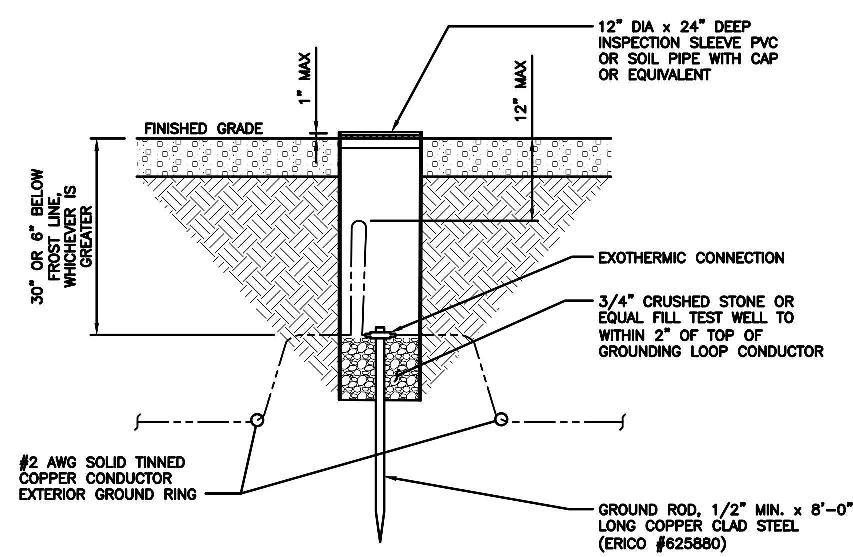


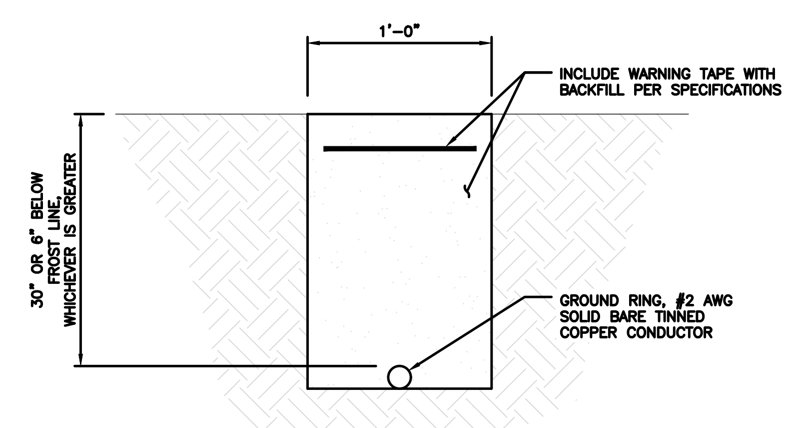
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

dish wireless.

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Kimley»Horn

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

STATE OF CONNECTICUT
BRIAN BREWER
29510
LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
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A&E PROJECT NUMBER

KHCLE-16706

DISH Wireless L.L.C. PROJECT INFORMATION

NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE

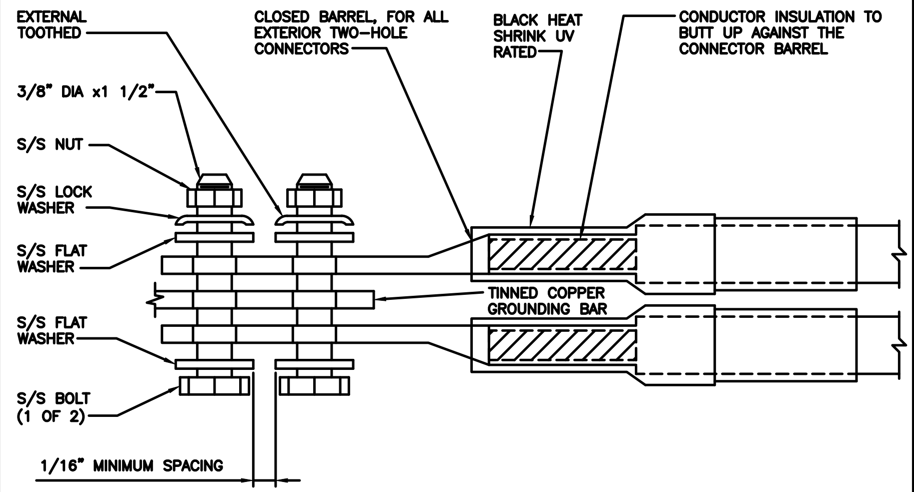
GROUNDING DETAILS

SHEET NUMBER

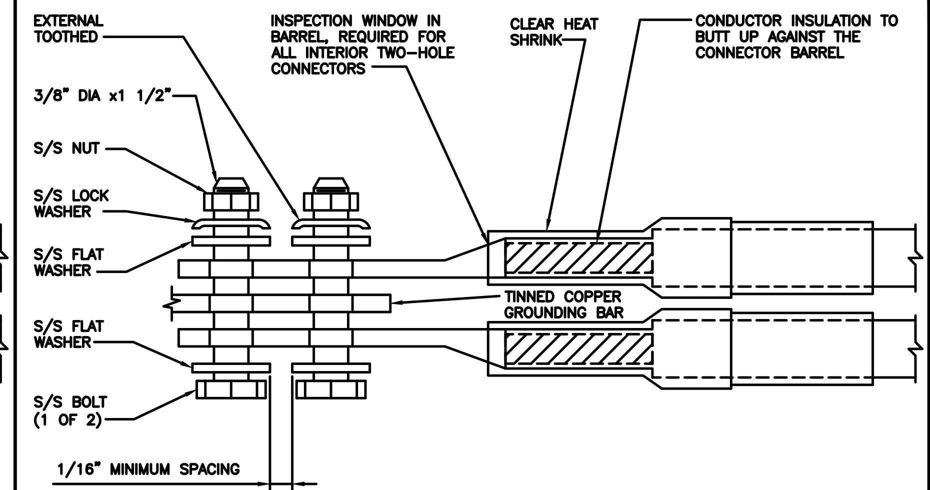
G-2

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).

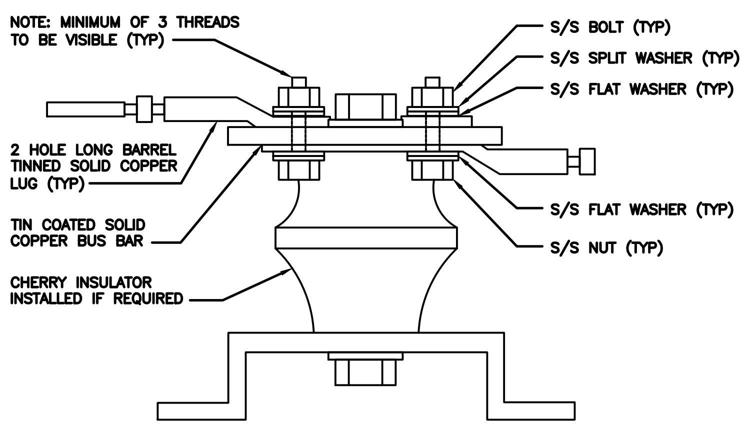
TYPICAL GROUNDING NOTES | NO SCALE | 1



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

11/12/21
Exp. 01/31/21

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STAMFORD, CT 06903

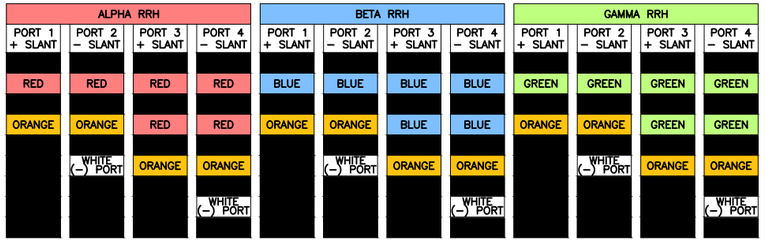
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

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

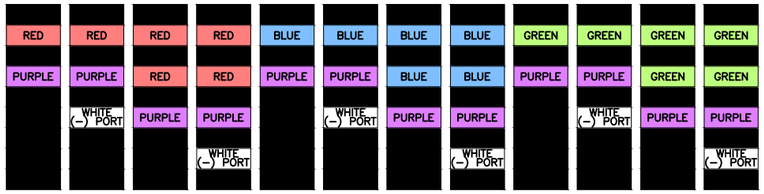
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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)



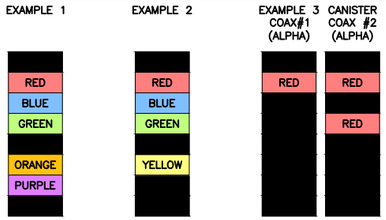
HYBRID/DISCREET CABLES

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.

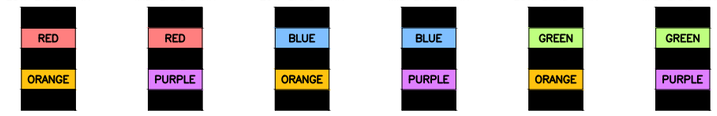


FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

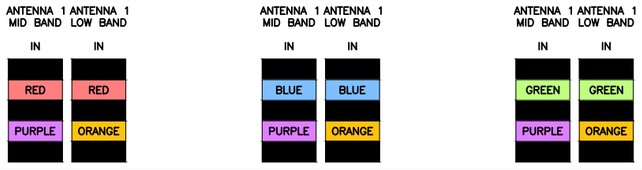
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

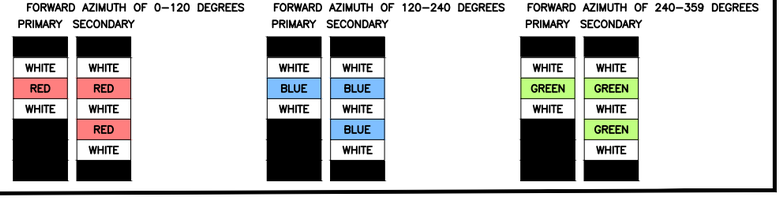
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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

NOT USED | | 3

RF CABLE COLOR CODES | | 1

NOT USED | | 4

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FOR REFERENCE PURPOSES ONLY

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NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

11/12/21
Exp. 01/31/21

dish wireless.

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

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.

RJE 12/21
Exp. 01/31/21

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

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

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

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

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

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

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

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

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

dish wireless.

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BRUCE J. BRUNER
29510
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	11/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE–16706

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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11/12/21
Exp. 01/31/21

STATE OF CONNECTICUT
BRUCE J. BREWER
29510
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
DJM	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/2021	ISSUED FOR REVIEW
0	11/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE-16706

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01089A
69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

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.

11/12/21
Exp. 01/31/21

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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PROJECT INFORMATION

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69 GUINEA RD (CAMP ROCKY CRAIG)
STAMFORD, CT 06903

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **August 25, 2021**

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-6909

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	NJJER01089A
	Site Name:	CT-CCI-T-806953
Crown Castle Designation:	**BU Number:**	806953
	Site Name:	BRG 2044 (A) 943097
	JDE Job Number:	640172
	Work Order Number:	1966029
	Order Number:	548687 Rev. 2
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	406642
Site Data:	**69 Guinea Rd. (Camp Rocky Craig), Stamford, Fairfield County, CT** **Latitude *41° 6' 6.3"*, Longitude *-73° 35' 40"*** **160 Foot - Monopole Tower**	

Black & Veatch Corp. 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:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 69.1%**

This analysis has been performed in accordance with the 2018 Connecticut Building Code. based upon an ultimate 3-second gust wind speed of 120 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Aditya Kulkarni

Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer

08/25/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by Valmont Microflect.

The tower has been modified multiple times in the past to accommodate additional loading.

The tower has been modified per reinforcement drawings prepared by Aero Solutions LLC, in August of 2009. Reinforcement consists of addition of base plate stiffeners. This modification has not been considered due to a lack of a post modification inspection report.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford & Company in October of 2012. Reinforcement consisted of addition of flat plate reinforcement from 1.75' to 16.75' and 77' to 82'. It also consists of the installation of transition stiffeners. Refer to Modification Inspection report by Tower Engineering Professionals, Inc. in August of 2013. These modifications were found to be ineffective.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford & Company in April of 2014. Reinforcement consisted of addition of flat plate reinforcement from 12.25' to 32.25', 32.33' to 52.33', and 78.5' to 88.5'. Refer to Modification Inspection Report by Sinnott Gering and Schmitt Towers, Inc. in August of 2014. The 78.5' to 88.5' reinforcements were found to be effective and all others were found to be ineffective.

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)
129.0	129.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1 1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

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)
157.0	158.0	3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe	1 4	1/8 17/64
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	1 1	5/8 7/8
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe	3	1 1/4

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	alcatel lucent	TD-RRH8x20-25		
		1	box enclosures and assembly	BEN-92P		
		3	nokia	FWHR		
	157.0	1	cci tower mounts (v2.1)	Platform Mount [13' LP 713-1]		
		9	rfs celwave	ACU-A20-N		
154.0	155.0	3	alcatel lucent	800 External Notch Filter	-	-
		3	alcatel lucent	800MHZ RRH		
	154.0	1	cci tower mounts (v2.1)	Pipe Mount [PM 601-3]		
	153.0	3	alcatel lucent	1900MHz RRH (65MHz)		
149.0	151.0	3	powerwave technologies	7770.00 w/ Mount Pipe	2 4 2 6 1	3/8 5/8 3/4 1 5/8 2 Conduit
		3	kmw communications	EPBQ-654L8H6-L2 w/ Mount Pipe		
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 8843 B2/B66A		
	149.0	1	cci tower mounts (v2.1)	Platform Mount [13' LP 713-1]		
		3	ericsson	RRUS 11 B12		
		6	powerwave technologies	LGP21401		
		3	raycap	DC6-48-60-18-8F		
139.0	142.0	6	andrew	DB846F65ZAXY w/ Mount Pipe	13	1 5/8
		3	commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	commscope	JAHH-65B-R3B		
		3	alcatel lucent	B66A RRH4X45		
		3	alcatel lucent	B13 RRH 4X30		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
	139.0	1	cci tower mounts (v2.1)	Platform Mount [LP 713-1]		
116.0	118.0	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	10	1 5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	Ericsson Air 21 B2A B4P w/ Mount Pipe		
		3	ericsson	Radio 4449 B12/B71		
		3	ericsson	KRY 112 144/1		
	116.0	1	cci tower mounts (v2.1)	Miscellaneous [NA 507-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	cci tower mounts (v2.1)	Platform Mount [LP 712-1]		
84.0	84.0	1	cci tower mounts (v2.1)	Side Arm Mount [4' SO 702-1]	-	-
		1	gps	GPS_A		
40.0	40.0	1	andrew	GPS-QBW-20N	1	1/2
		1	cci tower mounts (v2.1)	Pipe Mount [PM 601-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	5749621	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1104113	CCISITES
4-TOWER MANUFACTURER DRAWINGS	823122	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1251715	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3332716	CCISITES
4-POST-MODIFICATION INSPECTION	4015064	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4837035	CCISITES
4-POST-MODIFICATION INSPECTION	5577141	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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole Tower)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.1%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	6.0%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	13.7%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	20.1%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	29.6%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	37.3%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	45.7%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	53.4%	Pass
120 - 116	Pole	TP31.29x29.208x0.25	Pole	59.0%	Pass
116 - 111	Pole	TP30.867x29.669x0.3438	Pole	44.7%	Pass
111 - 106	Pole	TP32.065x30.867x0.3438	Pole	49.1%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	53.1%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	56.7%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	60.0%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	63.1%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 5 Tension Rupture	60.1%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 5 Tension Rupture	62.5%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	66.1%	Pass
80.75 - 80.5	Pole	TP38.175x38.115x0.3438	Pole	66.2%	Pass
80.5 - 79	Pole	TP39.912x38.175x0.3438	Pole	67.0%	Pass
79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	57.6%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	59.3%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	60.9%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	62.4%	Pass
57.25 - 52.25	Pole	TP44.268x43.067x0.4063	Pole	63.8%	Pass
52.25 - 49.83	Pole	TP44.848x44.268x0.4063	Pole	64.5%	Pass
49.83 - 49.58	Pole	TP44.908x44.848x0.4063	Pole	64.5%	Pass
49.58 - 44.58	Pole	TP46.109x44.908x0.4063	Pole	65.8%	Pass
44.58 - 43	Pole	TP48.088x46.109x0.4063	Pole	66.2%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	63.0%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	63.6%	Pass
32.25 - 32	Pole	TP48.317x48.256x0.4375	Pole	63.7%	Pass
32 - 27	Pole	TP49.517x48.317x0.4375	Pole	64.6%	Pass
27 - 22	Pole	TP50.718x49.517x0.4375	Pole	65.5%	Pass
22 - 17	Pole	TP51.918x50.718x0.4375	Pole	66.4%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	66.6%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	66.7%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	66.8%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	66.8%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	67.6%	Pass
9.5 - 4.5	Pole	TP54.92x53.719x0.4375	Pole	68.4%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
4.5 - 0	Pole	TP56x54.92x0.4375	Pole	69.1%	Pass
				Summary	
			Pole	69.1%	Pass
			Reinforcement	62.5%	Pass
			Overall	**69.1%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity (Monopole Tower) - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	55.6	Pass
	Base Plate		40.4	Pass
1	Base Foundation (Structure)	0	22.2	Pass
	Base Foundation (Soil Interaction)		64.2	Pass

Structure Rating (max from all components) =	69.1%

Note:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed. Rating per TIA-222-H Section 15.5.

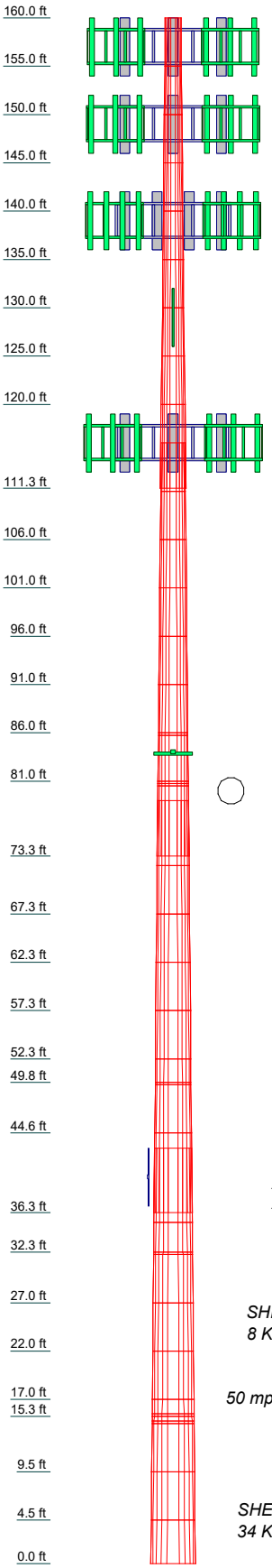
4.1) Recommendations

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		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Length (ft)		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.750	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.000	7.6625	5.00	5.00	5.00	5.000	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.50
Number of Sides		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)		0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.3438	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375
Socket Length (ft)										4.67											5.75									6.67															
Top Dia (in)		19.6000	20.8010	22.0021	23.2031	24.4041	25.6051	26.8062	28.0072	29.2082	30.4092	31.6102	32.8112	34.0122	35.2132	36.4142	37.6152	38.8162	40.0172	41.2182	42.4192	43.6202	44.8212	46.0222	47.2232	48.4242	49.6252	50.8262	52.0272	53.2282	54.4292	55.6302	56.8312	58.0322	59.2332	60.4342	61.6352	62.8362	64.0372	65.2382	66.4392	67.6402	68.8412
Bot Dia (in)		20.8010	22.0021	23.2031	24.4041	25.6051	26.8062	28.0072	29.2082	30.4092	31.6102	32.8112	34.0122	35.2132	36.4142	37.6152	38.8162	40.0172	41.2182	42.4192	43.6202	44.8212	46.0222	47.2232	48.4242	49.6252	50.8262	52.0272	53.2282	54.4292	55.6302	56.8312	58.0322	59.2332	60.4342	61.6352	62.8362	64.0372	65.2382	66.4392	67.6402	68.8412	70.0422
Grade																														A572-65														
Weight (K)		0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.0	1.0	0.0	1.1	1.1	1.1	0.9	0.9	0.9	1.0	0.5	1.0	1.0	1.7	1.7	0.7	1.1	1.2	1.2	1.2	1.4	1.4	1.3	1.3	1.3	1.2	27.7



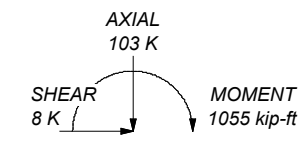
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

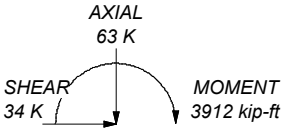
TOWER DESIGN NOTES

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: 69.1%

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 0 kip-ft
REACTIONS - 120 mph WIND

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Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
Phone: (913) 458-6909
FAX: (913) 458-8136

Job: ***BRG 2044 (A) 943097 (BU #806953)***			
Project: ***406642 (806953.1966029)***			
Client: Crown Castle	Drawn by: Aditya Kulkarni	App'd:	
Code: TIA-222-H	Date: 08/24/21	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
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: 247.00 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.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole 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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.00-155.00	5.00	0.00	12	19.6000	20.8010	0.2500	1.0000	A572-65 (65 ksi)
L2	155.00-150.00	5.00	0.00	12	20.8010	22.0021	0.2500	1.0000	A572-65 (65 ksi)
L3	150.00-145.00	5.00	0.00	12	22.0021	23.2031	0.2500	1.0000	A572-65 (65 ksi)
L4	145.00-140.00	5.00	0.00	12	23.2031	24.4041	0.2500	1.0000	A572-65 (65 ksi)
L5	140.00-135.00	5.00	0.00	12	24.4041	25.6051	0.2500	1.0000	A572-65 (65 ksi)
L6	135.00-130.00	5.00	0.00	12	25.6051	26.8062	0.2500	1.0000	A572-65 (65 ksi)
L7	130.00-125.00	5.00	0.00	12	26.8062	28.0072	0.2500	1.0000	A572-65 (65 ksi)
L8	125.00-120.00	5.00	0.00	12	28.0072	29.2082	0.2500	1.0000	A572-65 (65 ksi)
L9	120.00-111.33	8.67	4.67	12	29.2082	31.2900	0.2500	1.0000	A572-65 (65 ksi)
L10	111.33-111.00	5.00	0.00	12	29.6690	30.8670	0.3438	1.3750	A572-65 (65 ksi)
L11	111.00-106.00	5.00	0.00	12	30.8670	32.0650	0.3438	1.3750	A572-65 (65 ksi)
L12	106.00-101.00	5.00	0.00	12	32.0650	33.2631	0.3438	1.3750	A572-65 (65 ksi)
L13	101.00-96.00	5.00	0.00	12	33.2631	34.4611	0.3438	1.3750	A572-65 (65 ksi)
L14	96.00-91.00	5.00	0.00	12	34.4611	35.6591	0.3438	1.3750	A572-65 (65 ksi)
L15	91.00-86.00	5.00	0.00	12	35.6591	36.8571	0.3438	1.3750	A572-65 (65 ksi)
L16	86.00-85.75	0.25	0.00	12	36.8571	36.9170	0.5125	2.0500	A572-65 (65 ksi)
L17	85.75-81.00	4.75	0.00	12	36.9170	38.0551	0.5062	2.0250	A572-65 (65 ksi)
L18	81.00-80.75	0.25	0.00	12	38.0551	38.1150	0.3438	1.3750	A572-65 (65 ksi)
L19	80.75-80.50	0.25	0.00	12	38.1150	38.1749	0.3438	1.3750	A572-65 (65 ksi)
L20	80.50-73.25	7.25	5.75	12	38.1749	39.9120	0.3438	1.3750	A572-65 (65 ksi)
L21	73.25-72.25	6.75	0.00	12	37.8468	39.4670	0.4063	1.6250	A572-65 (65 ksi)
L22	72.25-67.25	5.00	0.00	12	39.4670	40.6671	0.4063	1.6250	A572-65 (65 ksi)
L23	67.25-62.25	5.00	0.00	12	40.6671	41.8673	0.4063	1.6250	A572-65 (65 ksi)
L24	62.25-57.25	5.00	0.00	12	41.8673	43.0674	0.4063	1.6250	A572-65 (65 ksi)
L25	57.25-52.25	5.00	0.00	12	43.0674	44.2675	0.4063	1.6250	A572-65 (65 ksi)
L26	52.25-49.83	2.42	0.00	12	44.2675	44.8484	0.4063	1.6250	A572-65 (65 ksi)
L27	49.83-49.58	0.25	0.00	12	44.8484	44.9084	0.4063	1.6250	A572-65 (65 ksi)
L28	49.58-44.58	5.00	0.00	12	44.9084	46.1086	0.4063	1.6250	A572-65 (65 ksi)
L29	44.58-36.33	8.25	6.67	12	46.1086	48.0880	0.4063	1.6250	A572-65 (65 ksi)
L30	36.33-35.33	7.67	0.00	12	45.6753	47.5161	0.4375	1.7500	A572-65 (65 ksi)
L31	35.33-32.25	3.08	0.00	12	47.5161	48.2565	0.4375	1.7500	A572-65 (65 ksi)
L32	32.25-32.00	0.25	0.00	12	48.2565	48.3165	0.4375	1.7500	A572-65 (65 ksi)
L33	32.00-27.00	5.00	0.00	12	48.3165	49.5171	0.4375	1.7500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L34	27.00-22.00	5.00	0.00	12	49.5171	50.7176	0.4375	1.7500	A572-65 (65 ksi)
L35	22.00-17.00	5.00	0.00	12	50.7176	51.9181	0.4375	1.7500	A572-65 (65 ksi)
L36	17.00-15.50	1.50	0.00	12	51.9181	52.2783	0.4375	1.7500	A572-65 (65 ksi)
L37	15.50-15.25	0.25	0.00	12	52.2783	52.3383	0.4375	1.7500	A572-65 (65 ksi)
L38	15.25-14.75	0.50	0.00	12	52.3383	52.4584	0.4375	1.7500	A572-65 (65 ksi)
L39	14.75-14.50	0.25	0.00	12	52.4584	52.5184	0.4375	1.7500	A572-65 (65 ksi)
L40	14.50-9.50	5.00	0.00	12	52.5184	53.7190	0.4375	1.7500	A572-65 (65 ksi)
L41	9.50-4.50	5.00	0.00	12	53.7190	54.9195	0.4375	1.7500	A572-65 (65 ksi)
L42	4.50-0.00	4.50		12	54.9195	56.0000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.2032	15.5768	744.4315	6.9273	10.1528	73.3228	1508.4200	7.6664	4.5828	18.331
	21.4466	16.5436	891.8306	7.3573	10.7749	82.7690	1807.0907	8.1422	4.9047	19.619
L2	21.4466	16.5436	891.8306	7.3573	10.7749	82.7690	1807.0907	8.1422	4.9047	19.619
	22.6900	17.5104	1057.5054	7.7872	11.3971	92.7875	2142.7927	8.6181	5.2266	20.906
L3	22.6900	17.5104	1057.5054	7.7872	11.3971	92.7875	2142.7927	8.6181	5.2266	20.906
	23.9334	18.4772	1242.5238	8.2172	12.0192	103.3783	2517.6901	9.0939	5.5484	22.194
L4	23.9334	18.4772	1242.5238	8.2172	12.0192	103.3783	2517.6901	9.0939	5.5484	22.194
	25.1768	19.4441	1447.9540	8.6472	12.6413	114.5413	2933.9473	9.5698	5.8703	23.481
L5	25.1768	19.4441	1447.9540	8.6472	12.6413	114.5413	2933.9473	9.5698	5.8703	23.481
	26.4202	20.4109	1674.8638	9.0771	13.2635	126.2766	3393.7282	10.0456	6.1922	24.769
L6	26.4202	20.4109	1674.8638	9.0771	13.2635	126.2766	3393.7282	10.0456	6.1922	24.769
	27.6636	21.3777	1924.3215	9.5071	13.8856	138.5841	3899.1971	10.5215	6.5141	26.056
L7	27.6636	21.3777	1924.3215	9.5071	13.8856	138.5841	3899.1971	10.5215	6.5141	26.056
	28.9070	22.3445	2197.3950	9.9371	14.5077	151.4638	4452.5181	10.9973	6.8359	27.344
L8	28.9070	22.3445	2197.3950	9.9371	14.5077	151.4638	4452.5181	10.9973	6.8359	27.344
	30.1504	23.3114	2495.1525	10.3670	15.1299	164.9158	5055.8554	11.4731	7.1578	28.631
L9	30.1504	23.3114	2495.1525	10.3670	15.1299	164.9158	5055.8554	11.4731	7.1578	28.631
	32.3056	24.9872	3072.8897	11.1123	16.2082	189.5883	6226.5076	12.2979	7.7157	30.863
L10	31.7520	32.4594	3562.9621	10.4985	15.3686	231.8345	7219.5272	15.9755	7.0301	20.451
	31.8347	33.7855	4017.7104	10.9273	15.9891	251.2776	8140.9705	16.6282	7.3511	21.385
L11	31.8347	33.7855	4017.7104	10.9273	15.9891	251.2776	8140.9705	16.6282	7.3511	21.385
	33.0749	35.1115	4509.5939	11.3562	16.6097	271.5037	9137.6598	17.2808	7.6722	22.319
L12	33.0749	35.1115	4509.5939	11.3562	16.6097	271.5037	9137.6598	17.2808	7.6722	22.319
	34.3152	36.4376	5040.0702	11.7851	17.2303	292.5127	10212.5486	17.9335	7.9932	23.253
L13	34.3152	36.4376	5040.0702	11.7851	17.2303	292.5127	10212.5486	17.9335	7.9932	23.253
	35.5555	37.7636	5610.5968	12.2140	17.8508	314.3045	11368.5902	18.5861	8.3143	24.187
L14	35.5555	37.7636	5610.5968	12.2140	17.8508	314.3045	11368.5902	18.5861	8.3143	24.187
	36.7957	39.0896	6222.6312	12.6429	18.4714	336.8792	12608.7378	19.2387	8.6354	25.121
L15	36.7957	39.0896	6222.6312	12.6429	18.4714	336.8792	12608.7378	19.2387	8.6354	25.121
	38.0360	40.4157	6877.6309	13.0718	19.0920	360.2369	13935.9448	19.8914	8.9564	26.055
L16	37.9765	59.9776	10112.4099	13.0114	19.0920	529.6683	20490.4841	29.5192	8.5042	16.594
	38.0385	60.0765	10162.4919	13.0328	19.1230	531.4278	20591.9637	29.5678	8.5203	16.625
L17	38.0407	59.3540	10043.7303	13.0350	19.1230	525.2174	20351.3205	29.2123	8.5370	16.863

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	39.2189	61.2093	11015.3009	13.4425	19.7125	558.7968	22319.9859	30.1254	8.8420	17.466
L18	39.2763	41.7417	7577.0535	13.5007	19.7125	384.3774	15353.1646	20.5440	9.2775	26.989
	39.3383	41.8080	7613.2169	13.5221	19.7436	385.6050	15426.4414	20.5766	9.2936	27.036
L19	39.3383	41.8080	7613.2169	13.5221	19.7436	385.6050	15426.4414	20.5766	9.2936	27.036
	39.4003	41.8743	7649.4951	13.5435	19.7746	386.8345	15499.9510	20.6093	9.3096	27.083
L20	39.4003	41.8743	7649.4951	13.5435	19.7746	386.8345	15499.9510	20.6093	9.3096	27.083
	41.1987	43.7971	8752.3577	14.1654	20.6744	423.3424	17734.6495	21.5556	9.7752	28.437
L21	40.4674	48.9769	8763.1762	13.4037	19.6046	446.9951	17756.5709	24.1049	9.0542	22.287
	40.7159	51.0963	9950.7611	13.9837	20.4439	486.7351	20162.9397	25.1481	9.4884	23.356
L22	40.7159	51.0963	9950.7611	13.9837	20.4439	486.7351	20162.9397	25.1481	9.4884	23.356
	41.9584	52.6663	10896.4422	14.4134	21.0656	517.2631	22079.1461	25.9207	9.8100	24.148
L23	41.9584	52.6663	10896.4422	14.4134	21.0656	517.2631	22079.1461	25.9207	9.8100	24.148
	43.2009	54.2362	11900.2177	14.8430	21.6872	548.7197	24113.0675	26.6934	10.1317	24.94
L24	43.2009	54.2362	11900.2177	14.8430	21.6872	548.7197	24113.0675	26.6934	10.1317	24.94
	44.4433	55.8061	12963.8194	15.2727	22.3089	581.1049	26268.2127	27.4661	10.4533	25.731
L25	44.4433	55.8061	12963.8194	15.2727	22.3089	581.1049	26268.2127	27.4661	10.4533	25.731
	45.6858	57.3761	14088.9788	15.7023	22.9306	614.4186	28548.0908	28.2387	10.7750	26.523
L26	45.6858	57.3761	14088.9788	15.7023	22.9306	614.4186	28548.0908	28.2387	10.7750	26.523
	46.2872	58.1359	14656.1781	15.9103	23.2315	630.8758	29697.3903	28.6127	10.9306	26.906
L27	46.2872	58.1359	14656.1781	15.9103	23.2315	630.8758	29697.3903	28.6127	10.9306	26.906
	46.3493	58.2144	14715.6258	15.9318	23.2626	632.5884	29817.8475	28.6514	10.9467	26.946
L28	46.3493	58.2144	14715.6258	15.9318	23.2626	632.5884	29817.8475	28.6514	10.9467	26.946
	47.5918	59.7843	15938.5808	16.3614	23.8842	667.3264	32295.8858	29.4240	11.2683	27.737
L29	47.5918	59.7843	15938.5808	16.3614	23.8842	667.3264	32295.8858	29.4240	11.2683	27.737
	49.6411	62.3737	18100.5493	17.0701	24.9096	726.6500	36676.6202	30.6984	11.7988	29.043
L30	48.7894	63.7288	16646.5574	16.1951	23.6598	703.5796	33730.4385	31.3654	11.0685	25.299
	49.0380	66.3220	18762.5503	16.8542	24.6134	762.2911	38018.0137	32.6417	11.5618	26.427
L31	49.0380	66.3220	18762.5503	16.8542	24.6134	762.2911	38018.0137	32.6417	11.5618	26.427
	49.8044	67.3650	19661.6860	17.1192	24.9969	786.5664	39839.9064	33.1550	11.7602	26.881
L32	49.8044	67.3650	19661.6860	17.1192	24.9969	786.5664	39839.9064	33.1550	11.7602	26.881
	49.8666	67.4495	19735.8231	17.1407	25.0279	788.5513	39990.1283	33.1966	11.7763	26.917
L33	49.8666	67.4495	19735.8231	17.1407	25.0279	788.5513	39990.1283	33.1966	11.7763	26.917
	51.1095	69.1408	21257.9625	17.5705	25.6498	828.7759	43074.3954	34.0290	12.0981	27.653
L34	51.1095	69.1408	21257.9625	17.5705	25.6498	828.7759	43074.3954	34.0290	12.0981	27.653
	52.3524	70.8321	22856.4204	18.0003	26.2717	870.0011	46313.3043	34.8614	12.4198	28.388

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L35	52.3524	70.8321	22856.4204	18.0003	26.2717	870.0011	46313.3043	34.8614	12.4198	28.388
	53.5953	72.5234	24533.0634	18.4301	26.8936	912.2269	49710.6378	35.6938	12.7416	29.124
L36	53.5953	72.5234	24533.0634	18.4301	26.8936	912.2269	49710.6378	35.6938	12.7416	29.124
	53.9682	73.0307	25051.5816	18.5590	27.0802	925.0898	50761.2961	35.9435	12.8381	29.344
L37	53.9682	73.0307	25051.5816	18.5590	27.0802	925.0898	50761.2961	35.9435	12.8381	29.344
	54.0303	73.1153	25138.7053	18.5805	27.1113	927.2423	50937.8323	35.9851	12.8542	29.381
L38	54.0303	73.1153	25138.7053	18.5805	27.1113	927.2423	50937.8323	35.9851	12.8542	29.381
	54.1546	73.2844	25313.5582	18.6235	27.1734	931.5550	51292.1317	36.0684	12.8863	29.455
L39	54.1546	73.2844	25313.5582	18.6235	27.1734	931.5550	51292.1317	36.0684	12.8863	29.455
	54.2167	73.3690	25401.2878	18.6450	27.2045	933.7150	51469.8958	36.1100	12.9024	29.491
L40	54.2167	73.3690	25401.2878	18.6450	27.2045	933.7150	51469.8958	36.1100	12.9024	29.491
	55.4596	75.0603	27198.7091	19.0748	27.8264	977.4418	55111.9587	36.9424	13.2242	30.227
L41	55.4596	75.0603	27198.7091	19.0748	27.8264	977.4418	55111.9587	36.9424	13.2242	30.227
	56.7025	76.7515	29078.9828	19.5046	28.4483	1022.1692	58921.9028	37.7748	13.5459	30.962
L42	56.7025	76.7515	29078.9828	19.5046	28.4483	1022.1692	58921.9028	37.7748	13.5459	30.962
	57.8211	78.2737	30843.6108	19.8914	29.0080	1063.2795	62497.5176	38.5239	13.8355	31.624

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
L1 160.00-155.00				1	1	1			
L2 155.00-150.00				1	1	1			
L3 150.00-145.00				1	1	1			
L4 145.00-140.00				1	1	1			
L5 140.00-135.00				1	1	1			
L6 135.00-130.00				1	1	1			
L7 130.00-125.00				1	1	1			
L8 125.00-120.00				1	1	1			
L9 120.00-111.33				1	1	1			
L10 111.33-111.00				1	1	1			
L11 111.00-106.00				1	1	1			
L12 106.00-101.00				1	1	1			
L13 101.00-96.00				1	1	1			
L14 96.00-91.00				1	1	1			
L15 91.00-86.00				1	1	1			
L16 86.00-				1	1	0.973888			

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
85.75									
L17 85.75-81.00				1	1	0.976445			
L18 81.00-80.75				1	1	1			
L19 80.75-80.50				1	1	1			
L20 80.50-73.25				1	1	1			
L21 73.25-72.25				1	1	1			
L22 72.25-67.25				1	1	1			
L23 67.25-62.25				1	1	1			
L24 62.25-57.25				1	1	1			
L25 57.25-52.25				1	1	1			
L26 52.25-49.83				1	1	1			
L27 49.83-49.58				1	1	1			
L28 49.58-44.58				1	1	1			
L29 44.58-36.33				1	1	1			
L30 36.33-35.33				1	1	1			
L31 35.33-32.25				1	1	1			
L32 32.25-32.00				1	1	1			
L33 32.00-27.00				1	1	1			
L34 27.00-22.00				1	1	1			
L35 22.00-17.00				1	1	1			
L36 17.00-15.50				1	1	1			
L37 15.50-15.25				1	1	1			
L38 15.25-14.75				1	1	1			
L39 14.75-14.50				1	1	1			
L40 14.50-9.50				1	1	1			
L41 9.50-4.50				1	1	1			
L42 4.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Surface Ar (CaAa)	160.00 - 10.00	1	1	-0.390 -0.380	0.3750		0.22
***										
MK SR 1	A	No	Surface Af (CaAa)	16.75 - 1.75	1	1	0.000 0.000	4.0000	9.5000	10.21

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
MK SR 1	B	No	Surface Af (CaAa)	16.75 - 1.75	1	1	0.000 0.000	4.0000	9.5000	10.21
MK SR 1	C	No	Surface Af (CaAa)	16.75 - 1.75	1	1	0.000 0.000	4.0000	9.5000	10.21
MK SR 2	A	No	Surface Af (CaAa)	82.00 - 77.00	1	1	0.000 0.000	4.0000	9.5000	10.21
MK SR 2	B	No	Surface Af (CaAa)	82.00 - 77.00	1	1	0.000 0.000	4.0000	9.5000	10.21
MK SR 2	C	No	Surface Af (CaAa)	82.00 - 77.00	1	1	0.000 0.000	4.0000	9.5000	10.21
CCI-AFP-060100	A	No	Surface Af (CaAa)	32.25 - 12.25	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	B	No	Surface Af (CaAa)	32.25 - 12.25	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	C	No	Surface Af (CaAa)	32.25 - 12.25	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	A	No	Surface Af (CaAa)	52.33 - 32.33	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	B	No	Surface Af (CaAa)	52.33 - 32.33	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	C	No	Surface Af (CaAa)	52.33 - 32.33	1	1	0.000 0.000	6.0000	14.0000	20.42
CCI-AFP-060100	A	No	Surface Af (CaAa)	88.50 - 78.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	88.50 - 78.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	C	No	Surface Af (CaAa)	88.50 - 78.50	1	1	0.000 0.000	6.0000	14.0000	0.00
**** **** ****										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
157, 40									
004U8X-32125E2G(1/8)	C	No	No	Inside Pole	157.00 - 0.00	1	No Ice	0.00	0.01
							1/2" Ice	0.00	0.01
							1" Ice	0.00	0.01
							2" Ice	0.00	0.01
7919A(17/64)	C	No	No	Inside Pole	157.00 - 0.00	4	No Ice	0.00	0.03
							1/2" Ice	0.00	0.03
							1" Ice	0.00	0.03
							2" Ice	0.00	0.03
LDF4-50A(1/2)	C	No	No	Inside Pole	40.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
HB058-M12-XXXF(5/8)	C	No	No	Inside Pole	157.00 - 0.00	1	No Ice	0.00	0.24
							1/2" Ice	0.00	0.24
							1" Ice	0.00	0.24
							2" Ice	0.00	0.24
TYPE SOOW 12/9(7/8)	C	No	No	Inside Pole	157.00 - 0.00	1	No Ice	0.00	0.51
							1/2" Ice	0.00	0.51
							1" Ice	0.00	0.51
							2" Ice	0.00	0.51
HB114-1-0813U4-M5J(1-1/4)	C	No	No	Inside Pole	157.00 - 0.00	3	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
							2" Ice	0.00	1.20
149									
FB-L98B-002-	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
75000(3/8)							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	149.00 - 0.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	149.00 - 0.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
2" innerduct conduit	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
							2" Ice	0.00	0.20
LCF158-50JA-A0(1-5/8)	C	No	No	Inside Pole	149.00 - 0.00	6	No Ice	0.00	0.80
							1/2" Ice	0.00	0.80
							1" Ice	0.00	0.80
							2" Ice	0.00	0.80
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	149.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
139									
561(1-5/8)	C	No	No	Inside Pole	139.00 - 0.00	12	No Ice	0.00	1.35
							1/2" Ice	0.00	1.35
							1" Ice	0.00	1.35
							2" Ice	0.00	1.35
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	139.00 - 0.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
129									
CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	129.00 - 0.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35
116									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	116.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	C	No	No	Inside Pole	116.00 - 0.00	1	No Ice	0.00	1.07
							1/2" Ice	0.00	1.07
							1" Ice	0.00	1.07
							2" Ice	0.00	1.07
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	116.00 - 0.00	3	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
****									
****									
****									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-155.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.01
L2	155.00-150.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.02
L3	150.00-145.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L4	145.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.06
L5	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.13
L6	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.15
L7	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.16
L8	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.16
L9	120.00-111.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.325	0.000	0.34
L10	111.33-111.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.012	0.000	0.02
L11	111.00-106.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L12	106.00-101.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L13	101.00-96.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L14	96.00-91.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L15	91.00-86.00	A	0.000	0.000	2.280	0.000	0.00
		B	0.000	0.000	2.280	0.000	0.00
		C	0.000	0.000	2.468	0.000	0.23
L16	86.00-85.75	A	0.000	0.000	0.228	0.000	0.00
		B	0.000	0.000	0.228	0.000	0.00
		C	0.000	0.000	0.237	0.000	0.01
L17	85.75-81.00	A	0.000	0.000	4.885	0.000	0.01
		B	0.000	0.000	4.885	0.000	0.01
		C	0.000	0.000	5.063	0.000	0.23
L18	81.00-80.75	A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.366	0.000	0.00
		C	0.000	0.000	0.376	0.000	0.01
L19	80.75-80.50	A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.366	0.000	0.00
		C	0.000	0.000	0.376	0.000	0.01
L20	80.50-73.25	A	0.000	0.000	3.759	0.000	0.04
		B	0.000	0.000	3.759	0.000	0.04
		C	0.000	0.000	4.031	0.000	0.36
L21	73.25-72.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.037	0.000	0.05
L22	72.25-67.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L23	67.25-62.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L24	62.25-57.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.23
L25	57.25-52.25	A	0.000	0.000	0.080	0.000	0.00
		B	0.000	0.000	0.080	0.000	0.00
		C	0.000	0.000	0.268	0.000	0.23
L26	52.25-49.83	A	0.000	0.000	2.420	0.000	0.05
		B	0.000	0.000	2.420	0.000	0.05
		C	0.000	0.000	2.511	0.000	0.16
L27	49.83-49.58	A	0.000	0.000	0.250	0.000	0.01
		B	0.000	0.000	0.250	0.000	0.01
		C	0.000	0.000	0.259	0.000	0.02
L28	49.58-44.58	A	0.000	0.000	5.000	0.000	0.10
		B	0.000	0.000	5.000	0.000	0.10
		C	0.000	0.000	5.188	0.000	0.33
L29	44.58-36.33	A	0.000	0.000	8.247	0.000	0.17
		B	0.000	0.000	8.247	0.000	0.17
		C	0.000	0.000	8.556	0.000	0.54
L30	36.33-35.33	A	0.000	0.000	1.000	0.000	0.02
		B	0.000	0.000	1.000	0.000	0.02
		C	0.000	0.000	1.038	0.000	0.07
L31	35.33-32.25	A	0.000	0.000	3.003	0.000	0.06
		B	0.000	0.000	3.003	0.000	0.06
		C	0.000	0.000	3.119	0.000	0.20
L32	32.25-32.00	A	0.000	0.000	0.250	0.000	0.01
		B	0.000	0.000	0.250	0.000	0.01
		C	0.000	0.000	0.259	0.000	0.02
L33	32.00-27.00	A	0.000	0.000	5.000	0.000	0.10
		B	0.000	0.000	5.000	0.000	0.10
		C	0.000	0.000	5.188	0.000	0.33
L34	27.00-22.00	A	0.000	0.000	5.000	0.000	0.10
		B	0.000	0.000	5.000	0.000	0.10
		C	0.000	0.000	5.188	0.000	0.33
L35	22.00-17.00	A	0.000	0.000	5.000	0.000	0.10
		B	0.000	0.000	5.000	0.000	0.10
		C	0.000	0.000	5.188	0.000	0.33
L36	17.00-15.50	A	0.000	0.000	2.333	0.000	0.04
		B	0.000	0.000	2.333	0.000	0.04
		C	0.000	0.000	2.390	0.000	0.11
L37	15.50-15.25	A	0.000	0.000	0.417	0.000	0.01
		B	0.000	0.000	0.417	0.000	0.01
		C	0.000	0.000	0.426	0.000	0.02
L38	15.25-14.75	A	0.000	0.000	0.833	0.000	0.02
		B	0.000	0.000	0.833	0.000	0.02
		C	0.000	0.000	0.852	0.000	0.04
L39	14.75-14.50	A	0.000	0.000	0.417	0.000	0.01
		B	0.000	0.000	0.417	0.000	0.01
		C	0.000	0.000	0.426	0.000	0.02
L40	14.50-9.50	A	0.000	0.000	5.583	0.000	0.10
		B	0.000	0.000	5.583	0.000	0.10
		C	0.000	0.000	5.752	0.000	0.32
L41	9.50-4.50	A	0.000	0.000	3.333	0.000	0.05
		B	0.000	0.000	3.333	0.000	0.05
		C	0.000	0.000	3.333	0.000	0.28
L42	4.50-0.00	A	0.000	0.000	1.833	0.000	0.03
		B	0.000	0.000	1.833	0.000	0.03
		C	0.000	0.000	1.833	0.000	0.23

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-155.00	A	1.491	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.678	0.000	0.03
L2	155.00-150.00	A	1.486	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.673	0.000	0.04
L3	150.00-145.00	A	1.481	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.668	0.000	0.07
L4	145.00-140.00	A	1.476	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.663	0.000	0.08
L5	140.00-135.00	A	1.471	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.658	0.000	0.15
L6	135.00-130.00	A	1.465	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.653	0.000	0.17
L7	130.00-125.00	A	1.459	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.647	0.000	0.17
L8	125.00-120.00	A	1.454	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.641	0.000	0.18
L9	120.00-111.33	A	1.445	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.830	0.000	0.37
L10	111.33-111.00	A	1.440	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.109	0.000	0.02
L11	111.00-106.00	A	1.436	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.624	0.000	0.24
L12	106.00-101.00	A	1.429	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.617	0.000	0.24
L13	101.00-96.00	A	1.422	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.610	0.000	0.24
L14	96.00-91.00	A	1.415	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.602	0.000	0.24
L15	91.00-86.00	A	1.407	0.000	0.000	2.654	0.000	0.03
		B		0.000	0.000	2.654	0.000	0.03
		C		0.000	0.000	4.249	0.000	0.27
L16	86.00-85.75	A	1.403	0.000	0.000	0.265	0.000	0.00
		B		0.000	0.000	0.265	0.000	0.00
		C		0.000	0.000	0.345	0.000	0.01
L17	85.75-81.00	A	1.399	0.000	0.000	5.741	0.000	0.07
		B		0.000	0.000	5.741	0.000	0.07
		C		0.000	0.000	7.248	0.000	0.30
L18	81.00-80.75	A	1.395	0.000	0.000	0.441	0.000	0.01
		B		0.000	0.000	0.441	0.000	0.01
		C		0.000	0.000	0.520	0.000	0.02
L19	80.75-80.50	A	1.394	0.000	0.000	0.441	0.000	0.01
		B		0.000	0.000	0.441	0.000	0.01
		C		0.000	0.000	0.520	0.000	0.02
L20	80.50-73.25	A	1.387	0.000	0.000	4.573	0.000	0.08
		B		0.000	0.000	4.573	0.000	0.08
		C		0.000	0.000	6.857	0.000	0.43
L21	73.25-72.25	A	1.380	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.315	0.000	0.05
L22	72.25-67.25	A	1.374	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.562	0.000	0.24
L23	67.25-62.25	A	1.364	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.551	0.000	0.24

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L24	62.25-57.25	A	1.353	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.540	0.000	0.24
L25	57.25-52.25	A	1.341	0.000	0.000	0.101	0.000	0.00
		B		0.000	0.000	0.101	0.000	0.00
		C		0.000	0.000	1.630	0.000	0.24
L26	52.25-49.83	A	1.332	0.000	0.000	3.065	0.000	0.07
		B		0.000	0.000	3.065	0.000	0.07
		C		0.000	0.000	3.800	0.000	0.19
L27	49.83-49.58	A	1.328	0.000	0.000	0.316	0.000	0.01
		B		0.000	0.000	0.316	0.000	0.01
		C		0.000	0.000	0.392	0.000	0.02
L28	49.58-44.58	A	1.321	0.000	0.000	6.321	0.000	0.15
		B		0.000	0.000	6.321	0.000	0.15
		C		0.000	0.000	7.830	0.000	0.39
L29	44.58-36.33	A	1.301	0.000	0.000	10.393	0.000	0.25
		B		0.000	0.000	10.393	0.000	0.25
		C		0.000	0.000	12.848	0.000	0.64
L30	36.33-35.33	A	1.286	0.000	0.000	1.260	0.000	0.03
		B		0.000	0.000	1.260	0.000	0.03
		C		0.000	0.000	1.558	0.000	0.08
L31	35.33-32.25	A	1.278	0.000	0.000	3.771	0.000	0.09
		B		0.000	0.000	3.771	0.000	0.09
		C		0.000	0.000	4.675	0.000	0.24
L32	32.25-32.00	A	1.272	0.000	0.000	0.314	0.000	0.01
		B		0.000	0.000	0.314	0.000	0.01
		C		0.000	0.000	0.387	0.000	0.02
L33	32.00-27.00	A	1.261	0.000	0.000	6.261	0.000	0.15
		B		0.000	0.000	6.261	0.000	0.15
		C		0.000	0.000	7.709	0.000	0.39
L34	27.00-22.00	A	1.238	0.000	0.000	6.238	0.000	0.15
		B		0.000	0.000	6.238	0.000	0.15
		C		0.000	0.000	7.663	0.000	0.39
L35	22.00-17.00	A	1.210	0.000	0.000	6.210	0.000	0.15
		B		0.000	0.000	6.210	0.000	0.15
		C		0.000	0.000	7.607	0.000	0.38
L36	17.00-15.50	A	1.188	0.000	0.000	2.987	0.000	0.06
		B		0.000	0.000	2.987	0.000	0.06
		C		0.000	0.000	3.399	0.000	0.14
L37	15.50-15.25	A	1.181	0.000	0.000	0.535	0.000	0.01
		B		0.000	0.000	0.535	0.000	0.01
		C		0.000	0.000	0.603	0.000	0.02
L38	15.25-14.75	A	1.178	0.000	0.000	1.069	0.000	0.02
		B		0.000	0.000	1.069	0.000	0.02
		C		0.000	0.000	1.206	0.000	0.05
L39	14.75-14.50	A	1.175	0.000	0.000	0.534	0.000	0.01
		B		0.000	0.000	0.534	0.000	0.01
		C		0.000	0.000	0.602	0.000	0.02
L40	14.50-9.50	A	1.152	0.000	0.000	7.254	0.000	0.15
		B		0.000	0.000	7.254	0.000	0.15
		C		0.000	0.000	8.460	0.000	0.38
L41	9.50-4.50	A	1.092	0.000	0.000	4.425	0.000	0.08
		B		0.000	0.000	4.425	0.000	0.08
		C		0.000	0.000	4.425	0.000	0.31
L42	4.50-0.00	A	0.974	0.000	0.000	2.369	0.000	0.04
		B		0.000	0.000	2.369	0.000	0.04
		C		0.000	0.000	2.369	0.000	0.25

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.00-155.00	0.1651	0.1584	0.9175	0.8799
L2	155.00-150.00	0.1651	0.1584	0.9265	0.8885

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L3	150.00-145.00	0.1651	0.1584	0.9345	0.8961
L4	145.00-140.00	0.1651	0.1584	0.9414	0.9028
L5	140.00-135.00	0.1651	0.1584	0.9475	0.9086
L6	135.00-130.00	0.1651	0.1584	0.9528	0.9137
L7	130.00-125.00	0.1651	0.1584	0.9573	0.9180
L8	125.00-120.00	0.1651	0.1584	0.9612	0.9217
L9	120.00-111.33	0.1651	0.1584	0.9654	0.9258
L10	111.33-111.00	0.1653	0.1585	0.9692	0.9295
L11	111.00-106.00	0.1653	0.1585	0.9673	0.9276
L12	106.00-101.00	0.1653	0.1585	0.9691	0.9293
L13	101.00-96.00	0.1653	0.1585	0.9703	0.9304
L14	96.00-91.00	0.1653	0.1585	0.9709	0.9311
L15	91.00-86.00	0.1135	0.1088	0.7105	0.6813
L16	86.00-85.75	0.0872	0.0836	0.5641	0.5409
L17	85.75-81.00	0.0829	0.0795	0.5361	0.5141
L18	81.00-80.75	0.0690	0.0662	0.4475	0.4292
L19	80.75-80.50	0.0691	0.0662	0.4479	0.4295
L20	80.50-73.25	0.1115	0.1069	0.6878	0.6596
L21	73.25-72.25	0.1654	0.1586	0.9710	0.9312
L22	72.25-67.25	0.1653	0.1586	0.9655	0.9259
L23	67.25-62.25	0.1653	0.1586	0.9632	0.9237
L24	62.25-57.25	0.1653	0.1585	0.9602	0.9208
L25	57.25-52.25	0.1632	0.1565	0.9452	0.9064
L26	52.25-49.83	0.0911	0.0873	0.5494	0.5269
L27	49.83-49.58	0.0913	0.0876	0.5503	0.5277
L28	49.58-44.58	0.0919	0.0881	0.5517	0.5291
L29	44.58-36.33	0.0933	0.0895	0.5544	0.5317
L30	36.33-35.33	0.0936	0.0897	0.5563	0.5335
L31	35.33-32.25	0.0950	0.0911	0.5573	0.5344
L32	32.25-32.00	0.0943	0.0904	0.5515	0.5288
L33	32.00-27.00	0.0948	0.0909	0.5512	0.5286
L34	27.00-22.00	0.0958	0.0919	0.5497	0.5271
L35	22.00-17.00	0.0967	0.0928	0.5461	0.5237
L36	17.00-15.50	0.0792	0.0760	0.4390	0.4210
L37	15.50-15.25	0.0766	0.0734	0.4222	0.4049
L38	15.25-14.75	0.0766	0.0735	0.4219	0.4045
L39	14.75-14.50	0.0767	0.0736	0.4215	0.4042
L40	14.50-9.50	0.0842	0.0808	0.4511	0.4326
L41	9.50-4.50	0.0000	0.0000	0.0000	0.0000
L42	4.50-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L2	1	Safety Line 3/8	150.00 - 155.00	1.0000	1.0000
L3	1	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L4	1	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L5	1	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L6	1	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L7	1	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L8	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L9	1	Safety Line 3/8	111.33 - 120.00	1.0000	1.0000
L10	1	Safety Line 3/8	111.00 - 111.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	1	Safety Line 3/8	106.00 - 111.00	1.0000	1.0000
L12	1	Safety Line 3/8	101.00 - 106.00	1.0000	1.0000
L13	1	Safety Line 3/8	96.00 - 101.00	1.0000	1.0000
L14	1	Safety Line 3/8	91.00 - 96.00	1.0000	1.0000
L15	1	Safety Line 3/8	86.00 - 91.00	1.0000	1.0000
L15	44	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L15	45	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L15	46	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L16	1	Safety Line 3/8	85.75 - 86.00	1.0000	1.0000
L16	44	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L16	45	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L16	46	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L17	1	Safety Line 3/8	81.00 - 85.75	1.0000	1.0000
L17	35	MK SR 2	81.00 - 82.00	1.0000	1.0000
L17	36	MK SR 2	81.00 - 82.00	1.0000	1.0000
L17	37	MK SR 2	81.00 - 82.00	1.0000	1.0000
L17	44	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L17	45	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L17	46	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L18	1	Safety Line 3/8	80.75 - 81.00	1.0000	1.0000
L18	35	MK SR 2	80.75 - 81.00	1.0000	1.0000
L18	36	MK SR 2	80.75 - 81.00	1.0000	1.0000
L18	37	MK SR 2	80.75 - 81.00	1.0000	1.0000
L18	44	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L18	45	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L18	46	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L19	1	Safety Line 3/8	80.50 - 80.75	1.0000	1.0000
L19	35	MK SR 2	80.50 - 80.75	1.0000	1.0000
L19	36	MK SR 2	80.50 - 80.75	1.0000	1.0000
L19	37	MK SR 2	80.50 - 80.75	1.0000	1.0000
L19	44	CCI-AFP-060100	80.50 - 80.75	1.0000	1.0000
L19	45	CCI-AFP-060100	80.50 - 80.75	1.0000	1.0000
L19	46	CCI-AFP-060100	80.50 - 80.75	1.0000	1.0000
L20	1	Safety Line 3/8	73.25 - 80.50	1.0000	1.0000
L20	35	MK SR 2	77.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L20	36	MK SR 2	80.50 77.00 - 80.50	1.0000	1.0000
L20	37	MK SR 2	77.00 - 80.50	1.0000	1.0000
L20	44	CCI-AFP-060100	78.50 - 80.50	1.0000	1.0000
L20	45	CCI-AFP-060100	78.50 - 80.50	1.0000	1.0000
L20	46	CCI-AFP-060100	78.50 - 80.50	1.0000	1.0000
L21	1	Safety Line 3/8	72.25 - 73.25	1.0000	1.0000
L22	1	Safety Line 3/8	67.25 - 72.25	1.0000	1.0000
L23	1	Safety Line 3/8	62.25 - 67.25	1.0000	1.0000
L24	1	Safety Line 3/8	57.25 - 62.25	1.0000	1.0000
L25	1	Safety Line 3/8	52.25 - 57.25	1.0000	1.0000
L25	41	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L25	42	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L25	43	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L26	1	Safety Line 3/8	49.83 - 52.25	1.0000	1.0000
L26	41	CCI-AFP-060100	49.83 - 52.25	1.0000	1.0000
L26	42	CCI-AFP-060100	49.83 - 52.25	1.0000	1.0000
L26	43	CCI-AFP-060100	49.83 - 52.25	1.0000	1.0000
L27	1	Safety Line 3/8	49.58 - 49.83	1.0000	1.0000
L27	41	CCI-AFP-060100	49.58 - 49.83	1.0000	1.0000
L27	42	CCI-AFP-060100	49.58 - 49.83	1.0000	1.0000
L27	43	CCI-AFP-060100	49.58 - 49.83	1.0000	1.0000
L28	1	Safety Line 3/8	44.58 - 49.58	1.0000	1.0000
L28	41	CCI-AFP-060100	44.58 - 49.58	1.0000	1.0000
L28	42	CCI-AFP-060100	44.58 - 49.58	1.0000	1.0000
L28	43	CCI-AFP-060100	44.58 - 49.58	1.0000	1.0000
L29	1	Safety Line 3/8	36.33 - 44.58	1.0000	1.0000
L29	41	CCI-AFP-060100	36.33 - 44.58	1.0000	1.0000
L29	42	CCI-AFP-060100	36.33 - 44.58	1.0000	1.0000
L29	43	CCI-AFP-060100	36.33 - 44.58	1.0000	1.0000
L30	1	Safety Line 3/8	35.33 - 36.33	1.0000	1.0000
L30	41	CCI-AFP-060100	35.33 - 36.33	1.0000	1.0000
L30	42	CCI-AFP-060100	35.33 - 36.33	1.0000	1.0000
L30	43	CCI-AFP-060100	35.33 - 36.33	1.0000	1.0000
L31	1	Safety Line 3/8	32.25 - 35.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	41	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L31	42	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L31	43	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L32	1	Safety Line 3/8	32.00 - 32.25	1.0000	1.0000
L32	38	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L32	39	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L32	40	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L33	1	Safety Line 3/8	27.00 - 32.00	1.0000	1.0000
L33	38	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L33	39	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L33	40	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L34	1	Safety Line 3/8	22.00 - 27.00	1.0000	1.0000
L34	38	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L34	39	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L34	40	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L35	1	Safety Line 3/8	17.00 - 22.00	1.0000	1.0000
L35	38	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L35	39	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L35	40	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L36	1	Safety Line 3/8	15.50 - 17.00	1.0000	1.0000
L36	32	MK SR 1	15.50 - 16.75	1.0000	1.0000
L36	33	MK SR 1	15.50 - 16.75	1.0000	1.0000
L36	34	MK SR 1	15.50 - 16.75	1.0000	1.0000
L36	38	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L36	39	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L36	40	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L37	1	Safety Line 3/8	15.25 - 15.50	1.0000	1.0000
L37	32	MK SR 1	15.25 - 15.50	1.0000	1.0000
L37	33	MK SR 1	15.25 - 15.50	1.0000	1.0000
L37	34	MK SR 1	15.25 - 15.50	1.0000	1.0000
L37	38	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L37	39	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L37	40	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L38	1	Safety Line 3/8	14.75 - 15.25	1.0000	1.0000
L38	32	MK SR 1	14.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	33	MK SR 1	15.25 14.75 - 15.25	1.0000	1.0000
L38	34	MK SR 1	14.75 - 15.25	1.0000	1.0000
L38	38	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L38	39	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L38	40	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L39	1	Safety Line 3/8	14.50 - 14.75	1.0000	1.0000
L39	32	MK SR 1	14.50 - 14.75	1.0000	1.0000
L39	33	MK SR 1	14.50 - 14.75	1.0000	1.0000
L39	34	MK SR 1	14.50 - 14.75	1.0000	1.0000
L39	38	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L39	39	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L39	40	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L40	1	Safety Line 3/8	10.00 - 14.50	1.0000	1.0000
L40	32	MK SR 1	9.50 - 14.50	1.0000	1.0000
L40	33	MK SR 1	9.50 - 14.50	1.0000	1.0000
L40	34	MK SR 1	9.50 - 14.50	1.0000	1.0000
L40	38	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L40	39	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L40	40	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L41	32	MK SR 1	4.50 - 9.50	1.0000	1.0000
L41	33	MK SR 1	4.50 - 9.50	1.0000	1.0000
L41	34	MK SR 1	4.50 - 9.50	1.0000	1.0000
L42	32	MK SR 1	1.75 - 4.50	1.0000	1.0000
L42	33	MK SR 1	1.75 - 4.50	1.0000	1.0000
L42	34	MK SR 1	1.75 - 4.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L15	44	CCI-AFP-060100	86.00 - 88.50	Auto	0.0000
L15	45	CCI-AFP-060100	86.00 - 88.50	Auto	0.0000
L15	46	CCI-AFP-060100	86.00 - 88.50	Auto	0.0000
L16	44	CCI-AFP-060100	85.75 - 86.00	Auto	0.0000
L16	45	CCI-AFP-060100	85.75 - 86.00	Auto	0.0000
L16	46	CCI-AFP-060100	85.75 - 86.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L17	35	MK SR 2	81.00 - 82.00	Manual	1.0000
L17	36	MK SR 2	81.00 - 82.00	Manual	1.0000
L17	37	MK SR 2	81.00 - 82.00	Manual	1.0000
L17	44	CCI-AFP-060100	81.00 - 85.75	Auto	0.0000
L17	45	CCI-AFP-060100	81.00 - 85.75	Auto	0.0000
L17	46	CCI-AFP-060100	81.00 - 85.75	Auto	0.0000
L18	35	MK SR 2	80.75 - 81.00	Manual	1.0000
L18	36	MK SR 2	80.75 - 81.00	Manual	1.0000
L18	37	MK SR 2	80.75 - 81.00	Manual	1.0000
L18	44	CCI-AFP-060100	80.75 - 81.00	Auto	0.0000
L18	45	CCI-AFP-060100	80.75 - 81.00	Auto	0.0000
L18	46	CCI-AFP-060100	80.75 - 81.00	Auto	0.0000
L19	35	MK SR 2	80.50 - 80.75	Manual	1.0000
L19	36	MK SR 2	80.50 - 80.75	Manual	1.0000
L19	37	MK SR 2	80.50 - 80.75	Manual	1.0000
L19	44	CCI-AFP-060100	80.50 - 80.75	Auto	0.0000
L19	45	CCI-AFP-060100	80.50 - 80.75	Auto	0.0000
L19	46	CCI-AFP-060100	80.50 - 80.75	Auto	0.0000
L20	35	MK SR 2	77.00 - 80.50	Manual	1.0000
L20	36	MK SR 2	77.00 - 80.50	Manual	1.0000
L20	37	MK SR 2	77.00 - 80.50	Manual	1.0000
L20	44	CCI-AFP-060100	78.50 - 80.50	Auto	0.0000
L20	45	CCI-AFP-060100	78.50 - 80.50	Auto	0.0000
L20	46	CCI-AFP-060100	78.50 - 80.50	Auto	0.0000
L25	41	CCI-AFP-060100	52.25 - 52.33	Auto	0.0000
L25	42	CCI-AFP-060100	52.25 - 52.33	Auto	0.0000
L25	43	CCI-AFP-060100	52.25 - 52.33	Auto	0.0000
L26	41	CCI-AFP-060100	49.83 - 52.25	Auto	0.0000
L26	42	CCI-AFP-060100	49.83 - 52.25	Auto	0.0000
L26	43	CCI-AFP-060100	49.83 - 52.25	Auto	0.0000
L27	41	CCI-AFP-060100	49.58 - 49.83	Auto	0.0000
L27	42	CCI-AFP-060100	49.58 - 49.83	Auto	0.0000
L27	43	CCI-AFP-060100	49.58 - 49.83	Auto	0.0000
L28	41	CCI-AFP-060100	44.58 - 49.58	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	42	CCI-AFP-060100	44.58 - 49.58	Auto	0.0000
L28	43	CCI-AFP-060100	44.58 - 49.58	Auto	0.0000
L29	41	CCI-AFP-060100	36.33 - 44.58	Auto	0.0000
L29	42	CCI-AFP-060100	36.33 - 44.58	Auto	0.0000
L29	43	CCI-AFP-060100	36.33 - 44.58	Auto	0.0000
L30	41	CCI-AFP-060100	35.33 - 36.33	Auto	0.0000
L30	42	CCI-AFP-060100	35.33 - 36.33	Auto	0.0000
L30	43	CCI-AFP-060100	35.33 - 36.33	Auto	0.0000
L31	41	CCI-AFP-060100	32.33 - 35.33	Auto	0.0000
L31	42	CCI-AFP-060100	32.33 - 35.33	Auto	0.0000
L31	43	CCI-AFP-060100	32.33 - 35.33	Auto	0.0000
L32	38	CCI-AFP-060100	32.00 - 32.25	Auto	0.0000
L32	39	CCI-AFP-060100	32.00 - 32.25	Auto	0.0000
L32	40	CCI-AFP-060100	32.00 - 32.25	Auto	0.0000
L33	38	CCI-AFP-060100	27.00 - 32.00	Auto	0.0000
L33	39	CCI-AFP-060100	27.00 - 32.00	Auto	0.0000
L33	40	CCI-AFP-060100	27.00 - 32.00	Auto	0.0000
L34	38	CCI-AFP-060100	22.00 - 27.00	Auto	0.0000
L34	39	CCI-AFP-060100	22.00 - 27.00	Auto	0.0000
L34	40	CCI-AFP-060100	22.00 - 27.00	Auto	0.0000
L35	38	CCI-AFP-060100	17.00 - 22.00	Auto	0.0000
L35	39	CCI-AFP-060100	17.00 - 22.00	Auto	0.0000
L35	40	CCI-AFP-060100	17.00 - 22.00	Auto	0.0000
L36	32	MK SR 1	15.50 - 16.75	Manual	1.0000
L36	33	MK SR 1	15.50 - 16.75	Manual	1.0000
L36	34	MK SR 1	15.50 - 16.75	Manual	1.0000
L36	38	CCI-AFP-060100	15.50 - 17.00	Auto	0.0000
L36	39	CCI-AFP-060100	15.50 - 17.00	Auto	0.0000
L36	40	CCI-AFP-060100	15.50 - 17.00	Auto	0.0000
L37	32	MK SR 1	15.25 - 15.50	Manual	1.0000
L37	33	MK SR 1	15.25 - 15.50	Manual	1.0000
L37	34	MK SR 1	15.25 - 15.50	Manual	1.0000
L37	38	CCI-AFP-060100	15.25 - 15.50	Auto	0.0000
L37	39	CCI-AFP-060100	15.25 - 15.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L37	40	CCI-AFP-060100	15.25 - 15.50	Auto	0.0000
L38	32	MK SR 1	14.75 - 15.25	Manual	1.0000
L38	33	MK SR 1	14.75 - 15.25	Manual	1.0000
L38	34	MK SR 1	14.75 - 15.25	Manual	1.0000
L38	38	CCI-AFP-060100	14.75 - 15.25	Auto	0.0000
L38	39	CCI-AFP-060100	14.75 - 15.25	Auto	0.0000
L38	40	CCI-AFP-060100	14.75 - 15.25	Auto	0.0000
L39	32	MK SR 1	14.50 - 14.75	Manual	1.0000
L39	33	MK SR 1	14.50 - 14.75	Manual	1.0000
L39	34	MK SR 1	14.50 - 14.75	Manual	1.0000
L39	38	CCI-AFP-060100	14.50 - 14.75	Auto	0.0000
L39	39	CCI-AFP-060100	14.50 - 14.75	Auto	0.0000
L39	40	CCI-AFP-060100	14.50 - 14.75	Auto	0.0000
L40	32	MK SR 1	9.50 - 14.50	Manual	1.0000
L40	33	MK SR 1	9.50 - 14.50	Manual	1.0000
L40	34	MK SR 1	9.50 - 14.50	Manual	1.0000
L40	38	CCI-AFP-060100	12.25 - 14.50	Auto	0.0000
L40	39	CCI-AFP-060100	12.25 - 14.50	Auto	0.0000
L40	40	CCI-AFP-060100	12.25 - 14.50	Auto	0.0000
L41	32	MK SR 1	4.50 - 9.50	Manual	1.0000
L41	33	MK SR 1	4.50 - 9.50	Manual	1.0000
L41	34	MK SR 1	4.50 - 9.50	Manual	1.0000
L42	32	MK SR 1	1.75 - 4.50	Manual	1.0000
L42	33	MK SR 1	1.75 - 4.50	Manual	1.0000
L42	34	MK SR 1	1.75 - 4.50	Manual	1.0000

Discrete Tower Loads

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
157									
Platform Mount [13' LP 713-1]	C	None		0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	35.63 38.74 41.99 49.03	35.63 38.74 41.99 49.03	1.64 2.41 3.28 5.27
4'x3"x3"x3/16" Horizontal Angle	A	From Leg	3.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.49 1.78 2.39	0.07 0.11 0.16 0.27	0.02 0.03 0.05 0.09
4'x3"x3"x3/16" Horizontal Angle	B	From Leg	3.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice	1.20 1.49 1.78	0.07 0.11 0.16	0.02 0.03 0.05

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	2.39	0.27	0.09
						2" Ice			
4'x3"x3"x3/16" Horizontal Angle	C	From Leg	3.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.49 1.78 2.39	0.07 0.11 0.16 0.27	0.02 0.03 0.05 0.09
4'x2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
4'x2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
4'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
LLPX310R-V1 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.54 4.89 5.25 6.01	2.98 3.53 4.09 5.24	0.05 0.08 0.13 0.23
LLPX310R-V1 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.54 4.89 5.25 6.01	2.98 3.53 4.09 5.24	0.05 0.08 0.13 0.23
LLPX310R-V1 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	157.00	No Ice 1/2" Ice	4.54 4.89 5.25	2.98 3.53 4.09	0.05 0.08 0.13

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	6.01	5.24	0.23
						2" Ice			
TD-RRH8x20-25	A	From Face	4.00	0.0000	157.00	No Ice	3.70	1.29	0.07
			0.00			1/2"	3.95	1.46	0.09
			1.00			Ice	4.20	1.64	0.12
						1" Ice	4.72	2.02	0.18
						2" Ice			
TD-RRH8x20-25	B	From Face	4.00	0.0000	157.00	No Ice	3.70	1.29	0.07
			0.00			1/2"	3.95	1.46	0.09
			1.00			Ice	4.20	1.64	0.12
						1" Ice	4.72	2.02	0.18
						2" Ice			
TD-RRH8x20-25	C	From Face	4.00	0.0000	157.00	No Ice	3.70	1.29	0.07
			0.00			1/2"	3.95	1.46	0.09
			1.00			Ice	4.20	1.64	0.12
						1" Ice	4.72	2.02	0.18
						2" Ice			
(3) ACU-A20-N	A	From Face	4.00	0.0000	157.00	No Ice	0.07	0.12	0.00
			0.00			1/2"	0.10	0.16	0.00
			0.00			Ice	0.15	0.21	0.00
						1" Ice	0.26	0.34	0.01
						2" Ice			
(3) ACU-A20-N	B	From Face	4.00	0.0000	157.00	No Ice	0.07	0.12	0.00
			0.00			1/2"	0.10	0.16	0.00
			0.00			Ice	0.15	0.21	0.00
						1" Ice	0.26	0.34	0.01
						2" Ice			
(3) ACU-A20-N	C	From Face	4.00	0.0000	157.00	No Ice	0.07	0.12	0.00
			0.00			1/2"	0.10	0.16	0.00
			0.00			Ice	0.15	0.21	0.00
						1" Ice	0.26	0.34	0.01
						2" Ice			
BEN-92P	A	From Face	4.00	0.0000	157.00	No Ice	0.65	0.42	0.00
			0.00			1/2"	0.75	0.51	0.01
			1.00			Ice	0.86	0.60	0.02
						1" Ice	1.10	0.81	0.04
						2" Ice			
FWHR	A	From Face	4.00	0.0000	157.00	No Ice	1.03	0.51	0.03
			0.00			1/2"	1.16	0.60	0.04
			1.00			Ice	1.30	0.70	0.05
						1" Ice	1.59	0.92	0.08
						2" Ice			
FWHR	B	From Face	4.00	0.0000	157.00	No Ice	1.03	0.51	0.03
			0.00			1/2"	1.16	0.60	0.04
			1.00			Ice	1.30	0.70	0.05
						1" Ice	1.59	0.92	0.08
						2" Ice			
FWHR	C	From Face	4.00	0.0000	157.00	No Ice	1.03	0.51	0.03
			0.00			1/2"	1.16	0.60	0.04
			1.00			Ice	1.30	0.70	0.05
						1" Ice	1.59	0.92	0.08
						2" Ice			
***154**									
Pipe Mount [PM 601-3]	C	None		0.0000	154.00	No Ice	3.17	3.17	0.20
						1/2"	3.79	3.79	0.23
						Ice	4.42	4.42	0.28
						1" Ice	5.76	5.76	0.40
						2" Ice			
800 EXTERNAL NOTCH FILTER	A	From Face	1.00	0.0000	154.00	No Ice	0.66	0.29	0.01
			0.00			1/2"	0.76	0.36	0.02
			1.00			Ice	0.87	0.45	0.02
						1" Ice	1.11	0.63	0.04
						2" Ice			
800 EXTERNAL NOTCH FILTER	B	From Face	1.00	0.0000	154.00	No Ice	0.66	0.29	0.01
			0.00			1/2"	0.76	0.36	0.02

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
			1.00			Ice	0.87	0.45	0.02
						1" Ice	1.11	0.63	0.04
						2" Ice			
800 EXTERNAL NOTCH FILTER	C	From Face	1.00 0.00 1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.29 0.36 0.45 0.63	0.01 0.02 0.02 0.04
1900MHz RRH (65MHz)	A	From Face	1.00 0.00 -1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.38 2.59 2.80 3.25	0.06 0.08 0.11 0.18
1900MHz RRH (65MHz)	B	From Face	1.00 0.00 -1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.38 2.59 2.80 3.25	0.06 0.08 0.11 0.18
1900MHz RRH (65MHz)	C	From Face	1.00 0.00 -1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.38 2.59 2.80 3.25	0.06 0.08 0.11 0.18
800MHZ RRH	A	From Face	1.00 0.00 1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Face	1.00 0.00 1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Face	1.00 0.00 1.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
149 Platform Mount [13' LP 713-1]	C	None		0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	35.63 38.74 41.99 49.03	35.63 38.74 41.99 49.03	1.64 2.41 3.28 5.27
(2) 4'x2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
(2) 4'x2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
(2) 4'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
7770.00 w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Face	4.00	0.0000	149.00	No Ice	5.75	4.25	0.06

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
			0.00			1/2"	6.18	5.01	0.10
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
7770.00 w/ Mount Pipe	C	From Face	4.00	0.0000	149.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
EPBQ-654L8H6-L2 w/ Mount Pipe	A	From Face	4.00	0.0000	149.00	No Ice	11.09	4.69	0.11
			0.00			1/2"	11.77	5.28	0.19
			2.00			Ice	12.46	5.89	0.29
						1" Ice	13.88	7.13	0.52
						2" Ice			
EPBQ-654L8H6-L2 w/ Mount Pipe	B	From Face	4.00	0.0000	149.00	No Ice	11.09	4.69	0.11
			0.00			1/2"	11.77	5.28	0.19
			2.00			Ice	12.46	5.89	0.29
						1" Ice	13.88	7.13	0.52
						2" Ice			
EPBQ-654L8H6-L2 w/ Mount Pipe	C	From Face	4.00	0.0000	149.00	No Ice	11.09	4.69	0.11
			0.00			1/2"	11.77	5.28	0.19
			2.00			Ice	12.46	5.89	0.29
						1" Ice	13.88	7.13	0.52
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Face	4.00	0.0000	149.00	No Ice	9.22	6.25	0.07
			0.00			1/2"	9.98	6.96	0.14
			2.00			Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Face	4.00	0.0000	149.00	No Ice	9.22	6.25	0.07
			0.00			1/2"	9.98	6.96	0.14
			2.00			Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Face	4.00	0.0000	149.00	No Ice	9.22	6.25	0.07
			0.00			1/2"	9.98	6.96	0.14
			2.00			Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
(2) LGP21401	A	From Face	4.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice	1.69	0.77	0.05
						2" Ice			
(2) LGP21401	B	From Face	4.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice	1.69	0.77	0.05
						2" Ice			
(2) LGP21401	C	From Face	4.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice	1.69	0.77	0.05
						2" Ice			
RRUS 11 B12	A	From Face	4.00	0.0000	149.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B12	B	From Face	4.00	0.0000	149.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B12	C	From Face	4.00	0.0000	149.00	No Ice	2.83	1.18	0.05

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
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 32 B30	A	From Face	4.00	0.0000	149.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			2.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
RRUS 32 B30	B	From Face	4.00	0.0000	149.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			2.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
RRUS 32 B30	C	From Face	4.00	0.0000	149.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			2.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
DC6-48-60-18-8F	A	From Face	4.00	0.0000	149.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
DC6-48-60-18-8F	B	From Face	4.00	0.0000	149.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
DC6-48-60-18-8F	C	From Face	4.00	0.0000	149.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
RRUS 4449 B5/B12	A	From Face	4.00	0.0000	149.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Face	4.00	0.0000	149.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Face	4.00	0.0000	149.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 8843 B2/B66A	A	From Face	4.00	0.0000	149.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			2.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			
RRUS 8843 B2/B66A	B	From Face	4.00	0.0000	149.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			2.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			
RRUS 8843 B2/B66A	C	From Face	4.00	0.0000	149.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			2.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			

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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
Platform Mount [LP 713-1]	C	None		0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.89 35.76 38.76 45.26	32.89 35.76 38.76 45.26	1.51 2.23 3.03 4.86
BSAMNT-SBS-2-2 Side By Side Bracket	A	From Face	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
BSAMNT-SBS-2-2 Side By Side Bracket	B	From Face	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
BSAMNT-SBS-2-2 Side By Side Bracket	C	From Face	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.07 0.09 0.11 0.15
(4) 4'x2" Mount Pipe	A	From Face	3.00 -5.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
(4) 4'x2" Mount Pipe	B	From Face	3.00 -5.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
(4) 4'x2" Mount Pipe	C	From Face	3.00 -5.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
(2) DB846F65ZAXY w/ Mount Pipe	A	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	B	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46

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
JAHH-65B-R3B	A	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.29 5.75 6.22 7.20	3.05 3.48 3.93 4.84	0.06 0.12 0.19 0.33
JAHH-65B-R3B	B	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.29 5.75 6.22 7.20	3.05 3.48 3.93 4.84	0.06 0.12 0.19 0.33
JAHH-65B-R3B	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.29 5.75 6.22 7.20	3.05 3.48 3.93 4.84	0.06 0.12 0.19 0.33
B66A RRH4X45	A	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B66A RRH4X45	B	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B66A RRH4X45	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B13 RRH 4X30	A	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
B13 RRH 4X30	B	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
B13 RRH 4X30	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
DB-T1-6Z-8AB-0Z	C	From Face	3.00 0.00 3.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
129 Commscope MC-PK8-DSH	C	None		0.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	34.24 62.95 91.66 149.08	34.24 62.95 91.66 149.08	1.75 2.10 2.45 3.15
(2) 8'x2'' Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8'x2'' Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12

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			
(2) 8'x2'' Mount Pipe	C	From Face	4.00	0.0000	129.00	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
MX08FRO665-21 w/ Mount Pipe	A	From Face	4.00	0.0000	129.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	B	From Face	4.00	0.0000	129.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	C	From Face	4.00	0.0000	129.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
TA08025-B604	A	From Face	4.00	0.0000	129.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B605	A	From Face	4.00	0.0000	129.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B604	B	From Face	4.00	0.0000	129.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B605	B	From Face	4.00	0.0000	129.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B604	C	From Face	4.00	0.0000	129.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B605	C	From Face	4.00	0.0000	129.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
RDIDC-9181-PF-48	A	From Face	4.00	0.0000	129.00	No Ice	2.01	1.17	0.02
			0.00			1/2" Ice	2.19	1.31	0.04
			0.00			1" Ice	2.37	1.46	0.06
						2" Ice	2.76	1.78	0.11
116									
Platform Mount [LP 712-1]	C	None		0.0000	116.00	No Ice	24.56	24.56	1.34
						1/2" Ice	27.92	27.92	1.91
						1" Ice	31.27	31.27	2.55
						2" Ice	37.98	37.98	3.97
Miscellaneous [NA 507-1]	C	None		0.0000	116.00	No Ice	4.56	4.56	0.25
						1/2" Ice	6.39	6.39	0.31
						Ice	8.18	8.18	0.40

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	11.66	11.66	0.66
						2" Ice			
6'x2" Mount Pipe	A	From Face	3.00	0.0000	116.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
6'x2" Mount Pipe	B	From Face	3.00	0.0000	116.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
6'x2" Mount Pipe	C	From Face	3.00	0.0000	116.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	3.00	0.0000	116.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			2.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	3.00	0.0000	116.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			2.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	3.00	0.0000	116.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			2.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Face	3.00	0.0000	116.00	No Ice	3.76	3.15	0.19
			0.00			1/2"	4.12	3.49	0.25
			2.00			Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Face	3.00	0.0000	116.00	No Ice	3.76	3.15	0.19
			0.00			1/2"	4.12	3.49	0.25
			2.00			Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Face	3.00	0.0000	116.00	No Ice	3.76	3.15	0.19
			0.00			1/2"	4.12	3.49	0.25
			2.00			Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.00	0.0000	116.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.00	0.0000	116.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.00	0.0000	116.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
RADIO 4449 B12/B71	A	From Face	3.00	0.0000	116.00	No Ice	1.65	1.30	0.08
			0.00			1/2"	1.81	1.44	0.09
			2.00			Ice	1.98	1.60	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	2.34	1.92	0.16
						2" Ice			
RADIO 4449 B12/B71	B	From Face	3.00	0.0000	116.00	No Ice	1.65	1.30	0.08
			0.00			1/2"	1.81	1.44	0.09
			2.00			Ice	1.98	1.60	0.11
						1" Ice	2.34	1.92	0.16
						2" Ice			
RADIO 4449 B12/B71	C	From Face	3.00	0.0000	116.00	No Ice	1.65	1.30	0.08
			0.00			1/2"	1.81	1.44	0.09
			2.00			Ice	1.98	1.60	0.11
						1" Ice	2.34	1.92	0.16
						2" Ice			
KRY 112 144/1	A	From Face	3.00	0.0000	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			2.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
KRY 112 144/1	B	From Face	3.00	0.0000	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			2.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
KRY 112 144/1	C	From Face	3.00	0.0000	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			2.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
84									
Side Arm Mount [4' SO 702-1]	C	From Face	1.50	0.0000	84.00	No Ice	0.41	0.99	0.02
			0.00			1/2"	0.49	1.38	0.03
			0.00			Ice	0.59	1.69	0.04
						1" Ice	0.83	2.37	0.08
						2" Ice			
GPS_A	C	From Face	3.00	0.0000	84.00	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			0.00			Ice	0.39	0.39	0.01
						1" Ice	0.56	0.56	0.02
						2" Ice			
40									
Pipe Mount [PM 601-1]	A	From Face	1.00	0.0000	40.00	No Ice	1.32	1.32	0.07
			0.00			1/2"	1.58	1.58	0.08
			0.00			Ice	1.84	1.84	0.09
						1" Ice	2.40	2.40	0.13
						2" Ice			
GPS-QBW-20N	A	From Face	1.00	0.0000	40.00	No Ice	0.13	0.13	0.00
			0.00			1/2"	0.18	0.18	0.00
			0.00			Ice	0.23	0.23	0.00
						1" Ice	0.37	0.37	0.01
						2" Ice			
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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
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	2	0.00	-0.00	-0.00
			Max. Compression	26	-8.71	0.11	0.05
			Max. Mx	20	-3.19	9.67	0.01
			Max. My	2	-3.18	0.02	9.65
			Max. Vy	20	-3.89	9.67	0.01
			Max. Vx	14	3.89	-0.00	-9.64
			Max. Torque	16			-0.07
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-10.68	0.11	0.03
			Max. Mx	20	-4.12	32.76	0.03
			Max. My	2	-4.12	0.03	32.73
			Max. Vy	20	-4.95	32.76	0.03
			Max. Vx	14	4.94	-0.02	-32.72
			Max. Torque	16			-0.07
L3	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.41	0.11	0.02
			Max. Mx	20	-7.97	83.22	0.04
			Max. My	2	-7.97	0.05	83.18
			Max. Vy	20	-10.28	83.22	0.04
			Max. Vx	14	10.28	-0.04	-83.18
			Max. Torque	16			-0.07
L4	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.12	0.11	-0.00
			Max. Mx	20	-8.41	135.63	0.06
			Max. My	14	-8.41	-0.05	-135.58
			Max. Vy	20	-10.69	135.63	0.06
			Max. Vx	14	10.69	-0.05	-135.58
			Max. Torque	16			-0.07
L5	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.76	0.11	-0.71
			Max. Mx	20	-12.20	215.66	-0.09
			Max. My	14	-12.18	-0.07	-216.43
			Max. Vy	20	-15.61	215.66	-0.09
			Max. Vx	14	15.70	-0.07	-216.43
			Max. Torque	10			-0.25
L6	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.63	0.11	-0.73
			Max. Mx	20	-12.81	294.78	-0.08
			Max. My	14	-12.80	-0.09	-295.99
			Max. Vy	20	-16.04	294.78	-0.08
			Max. Vx	14	16.13	-0.09	-295.99
			Max. Torque	10			-0.25
L7	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.45	0.50	-0.53
			Max. Mx	20	-16.45	387.63	0.04
			Max. My	14	-16.43	-0.06	-389.07
			Max. Vy	20	-19.34	387.63	0.04
			Max. Vx	14	19.42	-0.06	-389.07
			Max. Torque	12			-0.28
L8	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.40	0.50	-0.55
			Max. Mx	20	-17.15	485.37	0.11
			Max. My	14	-17.14	-0.13	-487.20
			Max. Vy	20	-19.77	485.37	0.11
			Max. Vx	14	19.85	-0.13	-487.20
			Max. Torque	12			-0.28
L9	120 - 111.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.22	0.50	-0.57
			Max. Mx	20	-17.77	565.10	0.17
			Max. My	14	-17.76	-0.19	-567.23
			Max. Vy	20	-20.11	565.10	0.17
			Max. Vx	14	20.19	-0.19	-567.23
			Max. Torque	12			-0.28
L10	111.333 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.10	0.50	-0.59
			Max. Mx	20	-22.98	686.58	0.24
			Max. My	14	-22.96	-0.27	-689.10
			Max. Vy	20	-23.89	686.58	0.24
			Max. Vx	14	23.96	-0.27	-689.10
			Max. Torque	12			-0.28
L11	111 - 106	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.38	0.50	-0.62
			Max. Mx	20	-24.01	807.09	0.31
			Max. My	14	-24.00	-0.35	-810.00
			Max. Vy	20	-24.34	807.09	0.31

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	24.41	-0.35	-810.00
			Max. Torque	12			-0.28
L12	106 - 101	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.71	0.50	-0.64
			Max. Mx	20	-25.08	929.83	0.39
			Max. My	14	-25.07	-0.42	-933.12
			Max. Vy	20	-24.78	929.83	0.39
			Max. Vx	14	24.86	-0.42	-933.12
			Max. Torque	12			-0.28
L13	101 - 96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.06	0.50	-0.66
			Max. Mx	20	-26.19	1054.79	0.46
			Max. My	14	-26.18	-0.50	-1058.48
			Max. Vy	20	-25.23	1054.79	0.46
			Max. Vx	14	25.31	-0.50	-1058.48
			Max. Torque	12			-0.28
L14	96 - 91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.46	0.50	-0.69
			Max. Mx	20	-27.33	1182.00	0.54
			Max. My	14	-27.32	-0.57	-1186.07
			Max. Vy	20	-25.68	1182.00	0.54
			Max. Vx	14	25.75	-0.57	-1186.07
			Max. Torque	12			-0.28
L15	91 - 86	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.97	0.50	-0.71
			Max. Mx	20	-28.50	1311.43	0.61
			Max. My	14	-28.49	-0.65	-1315.89
			Max. Vy	20	-26.13	1311.43	0.61
			Max. Vx	14	26.20	-0.65	-1315.89
			Max. Torque	12			-0.28
L16	86 - 85.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.07	0.50	-0.71
			Max. Mx	20	-28.58	1317.96	0.61
			Max. My	14	-28.58	-0.65	-1322.44
			Max. Vy	20	-26.15	1317.96	0.61
			Max. Vx	14	26.22	-0.65	-1322.44
			Max. Torque	12			-0.28
L17	85.75 - 81	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.09	0.50	-1.00
			Max. Mx	20	-30.08	1443.39	0.62
			Max. My	14	-30.08	-0.72	-1448.24
			Max. Vy	20	-26.68	1443.39	0.62
			Max. Vx	14	26.73	-0.72	-1448.24
			Max. Torque	10			-0.36
L18	81 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.19	0.50	-1.00
			Max. Mx	20	-30.16	1450.06	0.62
			Max. My	14	-30.15	-0.73	-1454.92
			Max. Vy	20	-26.70	1450.06	0.62
			Max. Vx	14	26.76	-0.73	-1454.92
			Max. Torque	10			-0.36
L19	80.75 - 80.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.29	0.50	-1.00
			Max. Mx	20	-30.23	1456.73	0.63
			Max. My	14	-30.22	-0.73	-1461.61
			Max. Vy	20	-26.72	1456.73	0.63
			Max. Vx	14	26.78	-0.73	-1461.61
			Max. Torque	10			-0.36
L20	80.5 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.79	0.50	-1.01
			Max. Mx	20	-30.61	1496.90	0.65
			Max. My	14	-30.60	-0.75	-1501.86
			Max. Vy	20	-26.87	1496.90	0.65
			Max. Vx	14	26.92	-0.75	-1501.86
			Max. Torque	10			-0.36
L21	73.25 - 72.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.67	0.50	-1.05
			Max. Mx	20	-33.53	1680.72	0.75

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-33.52	-0.86	-1686.07
			Max. Vy	20	-27.62	1680.72	0.75
			Max. Vx	14	27.67	-0.86	-1686.07
			Max. Torque	10			-0.36
L22	72.25 - 67.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.37	0.50	-1.07
			Max. Mx	20	-34.95	1819.85	0.82
			Max. My	14	-34.94	-0.93	-1825.49
			Max. Vy	20	-28.07	1819.85	0.82
			Max. Vx	14	28.12	-0.93	-1825.49
			Max. Torque	10			-0.36
L23	67.25 - 62.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.11	0.50	-1.10
			Max. Mx	20	-36.40	1961.22	0.90
			Max. My	14	-36.40	-1.01	-1967.14
			Max. Vy	20	-28.51	1961.22	0.90
			Max. Vx	14	28.57	-1.01	-1967.14
			Max. Torque	10			-0.36
L24	62.25 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.89	0.50	-1.13
			Max. Mx	20	-37.89	2104.81	0.97
			Max. My	14	-37.88	-1.08	-2111.01
			Max. Vy	20	-28.96	2104.81	0.97
			Max. Vx	14	29.01	-1.08	-2111.01
			Max. Torque	10			-0.36
L25	57.25 - 52.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.72	0.50	-1.16
			Max. Mx	20	-39.42	2250.59	1.04
			Max. My	14	-39.41	-1.16	-2257.08
			Max. Vy	20	-29.39	2250.59	1.04
			Max. Vx	14	29.45	-1.16	-2257.08
			Max. Torque	10			-0.36
L26	52.25 - 49.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.86	0.50	-1.17
			Max. Mx	20	-40.34	2321.94	1.08
			Max. My	14	-40.34	-1.19	-2328.56
			Max. Vy	20	-29.61	2321.94	1.08
			Max. Vx	14	29.66	-1.19	-2328.56
			Max. Torque	10			-0.36
L27	49.83 - 49.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	0.50	-1.17
			Max. Mx	20	-40.45	2329.34	1.08
			Max. My	14	-40.45	-1.20	-2335.98
			Max. Vy	20	-29.62	2329.34	1.08
			Max. Vx	14	29.68	-1.20	-2335.98
			Max. Torque	10			-0.36
L28	49.58 - 44.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.37	0.50	-1.20
			Max. Mx	20	-42.38	2478.47	1.15
			Max. My	14	-42.38	-1.27	-2485.39
			Max. Vy	20	-30.06	2478.47	1.15
			Max. Vx	14	30.11	-1.27	-2485.39
			Max. Torque	10			-0.36
L29	44.58 - 36.3333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.13	0.50	-1.21
			Max. Mx	20	-43.00	2526.04	1.18
			Max. My	14	-43.00	-1.30	-2533.05
			Max. Vy	20	-30.20	2526.04	1.18
			Max. Vx	14	30.25	-1.30	-2533.05
			Max. Torque	10			-0.36
L30	36.3333 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	35.3333						
			Max. Compression	26	-84.31	0.82	-1.07
			Max. Mx	20	-47.85	2760.88	1.40
			Max. My	14	-47.84	-1.21	-2768.00
			Max. Vy	20	-31.02	2760.88	1.40
			Max. Vx	14	31.08	-1.21	-2768.00
			Max. Torque	12			-0.40
L31	35.3333 - 32.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.88	0.82	-1.08
			Max. Mx	20	-49.14	2856.84	1.45
			Max. My	14	-49.14	-1.26	-2864.12
			Max. Vy	20	-31.26	2856.84	1.45
			Max. Vx	14	31.31	-1.26	-2864.12
			Max. Torque	12			-0.40
L32	32.25 - 32	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.01	0.82	-1.09
			Max. Mx	20	-49.25	2864.65	1.45
			Max. My	14	-49.25	-1.26	-2871.95
			Max. Vy	20	-31.27	2864.65	1.45
			Max. Vx	14	31.32	-1.26	-2871.95
			Max. Torque	12			-0.40
L33	32 - 27	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.59	0.82	-1.11
			Max. Mx	20	-51.38	3021.86	1.52
			Max. My	14	-51.38	-1.34	-3029.44
			Max. Vy	20	-31.64	3021.86	1.52
			Max. Vx	14	31.70	-1.34	-3029.44
			Max. Torque	12			-0.40
L34	27 - 22	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.20	0.82	-1.14
			Max. Mx	20	-53.55	3180.92	1.60
			Max. My	14	-53.55	-1.41	-3188.77
			Max. Vy	20	-32.02	3180.92	1.60
			Max. Vx	14	32.07	-1.41	-3188.77
			Max. Torque	12			-0.40
L35	22 - 17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.85	0.82	-1.17
			Max. Mx	20	-55.76	3341.83	1.67
			Max. My	14	-55.76	-1.48	-3349.95
			Max. Vy	20	-32.39	3341.83	1.67
			Max. Vx	14	32.44	-1.48	-3349.95
			Max. Torque	12			-0.40
L36	17 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.72	0.82	-1.18
			Max. Mx	20	-56.47	3390.46	1.69
			Max. My	14	-56.47	-1.51	-3398.67
			Max. Vy	20	-32.51	3390.46	1.69
			Max. Vx	14	32.56	-1.51	-3398.67
			Max. Torque	12			-0.40
L37	15.5 - 15.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.86	0.82	-1.18
			Max. Mx	20	-56.60	3398.59	1.69
			Max. My	14	-56.60	-1.51	-3406.81
			Max. Vy	20	-32.51	3398.59	1.69
			Max. Vx	14	32.56	-1.51	-3406.81
			Max. Torque	12			-0.40
L38	15.25 - 14.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.16	0.82	-1.18
			Max. Mx	20	-56.84	3414.85	1.70
			Max. My	14	-56.84	-1.52	-3423.09
			Max. Vy	20	-32.55	3414.85	1.70
			Max. Vx	14	32.60	-1.52	-3423.09
			Max. Torque	12			-0.40
L39	14.75 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.30	0.82	-1.18
			Max. Mx	20	-56.97	3422.98	1.70
			Max. My	14	-56.96	-1.52	-3431.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-32.57	3422.98	1.70
			Max. Vx	14	32.62	-1.52	-3431.24
			Max. Torque	12			-0.40
L40	14.5 - 9.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.99	0.82	-1.21
			Max. Mx	20	-59.20	3586.71	1.77
			Max. My	14	-59.20	-1.60	-3595.24
			Max. Vy	20	-32.95	3586.71	1.77
			Max. Vx	14	33.01	-1.60	-3595.24
			Max. Torque	12			-0.40
L41	9.5 - 4.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.46	0.82	-1.21
			Max. Mx	20	-61.31	3752.31	1.85
			Max. My	14	-61.31	-1.67	-3761.11
			Max. Vy	20	-33.33	3752.31	1.85
			Max. Vx	14	33.38	-1.67	-3761.11
			Max. Torque	12			-0.40
L42	4.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-102.58	0.82	-1.21
			Max. Mx	20	-63.17	3902.98	1.91
			Max. My	14	-63.17	-1.73	-3912.01
			Max. Vy	20	-33.68	3902.98	1.91
			Max. Vx	14	33.73	-1.73	-3912.01
			Max. Torque	12			-0.40

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	102.58	0.00	0.00
	Max. H_x	20	63.18	33.65	0.01
	Max. H_z	2	63.18	0.01	33.70
	Max. M_x	2	3911.69	0.01	33.70
	Max. M_z	8	3902.30	-33.65	-0.01
	Max. Torsion	24	0.38	16.84	29.20
	Min. Vert	7	47.39	-29.14	16.84
	Min. H_x	8	63.18	-33.65	-0.01
	Min. H_z	14	63.18	-0.01	-33.70
	Min. M_x	14	-3912.01	-0.01	-33.70
	Min. M_z	20	-3902.98	33.65	0.01
	Min. Torsion	12	-0.40	-16.84	-29.20

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	52.65	0.00	0.00	0.12	0.27	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	63.18	-0.01	-33.70	-3911.69	2.41	-0.32
0.9 Dead+1.0 Wind 0 deg - No Ice	47.39	-0.01	-33.70	-3857.40	2.29	-0.32
1.2 Dead+1.0 Wind 30 deg - No Ice	63.18	16.81	-29.18	-3386.58	-1949.18	-0.18
0.9 Dead+1.0 Wind 30 deg - No Ice	47.39	16.81	-29.18	-3339.58	-1922.20	-0.18
1.2 Dead+1.0 Wind 60 deg - No Ice	63.18	29.14	-16.84	-1953.99	-3378.41	0.02
0.9 Dead+1.0 Wind 60 deg - No Ice	47.39	29.14	-16.84	-1926.89	-3331.59	0.02

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 90 deg - No Ice	63.18	33.65	0.01	2.23	-3902.30	0.22
0.9 Dead+1.0 Wind 90 deg - No Ice	47.39	33.65	0.01	2.15	-3848.21	0.22
1.2 Dead+1.0 Wind 120 deg - No Ice	63.18	29.15	16.87	1957.89	-3380.47	0.36
0.9 Dead+1.0 Wind 120 deg - No Ice	47.39	29.15	16.87	1930.65	-3333.62	0.36
1.2 Dead+1.0 Wind 150 deg - No Ice	63.18	16.84	29.20	3388.96	-1952.76	0.40
0.9 Dead+1.0 Wind 150 deg - No Ice	47.39	16.84	29.20	3341.84	-1925.73	0.40
1.2 Dead+1.0 Wind 180 deg - No Ice	63.18	0.01	33.70	3912.01	-1.73	0.32
0.9 Dead+1.0 Wind 180 deg - No Ice	47.39	0.01	33.70	3857.63	-1.79	0.32
1.2 Dead+1.0 Wind 210 deg - No Ice	63.18	-16.81	29.18	3386.90	1949.86	0.16
0.9 Dead+1.0 Wind 210 deg - No Ice	47.39	-16.81	29.18	3339.81	1922.70	0.16
1.2 Dead+1.0 Wind 240 deg - No Ice	63.18	-29.14	16.84	1954.31	3379.09	-0.04
0.9 Dead+1.0 Wind 240 deg - No Ice	47.39	-29.14	16.84	1927.12	3332.09	-0.04
1.2 Dead+1.0 Wind 270 deg - No Ice	63.18	-33.65	-0.01	-1.91	3902.98	-0.22
0.9 Dead+1.0 Wind 270 deg - No Ice	47.39	-33.65	-0.01	-1.92	3848.70	-0.22
1.2 Dead+1.0 Wind 300 deg - No Ice	63.18	-29.15	-16.87	-1957.57	3381.15	-0.34
0.9 Dead+1.0 Wind 300 deg - No Ice	47.39	-29.15	-16.87	-1930.42	3334.12	-0.34
1.2 Dead+1.0 Wind 330 deg - No Ice	63.18	-16.84	-29.20	-3388.64	1953.43	-0.38
0.9 Dead+1.0 Wind 330 deg - No Ice	47.39	-16.84	-29.20	-3341.61	1926.23	-0.38
1.2 Dead+1.0 Ice+1.0 Temp	102.58	0.00	0.00	1.21	0.82	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	102.58	-0.00	-8.41	-1051.59	1.42	-0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	102.58	4.20	-7.28	-910.29	-524.42	-0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	102.58	7.28	-4.20	-524.69	-909.47	0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	102.58	8.41	0.00	1.89	-1050.57	0.07
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	102.58	7.28	4.21	528.36	-909.91	0.11
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	102.58	4.21	7.29	913.64	-525.17	0.12
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	102.58	0.00	8.41	1054.51	0.54	0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	102.58	-4.20	7.28	913.21	526.37	0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	102.58	-7.28	4.20	527.60	911.43	-0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	102.58	-8.41	-0.00	1.02	1052.53	-0.07
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	102.58	-7.28	-4.21	-525.45	911.86	-0.10
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	102.58	-4.21	-7.29	-910.73	527.13	-0.12
Dead+Wind 0 deg - Service	52.65	-0.00	-7.94	-914.21	0.76	-0.08
Dead+Wind 30 deg - Service	52.65	3.96	-6.87	-791.47	-455.39	-0.04
Dead+Wind 60 deg - Service	52.65	6.86	-3.97	-456.62	-789.45	0.01
Dead+Wind 90 deg - Service	52.65	7.93	0.00	0.61	-911.90	0.05
Dead+Wind 120 deg - Service	52.65	6.87	3.97	457.72	-789.94	0.08
Dead+Wind 150 deg - Service	52.65	3.97	6.88	792.21	-456.23	0.09

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 180 deg - Service	52.65	0.00	7.94	914.47	-0.20	0.08
Dead+Wind 210 deg - Service	52.65	-3.96	6.87	791.73	455.95	0.04
Dead+Wind 240 deg - Service	52.65	-6.86	3.97	456.88	790.01	-0.01
Dead+Wind 270 deg - Service	52.65	-7.93	-0.00	-0.35	912.46	-0.05
Dead+Wind 300 deg - Service	52.65	-6.87	-3.97	-457.46	790.49	-0.08
Dead+Wind 330 deg - Service	52.65	-3.97	-6.88	-791.95	456.79	-0.09

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-52.65	0.00	0.00	52.65	0.00	0.000%
2	-0.01	-63.18	-33.70	0.01	63.18	33.70	0.000%
3	-0.01	-47.39	-33.70	0.01	47.39	33.70	0.000%
4	16.81	-63.18	-29.18	-16.81	63.18	29.18	0.000%
5	16.81	-47.39	-29.18	-16.81	47.39	29.18	0.000%
6	29.14	-63.18	-16.84	-29.14	63.18	16.84	0.000%
7	29.14	-47.39	-16.84	-29.14	47.39	16.84	0.000%
8	33.65	-63.18	0.01	-33.65	63.18	-0.01	0.000%
9	33.65	-47.39	0.01	-33.65	47.39	-0.01	0.000%
10	29.15	-63.18	16.87	-29.15	63.18	-16.87	0.000%
11	29.15	-47.39	16.87	-29.15	47.39	-16.87	0.000%
12	16.84	-63.18	29.20	-16.84	63.18	-29.20	0.000%
13	16.84	-47.39	29.20	-16.84	47.39	-29.20	0.000%
14	0.01	-63.18	33.70	-0.01	63.18	-33.70	0.000%
15	0.01	-47.39	33.70	-0.01	47.39	-33.70	0.000%
16	-16.81	-63.18	29.18	16.81	63.18	-29.18	0.000%
17	-16.81	-47.39	29.18	16.81	47.39	-29.18	0.000%
18	-29.14	-63.18	16.84	29.14	63.18	-16.84	0.000%
19	-29.14	-47.39	16.84	29.14	47.39	-16.84	0.000%
20	-33.65	-63.18	-0.01	33.65	63.18	0.01	0.000%
21	-33.65	-47.39	-0.01	33.65	47.39	0.01	0.000%
22	-29.15	-63.18	-16.87	29.15	63.18	16.87	0.000%
23	-29.15	-47.39	-16.87	29.15	47.39	16.87	0.000%
24	-16.84	-63.18	-29.20	16.84	63.18	29.20	0.000%
25	-16.84	-47.39	-29.20	16.84	47.39	29.20	0.000%
26	0.00	-102.58	0.00	0.00	102.58	0.00	0.000%
27	-0.00	-102.58	-8.41	0.00	102.58	8.41	0.000%
28	4.20	-102.58	-7.28	-4.20	102.58	7.28	0.000%
29	7.28	-102.58	-4.20	-7.28	102.58	4.20	0.000%
30	8.41	-102.58	0.00	-8.41	102.58	-0.00	0.000%
31	7.28	-102.58	4.21	-7.28	102.58	-4.21	0.000%
32	4.21	-102.58	7.29	-4.21	102.58	-7.29	0.000%
33	0.00	-102.58	8.41	-0.00	102.58	-8.41	0.000%
34	-4.20	-102.58	7.28	4.20	102.58	-7.28	0.000%
35	-7.28	-102.58	4.20	7.28	102.58	-4.20	0.000%
36	-8.41	-102.58	-0.00	8.41	102.58	0.00	0.000%
37	-7.28	-102.58	-4.21	7.28	102.58	4.21	0.000%
38	-4.21	-102.58	-7.29	4.21	102.58	7.29	0.000%
39	-0.00	-52.65	-7.94	0.00	52.65	7.94	0.000%
40	3.96	-52.65	-6.87	-3.96	52.65	6.87	0.000%
41	6.86	-52.65	-3.97	-6.86	52.65	3.97	0.000%
42	7.93	-52.65	0.00	-7.93	52.65	-0.00	0.000%
43	6.87	-52.65	3.97	-6.87	52.65	-3.97	0.000%
44	3.97	-52.65	6.88	-3.97	52.65	-6.88	0.000%
45	0.00	-52.65	7.94	-0.00	52.65	-7.94	0.000%
46	-3.96	-52.65	6.87	3.96	52.65	-6.87	0.000%
47	-6.86	-52.65	3.97	6.86	52.65	-3.97	0.000%
48	-7.93	-52.65	-0.00	7.93	52.65	0.00	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
49	-6.87	-52.65	-3.97	6.87	52.65	3.97	0.000%
50	-3.97	-52.65	-6.88	3.97	52.65	6.88	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00050281
3	Yes	5	0.00000001	0.00019308
4	Yes	7	0.00000001	0.00010690
5	Yes	6	0.00000001	0.00055737
6	Yes	7	0.00000001	0.00010688
7	Yes	6	0.00000001	0.00055736
8	Yes	5	0.00000001	0.00049850
9	Yes	5	0.00000001	0.00019072
10	Yes	7	0.00000001	0.00010777
11	Yes	6	0.00000001	0.00056199
12	Yes	7	0.00000001	0.00010682
13	Yes	6	0.00000001	0.00055679
14	Yes	5	0.00000001	0.00048076
15	Yes	5	0.00000001	0.00017983
16	Yes	7	0.00000001	0.00010727
17	Yes	6	0.00000001	0.00055928
18	Yes	7	0.00000001	0.00010719
19	Yes	6	0.00000001	0.00055889
20	Yes	5	0.00000001	0.00047774
21	Yes	5	0.00000001	0.00017819
22	Yes	7	0.00000001	0.00010678
23	Yes	6	0.00000001	0.00055666
24	Yes	7	0.00000001	0.00010783
25	Yes	6	0.00000001	0.00056226
26	Yes	4	0.00000001	0.00000001
27	Yes	7	0.00000001	0.00029362
28	Yes	7	0.00000001	0.00035571
29	Yes	7	0.00000001	0.00035548
30	Yes	7	0.00000001	0.00029332
31	Yes	7	0.00000001	0.00035783
32	Yes	7	0.00000001	0.00035759
33	Yes	7	0.00000001	0.00029501
34	Yes	7	0.00000001	0.00035849
35	Yes	7	0.00000001	0.00035822
36	Yes	7	0.00000001	0.00029418
37	Yes	7	0.00000001	0.00035672
38	Yes	7	0.00000001	0.00035746
39	Yes	5	0.00000001	0.00008996
40	Yes	5	0.00000001	0.00039541
41	Yes	5	0.00000001	0.00039533
42	Yes	5	0.00000001	0.00008967
43	Yes	5	0.00000001	0.00040275
44	Yes	5	0.00000001	0.00039409
45	Yes	5	0.00000001	0.00008996
46	Yes	5	0.00000001	0.00039922
47	Yes	5	0.00000001	0.00039850
48	Yes	5	0.00000001	0.00008966
49	Yes	5	0.00000001	0.00039377
50	Yes	5	0.00000001	0.00040322

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	25.568	45	1.4410	0.0005
L2	155 - 150	24.059	45	1.4401	0.0005
L3	150 - 145	22.554	45	1.4331	0.0005
L4	145 - 140	21.061	45	1.4167	0.0005
L5	140 - 135	19.591	45	1.3899	0.0005
L6	135 - 130	18.154	45	1.3524	0.0005
L7	130 - 125	16.762	45	1.3052	0.0004
L8	125 - 120	15.423	45	1.2503	0.0004
L9	120 - 111.333	14.146	45	1.1883	0.0003
L10	116 - 111	13.173	45	1.1350	0.0003
L11	111 - 106	12.000	45	1.1022	0.0003
L12	106 - 101	10.876	45	1.0439	0.0002
L13	101 - 96	9.815	45	0.9834	0.0002
L14	96 - 91	8.817	45	0.9214	0.0002
L15	91 - 86	7.886	45	0.8585	0.0002
L16	86 - 85.75	7.020	45	0.7951	0.0002
L17	85.75 - 81	6.978	45	0.7930	0.0002
L18	81 - 80.75	6.210	45	0.7515	0.0001
L19	80.75 - 80.5	6.171	45	0.7484	0.0001
L20	80.5 - 73.25	6.132	45	0.7452	0.0001
L21	79 - 72.25	5.900	45	0.7262	0.0001
L22	72.25 - 67.25	4.902	45	0.6807	0.0001
L23	67.25 - 62.25	4.219	45	0.6248	0.0001
L24	62.25 - 57.25	3.594	45	0.5696	0.0001
L25	57.25 - 52.25	3.026	45	0.5152	0.0001
L26	52.25 - 49.83	2.514	45	0.4616	0.0001
L27	49.83 - 49.58	2.287	45	0.4360	0.0001
L28	49.58 - 44.58	2.264	45	0.4333	0.0001
L29	44.58 - 36.3333	1.838	45	0.3811	0.0001
L30	43 - 35.3333	1.714	45	0.3648	0.0001
L31	35.3333 - 32.25	1.160	45	0.3215	0.0000
L32	32.25 - 32	0.962	45	0.2915	0.0000
L33	32 - 27	0.947	45	0.2891	0.0000
L34	27 - 22	0.669	45	0.2413	0.0000
L35	22 - 17	0.441	45	0.1944	0.0000
L36	17 - 15.5	0.262	45	0.1486	0.0000
L37	15.5 - 15.25	0.217	45	0.1352	0.0000
L38	15.25 - 14.75	0.210	45	0.1329	0.0000
L39	14.75 - 14.5	0.196	45	0.1284	0.0000
L40	14.5 - 9.5	0.190	45	0.1262	0.0000
L41	9.5 - 4.5	0.081	45	0.0818	0.0000
L42	4.5 - 0	0.018	45	0.0383	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	Platform Mount [13' LP 713-1]	45	24.662	1.4409	0.0005	77413
154.00	Pipe Mount [PM 601-3]	45	23.758	1.4393	0.0005	59211
149.00	Platform Mount [13' LP 713-1]	45	22.254	1.4306	0.0005	21651
139.00	Platform Mount [LP 713-1]	45	19.301	1.3832	0.0005	8435
129.00	Commscope MC-PK8-DSH	45	16.490	1.2947	0.0004	5466
116.00	Platform Mount [LP 712-1]	45	13.173	1.1350	0.0003	5920
84.00	Side Arm Mount [4' SO 702-1]	45	6.690	0.7794	0.0002	5873
40.00	Pipe Mount [PM 601-1]	45	1.488	0.3457	0.0001	9311

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	109.468	14	6.1772	0.0023
L2	155 - 150	103.012	14	6.1733	0.0023
L3	150 - 145	96.573	14	6.1434	0.0022
L4	145 - 140	90.184	14	6.0731	0.0022
L5	140 - 135	83.893	14	5.9579	0.0021
L6	135 - 130	77.744	14	5.7976	0.0019
L7	130 - 125	71.785	14	5.5954	0.0017
L8	125 - 120	66.055	14	5.3601	0.0015
L9	120 - 111.333	60.586	14	5.0946	0.0013
L10	116 - 111	56.418	14	4.8659	0.0012
L11	111 - 106	51.397	14	4.7254	0.0011
L12	106 - 101	46.584	14	4.4753	0.0010
L13	101 - 96	42.037	14	4.2156	0.0009
L14	96 - 91	37.765	14	3.9496	0.0008
L15	91 - 86	33.773	14	3.6797	0.0007
L16	86 - 85.75	30.064	14	3.4079	0.0007
L17	85.75 - 81	29.886	14	3.3987	0.0007
L18	81 - 80.75	26.595	14	3.2208	0.0006
L19	80.75 - 80.5	26.427	14	3.2072	0.0006
L20	80.5 - 73.25	26.259	14	3.1937	0.0006
L21	79 - 72.25	25.269	14	3.1122	0.0006
L22	72.25 - 67.25	20.995	14	2.9169	0.0005
L23	67.25 - 62.25	18.067	14	2.6772	0.0005
L24	62.25 - 57.25	15.388	14	2.4404	0.0004
L25	57.25 - 52.25	12.956	14	2.2070	0.0004
L26	52.25 - 49.83	10.766	14	1.9772	0.0003
L27	49.83 - 49.58	9.792	14	1.8674	0.0003
L28	49.58 - 44.58	9.694	14	1.8561	0.0003
L29	44.58 - 36.3333	7.869	14	1.6323	0.0003
L30	43 - 35.3333	7.340	14	1.5624	0.0002
L31	35.3333 - 32.25	4.965	14	1.3767	0.0002
L32	32.25 - 32	4.118	14	1.2481	0.0002
L33	32 - 27	4.053	14	1.2377	0.0002
L34	27 - 22	2.864	14	1.0329	0.0002
L35	22 - 17	1.888	14	0.8323	0.0001
L36	17 - 15.5	1.119	14	0.6360	0.0001
L37	15.5 - 15.25	0.929	14	0.5785	0.0001
L38	15.25 - 14.75	0.899	14	0.5689	0.0001
L39	14.75 - 14.5	0.840	14	0.5497	0.0001
L40	14.5 - 9.5	0.812	14	0.5401	0.0001
L41	9.5 - 4.5	0.346	14	0.3500	0.0000
L42	4.5 - 0	0.077	14	0.1640	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	Platform Mount [13' LP 713-1]	14	105.593	6.1767	0.0023	18482
154.00	Pipe Mount [PM 601-3]	14	101.722	6.1700	0.0023	14125
149.00	Platform Mount [13' LP 713-1]	14	95.290	6.1328	0.0022	5157
139.00	Platform Mount [LP 713-1]	14	82.650	5.9294	0.0021	2009
129.00	Commscope MC-PK8-DSH	14	70.620	5.5504	0.0017	1299
116.00	Platform Mount [LP 712-1]	14	56.418	4.8659	0.0012	1400
84.00	Side Arm Mount [4' SO 702-1]	14	28.653	3.3406	0.0006	1378
40.00	Pipe Mount [PM 601-1]	14	6.372	1.4806	0.0002	2175

Compression Checks

Pole Design Data

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	
L1	160 - 155 (1)	TP20.801x19.6x0.25	5.00	0.00	0.0	16.5436	-3.18	967.80	0.003
L2	155 - 150 (2)	TP22.0021x20.801x0.25	5.00	0.00	0.0	17.5104	-4.12	1024.36	0.004
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	5.00	0.00	0.0	18.4772	-7.97	1080.92	0.007
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	5.00	0.00	0.0	19.4441	-8.41	1137.48	0.007
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	5.00	0.00	0.0	20.4109	-12.18	1194.04	0.010
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	5.00	0.00	0.0	21.3777	-12.80	1250.60	0.010
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	5.00	0.00	0.0	22.3445	-16.43	1307.16	0.013
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	5.00	0.00	0.0	23.3114	-17.14	1363.71	0.013
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	8.67	0.00	0.0	24.0848	-17.76	1408.96	0.013
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	5.00	0.00	0.0	33.7855	-22.96	1976.45	0.012
L11	111 - 106 (11)	TP32.065x30.867x0.3438	5.00	0.00	0.0	35.1115	-24.00	2054.02	0.012
L12	106 - 101 (12)	TP33.2631x32.065x0.3438	5.00	0.00	0.0	36.4376	-25.07	2131.60	0.012
L13	101 - 96 (13)	TP34.4611x33.2631x0.3438	5.00	0.00	0.0	37.7636	-26.18	2209.17	0.012
L14	96 - 91 (14)	TP35.6591x34.4611x0.3438	5.00	0.00	0.0	39.0896	-27.32	2286.74	0.012
L15	91 - 86 (15)	TP36.8571x35.6591x0.3438	5.00	0.00	0.0	40.4157	-28.49	2364.32	0.012
L16	86 - 85.75 (16)	TP36.917x36.8571x0.5125	0.25	0.00	0.0	60.0765	-28.58	3514.48	0.008
L17	85.75 - 81 (17)	TP38.0551x36.917x0.5063	4.75	0.00	0.0	61.2093	-30.08	3580.74	0.008
L18	81 - 80.75 (18)	TP38.115x38.0551x0.3438	0.25	0.00	0.0	41.8080	-30.15	2445.77	0.012
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.3438	0.25	0.00	0.0	41.8743	-30.22	2449.65	0.012
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.3438	7.25	0.00	0.0	42.2722	-30.60	2472.92	0.012
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.4063	6.75	0.00	0.0	51.0963	-33.52	2989.13	0.011
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.4063	5.00	0.00	0.0	52.6663	-34.94	3080.98	0.011
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.4063	5.00	0.00	0.0	54.2362	-36.40	3172.82	0.011
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.4063	5.00	0.00	0.0	55.8061	-37.88	3264.66	0.012
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.4063	5.00	0.00	0.0	57.3761	-39.41	3356.50	0.012
L26	52.25 - 49.83 (26)	TP44.8484x44.2675x0.4063	2.42	0.00	0.0	58.1359	-40.34	3400.95	0.012
L27	49.83 - 49.58 (27)	TP44.9084x44.8484x0.4063	0.25	0.00	0.0	58.2144	-40.45	3405.54	0.012
L28	49.58 - 44.58 (28)	TP46.1086x44.9084x0.4063	5.00	0.00	0.0	59.7843	-42.38	3497.38	0.012
L29	44.58 - 36.3333 (29)	TP48.088x46.1086x0.4063	8.25	0.00	0.0	60.2804	-43.00	3526.41	0.012
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.4375	7.67	0.00	0.0	66.3220	-47.84	3879.84	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.4375	3.08	0.00	0.0	67.3650	-49.14	3940.85	0.012
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.4375	0.25	0.00	0.0	67.4495	-49.25	3945.80	0.012
L33	32 - 27 (33)	TP49.5171x48.3165x0.4375	5.00	0.00	0.0	69.1408	-51.38	4044.74	0.013
L34	27 - 22 (34)	TP50.7176x49.5171x0.4375	5.00	0.00	0.0	70.8321	-53.55	4143.68	0.013
L35	22 - 17 (35)	TP51.9181x50.7176x0.4375	5.00	0.00	0.0	72.5234	-55.76	4242.62	0.013
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.4375	1.50	0.00	0.0	73.0307	-56.47	4272.30	0.013
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.4375	0.25	0.00	0.0	73.1153	-56.60	4277.25	0.013
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.4375	0.50	0.00	0.0	73.2844	-56.84	4287.14	0.013
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.4375	0.25	0.00	0.0	73.3690	-56.96	4292.09	0.013
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.4375	5.00	0.00	0.0	75.0603	-59.20	4391.03	0.013
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.4375	5.00	0.00	0.0	76.7515	-61.31	4489.96	0.014
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	4.50	0.00	0.0	78.2737	-63.17	4579.01	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 155 (1)	TP20.801x19.6x0.25	9.68	508.14	0.019	0.00	508.14	0.000
L2	155 - 150 (2)	TP22.0021x20.801x0.25	32.78	559.87	0.059	0.00	559.87	0.000
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	83.25	612.89	0.136	0.00	612.89	0.000
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	135.67	667.00	0.203	0.00	667.00	0.000
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	216.43	722.04	0.300	0.00	722.04	0.000
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	295.99	777.82	0.381	0.00	777.82	0.000
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	389.07	834.16	0.466	0.00	834.16	0.000
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	487.20	890.88	0.547	0.00	890.88	0.000
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	567.23	936.40	0.606	0.00	936.40	0.000
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	689.10	1506.34	0.457	0.00	1506.34	0.000
L11	111 - 106 (11)	TP32.065x30.867x0.3438	810.00	1606.85	0.504	0.00	1606.85	0.000
L12	106 - 101 (12)	TP33.2631x32.065x0.3438	933.13	1708.83	0.546	0.00	1708.83	0.000
L13	101 - 96 (13)	TP34.4611x33.2631x0.3438	1058.47	1812.13	0.584	0.00	1812.13	0.000
L14	96 - 91 (14)	TP35.6591x34.4611x0.3438	1186.07	1916.55	0.619	0.00	1916.55	0.000
L15	91 - 86 (15)	TP36.8571x35.6591x0.3438	1315.88	2021.91	0.651	0.00	2021.91	0.000
L16	86 - 85.75 (16)	TP36.917x36.8571x0.5125	1322.44	3264.29	0.405	0.00	3264.29	0.000
L17	85.75 - 81 (17)	TP38.0551x36.917x0.5063	1448.24	3432.41	0.422	0.00	3432.41	0.000
L18	81 - 80.75 (18)	TP38.115x38.0551x0.3438	1454.93	2133.36	0.682	0.00	2133.36	0.000
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.3438	1461.62	2138.68	0.683	0.00	2138.68	0.000
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.3438	1501.87	2170.66	0.692	0.00	2170.66	0.000
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.4063	1686.08	2839.37	0.594	0.00	2839.37	0.000
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.4063	1825.48	2983.96	0.612	0.00	2983.96	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.4063	1967.14	3129.88	0.629	0.00	3129.88	0.000
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.4063	2111.02	3276.97	0.644	0.00	3276.97	0.000
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.4063	2257.08	3425.04	0.659	0.00	3425.04	0.000
L26	52.25 - 49.83 (26)	TP44.8484x44.2675x0.4063	2328.57	3497.01	0.666	0.00	3497.01	0.000
L27	49.83 - 49.58 (27)	TP44.9084x44.8484x0.4063	2335.97	3504.46	0.667	0.00	3504.46	0.000
L28	49.58 - 44.58 (28)	TP46.1086x44.9084x0.4063	2485.39	3653.68	0.680	0.00	3653.68	0.000
L29	44.58 - 36.3333 (29)	TP48.088x46.1086x0.4063	2533.05	3700.96	0.684	0.00	3700.96	0.000
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.4375	2768.00	4255.33	0.650	0.00	4255.33	0.000
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.4375	2864.13	4361.67	0.657	0.00	4361.67	0.000
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.4375	2871.95	4370.30	0.657	0.00	4370.30	0.000
L33	32 - 27 (33)	TP49.5171x48.3165x0.4375	3029.43	4543.38	0.667	0.00	4543.38	0.000
L34	27 - 22 (34)	TP50.7176x49.5171x0.4375	3188.77	4717.04	0.676	0.00	4717.04	0.000
L35	22 - 17 (35)	TP51.9181x50.7176x0.4375	3349.95	4891.11	0.685	0.00	4891.11	0.000
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.4375	3398.67	4943.38	0.688	0.00	4943.38	0.000
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.4375	3406.81	4952.09	0.688	0.00	4952.09	0.000
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.4375	3423.09	4969.52	0.689	0.00	4969.52	0.000
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.4375	3431.24	4978.23	0.689	0.00	4978.23	0.000
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.4375	3595.23	5152.57	0.698	0.00	5152.57	0.000
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.4375	3761.11	5326.86	0.706	0.00	5326.86	0.000
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	3912.01	5483.53	0.713	0.00	5483.53	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP20.801x19.6x0.25	3.90	290.34	0.013	0.00	524.86	0.000
L2	155 - 150 (2)	TP22.0021x20.801x0.25	4.95	307.31	0.016	0.00	588.00	0.000
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	10.28	324.27	0.032	0.00	654.72	0.000
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	10.70	341.24	0.031	0.00	725.03	0.000
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	15.70	358.21	0.044	0.06	798.92	0.000
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	16.13	375.18	0.043	0.06	876.40	0.000
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	19.42	392.15	0.050	0.23	957.47	0.000
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	19.85	409.11	0.049	0.23	1042.12	0.000
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	20.19	422.69	0.048	0.23	1112.42	0.000
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	23.96	592.93	0.040	0.23	1591.98	0.000
L11	111 - 106 (11)	TP32.065x30.867x0.3438	24.41	616.21	0.040	0.23	1719.40	0.000
L12	106 - 101 (12)	TP33.2631x32.065x0.3438	24.86	639.48	0.039	0.23	1851.72	0.000
L13	101 - 96 (13)	TP34.4611x33.2631x0.3438	25.31	662.75	0.038	0.23	1988.96	0.000
L14	96 - 91 (14)	TP35.6591x34.4611x0.3438	25.75	686.02	0.038	0.23	2131.09	0.000
L15	91 - 86 (15)	TP36.8571x35.6591x0.34	26.20	709.29	0.037	0.23	2278.13	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
		38						
L16	86 - 85.75 (16)	TP36.917x36.8571x0.5125	26.22	1054.34	0.025	0.23	3376.27	0.000
L17	85.75 - 81 (17)	TP38.0551x36.917x0.5063	26.73	1074.22	0.025	0.23	3548.06	0.000
L18	81 - 80.75 (18)	TP38.115x38.0551x0.3438	26.76	733.73	0.036	0.23	2437.80	0.000
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.3438	26.78	734.89	0.036	0.23	2445.54	0.000
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.3438	26.92	741.88	0.036	0.23	2492.22	0.000
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.4063	27.67	896.74	0.031	0.23	3081.11	0.000
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.4063	28.12	924.29	0.030	0.23	3273.35	0.000
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.4063	28.57	951.85	0.030	0.23	3471.41	0.000
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.4063	29.01	979.40	0.030	0.23	3675.29	0.000
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.4063	29.45	1006.95	0.029	0.23	3884.98	0.000
L26	52.25 - 49.83 (26)	TP44.8484x44.2675x0.4063	29.66	1020.29	0.029	0.23	3988.57	0.000
L27	49.83 - 49.58 (27)	TP44.9084x44.8484x0.4063	29.68	1021.66	0.029	0.23	3999.34	0.000
L28	49.58 - 44.58 (28)	TP46.1086x44.9084x0.4063	30.11	1049.22	0.029	0.23	4217.96	0.000
L29	44.58 - 36.3333 (29)	TP48.088x46.1086x0.4063	30.25	1057.92	0.029	0.23	4288.25	0.000
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.4375	31.08	1163.95	0.027	0.32	4820.13	0.000
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.4375	31.31	1182.26	0.026	0.32	4972.92	0.000
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.4375	31.32	1183.74	0.026	0.32	4985.42	0.000
L33	32 - 27 (33)	TP49.5171x48.3165x0.4375	31.70	1213.42	0.026	0.32	5238.56	0.000
L34	27 - 22 (34)	TP50.7176x49.5171x0.4375	32.07	1243.10	0.026	0.32	5497.98	0.000
L35	22 - 17 (35)	TP51.9181x50.7176x0.4375	32.44	1272.78	0.025	0.32	5763.67	0.000
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.4375	32.56	1281.69	0.025	0.32	5844.59	0.000
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.4375	32.56	1283.17	0.025	0.32	5858.14	0.000
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.4375	32.60	1286.14	0.025	0.32	5885.27	0.000
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.4375	32.62	1287.63	0.025	0.32	5898.86	0.000
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.4375	33.01	1317.31	0.025	0.32	6173.95	0.000
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.4375	33.38	1346.99	0.025	0.32	6455.31	0.000
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	33.73	1373.70	0.025	0.32	6713.89	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 155 (1)	0.003	0.019	0.000	0.013	0.000	0.023	1.050	4.8.2
L2	155 - 150 (2)	0.004	0.059	0.000	0.016	0.000	0.063	1.050	4.8.2
L3	150 - 145 (3)	0.007	0.136	0.000	0.032	0.000	0.144	1.050	4.8.2
L4	145 - 140 (4)	0.007	0.203	0.000	0.031	0.000	0.212	1.050	4.8.2
L5	140 - 135 (5)	0.010	0.300	0.000	0.044	0.000	0.312	1.050	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L6	135 - 130 (6)	0.010	0.381	0.000	0.043	0.000	0.393	1.050	4.8.2
L7	130 - 125 (7)	0.013	0.466	0.000	0.050	0.000	0.481	1.050	4.8.2
L8	125 - 120 (8)	0.013	0.547	0.000	0.049	0.000	0.562	1.050	4.8.2
L9	120 - 111.333 (9)	0.013	0.606	0.000	0.048	0.000	0.621	1.050	4.8.2
L10	111.333 - 111 (10)	0.012	0.457	0.000	0.040	0.000	0.471	1.050	4.8.2
L11	111 - 106 (11)	0.012	0.504	0.000	0.040	0.000	0.517	1.050	4.8.2
L12	106 - 101 (12)	0.012	0.546	0.000	0.039	0.000	0.559	1.050	4.8.2
L13	101 - 96 (13)	0.012	0.584	0.000	0.038	0.000	0.597	1.050	4.8.2
L14	96 - 91 (14)	0.012	0.619	0.000	0.038	0.000	0.632	1.050	4.8.2
L15	91 - 86 (15)	0.012	0.651	0.000	0.037	0.000	0.664	1.050	4.8.2
L16	86 - 85.75 (16)	0.008	0.405	0.000	0.025	0.000	0.414	1.050	4.8.2
L17	85.75 - 81 (17)	0.008	0.422	0.000	0.025	0.000	0.431	1.050	4.8.2
L18	81 - 80.75 (18)	0.012	0.682	0.000	0.036	0.000	0.696	1.050	4.8.2
L19	80.75 - 80.5 (19)	0.012	0.683	0.000	0.036	0.000	0.697	1.050	4.8.2
L20	80.5 - 73.25 (20)	0.012	0.692	0.000	0.036	0.000	0.706	1.050	4.8.2
L21	73.25 - 72.25 (21)	0.011	0.594	0.000	0.031	0.000	0.606	1.050	4.8.2
L22	72.25 - 67.25 (22)	0.011	0.612	0.000	0.030	0.000	0.624	1.050	4.8.2
L23	67.25 - 62.25 (23)	0.011	0.629	0.000	0.030	0.000	0.641	1.050	4.8.2
L24	62.25 - 57.25 (24)	0.012	0.644	0.000	0.030	0.000	0.657	1.050	4.8.2
L25	57.25 - 52.25 (25)	0.012	0.659	0.000	0.029	0.000	0.672	1.050	4.8.2
L26	52.25 - 49.83 (26)	0.012	0.666	0.000	0.029	0.000	0.679	1.050	4.8.2
L27	49.83 - 49.58 (27)	0.012	0.667	0.000	0.029	0.000	0.679	1.050	4.8.2
L28	49.58 - 44.58 (28)	0.012	0.680	0.000	0.029	0.000	0.693	1.050	4.8.2
L29	44.58 - 36.3333 (29)	0.012	0.684	0.000	0.029	0.000	0.697	1.050	4.8.2
L30	36.3333 - 35.3333 (30)	0.012	0.650	0.000	0.027	0.000	0.664	1.050	4.8.2
L31	35.3333 - 32.25 (31)	0.012	0.657	0.000	0.026	0.000	0.670	1.050	4.8.2
L32	32.25 - 32 (32)	0.012	0.657	0.000	0.026	0.000	0.670	1.050	4.8.2
L33	32 - 27 (33)	0.013	0.667	0.000	0.026	0.000	0.680	1.050	4.8.2
L34	27 - 22 (34)	0.013	0.676	0.000	0.026	0.000	0.690	1.050	4.8.2
L35	22 - 17 (35)	0.013	0.685	0.000	0.025	0.000	0.699	1.050	4.8.2
L36	17 - 15.5 (36)	0.013	0.688	0.000	0.025	0.000	0.701	1.050	4.8.2
L37	15.5 - 15.25 (37)	0.013	0.688	0.000	0.025	0.000	0.702	1.050	4.8.2
L38	15.25 - 14.75 (38)	0.013	0.689	0.000	0.025	0.000	0.703	1.050	4.8.2
L39	14.75 - 14.5 (39)	0.013	0.689	0.000	0.025	0.000	0.703	1.050	4.8.2
L40	14.5 - 9.5 (40)	0.013	0.698	0.000	0.025	0.000	0.712	1.050	4.8.2
L41	9.5 - 4.5 (41)	0.014	0.706	0.000	0.025	0.000	0.720	1.050	4.8.2
L42	4.5 - 0 (42)	0.014	0.713	0.000	0.025	0.000	0.728	1.050	4.8.2

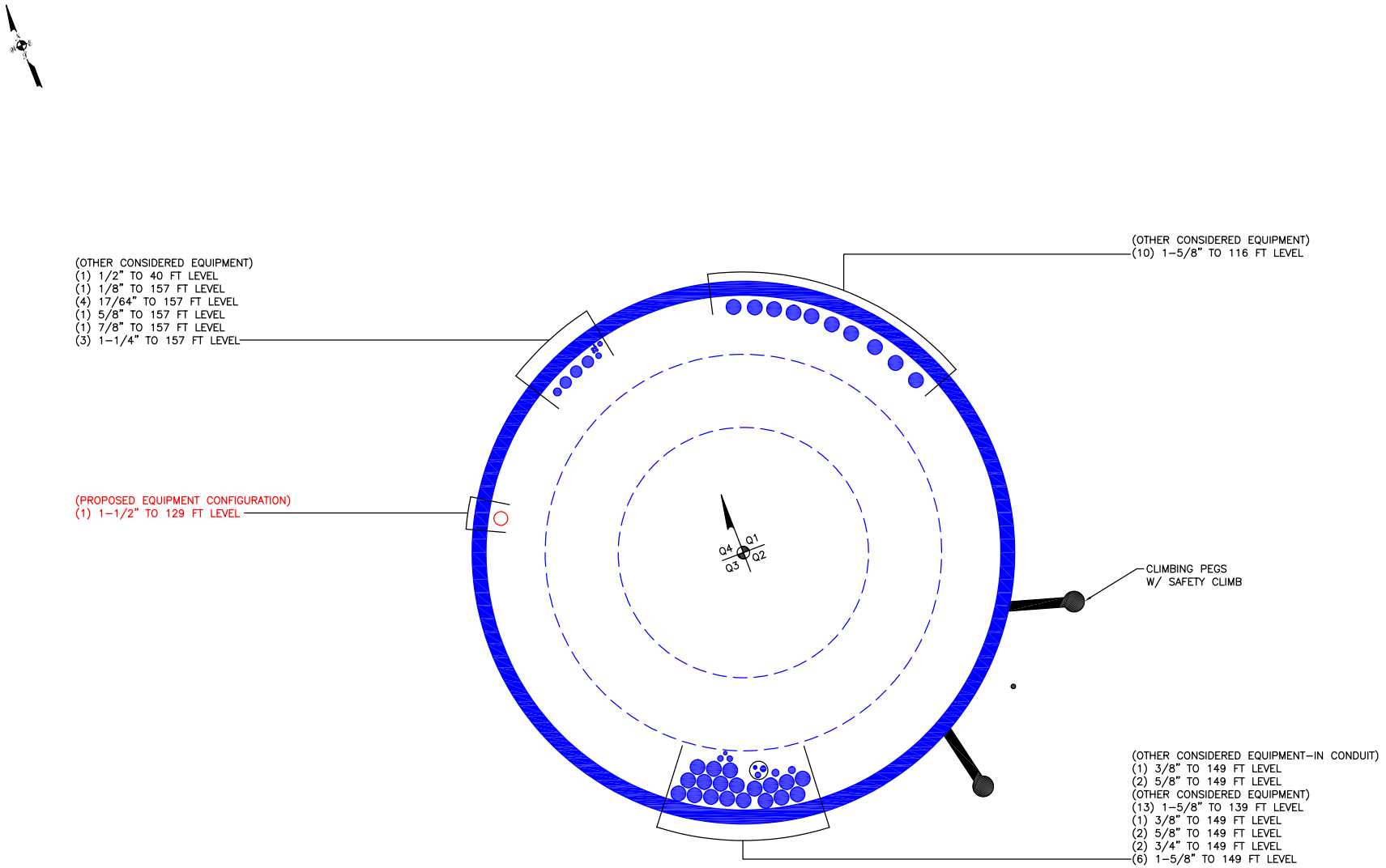
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 155	Pole	TP20.801x19.6x0.25	1	-3.18	1016.19	2.1	Pass
L2	155 - 150	Pole	TP22.0021x20.801x0.25	2	-4.12	1075.58	6.0	Pass
L3	150 - 145	Pole	TP23.2031x22.0021x0.25	3	-7.97	1134.97	13.7	Pass
L4	145 - 140	Pole	TP24.4041x23.2031x0.25	4	-8.41	1194.35	20.2	Pass
L5	140 - 135	Pole	TP25.6051x24.4041x0.25	5	-12.18	1253.74	29.7	Pass
L6	135 - 130	Pole	TP26.8062x25.6051x0.25	6	-12.80	1313.13	37.4	Pass
L7	130 - 125	Pole	TP28.0072x26.8062x0.25	7	-16.43	1372.52	45.9	Pass
L8	125 - 120	Pole	TP29.2082x28.0072x0.25	8	-17.14	1431.90	53.5	Pass
L9	120 - 111.333	Pole	TP31.29x29.2082x0.25	9	-17.76	1479.41	59.1	Pass
L10	111.333 - 111	Pole	TP30.867x29.669x0.3438	10	-22.96	2075.27	44.8	Pass
L11	111 - 106	Pole	TP32.065x30.867x0.3438	11	-24.00	2156.72	49.3	Pass
L12	106 - 101	Pole	TP33.2631x32.065x0.3438	12	-25.07	2238.18	53.3	Pass
L13	101 - 96	Pole	TP34.4611x33.2631x0.3438	13	-26.18	2319.63	56.9	Pass
L14	96 - 91	Pole	TP35.6591x34.4611x0.3438	14	-27.32	2401.08	60.2	Pass
L15	91 - 86	Pole	TP36.8571x35.6591x0.3438	15	-28.49	2482.54	63.3	Pass
L16	86 - 85.75	Pole	TP36.917x36.8571x0.5125	16	-28.58	3690.20	39.4	Pass
L17	85.75 - 81	Pole	TP38.0551x36.917x0.5063	17	-30.08	3759.78	41.0	Pass
L18	81 - 80.75	Pole	TP38.115x38.0551x0.3438	18	-30.15	2568.06	66.3	Pass
L19	80.75 - 80.5	Pole	TP38.1749x38.115x0.3438	19	-30.22	2572.13	66.4	Pass
L20	80.5 - 73.25	Pole	TP39.912x38.1749x0.3438	20	-30.60	2596.57	67.2	Pass
L21	73.25 - 72.25	Pole	TP39.467x37.8468x0.4063	21	-33.52	3138.59	57.7	Pass
L22	72.25 - 67.25	Pole	TP40.6671x39.467x0.4063	22	-34.94	3235.03	59.4	Pass
L23	67.25 - 62.25	Pole	TP41.8673x40.6671x0.4063	23	-36.40	3331.46	61.0	Pass
L24	62.25 - 57.25	Pole	TP43.0674x41.8673x0.4063	24	-37.88	3427.89	62.5	Pass
L25	57.25 - 52.25	Pole	TP44.2675x43.0674x0.4063	25	-39.41	3524.32	64.0	Pass
L26	52.25 - 49.83	Pole	TP44.8484x44.2675x0.4063	26	-40.34	3571.00	64.6	Pass
L27	49.83 - 49.58	Pole	TP44.9084x44.8484x0.4063	27	-40.45	3575.82	64.7	Pass
L28	49.58 - 44.58	Pole	TP46.1086x44.9084x0.4063	28	-42.38	3672.25	66.0	Pass
L29	44.58 - 36.3333	Pole	TP48.088x46.1086x0.4063	29	-43.00	3702.73	66.4	Pass
L30	36.3333 - 35.3333	Pole	TP47.5161x45.6753x0.4375	30	-47.84	4073.83	63.2	Pass
L31	35.3333 - 32.25	Pole	TP48.2565x47.5161x0.4375	31	-49.14	4137.89	63.8	Pass
L32	32.25 - 32	Pole	TP48.3165x48.2565x0.4375	32	-49.25	4143.09	63.8	Pass
L33	32 - 27	Pole	TP49.5171x48.3165x0.4375	33	-51.38	4246.98	64.8	Pass
L34	27 - 22	Pole	TP50.7176x49.5171x0.4375	34	-53.55	4350.86	65.7	Pass
L35	22 - 17	Pole	TP51.9181x50.7176x0.4375	35	-55.76	4454.75	66.5	Pass
L36	17 - 15.5	Pole	TP52.2783x51.9181x0.4375	36	-56.47	4485.91	66.8	Pass
L37	15.5 - 15.25	Pole	TP52.3383x52.2783x0.4375	37	-56.60	4491.11	66.8	Pass
L38	15.25 - 14.75	Pole	TP52.4584x52.3383x0.4375	38	-56.84	4501.50	66.9	Pass
L39	14.75 - 14.5	Pole	TP52.5184x52.4584x0.4375	39	-56.96	4506.69	67.0	Pass
L40	14.5 - 9.5	Pole	TP53.719x52.5184x0.4375	40	-59.20	4610.58	67.8	Pass
L41	9.5 - 4.5	Pole	TP54.9195x53.719x0.4375	41	-61.31	4714.46	68.6	Pass
L42	4.5 - 0	Pole	TP56x54.9195x0.4375	42	-63.17	4807.96	69.3	Pass
							Summary	
						Pole (L42)	69.3	Pass
						RATING =	**69.3**	**Pass**

***Note: Above stress ratio for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806953 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 806953

Work Order: 1966029

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160	48.6667	4.6667	12	19.6	31.29	0.25	Auto	A572-65
2	116	42.75	5.75	12	29.67	39.912	0.34375	Auto	A572-65
3	79	42.6667	6.6667	12	37.85	48.088	0.40625	Auto	A572-65
4	43	43	0	12	45.68	56	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	15.5	plate	MK SR 1													
2	78.25	80.75	plate	MK SR 2													
3	14.75	32.25	plate	CCI-AFP-060100													
4	32.25	49.83	plate	CCI-AFP-060100													
5	81	86	plate	CCI-AFP-060100	3		E				E				E		
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4	0.75	3	0.375	PC 8.8 - M20 (100)	15	PC 8.8 - M20 (100)	15.000	15.000	2.063	1.1875	A572-65
2	4	0.75	3	0.375	PC 8.8 - M20 (100)	15	PC 8.8 - M20 (100)	15.000	15.000	2.069	1.1788	A572-65
3	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
5	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
MK SR 1	Top	5	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	5	N	3	3	-	-	-	-	-	-	-	-	-
MK SR 2	Top	5	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	5	N	3	3	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	160 - 155	5		12	19.600	20.801	0.25	A572-65	1.000
2	155 - 150	5		12	20.801	22.002	0.25	A572-65	1.000
3	150 - 145	5		12	22.002	23.203	0.25	A572-65	1.000
4	145 - 140	5		12	23.203	24.404	0.25	A572-65	1.000
5	140 - 135	5		12	24.404	25.605	0.25	A572-65	1.000
6	135 - 130	5		12	25.605	26.806	0.25	A572-65	1.000
7	130 - 125	5		12	26.806	28.007	0.25	A572-65	1.000
8	125 - 120	5		12	28.007	29.208	0.25	A572-65	1.000
9	120 - 116	8.6667	4.6667	12	29.208	31.290	0.25	A572-65	1.000
10	116 - 111	5		12	29.669	30.867	0.34375	A572-65	1.000
11	111 - 106	5		12	30.867	32.065	0.34375	A572-65	1.000
12	106 - 101	5		12	32.065	33.263	0.34375	A572-65	1.000
13	101 - 96	5		12	33.263	34.461	0.34375	A572-65	1.000
14	96 - 91	5		12	34.461	35.659	0.34375	A572-65	1.000
15	91 - 86	5		12	35.659	36.857	0.34375	A572-65	1.000
16	86 - 85.75	0.25		12	36.857	36.917	0.5125	A572-65	0.974
17	85.75 - 81	4.75		12	36.917	38.055	0.50625	A572-65	0.976
18	81 - 80.75	0.25		12	38.055	38.115	0.34375	A572-65	1.000
19	80.75 - 80.5	0.25		12	38.115	38.175	0.34375	A572-65	1.000
20	80.5 - 79	7.25	5.75	12	38.175	39.912	0.34375	A572-65	1.000
21	79 - 72.25	6.75		12	37.847	39.467	0.40625	A572-65	1.000
22	72.25 - 67.25	5		12	39.467	40.667	0.40625	A572-65	1.000
23	67.25 - 62.25	5		12	40.667	41.867	0.40625	A572-65	1.000
24	62.25 - 57.25	5		12	41.867	43.067	0.40625	A572-65	1.000
25	57.25 - 52.25	5		12	43.067	44.268	0.40625	A572-65	1.000
26	52.25 - 49.83	2.42		12	44.268	44.848	0.40625	A572-65	1.000
27	49.83 - 49.58	0.25		12	44.848	44.908	0.40625	A572-65	1.000
28	49.58 - 44.58	5		12	44.908	46.109	0.40625	A572-65	1.000
29	44.58 - 43	8.2467	6.6667	12	46.109	48.088	0.40625	A572-65	1.000
30	43 - 35.3333	7.6667		12	45.675	47.516	0.4375	A572-65	1.000
31	35.3333 - 32.25	3.0833		12	47.516	48.256	0.4375	A572-65	1.000
32	32.25 - 32	0.25		12	48.256	48.317	0.4375	A572-65	1.000
33	32 - 27	5		12	48.317	49.517	0.4375	A572-65	1.000
34	27 - 22	5		12	49.517	50.718	0.4375	A572-65	1.000
35	22 - 17	5		12	50.718	51.918	0.4375	A572-65	1.000
36	17 - 15.5	1.5		12	51.918	52.278	0.4375	A572-65	1.000
37	15.5 - 15.25	0.25		12	52.278	52.338	0.4375	A572-65	1.000
38	15.25 - 14.75	0.5		12	52.338	52.458	0.4375	A572-65	1.000
39	14.75 - 14.5	0.25		12	52.458	52.518	0.4375	A572-65	1.000
40	14.5 - 9.5	5		12	52.518	53.719	0.4375	A572-65	1.000
41	9.5 - 4.5	5		12	53.719	54.920	0.4375	A572-65	1.000
42	4.5 - 0	4.5		12	54.920	56.000	0.4375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160 - 155	3.18	9.68	3.90
2	155 - 150	4.12	32.78	4.95
3	150 - 145	7.97	83.25	10.28
4	145 - 140	8.41	135.67	10.70
5	140 - 135	12.18	216.43	15.70
6	135 - 130	12.80	295.99	16.13
7	130 - 125	16.43	389.07	19.42
8	125 - 120	17.14	487.20	19.85
9	120 - 116	17.76	567.23	20.19
10	116 - 111	22.96	689.10	23.96
11	111 - 106	24.00	810.00	24.41
12	106 - 101	25.07	933.12	24.86
13	101 - 96	26.18	1058.48	25.31
14	96 - 91	27.32	1186.07	25.75
15	91 - 86	28.49	1315.89	26.20
16	86 - 85.75	28.58	1322.44	26.22
17	85.75 - 81	30.08	1448.24	26.73
18	81 - 80.75	30.15	1454.92	26.76
19	80.75 - 80.5	30.22	1461.61	26.78
20	80.5 - 79	30.60	1501.86	26.92
21	79 - 72.25	33.52	1686.07	27.67
22	72.25 - 67.25	34.94	1825.49	28.12
23	67.25 - 62.25	36.40	1967.14	28.57
24	62.25 - 57.25	37.88	2111.02	29.01
25	57.25 - 52.25	39.41	2257.08	29.45
26	52.25 - 49.83	40.34	2328.56	29.66
27	49.83 - 49.58	40.45	2335.98	29.68
28	49.58 - 44.58	42.38	2485.39	30.11
29	44.58 - 43	43.00	2533.05	30.25
30	43 - 35.3333	47.84	2768.00	31.08
31	35.3333 - 32.25	49.14	2864.12	31.31
32	32.25 - 32	49.25	2871.95	31.32
33	32 - 27	51.38	3029.44	31.70
34	27 - 22	53.55	3188.77	32.07
35	22 - 17	55.76	3349.95	32.44
36	17 - 15.5	56.47	3398.67	32.56
37	15.5 - 15.25	56.60	3406.81	32.56
38	15.25 - 14.75	56.84	3423.09	32.60
39	14.75 - 14.5	56.96	3431.24	32.62
40	14.5 - 9.5	59.20	3595.24	33.01
41	9.5 - 4.5	61.31	3761.11	33.38
42	4.5 - 0	63.17	3912.01	33.73

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.1%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	6.0%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	13.7%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	20.1%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	29.6%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	37.3%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	45.7%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	53.4%	Pass
120 - 116	Pole	TP31.29x29.208x0.25	Pole	59.0%	Pass
116 - 111	Pole	TP30.867x29.669x0.3438	Pole	44.7%	Pass
111 - 106	Pole	TP32.065x30.867x0.3438	Pole	49.1%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	53.1%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	56.7%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	60.0%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	63.1%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 5 Tension Rupture	60.1%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 5 Tension Rupture	62.5%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	66.1%	Pass
80.75 - 80.5	Pole	TP38.175x38.115x0.3438	Pole	66.2%	Pass
80.5 - 79	Pole	TP39.912x38.175x0.3438	Pole	67.0%	Pass
79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	57.6%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	59.3%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	60.9%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	62.4%	Pass
57.25 - 52.25	Pole	TP44.268x43.067x0.4063	Pole	63.8%	Pass
52.25 - 49.83	Pole	TP44.848x44.268x0.4063	Pole	64.5%	Pass
49.83 - 49.58	Pole	TP44.908x44.848x0.4063	Pole	64.5%	Pass
49.58 - 44.58	Pole	TP46.109x44.908x0.4063	Pole	65.8%	Pass
44.58 - 43	Pole	TP48.088x46.109x0.4063	Pole	66.2%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	63.0%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	63.6%	Pass
32.25 - 32	Pole	TP48.317x48.256x0.4375	Pole	63.7%	Pass
32 - 27	Pole	TP49.517x48.317x0.4375	Pole	64.6%	Pass
27 - 22	Pole	TP50.718x49.517x0.4375	Pole	65.5%	Pass
22 - 17	Pole	TP51.918x50.718x0.4375	Pole	66.4%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	66.6%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	66.7%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	66.8%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	66.8%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	67.6%	Pass
9.5 - 4.5	Pole	TP54.92x53.719x0.4375	Pole	68.4%	Pass
4.5 - 0	Pole	TP56x54.92x0.4375	Pole	69.1%	Pass
				Summary	
			Pole	69.1%	Pass
			Reinforcement	62.5%	Pass
			Overall	69.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
160 - 155	893	n/a	893	16.52	n/a	16.52	2.1%					
155 - 150	1059	n/a	1059	17.49	n/a	17.49	6.0%					
150 - 145	1244	n/a	1244	18.45	n/a	18.45	13.7%					
145 - 140	1450	n/a	1450	19.42	n/a	19.42	20.1%					
140 - 135	1677	n/a	1677	20.38	n/a	20.38	29.6%					
135 - 130	1927	n/a	1927	21.35	n/a	21.35	37.3%					
130 - 125	2200	n/a	2200	22.31	n/a	22.31	45.7%					
125 - 120	2499	n/a	2499	23.28	n/a	23.28	53.4%					
120 - 116	2756	n/a	2756	24.05	n/a	24.05	59.0%					
116 - 111	4023	n/a	4023	33.74	n/a	33.74	44.7%					
111 - 106	4516	n/a	4516	35.06	n/a	35.06	49.1%					
106 - 101	5047	n/a	5047	36.39	n/a	36.39	53.1%					
101 - 96	5618	n/a	5618	37.71	n/a	37.71	56.7%					
96 - 91	6231	n/a	6231	39.03	n/a	39.03	60.0%					
91 - 86	6887	n/a	6887	40.36	n/a	40.36	63.1%					
86 - 85.75	6921	3263	10183	40.42	18.00	58.42	41.6%					60.1%
85.75 - 81	7587	3460	11047	41.68	18.00	59.68	43.8%					62.5%
81 - 80.75	7623	n/a	7623	41.75	n/a	41.75	66.1%					
80.75 - 80.5	7660	n/a	7660	41.81	n/a	41.81	66.2%					
80.5 - 79	7880	n/a	7880	42.21	n/a	42.21	67.0%					
79 - 72.25	9964	n/a	9964	51.02	n/a	51.02	57.6%					
72.25 - 67.25	10911	n/a	10911	52.59	n/a	52.59	59.3%					
67.25 - 62.25	11916	n/a	11916	54.16	n/a	54.16	60.9%					
62.25 - 57.25	12981	n/a	12981	55.73	n/a	55.73	62.4%					
57.25 - 52.25	14108	n/a	14108	57.29	n/a	57.29	63.8%					
52.25 - 49.83	14676	n/a	14676	58.05	n/a	58.05	64.5%					
49.83 - 49.58	14735	n/a	14735	58.13	n/a	58.13	64.5%					
49.58 - 44.58	15960	n/a	15960	59.70	n/a	59.70	65.8%					
44.58 - 43	16361	n/a	16361	60.19	n/a	60.19	66.2%					
43 - 35.33	18788	n/a	18788	66.23	n/a	66.23	63.0%					
35.33 - 32.25	19688	n/a	19688	67.27	n/a	67.27	63.6%					
32.25 - 32	19762	n/a	19762	67.35	n/a	67.35	63.7%					
32 - 27	21287	n/a	21287	69.04	n/a	69.04	64.6%					
27 - 22	22887	n/a	22887	70.73	n/a	70.73	65.5%					
22 - 17	24566	n/a	24566	72.42	n/a	72.42	66.4%					
17 - 15.5	25085	n/a	25085	72.93	n/a	72.93	66.6%					
15.5 - 15.25	25172	n/a	25172	73.01	n/a	73.01	66.7%					
15.25 - 14.75	25348	n/a	25348	73.18	n/a	73.18	66.8%					
14.75 - 14.5	25435	n/a	25435	73.26	n/a	73.26	66.8%					
14.5 - 9.5	27235	n/a	27235	74.95	n/a	74.95	67.6%					
9.5 - 4.5	29118	n/a	29118	76.64	n/a	76.64	68.4%					
4.5 - 0	30885	n/a	30885	78.16	n/a	78.16	69.1%					

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

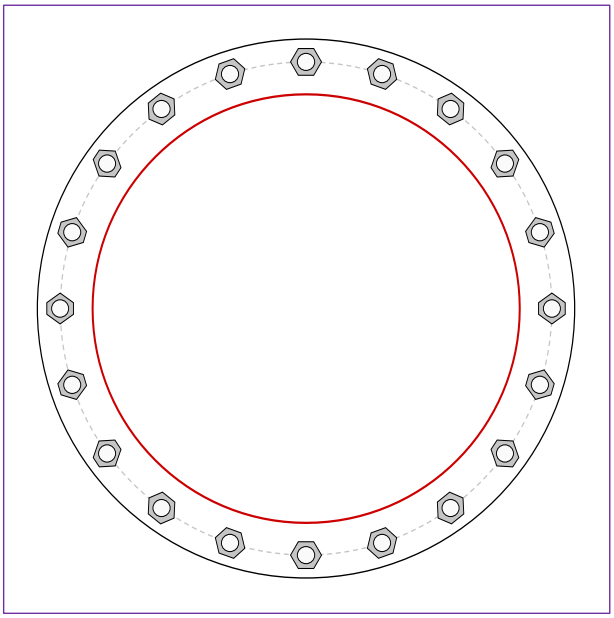
Monopole Base Plate Connection

Site Info	
BU #	806953
Site Name	BRG 2044 (A) 943097
Order #	548687 Rev. 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.0625

Applied Loads	
Moment (kip-ft)	3912.01
Axial Force (kips)	63.17
Shear Force (kips)	33.73

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(20) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 64.48" BC

Base Plate Data

70.48" OD x 2.75" Plate (A633-60; Fy=60 ksi, Fu=80 ksi)

Stiffener Data

N/A

Pole Data

56" x 0.4375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 142.38	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.69	ϕVn = 149.1	**55.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	22.91	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**40.4%**	**Pass**

Pier and Pad Foundation

BU # :	806953
Site Name:	BRG 2044 (A) 9430
App. Number:	548687 Rev. 2

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☑
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	63.18	kips
Base Shear, Vu_comp:	33.7	kips
Moment, M_u:	3912.01	ft-kips
Tower Height, **H**:	160	ft
BP Dist. Above Fdn, bp_{dist}:	6	in
Bolt Circle / Bearing Plate Width, **BC**:	64.48	in

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	195.52	33.70	**16.4%**	**Pass**
Bearing Pressure (ksf)	30.00	2.40	**8.0%**	**Pass**
*Overturning (kip*ft)*	6385.83	4097.36	**64.2%**	**Pass**
*Pad Flexure (kip*ft)*	8047.81	1872.67	**22.2%**	**Pass**
Pad Shear - 1-way (kips)	1630.75	217.09	**12.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.002	**1.2%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	6537.76	0.00	**0.0%**	**Pass**

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

Structural Rating*:	**22.2%**
Soil Rating*:	**64.2%**

Pad Properties		
Depth, **D**:	3.5	ft
Pad Width, W_1:	26	ft
Pad Thickness, **T**:	5	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	18	
Pad Rebar Size (Bottom dir. 2), Sp_2:	10	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	26	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	130	pcf
Ultimate Gross Bearing, Qult:	40.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	40	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

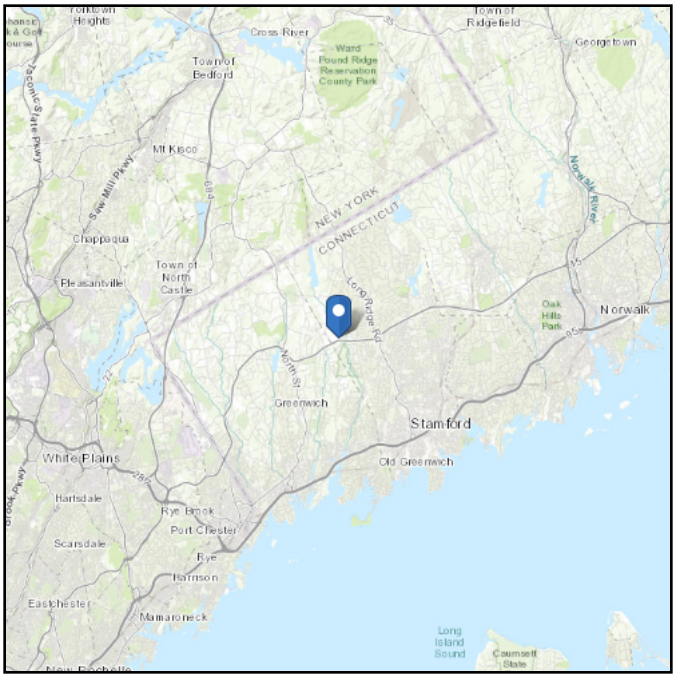
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 246.84 ft (NAVD 88)
Latitude: 41.10175
Longitude: -73.594444



Wind

Results:

Wind Speed:	~~117 Vmph~~ Vu = 120mph per Jurisdictional requirement
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data 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

Date Accessed: Tue Aug 24 2021

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.

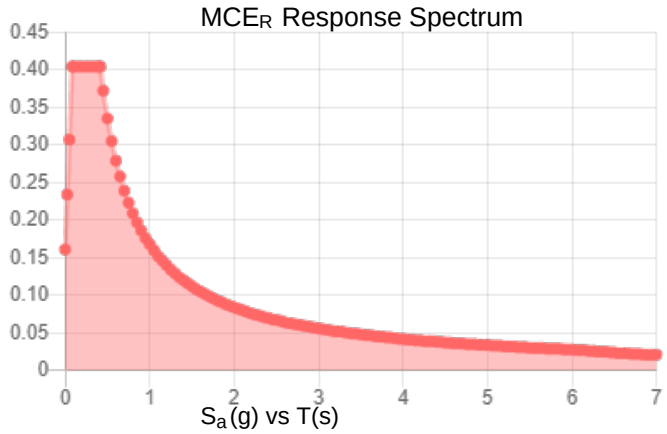
Seismic

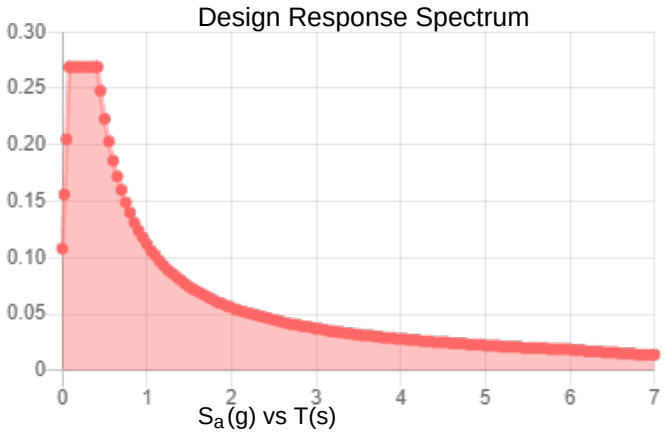
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.253	S_{DS} :	0.269
S_1 :	0.07	S_{D1} :	0.112
F_a :	1.598	T_L :	6
F_v :	2.4	PGA :	0.148
S_{MS} :	0.404	PGA_M :	0.222
S_{M1} :	0.168	F_{PGA} :	1.505
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Aug 24 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 24 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.

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:	NJJER01089A
	Carrier Site Name:	CT-CCI-T-806953
Crown Castle Designation:	**BU Number:**	806953
	Site Name:	BRG 2044 (A) 943097
	JDE Job Number:	640172
	Order Number:	548687 Rev. 4
Engineering Firm Designation:	**Trylon Report Designation:**	204653
Site Data:	**69 Guinea RD (Camp Rocky Craig), Stamford, Fairfield County, CT, 06903 Latitude 41°6'6.30" Longitude 73°35'40.00"**	
Structure Information:	**Tower Height & Type:**	**160.0 ft Monopole**
	Mount Elevation:	**129.0 ft**
	Mount Width & Type:	**8.0 ft Platform**

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:

Platform **Sufficient***

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

Mount analysis prepared by: Gabriela Raboj

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Platform**,** designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 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:	0.249
Seismic S_1:	0.069
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
129.0	129.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform **[Commscope MC-PK8-DSH]**
		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	548687, Rev. 4	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	Trylon
Structural Analysis Report	BLACK & VEATCH	10057831	CCI Sites

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.

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 (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP1	129.0	11.6	Pass
	Horizontal(s)	H1		10.1	Pass
	Standoff(s)	M2		53.5	Pass
	Bracing(s)	M1		43.7	Pass
	Handrail(s)	M19		7.5	Pass
	Plates(s)	M5		21.8	Pass
	Mount Connection(s)	-		21.8	Pass

Structure Rating (max from all components) =	**53.5%**

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

4.1) Recommendations

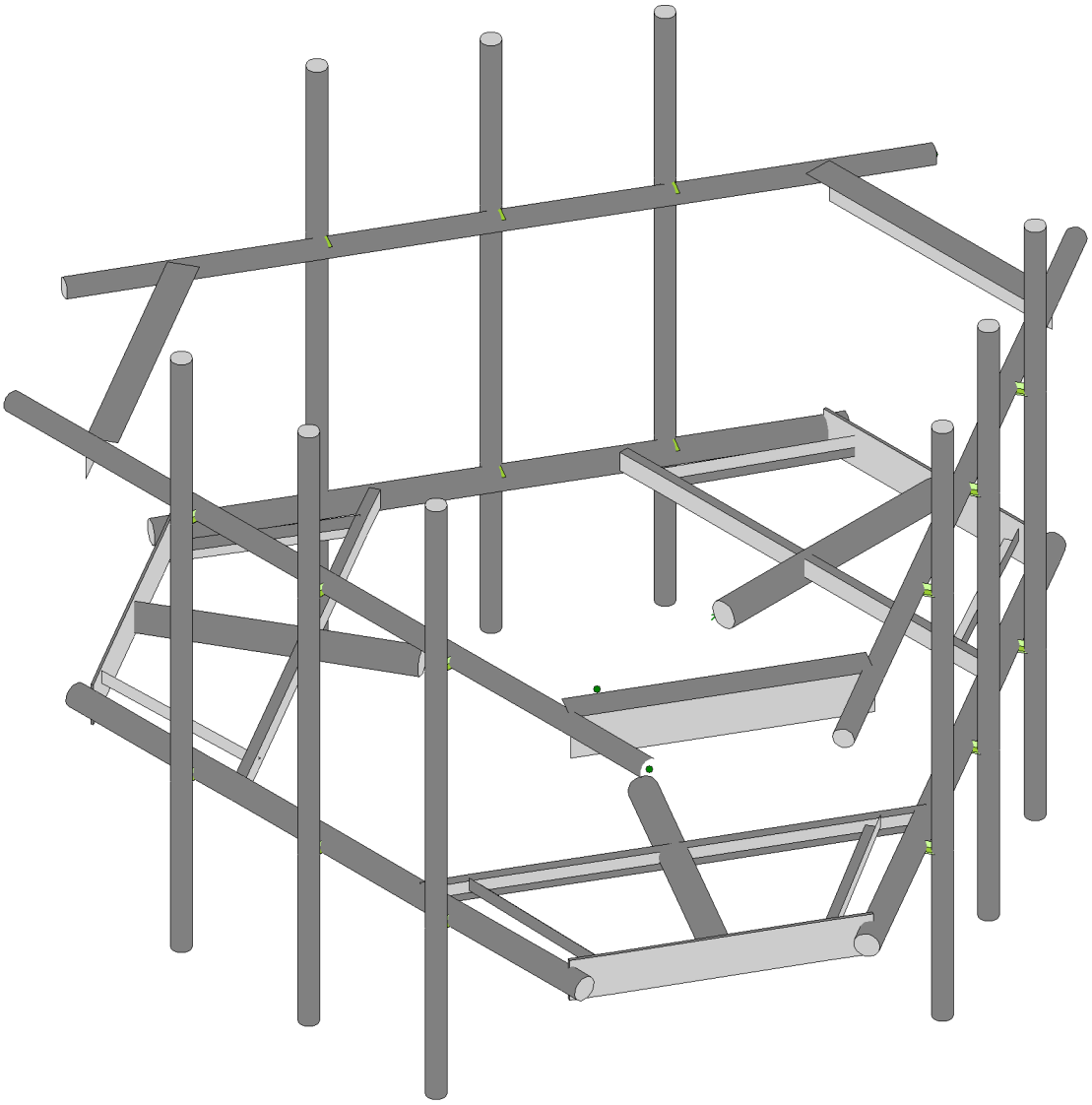
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MC-PK8-DSH

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

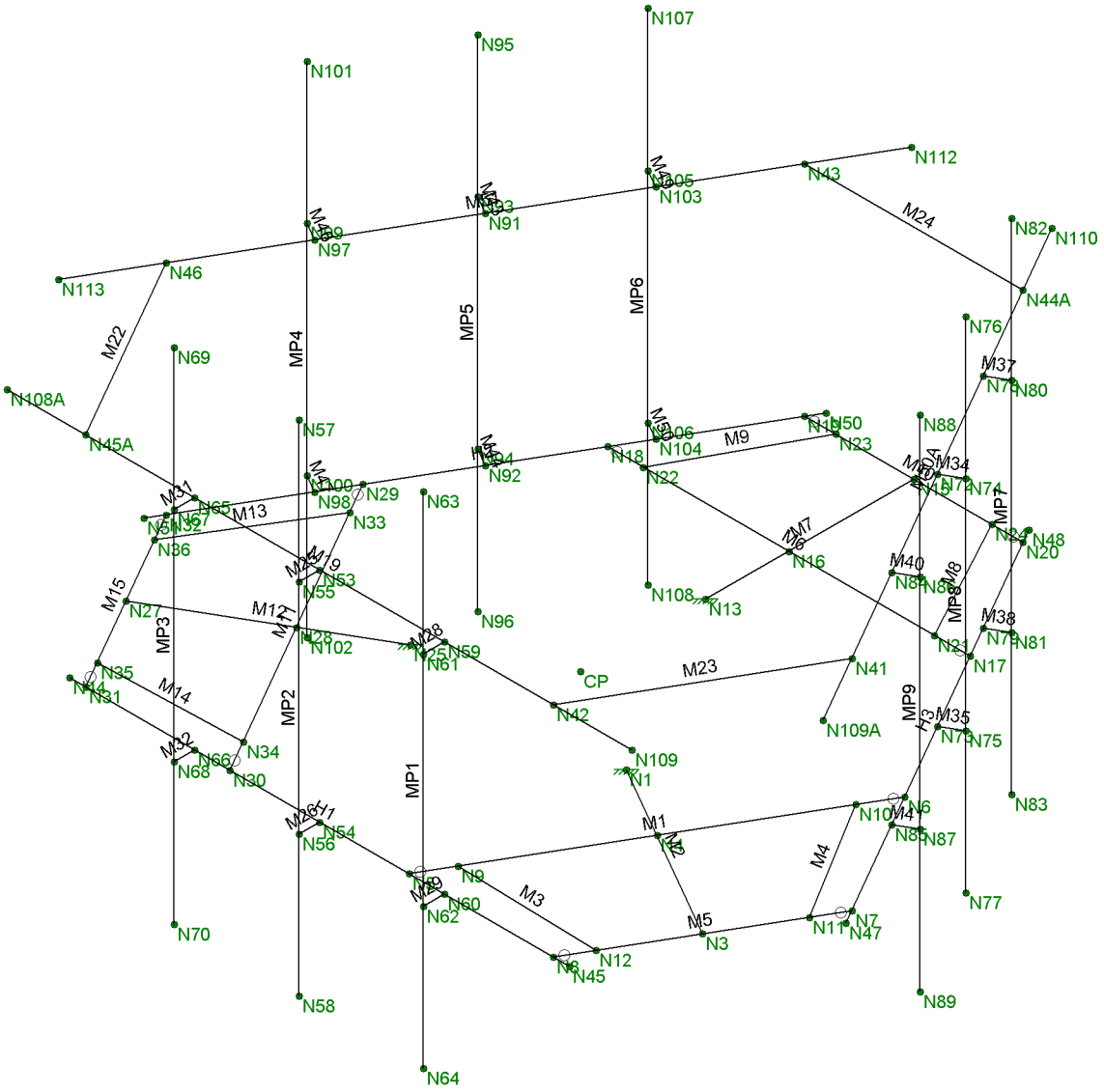
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	806953	SK - 1
GR		Mar 14, 2022 at 12:25 PM
204653		806953_loaded.r3d



Envelope Only Solution

Trylon	806953	SK - 2
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APPENDIX B

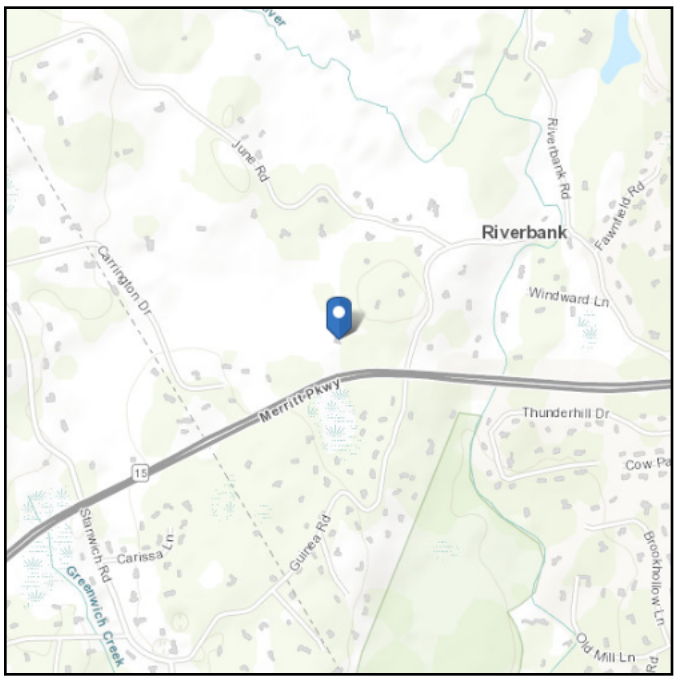
SOFTWARE INPUT CALCULATIONS

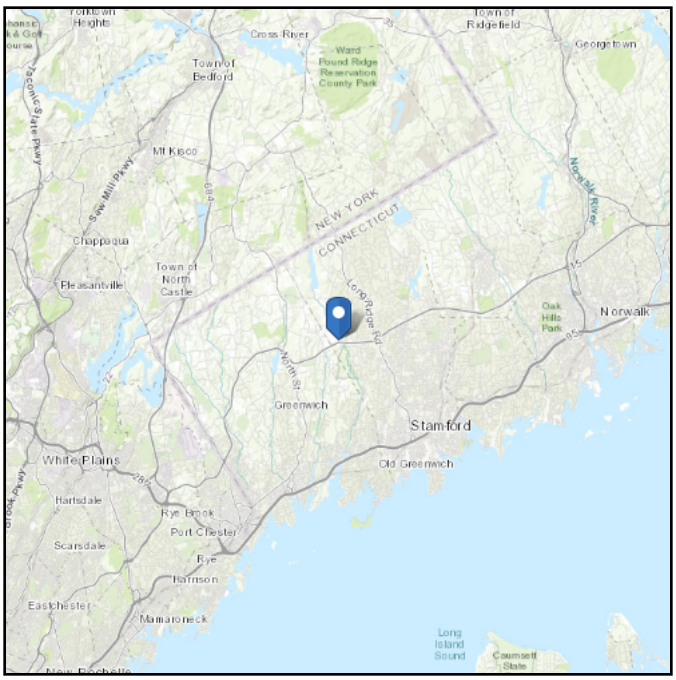
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 246.84 ft (NAVD 88)
Latitude: 41.10175
Longitude: -73.594444





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: Wed Mar 09 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:	204653
Carrier Site ID:	NJJER01089A
Carrier Site Name:	CT-CCI-T-806953

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	129.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	160.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	246.84	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:	120	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.06	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	36.89	psf
Ground Elevation Factor (K_e):	0.99	--

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}):	6.91	psf
Mount Ice Thickness (t_{iz}):	1.72	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	66.40	psf
Round Member Pressure:	39.84	psf
Ice Wind Pressure:	7.46	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.249	g
1 Second Accel (S_1):	0.069	g
Short Period Des. (S_{DS}):	0.27	g
1 Second Des. (S_{D1}):	0.11	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.13	--
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	129	No Ice	8.01	3.21	82.50
--	--	--	w/ Ice	9.62	4.62	282.08
TA08025-B605	3	129	No Ice	1.96	1.13	75.00
--	--	--	w/ Ice	2.38	1.47	73.81
TA08025-B604	3	129	No Ice	1.96	0.98	63.90
--	--	--	w/ Ice	2.38	1.31	69.28
RDIDC-9181-PF-48	1	129	No Ice	2.01	1.17	21.85
--	--	--	w/ Ice	2.44	1.52	72.74
			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			
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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			
			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			
--	--	--	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 WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	129	1.00	1.06	0.95	1.72	36.89	6.40
TA08025-B605	3	129	1.00	1.06	0.95	1.72	36.89	6.40
TA08025-B604	3	129	1.00	1.06	0.95	1.72	36.89	6.40
RDIDC-9181-PF-48	1	129	1.00	1.06	0.95	1.72	36.89	6.40

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	265.94	146.41	226.09	106.57	226.09	146.41
--	--	w/ Ice	55.46	33.85	48.25	26.65	48.25	33.85
TA08025-B605	3	No Ice	65.19	44.42	58.27	37.50	58.27	44.42
--	--	w/ Ice	13.74	9.79	12.43	8.48	12.43	9.79
TA08025-B604	3	No Ice	65.19	40.73	57.04	32.57	57.04	40.73
--	--	w/ Ice	13.74	9.09	12.19	7.54	12.19	9.09
RDIDC-9181-PF-48	1	No Ice	66.80	45.79	59.79	38.78	59.79	45.79
--	--	w/ Ice	14.06	10.10	12.74	8.78	12.74	10.10
		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						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

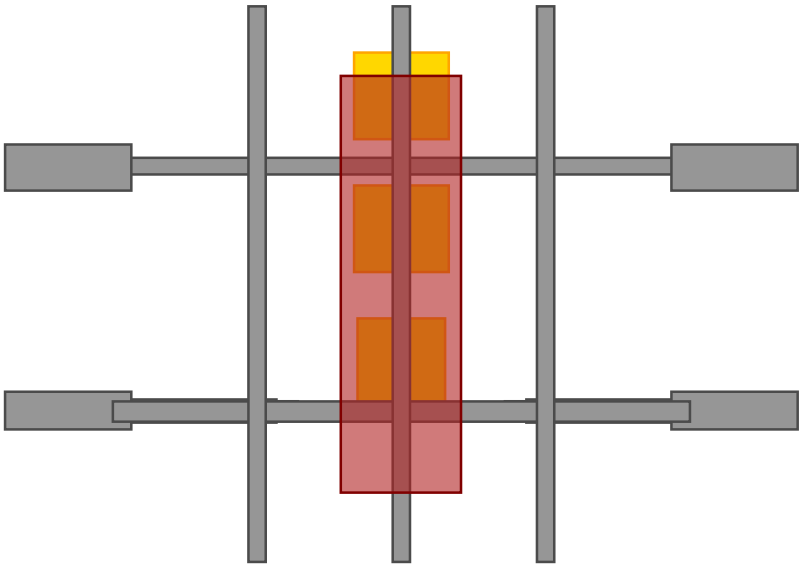
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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	129	82.5	13.15
TA08025-B605	3	129	75	11.95
TA08025-B604	3	129	63.9	10.18
RDIDC-9181-PF-48	1	129	21.85	3.48

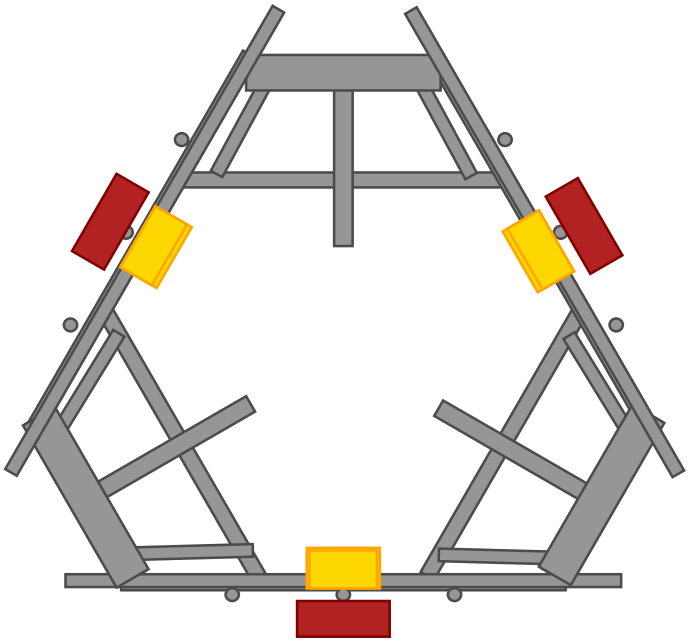
ELEVATION VIEW



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	129	MP2/MP5/MP8	0/120/240
TA08025-B605	3	129	MP2/MP5/MP8	0/120/240
TA08025-B604	3	129	MP2/MP5/MP8	0/120/240
RDIDC-9181-PF-48	1	129	MP2	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 7-16
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 (/1...	Density[k/f...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3
8	A500 Gr. C	29000	11154	.3	.65	.49	46000	1.5	62000	1.2

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Fu[psi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50000	65000

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE_2.5	Beam	Pipe	A500 Gr. C	Typical	1.61	1.45	1.45	2.89
6	Handrail Corners	L6.6"X4.46"X0.25"	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	.055

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
7	Horizontals	Pipe 3.5" O.D. x0.1...	Beam	Pipe	A500 Gr. C	Typical	1.729	2.409	2.409	4.819
8	Mount Pipes	PIPE_2.5	Beam	Pipe	A500 Gr. C	Typical	1.61	1.45	1.45	2.89

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	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	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(M...	Surface(...
1	Self Weight	DL			-1		13		3	
2	Structure Wind X	WLX						51		
3	Structure Wind Y	WLY						51		
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	51	3	
13	Ice Structure Wind X	OL2						51		
14	Ice Structure Wind Y	OL3						51		
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			
22	Ice Wind Load 150 AZI	None					26			
23	Seismic Load X	ELX	-.159				13			
24	Seismic Load Y	ELY		-.159			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			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(M...	Surface(...
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	BLC 1 Transient Area Loads	None						9		
44	BLC 12 Transient Area Loads	None						9		

Load Combinations

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 120 A...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi 135 A...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi 150 A...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi 180 A...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi 210 A...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi 225 A...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WLi 240 A...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WLi 270 A...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WLi 300 A...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WLi 315 A...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WLi 330 A...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E 120 A...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 135 A...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 150 A...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 180 A...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 210 A...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 225 A...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 240 A...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 270 A...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 300 A...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 315 A...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 330 A...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.847	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	.847	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	.847	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	.847	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	.847	23		24	1																
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	.847	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	.847	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	.847	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	.847	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	.847	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	.847	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	.847	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	.847	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	.847	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	.847	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	.847	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																		

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																	
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																	
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																	
91	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	34	1.5	2	.063	3		4	.063											
92	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	34	1.5	2	.054	3	.031	5	.063											
93	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	34	1.5	2	.044	3	.044	6	.063											
94	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	34	1.5	2	.031	3	.054	7	.063											
95	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	34	1.5	2		3	.063	8	.063											
96	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	34	1.5	2	-.031	3	.054	9	.063											
97	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	34	1.5	2	-.044	3	.044	10	.063											
98	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	34	1.5	2	-.054	3	.031	11	.063											
99	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	34	1.5	2	-.063	3		4	-.063											
100	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	34	1.5	2	-.054	3	-.031	5	-.063											
101	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	34	1.5	2	-.044	3	-.044	6	-.063											
102	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	34	1.5	2	-.031	3	-.054	7	-.063											
103	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	34	1.5	2		3	-.063	8	-.063											
104	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	34	1.5	2	.031	3	-.054	9	-.063											
105	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	34	1.5	2	.044	3	-.044	10	-.063											
106	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	34	1.5	2	.054	3	-.031	11	-.063											
107	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	35	1.5	2	.063	3		4	.063											
108	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	35	1.5	2	.054	3	.031	5	.063											
109	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	35	1.5	2	.044	3	.044	6	.063											
110	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	35	1.5	2	.031	3	.054	7	.063											
111	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	35	1.5	2		3	.063	8	.063											
112	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	35	1.5	2	-.031	3	.054	9	.063											
113	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	35	1.5	2	-.044	3	.044	10	.063											
114	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	35	1.5	2	-.054	3	.031	11	.063											
115	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	35	1.5	2	-.063	3		4	-.063											
116	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	35	1.5	2	-.054	3	-.031	5	-.063											
117	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	35	1.5	2	-.044	3	-.044	6	-.063											
118	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	35	1.5	2	-.031	3	-.054	7	-.063											
119	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	35	1.5	2		3	-.063	8	-.063											
120	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	35	1.5	2	.031	3	-.054	9	-.063											
121	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	35	1.5	2	.044	3	-.044	10	-.063											
122	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	35	1.5	2	.054	3	-.031	11	-.063											
123	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	36	1.5	2	.063	3		4	.063											
124	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	36	1.5	2	.054	3	.031	5	.063											
125	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	36	1.5	2	.044	3	.044	6	.063											
126	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	36	1.5	2	.031	3	.054	7	.063											
127	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	36	1.5	2		3	.063	8	.063											
128	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	36	1.5	2	-.031	3	.054	9	.063											
129	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	36	1.5	2	-.044	3	.044	10	.063											
130	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	36	1.5	2	-.054	3	.031	11	.063											
131	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	36	1.5	2	-.063	3		4	-.063											
132	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	36	1.5	2	-.054	3	-.031	5	-.063											
133	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	36	1.5	2	-.044	3	-.044	6	-.063											
134	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	36	1.5	2	-.031	3	-.054	7	-.063											
135	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	36	1.5	2		3	-.063	8	-.063											
136	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	36	1.5	2	.031	3	-.054	9	-.063											
137	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	36	1.5	2	.044	3	-.044	10	-.063											
138	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	36	1.5	2	.054	3	-.031	11	-.063											
139	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	37	1.5	2	.063	3		4	.063											

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
140	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	37	1.5	2	.054	3	.031	5	.063										
141	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	37	1.5	2	.044	3	.044	6	.063										
142	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	37	1.5	2	.031	3	.054	7	.063										
143	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	37	1.5	2		3	.063	8	.063										
144	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	37	1.5	2	-.031	3	.054	9	.063										
145	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	37	1.5	2	-.044	3	.044	10	.063										
146	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	37	1.5	2	-.054	3	.031	11	.063										
147	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	37	1.5	2	-.063	3		4	-.063										
148	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	37	1.5	2	-.054	3	-.031	5	-.063										
149	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	37	1.5	2	-.044	3	-.044	6	-.063										
150	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	37	1.5	2	-.031	3	-.054	7	-.063										
151	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	37	1.5	2		3	-.063	8	-.063										
152	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	37	1.5	2	.031	3	-.054	9	-.063										
153	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	37	1.5	2	.044	3	-.044	10	-.063										
154	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	37	1.5	2	.054	3	-.031	11	-.063										
155	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	38	1.5	2	.063	3		4	.063										
156	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	38	1.5	2	.054	3	.031	5	.063										
157	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	38	1.5	2	.044	3	.044	6	.063										
158	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	38	1.5	2	.031	3	.054	7	.063										
159	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	38	1.5	2		3	.063	8	.063										
160	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	38	1.5	2	-.031	3	.054	9	.063										
161	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	38	1.5	2	-.044	3	.044	10	.063										
162	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	38	1.5	2	-.054	3	.031	11	.063										
163	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	38	1.5	2	-.063	3		4	-.063										
164	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	38	1.5	2	-.054	3	-.031	5	-.063										
165	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	38	1.5	2	-.044	3	-.044	6	-.063										
166	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	38	1.5	2	-.031	3	-.054	7	-.063										
167	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	38	1.5	2		3	-.063	8	-.063										
168	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	38	1.5	2	.031	3	-.054	9	-.063										
169	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	38	1.5	2	.044	3	-.044	10	-.063										
170	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	38	1.5	2	.054	3	-.031	11	-.063										
171	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	39	1.5	2	.063	3		4	.063										
172	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	39	1.5	2	.054	3	.031	5	.063										
173	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	39	1.5	2	.044	3	.044	6	.063										
174	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	39	1.5	2	.031	3	.054	7	.063										
175	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	39	1.5	2		3	.063	8	.063										
176	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	39	1.5	2	-.031	3	.054	9	.063										
177	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	39	1.5	2	-.044	3	.044	10	.063										
178	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	39	1.5	2	-.054	3	.031	11	.063										
179	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	39	1.5	2	-.063	3		4	-.063										
180	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	39	1.5	2	-.054	3	-.031	5	-.063										
181	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	39	1.5	2	-.044	3	-.044	6	-.063										
182	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	39	1.5	2	-.031	3	-.054	7	-.063										
183	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	39	1.5	2		3	-.063	8	-.063										
184	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	39	1.5	2	.031	3	-.054	9	-.063										
185	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	39	1.5	2	.044	3	-.044	10	-.063										
186	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	39	1.5	2	.054	3	-.031	11	-.063										
187	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	40	1.5	2	.063	3		4	.063										
188	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	40	1.5	2	.054	3	.031	5	.063										
189	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	40	1.5	2	.044	3	.044	6	.063										
190	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	40	1.5	2	.031	3	.054	7	.063										
191	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	40	1.5	2		3	.063	8	.063										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
192	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	40	1.5	2	-.031	3	.054	9	.063												
193	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	40	1.5	2	-.044	3	.044	10	.063												
194	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	40	1.5	2	-.054	3	.031	11	.063												
195	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	40	1.5	2	-.063	3		4	-.063												
196	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	40	1.5	2	-.054	3	-.031	5	-.063												
197	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	40	1.5	2	-.044	3	-.044	6	-.063												
198	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	40	1.5	2	-.031	3	-.054	7	-.063												
199	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	40	1.5	2		3	-.063	8	-.063												
200	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	40	1.5	2	.031	3	-.054	9	-.063												
201	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	40	1.5	2	.044	3	-.044	10	-.063												
202	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	40	1.5	2	.054	3	-.031	11	-.063												
203	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	41	1.5	2	.063	3		4	.063												
204	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	41	1.5	2	.054	3	.031	5	.063												
205	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	41	1.5	2	.044	3	.044	6	.063												
206	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	41	1.5	2	.031	3	.054	7	.063												
207	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	41	1.5	2		3	.063	8	.063												
208	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	41	1.5	2	-.031	3	.054	9	.063												
209	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	41	1.5	2	-.044	3	.044	10	.063												
210	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	41	1.5	2	-.054	3	.031	11	.063												
211	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	41	1.5	2	-.063	3		4	-.063												
212	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	41	1.5	2	-.054	3	-.031	5	-.063												
213	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	41	1.5	2	-.044	3	-.044	6	-.063												
214	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	41	1.5	2	-.031	3	-.054	7	-.063												
215	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	41	1.5	2		3	-.063	8	-.063												
216	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	41	1.5	2	.031	3	-.054	9	-.063												
217	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	41	1.5	2	.044	3	-.044	10	-.063												
218	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	41	1.5	2	.054	3	-.031	11	-.063												
219	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	42	1.5	2	.063	3		4	.063												
220	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	42	1.5	2	.054	3	.031	5	.063												
221	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	42	1.5	2	.044	3	.044	6	.063												
222	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	42	1.5	2	.031	3	.054	7	.063												
223	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	42	1.5	2		3	.063	8	.063												
224	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	42	1.5	2	-.031	3	.054	9	.063												
225	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	42	1.5	2	-.044	3	.044	10	.063												
226	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	42	1.5	2	-.054	3	.031	11	.063												
227	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	42	1.5	2	-.063	3		4	-.063												
228	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	42	1.5	2	-.054	3	-.031	5	-.063												
229	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	42	1.5	2	-.044	3	-.044	6	-.063												
230	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	42	1.5	2	-.031	3	-.054	7	-.063												
231	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	42	1.5	2		3	-.063	8	-.063												
232	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	42	1.5	2	.031	3	-.054	9	-.063												
233	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	42	1.5	2	.044	3	-.044	10	-.063												
234	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	42	1.5	2	.054	3	-.031	11	-.063												

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	N25	max	1355.636	3	844.621	20	2170.209	39	329.871	31	315.011	33	1639.79	3
2		min	-1350.73	27	-851.817	12	-28.223	31	-3830.547	39	-2329.64	41	-1638.325	27
3	N1	max	1355.637	17	851.82	8	2170.21	45	3830.55	45	315.005	19	1638.327	25
4		min	-1350.731	25	-844.623	32	-28.219	21	-329.861	21	-2329.641	43	-1639.792	17

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
5	N13	max	437.494	18	1370.886	22	2098.221	34	607.559	167	4306.242	34	1401.531	30
6		min	-449.123	10	-1370.886	30	-64.363	26	-607.558	223	-466.83	26	-1401.531	22
7	Totals:	max	2867.912	2	2695.334	6	5946.022	43						
8		min	-2867.912	26	-2695.333	30	1534.492	67						

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

	Member	Shape	Code Ch...	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M2	PIPE_3.5	.562	40	45	.146	40		1...	64491.4...	78750	7953.75	7953.75	2....	H1-1b
2	M12	PIPE_3.5	.562	40	39	.146	40		1...	64491.4...	78750	7953.75	7953.75	2....	H1-1b
3	M7	PIPE_3.5	.542	40	34	.143	40		1...	64491.4...	78750	7953.75	7953.75	2....	H1-1b
4	M11	C3X5	.459	34.856	39	.150	63.177	y	34	32283.1...	47628	981.263	4104	1....	H1-1b
5	M1	C3X5	.459	34.856	45	.150	6.536	y	34	32283.1...	47628	981.263	4104	1....	H1-1b
6	M6	C3X5	.439	34.856	34	.144	6.536	y	39	32283.1...	47628	981.263	4104	1....	H1-1b
7	M15	6.5"x0.37" P...	.229	21	7	.101	21	y	41	27548.2...	75757.5	583.963	6550.444	1....	H1-1b
8	M5	6.5"x0.37" P...	.229	21	13	.101	21	y	43	27548.2...	75757.5	583.963	6550.446	1....	H1-1b
9	M10	6.5"x0.37" P...	.229	21	2	.098	21	y	49	27548.2...	75757.5	583.963	6531.504	1....	H1-1b
10	M4	L2x2x3	.189	0	13	.032	0	y	42	18084.2	23392.8	557.717	1182.442	1	H2-1
11	M13	L2x2x3	.187	0	31	.032	0	z	42	18084.2	23392.8	557.717	1182.442	1	H2-1
12	M9	L2x2x3	.179	0	2	.031	0	y	48	18084.2	23392.8	557.717	1182.442	1	H2-1
13	M8	L2x2x3	.179	0	26	.031	0	z	36	18084.2	23392.8	557.717	1182.442	1	H2-1
14	M14	L2x2x3	.176	0	8	.032	0	y	37	18084.2	23392.8	557.717	1182.442	1	H2-1
15	M3	L2x2x3	.175	0	20	.032	0	z	47	18084.2	23392.8	557.717	1182.442	1	H2-1
16	MP1	PIPE_2.5	.122	69	15	.031	69		2	33487.3...	66654	4726.5	4726.5	4....	H1-1b
17	MP3	PIPE_2.5	.122	69	5	.031	69		2	33487.3...	66654	4726.5	4726.5	1	H1-1b
18	MP4	PIPE_2.5	.122	69	10	.029	69		13	33487.3...	66654	4726.5	4726.5	1	H1-1b
19	MP9	PIPE_2.5	.122	69	10	.029	69		7	33487.3...	66654	4726.5	4726.5	2....	H1-1b
20	MP6	PIPE_2.5	.116	69	15	.029	69		13	33487.3...	66654	4726.5	4726.5	3....	H1-1b
21	MP7	PIPE_2.5	.116	69	5	.029	69		7	33487.3...	66654	4726.5	4726.5	1	H1-1b
22	H1	Pipe 3.5" O...	.107	72	120	.076	24		10	45871.8...	71569.8...	6336.493	6336.493	1	H1-1b
23	H2	Pipe 3.5" O...	.106	72	211	.076	72		4	45871.8...	71569.8...	6336.493	6336.493	1	H1-1b
24	H3	Pipe 3.5" O...	.106	24	179	.076	24		16	45871.8...	71569.8...	6336.493	6336.493	1	H1-1b
25	M23	L6.6"X4.46"...	.099	0	23	.020	42	y	17	51170.9...	87561	2464.809	7125.374	1	H2-1
26	M22	L6.6"X4.46"...	.099	42	29	.020	0	y	3	51170.9...	87561	2464.809	7125.374	1	H2-1
27	MP2	PIPE_2.5	.085	69	6	.044	69		14	33487.3...	66654	4726.5	4726.5	1	H1-1b
28	MP5	PIPE_2.5	.083	69	10	.042	69		9	33487.3...	66654	4726.5	4726.5	1	H1-1b
29	MP8	PIPE_2.5	.083	69	10	.042	69		11	33487.3...	66654	4726.5	4726.5	3....	H1-1b
30	M24	L6.6"X4.46"...	.082	0	29	.020	0	y	14	51170.9...	87561	2464.809	7125.374	1	H2-1
31	M19	PIPE_2.5	.079	35	11	.059	16.25		2	22748.1...	66654	4726.5	4726.5	1....	H1-1b
32	M50A	PIPE_2.5	.079	35	17	.058	16.25		8	22748.1...	66654	4726.5	4726.5	1....	H1-1b
33	M51	PIPE_2.5	.079	85	3	.058	103.75		12	22748.1...	66654	4726.5	4726.5	1....	H1-1b

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

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

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

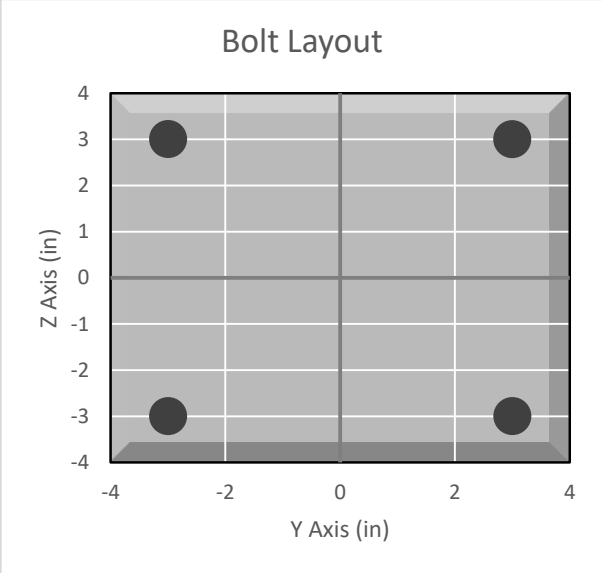
Analysis date: 3/14/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	204653
Carrier Site ID:	NJJER01089A
Carrier Site Name:	CT-CCI-T-806953

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:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	4652.0	lbs
Shear Force (V_u):	646.8	lbs
Tension Usage:	21.8%	--
Shear Usage:	4.5%	--
Interaction:	21.8%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

**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 PATENTS, SEE WWW.CS-PAT.COM

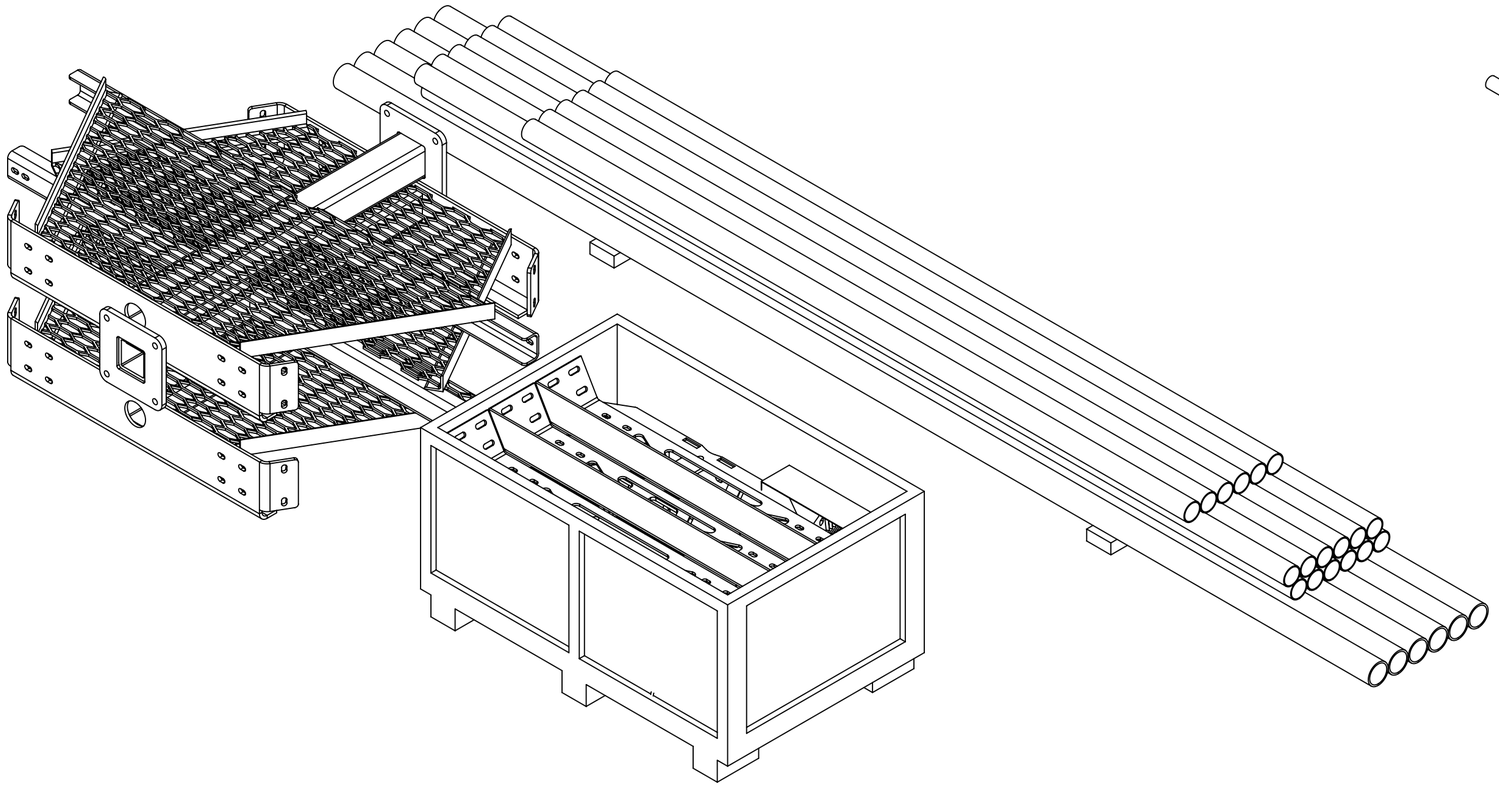
2.0 DESIGN NOTES
- 2.1 TIGHTEN ALL BOLTS SECURING FLAT PLATES BY THE TURN-OF-NUT METHOD. TIGHTEN ALL U-BOLTS USING TURN-OF-NUT METHOD WITH ATTENTION TO LEAVE EQUAL DISTANCE AND EQUAL FORCE ON EACH LEG OF THE U-BOLT.

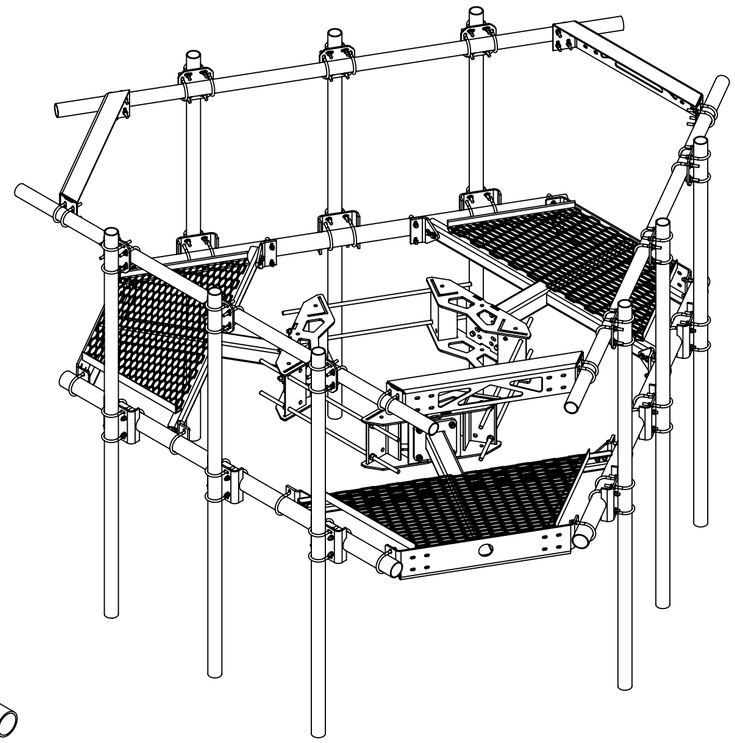
3.0 MANUFACTURING/SPECIAL REQUIREMENTS

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 MAYBE SUPPLIED, BAGGED AND SHIPPED.

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/08/2021
B	14762	SHEET 1: UPDATED NOTE 2.1 & ADDED NOTE 5.1 TO 5.2 SHEET2: REPOSITION ANTENNA PIPES; CHANGED HAND RAIL DISTANCE FORM PLATFORM: 42" WAS 40" IN ZONE B3; DIM ∅12 WAS ∅15 IN ZONE D3; UPDATED ITEM 4: GB-0522A WAS GB-0520A	JL1183	09/10/2021
c	40139639CMO	ADDED WEIGHT AND MASS INFORMATION	LL1090	12/07/2021





PATENT PENDING

DENSITY		lbs/in³
MASS	1801.56	lbs
VOLUME	6362.00	in³
SURFACE AREA	55884.77	in²
HEIGHT	96"	
LENGTH	46"	
WIDTH	29'	

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
1 PLACE .X ± .25 | 3 PLACE .XXX ± 0.06
2 PLACE .XX ± 0.12 | ANGLES ± 2°

SAP MATERIAL MASTER: MC-PK8-DSH

FINISH: GALV A123

MATERIAL: SEE SEPARATE BILLS OF MATERIAL

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

	NAME	DATE
CE	MRC	02/17/20
RW	LL1090	12/07/2021
AD	VCORTEZ1	12/09/2021
RE	VCORTEZ1	12/09/2021

ECN 40139639CMO

TITLE: **LOW PROFILE PLATFORM FACE**

SCALE: 1:32

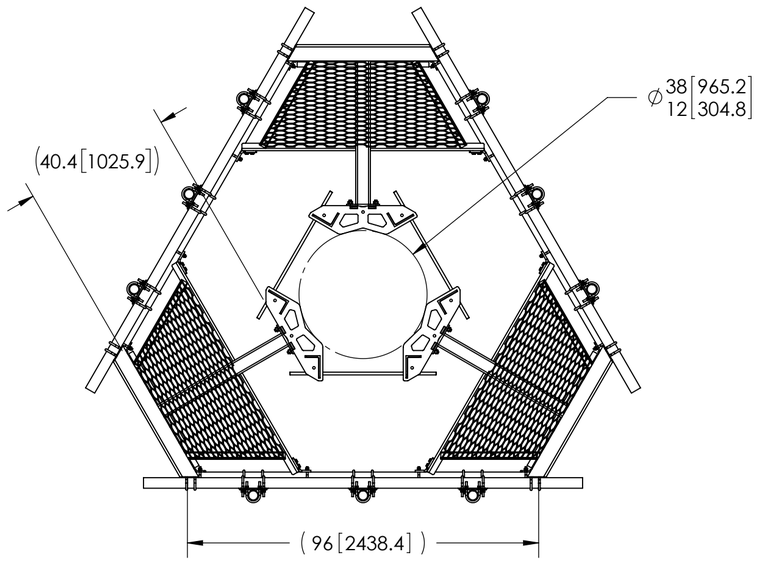
DOCUMENT NO.: MC-PK8-DSH

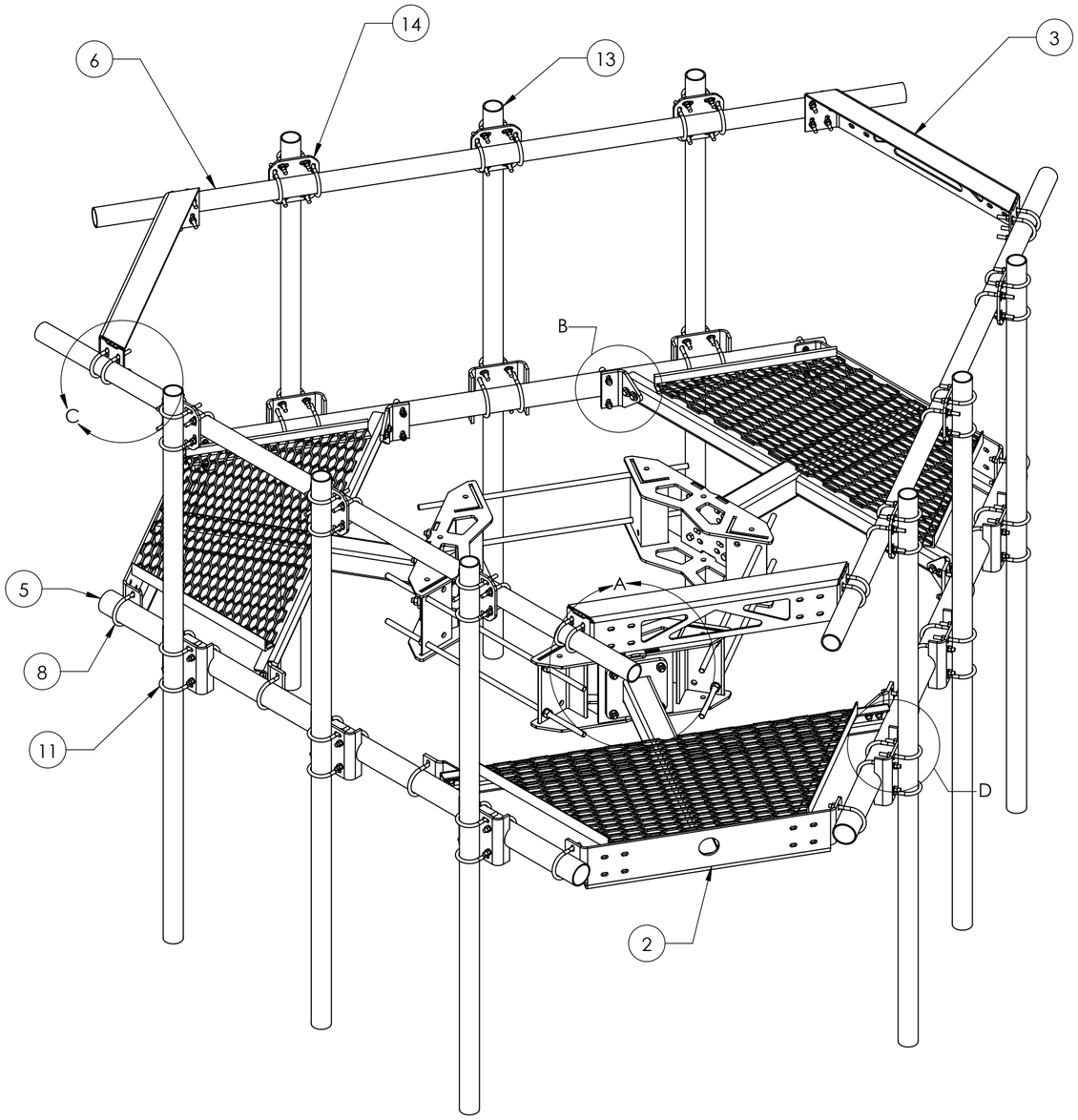
SIZE: C

Auth Group: INSL

MODEL			DRAWING			SHEET
VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
03	RE	B	02	RE	C	1 OF 3

NOTES:





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

ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MTC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MT195801	Corner Weldment Snub Nose Handrail	3
4	GB-0522A	5/8" X 2-1/4" GALV BOLT KIT (A325)	12
5	MT54796	3.50" OD X 96" GALV PIPE	3
6	MT546120	2.875" O.D. X 120" PIPE	3
7	GWF-04	1/2" GALV FLAT WASHER	12
8	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MTC300618	MOUNTING PLATE FOR MT-196	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MT-219M-H	3.5" OD X 2-7/8" OD CLAMP BRACKET ASSY	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MT54696	∅2.875" O.D. X 96 PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

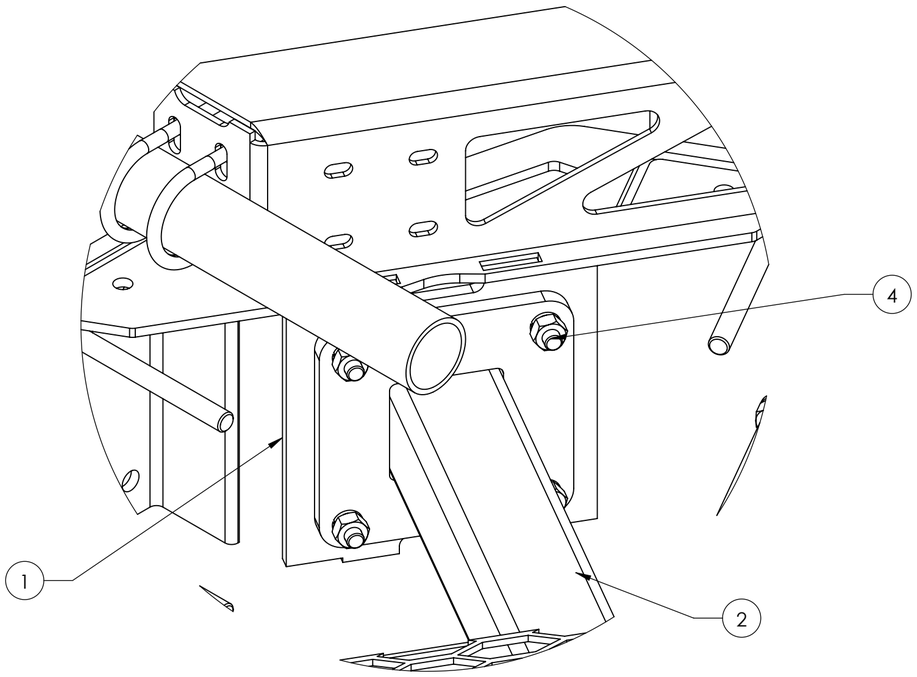
COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

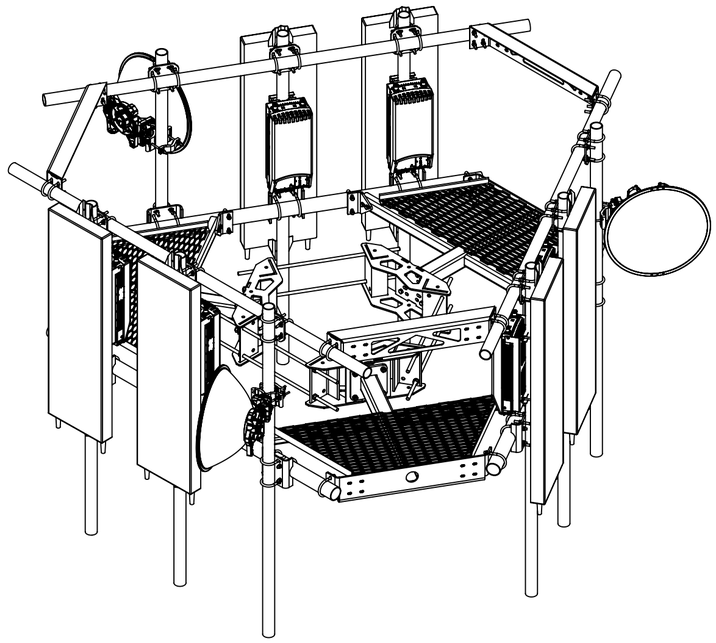
LOW PROFILE PLATFORM FACE

SIZE	SCALE	DOCUMENT NO.			
C	1:32	MC-PK8-DSH			
		DRAWING			SHEET
		VERSION	STATUS	REVISION	
		02	RE	C	

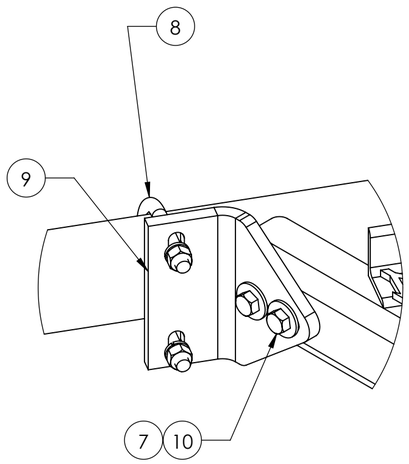
NOTES:



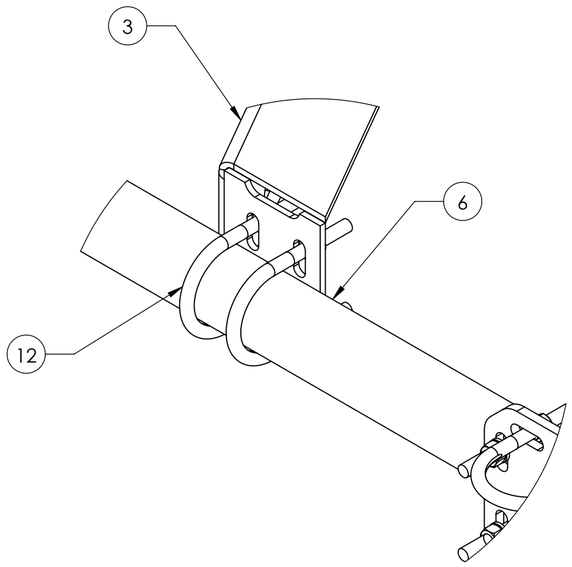
DETAIL A
SCALE 1 : 4



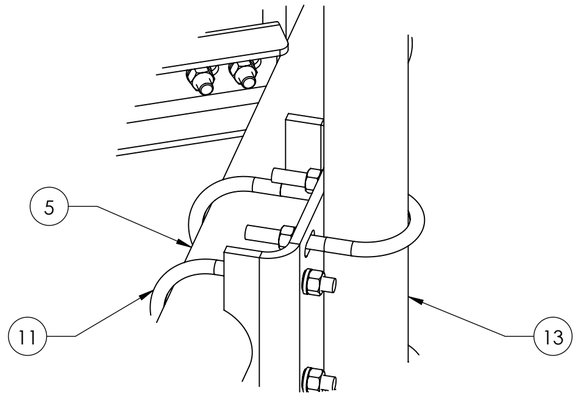
WITH ANTENNAS



DETAIL B
SCALE 1 : 4



DETAIL C
SCALE 1 : 4



DETAIL D
SCALE 1 : 4

COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: LOW PROFILE PLATFORM FACE			
SIZE: C	SCALE: 1:24	DOCUMENT NO.: MC-PK8-DSH	
		DRAWING: VERSION 02 / STATUS RE / REVISION C	SHEET: 3 OF 3

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: 806953

NJJER01089A
69 Guinea Road
Stamford, Connecticut 06903

May 20, 2022

EBI Project Number: 6222003433

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.74%**

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

May 20, 2022

Attn: Dish Wireless

Emissions Analysis for Site: 806953 - NJJER01089A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **69 Guinea Road** in **Stamford, 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 69 Guinea Road in Stamford, 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 129 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:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	129 feet	Height (AGL):	129 feet	Height (AGL):	129 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):	2,524.75	ERP (W):	2,524.75	ERP (W):	2,524.75
Antenna A1 MPE %:	**0.76%**	Antenna B1 MPE %:	**0.76%**	Antenna C1 MPE %:	**0.76%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.76%
T-Mobile	5.23%
Sprint	2.29%
AT&T	4.46%
Verizon	2.81%
Metricom	0%
Nextel	0.19%
Site Total MPE % :	15.74%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.76%
Dish Wireless Sector B Total:	0.76%
Dish Wireless Sector C Total:	0.76%
Site Total MPE % :	15.74%

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	110.82	129.0	1.05	600 MHz n71	400	0.26%
Dish Wireless 1900 MHz n70	4	245.22	129.0	2.33	1900 MHz n70	1000	0.23%
Dish Wireless 2190 MHz n66	4	275.14	129.0	2.62	2190 MHz n66	1000	0.26%
						Total:	**0.76%**

• 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:	0.76%
Sector B:	0.76%
Sector C:	0.76%
Dish Wireless Maximum MPE % (Sector A):	0.76%
Site Total:	15.74%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.74%** 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

6325 Ardrey Kell Rd, Suite 600
Charlotte, NC 28277

Phone:
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:
69 GUINEA RD (CAMP ROCKY CRAIG), STAMFORD, CT 06903

CROWN ATLANTIC COMPANY 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: **806953/BRG 2044 (A) 943097**
Customer Site ID: **NJJER01089A/CT-CCI-T-806953**
Site Address: **69 GUINEA RD (CAMP ROCKY CRAIG), STAMFORD, CT 06903**

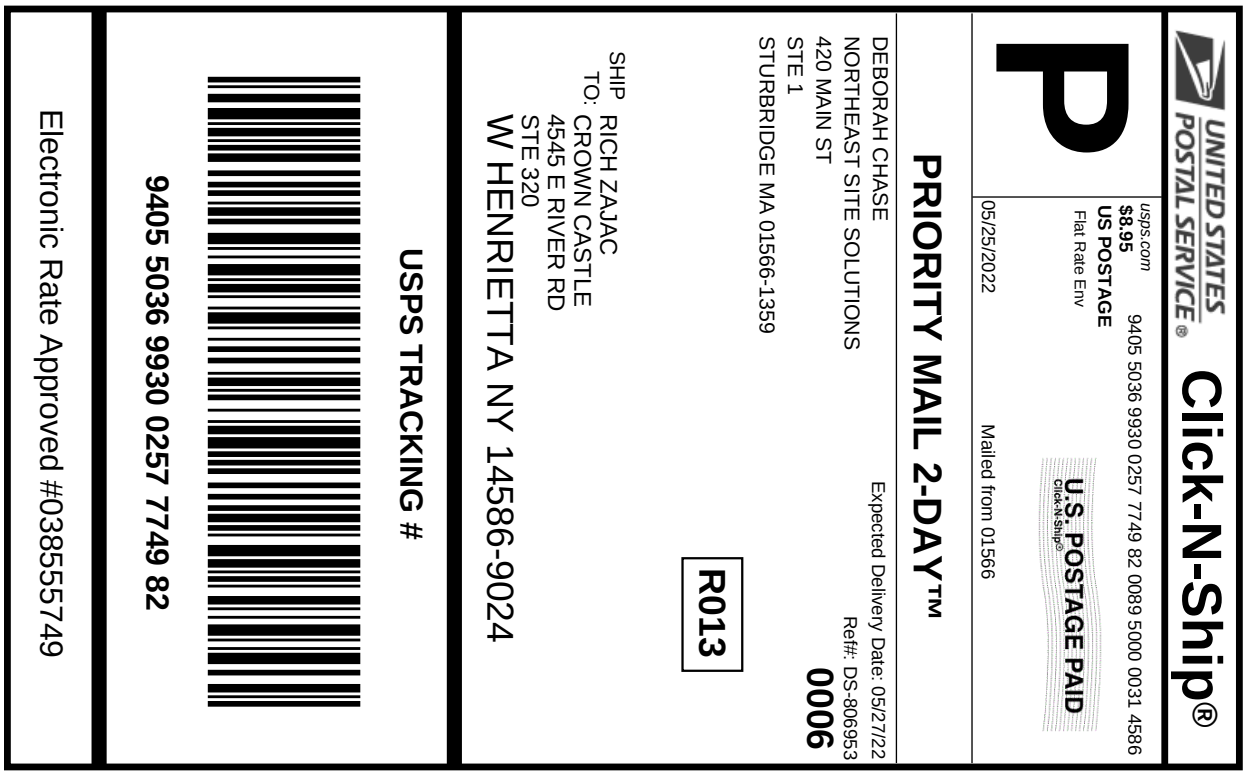
Crown Castle

By: _____ Date: 04/07/2022

Robin Cannizzaro
Real Estate Specialist

Exhibit H

Recipient Mailings



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Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0257 7749 82

Trans. #:	564266165
Print Date:	05/25/2022
Ship Date:	05/25/2022
Expected Delivery Date:	05/27/2022

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-806953

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

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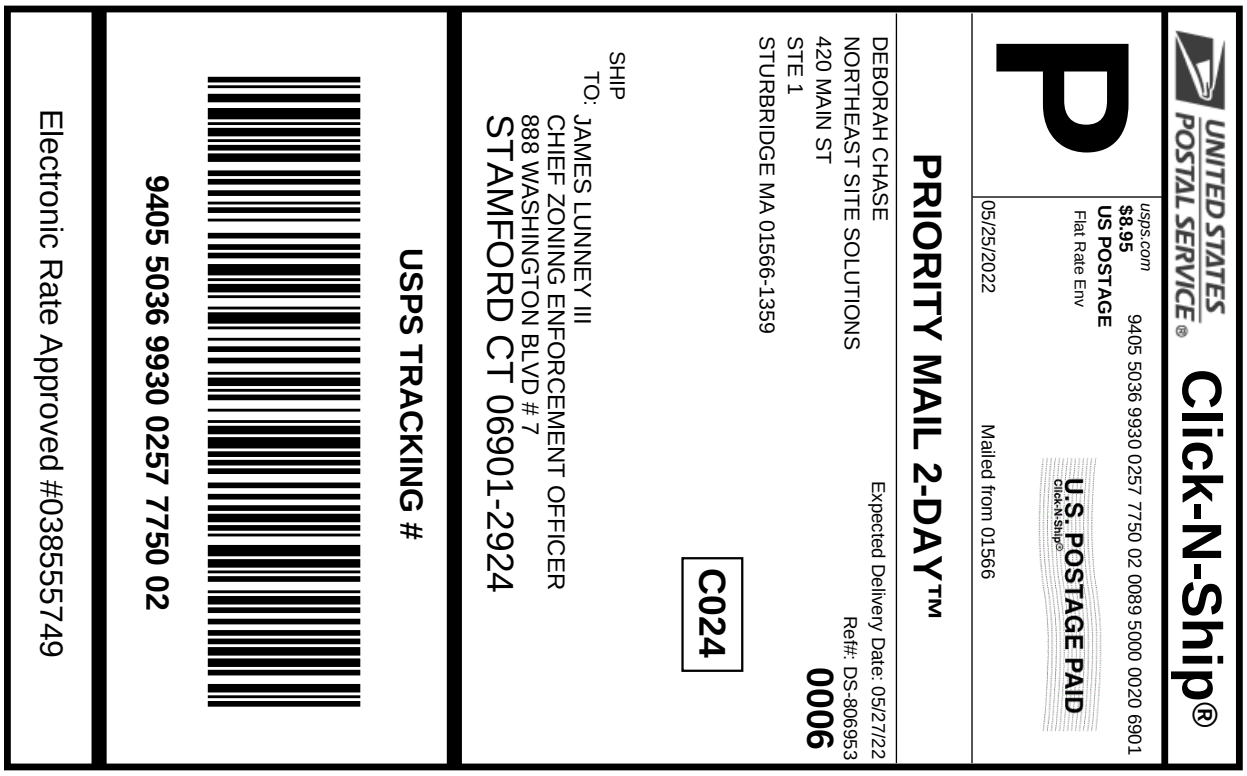

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USPS TRACKING # :
9405 5036 9930 0257 7750 02

Trans. #:	564266165
Print Date:	05/25/2022
Ship Date:	05/25/2022
Expected Delivery Date:	05/27/2022

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-806953

To: JAMES LUNNEY III
CHIEF ZONING ENFORCEMENT OFFICER
888 WASHINGTON BLVD # 7
STAMFORD CT 06901-2924

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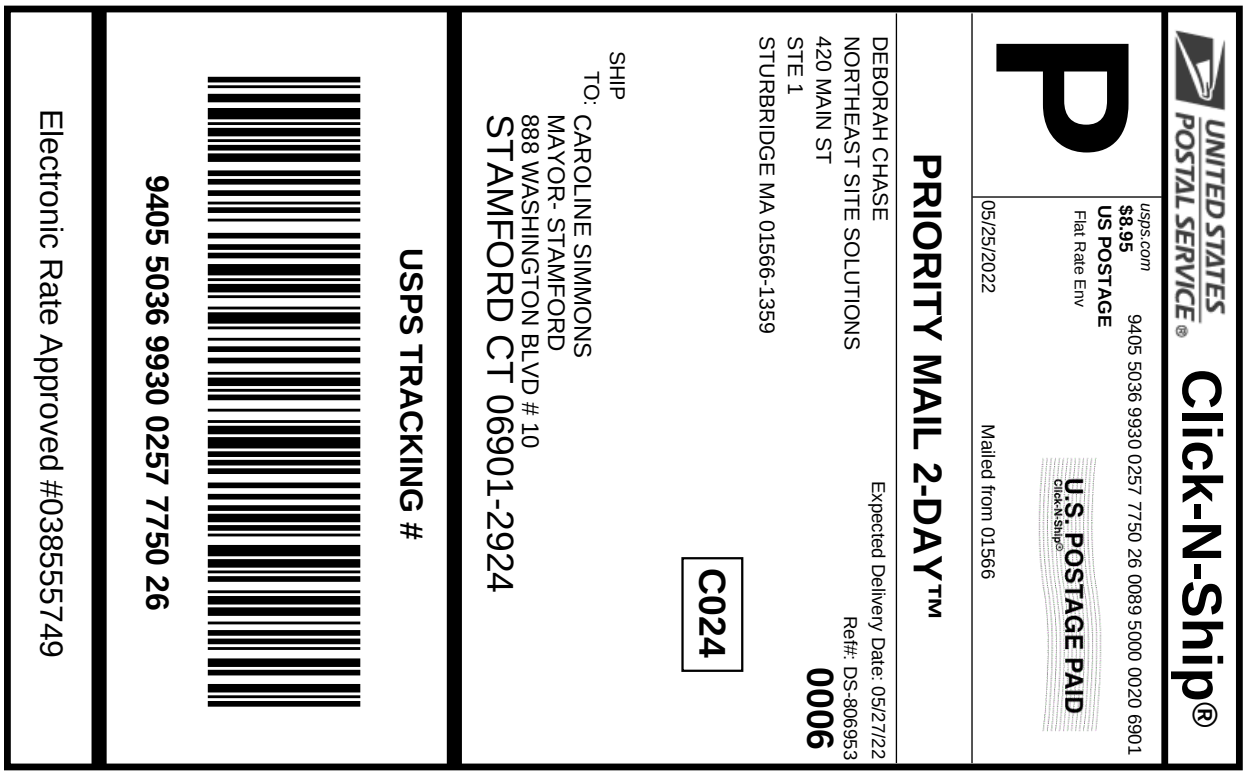

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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0257 7750 26

Trans. #:	564266165
Print Date:	05/25/2022
Ship Date:	05/25/2022
Expected Delivery Date:	05/27/2022

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-806953

To: CAROLINE SIMMONS
MAYOR- STAMFORD
888 WASHINGTON BLVD # 10
STAMFORD CT 06901-2924

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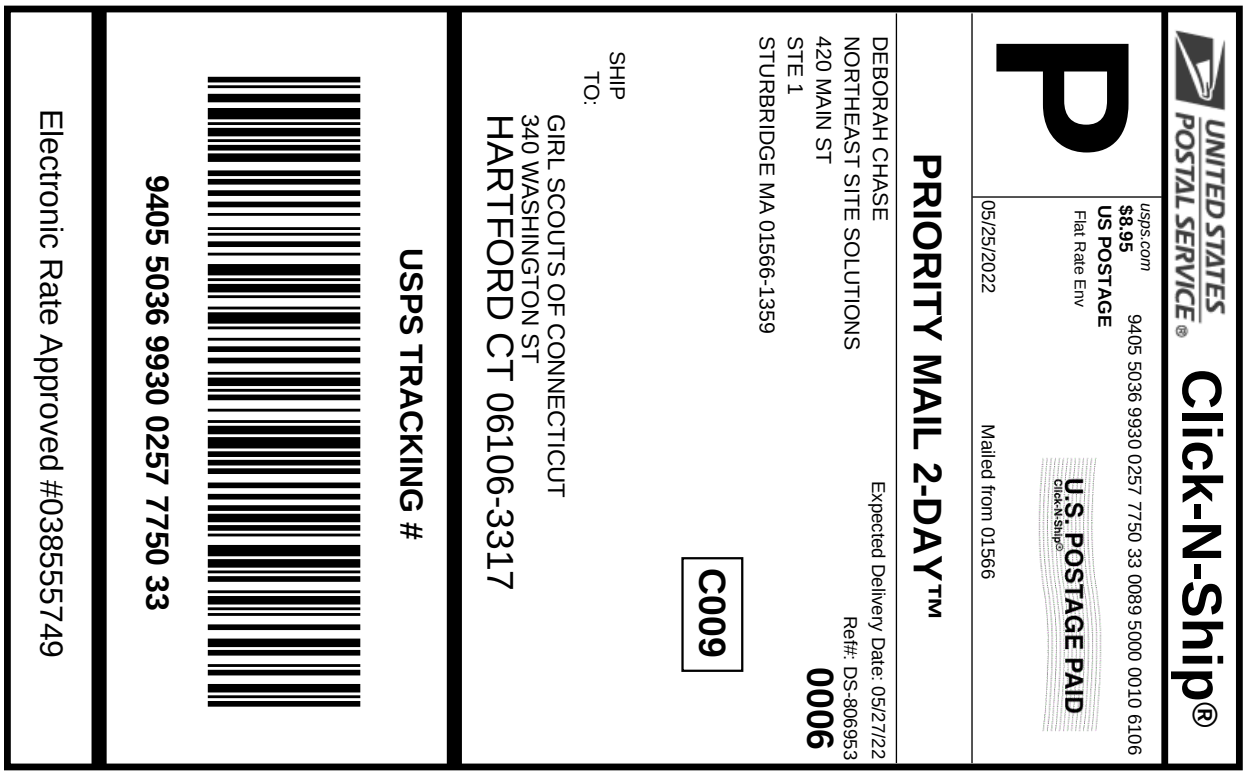

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0257 7750 33

Trans. #:	564266165
Print Date:	05/25/2022
Ship Date:	05/25/2022
Expected Delivery Date:	05/27/2022

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-806953

To: GIRL SCOUTS OF CONNECTICUT
340 WASHINGTON ST
HARTFORD CT 06106-3317

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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806953 Crown Dish

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

05/25/2022 04:43 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Wed 05/25/2022 Tracking #: 9405 5036 9930 0257 7749 82	1		$0.00
Prepaid Mail Stamford, CT 06901 Weight: 0 lb 8.60 oz Acceptance Date: Wed 05/25/2022 Tracking #: 9405 5036 9930 0257 7750 02	1		$0.00
Prepaid Mail Stamford, CT 06901 Weight: 0 lb 8.60 oz Acceptance Date: Wed 05/25/2022 Tracking #: 9405 5036 9930 0257 7750 26	1		$0.00
Prepaid Mail Hartford, CT 06106 Weight: 0 lb 8.70 oz Acceptance Date: Wed 05/25/2022 Tracking #: 9405 5036 9930 0257 7750 33	1		$0.00
Grand Total:			$0.00

****
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