NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

August 15, 2021

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

RE: Tower Share Application
10 Sparks Street, Plainville CT 06062
Latitude: 41.673478
Longitude: -72.854492
Site# 876333_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 10 Sparks Street in Plainville, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antenna and six (6) RRUs, at the 103-foot level of the existing 138-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated July 9, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated May 21, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Plainville Planning and Zoning. 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 Robert E. Lee, Town Manager for the Town of Plainville, Garrett Daigle, Town Planner, as well as the tower owner (Crown Castle) and property owner (SMA Realty LLC).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 138-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 103-feet.

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 29.13% 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 indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit 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 support tower in Plainville. 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 101-foot level of the existing 109-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 guyed tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Plainville.

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:

Robert E. Lee, Town Manager
Plainville Municipal Center
1 Central Square Plainville, CT 06062

Garrett Daigle, Town Planner
Plainville Municipal Center
1 Central Square – Room 100 Plainville, CT 06062
860-793-0221

SMA Realty LLC
10 Sparks Street, Plainville CT 06062

Crown Castle, Tower Owner

NORTHEAST SITE SOLUTIONS, LLC
1053 FARMINGTON AVE STE G
FARMINGTON, CT 06032

WEBSTER BANK
51-7010/2111

4591

08/06/2021

PAY TO THE ORDER OF Connecticut Siting Council

*625.00

$

EXACTLY SIX HUNDRED TWENTY-FIVE DOLLARS

DOLLARS

Connecticut Siting Council
10 Franklin Square
New Britain CT 06051

MEMO

AUTHORIZED SIGNATURE

Photo Safe Deposit®

Details on Back.

⑈004591⑈ ⑆211170101⑆10 001060888?⑈

NORTHEAST SITE SOLUTIONS, LLC

4591

Check#: 4591 **Date: 08/06/2021** **Vendor#: 10023 Connecticut Siting Council** **Total: *625.00**

Invoice#	*Invoice Date*	*Job/Description*	*Balance*	*Retain*	*Discount*	*This Check*
876333 Crown Direct	08/06/2021	117 Crown Direct Z/P	625.00			625.00

Exhibit A

Original Facility Approval

Hanlon, Dashanna

From: Mark Devoe <devoe@plainville-ct.gov>
Sent: Thursday, April 13, 2017 10:50 AM
To: Hanlon, Dashanna
Cc: Garrett Daigle
Subject: RE: [Town of Plainville CT] Original Zoning - 10 Sparks Street (Sent by Dashanna Hanlon, dashanna.hanlon@crowncastle.com)

Hello Dashanna,

We were able to locate two zoning files for 10 Sparks Street relative to the initial local zoning approvals for the tower in 1996 (SBA), and in 2001 for the addition of a backup generator(Sprint Spectrum). All other approvals beyond those dates were acquired through CSC as modifications or exempt modifications. The files are not available electronically, but you may inspect them during normal business hours and mark whatever information you may require to be copied.

We can then furnish you with an estimate for copying costs.

Mark S. DeVoe, AICP
Director of Planning and Economic Development Town of Plainville | One Central Square | Plainville, CT 06062
(860) 793-0221 Ext. 210 | devoe@plainville-ct.gov

-----Original Message-----
From: vtsdmailer@vt-s.net [mailto:vtsdmailer@vt-s.net]
Sent: Wednesday, April 12, 2017 8:55 PM
To: Mark Devoe <devoe@plainville-ct.gov>
Subject: [Town of Plainville CT] Original Zoning - 10 Sparks Street (Sent by Dashanna Hanlon, dashanna.hanlon@crowncastle.com)

Hello MDeVoe,

Dashanna Hanlon (dashanna.hanlon@crowncastle.com) has sent you a message via your contact form (http://www.plainvillect.com/user/125/contact) at Town of Plainville CT.

If you don't want to receive such e-mails, you can change your settings at http://www.plainvillect.com/user/125/edit.

Message:

Hello,

I have an inquiry regarding original zoning documents for a tower and I am hoping you can provide more information.

We are applying for CSC Zoning Approval for tower modifications and new requirements ask that we procure original zoning documents from the jurisdiction, if possible. However, if these documents are not available, please let me know.

The tower is located at 10 Sparks Street and according to lease documents this was have been approved around 2006– the original lease was signed around this time.

If you have any questions, please don't hesitate to call or e-mail me.

Thank you,
Dashanna

Exhibit B

Property Card

Plainville, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
			10	SPARKS ST

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
23-O-05	R02784	1	1	SPARKS ST	10	GI	Manufacturing Warehouse Facilities	1.26

Owner Information:

Owner 1 Name:	SMA REALTY LLC
Owner 2 Name:	
Street 1:	10 SPARKS ST
Street 2:	
City:	PLAINVILLE
State:	CT
Zip:	06062
Volume:	606
Page:	1131
Deed Date:	0000-00-00

Building Information:

Building Number:	1
Units:	1
Structure Type:	WAREHOUSE
Grade:	C
Identical Units:	1
Year Built:	1949

Valuation:

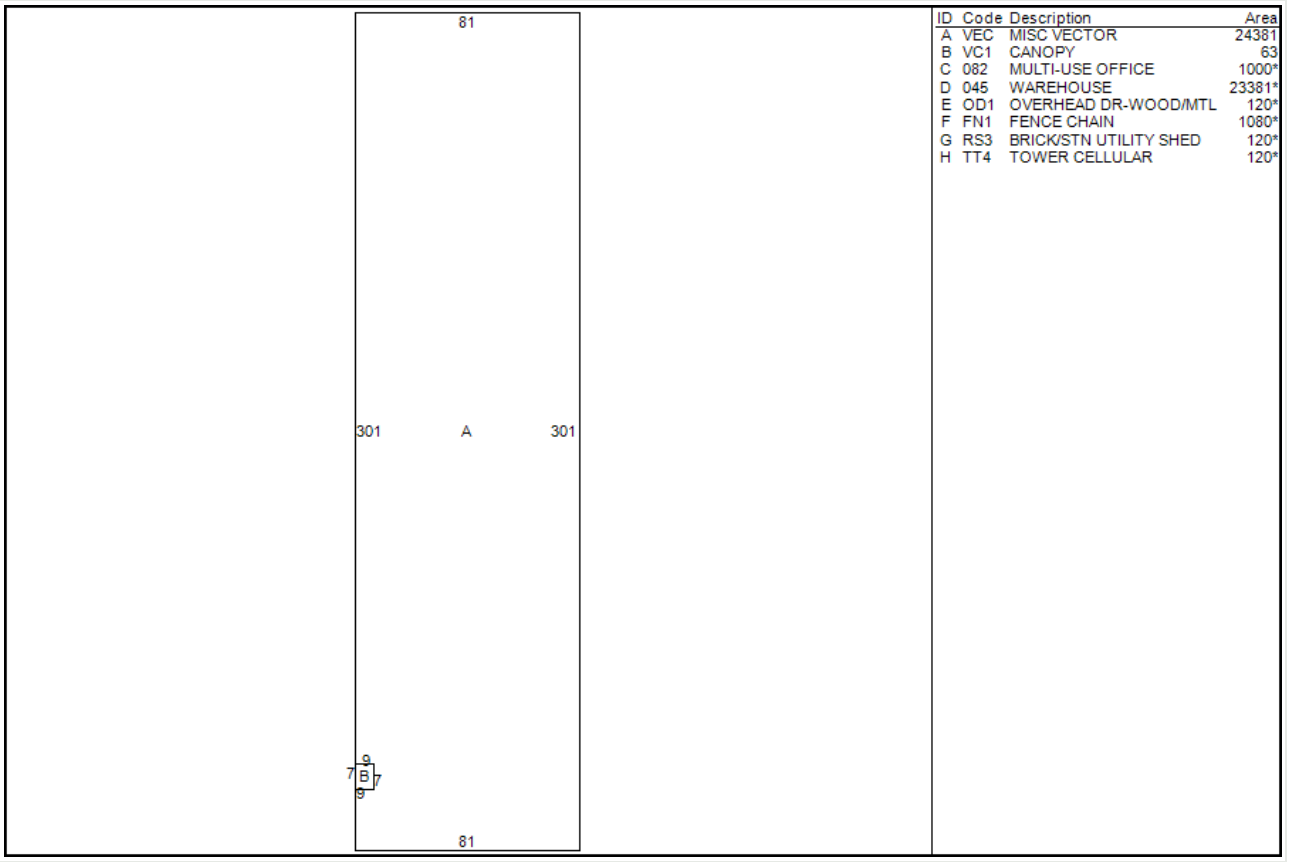
Appraised Land:	$107,000.00
Appraised Bldg:	$658,000.00
Appraised Total:	$765,000.00
Total Assessment:	$535,500.00

Property Images:

Picture:

There is no picture available.

Sketch:



ID	Code	Description	Area
A	VEC	MISC VECTOR	24381
B	VC1	CANOPY	63
C	082	MULTI-USE OFFICE	1000*
D	045	WAREHOUSE	23381*
E	OD1	OVERHEAD DR-WOOD/MTL	120*
F	FN1	FENCE CHAIN	1080*
G	RS3	BRICK/STN UTILITY SHED	120*
H	TT4	TOWER CELLULAR	120*

Sales History:

Book:	Page:	Sale Date:	Price:	Validity:	Sale Type:
449	526	01/14/2005	266,000	08	2
449	534	01/14/2005	266,000	08	2
182	1140	08/09/1971			
254	154	02/22/1988			
320	120	06/07/1995			
449	521	01/14/2005			
449	534	01/14/2005			
449	526	01/14/2005			
606	1131	01/02/2018	340,000	0	2

Out-Buildings:

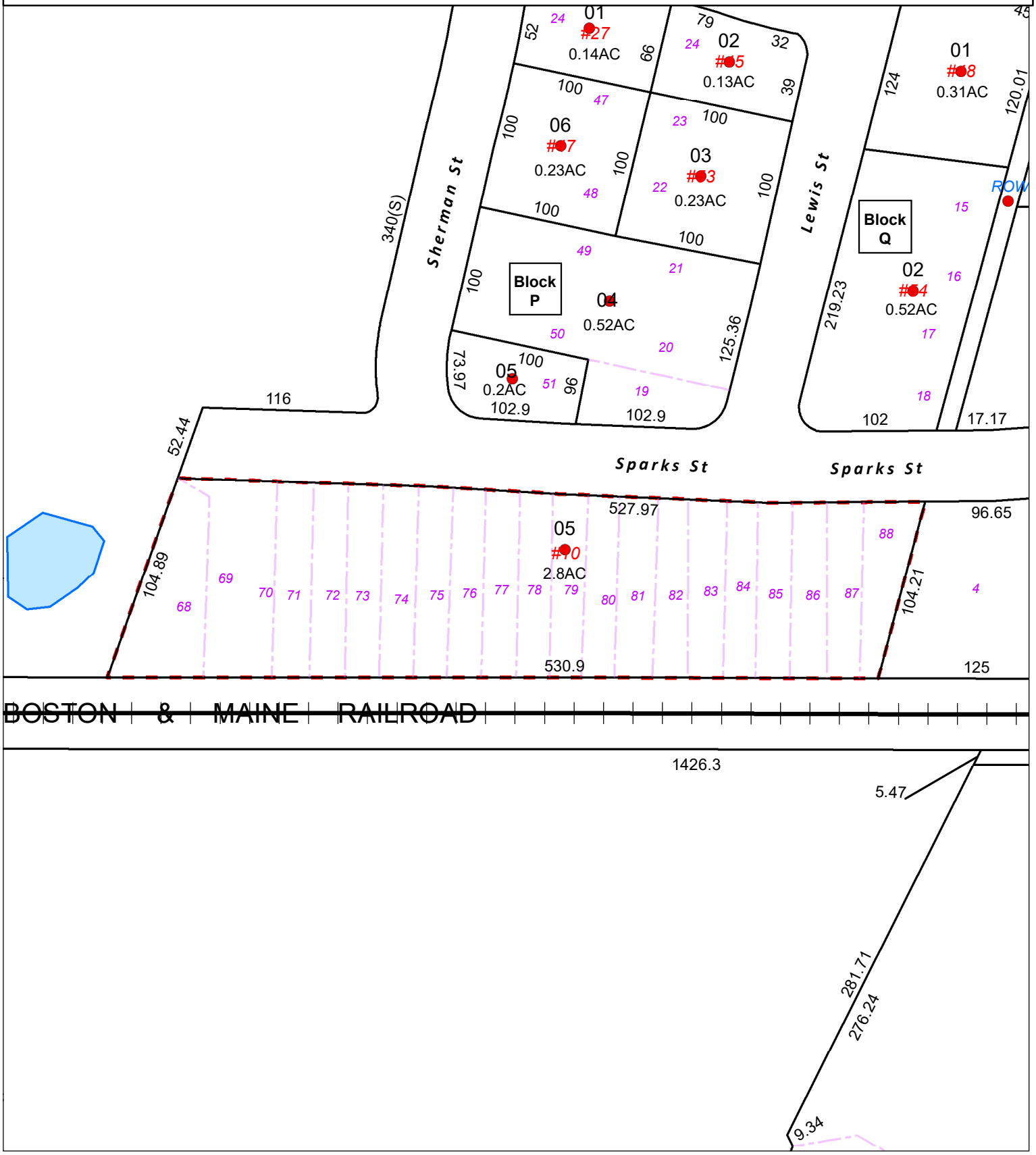
Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
FN1	FENCE CHAIN	1	2000	6	180	1080	C	NORMAL (Comm)
PA1	PAVING ASPHALT PARKING	1	2018	135	80	10800	C	NORMAL (Comm)
RS3	BRICK/STN UTILITY SHED	1	2000	12	12	144	C	NORMAL (Comm)
RS3	BRICK/STN UTILITY SHED	1	2000	1	120	120	C	NORMAL (Comm)
TT4	TOWER CELLULAR	1	2000	0	0	120	C	NORMAL (Comm)

Building Interior/Exterior Information:

Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional Utility:
01	01	3645	MULTI-USE OFFICE	BRICK VENEER	WOOD FRAME/JOIST/BEAM	HOT AIR	CENTRAL	NORMAL	3
01	01	20736	LIGHT MANUFACTURING	BRICK VENEER	WOOD FRAME/JOIST/BEAM	HOT AIR	NONE	NORMAL	2

Town of Plainville, Connecticut - Assessment Parcel Map

Parcel: 23-O-05 **Address: 10 SPARKS ST**



0 30 60 90 120

Feet

Approximate Scale:
1 inch = 92 feet

Map Produced March 2021

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00085A

DISH Wireless L.L.C. SITE ADDRESS:

10 SPARKS ST.
PLAINVILLE, CT 06062

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

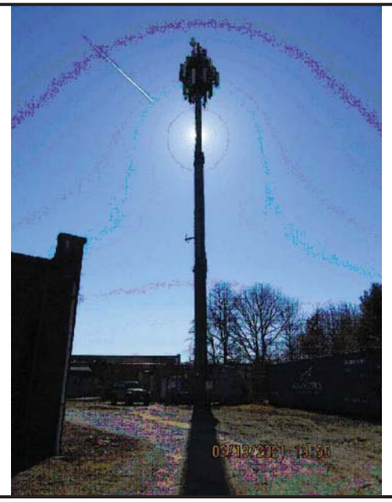
SCOPE OF WORK

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

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

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

SITE PHOTO



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	SMA REALTY LLC
ADDRESS:	N/A
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876333
TOWER APP NUMBER:	556608
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 40' 24.5" N 41.673478 N
LONGITUDE (NAD 83):	72° 51' 16.2" W 72.854492 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	GI
PARCEL NUMBER:	23-0-05
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

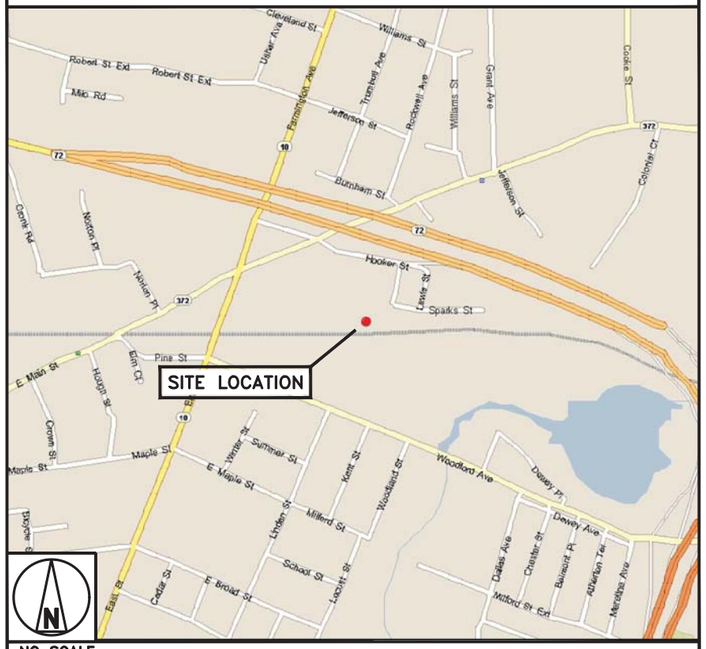
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	NICHOLAS CURRY NICHOLAS.CURRY@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM DISTRICT OFFICE:

I-84 TO EXIT 34, 372 WEST TO ROUTE 10 NORTH. TURN RIGHT ON HOOKER STREET, GO STRAIGHT THROUGH INTERSECTION THEN STRAIGHT NEXT TO 84 ON-RAMP. TURN RIGHT INTO ACCESS RD AND PARKING LOT.

VICINITY MAP



dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT · MICHAEL D. WILLIAMS · No. 23924 · LICENSED PROFESSIONAL ENGINEER

7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

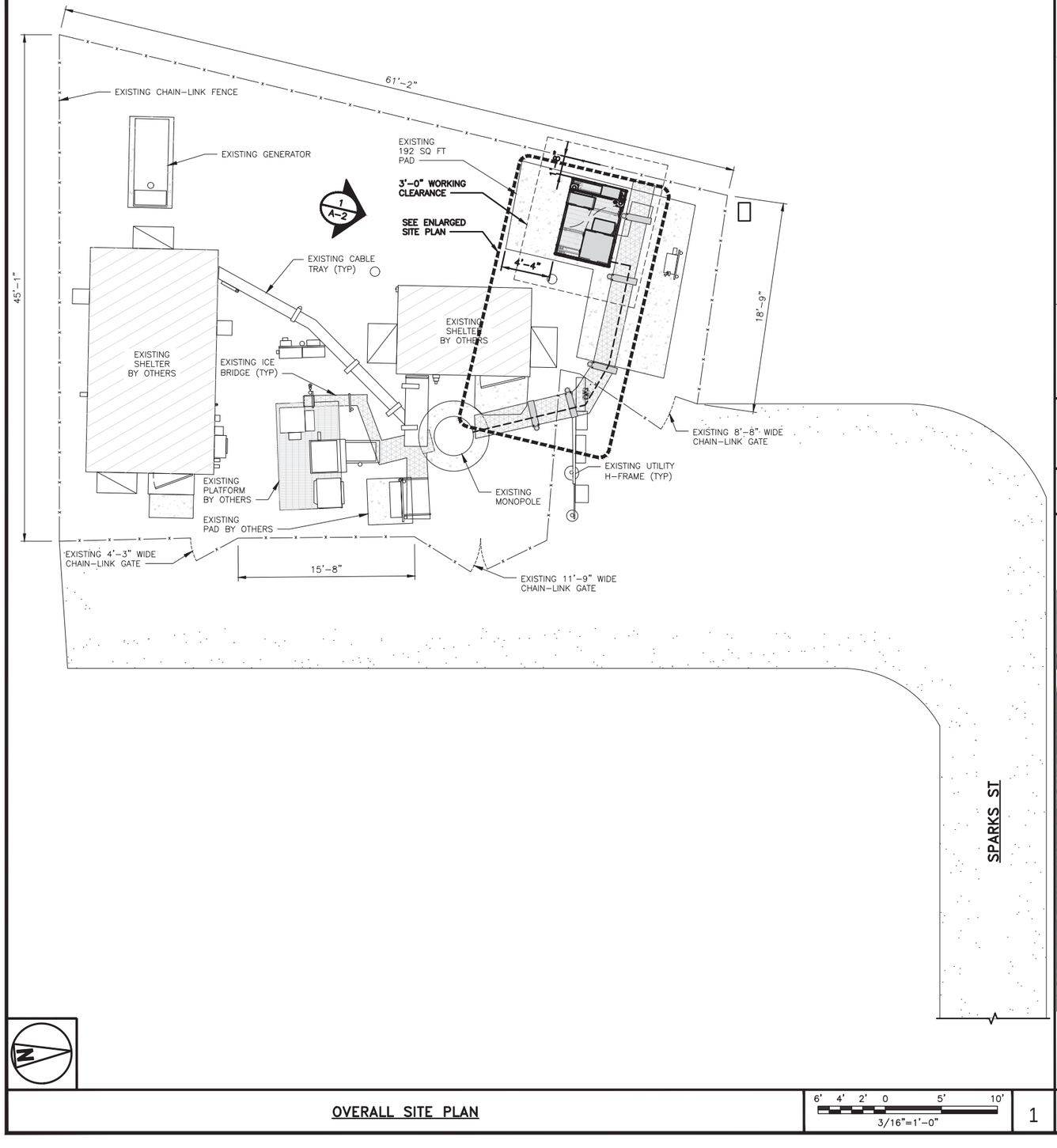
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



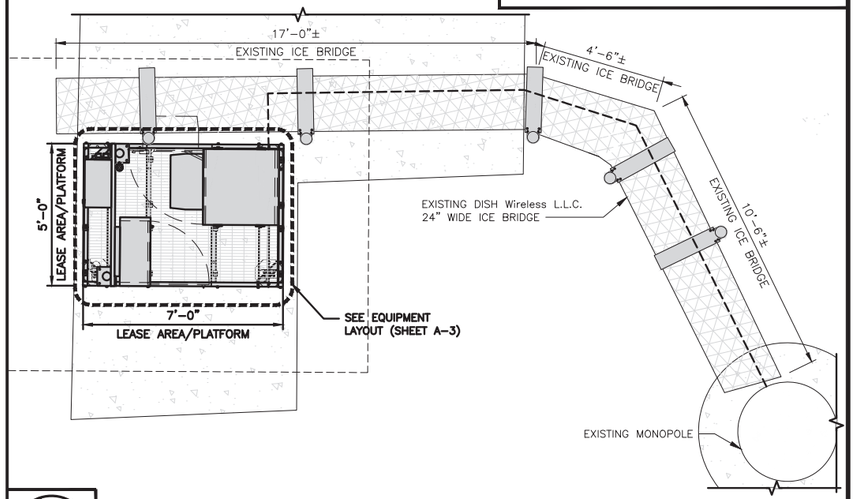
OVERALL SITE PLAN

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

1

NOTES

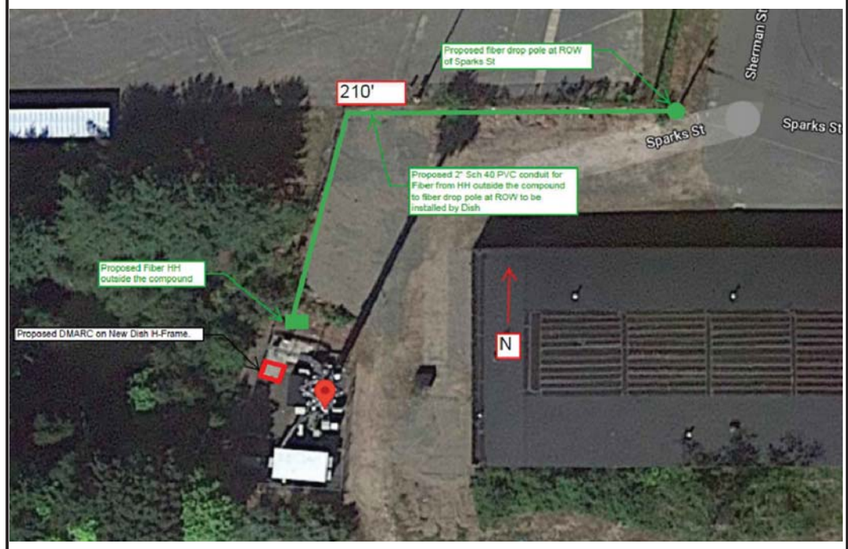
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



OVERALL UTILITY PLAN

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

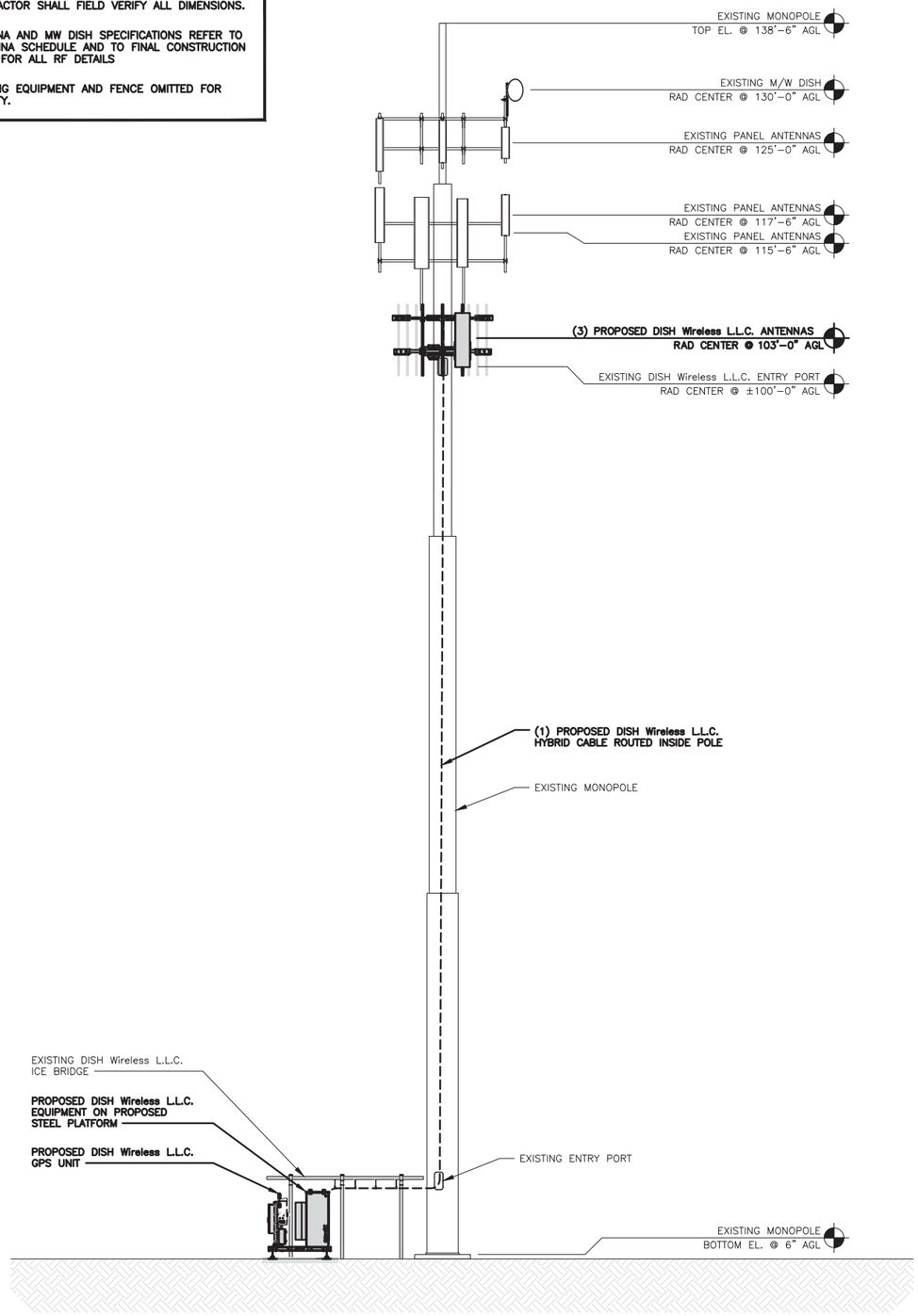
OVERALL AND ENLARGED SITE PLAN

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

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

1

ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	0°	103'–0"	(1) HIGH–CAPACITY HYBRID CABLE (150' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	120°	103'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	240°	103'–0"	

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

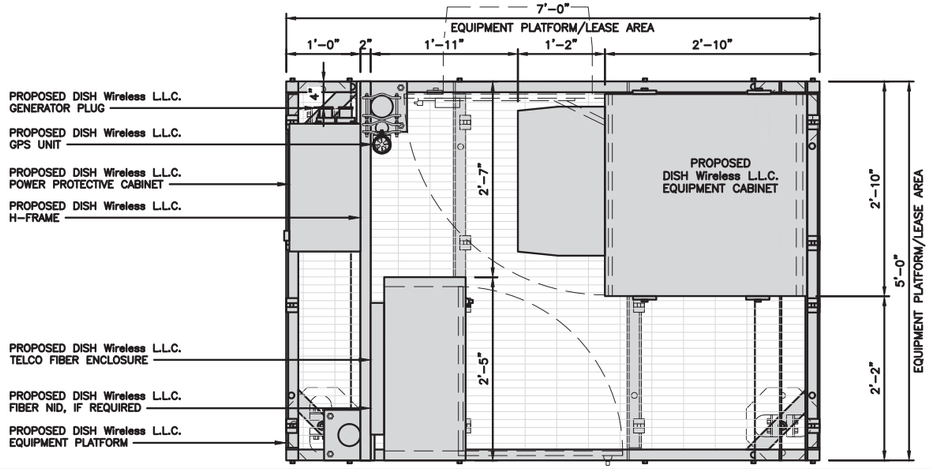
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



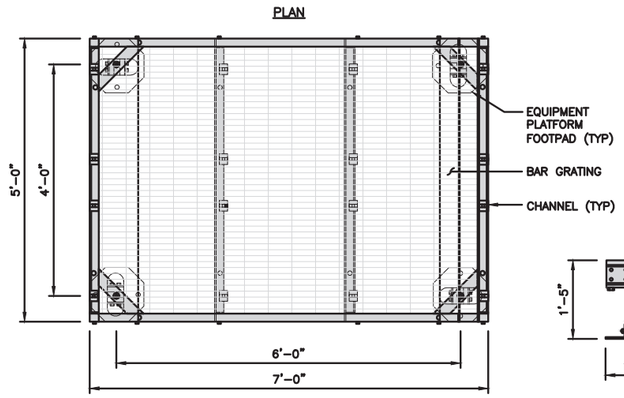
PLATFORM EQUIPMENT PLAN

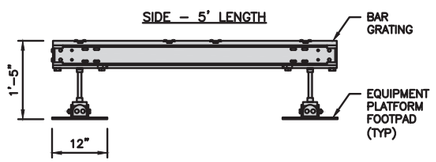
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

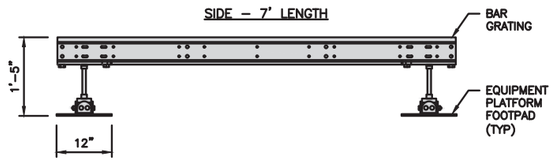
1

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

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





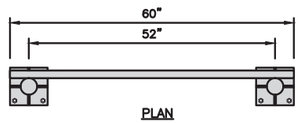


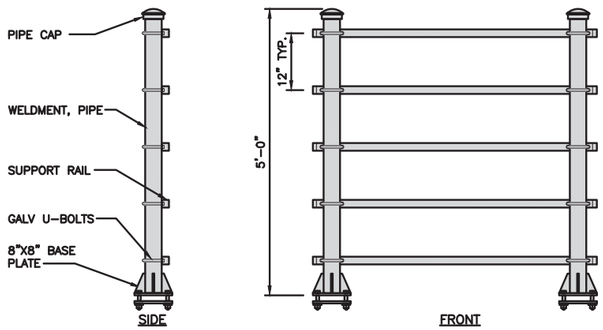
PLATFORM DETAIL

NO SCALE

2

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





H-FRAME DETAIL

NO SCALE

3

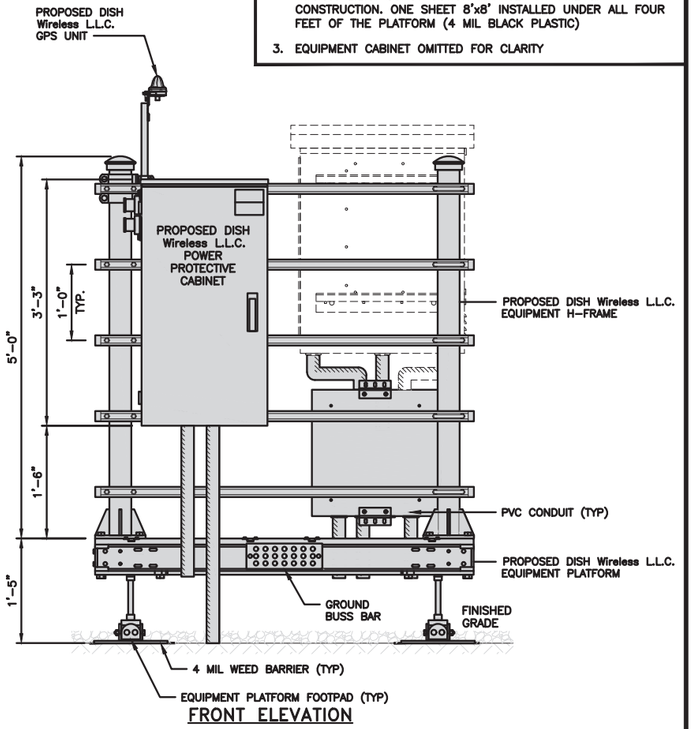
NOT USED

NO SCALE

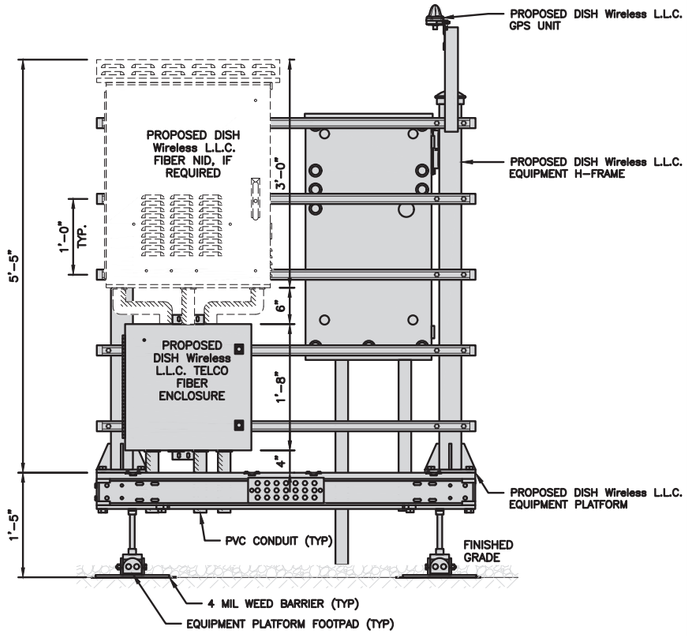
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

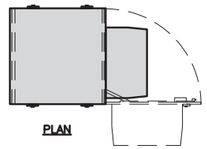
A&E PROJECT NUMBER
147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

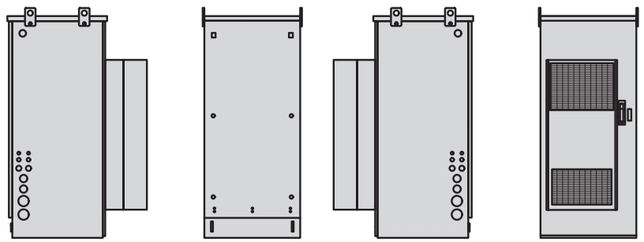
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS



PLAN

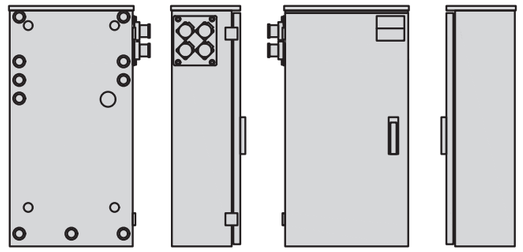


SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

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

TOP



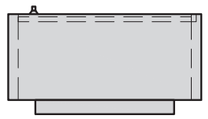
BACK SIDE FRONT SIDE

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

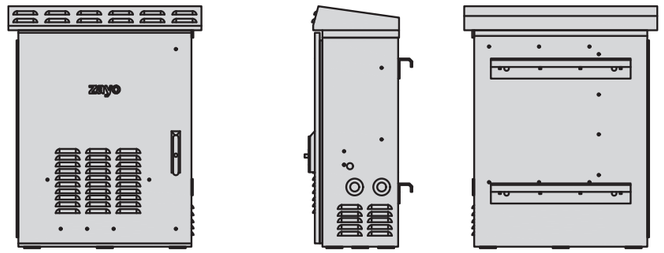
NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC



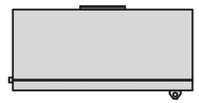
PLAN



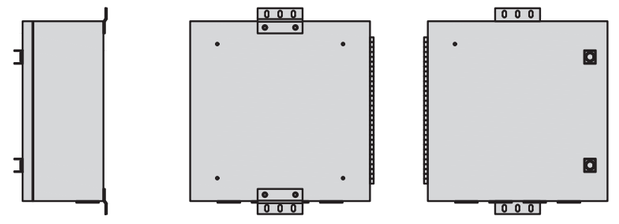
FRONT SIDE BACK

NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

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



FRONT

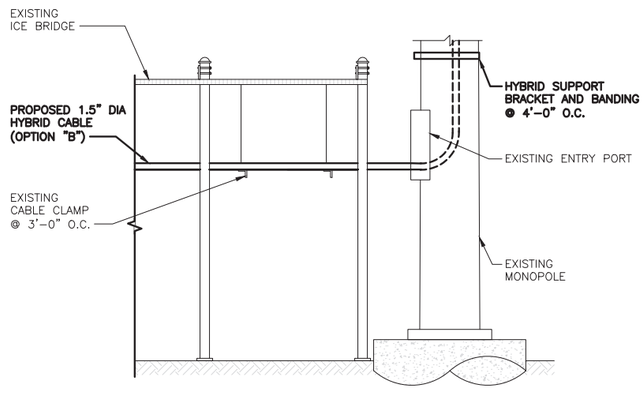


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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

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

STATE OF CONNECTICUT · GREGORY M. CHASE · No. 23924 · LICENSED PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

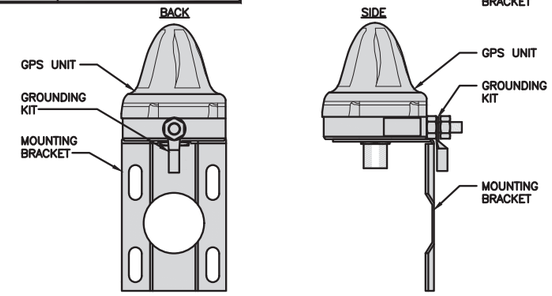
SHEET TITLE

EQUIPMENT DETAILS

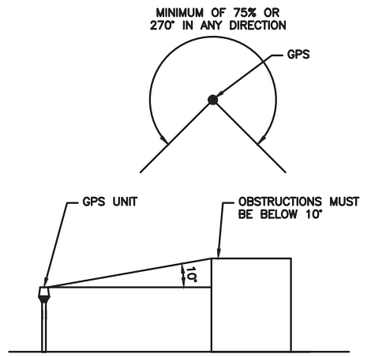
SHEET NUMBER

A-4

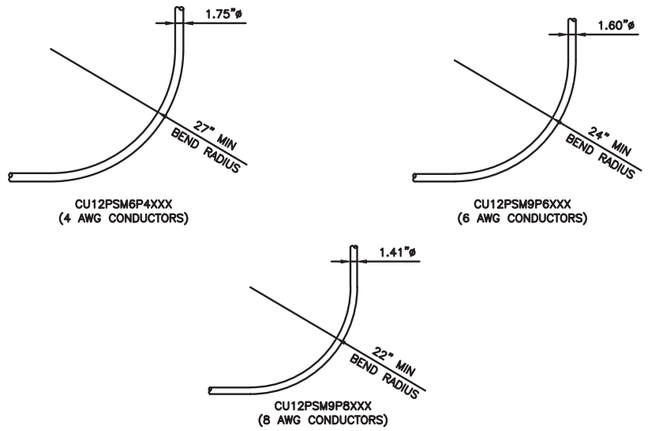
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

B+T GRP

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR COSNTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

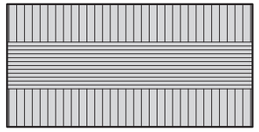
SHEET TITLE

EQUIPMENT DETAILS

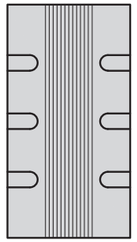
SHEET NUMBER

A-5

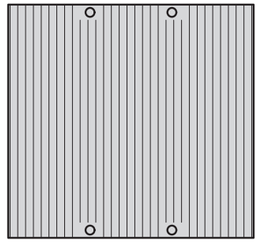
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



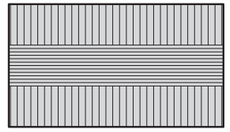
SIDE



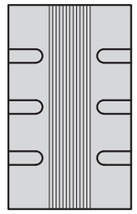
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

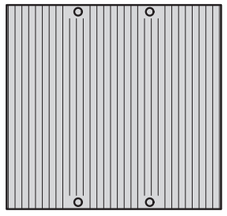
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

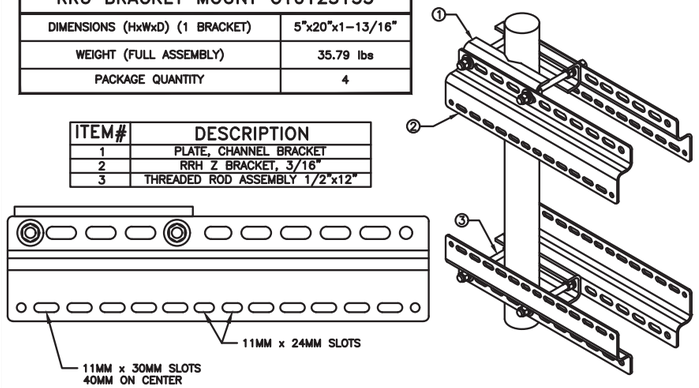


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

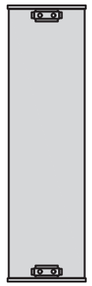
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



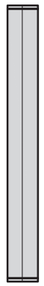
REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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

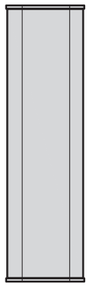
PLAN



BACK



SIDE

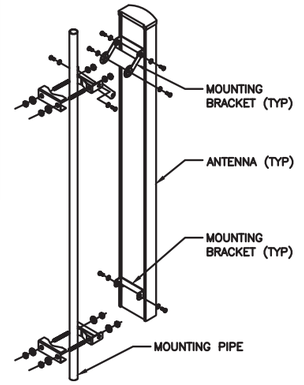


FRONT

ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

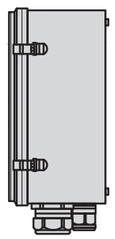
M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5" (135mm)
DEPTH	2" (51mm)
HEIGHT	8" (213mm)
TOTAL WEIGHT (WITH BRACKETS)	1.5 LBS (15.50 Kg)
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1X8-PIN DAISY CHAIN



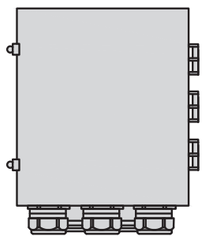
ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

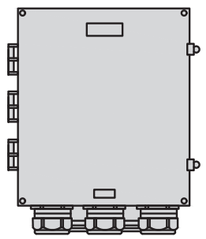
PLAN



SIDE



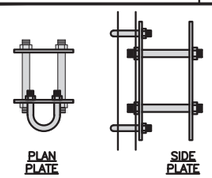
BACK



FRONT

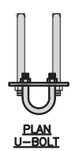
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS

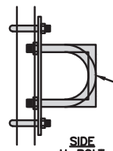


PLAN PLATE

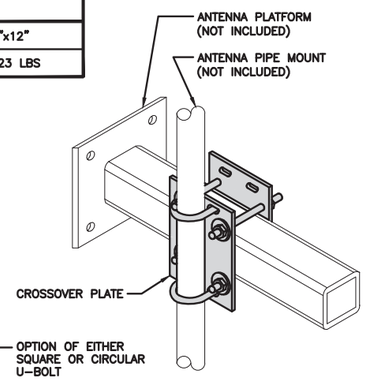
SIDE PLATE



PLAN U-BOLT

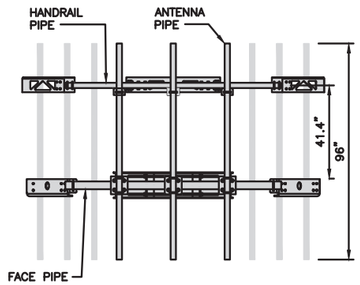


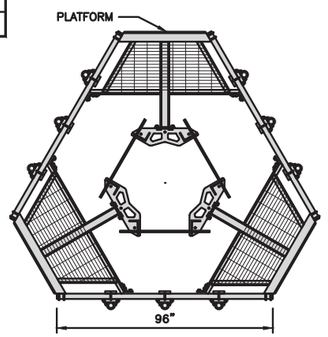
SIDE U-BOLT



RRH/OVP MOUNT DETAIL | NO SCALE | 8

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

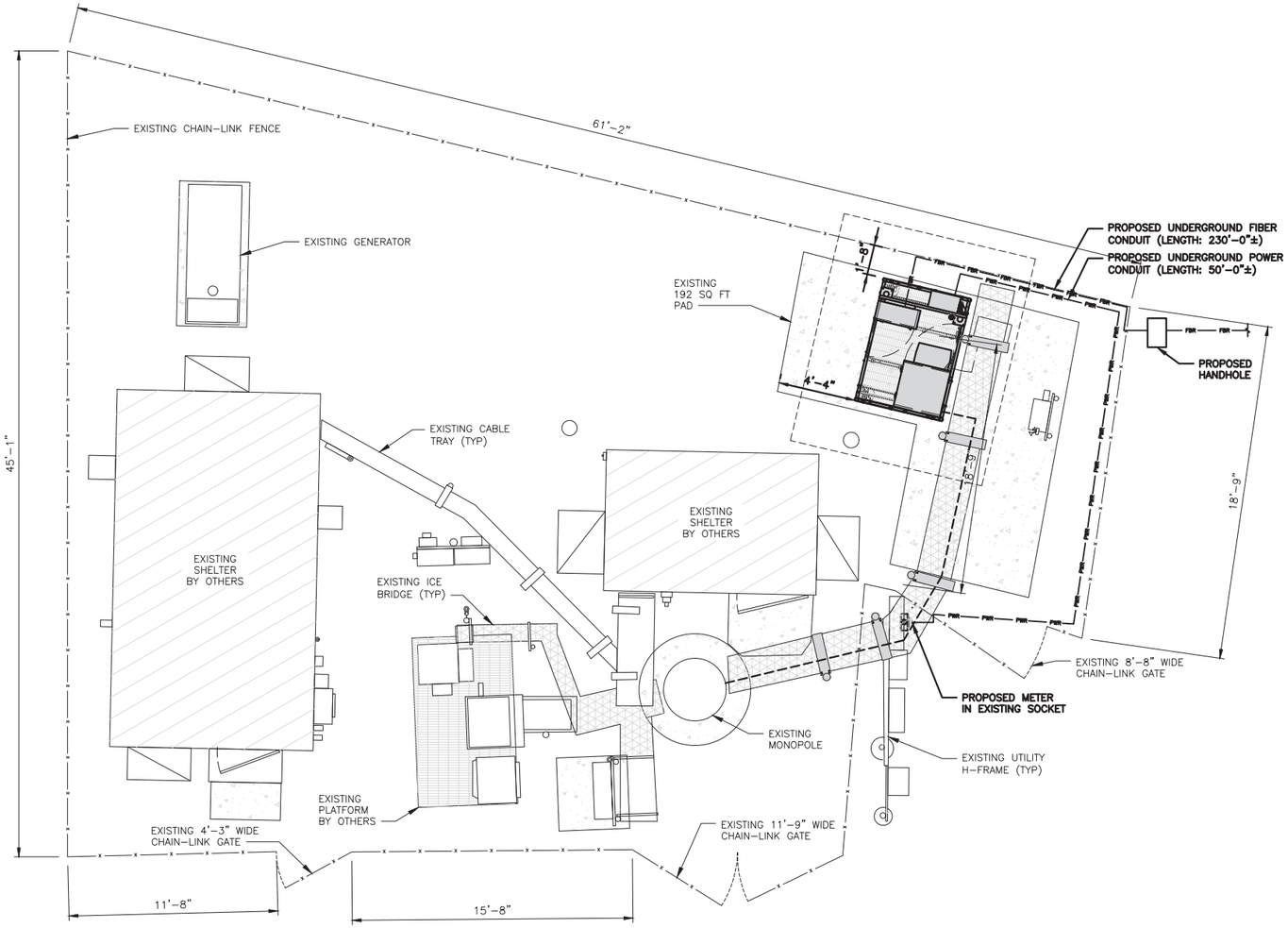
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

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



UTILITY ROUTE PLAN

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

ELECTRICAL NOTES

NO SCALE

2

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR COSNTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

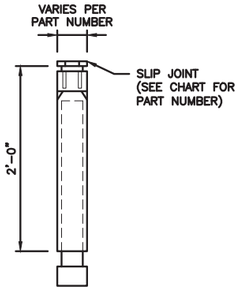
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

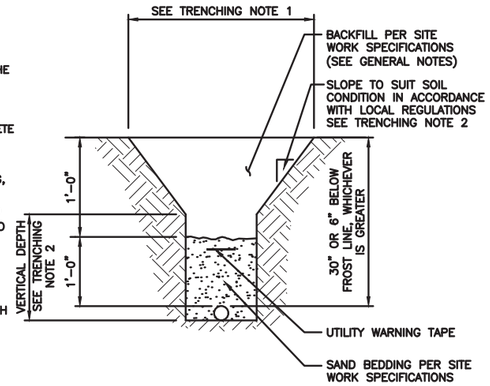


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

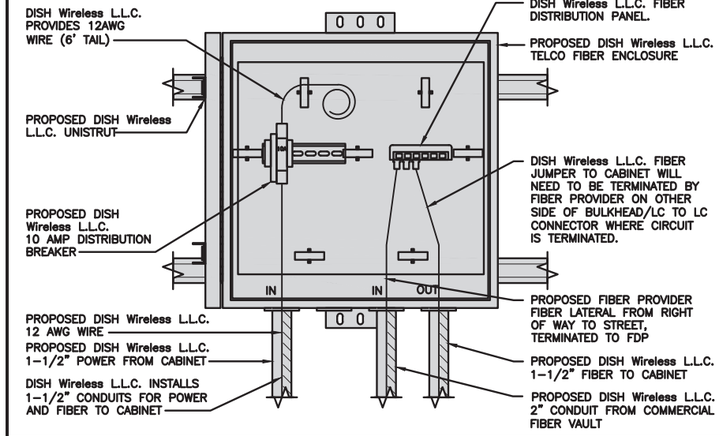
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

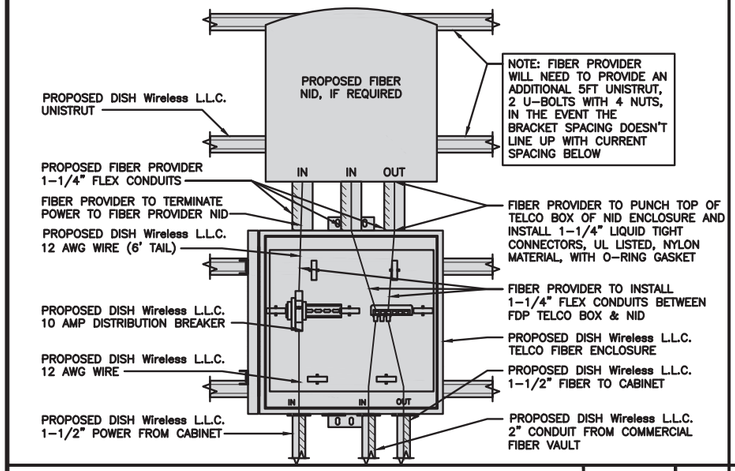
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

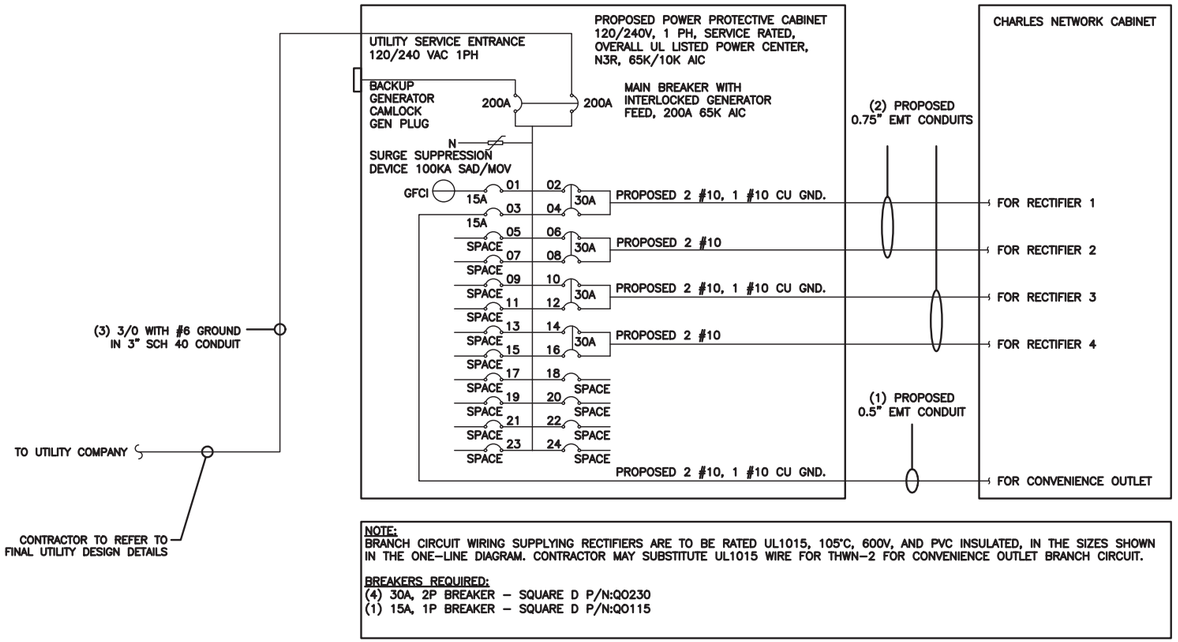
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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

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

STATE OF CONNECTICUT – No. 23924 – LICENSED PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

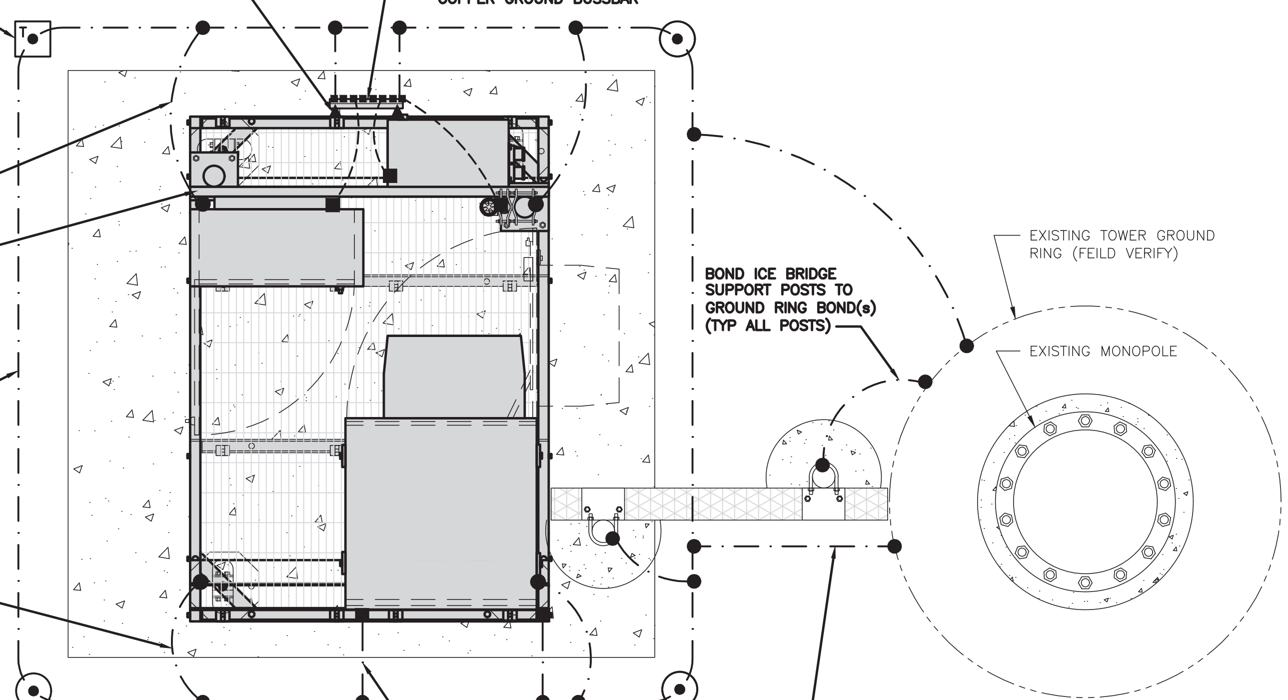
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

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

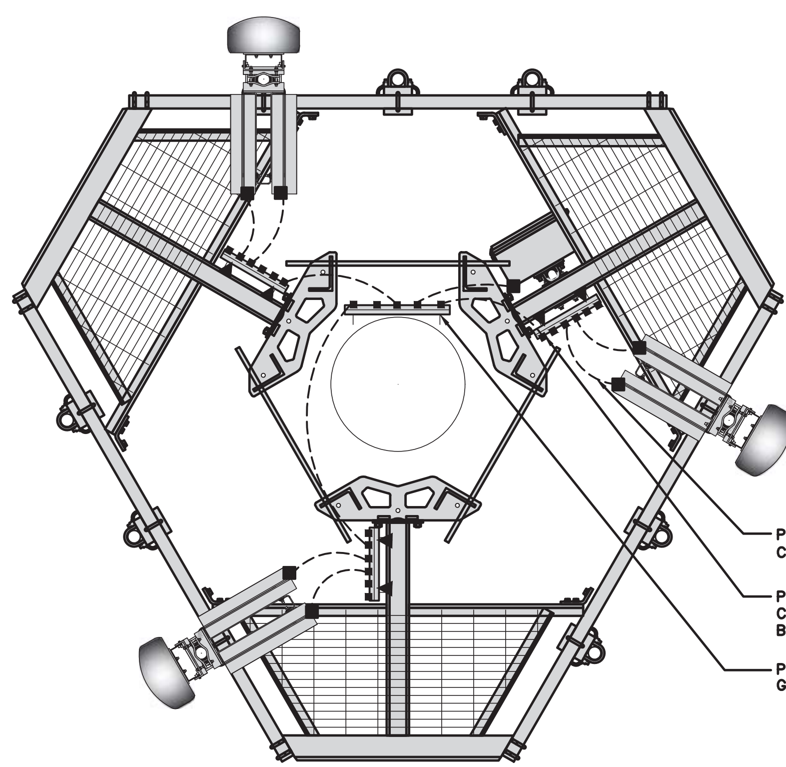
SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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

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

STATE OF CONNECTICUT PROFESSIONAL ENGINEER No. 23924 LICENSED
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR COSNTRUCTION

A&E PROJECT NUMBER
147961.001.01

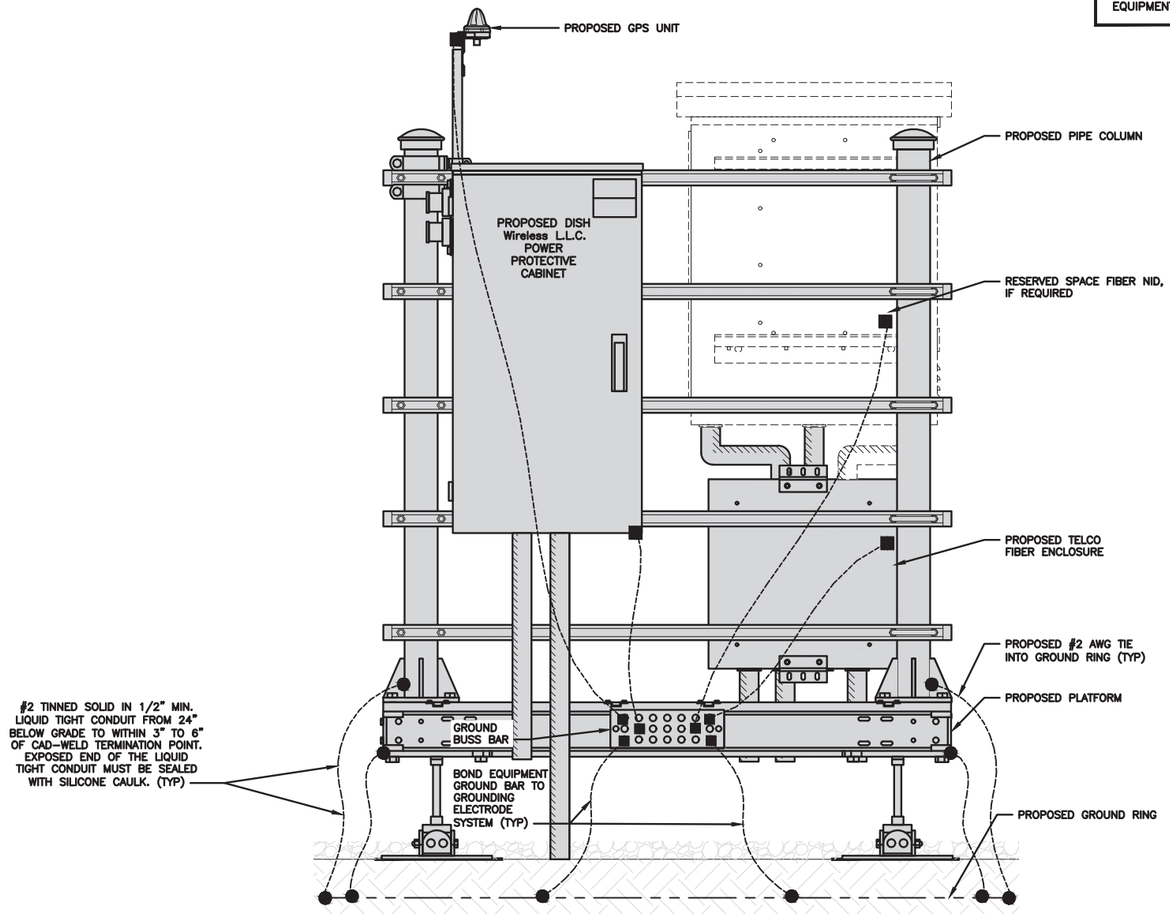
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

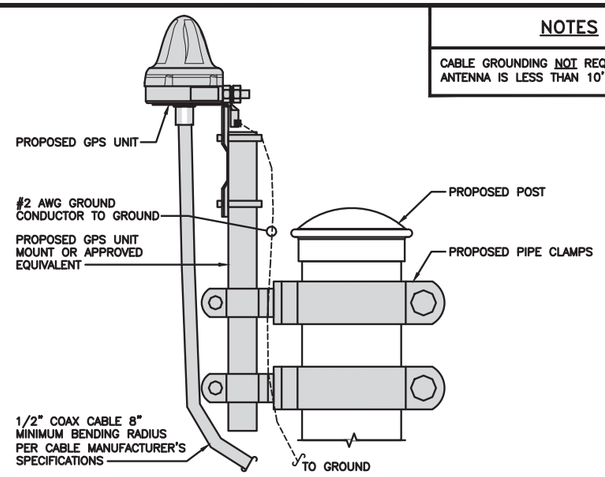
EQUIPMENT CABINET OMITTED FOR CLARITY



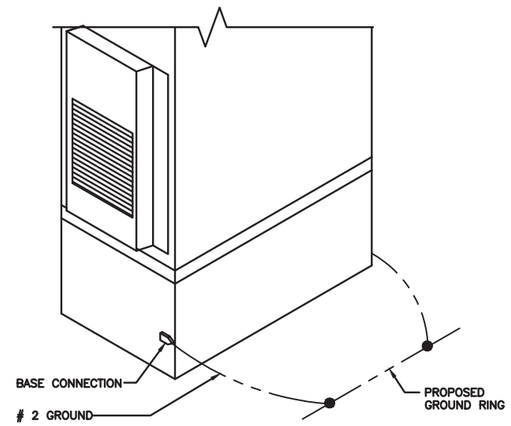
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

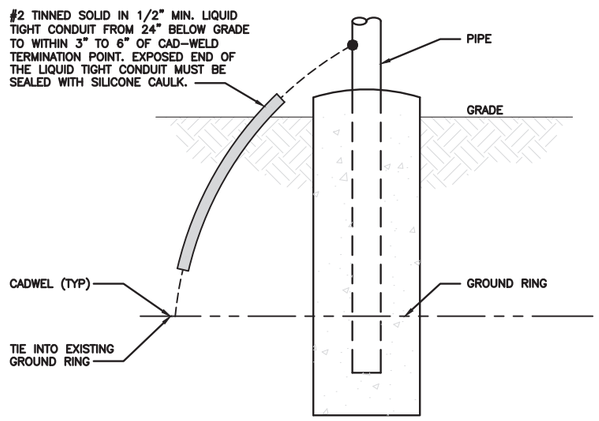
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



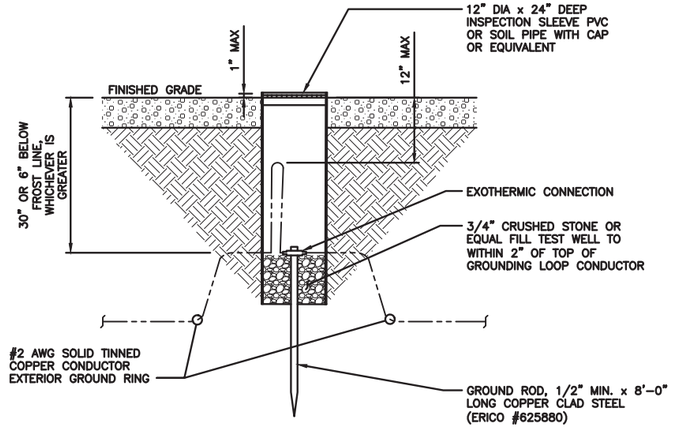
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



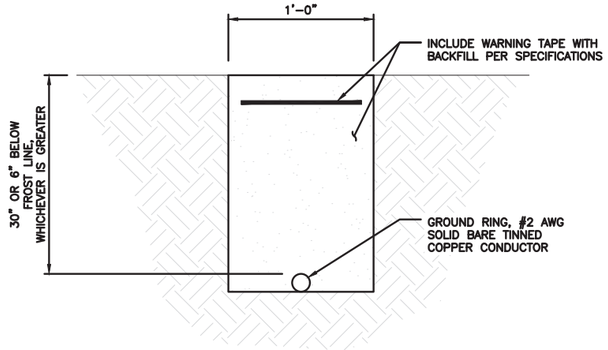
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR COSNTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

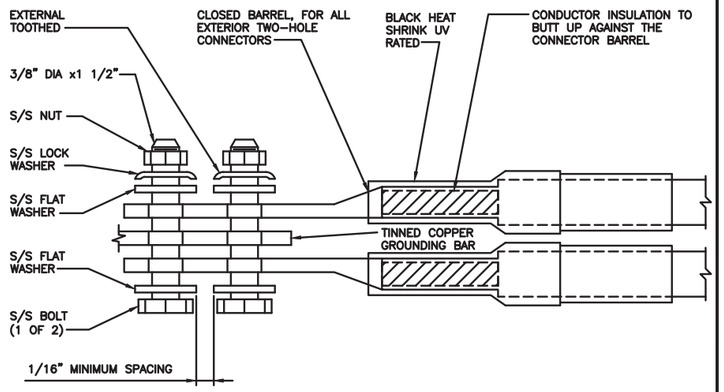
GROUNDING DETAILS

SHEET NUMBER

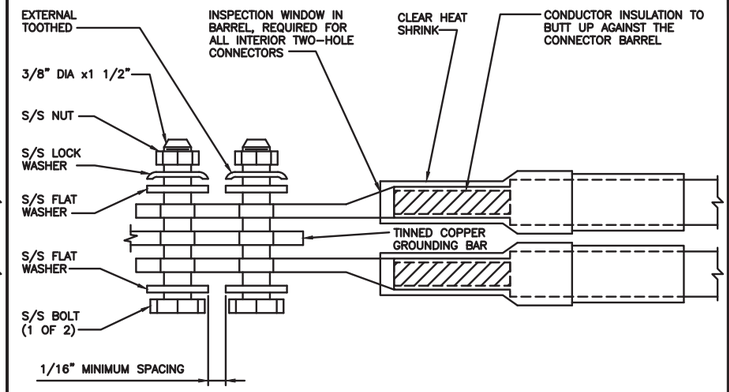
G-2

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

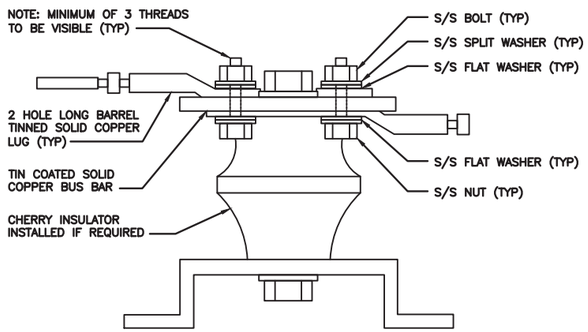
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR COSNTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

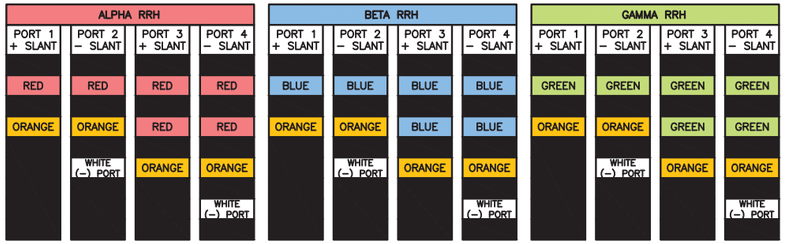
G-3

RF JUMPER COLOR CODING

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

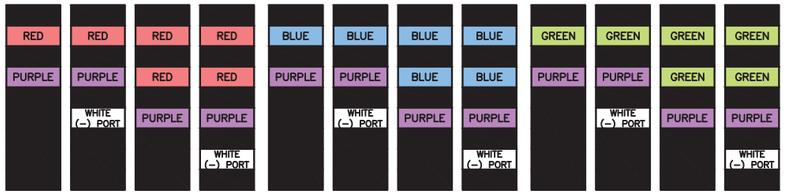
LOW–BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH –
(AWS BANDS N66+N70)

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

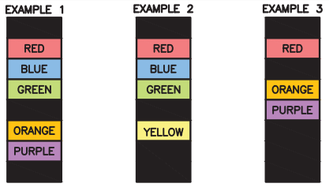


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

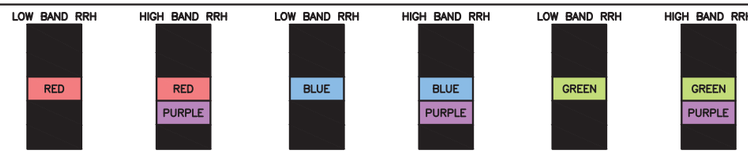
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW–BANDS AND MID–BANDS

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



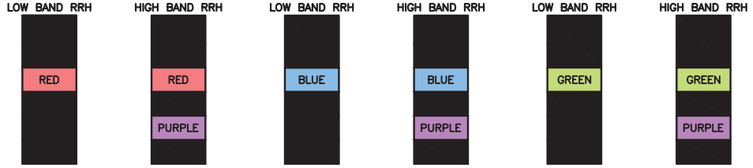
FIBER JUMPERS TO RRHs

LOW–BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

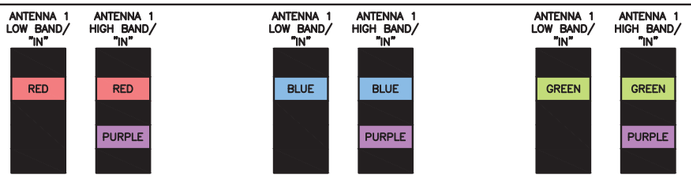


POWER CABLES TO RRHs

LOW–BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



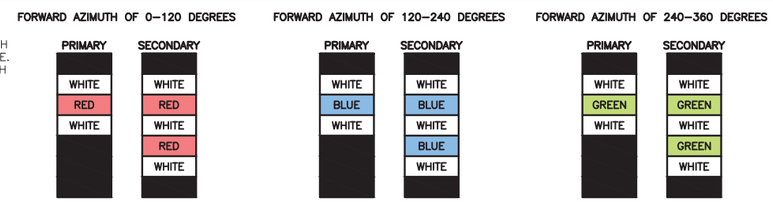
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES	NO SCALE	1

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

AWS
(N66+N70+H–BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

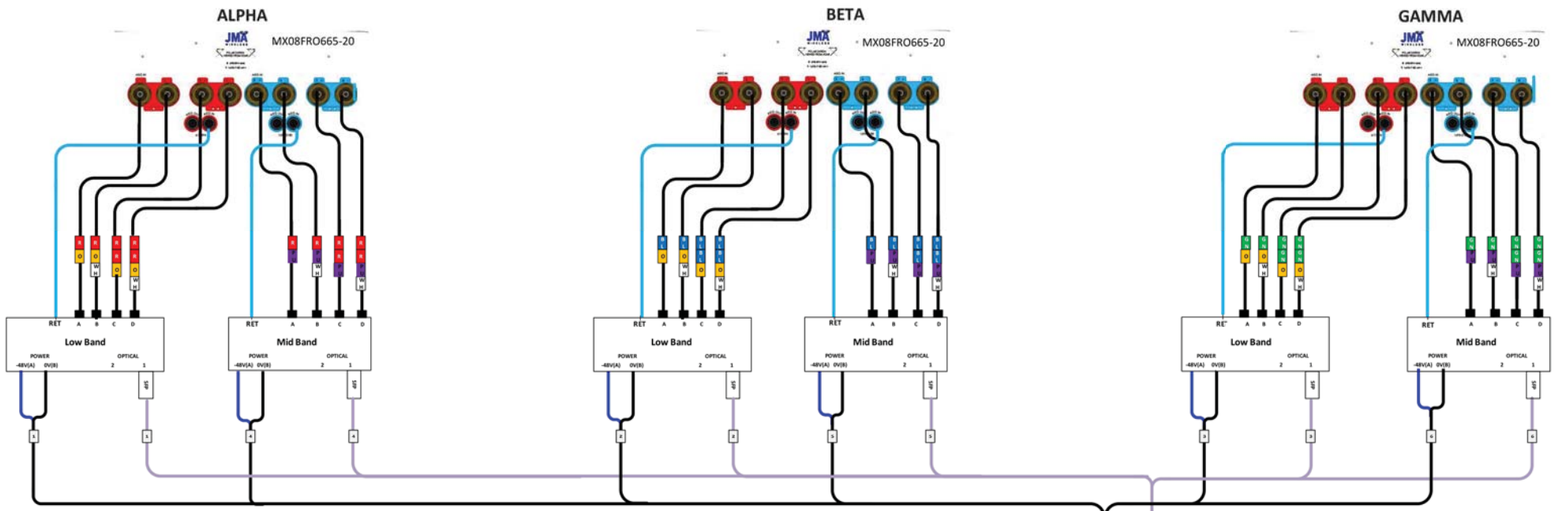
BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

RF
CABLE COLOR CODES

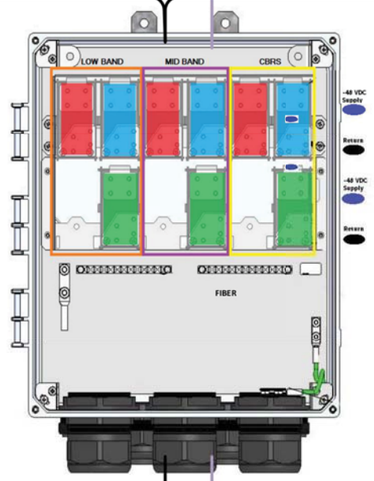
SHEET NUMBER

RF-1



Fiber Patch Panel

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



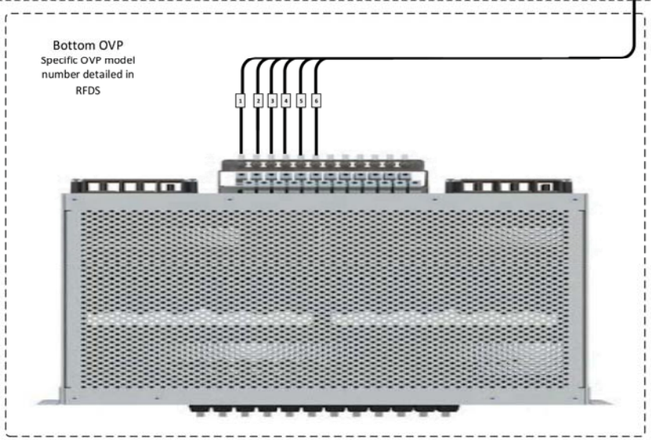
CSR NCS540		
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Wifi
11	Te0/0/0/11	Fixed Wifi
12	Te0/0/0/12	Fixed Wifi
13	Te0/0/0/13	Fixed Wifi
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/019	SM1 - Data 1
20	Te0/0/020	SM1 - Data 2
21	Te0/0/021	SM2 - Data 1
22	Te0/0/022	SM2 - Data 2
23	Te0/0/023	Reserved Uplink (EDC, LDC)
24	Te0/0/024	Blank/Future
25	Te0/0/025	Blank/Future
26	Te0/0/026	Fiber NIU
27	Te0/0/027	Fiber NIU
28	Te0/0/028	Blank/Future
29	Te0/0/029	Blank/Future

top

bottom

Bottom OVP Layout

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



Quan Liu	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)
5-Jan-2021	SIZE: — FSCM NO: — DWG NO: — REV: 3; SCALE: None; SHEET: —

PLUMBING DIAGRAM

NO SCALE

1

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

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

RF
PLUMBING DIAGRAM

SHEET NUMBER

RF-2

LEGEND

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

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
7/9/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

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.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

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.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

147961.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00085A
10 SPARKS ST.
PLAINVILLE, CT 06062

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **May 21, 2021**

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00085A
	Site Name:	CT-CCI-T-876333
Crown Castle Designation:	**BU Number:**	876333
	Site Name:	CREATIVE DIMENSIONS
	JDE Job Number:	650075
	Work Order Number:	1962707
	Order Number:	556608 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1962707
Site Data:	**10 Sparks St., PLAINVILLE, HARTFORD County, CT** **Latitude *41° 40' 24.52"*, Longitude *-72° 51' 16.17"*** **137 Foot - Monopole Tower**	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC5: Proposed Equipment Configuration **Sufficient Capacity-99.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Melanie Atiles

Respectfully submitted by:

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED PROFESSIONAL ENGINEER

Terry P Styran
2021.05.25
15:15:11 -04'00'

Terry P. Styran, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 137 ft Monopole tower designed by PITTSBURG MONOPOLE. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2 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)
103.0	103.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		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)
124.0	131.0	1	andrew	VHLP1-23	10 4 4	5/16 1/2 1-1/4
		1	andrew	VHLP2.5-18		
	124.0	3	alcatel lucent	TD-RRH8X20-25		
		3	argus technologies	LLPX310R-V4 w/ Mount Pipe		
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe		
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		3	rfs celwave	IBC1900BB-1		
		3	rfs celwave	IBC1900HG-2A		
		5	samsung telecommunications	WIMAX DAP HEAD		
		1	tower mounts	Miscellaneous [NA 507-1]		
		1	tower mounts	Miscellaneous [NA 510-1]		
		1	tower mounts	Platform Mount [LP 712-1]		
122.0	125.0	3	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz	-	-
	122.0	3	alcatel lucent	TME-800MHz 2X50W RRH W/FILTER		
		1	tower mounts	Pipe Mount [PM 601-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
113.0	115.0	3	cci antennas	OPA-65R-LCUU-H8 w/ Mount Pipe	12 6 2	7/8 3/4 3/8
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS-11		
		6	kaelus	DBC0061F1V51-2		
		3	kathrein	80010966 w/ Mount Pipe		
		6	kathrein	860 10025		
		3	powerwave technologies	1001940		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-0-8F		
		2	raycap	DC6-48-60-18-8F		
	113.0	1	tower mounts	Miscellaneous [NA 507-1]		
		1	tower mounts	Platform Mount [LP 712-1]		
50.0	50.0	1	lucent	KS24019-L112A	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1529723	CCISITES
4-POST-MODIFICATION INSPECTION	5781873	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1616541	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1615369	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2680348	CCISITES
4-POST-MODIFICATION INSPECTION	7011614	CCISITES
4-POST-MODIFICATION INSPECTION	6560711	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6679153	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6561090	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5626530	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), 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 included 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. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	137 - 132	Pole	TP12.75x12.75x0.375	Pole	0.4%	Pass
L2	132 - 127	Pole	TP12.75x12.75x0.375	Pole	2.6%	Pass
L3	127 - 125	Pole	TP12.75x12.75x0.375	Pole	3.7%	Pass
L4	125 - 120	Pole	TP24x24x0.375	Pole	6.0%	Pass
L5	120 - 115	Pole	TP24x24x0.375	Pole	11.8%	Pass
L6	115 - 110	Pole	TP24x24x0.375	Pole	24.4%	Pass
L7	110 - 105	Pole	TP24x24x0.375	Pole	37.4%	Pass
L8	105 - 100	Pole	TP24x24x0.375	Pole	52.8%	Pass
L9	100 - 95	Pole	TP24x24x0.375	Pole	69.3%	Pass
L10	95 - 90	Pole	TP24x24x0.375	Pole	85.9%	Pass
L11	90 - 89.25	Pole	TP24x24x0.375	Pole	88.5%	Pass
L12	89.25 - 89	Pole + Reinf.	TP24x24x0.5	Pole	68.2%	Pass
L13	89 - 85.66	Pole + Reinf.	TP24x24x0.5	Pole	76.9%	Pass
L14	85.66 - 85.41	Pole + Reinf.	TP24x24x0.5	Pole	77.6%	Pass
L15	85.41 - 81.15	Pole + Reinf.	TP24x24x0.5	Pole	89.0%	Pass
L16	81.15 - 80.9	Pole + Reinf.	TP24x24x0.8625	Reinf. 15 Compression	60.0%	Pass
L17	80.9 - 80.5	Pole + Reinf.	TP24x24x0.8625	Reinf. 15 Compression	60.7%	Pass
L18	80.5 - 80.25	Pole + Reinf.	TP24x24x1.225	Reinf. 12 Tension Rupture	58.0%	Pass
L19	80.25 - 80	Pole + Reinf.	TP24x24x1.225	Reinf. 15 Weldment	68.9%	Pass
L20	80 - 79.75	Pole + Reinf.	TP36x36x0.5	Pole	44.2%	Pass
L21	79.75 - 79	Pole + Reinf.	TP36x36x0.5	Pole	45.2%	Pass
L22	79 - 78.75	Pole	TP36x36x0.375	Pole	59.3%	Pass
L23	78.75 - 73.75	Pole	TP36x36x0.375	Pole	67.9%	Pass
L24	73.75 - 68.75	Pole	TP36x36x0.375	Pole	76.8%	Pass
L25	68.75 - 65.5	Pole	TP36x36x0.375	Pole	82.6%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L26	65.5 - 65.25	Pole + Reinf.	TP36x36x0.4625	Pole	67.4%	Pass
L27	65.25 - 60.25	Pole + Reinf.	TP36x36x0.4625	Pole	74.8%	Pass
L28	60.25 - 58.4	Pole + Reinf.	TP36x36x0.4625	Pole	77.6%	Pass
L29	58.4 - 58.15	Pole + Reinf.	TP36x36x0.6125	Reinf. 3 Tension Rupture	62.9%	Pass
L30	58.15 - 57.5	Pole + Reinf.	TP36x36x0.6125	Reinf. 3 Tension Rupture	63.7%	Pass
L31	57.5 - 57.25	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	74.8%	Pass
L32	57.25 - 52.25	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	82.1%	Pass
L33	52.25 - 49.5	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	86.2%	Pass
L34	49.5 - 49.25	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	74.4%	Pass
L35	49.25 - 44.25	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	81.0%	Pass
L36	44.25 - 41.9	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	84.2%	Pass
L37	41.9 - 41.65	Pole + Reinf.	TP36x36x0.5125	Pole	95.3%	Pass
L38	41.65 - 40.75	Pole + Reinf.	TP36x36x0.5125	Pole	96.7%	Pass
L39	40.75 - 40.5	Pole + Reinf.	TP36x36x0.7375	Pole	69.3%	Pass
L40	40.5 - 40	Pole + Reinf.	TP36x36x0.675	Pole	76.0%	Pass
L41	40 - 39.75	Pole + Reinf.	TP42x42x0.6875	Pole	53.3%	Pass
L42	39.75 - 39.25	Pole + Reinf.	TP42x42x0.6875	Pole	53.7%	Pass
L43	39.25 - 39	Pole	TP42x42x0.5	Pole	72.9%	Pass
L44	39 - 34	Pole	TP42x42x0.5	Pole	78.7%	Pass
L45	34 - 29	Pole	TP42x42x0.5	Pole	84.6%	Pass
L46	29 - 24	Pole	TP42x42x0.5	Pole	90.6%	Pass
L47	24 - 19.5	Pole	TP42x42x0.5	Pole	96.0%	Pass
L48	19.5 - 19.25	Pole + Reinf.	TP42x42x0.55	Pole	88.3%	Pass
L49	19.25 - 14.25	Pole + Reinf.	TP42x42x0.55	Pole	93.9%	Pass
L50	14.25 - 13	Pole + Reinf.	TP42x42x0.55	Pole	95.3%	Pass
L51	13 - 12.75	Pole + Reinf.	TP42x42x0.6375	Pole	83.8%	Pass
L52	12.75 - 7.75	Pole + Reinf.	TP42x42x0.6375	Pole	88.8%	Pass
L53	7.75 - 3.67	Pole + Reinf.	TP42x42x0.6375	Pole	93.0%	Pass
L54	3.67 - 3.42	Pole + Reinf.	TP42x42x0.725	Reinf. 2 Tension Rupture	88.8%	Pass
L55	3.42 - 1.5	Pole + Reinf.	TP42x42x0.725	Reinf. 2 Tension Rupture	90.7%	Pass
L56	1.5 - 1.25	Pole + Reinf.	TP42x42x0.675	Reinf. 2 Tension Rupture	98.6%	Pass
L57	1.25 - 0.5	Pole + Reinf.	TP42x42x0.675	Reinf. 2 Tension Rupture	99.4%	Pass
L58	0.5 - 0.25	Pole + Reinf.	TP42x42x0.7	Pole	88.3%	Pass
L59	0.25 - 0	Pole + Reinf.	TP42x42x0.7	Pole	88.5%	Pass
					Summary	
				Pole	96.7%	Pass
				Reinforcement	99.4%	Pass
				Overall	99.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	90.6	Pass
1	Base Plate	0	50.5	Pass
1	Base Foundation (Structure)	0	69.1	Pass
1	Base Foundation (Soil Interaction)	0	25.0	Pass
1	Flange Connection	120	20.8	Pass
1	Flange Connection	80	66.0	Pass
1	Flange Connection	40	69.7	Pass

Structure Rating (max from all components) =	99.4%

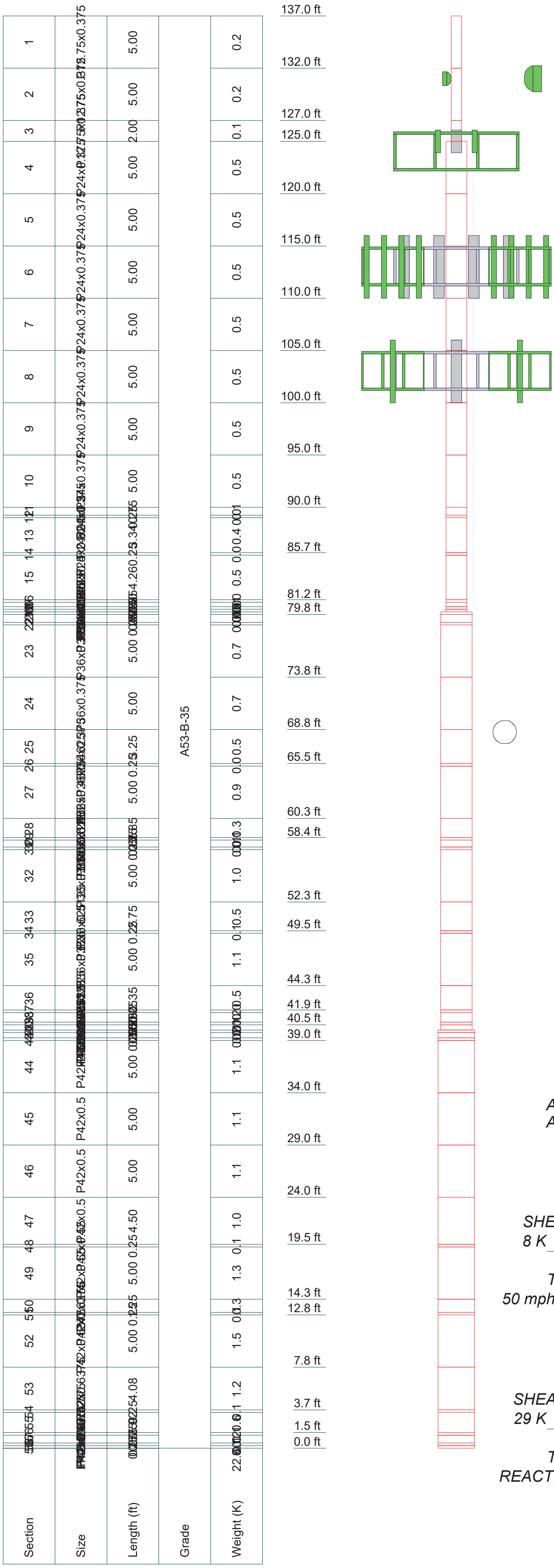
Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

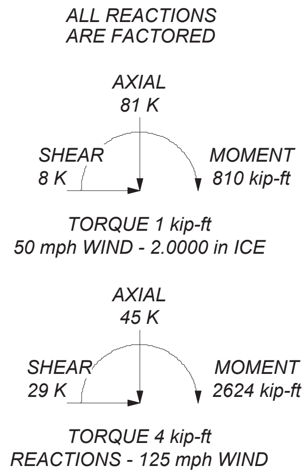


MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 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: 99.4%



Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX:	Job: **BU 876333**		
	Project:		
	Client: Crown Castle	Drawn by: MAtiles	App'd:
	Code: TIA-222-H	Date: 05/21/21	Scale: NTS
	Path: C:\Users\matiles\Desktop\Working from Home\876333\WO 1962707 - SA\Prod\876333 reinf.eri		Dwg No. E-1

The Pathway to Possible

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 Hartford County, Connecticut.
- Tower base elevation above sea level: 189.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 2.0000 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.
- TOWER RATING: 99.4%.
- 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

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	137.00-132.00	5.00	P12.75x0.375	A53-B-35 (35 ksi)	
L2	132.00-127.00	5.00	P12.75x0.375	A53-B-35 (35 ksi)	
L3	127.00-125.00	2.00	P12.75x0.375	A53-B-35 (35 ksi)	
L4	125.00-120.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L5	120.00-115.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L6	115.00-110.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L7	110.00-105.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L8	105.00-100.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L9	100.00-95.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L10	95.00-90.00	5.00	P24x0.375	A53-B-35 (35 ksi)	
L11	90.00-89.25	0.75	P24x0.375	A53-B-35 (35 ksi)	
L12	89.25-89.00	0.25	P24x0.5	A53-B-35 (35 ksi)	
L13	89.00-85.66	3.34	P24x0.5	A53-B-35 (35 ksi)	
L14	85.66-85.41	0.25	P24x0.5	A53-B-35 (35 ksi)	
L15	85.41-81.15	4.26	P24x0.5	A53-B-35 (35 ksi)	
L16	81.15-80.90	0.25	P24x0.8625	A53-B-35 (35 ksi)	
L17	80.90-80.50	0.40	P24x0.8625	A53-B-35 (35 ksi)	
L18	80.50-80.25	0.25	P24x1.225	A53-B-35 (35 ksi)	
L19	80.25-80.00	0.25	P24x1.225	A53-B-35 (35 ksi)	
L20	80.00-79.75	0.25	P36x0.5	A53-B-35 (35 ksi)	
L21	79.75-79.00	0.75	P36x0.5	A53-B-35 (35 ksi)	
L22	79.00-78.75	0.25	P36x0.375	A53-B-35 (35 ksi)	
L23	78.75-73.75	5.00	P36x0.375	A53-B-35 (35 ksi)	
L24	73.75-68.75	5.00	P36x0.375	A53-B-35 (35 ksi)	
L25	68.75-65.50	3.25	P36x0.375	A53-B-35 (35 ksi)	
L26	65.50-65.25	0.25	P36x0.4625	A53-B-35 (35 ksi)	
L27	65.25-60.25	5.00	P36x0.4625	A53-B-35 (35 ksi)	
L28	60.25-58.40	1.85	P36x0.4625	A53-B-35 (35 ksi)	
L29	58.40-58.15	0.25	P36x0.6125	A53-B-35 (35 ksi)	
L30	58.15-57.50	0.65	P36x0.6125	A53-B-35 (35 ksi)	
L31	57.50-57.25	0.25	P36x0.5125	A53-B-35 (35 ksi)	
L32	57.25-52.25	5.00	P36x0.5125	A53-B-35 (35 ksi)	
L33	52.25-49.50	2.75	P36x0.5125	A53-B-35 (35 ksi)	
L34	49.50-49.25	0.25	P36x0.625	A53-B-35 (35 ksi)	
L35	49.25-44.25	5.00	P36x0.625	A53-B-35	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L36	44.25-41.90	2.35	P36x0.625	(35 ksi) A53-B-35 (35 ksi)	
L37	41.90-41.65	0.25	P36x0.5125	A53-B-35 (35 ksi)	
L38	41.65-40.75	0.90	P36x0.5125	A53-B-35 (35 ksi)	
L39	40.75-40.50	0.25	P36x0.7375	A53-B-35 (35 ksi)	
L40	40.50-40.00	0.50	P36x0.675	A53-B-35 (35 ksi)	
L41	40.00-39.75	0.25	P42x0.6875	A53-B-35 (35 ksi)	
L42	39.75-39.25	0.50	P42x0.6875	A53-B-35 (35 ksi)	
L43	39.25-39.00	0.25	P42x0.5	A53-B-35 (35 ksi)	
L44	39.00-34.00	5.00	P42x0.5	A53-B-35 (35 ksi)	
L45	34.00-29.00	5.00	P42x0.5	A53-B-35 (35 ksi)	
L46	29.00-24.00	5.00	P42x0.5	A53-B-35 (35 ksi)	
L47	24.00-19.50	4.50	P42x0.5	A53-B-35 (35 ksi)	
L48	19.50-19.25	0.25	P42x0.55	A53-B-35 (35 ksi)	
L49	19.25-14.25	5.00	P42x0.55	A53-B-35 (35 ksi)	
L50	14.25-13.00	1.25	P42x0.55	A53-B-35 (35 ksi)	
L51	13.00-12.75	0.25	P42x0.6375	A53-B-35 (35 ksi)	
L52	12.75-7.75	5.00	P42x0.6375	A53-B-35 (35 ksi)	
L53	7.75-3.67	4.08	P42x0.6375	A53-B-35 (35 ksi)	
L54	3.67-3.42	0.25	P42x0.725	A53-B-35 (35 ksi)	
L55	3.42-1.50	1.92	P42x0.725	A53-B-35 (35 ksi)	
L56	1.50-1.25	0.25	P42x0.675	A53-B-35 (35 ksi)	
L57	1.25-0.50	0.75	P42x0.675	A53-B-35 (35 ksi)	
L58	0.50-0.25	0.25	P42x0.7	A53-B-35 (35 ksi)	
L59	0.25-0.00	0.25	P42x0.7	A53-B-35 (35 ksi)	

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 137.00-132.00				1	1	1			
L2 132.00-127.00				1	1	1			
L3 127.00-125.00				1	1	1			
L4 125.00-120.00				1	1	1			
L5 120.00-115.00				1	1	1			
L6 115.00-110.00				1	1	1			

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
L7 110.00-105.00				1	1	1			
L8 105.00-100.00				1	1	1			
L9 100.00-95.00				1	1	1			
L10 95.00-90.00				1	1	1			
L11 90.00-89.25				1	1	1			
L12 89.25-89.00				1	1	0.997801			
L13 89.00-85.66				1	1	0.997801			
L14 85.66-85.41				1	1	0.997801			
L15 85.41-81.15				1	1	0.997801			
L16 81.15-80.90				1	1	0.814793			
L17 80.90-80.50				1	1	0.814793			
L18 80.50-80.25				1	1	0.634153			
L19 80.25-80.00				1	1	0.634153			
L20 80.00-79.75				1	1	0.994736			
L21 79.75-79.00				1	1	0.994736			
L22 79.00-78.75				1	1	1			
L23 78.75-73.75				1	1	1			
L24 73.75-68.75				1	1	1			
L25 68.75-65.50				1	1	1			
L26 65.50-65.25				1	1	0.987106			
L27 65.25-60.25				1	1	0.987106			
L28 60.25-58.40				1	1	0.987106			
L29 58.40-58.15				1	1	0.963303			
L30 58.15-57.50				1	1	0.963303			
L31 57.50-57.25				1	1	0.990505			
L32 57.25-52.25				1	1	0.990505			
L33 52.25-49.50				1	1	0.990505			
L34 49.50-49.25				1	1	0.944371			
L35 49.25-44.25				1	1	0.944371			
L36 44.25-41.90				1	1	0.944371			
L37 41.90-41.65				1	1	0.983942			
L38 41.65-40.75				1	1	0.983942			
L39 40.75-40.50				1	1	0.876306			
L40 40.50-				1	1	0.885667			

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
40.00									
L41 40.00-39.75				1	1	1.00375			
L42 39.75-39.25				1	1	1.00375			
L43 39.25-39.00				1	1	1			
L44 39.00-34.00				1	1	1			
L45 34.00-29.00				1	1	1			
L46 29.00-24.00				1	1	1			
L47 24.00-19.50				1	1	1			
L48 19.50-19.25				1	1	1.03585			
L49 19.25-14.25				1	1	1.03585			
L50 14.25-13.00				1	1	1.03585			
L51 13.00-12.75				1	1	1.06306			
L52 12.75-7.75				1	1	1.06306			
L53 7.75-3.67				1	1	1.06306			
L54 3.67-3.42				1	1	1.02649			
L55 3.42-1.50				1	1	1.02649			
L56 1.50-1.25				1	1	0.998491			
L57 1.25-0.50				1	1	0.998491			
L58 0.50-0.25				1	1	0.989563			
L59 0.25-0.00				1	1	0.989563			

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	A	No	Surface Ar (CaAa)	137.00 - 0.00	1	1	-0.250 -0.250	0.3750		0.22
Ladder Rail - L4x4x5/16 **Mods**	A	No	Surface Ar (CaAa)	80.00 - 0.00	1	1	-0.250 -0.250	4.0000		8.20
PL 1x4.625	C	No	Surface Af (CaAa)	14.25 - 0.00	1	1	0.167 0.167	4.6250	11.2500	0.00
PL 1x4.625	B	No	Surface Af (CaAa)	14.25 - 0.00	1	1	0.417 0.417	4.6250	11.2500	0.00
PL 1x4.625 ***	A	No	Surface Af (CaAa)	14.25 - 0.00	1	1	0.417 0.417	4.6250	11.2500	15.74
PL 1x4.875	C	No	Surface Af (CaAa)	59.90 - 40.40	1	1	0.167 0.167	4.8750	11.7500	0.00
PL 1x4.875	B	No	Surface Af (CaAa)	59.90 - 40.40	1	1	0.250 0.250	4.8750	11.7500	0.00
PL 1x4.875 ***	A	No	Surface Af (CaAa)	59.90 - 40.40	1	1	0.167 0.167	4.8750	11.7500	16.59
PL 0.75x3.75	C	No	Surface Af (CaAa)	86.66 - 80.40	1	1	0.167 0.167	3.7500	0.0000	0.00
PL 0.75x3.75	B	No	Surface Af (CaAa)	86.66 - 80.40	1	1	0.083 0.083	3.7500	9.0000	0.00
PL 0.75x3.75	A	No	Surface Af	86.66 -	1	1	0.167	3.7500	9.0000	9.57

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
			(CaAa)	80.40			0.167			
***										
(Area) CCI-65FP-040075 (H)	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	-0.083 -0.083	4.0000	9.5000	0.00
(Area) CCI-65FP-040075 (H)	B	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.167 0.167	4.0000	9.5000	0.00
(Area) CCI-65FP-040075 (H)	A	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.167 0.167	4.0000	9.5000	0.00
***										
(Area) Sabre MS650 (1.25x6.50) (H)	A	No	Surface Af (CaAa)	40.00 - 35.75	1	1	-0.417 -0.417	6.5000	15.5000	0.00
(Area) Sabre MS650 (1.25x6.50) (H)	C	No	Surface Af (CaAa)	40.00 - 35.75	1	1	-0.333 -0.333	6.5000	15.5000	0.00
(Area) Sabre MS650 (1.25x6.50) (H)	B	No	Surface Af (CaAa)	40.00 - 35.75	1	1	-0.333 -0.333	6.5000	15.5000	0.00
***										
(Area) Sabre MS650 (1.25x6.50) (H)	A	No	Surface Af (CaAa)	44.25 - 40.00	1	1	-0.417 -0.417	6.5000	15.5000	0.00
(Area) Sabre MS650 (1.25x6.50) (H)	C	No	Surface Af (CaAa)	44.25 - 40.00	1	1	-0.333 -0.333	6.5000	15.5000	0.00
(Area) Sabre MS650 (1.25x6.50) (H)	B	No	Surface Af (CaAa)	44.25 - 40.00	1	1	-0.333 -0.333	6.5000	15.5000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	A	No	Surface Af (CaAa)	50.50 - 40.50	1	1	-0.417 -0.417	4.0000	9.5000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	C	No	Surface Af (CaAa)	50.50 - 40.50	1	1	-0.333 -0.333	4.0000	9.5000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	B	No	Surface Af (CaAa)	50.50 - 40.50	1	1	-0.333 -0.333	4.0000	9.5000	0.00
(Area) CCI-65FP-040075 (H)	C	No	Surface Af (CaAa)	66.50 - 56.50	1	1	0.333 0.333	4.0000	9.5000	0.00
(Area) CCI-65FP-040075 (H)	B	No	Surface Af (CaAa)	66.50 - 56.50	1	1	0.333 0.333	4.0000	9.5000	0.00
(Area) CCI-65FP-040075 (H)	A	No	Surface Af (CaAa)	66.50 - 56.50	1	1	0.333 0.333	4.0000	9.5000	0.00
***										
(Area) Sabre MS450 (1.00x4.50) (H)	A	No	Surface Af (CaAa)	80.00 - 76.50	1	1	-0.417 -0.417	4.5000	11.0000	0.00
(Area) Sabre MS450 (1.00x4.50) (H)	C	No	Surface Af (CaAa)	80.00 - 76.50	1	1	-0.333 -0.333	4.5000	11.0000	0.00
(Area) Sabre MS450 (1.00x4.50) (H)	B	No	Surface Af (CaAa)	80.00 - 76.50	1	1	-0.333 -0.333	4.5000	11.0000	0.00
***										
(Area) Sabre MS450 (1.00x4.50) (H)	A	No	Surface Af (CaAa)	83.00 - 80.00	1	1	-0.417 -0.417	4.5000	11.0000	0.00
(Area) Sabre MS450 (1.00x4.50) (H)	C	No	Surface Af (CaAa)	83.00 - 80.00	1	1	-0.333 -0.333	4.5000	11.0000	0.00
(Area) Sabre MS450 (1.00x4.50) (H)	B	No	Surface Af (CaAa)	83.00 - 80.00	1	1	-0.333 -0.333	4.5000	11.0000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	A	No	Surface Af (CaAa)	90.25 - 80.25	1	1	-0.417 -0.417	4.0000	9.5000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	C	No	Surface Af (CaAa)	90.25 - 80.25	1	1	-0.333 -0.333	4.0000	9.5000	0.00
(Area) Sabre MS400 (0.75x4.00) (H)	B	No	Surface Af (CaAa)	90.25 - 80.25	1	1	-0.333 -0.333	4.0000	9.5000	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
124									
LDF4-50A(1/2)	C	No	No	Inside Pole	124.00 - 0.00	4	No Ice 1/2" Ice	0.00 0.00	0.15 0.15

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
9207(5/16)	C	No	No	Inside Pole	124.00 - 0.00	10	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
2" Flexible Conduit	C	No	No	Inside Pole	124.00 - 0.00	2	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
							2" Ice	0.00	0.34
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	124.00 - 0.00	3	No Ice	0.00	1.08
							1/2" Ice	0.00	1.08
							1" Ice	0.00	1.08
							2" Ice	0.00	1.08
HB114-21U3M12-XXXF(1-1/4)	C	No	No	Inside Pole	124.00 - 0.00	1	No Ice	0.00	1.22
							1/2" Ice	0.00	1.22
							1" Ice	0.00	1.22
							2" Ice	0.00	1.22
113									
LDF5-50A(7/8)	C	No	No	Inside Pole	113.00 - 0.00	12	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	113.00 - 0.00	2	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-VG86ST-BRD(3/4)	C	No	No	Inside Pole	113.00 - 0.00	6	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
103									
CU12PSM9P6XXX (1-1/2)	A	No	No	Inside Pole	103.00 - 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
50									
LDF4-50A(1/2)	C	No	No	Inside Pole	50.00 - 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
***									
***									
***									
****									

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	137.00-132.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	132.00-127.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	127.00-125.00	A	0.000	0.000	0.075	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.05
L5	120.00-115.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L6	115.00-110.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.08
L7	110.00-105.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L8	105.00-100.00	A	0.000	0.000	0.188	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L9	100.00-95.00	A	0.000	0.000	0.188	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L10	95.00-90.00	A	0.000	0.000	0.354	0.000	0.01
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.10
L11	90.00-89.25	A	0.000	0.000	0.528	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.01
L12	89.25-89.00	A	0.000	0.000	0.176	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L13	89.00-85.66	A	0.000	0.000	2.921	0.000	0.02
		B	0.000	0.000	2.796	0.000	0.00
		C	0.000	0.000	2.800	0.000	0.06
L14	85.66-85.41	A	0.000	0.000	0.318	0.000	0.00
		B	0.000	0.000	0.309	0.000	0.00
		C	0.000	0.000	0.310	0.000	0.00
L15	85.41-81.15	A	0.000	0.000	6.415	0.000	0.05
		B	0.000	0.000	6.255	0.000	0.00
		C	0.000	0.000	6.272	0.000	0.08
L16	81.15-80.90	A	0.000	0.000	0.452	0.000	0.00
		B	0.000	0.000	0.443	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L17	80.90-80.50	A	0.000	0.000	0.723	0.000	0.00
		B	0.000	0.000	0.708	0.000	0.00
		C	0.000	0.000	0.710	0.000	0.01
L18	80.50-80.25	A	0.000	0.000	0.367	0.000	0.00
		B	0.000	0.000	0.357	0.000	0.00
		C	0.000	0.000	0.358	0.000	0.00
L19	80.25-80.00	A	0.000	0.000	0.143	0.000	0.00
		B	0.000	0.000	0.134	0.000	0.00
		C	0.000	0.000	0.134	0.000	0.00
L20	80.00-79.75	A	0.000	0.000	0.247	0.000	0.00
		B	0.000	0.000	0.138	0.000	0.00
		C	0.000	0.000	0.138	0.000	0.00
L21	79.75-79.00	A	0.000	0.000	0.742	0.000	0.01
		B	0.000	0.000	0.414	0.000	0.00
		C	0.000	0.000	0.414	0.000	0.01
L22	79.00-78.75	A	0.000	0.000	0.247	0.000	0.00
		B	0.000	0.000	0.138	0.000	0.00
		C	0.000	0.000	0.138	0.000	0.00
L23	78.75-73.75	A	0.000	0.000	3.428	0.000	0.05
		B	0.000	0.000	1.241	0.000	0.00
		C	0.000	0.000	1.241	0.000	0.10
L24	73.75-68.75	A	0.000	0.000	2.188	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L25	68.75-65.50	A	0.000	0.000	2.089	0.000	0.04
		B	0.000	0.000	0.667	0.000	0.00
		C	0.000	0.000	0.667	0.000	0.06
L26	65.50-65.25	A	0.000	0.000	0.276	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L27	65.25-60.25	A	0.000	0.000	5.521	0.000	0.05
		B	0.000	0.000	3.333	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	3.333	0.000	0.10
L28	60.25-58.40	A	0.000	0.000	3.261	0.000	0.04
		B	0.000	0.000	2.452	0.000	0.00
		C	0.000	0.000	2.452	0.000	0.04
L29	58.40-58.15	A	0.000	0.000	0.479	0.000	0.01
		B	0.000	0.000	0.370	0.000	0.00
		C	0.000	0.000	0.370	0.000	0.00
L30	58.15-57.50	A	0.000	0.000	1.246	0.000	0.02
		B	0.000	0.000	0.961	0.000	0.00
		C	0.000	0.000	0.961	0.000	0.01
L31	57.50-57.25	A	0.000	0.000	0.479	0.000	0.01
		B	0.000	0.000	0.370	0.000	0.00
		C	0.000	0.000	0.370	0.000	0.00
L32	57.25-52.25	A	0.000	0.000	6.750	0.000	0.14
		B	0.000	0.000	4.563	0.000	0.00
		C	0.000	0.000	4.563	0.000	0.10
L33	52.25-49.50	A	0.000	0.000	4.104	0.000	0.08
		B	0.000	0.000	2.901	0.000	0.00
		C	0.000	0.000	2.901	0.000	0.05
L34	49.50-49.25	A	0.000	0.000	0.479	0.000	0.01
		B	0.000	0.000	0.370	0.000	0.00
		C	0.000	0.000	0.370	0.000	0.00
L35	49.25-44.25	A	0.000	0.000	9.583	0.000	0.14
		B	0.000	0.000	7.396	0.000	0.00
		C	0.000	0.000	7.396	0.000	0.10
L36	44.25-41.90	A	0.000	0.000	6.316	0.000	0.06
		B	0.000	0.000	5.288	0.000	0.00
		C	0.000	0.000	5.288	0.000	0.05
L37	41.90-41.65	A	0.000	0.000	0.672	0.000	0.01
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.563	0.000	0.00
L38	41.65-40.75	A	0.000	0.000	2.419	0.000	0.02
		B	0.000	0.000	2.025	0.000	0.00
		C	0.000	0.000	2.025	0.000	0.02
L39	40.75-40.50	A	0.000	0.000	0.672	0.000	0.01
		B	0.000	0.000	0.563	0.000	0.00
		C	0.000	0.000	0.563	0.000	0.00
L40	40.50-40.00	A	0.000	0.000	0.686	0.000	0.01
		B	0.000	0.000	0.467	0.000	0.00
		C	0.000	0.000	0.467	0.000	0.01
L41	40.00-39.75	A	0.000	0.000	0.302	0.000	0.00
		B	0.000	0.000	0.193	0.000	0.00
		C	0.000	0.000	0.193	0.000	0.00
L42	39.75-39.25	A	0.000	0.000	0.604	0.000	0.01
		B	0.000	0.000	0.386	0.000	0.00
		C	0.000	0.000	0.386	0.000	0.01
L43	39.25-39.00	A	0.000	0.000	0.302	0.000	0.00
		B	0.000	0.000	0.193	0.000	0.00
		C	0.000	0.000	0.193	0.000	0.00
L44	39.00-34.00	A	0.000	0.000	4.693	0.000	0.05
		B	0.000	0.000	2.506	0.000	0.00
		C	0.000	0.000	2.506	0.000	0.10
L45	34.00-29.00	A	0.000	0.000	2.188	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L46	29.00-24.00	A	0.000	0.000	2.188	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L47	24.00-19.50	A	0.000	0.000	2.635	0.000	0.05
		B	0.000	0.000	0.667	0.000	0.00
		C	0.000	0.000	0.667	0.000	0.09
L48	19.50-19.25	A	0.000	0.000	0.276	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L49	19.25-14.25	A	0.000	0.000	5.521	0.000	0.05
		B	0.000	0.000	3.333	0.000	0.00
		C	0.000	0.000	3.333	0.000	0.10
L50	14.25-13.00	A	0.000	0.000	2.344	0.000	0.03
		B	0.000	0.000	1.797	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C	0.000	0.000	1.797	0.000	0.02
L51	13.00-12.75	A	0.000	0.000	0.469	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.00
		C	0.000	0.000	0.359	0.000	0.00
L52	12.75-7.75	A	0.000	0.000	9.375	0.000	0.13
		B	0.000	0.000	7.188	0.000	0.00
		C	0.000	0.000	7.188	0.000	0.10
L53	7.75-3.67	A	0.000	0.000	7.650	0.000	0.11
		B	0.000	0.000	5.865	0.000	0.00
		C	0.000	0.000	5.865	0.000	0.08
L54	3.67-3.42	A	0.000	0.000	0.469	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.00
		C	0.000	0.000	0.359	0.000	0.00
L55	3.42-1.50	A	0.000	0.000	3.600	0.000	0.05
		B	0.000	0.000	2.760	0.000	0.00
		C	0.000	0.000	2.760	0.000	0.04
L56	1.50-1.25	A	0.000	0.000	0.469	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.00
		C	0.000	0.000	0.359	0.000	0.00
L57	1.25-0.50	A	0.000	0.000	1.406	0.000	0.02
		B	0.000	0.000	1.078	0.000	0.00
		C	0.000	0.000	1.078	0.000	0.01
L58	0.50-0.25	A	0.000	0.000	0.469	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.00
		C	0.000	0.000	0.359	0.000	0.00
L59	0.25-0.00	A	0.000	0.000	0.469	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.00
		C	0.000	0.000	0.359	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	137.00-132.00	A	1.956	0.000	0.000	2.144	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	132.00-127.00	A	1.949	0.000	0.000	2.137	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	127.00-125.00	A	1.944	0.000	0.000	0.852	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	1.938	0.000	0.000	2.126	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L5	120.00-115.00	A	1.930	0.000	0.000	2.118	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L6	115.00-110.00	A	1.922	0.000	0.000	2.109	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.08
L7	110.00-105.00	A	1.913	0.000	0.000	2.101	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L8	105.00-100.00	A	1.904	0.000	0.000	2.092	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L9	100.00-95.00	A	1.895	0.000	0.000	2.082	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L10	95.00-90.00	A	1.885	0.000	0.000	2.299	0.000	0.04
		B		0.000	0.000	0.227	0.000	0.00
		C		0.000	0.000	0.227	0.000	0.10
L11	90.00-89.25	A	1.879	0.000	0.000	0.991	0.000	0.01
		B		0.000	0.000	0.681	0.000	0.01

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
		C		0.000	0.000	0.681	0.000	0.02
L12	89.25-89.00	A	1.878	0.000	0.000	0.330	0.000	0.00
		B		0.000	0.000	0.227	0.000	0.00
		C		0.000	0.000	0.227	0.000	0.01
L13	89.00-85.66	A	1.874	0.000	0.000	5.173	0.000	0.09
		B		0.000	0.000	3.796	0.000	0.05
		C		0.000	0.000	3.798	0.000	0.12
L14	85.66-85.41	A	1.870	0.000	0.000	0.521	0.000	0.01
		B		0.000	0.000	0.418	0.000	0.01
		C		0.000	0.000	0.419	0.000	0.01
L15	85.41-81.15	A	1.865	0.000	0.000	10.223	0.000	0.20
		B		0.000	0.000	8.474	0.000	0.13
		C		0.000	0.000	8.484	0.000	0.20
L16	81.15-80.90	A	1.860	0.000	0.000	0.703	0.000	0.01
		B		0.000	0.000	0.600	0.000	0.01
		C		0.000	0.000	0.601	0.000	0.01
L17	80.90-80.50	A	1.859	0.000	0.000	1.124	0.000	0.02
		B		0.000	0.000	0.961	0.000	0.01
		C		0.000	0.000	0.962	0.000	0.02
L18	80.50-80.25	A	1.858	0.000	0.000	0.588	0.000	0.01
		B		0.000	0.000	0.486	0.000	0.01
		C		0.000	0.000	0.486	0.000	0.01
L19	80.25-80.00	A	1.858	0.000	0.000	0.285	0.000	0.01
		B		0.000	0.000	0.183	0.000	0.00
		C		0.000	0.000	0.183	0.000	0.01
L20	80.00-79.75	A	1.857	0.000	0.000	0.483	0.000	0.01
		B		0.000	0.000	0.188	0.000	0.00
		C		0.000	0.000	0.188	0.000	0.01
L21	79.75-79.00	A	1.856	0.000	0.000	1.447	0.000	0.03
		B		0.000	0.000	0.563	0.000	0.01
		C		0.000	0.000	0.563	0.000	0.02
L22	79.00-78.75	A	1.855	0.000	0.000	0.482	0.000	0.01
		B		0.000	0.000	0.187	0.000	0.00
		C		0.000	0.000	0.187	0.000	0.01
L23	78.75-73.75	A	1.849	0.000	0.000	7.570	0.000	0.17
		B		0.000	0.000	1.686	0.000	0.03
		C		0.000	0.000	1.686	0.000	0.13
L24	73.75-68.75	A	1.836	0.000	0.000	5.860	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L25	68.75-65.50	A	1.825	0.000	0.000	4.697	0.000	0.10
		B		0.000	0.000	0.902	0.000	0.01
		C		0.000	0.000	0.902	0.000	0.07
L26	65.50-65.25	A	1.820	0.000	0.000	0.517	0.000	0.01
		B		0.000	0.000	0.225	0.000	0.00
		C		0.000	0.000	0.225	0.000	0.01
L27	65.25-60.25	A	1.813	0.000	0.000	10.319	0.000	0.20
		B		0.000	0.000	4.506	0.000	0.06
		C		0.000	0.000	4.506	0.000	0.15
L28	60.25-58.40	A	1.803	0.000	0.000	5.568	0.000	0.12
		B		0.000	0.000	3.425	0.000	0.04
		C		0.000	0.000	3.425	0.000	0.08
L29	58.40-58.15	A	1.799	0.000	0.000	0.807	0.000	0.02
		B		0.000	0.000	0.518	0.000	0.01
		C		0.000	0.000	0.518	0.000	0.01
L30	58.15-57.50	A	1.798	0.000	0.000	2.099	0.000	0.05
		B		0.000	0.000	1.347	0.000	0.02
		C		0.000	0.000	1.347	0.000	0.03
L31	57.50-57.25	A	1.797	0.000	0.000	0.807	0.000	0.02
		B		0.000	0.000	0.518	0.000	0.01
		C		0.000	0.000	0.518	0.000	0.01
L32	57.25-52.25	A	1.788	0.000	0.000	12.289	0.000	0.30
		B		0.000	0.000	6.525	0.000	0.07
		C		0.000	0.000	6.525	0.000	0.17
L33	52.25-49.50	A	1.775	0.000	0.000	7.264	0.000	0.17
		B		0.000	0.000	4.108	0.000	0.05
		C		0.000	0.000	4.108	0.000	0.10
L34	49.50-49.25	A	1.770	0.000	0.000	0.802	0.000	0.02
		B		0.000	0.000	0.516	0.000	0.01

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
		C		0.000	0.000	0.516	0.000	0.01
L35	49.25-44.25	A	1.760	0.000	0.000	16.010	0.000	0.34
		B		0.000	0.000	10.302	0.000	0.12
		C		0.000	0.000	10.302	0.000	0.22
L36	44.25-41.90	A	1.746	0.000	0.000	9.747	0.000	0.19
		B		0.000	0.000	7.078	0.000	0.09
		C		0.000	0.000	7.078	0.000	0.14
L37	41.90-41.65	A	1.741	0.000	0.000	1.036	0.000	0.02
		B		0.000	0.000	0.752	0.000	0.01
		C		0.000	0.000	0.752	0.000	0.01
L38	41.65-40.75	A	1.738	0.000	0.000	3.727	0.000	0.07
		B		0.000	0.000	2.708	0.000	0.03
		C		0.000	0.000	2.708	0.000	0.05
L39	40.75-40.50	A	1.736	0.000	0.000	1.035	0.000	0.02
		B		0.000	0.000	0.752	0.000	0.01
		C		0.000	0.000	0.752	0.000	0.01
L40	40.50-40.00	A	1.734	0.000	0.000	1.159	0.000	0.02
		B		0.000	0.000	0.593	0.000	0.01
		C		0.000	0.000	0.593	0.000	0.02
L41	40.00-39.75	A	1.732	0.000	0.000	0.521	0.000	0.01
		B		0.000	0.000	0.239	0.000	0.00
		C		0.000	0.000	0.239	0.000	0.01
L42	39.75-39.25	A	1.731	0.000	0.000	1.042	0.000	0.02
		B		0.000	0.000	0.477	0.000	0.01
		C		0.000	0.000	0.477	0.000	0.02
L43	39.25-39.00	A	1.729	0.000	0.000	0.521	0.000	0.01
		B		0.000	0.000	0.238	0.000	0.00
		C		0.000	0.000	0.238	0.000	0.01
L44	39.00-34.00	A	1.717	0.000	0.000	8.718	0.000	0.18
		B		0.000	0.000	3.096	0.000	0.05
		C		0.000	0.000	3.096	0.000	0.15
L45	34.00-29.00	A	1.692	0.000	0.000	5.572	0.000	0.13
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L46	29.00-24.00	A	1.663	0.000	0.000	5.514	0.000	0.13
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L47	24.00-19.50	A	1.631	0.000	0.000	5.897	0.000	0.13
		B		0.000	0.000	0.993	0.000	0.01
		C		0.000	0.000	0.993	0.000	0.10
L48	19.50-19.25	A	1.612	0.000	0.000	0.518	0.000	0.01
		B		0.000	0.000	0.247	0.000	0.00
		C		0.000	0.000	0.247	0.000	0.01
L49	19.25-14.25	A	1.589	0.000	0.000	10.286	0.000	0.18
		B		0.000	0.000	4.922	0.000	0.05
		C		0.000	0.000	4.922	0.000	0.15
L50	14.25-13.00	A	1.556	0.000	0.000	3.880	0.000	0.08
		B		0.000	0.000	2.555	0.000	0.02
		C		0.000	0.000	2.555	0.000	0.05
L51	13.00-12.75	A	1.547	0.000	0.000	0.774	0.000	0.02
		B		0.000	0.000	0.510	0.000	0.00
		C		0.000	0.000	0.510	0.000	0.01
L52	12.75-7.75	A	1.512	0.000	0.000	15.353	0.000	0.30
		B		0.000	0.000	10.140	0.000	0.09
		C		0.000	0.000	10.140	0.000	0.19
L53	7.75-3.67	A	1.426	0.000	0.000	12.261	0.000	0.23
		B		0.000	0.000	8.148	0.000	0.07
		C		0.000	0.000	8.148	0.000	0.15
L54	3.67-3.42	A	1.360	0.000	0.000	0.739	0.000	0.01
		B		0.000	0.000	0.493	0.000	0.00
		C		0.000	0.000	0.493	0.000	0.01
L55	3.42-1.50	A	1.311	0.000	0.000	5.601	0.000	0.10
		B		0.000	0.000	3.754	0.000	0.03
		C		0.000	0.000	3.754	0.000	0.07
L56	1.50-1.25	A	1.237	0.000	0.000	0.715	0.000	0.01
		B		0.000	0.000	0.482	0.000	0.00
		C		0.000	0.000	0.482	0.000	0.01
L57	1.25-0.50	A	1.182	0.000	0.000	2.114	0.000	0.04
		B		0.000	0.000	1.431	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C		0.000	0.000	1.431	0.000	0.02
L58	0.50-0.25	A	1.086	0.000	0.000	0.686	0.000	0.01
		B		0.000	0.000	0.468	0.000	0.00
		C		0.000	0.000	0.468	0.000	0.01
L59	0.25-0.00	A	0.973	0.000	0.000	0.663	0.000	0.01
		B		0.000	0.000	0.457	0.000	0.00
		C		0.000	0.000	0.457	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	137.00-132.00	-0.3646	0.0000	-1.3431	0.0000
L2	132.00-127.00	-0.3646	0.0000	-1.3404	0.0000
L3	127.00-125.00	-0.3646	0.0000	-1.3384	0.0000
L4	125.00-120.00	-0.3693	0.0000	-1.6128	0.0000
L5	120.00-115.00	-0.3693	0.0000	-1.6083	0.0000
L6	115.00-110.00	-0.3693	0.0000	-1.6036	0.0000
L7	110.00-105.00	-0.3693	0.0000	-1.5987	0.0000
L8	105.00-100.00	-0.3693	0.0000	-1.5936	0.0000
L9	100.00-95.00	-0.3693	0.0000	-1.5882	0.0000
L10	95.00-90.00	-0.2767	0.0905	-1.4822	0.0496
L11	90.00-89.25	0.2874	0.5423	-0.4489	0.5547
L12	89.25-89.00	0.2874	0.5423	-0.4485	0.5547
L13	89.00-85.66	0.2391	0.3316	-0.4147	0.3394
L14	85.66-85.41	0.1588	-0.0186	-0.3595	-0.0182
L15	85.41-81.15	0.2349	0.1327	-0.2218	0.1373
L16	81.15-80.90	0.3119	0.2858	-0.0831	0.2941
L17	80.90-80.50	0.3119	0.2858	-0.0830	0.2941
L18	80.50-80.25	0.3850	0.5479	-0.0728	0.5612
L19	80.25-80.00	0.2612	0.5932	-0.5329	0.6108
L20	80.00-79.75	-1.6280	0.7478	-2.6925	0.5509
L21	79.75-79.00	-1.6280	0.7478	-2.6918	0.5508
L22	79.00-78.75	-1.6280	0.7478	-2.6910	0.5508
L23	78.75-73.75	-2.4890	0.4353	-3.4882	0.2976
L24	73.75-68.75	-3.6886	0.0000	-4.4180	0.0000
L25	68.75-65.50	-2.9030	0.0000	-3.7920	0.0000
L26	65.50-65.25	-1.9625	0.0000	-2.8824	0.0000
L27	65.25-60.25	-1.9625	0.0000	-2.8776	0.0000
L28	60.25-58.40	-1.1381	0.5126	-2.1590	0.5563
L29	58.40-58.15	-1.0866	0.5960	-2.0406	0.6442
L30	58.15-57.50	-1.0866	0.5960	-2.0401	0.6441
L31	57.50-57.25	-1.0866	0.5960	-2.0395	0.6441
L32	57.25-52.25	-1.7709	0.9713	-2.5739	0.8140
L33	52.25-49.50	-1.4736	1.1315	-2.2802	0.9492
L34	49.50-49.25	-0.7805	1.0153	-1.7172	1.0680
L35	49.25-44.25	-0.7805	1.0153	-1.7132	1.0678
L36	44.25-41.90	-0.3217	1.1818	-1.0697	1.2176
L37	41.90-41.65	-0.3217	1.1818	-1.0679	1.2175
L38	41.65-40.75	-0.3217	1.1818	-1.0670	1.2175
L39	40.75-40.50	-0.3217	1.1818	-1.0662	1.2175
L40	40.50-40.00	-0.8232	0.7967	-2.0902	0.8043
L41	40.00-39.75	-0.9281	0.7018	-2.4454	0.7072
L42	39.75-39.25	-0.9281	0.7018	-2.4442	0.7072
L43	39.25-39.00	-0.9281	0.7018	-2.4430	0.7072
L44	39.00-34.00	-1.8946	0.7823	-2.9689	0.5224
L45	34.00-29.00	-3.8984	0.0000	-4.4135	0.0000
L46	29.00-24.00	-3.8984	0.0000	-4.3817	0.0000
L47	24.00-19.50	-2.2754	0.1359	-3.1480	0.0974
L48	19.50-19.25	0.8721	0.3995	-0.3996	0.3199
L49	19.25-14.25	0.8721	0.3995	-0.3883	0.3194
L50	14.25-13.00	1.6206	1.6891	0.9756	1.8026
L51	13.00-12.75	1.6206	1.6891	0.9786	1.8024
L52	12.75-7.75	1.6206	1.6891	0.9908	1.8015

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L53	7.75-3.67	1.6206	1.6891	1.0211	1.7992
L54	3.67-3.42	1.6206	1.6891	1.0450	1.7972
L55	3.42-1.50	1.6206	1.6891	1.0627	1.7956
L56	1.50-1.25	1.6206	1.6891	1.0900	1.7931
L57	1.25-0.50	1.6206	1.6891	1.1105	1.7910
L58	0.50-0.25	1.6206	1.6891	1.1467	1.7867
L59	0.25-0.00	1.6206	1.6891	1.1880	1.7782

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	132.00 - 137.00	1.0000	1.0000
L2	1	Safety Line 3/8	127.00 - 132.00	1.0000	1.0000
L3	1	Safety Line 3/8	125.00 - 127.00	1.0000	1.0000
L4	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L5	1	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L6	1	Safety Line 3/8	110.00 - 115.00	1.0000	1.0000
L7	1	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L8	1	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L9	1	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L10	1	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L10	69	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	1.0000	1.0000
L10	70	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	1.0000	1.0000
L10	72	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	1.0000	1.0000
L11	1	Safety Line 3/8	89.25 - 90.00	1.0000	1.0000
L11	69	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	1.0000	1.0000
L11	70	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	1.0000	1.0000
L11	72	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	1.0000	1.0000
L12	1	Safety Line 3/8	89.00 - 89.25	1.0000	1.0000
L12	69	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	1.0000	1.0000
L12	70	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	1.0000	1.0000
L12	72	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	1.0000	1.0000
L13	1	Safety Line 3/8	85.66 - 89.00	1.0000	1.0000
L13	30	PL 0.75x3.75	85.66 - 86.66	1.0000	1.0000
L13	31	PL 0.75x3.75	85.66 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			86.66		
L13	32	PL 0.75x3.75	85.66 - 86.66	1.0000	1.0000
L13	69	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	1.0000	1.0000
L13	70	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	1.0000	1.0000
L13	72	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	1.0000	1.0000
L14	1	Safety Line 3/8	85.41 - 85.66	1.0000	1.0000
L14	30	PL 0.75x3.75	85.41 - 85.66	1.0000	1.0000
L14	31	PL 0.75x3.75	85.41 - 85.66	1.0000	1.0000
L14	32	PL 0.75x3.75	85.41 - 85.66	1.0000	1.0000
L14	69	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	1.0000	1.0000
L14	70	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	1.0000	1.0000
L14	72	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	1.0000	1.0000
L15	1	Safety Line 3/8	81.15 - 85.41	1.0000	1.0000
L15	30	PL 0.75x3.75	81.15 - 85.41	1.0000	1.0000
L15	31	PL 0.75x3.75	81.15 - 85.41	1.0000	1.0000
L15	32	PL 0.75x3.75	81.15 - 85.41	1.0000	1.0000
L15	64	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	1.0000	1.0000
L15	65	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	1.0000	1.0000
L15	66	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	1.0000	1.0000
L15	69	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	1.0000	1.0000
L15	70	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	1.0000	1.0000
L15	72	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	1.0000	1.0000
L16	1	Safety Line 3/8	80.90 - 81.15	1.0000	1.0000
L16	30	PL 0.75x3.75	80.90 - 81.15	1.0000	1.0000
L16	31	PL 0.75x3.75	80.90 - 81.15	1.0000	1.0000
L16	32	PL 0.75x3.75	80.90 - 81.15	1.0000	1.0000
L16	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	1.0000	1.0000
L16	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	1.0000	1.0000
L16	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	1.0000	1.0000
L16	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	1.0000	1.0000
L16	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	1.0000	1.0000
L16	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	1.0000	1.0000
L17	1	Safety Line 3/8	80.50 - 80.90	1.0000	1.0000
L17	30	PL 0.75x3.75	80.50 - 80.90	1.0000	1.0000
L17	31	PL 0.75x3.75	80.50 - 80.90	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	32	PL 0.75x3.75	80.50 - 80.90	1.0000	1.0000
L17	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	1.0000	1.0000
L17	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	1.0000	1.0000
L17	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	1.0000	1.0000
L17	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	1.0000	1.0000
L17	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	1.0000	1.0000
L17	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	1.0000	1.0000
L18	1	Safety Line 3/8	80.25 - 80.50	1.0000	1.0000
L18	30	PL 0.75x3.75	80.40 - 80.50	1.0000	1.0000
L18	31	PL 0.75x3.75	80.40 - 80.50	1.0000	1.0000
L18	32	PL 0.75x3.75	80.40 - 80.50	1.0000	1.0000
L18	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	1.0000	1.0000
L18	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	1.0000	1.0000
L18	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	1.0000	1.0000
L18	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	1.0000	1.0000
L18	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	1.0000	1.0000
L18	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	1.0000	1.0000
L19	1	Safety Line 3/8	80.00 - 80.25	1.0000	1.0000
L19	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	1.0000	1.0000
L19	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	1.0000	1.0000
L19	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	1.0000	1.0000
L20	1	Safety Line 3/8	79.75 - 80.00	1.0000	1.0000
L20	3	Ladder Rail - L4x4x5/16	79.75 - 80.00	1.0000	1.0000
L20	60	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	1.0000	1.0000
L20	61	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	1.0000	1.0000
L20	62	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	1.0000	1.0000
L21	1	Safety Line 3/8	79.00 - 79.75	1.0000	1.0000
L21	3	Ladder Rail - L4x4x5/16	79.00 - 79.75	1.0000	1.0000
L21	60	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	1.0000	1.0000
L21	61	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	1.0000	1.0000
L21	62	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	1.0000	1.0000
L22	1	Safety Line 3/8	78.75 - 79.00	1.0000	1.0000
L22	3	Ladder Rail - L4x4x5/16	78.75 - 79.00	1.0000	1.0000
L22	60	(Area) Sabre MS450 (1.00x4.50) (H)	78.75 - 79.00	1.0000	1.0000
L22	61	(Area) Sabre MS450	78.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		(1.00x4.50) (H)	79.00		
L22	62	(Area) Sabre MS450 (1.00x4.50) (H)	78.75 - 79.00	1.0000	1.0000
L23	1	Safety Line 3/8	73.75 - 78.75	1.0000	1.0000
L23	3	Ladder Rail - L4x4x5/16	73.75 - 78.75	1.0000	1.0000
L23	60	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	1.0000	1.0000
L23	61	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	1.0000	1.0000
L23	62	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	1.0000	1.0000
L24	1	Safety Line 3/8	68.75 - 73.75	1.0000	1.0000
L24	3	Ladder Rail - L4x4x5/16	68.75 - 73.75	1.0000	1.0000
L25	1	Safety Line 3/8	65.50 - 68.75	1.0000	1.0000
L25	3	Ladder Rail - L4x4x5/16	65.50 - 68.75	1.0000	1.0000
L25	55	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	1.0000	1.0000
L25	57	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	1.0000	1.0000
L25	58	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	1.0000	1.0000
L26	1	Safety Line 3/8	65.25 - 65.50	1.0000	1.0000
L26	3	Ladder Rail - L4x4x5/16	65.25 - 65.50	1.0000	1.0000
L26	55	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	1.0000	1.0000
L26	57	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	1.0000	1.0000
L26	58	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	1.0000	1.0000
L27	1	Safety Line 3/8	60.25 - 65.25	1.0000	1.0000
L27	3	Ladder Rail - L4x4x5/16	60.25 - 65.25	1.0000	1.0000
L27	55	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	1.0000	1.0000
L27	57	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	1.0000	1.0000
L27	58	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	1.0000	1.0000
L28	1	Safety Line 3/8	58.40 - 60.25	1.0000	1.0000
L28	3	Ladder Rail - L4x4x5/16	58.40 - 60.25	1.0000	1.0000
L28	26	PL 1x4.875	58.40 - 59.90	1.0000	1.0000
L28	27	PL 1x4.875	58.40 - 59.90	1.0000	1.0000
L28	28	PL 1x4.875	58.40 - 59.90	1.0000	1.0000
L28	55	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	1.0000	1.0000
L28	57	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	1.0000	1.0000
L28	58	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	1.0000	1.0000
L29	1	Safety Line 3/8	58.15 - 58.40	1.0000	1.0000
L29	3	Ladder Rail - L4x4x5/16	58.15 - 58.40	1.0000	1.0000
L29	26	PL 1x4.875	58.15 - 58.40	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	27	PL 1x4.875	58.15 - 58.40	1.0000	1.0000
L29	28	PL 1x4.875	58.15 - 58.40	1.0000	1.0000
L29	55	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	1.0000	1.0000
L29	57	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	1.0000	1.0000
L29	58	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	1.0000	1.0000
L30	1	Safety Line 3/8	57.50 - 58.15	1.0000	1.0000
L30	3	Ladder Rail - L4x4x5/16	57.50 - 58.15	1.0000	1.0000
L30	26	PL 1x4.875	57.50 - 58.15	1.0000	1.0000
L30	27	PL 1x4.875	57.50 - 58.15	1.0000	1.0000
L30	28	PL 1x4.875	57.50 - 58.15	1.0000	1.0000
L30	55	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	1.0000	1.0000
L30	57	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	1.0000	1.0000
L30	58	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	1.0000	1.0000
L31	1	Safety Line 3/8	57.25 - 57.50	1.0000	1.0000
L31	3	Ladder Rail - L4x4x5/16	57.25 - 57.50	1.0000	1.0000
L31	26	PL 1x4.875	57.25 - 57.50	1.0000	1.0000
L31	27	PL 1x4.875	57.25 - 57.50	1.0000	1.0000
L31	28	PL 1x4.875	57.25 - 57.50	1.0000	1.0000
L31	55	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	1.0000	1.0000
L31	57	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	1.0000	1.0000
L31	58	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	1.0000	1.0000
L32	1	Safety Line 3/8	52.25 - 57.25	1.0000	1.0000
L32	3	Ladder Rail - L4x4x5/16	52.25 - 57.25	1.0000	1.0000
L32	26	PL 1x4.875	52.25 - 57.25	1.0000	1.0000
L32	27	PL 1x4.875	52.25 - 57.25	1.0000	1.0000
L32	28	PL 1x4.875	52.25 - 57.25	1.0000	1.0000
L32	55	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	1.0000	1.0000
L32	57	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	1.0000	1.0000
L32	58	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	1.0000	1.0000
L33	1	Safety Line 3/8	49.50 - 52.25	1.0000	1.0000
L33	3	Ladder Rail - L4x4x5/16	49.50 - 52.25	1.0000	1.0000
L33	26	PL 1x4.875	49.50 - 52.25	1.0000	1.0000
L33	27	PL 1x4.875	49.50 - 52.25	1.0000	1.0000
L33	28	PL 1x4.875	49.50 - 52.25	1.0000	1.0000
L33	49	(Area) Sabre MS400	49.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		(0.75x4.00) (H)	50.50		
L33	50	(Area) Sabre MS400 (0.75x4.00) (H)	49.50 - 50.50	1.0000	1.0000
L33	52	(Area) Sabre MS400 (0.75x4.00) (H)	49.50 - 50.50	1.0000	1.0000
L34	1	Safety Line 3/8	49.25 - 49.50	1.0000	1.0000
L34	3	Ladder Rail - L4x4x5/16	49.25 - 49.50	1.0000	1.0000
L34	26	PL 1x4.875	49.25 - 49.50	1.0000	1.0000
L34	27	PL 1x4.875	49.25 - 49.50	1.0000	1.0000
L34	28	PL 1x4.875	49.25 - 49.50	1.0000	1.0000
L34	49	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	1.0000	1.0000
L34	50	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	1.0000	1.0000
L34	52	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	1.0000	1.0000
L35	1	Safety Line 3/8	44.25 - 49.25	1.0000	1.0000
L35	3	Ladder Rail - L4x4x5/16	44.25 - 49.25	1.0000	1.0000
L35	26	PL 1x4.875	44.25 - 49.25	1.0000	1.0000
L35	27	PL 1x4.875	44.25 - 49.25	1.0000	1.0000
L35	28	PL 1x4.875	44.25 - 49.25	1.0000	1.0000
L35	49	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	1.0000	1.0000
L35	50	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	1.0000	1.0000
L35	52	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	1.0000	1.0000
L36	1	Safety Line 3/8	41.90 - 44.25	1.0000	1.0000
L36	3	Ladder Rail - L4x4x5/16	41.90 - 44.25	1.0000	1.0000
L36	26	PL 1x4.875	41.90 - 44.25	1.0000	1.0000
L36	27	PL 1x4.875	41.90 - 44.25	1.0000	1.0000
L36	28	PL 1x4.875	41.90 - 44.25	1.0000	1.0000
L36	44	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	1.0000	1.0000
L36	45	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	1.0000	1.0000
L36	46	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	1.0000	1.0000
L36	49	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	1.0000	1.0000
L36	50	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	1.0000	1.0000
L36	52	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	1.0000	1.0000
L37	1	Safety Line 3/8	41.65 - 41.90	1.0000	1.0000
L37	3	Ladder Rail - L4x4x5/16	41.65 - 41.90	1.0000	1.0000
L37	26	PL 1x4.875	41.65 - 41.90	1.0000	1.0000
L37	27	PL 1x4.875	41.65 - 41.90	1.0000	1.0000
L37	28	PL 1x4.875	41.65 - 41.90	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L37	44	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	1.0000	1.0000
L37	45	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	1.0000	1.0000
L37	46	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	1.0000	1.0000
L37	49	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	1.0000	1.0000
L37	50	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	1.0000	1.0000
L37	52	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	1.0000	1.0000
L38	1	Safety Line 3/8	40.75 - 41.65	1.0000	1.0000
L38	3	Ladder Rail - L4x4x5/16	40.75 - 41.65	1.0000	1.0000
L38	26	PL 1x4.875	40.75 - 41.65	1.0000	1.0000
L38	27	PL 1x4.875	40.75 - 41.65	1.0000	1.0000
L38	28	PL 1x4.875	40.75 - 41.65	1.0000	1.0000
L38	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	1.0000	1.0000
L38	45	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	1.0000	1.0000
L38	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	1.0000	1.0000
L38	49	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	1.0000	1.0000
L38	50	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	1.0000	1.0000
L38	52	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	1.0000	1.0000
L39	1	Safety Line 3/8	40.50 - 40.75	1.0000	1.0000
L39	3	Ladder Rail - L4x4x5/16	40.50 - 40.75	1.0000	1.0000
L39	26	PL 1x4.875	40.50 - 40.75	1.0000	1.0000
L39	27	PL 1x4.875	40.50 - 40.75	1.0000	1.0000
L39	28	PL 1x4.875	40.50 - 40.75	1.0000	1.0000
L39	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	1.0000	1.0000
L39	45	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	1.0000	1.0000
L39	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	1.0000	1.0000
L39	49	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	1.0000	1.0000
L39	50	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	1.0000	1.0000
L39	52	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	1.0000	1.0000
L40	1	Safety Line 3/8	40.00 - 40.50	1.0000	1.0000
L40	3	Ladder Rail - L4x4x5/16	40.00 - 40.50	1.0000	1.0000
L40	26	PL 1x4.875	40.40 - 40.50	1.0000	1.0000
L40	27	PL 1x4.875	40.40 - 40.50	1.0000	1.0000
L40	28	PL 1x4.875	40.40 - 40.50	1.0000	1.0000
L40	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.00 - 40.50	1.0000	1.0000
L40	45	(Area) Sabre MS650	40.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		(1.25x6.50) (H)	40.50		
L40	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.00 - 40.50	1.0000	1.0000
L41	1	Safety Line 3/8	39.75 - 40.00	1.0000	1.0000
L41	3	Ladder Rail - L4x4x5/16	39.75 - 40.00	1.0000	1.0000
L41	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	1.0000	1.0000
L41	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	1.0000	1.0000
L41	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	1.0000	1.0000
L42	1	Safety Line 3/8	39.25 - 39.75	1.0000	1.0000
L42	3	Ladder Rail - L4x4x5/16	39.25 - 39.75	1.0000	1.0000
L42	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	1.0000	1.0000
L42	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	1.0000	1.0000
L42	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	1.0000	1.0000
L43	1	Safety Line 3/8	39.00 - 39.25	1.0000	1.0000
L43	3	Ladder Rail - L4x4x5/16	39.00 - 39.25	1.0000	1.0000
L43	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	1.0000	1.0000
L43	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	1.0000	1.0000
L43	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	1.0000	1.0000
L44	1	Safety Line 3/8	34.00 - 39.00	1.0000	1.0000
L44	3	Ladder Rail - L4x4x5/16	34.00 - 39.00	1.0000	1.0000
L44	40	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	1.0000	1.0000
L44	41	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	1.0000	1.0000
L44	42	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	1.0000	1.0000
L45	1	Safety Line 3/8	29.00 - 34.00	1.0000	1.0000
L45	3	Ladder Rail - L4x4x5/16	29.00 - 34.00	1.0000	1.0000
L46	1	Safety Line 3/8	24.00 - 29.00	1.0000	1.0000
L46	3	Ladder Rail - L4x4x5/16	24.00 - 29.00	1.0000	1.0000
L47	1	Safety Line 3/8	19.50 - 24.00	1.0000	1.0000
L47	3	Ladder Rail - L4x4x5/16	19.50 - 24.00	1.0000	1.0000
L47	34	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	1.0000	1.0000
L47	36	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	1.0000	1.0000
L47	38	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	1.0000	1.0000
L48	1	Safety Line 3/8	19.25 - 19.50	1.0000	1.0000
L48	3	Ladder Rail - L4x4x5/16	19.25 - 19.50	1.0000	1.0000
L48	34	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	1.0000	1.0000
L48	36	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	38	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	1.0000	1.0000
L49	1	Safety Line 3/8	14.25 - 19.25	1.0000	1.0000
L49	3	Ladder Rail - L4x4x5/16	14.25 - 19.25	1.0000	1.0000
L49	34	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	1.0000	1.0000
L49	36	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	1.0000	1.0000
L49	38	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	1.0000	1.0000
L50	1	Safety Line 3/8	13.00 - 14.25	1.0000	1.0000
L50	3	Ladder Rail - L4x4x5/16	13.00 - 14.25	1.0000	1.0000
L50	22	PL 1x4.625	13.00 - 14.25	1.0000	1.0000
L50	23	PL 1x4.625	13.00 - 14.25	1.0000	1.0000
L50	24	PL 1x4.625	13.00 - 14.25	1.0000	1.0000
L50	34	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	1.0000	1.0000
L50	36	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	1.0000	1.0000
L50	38	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	1.0000	1.0000
L51	1	Safety Line 3/8	12.75 - 13.00	1.0000	1.0000
L51	3	Ladder Rail - L4x4x5/16	12.75 - 13.00	1.0000	1.0000
L51	22	PL 1x4.625	12.75 - 13.00	1.0000	1.0000
L51	23	PL 1x4.625	12.75 - 13.00	1.0000	1.0000
L51	24	PL 1x4.625	12.75 - 13.00	1.0000	1.0000
L51	34	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	1.0000	1.0000
L51	36	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	1.0000	1.0000
L51	38	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	1.0000	1.0000
L52	1	Safety Line 3/8	7.75 - 12.75	1.0000	1.0000
L52	3	Ladder Rail - L4x4x5/16	7.75 - 12.75	1.0000	1.0000
L52	22	PL 1x4.625	7.75 - 12.75	1.0000	1.0000
L52	23	PL 1x4.625	7.75 - 12.75	1.0000	1.0000
L52	24	PL 1x4.625	7.75 - 12.75	1.0000	1.0000
L52	34	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	1.0000	1.0000
L52	36	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	1.0000	1.0000
L52	38	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	1.0000	1.0000
L53	1	Safety Line 3/8	3.67 - 7.75	1.0000	1.0000
L53	3	Ladder Rail - L4x4x5/16	3.67 - 7.75	1.0000	1.0000
L53	22	PL 1x4.625	3.67 - 7.75	1.0000	1.0000
L53	23	PL 1x4.625	3.67 - 7.75	1.0000	1.0000
L53	24	PL 1x4.625	3.67 - 7.75	1.0000	1.0000
L53	34	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	1.0000	1.0000
L53	36	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	1.0000	1.0000
L53	38	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	1.0000	1.0000
L54	1	Safety Line 3/8	3.42 - 3.67	1.0000	1.0000
L54	3	Ladder Rail - L4x4x5/16	3.42 - 3.67	1.0000	1.0000
L54	22	PL 1x4.625	3.42 - 3.67	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L54	23	PL 1x4.625	3.42 - 3.67	1.0000	1.0000
L54	24	PL 1x4.625	3.42 - 3.67	1.0000	1.0000
L54	34	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	1.0000	1.0000
L54	36	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	1.0000	1.0000
L54	38	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	1.0000	1.0000
L55	1	Safety Line 3/8	1.50 - 3.42	1.0000	1.0000
L55	3	Ladder Rail - L4x4x5/16	1.50 - 3.42	1.0000	1.0000
L55	22	PL 1x4.625	1.50 - 3.42	1.0000	1.0000
L55	23	PL 1x4.625	1.50 - 3.42	1.0000	1.0000
L55	24	PL 1x4.625	1.50 - 3.42	1.0000	1.0000
L55	34	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	1.0000	1.0000
L55	36	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	1.0000	1.0000
L55	38	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	1.0000	1.0000
L56	1	Safety Line 3/8	1.25 - 1.50	1.0000	1.0000
L56	3	Ladder Rail - L4x4x5/16	1.25 - 1.50	1.0000	1.0000
L56	22	PL 1x4.625	1.25 - 1.50	1.0000	1.0000
L56	23	PL 1x4.625	1.25 - 1.50	1.0000	1.0000
L56	24	PL 1x4.625	1.25 - 1.50	1.0000	1.0000
L56	34	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	1.0000	1.0000
L56	36	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	1.0000	1.0000
L56	38	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	1.0000	1.0000
L57	1	Safety Line 3/8	0.50 - 1.25	1.0000	1.0000
L57	3	Ladder Rail - L4x4x5/16	0.50 - 1.25	1.0000	1.0000
L57	22	PL 1x4.625	0.50 - 1.25	1.0000	1.0000
L57	23	PL 1x4.625	0.50 - 1.25	1.0000	1.0000
L57	24	PL 1x4.625	0.50 - 1.25	1.0000	1.0000
L57	34	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	1.0000	1.0000
L57	36	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	1.0000	1.0000
L57	38	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	1.0000	1.0000
L58	1	Safety Line 3/8	0.25 - 0.50	1.0000	1.0000
L58	3	Ladder Rail - L4x4x5/16	0.25 - 0.50	1.0000	1.0000
L58	22	PL 1x4.625	0.25 - 0.50	1.0000	1.0000
L58	23	PL 1x4.625	0.25 - 0.50	1.0000	1.0000
L58	24	PL 1x4.625	0.25 - 0.50	1.0000	1.0000
L58	34	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	1.0000	1.0000
L58	36	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	1.0000	1.0000
L58	38	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	1.0000	1.0000
L59	1	Safety Line 3/8	0.00 - 0.25	1.0000	1.0000
L59	3	Ladder Rail - L4x4x5/16	0.00 - 0.25	1.0000	1.0000
L59	22	PL 1x4.625	0.00 - 0.25	1.0000	1.0000
L59	23	PL 1x4.625	0.00 - 0.25	1.0000	1.0000
L59	24	PL 1x4.625	0.00 - 0.25	1.0000	1.0000
L59	34	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	1.0000	1.0000
L59	36	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	1.0000	1.0000
L59	38	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	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
L10	69	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	Auto	1.0000
L10	70	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	Auto	1.0000
L10	72	(Area) Sabre MS400 (0.75x4.00) (H)	90.00 - 90.25	Auto	1.0000
L11	69	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	Auto	1.0000
L11	70	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	Auto	1.0000
L11	72	(Area) Sabre MS400 (0.75x4.00) (H)	89.25 - 90.00	Auto	1.0000
L12	69	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	Auto	1.0000
L12	70	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	Auto	1.0000
L12	72	(Area) Sabre MS400 (0.75x4.00) (H)	89.00 - 89.25	Auto	1.0000
L13	30	PL 0.75x3.75	85.66 - 86.66	Auto	1.0000
L13	31	PL 0.75x3.75	85.66 - 86.66	Auto	1.0000
L13	32	PL 0.75x3.75	85.66 - 86.66	Auto	1.0000
L13	69	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	Auto	1.0000
L13	70	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	Auto	1.0000
L13	72	(Area) Sabre MS400 (0.75x4.00) (H)	85.66 - 89.00	Auto	1.0000
L14	30	PL 0.75x3.75	85.41 - 85.66	Auto	1.0000
L14	31	PL 0.75x3.75	85.41 - 85.66	Auto	1.0000
L14	32	PL 0.75x3.75	85.41 - 85.66	Auto	1.0000
L14	69	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	Auto	1.0000
L14	70	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	Auto	1.0000
L14	72	(Area) Sabre MS400 (0.75x4.00) (H)	85.41 - 85.66	Auto	1.0000
L15	30	PL 0.75x3.75	81.15 - 85.41	Auto	1.0000
L15	31	PL 0.75x3.75	81.15 - 85.41	Auto	1.0000
L15	32	PL 0.75x3.75	81.15 - 85.41	Auto	1.0000
L15	64	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	Auto	1.0000
L15	65	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	Auto	1.0000
L15	66	(Area) Sabre MS450 (1.00x4.50) (H)	81.15 - 83.00	Auto	1.0000
L15	69	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	Auto	1.0000
L15	70	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	Auto	1.0000
L15	72	(Area) Sabre MS400 (0.75x4.00) (H)	81.15 - 85.41	Auto	1.0000
L16	30	PL 0.75x3.75	80.90 - 81.15	Auto	1.0000
L16	31	PL 0.75x3.75	80.90 - 81.15	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L16	32	PL 0.75x3.75	80.90 - 81.15	Auto	1.0000
L16	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	Auto	1.0000
L16	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	Auto	1.0000
L16	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.90 - 81.15	Auto	1.0000
L16	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	Auto	1.0000
L16	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	Auto	1.0000
L16	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.90 - 81.15	Auto	1.0000
L17	30	PL 0.75x3.75	80.50 - 80.90	Auto	1.0000
L17	31	PL 0.75x3.75	80.50 - 80.90	Auto	1.0000
L17	32	PL 0.75x3.75	80.50 - 80.90	Auto	1.0000
L17	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	Auto	1.0000
L17	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	Auto	1.0000
L17	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.50 - 80.90	Auto	1.0000
L17	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	Auto	1.0000
L17	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	Auto	1.0000
L17	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.50 - 80.90	Auto	1.0000
L18	30	PL 0.75x3.75	80.40 - 80.50	Auto	1.0000
L18	31	PL 0.75x3.75	80.40 - 80.50	Auto	1.0000
L18	32	PL 0.75x3.75	80.40 - 80.50	Auto	1.0000
L18	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	Auto	1.0000
L18	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	Auto	1.0000
L18	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.25 - 80.50	Auto	1.0000
L18	69	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	Auto	1.0000
L18	70	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	Auto	1.0000
L18	72	(Area) Sabre MS400 (0.75x4.00) (H)	80.25 - 80.50	Auto	1.0000
L19	64	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	Auto	1.0000
L19	65	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	Auto	1.0000
L19	66	(Area) Sabre MS450 (1.00x4.50) (H)	80.00 - 80.25	Auto	1.0000
L20	60	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	Auto	1.0000
L20	61	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	Auto	1.0000
L20	62	(Area) Sabre MS450 (1.00x4.50) (H)	79.75 - 80.00	Auto	1.0000
L21	60	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	Auto	1.0000
L21	61	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	Auto	1.0000
L21	62	(Area) Sabre MS450 (1.00x4.50) (H)	79.00 - 79.75	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	60	(Area) Sabre MS450 (1.00x4.50) (H)	78.75 - 79.00	Auto	1.0000
L22	61	(Area) Sabre MS450 (1.00x4.50) (H)	78.75 - 79.00	Auto	1.0000
L22	62	(Area) Sabre MS450 (1.00x4.50) (H)	78.75 - 79.00	Auto	1.0000
L23	60	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	Auto	1.0000
L23	61	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	Auto	1.0000
L23	62	(Area) Sabre MS450 (1.00x4.50) (H)	76.50 - 78.75	Auto	1.0000
L25	55	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	Auto	1.0000
L25	57	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	Auto	1.0000
L25	58	(Area) CCI-65FP-040075 (H)	65.50 - 66.50	Auto	1.0000
L26	55	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	Auto	1.0000
L26	57	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	Auto	1.0000
L26	58	(Area) CCI-65FP-040075 (H)	65.25 - 65.50	Auto	1.0000
L27	55	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	Auto	1.0000
L27	57	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	Auto	1.0000
L27	58	(Area) CCI-65FP-040075 (H)	60.25 - 65.25	Auto	1.0000
L28	26	PL 1x4.875	58.40 - 59.90	Auto	1.0000
L28	27	PL 1x4.875	58.40 - 59.90	Auto	1.0000
L28	28	PL 1x4.875	58.40 - 59.90	Auto	1.0000
L28	55	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	Auto	1.0000
L28	57	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	Auto	1.0000
L28	58	(Area) CCI-65FP-040075 (H)	58.40 - 60.25	Auto	1.0000
L29	26	PL 1x4.875	58.15 - 58.40	Auto	1.0000
L29	27	PL 1x4.875	58.15 - 58.40	Auto	1.0000
L29	28	PL 1x4.875	58.15 - 58.40	Auto	1.0000
L29	55	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	Auto	1.0000
L29	57	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	Auto	1.0000
L29	58	(Area) CCI-65FP-040075 (H)	58.15 - 58.40	Auto	1.0000
L30	26	PL 1x4.875	57.50 - 58.15	Auto	1.0000
L30	27	PL 1x4.875	57.50 - 58.15	Auto	1.0000
L30	28	PL 1x4.875	57.50 - 58.15	Auto	1.0000
L30	55	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	Auto	1.0000
L30	57	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	Auto	1.0000
L30	58	(Area) CCI-65FP-040075 (H)	57.50 - 58.15	Auto	1.0000
L31	26	PL 1x4.875	57.25 - 57.50	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L31	27	PL 1x4.875	57.25 - 57.50	Auto	1.0000
L31	28	PL 1x4.875	57.25 - 57.50	Auto	1.0000
L31	55	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	Auto	1.0000
L31	57	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	Auto	1.0000
L31	58	(Area) CCI-65FP-040075 (H)	57.25 - 57.50	Auto	1.0000
L32	26	PL 1x4.875	52.25 - 57.25	Auto	1.0000
L32	27	PL 1x4.875	52.25 - 57.25	Auto	1.0000
L32	28	PL 1x4.875	52.25 - 57.25	Auto	1.0000
L32	55	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	Auto	1.0000
L32	57	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	Auto	1.0000
L32	58	(Area) CCI-65FP-040075 (H)	56.50 - 57.25	Auto	1.0000
L33	26	PL 1x4.875	49.50 - 52.25	Auto	1.0000
L33	27	PL 1x4.875	49.50 - 52.25	Auto	1.0000
L33	28	PL 1x4.875	49.50 - 52.25	Auto	1.0000
L33	49	(Area) Sabre MS400 (0.75x4.00) (H)	49.50 - 50.50	Auto	1.0000
L33	50	(Area) Sabre MS400 (0.75x4.00) (H)	49.50 - 50.50	Auto	1.0000
L33	52	(Area) Sabre MS400 (0.75x4.00) (H)	49.50 - 50.50	Auto	1.0000
L34	26	PL 1x4.875	49.25 - 49.50	Auto	1.0000
L34	27	PL 1x4.875	49.25 - 49.50	Auto	1.0000
L34	28	PL 1x4.875	49.25 - 49.50	Auto	1.0000
L34	49	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	Auto	1.0000
L34	50	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	Auto	1.0000
L34	52	(Area) Sabre MS400 (0.75x4.00) (H)	49.25 - 49.50	Auto	1.0000
L35	26	PL 1x4.875	44.25 - 49.25	Auto	1.0000
L35	27	PL 1x4.875	44.25 - 49.25	Auto	1.0000
L35	28	PL 1x4.875	44.25 - 49.25	Auto	1.0000
L35	49	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	Auto	1.0000
L35	50	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	Auto	1.0000
L35	52	(Area) Sabre MS400 (0.75x4.00) (H)	44.25 - 49.25	Auto	1.0000
L36	26	PL 1x4.875	41.90 - 44.25	Auto	1.0000
L36	27	PL 1x4.875	41.90 - 44.25	Auto	1.0000
L36	28	PL 1x4.875	41.90 - 44.25	Auto	1.0000
L36	44	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	Auto	1.0000
L36	45	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L36	46	(Area) Sabre MS650 (1.25x6.50) (H)	41.90 - 44.25	Auto	1.0000
L36	49	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	Auto	1.0000
L36	50	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	Auto	1.0000
L36	52	(Area) Sabre MS400 (0.75x4.00) (H)	41.90 - 44.25	Auto	1.0000
L37	26	PL 1x4.875	41.65 - 41.90	Auto	1.0000
L37	27	PL 1x4.875	41.65 - 41.90	Auto	1.0000
L37	28	PL 1x4.875	41.65 - 41.90	Auto	1.0000
L37	44	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	Auto	1.0000
L37	45	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	Auto	1.0000
L37	46	(Area) Sabre MS650 (1.25x6.50) (H)	41.65 - 41.90	Auto	1.0000
L37	49	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	Auto	1.0000
L37	50	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	Auto	1.0000
L37	52	(Area) Sabre MS400 (0.75x4.00) (H)	41.65 - 41.90	Auto	1.0000
L38	26	PL 1x4.875	40.75 - 41.65	Auto	1.0000
L38	27	PL 1x4.875	40.75 - 41.65	Auto	1.0000
L38	28	PL 1x4.875	40.75 - 41.65	Auto	1.0000
L38	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	Auto	1.0000
L38	45	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	Auto	1.0000
L38	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.75 - 41.65	Auto	1.0000
L38	49	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	Auto	1.0000
L38	50	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	Auto	1.0000
L38	52	(Area) Sabre MS400 (0.75x4.00) (H)	40.75 - 41.65	Auto	1.0000
L39	26	PL 1x4.875	40.50 - 40.75	Auto	1.0000
L39	27	PL 1x4.875	40.50 - 40.75	Auto	1.0000
L39	28	PL 1x4.875	40.50 - 40.75	Auto	1.0000
L39	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	Auto	1.0000
L39	45	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	Auto	1.0000
L39	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.50 - 40.75	Auto	1.0000
L39	49	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	Auto	1.0000
L39	50	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	Auto	1.0000
L39	52	(Area) Sabre MS400 (0.75x4.00) (H)	40.50 - 40.75	Auto	1.0000
L40	26	PL 1x4.875	40.40 - 40.50	Auto	1.0000
L40	27	PL 1x4.875	40.40 - 40.50	Auto	1.0000
L40	28	PL 1x4.875	40.40 - 40.50	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L40	44	(Area) Sabre MS650 (1.25x6.50) (H)	40.00 - 40.50	Auto	1.0000
L40	45	(Area) Sabre MS650 (1.25x6.50) (H)	40.00 - 40.50	Auto	1.0000
L40	46	(Area) Sabre MS650 (1.25x6.50) (H)	40.00 - 40.50	Auto	1.0000
L41	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	Auto	1.0000
L41	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	Auto	1.0000
L41	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.75 - 40.00	Auto	1.0000
L42	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	Auto	1.0000
L42	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	Auto	1.0000
L42	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.25 - 39.75	Auto	1.0000
L43	40	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	Auto	1.0000
L43	41	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	Auto	1.0000
L43	42	(Area) Sabre MS650 (1.25x6.50) (H)	39.00 - 39.25	Auto	1.0000
L44	40	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	Auto	1.0000
L44	41	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	Auto	1.0000
L44	42	(Area) Sabre MS650 (1.25x6.50) (H)	35.75 - 39.00	Auto	1.0000
L47	34	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	Auto	1.0000
L47	36	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	Auto	1.0000
L47	38	(Area) CCI-65FP-040075 (H)	19.50 - 20.50	Auto	1.0000
L48	34	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	Auto	1.0000
L48	36	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	Auto	1.0000
L48	38	(Area) CCI-65FP-040075 (H)	19.25 - 19.50	Auto	1.0000
L49	34	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	Auto	1.0000
L49	36	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	Auto	1.0000
L49	38	(Area) CCI-65FP-040075 (H)	14.25 - 19.25	Auto	1.0000
L50	22	PL 1x4.625	13.00 - 14.25	Auto	1.0000
L50	23	PL 1x4.625	13.00 - 14.25	Auto	1.0000
L50	24	PL 1x4.625	13.00 - 14.25	Auto	1.0000
L50	34	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	Auto	1.0000
L50	36	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	Auto	1.0000
L50	38	(Area) CCI-65FP-040075 (H)	13.00 - 14.25	Auto	1.0000
L51	22	PL 1x4.625	12.75 - 13.00	Auto	1.0000
L51	23	PL 1x4.625	12.75 - 13.00	Auto	1.0000
L51	24	PL 1x4.625	12.75 - 13.00	Auto	1.0000
L51	34	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L51	36	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	Auto	1.0000
L51	38	(Area) CCI-65FP-040075 (H)	12.75 - 13.00	Auto	1.0000
L52	22	PL 1x4.625	7.75 - 12.75	Auto	1.0000
L52	23	PL 1x4.625	7.75 - 12.75	Auto	1.0000
L52	24	PL 1x4.625	7.75 - 12.75	Auto	1.0000
L52	34	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	Auto	1.0000
L52	36	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	Auto	1.0000
L52	38	(Area) CCI-65FP-040075 (H)	7.75 - 12.75	Auto	1.0000
L53	22	PL 1x4.625	3.67 - 7.75	Auto	1.0000
L53	23	PL 1x4.625	3.67 - 7.75	Auto	1.0000
L53	24	PL 1x4.625	3.67 - 7.75	Auto	1.0000
L53	34	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	Auto	1.0000
L53	36	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	Auto	1.0000
L53	38	(Area) CCI-65FP-040075 (H)	3.67 - 7.75	Auto	1.0000
L54	22	PL 1x4.625	3.42 - 3.67	Auto	1.0000
L54	23	PL 1x4.625	3.42 - 3.67	Auto	1.0000
L54	24	PL 1x4.625	3.42 - 3.67	Auto	1.0000
L54	34	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	Auto	1.0000
L54	36	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	Auto	1.0000
L54	38	(Area) CCI-65FP-040075 (H)	3.42 - 3.67	Auto	1.0000
L55	22	PL 1x4.625	1.50 - 3.42	Auto	1.0000
L55	23	PL 1x4.625	1.50 - 3.42	Auto	1.0000
L55	24	PL 1x4.625	1.50 - 3.42	Auto	1.0000
L55	34	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	Auto	1.0000
L55	36	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	Auto	1.0000
L55	38	(Area) CCI-65FP-040075 (H)	1.50 - 3.42	Auto	1.0000
L56	22	PL 1x4.625	1.25 - 1.50	Auto	1.0000
L56	23	PL 1x4.625	1.25 - 1.50	Auto	1.0000
L56	24	PL 1x4.625	1.25 - 1.50	Auto	1.0000
L56	34	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	Auto	1.0000
L56	36	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	Auto	1.0000
L56	38	(Area) CCI-65FP-040075 (H)	1.25 - 1.50	Auto	1.0000
L57	22	PL 1x4.625	0.50 - 1.25	Auto	1.0000
L57	23	PL 1x4.625	0.50 - 1.25	Auto	1.0000
L57	24	PL 1x4.625	0.50 - 1.25	Auto	1.0000
L57	34	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	Auto	1.0000
L57	36	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	Auto	1.0000
L57	38	(Area) CCI-65FP-040075 (H)	0.50 - 1.25	Auto	1.0000
L58	22	PL 1x4.625	0.25 - 0.50	Auto	1.0000
L58	23	PL 1x4.625	0.25 - 0.50	Auto	1.0000
L58	24	PL 1x4.625	0.25 - 0.50	Auto	1.0000
L58	34	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	Auto	1.0000
L58	36	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	Auto	1.0000
L58	38	(Area) CCI-65FP-040075 (H)	0.25 - 0.50	Auto	1.0000
L59	22	PL 1x4.625	0.00 - 0.25	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L59	23	PL 1x4.625	0.00 - 0.25	Auto	1.0000
L59	24	PL 1x4.625	0.00 - 0.25	Auto	1.0000
L59	34	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	Auto	1.0000
L59	36	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	Auto	1.0000
L59	38	(Area) CCI-65FP-040075 (H)	0.00 - 0.25	Auto	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
124					
LLPX310R-V4 w/ Mount Pipe	A	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
LLPX310R-V4 w/ Mount Pipe	B	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
LLPX310R-V4 w/ Mount Pipe	C	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
TD-RRH8X20-25	A	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
TD-RRH8X20-25	B	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
TD-RRH8X20-25	C	From Centroid-Leg	4.00 6.00 0.00	-30.0000	124.00
IBC1900BB-1	A	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
IBC1900BB-1	B	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft
IBC1900BB-1	C	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
IBC1900HG-2A	A	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
IBC1900HG-2A	B	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
IBC1900HG-2A	C	From Centroid-Leg	4.00 0.00 0.00	-30.0000	124.00
WIMAX DAP HEAD	A	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
(2) WIMAX DAP HEAD	B	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
(2) WIMAX DAP HEAD	C	From Centroid-Leg	4.00 -6.00 0.00	0.0000	124.00
Miscellaneous [NA 507-1]	C	None		0.0000	124.00
Miscellaneous [NA 510-1]	C	None		0.0000	124.00
Platform Mount [LP 712-1]	C	None		0.0000	124.00
122					
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 3.00	-50.0000	122.00
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 3.00	-30.0000	122.00
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.00 3.00	-30.0000	122.00
TME-800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 0.00	-50.0000	122.00
TME-800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 0.00	-30.0000	122.00
TME-800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 0.00	-30.0000	122.00
Pipe Mount [PM 601-3]	C	None		0.0000	122.00
113					
7770.00 w/ Mount Pipe	A	From Centroid-Leg	4.00 -6.00 2.00	13.0000	113.00
7770.00 w/ Mount Pipe	B	From Centroid-Leg	4.00 -6.00 2.00	23.0000	113.00
7770.00 w/ Mount Pipe	C	From Centroid-Leg	4.00 -6.00 2.00	23.0000	113.00
OPA-65R-LCUU-H8 w/ Mount Pipe	A	From Centroid-Leg	4.00 -2.00 2.00	13.0000	113.00
OPA-65R-LCUU-H8 w/ Mount Pipe	B	From Centroid-Leg	4.00 -2.00 2.00	23.0000	113.00
OPA-65R-LCUU-H8 w/ Mount Pipe	C	From Centroid-Leg	4.00 -2.00 2.00	23.0000	113.00
80010966 w/ Mount Pipe	A	From Centroid-Leg	4.00 2.00	13.0000	113.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
80010966 w/ Mount Pipe	B	From Centroid-Leg	2.00 4.00 2.00	23.0000	113.00
80010966 w/ Mount Pipe	C	From Centroid-Leg	2.00 4.00 2.00	23.0000	113.00
QS66512-2 w/ Mount Pipe	A	From Centroid-Leg	2.00 4.00 6.00	13.0000	113.00
QS66512-2 w/ Mount Pipe	B	From Centroid-Leg	2.00 4.00 6.00	23.0000	113.00
QS66512-2 w/ Mount Pipe	C	From Centroid-Leg	2.00 4.00 6.00	23.0000	113.00
(2) LGP21401	A	From Centroid-Leg	2.00 4.00 -6.00	13.0000	113.00
(2) LGP21401	B	From Centroid-Leg	2.00 4.00 -6.00	23.0000	113.00
(2) LGP21401	C	From Centroid-Leg	2.00 4.00 -6.00	23.0000	113.00
(2) 860 10025	A	From Centroid-Leg	2.00 4.00 -6.00	13.0000	113.00
(2) 860 10025	B	From Centroid-Leg	2.00 4.00 -6.00	23.0000	113.00
(2) 860 10025	C	From Centroid-Leg	2.00 4.00 -6.00	23.0000	113.00
RRUS 32	A	From Centroid-Leg	2.00 4.00 -2.00	13.0000	113.00
RRUS 32	B	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
RRUS 32	C	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
1001940	A	From Centroid-Leg	2.00 4.00 -2.00	13.0000	113.00
1001940	B	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
1001940	C	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
(2) DBC0061F1V51-2	A	From Centroid-Leg	2.00 4.00 -2.00	13.0000	113.00
(2) DBC0061F1V51-2	B	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
(2) DBC0061F1V51-2	C	From Centroid-Leg	2.00 4.00 -2.00	23.0000	113.00
DC6-48-60-18-8F	A	From Centroid-Leg	2.00 4.00 -2.00	13.0000	113.00
DC6-48-60-18-8F	A	From Centroid-Leg	2.00 4.00	13.0000	113.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			6.00 2.00		
RRUS 4478 B14	A	From Centroid-Leg	4.00 2.00	13.0000	113.00
			2.00		
RRUS 4478 B14	B	From Centroid-Leg	4.00 2.00	23.0000	113.00
			2.00		
RRUS 4478 B14	C	From Centroid-Leg	4.00 2.00	23.0000	113.00
			2.00		
RRUS 32 B66	A	From Centroid-Leg	4.00 2.00	13.0000	113.00
			2.00		
RRUS 32 B66	B	From Centroid-Leg	4.00 2.00	23.0000	113.00
			2.00		
RRUS 32 B66	C	From Centroid-Leg	4.00 2.00	23.0000	113.00
			2.00		
DC6-48-60-0-8F	A	From Centroid-Leg	4.00 2.00	13.0000	113.00
			2.00		
RRUS-11	A	From Centroid-Leg	4.00 6.00	13.0000	113.00
			2.00		
RRUS-11	B	From Centroid-Leg	4.00 6.00	23.0000	113.00
			2.00		
RRUS-11	C	From Centroid-Leg	4.00 6.00	23.0000	113.00
			2.00		
RRUS 32 B2	A	From Centroid-Leg	4.00 6.00	13.0000	113.00
			2.00		
RRUS 32 B2	B	From Centroid-Leg	4.00 6.00	23.0000	113.00
			2.00		
RRUS 32 B2	C	From Centroid-Leg	4.00 6.00	23.0000	113.00
			2.00		
Miscellaneous [NA 507-1]	C	None		0.0000	113.00
Platform Mount [LP 712-1]	C	None		0.0000	113.00
103					
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
TA08025-B605	A	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
TA08025-B605	B	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
TA08025-B605	C	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		
TA08025-B604	A	From Centroid-Leg	4.00 0.00	0.0000	103.00
			0.00		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TA08025-B604	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
TA08025-B604	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
RDIDC-9181-PF-48	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
(2) 8' x 2" Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
(2) 8' x 2" Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
(2) 8' x 2" Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	103.00
Commscope MC-PK8-DSH **50**	C	None		0.0000	103.00
KS24019-L112A	C	From Leg	3.00 0.00 0.00	0.0000	50.00
Side Arm Mount [SO 701-1] ***	C	From Leg	1.50 0.00 0.00	-30.0000	50.00
Bridge Stiffener (9"x52"x1")	A	From Leg	0.50 0.00 0.00	0.0000	40.00
Bridge Stiffener (9"x52"x1")	B	From Leg	0.50 0.00 0.00	0.0000	40.00
Bridge Stiffener (9"x52"x1")	C	From Leg	0.50 0.00 0.00	0.0000	40.00
Bridge Stiffener (10"x42.25"x1")	A	From Leg	0.50 0.00 0.00	0.0000	80.00
Bridge Stiffener (10"x42.25"x1")	B	From Leg	0.50 0.00 0.00	0.0000	80.00
Bridge Stiffener (10"x42.25"x1") ***	C	From Leg	0.50 0.00 0.00	0.0000	80.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Centroid-Leg	4.00 -6.00 7.00	0.0000		124.00	2.50
VHLP1-23	C	Paraboloid w/Shroud (HP)	From Centroi	4.00 -6.00	0.0000		124.00	1.27

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
***			d-Leg	7.00				

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	137 - 132	Pole	Max Tension	42	0.00	0.00	-0.00
			Max. Compression	26	-0.50	0.01	0.01
			Max. Mx	20	-0.28	0.48	0.00
			Max. My	2	-0.28	0.00	0.48
			Max. Vy	20	-0.19	0.48	0.00
			Max. Vx	2	-0.19	0.00	0.48
L2	132 - 127	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-1.15	-0.65	0.07
			Max. Mx	8	-0.61	-3.93	-0.34
			Max. My	2	-0.62	0.57	3.37
			Max. Vy	20	-0.86	3.45	0.45
			Max. Vx	2	-0.72	0.57	3.37
			Max. Torque	2			-2.82
L3	127 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-1.35	-0.65	0.07
			Max. Mx	8	-0.72	-5.58	-0.52
			Max. My	2	-0.73	0.93	4.89
			Max. Vy	20	-0.94	5.25	0.69
			Max. Vx	2	-0.80	0.93	4.89
			Max. Torque	2			-2.82
L4	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.02	-1.22	-0.29
			Max. Mx	8	-5.22	-30.47	-1.11
			Max. My	2	-5.22	1.67	28.91
			Max. Vy	20	-6.32	30.06	1.19
			Max. Vx	2	-6.14	1.67	28.91
			Max. Torque	2			-3.22
L5	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.00	-1.21	-0.26
			Max. Mx	8	-5.83	-62.59	-1.57
			Max. My	2	-5.84	2.61	60.48
			Max. Vy	20	-6.67	62.55	1.84
			Max. Vx	2	-6.49	2.61	60.48
			Max. Torque	2			-3.22
L6	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.44	-1.94	1.27
			Max. Mx	8	-10.85	-128.69	-2.32
			Max. My	2	-10.85	4.03	127.06
			Max. Vy	20	-14.17	128.67	3.43
			Max. Vx	2	-14.16	4.03	127.06
			Max. Torque	2			-4.00
L7	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.45	-1.94	1.32
			Max. Mx	20	-11.53	200.36	4.71
			Max. My	2	-11.53	5.59	198.69
			Max. Vy	20	-14.50	200.36	4.71
			Max. Vx	2	-14.49	5.59	198.69
			Max. Torque	2			-4.00
L8	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.30	-1.93	1.83
			Max. Mx	20	-15.25	283.62	6.09
			Max. My	2	-15.25	7.16	282.12
			Max. Vy	20	-18.14	283.62	6.09
			Max. Vx	2	-18.17	7.16	282.12
			Max. Torque	2			-4.00
L9	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.33	-1.92	1.88
			Max. Mx	20	-16.00	374.99	7.38
			Max. My	2	-16.00	8.74	373.65
			Max. Vy	20	-18.42	374.99	7.38
			Max. Vx	2	-18.45	8.74	373.65
			Max. Torque	2			-4.00
L10	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.36	-1.91	1.93
			Max. Mx	20	-16.78	467.69	8.67
			Max. My	2	-16.78	10.32	466.51
			Max. Vy	20	-18.67	467.69	8.67
			Max. Vx	2	-18.70	10.32	466.51
			Max. Torque	2			-4.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L11	90 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.54	-1.91	1.94
			Max. Mx	20	-16.90	481.72	8.87
			Max. My	2	-16.89	10.56	480.56
			Max. Vy	20	-18.75	481.72	8.87
			Max. Vx	2	-18.78	10.56	480.56
			Max. Torque	2			-4.00
L12	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.61	-1.91	1.94
			Max. Mx	20	-16.95	486.41	8.93
			Max. My	2	-16.95	10.64	485.26
			Max. Vy	20	-18.77	486.41	8.93
			Max. Vx	2	-18.80	10.64	485.26
			Max. Torque	2			-4.00
L13	89 - 85.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.58	-1.88	1.97
			Max. Mx	20	-17.58	549.73	9.80
			Max. My	2	-17.58	11.70	548.70
			Max. Vy	20	-19.15	549.73	9.80
			Max. Vx	2	-19.19	11.70	548.70
			Max. Torque	2			-4.00
L14	85.66 - 85.41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.66	-1.88	1.98
			Max. Mx	20	-17.64	554.52	9.86
			Max. My	2	-17.64	11.78	553.50
			Max. Vy	20	-19.17	554.52	9.86
			Max. Vx	2	-19.21	11.78	553.50
			Max. Torque	2			-3.99
L15	85.41 - 81.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.11	-1.82	2.05
			Max. Mx	20	-18.50	637.28	10.99
			Max. My	2	-18.49	13.16	636.41
			Max. Vy	20	-19.67	637.28	10.99
			Max. Vx	2	-19.71	13.16	636.41
			Max. Torque	2			-3.99
L16	81.15 - 80.9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.21	-1.81	2.06
			Max. Mx	20	-18.57	642.20	11.06
			Max. My	2	-18.57	13.24	641.34
			Max. Vy	20	-19.69	642.20	11.06
			Max. Vx	2	-19.73	13.24	641.34
			Max. Torque	2			-3.99
L17	80.9 - 80.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.38	-1.81	2.06
			Max. Mx	20	-18.67	650.09	11.16
			Max. My	2	-18.67	13.37	649.25
			Max. Vy	20	-19.75	650.09	11.16
			Max. Vx	2	-19.78	13.37	649.25
			Max. Torque	2			-3.99
L18	80.5 - 80.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.48	-1.80	2.07
			Max. Mx	20	-18.74	655.03	11.23
			Max. My	2	-18.74	13.45	654.20
			Max. Vy	20	-19.78	655.03	11.23
			Max. Vx	2	-19.82	13.45	654.20
			Max. Torque	2			-3.99
L19	80.25 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.57	-1.80	2.07
			Max. Mx	20	-18.81	659.98	11.29
			Max. My	2	-18.80	13.53	659.16
			Max. Vy	20	-19.81	659.98	11.29
			Max. Vx	2	-19.84	13.53	659.16
			Max. Torque	2			-3.99
L20	80 - 79.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.24	-1.79	2.08
			Max. Mx	20	-19.18	665.00	11.35
			Max. My	2	-19.18	13.61	664.19

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	-20.09	665.00	11.35
			Max. Vx	2	-20.13	13.61	664.19
			Max. Torque	2			-3.99
L21	79.75 - 79	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.55	-1.76	2.09
			Max. Mx	20	-19.38	680.11	11.55
			Max. My	2	-19.38	13.86	679.32
			Max. Vy	20	-20.16	680.11	11.55
			Max. Vx	2	-20.21	13.86	679.32
			Max. Torque	2			-3.99
L22	79 - 78.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.64	-1.75	2.10
			Max. Mx	20	-19.44	685.16	11.62
			Max. My	2	-19.43	13.94	684.38
			Max. Vy	20	-20.18	685.16	11.62
			Max. Vx	2	-20.23	13.94	684.38
			Max. Torque	2			-3.99
L23	78.75 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.28	-1.55	2.23
			Max. Mx	20	-20.50	787.19	12.93
			Max. My	2	-20.50	15.59	786.68
			Max. Vy	20	-20.61	787.19	12.93
			Max. Vx	2	-20.68	15.59	786.68
			Max. Torque	2			-3.99
L24	73.75 - 68.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.83	-1.35	2.34
			Max. Mx	20	-21.58	891.28	14.25
			Max. My	2	-21.58	17.24	891.18
			Max. Vy	20	-21.01	891.28	14.25
			Max. Vx	2	-21.11	17.24	891.18
			Max. Torque	2			-3.99
L25	68.75 - 65.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.87	-1.22	2.42
			Max. Mx	20	-22.29	959.99	15.10
			Max. My	2	-22.28	18.31	960.22
			Max. Vy	20	-21.26	959.99	15.10
			Max. Vx	2	-21.38	18.31	960.22
			Max. Torque	2			-3.99
L26	65.5 - 65.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.97	-1.21	2.42
			Max. Mx	20	-22.36	965.31	15.17
			Max. My	2	-22.35	18.40	965.57
			Max. Vy	20	-21.27	965.31	15.17
			Max. Vx	2	-21.40	18.40	965.57
			Max. Torque	2			-3.99
L27	65.25 - 60.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.87	-1.01	2.54
			Max. Mx	20	-23.63	1072.71	16.47
			Max. My	2	-23.62	20.04	1073.66
			Max. Vy	20	-21.66	1072.71	16.47
			Max. Vx	2	-21.83	20.04	1073.66
			Max. Torque	2			-3.99
L28	60.25 - 58.4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.66	-0.91	2.61
			Max. Mx	20	-24.12	1113.10	16.99
			Max. My	2	-24.11	20.68	1114.35
			Max. Vy	20	-21.96	1113.10	16.99
			Max. Vx	2	-22.13	20.68	1114.35
			Max. Torque	2			-3.99
L29	58.4 - 58.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.79	-0.89	2.62
			Max. Mx	20	-24.21	1118.60	17.06
			Max. My	2	-24.20	20.77	1119.89
			Max. Vy	20	-21.99	1118.60	17.06
			Max. Vx	2	-22.16	20.77	1119.89
			Max. Torque	2			-3.99

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L30	58.15 - 57.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.11	-0.85	2.65
			Max. Mx	20	-24.42	1132.95	17.25
			Max. My	2	-24.41	21.00	1134.34
			Max. Vy	20	-22.09	1132.95	17.25
			Max. Vx	2	-22.26	21.00	1134.34
			Max. Torque	2			-3.99
L31	57.5 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.22	-0.84	2.66
			Max. Mx	20	-24.50	1138.48	17.32
			Max. My	2	-24.49	21.09	1139.92
			Max. Vy	20	-22.13	1138.48	17.32
			Max. Vx	2	-22.30	21.09	1139.92
			Max. Torque	2			-3.99
L32	57.25 - 52.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.38	-0.54	2.88
			Max. Mx	20	-25.99	1250.23	18.74
			Max. My	2	-25.98	22.84	1252.65
			Max. Vy	8	22.75	-1242.67	-14.28
			Max. Vx	2	-22.73	22.84	1252.65
			Max. Torque	2			-3.99
L33	52.25 - 49.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.72	-0.01	2.78
			Max. Mx	20	-26.89	1312.71	19.41
			Max. My	2	-26.88	24.03	1315.43
			Max. Vy	8	23.23	-1305.47	-14.92
			Max. Vx	2	-23.01	24.03	1315.43
			Max. Torque	2			-3.99
L34	49.5 - 49.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.84	0.01	2.79
			Max. Mx	20	-26.98	1318.41	19.48
			Max. My	2	-26.97	24.12	1321.19
			Max. Vy	8	23.26	-1311.27	-14.97
			Max. Vx	2	-23.04	24.12	1321.19
			Max. Torque	2			-3.83
L35	49.25 - 44.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.31	0.31	3.00
			Max. Mx	20	-28.65	1434.42	20.98
			Max. My	2	-28.64	25.95	1438.41
			Max. Vy	8	24.01	-1429.23	-15.96
			Max. Vx	2	-23.79	25.95	1438.41
			Max. Torque	2			-3.83
L36	44.25 - 41.9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.57	0.45	3.08
			Max. Mx	20	-29.43	1490.25	21.68
			Max. My	2	-29.42	26.80	1494.81
			Max. Vy	8	24.37	-1485.98	-16.42
			Max. Vx	2	-24.16	26.80	1494.81
			Max. Torque	2			-3.83
L37	41.9 - 41.65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.69	0.47	3.09
			Max. Mx	20	-29.51	1496.24	21.75
			Max. My	2	-29.50	26.90	1500.87
			Max. Vy	8	24.40	-1492.06	-16.47
			Max. Vx	2	-24.19	26.90	1500.87
			Max. Torque	2			-3.83
L38	41.65 - 40.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.14	0.52	3.13
			Max. Mx	20	-29.78	1517.87	22.02
			Max. My	2	-29.77	27.22	1522.73
			Max. Vy	8	24.54	-1514.05	-16.65
			Max. Vx	2	-24.33	27.22	1522.73
			Max. Torque	2			-3.83
L39	40.75 - 40.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.28	0.54	3.14
			Max. Mx	20	-29.88	1523.91	22.09

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-29.87	27.32	1528.82
			Max. Vy	8	24.57	-1520.17	-16.70
			Max. Vx	2	-24.36	27.32	1528.82
			Max. Torque	2			-3.83
L40	40.5 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.51	0.56	3.15
			Max. Mx	20	-30.03	1535.99	22.23
			Max. My	2	-30.02	27.49	1541.02
			Max. Vy	8	24.64	-1532.47	-16.81
			Max. Vx	2	-24.44	27.49	1541.02
			Max. Torque	2			-3.83
L41	40 - 39.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.31	0.57	3.16
			Max. Mx	20	-30.53	1542.11	22.30
			Max. My	2	-30.52	27.57	1547.21
			Max. Vy	8	24.92	-1538.69	-16.86
			Max. Vx	2	-24.74	27.57	1547.21
			Max. Torque	2			-3.83
L42	39.75 - 39.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.59	0.60	3.17
			Max. Mx	20	-30.73	1554.38	22.44
			Max. My	2	-30.72	27.75	1559.60
			Max. Vy	8	24.96	-1551.15	-16.97
			Max. Vx	2	-24.83	27.75	1559.60
			Max. Torque	2			-3.83
L43	39.25 - 39	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.70	0.61	3.17
			Max. Mx	20	-30.81	1560.53	22.51
			Max. My	2	-30.80	27.83	1565.81
			Max. Vy	8	24.98	-1557.39	-17.03
			Max. Vx	2	-24.87	27.83	1565.81
			Max. Torque	2			-3.83
L44	39 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.90	0.83	3.28
			Max. Mx	20	-32.38	1684.59	23.88
			Max. My	2	-32.37	29.55	1691.13
			Max. Vy	8	25.36	-1683.14	-18.13
			Max. Vx	2	-25.25	29.55	1691.13
			Max. Torque	2			-3.83
L45	34 - 29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.94	1.04	3.41
			Max. Mx	8	-33.95	-1810.66	-19.23
			Max. My	2	-33.95	31.27	1818.24
			Max. Vy	8	25.70	-1810.66	-19.23
			Max. Vx	2	-25.59	31.27	1818.24
			Max. Torque	2			-3.83
L46	29 - 24	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.98	1.26	3.53
			Max. Mx	8	-35.54	-1939.80	-20.32
			Max. My	2	-35.54	32.98	1946.99
			Max. Vy	8	26.01	-1939.80	-20.32
			Max. Vx	2	-25.91	32.98	1946.99
			Max. Torque	2			-3.83
L47	24 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.83	1.43	3.64
			Max. Mx	8	-36.98	-2057.28	-21.30
			Max. My	2	-36.98	34.51	2064.14
			Max. Vy	8	26.26	-2057.28	-21.30
			Max. Vx	2	-26.16	34.51	2064.14
			Max. Torque	2			-3.83
L48	19.5 - 19.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.95	1.44	3.64
			Max. Mx	8	-37.07	-2063.84	-21.35
			Max. My	2	-37.07	34.60	2070.69
			Max. Vy	8	26.26	-2063.84	-21.35
			Max. Vx	2	-26.17	34.60	2070.69
			Max. Torque	2			-3.83
L49	19.25 -	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
	14.25						
			Max. Compression	26	-73.28	1.60	3.76
			Max. Mx	8	-38.85	-2195.67	-22.44
			Max. My	2	-38.85	36.30	2202.22
			Max. Vy	8	26.52	-2195.67	-22.44
			Max. Vx	2	-26.44	36.30	2202.22
			Max. Torque	2			-3.83
L50	14.25 - 13	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.92	1.65	3.84
			Max. Mx	8	-39.32	-2228.80	-22.66
			Max. My	2	-39.32	36.74	2235.41
			Max. Vy	8	26.58	-2228.80	-22.66
			Max. Vx	2	-26.59	36.74	2235.41
			Max. Torque	2			-3.83
L51	13 - 12.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.07	1.66	3.85
			Max. Mx	8	-39.43	-2235.44	-22.70
			Max. My	2	-39.43	36.83	2242.07
			Max. Vy	8	26.58	-2235.44	-22.70
			Max. Vx	2	-26.61	36.83	2242.07
			Max. Torque	2			-3.83
L52	12.75 - 7.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.89	1.85	4.17
			Max. Mx	8	-41.59	-2368.75	-23.57
			Max. My	2	-41.58	38.59	2376.86
			Max. Vy	20	-26.92	2363.09	31.25
			Max. Vx	2	-27.22	38.59	2376.86
			Max. Torque	2			-3.83
L53	7.75 - 3.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.16	2.00	4.42
			Max. Mx	8	-43.35	-2478.37	-24.28
			Max. My	2	-43.35	40.02	2489.05
			Max. Vy	20	-27.40	2473.99	32.50
			Max. Vx	2	-27.70	40.02	2489.05
			Max. Torque	2			-3.83
L54	3.67 - 3.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.31	2.01	4.44
			Max. Mx	8	-43.47	-2485.11	-24.32
			Max. My	2	-43.47	40.11	2495.99
			Max. Vy	20	-27.41	2480.84	32.57
			Max. Vx	2	-27.72	40.11	2495.99
			Max. Torque	2			-3.83
L55	3.42 - 1.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.41	2.08	4.56
			Max. Mx	8	-44.35	-2536.97	-24.65
			Max. My	2	-44.35	40.78	2549.51
			Max. Vy	20	-27.66	2533.75	33.16
			Max. Vx	2	-27.96	40.78	2549.51
			Max. Torque	2			-3.83
L56	1.5 - 1.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.55	2.09	4.57
			Max. Mx	8	-44.48	-2543.73	-24.70
			Max. My	2	-44.48	40.87	2556.51
			Max. Vy	20	-27.67	2540.67	33.24
			Max. Vx	2	-27.97	40.87	2556.51
			Max. Torque	2			-3.83
L57	1.25 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.94	2.12	4.62
			Max. Mx	8	-44.79	-2564.04	-24.83
			Max. My	2	-44.79	41.13	2577.55
			Max. Vy	20	-27.76	2561.47	33.47
			Max. Vx	2	-28.06	41.13	2577.55
			Max. Torque	2			-3.83
L58	0.5 - 0.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.07	2.13	4.63
			Max. Mx	8	-44.91	-2570.81	-24.87
			Max. My	2	-44.91	41.21	2584.58
			Max. Vy	20	-27.78	2568.42	33.54
			Max. Vx	2	-28.08	41.21	2584.58

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	2			-3.83
L59	0.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.20	2.14	4.65
			Max. Mx	8	-45.02	-2577.59	-24.91
			Max. My	2	-45.02	41.30	2591.62
			Max. Vy	21	-27.80	2549.97	32.72
			Max. Vx	3	-28.11	40.49	2565.94
			Max. Torque	2			-3.83

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	81.20	-0.00	0.00
	Max. H_x	21	33.77	27.80	0.25
	Max. H_z	3	33.77	0.32	28.11
	Max. M_x	2	2591.62	0.32	28.11
	Max. M_z	8	2577.59	-27.14	-0.22
	Max. Torsion	14	3.41	-0.25	-27.84
	Min. Vert	3	33.77	0.32	28.11
	Min. H_x	8	45.02	-27.14	-0.22
	Min. H_z	15	33.77	-0.25	-27.84
	Min. M_x	14	-2570.45	-0.25	-27.84
	Min. M_z	20	-2575.38	27.80	0.25
	Min. Torsion	2	-3.83	0.32	28.11

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	37.52	0.00	0.00	-1.75	1.18	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45.02	-0.32	-28.11	-2591.62	41.30	3.83
0.9 Dead+1.0 Wind 0 deg - No Ice	33.77	-0.32	-28.11	-2565.94	40.49	3.81
1.2 Dead+1.0 Wind 30 deg - No Ice	45.02	13.25	-23.08	-2209.37	-1265.31	1.94
0.9 Dead+1.0 Wind 30 deg - No Ice	33.77	13.25	-23.08	-2187.32	-1253.33	1.94
1.2 Dead+1.0 Wind 60 deg - No Ice	45.02	23.11	-13.18	-1256.11	-2207.74	0.05
0.9 Dead+1.0 Wind 60 deg - No Ice	33.77	23.11	-13.18	-1243.37	-2186.56	0.04
1.2 Dead+1.0 Wind 90 deg - No Ice	45.02	27.14	0.22	24.91	-2577.59	-1.37
0.9 Dead+1.0 Wind 90 deg - No Ice	33.77	27.14	0.22	25.17	-2552.91	-1.37
1.2 Dead+1.0 Wind 120 deg - No Ice	45.02	23.20	13.50	1295.25	-2226.34	-2.35
0.9 Dead+1.0 Wind 120 deg - No Ice	33.77	23.20	13.50	1283.14	-2204.96	-2.34
1.2 Dead+1.0 Wind 150 deg - No Ice	45.02	13.96	23.97	2221.27	-1298.66	-3.19
0.9 Dead+1.0 Wind 150 deg - No Ice	33.77	13.96	23.97	2200.18	-1286.33	-3.17
1.2 Dead+1.0 Wind 180 deg - No Ice	45.02	0.25	27.84	2570.45	-29.09	-3.41
0.9 Dead+1.0 Wind 180 deg - No Ice	33.77	0.25	27.84	2546.01	-29.12	-3.40

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 210 deg - No Ice	45.02	-13.71	24.04	2214.56	1260.66	-2.34
0.9 Dead+1.0 Wind 210 deg - No Ice	33.77	-13.71	24.04	2193.59	1248.09	-2.33
1.2 Dead+1.0 Wind 240 deg - No Ice	45.02	-23.93	13.56	1243.96	2220.08	0.72
0.9 Dead+1.0 Wind 240 deg - No Ice	33.77	-23.93	13.56	1232.45	2198.11	0.72
1.2 Dead+1.0 Wind 270 deg - No Ice	45.02	-27.80	-0.25	-33.62	2575.38	2.04
0.9 Dead+1.0 Wind 270 deg - No Ice	33.77	-27.80	-0.25	-32.72	2549.97	2.04
1.2 Dead+1.0 Wind 300 deg - No Ice	45.02	-24.37	-14.19	-1315.72	2252.81	2.97
0.9 Dead+1.0 Wind 300 deg - No Ice	33.77	-24.37	-14.19	-1302.40	2230.56	2.95
1.2 Dead+1.0 Wind 330 deg - No Ice	45.02	-14.39	-24.63	-2262.41	1329.40	3.64
0.9 Dead+1.0 Wind 330 deg - No Ice	33.77	-14.39	-24.63	-2239.98	1316.14	3.62
1.2 Dead+1.0 Ice+1.0 Temp	81.20	0.00	-0.00	-4.65	2.14	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	81.20	-0.06	-7.99	-802.64	9.95	0.82
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	81.20	3.97	-6.89	-692.58	-394.15	0.40
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	81.20	6.90	-3.94	-397.81	-686.75	-0.03
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	81.20	7.98	0.04	0.32	-794.35	-0.34
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	81.20	6.96	4.03	397.75	-692.80	-0.55
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	81.20	4.02	6.92	686.21	-400.48	-0.72
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	81.20	0.05	7.97	791.56	-3.71	-0.73
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	81.20	-3.95	6.90	683.31	396.02	-0.47
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	81.20	-6.91	3.93	386.11	692.54	0.19
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	81.20	-8.00	-0.05	-10.99	800.91	0.48
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	81.20	-6.98	-4.05	-409.13	698.95	0.67
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	81.20	-4.05	-6.94	-697.73	407.41	0.80
Dead+Wind 0 deg - Service	37.52	-0.07	-6.11	-561.65	9.78	0.84
Dead+Wind 30 deg - Service	37.52	2.88	-5.02	-479.00	-272.69	0.43
Dead+Wind 60 deg - Service	37.52	5.02	-2.86	-272.92	-476.44	0.00
Dead+Wind 90 deg - Service	37.52	5.90	0.05	4.04	-556.41	-0.31
Dead+Wind 120 deg - Service	37.52	5.04	2.93	278.70	-480.46	-0.53
Dead+Wind 150 deg - Service	37.52	3.03	5.21	478.92	-279.89	-0.71
Dead+Wind 180 deg - Service	37.52	0.05	6.05	554.41	-5.40	-0.75
Dead+Wind 210 deg - Service	37.52	-2.98	5.22	477.47	273.44	-0.51
Dead+Wind 240 deg - Service	37.52	-5.20	2.95	267.64	480.86	0.17
Dead+Wind 270 deg - Service	37.52	-6.04	-0.06	-8.58	557.68	0.46
Dead+Wind 300 deg - Service	37.52	-5.30	-3.08	-285.79	487.94	0.66
Dead+Wind 330 deg - Service	37.52	-3.13	-5.35	-490.48	288.29	0.80

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-37.52	0.00	0.00	37.52	0.00	0.000%
2	-0.32	-45.02	-28.11	0.32	45.02	28.11	0.000%
3	-0.32	-33.77	-28.11	0.32	33.77	28.11	0.000%
4	13.25	-45.02	-23.08	-13.25	45.02	23.08	0.000%
5	13.25	-33.77	-23.08	-13.25	33.77	23.08	0.000%
6	23.11	-45.02	-13.18	-23.11	45.02	13.18	0.000%
7	23.11	-33.77	-13.18	-23.11	33.77	13.18	0.000%
8	27.14	-45.02	0.22	-27.14	45.02	-0.22	0.000%
9	27.14	-33.77	0.22	-27.14	33.77	-0.22	0.000%
10	23.20	-45.02	13.50	-23.20	45.02	-13.50	0.000%
11	23.20	-33.77	13.50	-23.20	33.77	-13.50	0.000%
12	13.96	-45.02	23.97	-13.96	45.02	-23.97	0.000%
13	13.96	-33.77	23.97	-13.96	33.77	-23.97	0.000%
14	0.25	-45.02	27.84	-0.25	45.02	-27.84	0.000%
15	0.25	-33.77	27.84	-0.25	33.77	-27.84	0.000%
16	-13.71	-45.02	24.04	13.71	45.02	-24.04	0.000%
17	-13.71	-33.77	24.04	13.71	33.77	-24.04	0.000%
18	-23.93	-45.02	13.56	23.93	45.02	-13.56	0.000%
19	-23.93	-33.77	13.56	23.93	33.77	-13.56	0.000%
20	-27.80	-45.02	-0.25	27.80	45.02	0.25	0.000%
21	-27.80	-33.77	-0.25	27.80	33.77	0.25	0.000%
22	-24.37	-45.02	-14.19	24.37	45.02	14.19	0.000%
23	-24.37	-33.77	-14.19	24.37	33.77	14.19	0.000%
24	-14.39	-45.02	-24.63	14.39	45.02	24.63	0.000%
25	-14.39	-33.77	-24.63	14.39	33.77	24.63	0.000%
26	0.00	-81.20	0.00	-0.00	81.20	0.00	0.000%
27	-0.06	-81.20	-7.99	0.06	81.20	7.99	0.000%
28	3.97	-81.20	-6.89	-3.97	81.20	6.89	0.000%
29	6.90	-81.20	-3.94	-6.90	81.20	3.94	0.000%
30	7.98	-81.20	0.04	-7.98	81.20	-0.04	0.000%
31	6.96	-81.20	4.03	-6.96	81.20	-4.03	0.000%
32	4.02	-81.20	6.92	-4.02	81.20	-6.92	0.000%
33	0.05	-81.20	7.97	-0.05	81.20	-7.97	0.000%
34	-3.95	-81.20	6.90	3.95	81.20	-6.90	0.000%
35	-6.91	-81.20	3.93	6.91	81.20	-3.93	0.000%
36	-8.00	-81.20	-0.05	8.00	81.20	0.05	0.000%
37	-6.98	-81.20	-4.05	6.98	81.20	4.05	0.000%
38	-4.05	-81.20	-6.94	4.05	81.20	6.94	0.000%
39	-0.07	-37.52	-6.11	0.07	37.52	6.11	0.000%
40	2.88	-37.52	-5.02	-2.88	37.52	5.02	0.000%
41	5.02	-37.52	-2.86	-5.02	37.52	2.86	0.000%
42	5.90	-37.52	0.05	-5.90	37.52	-0.05	0.000%
43	5.04	-37.52	2.93	-5.04	37.52	-2.93	0.000%
44	3.03	-37.52	5.21	-3.03	37.52	-5.21	0.000%
45	0.05	-37.52	6.05	-0.05	37.52	-6.05	0.000%
46	-2.98	-37.52	5.22	2.98	37.52	-5.22	0.000%
47	-5.20	-37.52	2.95	5.20	37.52	-2.95	0.000%
48	-6.04	-37.52	-0.06	6.04	37.52	0.06	0.000%
49	-5.30	-37.52	-3.08	5.30	37.52	3.08	0.000%
50	-3.13	-37.52	-5.35	3.13	37.52	5.35	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	6	0.00000001	0.00006429
3	Yes	5	0.00000001	0.00064761
4	Yes	6	0.00000001	0.00046648
5	Yes	6	0.00000001	0.00015817
6	Yes	6	0.00000001	0.00043768
7	Yes	6	0.00000001	0.00014785

8	Yes	5	0.00000001	0.00042652
9	Yes	5	0.00000001	0.00019867
10	Yes	6	0.00000001	0.00043394
11	Yes	6	0.00000001	0.00014520
12	Yes	6	0.00000001	0.00049694
13	Yes	6	0.00000001	0.00016831
14	Yes	6	0.00000001	0.00008782
15	Yes	5	0.00000001	0.00087766
16	Yes	6	0.00000001	0.00041228
17	Yes	6	0.00000001	0.00013863
18	Yes	6	0.00000001	0.00042645
19	Yes	6	0.00000001	0.00014394
20	Yes	6	0.00000001	0.00006064
21	Yes	5	0.00000001	0.00060149
22	Yes	6	0.00000001	0.00050373
23	Yes	6	0.00000001	0.00016984
24	Yes	6	0.00000001	0.00043435
25	Yes	6	0.00000001	0.00014432
26	Yes	4	0.00000001	0.00064243
27	Yes	7	0.00000001	0.00013340
28	Yes	7	0.00000001	0.00015733
29	Yes	7	0.00000001	0.00015638
30	Yes	7	0.00000001	0.00013216
31	Yes	7	0.00000001	0.00015636
32	Yes	7	0.00000001	0.00015759
33	Yes	7	0.00000001	0.00013110
34	Yes	7	0.00000001	0.00015299
35	Yes	7	0.00000001	0.00015313
36	Yes	7	0.00000001	0.00013215
37	Yes	7	0.00000001	0.00016063
38	Yes	7	0.00000001	0.00015848
39	Yes	5	0.00000001	0.00008174
40	Yes	5	0.00000001	0.00013951
41	Yes	5	0.00000001	0.00011712
42	Yes	4	0.00000001	0.00096595
43	Yes	5	0.00000001	0.00011202
44	Yes	5	0.00000001	0.00016149
45	Yes	5	0.00000001	0.00007918
46	Yes	5	0.00000001	0.00010565
47	Yes	5	0.00000001	0.00010923
48	Yes	5	0.00000001	0.00005594
49	Yes	5	0.00000001	0.00016285
50	Yes	5	0.00000001	0.00012017

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	137 - 132	16.237	50	0.9860	0.0138
L2	132 - 127	15.204	50	0.9858	0.0138
L3	127 - 125	14.173	50	0.9840	0.0106
L4	125 - 120	13.761	50	0.9821	0.0090
L5	120 - 115	12.734	50	0.9798	0.0083
L6	115 - 110	11.711	50	0.9727	0.0077
L7	110 - 105	10.699	50	0.9581	0.0069
L8	105 - 100	9.708	50	0.9319	0.0061
L9	100 - 95	8.752	50	0.8936	0.0052
L10	95 - 90	7.842	50	0.8409	0.0044
L11	90 - 89.25	6.996	50	0.7736	0.0036
L12	89.25 - 89	6.875	50	0.7622	0.0035
L13	89 - 85.66	6.835	50	0.7593	0.0034
L14	85.66 - 85.41	6.319	50	0.7171	0.0030
L15	85.41 - 81.15	6.281	50	0.7138	0.0030
L16	81.15 - 80.9	5.671	50	0.6520	0.0024
L17	80.9 - 80.5	5.637	50	0.6496	0.0024
L18	80.5 - 80.25	5.583	50	0.6458	0.0024
L19	80.25 - 80	5.549	50	0.6440	0.0024

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L20	80 - 79.75	5.515	50	0.6422	0.0024
L21	79.75 - 79	5.482	50	0.6411	0.0024
L22	79 - 78.75	5.381	50	0.6375	0.0023
L23	78.75 - 73.75	5.348	50	0.6359	0.0023
L24	73.75 - 68.75	4.700	50	0.6016	0.0021
L25	68.75 - 65.5	4.090	50	0.5626	0.0018
L26	65.5 - 65.25	3.716	50	0.5345	0.0017
L27	65.25 - 60.25	3.688	50	0.5327	0.0017
L28	60.25 - 58.4	3.150	50	0.4940	0.0015
L29	58.4 - 58.15	2.962	50	0.4786	0.0014
L30	58.15 - 57.5	2.937	50	0.4770	0.0014
L31	57.5 - 57.25	2.872	50	0.4727	0.0014
L32	57.25 - 52.25	2.848	50	0.4708	0.0014
L33	52.25 - 49.5	2.376	50	0.4296	0.0012
L34	49.5 - 49.25	2.135	50	0.4052	0.0011
L35	49.25 - 44.25	2.114	50	0.4034	0.0011
L36	44.25 - 41.9	1.712	50	0.3640	0.0009
L37	41.9 - 41.65	1.538	50	0.3443	0.0009
L38	41.65 - 40.75	1.520	50	0.3417	0.0009
L39	40.75 - 40.5	1.456	50	0.3323	0.0008
L40	40.5 - 40	1.439	50	0.3304	0.0008
L41	40 - 39.75	1.405	50	0.3263	0.0008
L42	39.75 - 39.25	1.388	50	0.3251	0.0008
L43	39.25 - 39	1.354	50	0.3225	0.0008
L44	39 - 34	1.337	50	0.3208	0.0008
L45	34 - 29	1.020	50	0.2847	0.0007
L46	29 - 24	0.742	50	0.2458	0.0006
L47	24 - 19.5	0.506	50	0.2040	0.0005
L48	19.5 - 19.25	0.332	50	0.1640	0.0004
L49	19.25 - 14.25	0.324	50	0.1619	0.0003
L50	14.25 - 13	0.177	50	0.1186	0.0002
L51	13 - 12.75	0.147	50	0.1073	0.0002
L52	12.75 - 7.75	0.141	50	0.1054	0.0002
L53	7.75 - 3.67	0.052	50	0.0647	0.0001
L54	3.67 - 3.42	0.012	50	0.0298	0.0001
L55	3.42 - 1.5	0.010	50	0.0278	0.0001
L56	1.5 - 1.25	0.002	50	0.0127	0.0000
L57	1.25 - 0.5	0.001	50	0.0106	0.0000
L58	0.5 - 0.25	0.000	50	0.0000	0.0000
L59	0.25 - 0	0.000	1	0.0000	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	VHLP2.5-18	50	14.998	0.9857	0.0134	136486
124.00	LLPX310R-V4 w/ Mount Pipe	50	13.555	0.9815	0.0085	75057
122.00	TME-PCS 1900MHz 4x45W-65MHz	50	13.144	0.9807	0.0083	71276
113.00	7770.00 w/ Mount Pipe	50	11.304	0.9679	0.0073	20003
103.00	MX08FRO665-21 w/ Mount Pipe	50	9.321	0.9182	0.0057	7695
80.00	Bridge Stiffener (10"x42.25"x1")	50	5.515	0.6422	0.0024	6306
50.00	KS24019-L112A	50	2.178	0.4093	0.0011	6874
40.00	Bridge Stiffener (9"x52"x1")	50	1.405	0.3263	0.0008	7405

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	137 - 132	75.001	24	4.5646	0.0641
L2	132 - 127	70.231	24	4.5638	0.0641
L3	127 - 125	65.464	24	4.5547	0.0493

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L4	125 - 120	63.561	24	4.5455	0.0417
L5	120 - 115	58.814	24	4.5343	0.0387
L6	115 - 110	54.090	24	4.5006	0.0356
L7	110 - 105	49.416	24	4.4328	0.0320
L8	105 - 100	44.841	24	4.3113	0.0282
L9	100 - 95	40.421	24	4.1338	0.0243
L10	95 - 90	36.220	24	3.8899	0.0204
L11	90 - 89.25	32.309	24	3.5779	0.0165
L12	89.25 - 89	31.751	24	3.5251	0.0160
L13	89 - 85.66	31.567	24	3.5115	0.0158
L14	85.66 - 85.41	29.181	24	3.3162	0.0139
L15	85.41 - 81.15	29.007	24	3.3006	0.0137
L16	81.15 - 80.9	26.190	24	3.0143	0.0112
L17	80.9 - 80.5	26.033	24	3.0034	0.0111
L18	80.5 - 80.25	25.782	24	2.9857	0.0110
L19	80.25 - 80	25.626	24	2.9774	0.0109
L20	80 - 79.75	25.470	24	2.9691	0.0108
L21	79.75 - 79	25.315	24	2.9637	0.0108
L22	79 - 78.75	24.851	24	2.9472	0.0107
L23	78.75 - 73.75	24.697	24	2.9398	0.0106
L24	73.75 - 68.75	21.702	24	2.7810	0.0095
L25	68.75 - 65.5	18.885	24	2.6000	0.0084
L26	65.5 - 65.25	17.159	24	2.4703	0.0077
L27	65.25 - 60.25	17.030	24	2.4618	0.0076
L28	60.25 - 58.4	14.546	24	2.2824	0.0067
L29	58.4 - 58.15	13.676	24	2.2112	0.0064
L30	58.15 - 57.5	13.560	24	2.2037	0.0063
L31	57.5 - 57.25	13.262	24	2.1840	0.0062
L32	57.25 - 52.25	13.148	24	2.1750	0.0062
L33	52.25 - 49.5	10.969	24	1.9844	0.0054
L34	49.5 - 49.25	9.859	24	1.8719	0.0049
L35	49.25 - 44.25	9.761	24	1.8632	0.0049
L36	44.25 - 41.9	7.904	24	1.6811	0.0042
L37	41.9 - 41.65	7.099	24	1.5900	0.0039
L38	41.65 - 40.75	7.016	24	1.5780	0.0039
L39	40.75 - 40.5	6.723	24	1.5346	0.0037
L40	40.5 - 40	6.643	24	1.5259	0.0037
L41	40 - 39.75	6.484	24	1.5071	0.0037
L42	39.75 - 39.25	6.406	24	1.5012	0.0036
L43	39.25 - 39	6.249	24	1.4895	0.0036
L44	39 - 34	6.171	24	1.4815	0.0036
L45	34 - 29	4.706	24	1.3147	0.0031
L46	29 - 24	3.423	24	1.1349	0.0026
L47	24 - 19.5	2.334	24	0.9419	0.0021
L48	19.5 - 19.25	1.533	24	0.7569	0.0016
L49	19.25 - 14.25	1.494	24	0.7472	0.0016
L50	14.25 - 13	0.815	24	0.5473	0.0011
L51	13 - 12.75	0.678	24	0.4954	0.0010
L52	12.75 - 7.75	0.653	24	0.4863	0.0010
L53	7.75 - 3.67	0.241	24	0.2986	0.0006
L54	3.67 - 3.42	0.054	24	0.1373	0.0003
L55	3.42 - 1.5	0.047	24	0.1284	0.0002
L56	1.5 - 1.25	0.009	24	0.0587	0.0001
L57	1.25 - 0.5	0.006	24	0.0489	0.0001
L58	0.5 - 0.25	0.001	24	0.0192	0.0000
L59	0.25 - 0	0.000	24	0.0096	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	VHLP2.5-18	24	69.276	4.5633	0.0624	41672
124.00	LLPX310R-V4 w/ Mount Pipe	24	62.611	4.5424	0.0396	19697
122.00	TME-PCS 1900MHz 4x45W-65MHz	24	60.711	4.5388	0.0384	17219

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
113.00	7770.00 w/ Mount Pipe	24	52.212	4.4786	0.0341	4448
103.00	MX08FRO665-21 w/ Mount Pipe	24	43.051	4.2478	0.0266	1682
80.00	Bridge Stiffener (10"x42.25"x1")	24	25.470	2.9691	0.0108	1370
50.00	KS24019-L112A	24	10.056	1.8904	0.0050	1489
40.00	Bridge Stiffener (9"x52"x1")	24	6.484	1.5071	0.0037	1605

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	137 - 132 (1)	P12.75x0.375	5.00	0.00	0.0	14.5790	-0.28	459.24	0.001
L2	132 - 127 (2)	P12.75x0.375	5.00	0.00	0.0	14.5790	-0.61	459.24	0.001
L3	127 - 125 (3)	P12.75x0.375	2.00	0.00	0.0	14.5790	-0.72	459.24	0.002
L4	125 - 120 (4)	P24x0.375	5.00	0.00	0.0	27.8325	-5.21	876.73	0.006
L5	120 - 115 (5)	P24x0.375	5.00	0.00	0.0	27.8325	-5.82	876.73	0.007
L6	115 - 110 (6)	P24x0.375	5.00	0.00	0.0	27.8325	-10.82	876.73	0.012
L7	110 - 105 (7)	P24x0.375	5.00	0.00	0.0	27.8325	-11.51	876.73	0.013
L8	105 - 100 (8)	P24x0.375	5.00	0.00	0.0	27.8325	-15.22	876.73	0.017
L9	100 - 95 (9)	P24x0.375	5.00	0.00	0.0	27.8325	-15.97	876.73	0.018
L10	95 - 90 (10)	P24x0.375	5.00	0.00	0.0	27.8325	-16.75	876.73	0.019
L11	90 - 89.25 (11)	P24x0.375	0.75	0.00	0.0	27.8325	-16.87	876.73	0.019
L12	89.25 - 89 (12)	P24x0.5	0.25	0.00	0.0	36.9137	-16.93	1162.78	0.015
L13	89 - 85.66 (13)	P24x0.5	3.34	0.00	0.0	36.9137	-17.56	1162.78	0.015
L14	85.66 - 85.41 (14)	P24x0.5	0.25	0.00	0.0	36.9137	-17.62	1162.78	0.015
L15	85.41 - 81.15 (15)	P24x0.5	4.26	0.00	0.0	36.9137	-18.48	1162.78	0.016
L16	81.15 - 80.9 (16)	P24x0.8625	0.25	0.00	0.0	62.6939	-18.55	1974.86	0.009
L17	80.9 - 80.5 (17)	P24x0.8625	0.40	0.00	0.0	62.6939	-18.65	1974.86	0.009
L18	80.5 - 80.25 (18)	P24x1.225	0.25	0.00	0.0	87.6485	-18.72	2760.93	0.007
L19	80.25 - 80 (19)	P24x1.225	0.25	0.00	0.0	87.6485	-18.79	2760.93	0.007
L20	80 - 79.75 (20)	P36x0.5	0.25	0.00	0.0	55.7633	-19.16	1756.54	0.011
L21	79.75 - 79 (21)	P36x0.5	0.75	0.00	0.0	55.7633	-19.36	1756.54	0.011
L22	79 - 78.75 (22)	P36x0.375	0.25	0.00	0.0	41.9697	-19.42	1313.82	0.015
L23	78.75 - 73.75 (23)	P36x0.375	5.00	0.00	0.0	41.9697	-20.48	1313.82	0.016
L24	73.75 - 68.75 (24)	P36x0.375	5.00	0.00	0.0	41.9697	-21.56	1313.82	0.016
L25	68.75 - 65.5 (25)	P36x0.375	3.25	0.00	0.0	41.9697	-22.27	1313.82	0.017
L26	65.5 - 65.25 (26)	P36x0.4625	0.25	0.00	0.0	51.6355	-22.34	1626.52	0.014
L27	65.25 - 60.25	P36x0.4625	5.00	0.00	0.0	51.635	-23.61	1626.52	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(27)					5			
L28	60.25 - 58.4	P36x0.4625	1.85	0.00	0.0	51.635	-24.10	1626.52	0.015
	(28)					5			
L29	58.4 - 58.15	P36x0.6125	0.25	0.00	0.0	68.093	-24.19	2144.95	0.011
	(29)					5			
L30	58.15 - 57.5	P36x0.6125	0.65	0.00	0.0	68.093	-24.40	2144.95	0.011
	(30)					5			
L31	57.5 - 57.25	P36x0.5125	0.25	0.00	0.0	57.137	-24.48	1799.82	0.014
	(31)					2			
L32	57.25 - 52.25	P36x0.5125	5.00	0.00	0.0	57.137	-25.97	1799.82	0.014
	(32)					2			
L33	52.25 - 49.5	P36x0.5125	2.75	0.00	0.0	57.137	-26.87	1799.82	0.015
	(33)					2			
L34	49.5 - 49.25	P36x0.625	0.25	0.00	0.0	69.458	-26.96	2187.95	0.012
	(34)					6			
L35	49.25 - 44.25	P36x0.625	5.00	0.00	0.0	69.458	-28.61	2187.95	0.013
	(35)					6			
L36	44.25 - 41.9	P36x0.625	2.35	0.00	0.0	69.458	-29.40	2187.95	0.013
	(36)					6			
L37	41.9 - 41.65	P36x0.5125	0.25	0.00	0.0	57.137	-29.48	1799.82	0.016
	(37)					2			
L38	41.65 - 40.75	P36x0.5125	0.90	0.00	0.0	57.137	-29.75	1799.82	0.017
	(38)					2			
L39	40.75 - 40.5	P36x0.7375	0.25	0.00	0.0	81.700	-29.84	2573.57	0.012
	(39)					6			
L40	40.5 - 40 (40)	P36x0.675	0.50	0.00	0.0	74.909	-30.00	2359.64	0.013
						3			
L41	40 - 39.75	P42x0.6875	0.25	0.00	0.0	89.228	-30.50	2810.70	0.011
	(41)					6			
L42	39.75 - 39.25	P42x0.6875	0.50	0.00	0.0	89.228	-30.70	2810.70	0.011
	(42)					6			
L43	39.25 - 39	P42x0.5	0.25	0.00	0.0	65.188	-30.78	2053.42	0.015
	(43)					0			
L44	39 - 34 (44)	P42x0.5	5.00	0.00	0.0	65.188	-32.35	2053.42	0.016
						0			
L45	34 - 29 (45)	P42x0.5	5.00	0.00	0.0	65.188	-33.94	2053.42	0.017
						0			
L46	29 - 24 (46)	P42x0.5	5.00	0.00	0.0	65.188	-35.53	2053.42	0.017
						0			
L47	24 - 19.5 (47)	P42x0.5	4.50	0.00	0.0	65.188	-36.97	2053.42	0.018
						0			
L48	19.5 - 19.25	P42x0.55	0.25	0.00	0.0	71.620	-37.06	2256.04	0.016
	(48)					5			
L49	19.25 - 14.25	P42x0.55	5.00	0.00	0.0	71.620	-38.84	2256.04	0.017
	(49)					5			
L50	14.25 - 13	P42x0.55	1.25	0.00	0.0	71.620	-39.31	2256.04	0.017
	(50)					5			
L51	13 - 12.75	P42x0.6375	0.25	0.00	0.0	82.839	-39.43	2609.44	0.015
	(51)					4			
L52	12.75 - 7.75	P42x0.6375	5.00	0.00	0.0	82.839	-41.58	2609.44	0.016
	(52)					4			
L53	7.75 - 3.67	P42x0.6375	4.08	0.00	0.0	82.839	-43.35	2609.44	0.017
	(53)					4			
L54	3.67 - 3.42	P42x0.725	0.25	0.00	0.0	94.010	-43.47	2961.32	0.015
	(54)					2			
L55	3.42 - 1.5 (55)	P42x0.725	1.92	0.00	0.0	94.010	-44.35	2961.32	0.015
						2			
L56	1.5 - 1.25 (56)	P42x0.675	0.25	0.00	0.0	87.632	-44.47	2760.43	0.016
						8			
L57	1.25 - 0.5 (57)	P42x0.675	0.75	0.00	0.0	87.632	-44.79	2760.43	0.016
						8			
L58	0.5 - 0.25 (58)	P42x0.7	0.25	0.00	0.0	90.823	-44.91	2860.94	0.016
						4			
L59	0.25 - 0 (59)	P42x0.7	0.25	0.00	0.0	90.823	-45.02	2860.94	0.016
						4			

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	137 - 132 (1)	P12.75x0.375	0.48	150.79	0.003	0.00	150.79	0.000
L2	132 - 127 (2)	P12.75x0.375	3.94	150.79	0.026	0.00	150.79	0.000
L3	127 - 125 (3)	P12.75x0.375	5.61	150.79	0.037	0.00	150.79	0.000
L4	125 - 120 (4)	P24x0.375	30.49	538.74	0.057	0.00	538.74	0.000
L5	120 - 115 (5)	P24x0.375	62.91	538.74	0.117	0.00	538.74	0.000
L6	115 - 110 (6)	P24x0.375	130.04	538.74	0.241	0.00	538.74	0.000
L7	110 - 105 (7)	P24x0.375	202.56	538.74	0.376	0.00	538.74	0.000
L8	105 - 100 (8)	P24x0.375	286.79	538.74	0.532	0.00	538.74	0.000
L9	100 - 95 (9)	P24x0.375	379.28	538.74	0.704	0.00	538.74	0.000
L10	95 - 90 (10)	P24x0.375	473.11	538.74	0.878	0.00	538.74	0.000
L11	90 - 89.25 (11)	P24x0.375	487.29	538.74	0.904	0.00	538.74	0.000
L12	89.25 - 89 (12)	P24x0.5	492.02	724.94	0.679	0.00	724.94	0.000
L13	89 - 85.66 (13)	P24x0.5	555.89	724.94	0.767	0.00	724.94	0.000
L14	85.66 - 85.41 (14)	P24x0.5	560.73	724.94	0.773	0.00	724.94	0.000
L15	85.41 - 81.15 (15)	P24x0.5	644.15	724.94	0.889	0.00	724.94	0.000
L16	81.15 - 80.9 (16)	P24x0.8625	649.11	1212.62	0.535	0.00	1212.62	0.000
L17	80.9 - 80.5 (17)	P24x0.8625	657.06	1212.62	0.542	0.00	1212.62	0.000
L18	80.5 - 80.25 (18)	P24x1.225	662.04	1669.56	0.397	0.00	1669.56	0.000
L19	80.25 - 80 (19)	P24x1.225	667.02	1669.56	0.400	0.00	1669.56	0.000
L20	80 - 79.75 (20)	P36x0.5	672.08	1586.55	0.424	0.00	1586.55	0.000
L21	79.75 - 79 (21)	P36x0.5	687.28	1586.55	0.433	0.00	1586.55	0.000
L22	79 - 78.75 (22)	P36x0.375	692.36	1144.59	0.605	0.00	1144.59	0.000
L23	78.75 - 73.75 (23)	P36x0.375	795.11	1144.59	0.695	0.00	1144.59	0.000
L24	73.75 - 68.75 (24)	P36x0.375	900.35	1144.59	0.787	0.00	1144.59	0.000
L25	68.75 - 65.5 (25)	P36x0.375	969.81	1144.59	0.847	0.00	1144.59	0.000
L26	65.5 - 65.25 (26)	P36x0.4625	975.18	1450.93	0.672	0.00	1450.93	0.000
L27	65.25 - 60.25 (27)	P36x0.4625	1083.72	1450.93	0.747	0.00	1450.93	0.000
L28	60.25 - 58.4 (28)	P36x0.4625	1124.55	1450.93	0.775	0.00	1450.93	0.000
L29	58.4 - 58.15 (29)	P36x0.6125	1130.12	2013.63	0.561	0.00	2013.63	0.000
L30	58.15 - 57.5 (30)	P36x0.6125	1144.62	2013.63	0.568	0.00	2013.63	0.000
L31	57.5 - 57.25 (31)	P36x0.5125	1150.22	1632.33	0.705	0.00	1632.33	0.000
L32	57.25 - 52.25 (32)	P36x0.5125	1263.18	1632.33	0.774	0.00	1632.33	0.000
L33	52.25 - 49.5 (33)	P36x0.5125	1326.54	1632.33	0.813	0.00	1632.33	0.000
L34	49.5 - 49.25 (34)	P36x0.625	1332.36	2053.28	0.649	0.00	2053.28	0.000
L35	49.25 - 44.25 (35)	P36x0.625	1451.93	2053.28	0.707	0.00	2053.28	0.000
L36	44.25 - 41.9 (36)	P36x0.625	1509.58	2053.28	0.735	0.00	2053.28	0.000
L37	41.9 - 41.65 (37)	P36x0.5125	1515.77	1632.33	0.929	0.00	1632.33	0.000
L38	41.65 - 40.75 (38)	P36x0.5125	1538.11	1632.33	0.942	0.00	1632.33	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 $\frac{M_{uy}}{\phi M_{ny}}$
L39	40.75 - 40.5 (39)	P36x0.7375	1544.33	2407.58	0.641	0.00	2407.58	0.000
L40	40.5 - 40 (40)	P36x0.675	1556.80	2211.32	0.704	0.00	2211.32	0.000
L41	40 - 39.75 (41)	P42x0.6875	1563.11	3048.40	0.513	0.00	3048.40	0.000
L42	39.75 - 39.25 (42)	P42x0.6875	1575.74	3048.40	0.517	0.00	3048.40	0.000
L43	39.25 - 39 (43)	P42x0.5	1582.07	2112.71	0.749	0.00	2112.71	0.000
L44	39 - 34 (44)	P42x0.5	1709.53	2112.71	0.809	0.00	2112.71	0.000
L45	34 - 29 (45)	P42x0.5	1838.78	2112.71	0.870	0.00	2112.71	0.000
L46	29 - 24 (46)	P42x0.5	1969.63	2112.71	0.932	0.00	2112.71	0.000
L47	24 - 19.5 (47)	P42x0.5	2088.63	2112.71	0.989	0.00	2112.71	0.000
L48	19.5 - 19.25 (48)	P42x0.55	2095.28	2354.93	0.890	0.00	2354.93	0.000
L49	19.25 - 14.25 (49)	P42x0.55	2228.81	2354.93	0.946	0.00	2354.93	0.000
L50	14.25 - 13 (50)	P42x0.55	2262.49	2354.93	0.961	0.00	2354.93	0.000
L51	13 - 12.75 (51)	P42x0.6375	2269.25	2791.64	0.813	0.00	2791.64	0.000
L52	12.75 - 7.75 (52)	P42x0.6375	2406.07	2791.64	0.862	0.00	2791.64	0.000
L53	7.75 - 3.67 (53)	P42x0.6375	2519.95	2791.64	0.903	0.00	2791.64	0.000
L54	3.67 - 3.42 (54)	P42x0.725	2526.99	3242.55	0.779	0.00	3242.55	0.000
L55	3.42 - 1.5 (55)	P42x0.725	2581.32	3242.55	0.796	0.00	3242.55	0.000
L56	1.5 - 1.25 (56)	P42x0.675	2588.43	2983.72	0.868	0.00	2983.72	0.000
L57	1.25 - 0.5 (57)	P42x0.675	2609.80	2983.72	0.875	0.00	2983.72	0.000
L58	0.5 - 0.25 (58)	P42x0.7	2616.93	3113.41	0.841	0.00	3113.41	0.000
L59	0.25 - 0 (59)	P42x0.7	2624.07	3113.41	0.843	0.00	3113.41	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	137 - 132 (1)	P12.75x0.375	0.19	137.77	0.001	0.00	149.89	0.000
L2	132 - 127 (2)	P12.75x0.375	0.79	137.77	0.006	1.18	149.89	0.008
L3	127 - 125 (3)	P12.75x0.375	0.87	137.77	0.006	1.18	149.89	0.008
L4	125 - 120 (4)	P24x0.375	6.25	263.02	0.024	1.78	546.31	0.003
L5	120 - 115 (5)	P24x0.375	6.69	263.02	0.025	2.37	546.31	0.004
L6	115 - 110 (6)	P24x0.375	14.34	263.02	0.055	3.00	546.31	0.005
L7	110 - 105 (7)	P24x0.375	14.67	263.02	0.056	3.00	546.31	0.005
L8	105 - 100 (8)	P24x0.375	18.36	263.02	0.070	3.86	546.31	0.007
L9	100 - 95 (9)	P24x0.375	18.65	263.02	0.071	3.86	546.31	0.007
L10	95 - 90 (10)	P24x0.375	18.90	263.02	0.072	3.86	546.31	0.007
L11	90 - 89.25 (11)	P24x0.375	18.93	263.02	0.072	3.86	546.31	0.007
L12	89.25 - 89 (12)	P24x0.5	18.94	348.83	0.054	3.86	720.72	0.005
L13	89 - 85.66 (13)	P24x0.5	19.31	348.83	0.055	3.85	720.72	0.005
L14	85.66 - 85.41 (14)	P24x0.5	19.34	348.83	0.055	3.85	720.72	0.005
L15	85.41 - 81.15 (15)	P24x0.5	19.82	348.83	0.057	3.85	720.72	0.005
L16	81.15 - 80.9 (16)	P24x0.8625	19.84	592.46	0.033	3.85	1205.18	0.003
L17	80.9 - 80.5 (17)	P24x0.8625	19.89	592.46	0.034	3.85	1205.18	0.003
L18	80.5 - 80.25 (18)	P24x1.225	19.92	828.28	0.024	3.85	1658.49	0.002
L19	80.25 - 80 (19)	P24x1.225	19.94	828.28	0.024	3.85	1658.49	0.002

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 $\frac{T_u}{\phi T_n}$
L20	80 - 79.75 (20)	P36x0.5	20.23	526.96	0.038	3.85	1644.71	0.002
L21	79.75 - 79 (21)	P36x0.5	20.29	526.96	0.039	3.85	1644.71	0.002
L22	79 - 78.75 (22)	P36x0.375	20.32	396.61	0.051	3.85	1094.28	0.004
L23	78.75 - 73.75 (23)	P36x0.375	20.84	396.61	0.053	3.17	1094.28	0.003
L24	73.75 - 68.75 (24)	P36x0.375	21.24	396.61	0.054	3.17	1094.28	0.003
L25	68.75 - 65.5 (25)	P36x0.375	21.49	396.61	0.054	3.17	1094.28	0.003
L26	65.5 - 65.25 (26)	P36x0.4625	21.50	487.96	0.044	3.17	1524.57	0.002
L27	65.25 - 60.25 (27)	P36x0.4625	21.89	487.96	0.045	3.17	1524.57	0.002
L28	60.25 - 58.4 (28)	P36x0.4625	22.19	487.96	0.045	3.17	1524.57	0.002
L29	58.4 - 58.15 (29)	P36x0.6125	22.22	643.48	0.035	3.17	2002.02	0.002
L30	58.15 - 57.5 (30)	P36x0.6125	22.33	643.48	0.035	3.17	2002.02	0.002
L31	57.5 - 57.25 (31)	P36x0.5125	22.37	539.95	0.041	3.17	1684.63	0.002
L32	57.25 - 52.25 (32)	P36x0.5125	22.74	539.95	0.042	3.17	1684.63	0.002
L33	52.25 - 49.5 (33)	P36x0.5125	23.22	539.95	0.043	3.17	1684.63	0.002
L34	49.5 - 49.25 (34)	P36x0.625	23.25	656.38	0.035	2.97	2041.43	0.001
L35	49.25 - 44.25 (35)	P36x0.625	24.32	656.38	0.037	3.64	2041.43	0.002
L36	44.25 - 41.9 (36)	P36x0.625	24.68	656.38	0.038	3.64	2041.43	0.002
L37	41.9 - 41.65 (37)	P36x0.5125	24.71	539.95	0.046	3.64	1684.63	0.002
L38	41.65 - 40.75 (38)	P36x0.5125	24.85	539.95	0.046	3.64	1684.63	0.002
L39	40.75 - 40.5 (39)	P36x0.7375	24.88	772.07	0.032	3.64	2393.59	0.002
L40	40.5 - 40 (40)	P36x0.675	24.95	707.89	0.035	3.64	2198.52	0.002
L41	40 - 39.75 (41)	P42x0.6875	25.23	843.21	0.030	3.64	3062.65	0.001
L42	39.75 - 39.25 (42)	P42x0.6875	25.28	843.21	0.030	3.64	3062.65	0.001
L43	39.25 - 39 (43)	P42x0.5	25.29	616.03	0.041	3.64	2247.64	0.002
L44	39 - 34 (44)	P42x0.5	25.67	616.03	0.042	3.64	2247.64	0.002
L45	34 - 29 (45)	P42x0.5	26.01	616.03	0.042	3.64	2247.64	0.002
L46	29 - 24 (46)	P42x0.5	26.32	616.03	0.043	3.64	2247.64	0.002
L47	24 - 19.5 (47)	P42x0.5	26.57	616.03	0.043	3.64	2247.64	0.002
L48	19.5 - 19.25 (48)	P42x0.55	26.57	676.81	0.039	3.64	2466.46	0.001
L49	19.25 - 14.25 (49)	P42x0.55	26.82	676.81	0.040	3.64	2466.46	0.001
L50	14.25 - 13 (50)	P42x0.55	26.98	676.81	0.040	3.64	2466.46	0.001
L51	13 - 12.75 (51)	P42x0.6375	27.00	782.83	0.034	3.64	2846.79	0.001
L52	12.75 - 7.75 (52)	P42x0.6375	27.62	782.83	0.035	3.64	2846.79	0.001
L53	7.75 - 3.67 (53)	P42x0.6375	28.11	782.83	0.036	3.64	2846.79	0.001
L54	3.67 - 3.42 (54)	P42x0.725	28.13	888.40	0.032	3.64	3223.84	0.001
L55	3.42 - 1.5 (55)	P42x0.725	28.38	888.40	0.032	3.64	3223.84	0.001
L56	1.5 - 1.25 (56)	P42x0.675	28.39	828.13	0.034	3.64	3008.78	0.001
L57	1.25 - 0.5 (57)	P42x0.675	28.48	828.13	0.034	3.64	3008.78	0.001
L58	0.5 - 0.25 (58)	P42x0.7	28.50	858.28	0.033	3.64	3116.44	0.001

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 $\frac{T_u}{\phi T_n}$
L59	0.25 - 0 (59)	P42x0.7	28.53	858.28	0.033	3.64	3116.44	0.001

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	137 - 132 (1)	0.001	0.003	0.000	0.001	0.000	0.004	1.050	4.8.2
L2	132 - 127 (2)	0.001	0.026	0.000	0.006	0.008	0.028	1.050	4.8.2
L3	127 - 125 (3)	0.002	0.037	0.000	0.006	0.008	0.039	1.050	4.8.2
L4	125 - 120 (4)	0.006	0.057	0.000	0.024	0.003	0.063	1.050	4.8.2
L5	120 - 115 (5)	0.007	0.117	0.000	0.025	0.004	0.124	1.050	4.8.2
L6	115 - 110 (6)	0.012	0.241	0.000	0.055	0.005	0.257	1.050	4.8.2
L7	110 - 105 (7)	0.013	0.376	0.000	0.056	0.005	0.393	1.050	4.8.2
L8	105 - 100 (8)	0.017	0.532	0.000	0.070	0.007	0.556	1.050	4.8.2
L9	100 - 95 (9)	0.018	0.704	0.000	0.071	0.007	0.728	1.050	4.8.2
L10	95 - 90 (10)	0.019	0.878	0.000	0.072	0.007	0.904	1.050	4.8.2
L11	90 - 89.25 (11)	0.019	0.904	0.000	0.072	0.007	0.930	1.050	4.8.2
L12	89.25 - 89 (12)	0.015	0.679	0.000	0.054	0.005	0.697	1.050	4.8.2
L13	89 - 85.66 (13)	0.015	0.767	0.000	0.055	0.005	0.786	1.050	4.8.2
L14	85.66 - 85.41 (14)	0.015	0.773	0.000	0.055	0.005	0.792	1.050	4.8.2
L15	85.41 - 81.15 (15)	0.016	0.889	0.000	0.057	0.005	0.908	1.050	4.8.2
L16	81.15 - 80.9 (16)	0.009	0.535	0.000	0.033	0.003	0.546	1.050	4.8.2
L17	80.9 - 80.5 (17)	0.009	0.542	0.000	0.034	0.003	0.553	1.050	4.8.2
L18	80.5 - 80.25 (18)	0.007	0.397	0.000	0.024	0.002	0.404	1.050	4.8.2
L19	80.25 - 80 (19)	0.007	0.400	0.000	0.024	0.002	0.407	1.050	4.8.2
L20	80 - 79.75 (20)	0.011	0.424	0.000	0.038	0.002	0.436	1.050	4.8.2
L21	79.75 - 79 (21)	0.011	0.433	0.000	0.039	0.002	0.446	1.050	4.8.2
L22	79 - 78.75 (22)	0.015	0.605	0.000	0.051	0.004	0.623	1.050	4.8.2
L23	78.75 - 73.75 (23)	0.016	0.695	0.000	0.053	0.003	0.713	1.050	4.8.2
L24	73.75 - 68.75 (24)	0.016	0.787	0.000	0.054	0.003	0.806	1.050	4.8.2
L25	68.75 - 65.5 (25)	0.017	0.847	0.000	0.054	0.003	0.868	1.050	4.8.2
L26	65.5 - 65.25 (26)	0.014	0.672	0.000	0.044	0.002	0.688	1.050	4.8.2
L27	65.25 - 60.25 (27)	0.015	0.747	0.000	0.045	0.002	0.764	1.050	4.8.2
L28	60.25 - 58.4 (28)	0.015	0.775	0.000	0.045	0.002	0.792	1.050	4.8.2
L29	58.4 - 58.15 (29)	0.011	0.561	0.000	0.035	0.002	0.574	1.050	4.8.2
L30	58.15 - 57.5 (30)	0.011	0.568	0.000	0.035	0.002	0.581	1.050	4.8.2
L31	57.5 - 57.25 (31)	0.014	0.705	0.000	0.041	0.002	0.720	1.050	4.8.2
L32	57.25 - 52.25 (32)	0.014	0.774	0.000	0.042	0.002	0.790	1.050	4.8.2
L33	52.25 - 49.5 (33)	0.015	0.813	0.000	0.043	0.002	0.830	1.050	4.8.2
L34	49.5 - 49.25 (34)	0.012	0.649	0.000	0.035	0.001	0.663	1.050	4.8.2
L35	49.25 - 44.25	0.013	0.707	0.000	0.037	0.002	0.722	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(35)								
L36	44.25 - 41.9 (36)	0.013	0.735	0.000	0.038	0.002	0.750	1.050	4.8.2
L37	41.9 - 41.65 (37)	0.016	0.929	0.000	0.046	0.002	0.947	1.050	4.8.2
L38	41.65 - 40.75 (38)	0.017	0.942	0.000	0.046	0.002	0.961	1.050	4.8.2
L39	40.75 - 40.5 (39)	0.012	0.641	0.000	0.032	0.002	0.654	1.050	4.8.2
L40	40.5 - 40 (40)	0.013	0.704	0.000	0.035	0.002	0.718	1.050	4.8.2
L41	40 - 39.75 (41)	0.011	0.513	0.000	0.030	0.001	0.525	1.050	4.8.2
L42	39.75 - 39.25 (42)	0.011	0.517	0.000	0.030	0.001	0.529	1.050	4.8.2
L43	39.25 - 39 (43)	0.015	0.749	0.000	0.041	0.002	0.766	1.050	4.8.2
L44	39 - 34 (44)	0.016	0.809	0.000	0.042	0.002	0.827	1.050	4.8.2
L45	34 - 29 (45)	0.017	0.870	0.000	0.042	0.002	0.889	1.050	4.8.2
L46	29 - 24 (46)	0.017	0.932	0.000	0.043	0.002	0.952	1.050	4.8.2
L47	24 - 19.5 (47)	0.018	0.989	0.000	0.043	0.002	1.009	1.050	4.8.2
L48	19.5 - 19.25 (48)	0.016	0.890	0.000	0.039	0.001	0.908	1.050	4.8.2
L49	19.25 - 14.25 (49)	0.017	0.946	0.000	0.040	0.001	0.965	1.050	4.8.2
L50	14.25 - 13 (50)	0.017	0.961	0.000	0.040	0.001	0.980	1.050	4.8.2
L51	13 - 12.75 (51)	0.015	0.813	0.000	0.034	0.001	0.829	1.050	4.8.2
L52	12.75 - 7.75 (52)	0.016	0.862	0.000	0.035	0.001	0.879	1.050	4.8.2
L53	7.75 - 3.67 (53)	0.017	0.903	0.000	0.036	0.001	0.921	1.050	4.8.2
L54	3.67 - 3.42 (54)	0.015	0.779	0.000	0.032	0.001	0.795	1.050	4.8.2
L55	3.42 - 1.5 (55)	0.015	0.796	0.000	0.032	0.001	0.812	1.050	4.8.2
L56	1.5 - 1.25 (56)	0.016	0.868	0.000	0.034	0.001	0.885	1.050	4.8.2
L57	1.25 - 0.5 (57)	0.016	0.875	0.000	0.034	0.001	0.892	1.050	4.8.2
L58	0.5 - 0.25 (58)	0.016	0.841	0.000	0.033	0.001	0.857	1.050	4.8.2
L59	0.25 - 0 (59)	0.016	0.843	0.000	0.033	0.001	0.860	1.050	4.8.2

Section Capacity Table

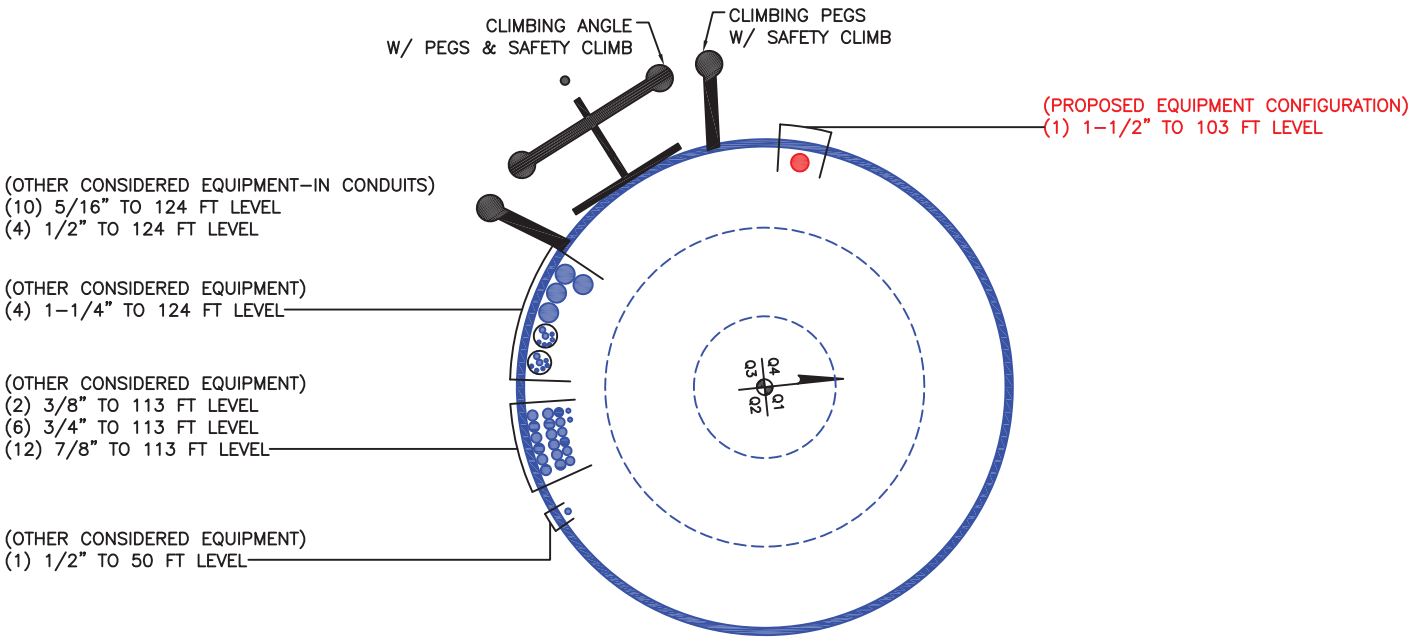
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	137 - 132	Pole	P12.75x0.375	1	-0.28	482.20	0.4	Pass
L2	132 - 127	Pole	P12.75x0.375	2	-0.61	482.20	2.6	Pass
L3	127 - 125	Pole	P12.75x0.375	3	-0.72	482.20	3.7	Pass
L4	125 - 120	Pole	P24x0.375	4	-5.21	920.56	6.0	Pass
L5	120 - 115	Pole	P24x0.375	5	-5.82	920.56	11.8	Pass
L6	115 - 110	Pole	P24x0.375	6	-10.82	920.56	24.5	Pass
L7	110 - 105	Pole	P24x0.375	7	-11.51	920.56	37.4	Pass
L8	105 - 100	Pole	P24x0.375	8	-15.22	920.56	52.9	Pass
L9	100 - 95	Pole	P24x0.375	9	-15.97	920.56	69.4	Pass
L10	95 - 90	Pole	P24x0.375	10	-16.75	920.56	86.0	Pass
L11	90 - 89.25	Pole	P24x0.375	11	-16.87	920.56	88.6	Pass
L12	89.25 - 89	Pole	P24x0.5	12	-16.93	1220.92	66.4	Pass
L13	89 - 85.66	Pole	P24x0.5	13	-17.56	1220.92	74.8	Pass
L14	85.66 - 85.41	Pole	P24x0.5	14	-17.62	1220.92	75.5	Pass
L15	85.41 - 81.15	Pole	P24x0.5	15	-18.48	1220.92	86.5	Pass
L16	81.15 - 80.9	Pole	P24x0.8625	16	-18.55	2073.60	52.0	Pass
L17	80.9 - 80.5	Pole	P24x0.8625	17	-18.65	2073.60	52.6	Pass
L18	80.5 - 80.25	Pole	P24x1.225	18	-18.72	2898.98	38.5	Pass
L19	80.25 - 80	Pole	P24x1.225	19	-18.79	2898.98	38.8	Pass
L20	80 - 79.75	Pole	P36x0.5	20	-19.16	1844.37	41.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L21	79.75 - 79	Pole	P36x0.5	21	-19.36	1844.37	42.5	Pass
L22	79 - 78.75	Pole	P36x0.375	22	-19.42	1379.51	59.3	Pass
L23	78.75 - 73.75	Pole	P36x0.375	23	-20.48	1379.51	67.9	Pass
L24	73.75 - 68.75	Pole	P36x0.375	24	-21.56	1379.51	76.8	Pass
L25	68.75 - 65.5	Pole	P36x0.375	25	-22.27	1379.51	82.6	Pass
L26	65.5 - 65.25	Pole	P36x0.4625	26	-22.34	1707.85	65.5	Pass
L27	65.25 - 60.25	Pole	P36x0.4625	27	-23.61	1707.85	72.7	Pass
L28	60.25 - 58.4	Pole	P36x0.4625	28	-24.10	1707.85	75.4	Pass
L29	58.4 - 58.15	Pole	P36x0.6125	29	-24.19	2252.20	54.6	Pass
L30	58.15 - 57.5	Pole	P36x0.6125	30	-24.40	2252.20	55.3	Pass
L31	57.5 - 57.25	Pole	P36x0.5125	31	-24.48	1889.81	68.6	Pass
L32	57.25 - 52.25	Pole	P36x0.5125	32	-25.97	1889.81	75.3	Pass
L33	52.25 - 49.5	Pole	P36x0.5125	33	-26.87	1889.81	79.0	Pass
L34	49.5 - 49.25	Pole	P36x0.625	34	-26.96	2297.35	63.1	Pass
L35	49.25 - 44.25	Pole	P36x0.625	35	-28.61	2297.35	68.7	Pass
L36	44.25 - 41.9	Pole	P36x0.625	36	-29.40	2297.35	71.4	Pass
L37	41.9 - 41.65	Pole	P36x0.5125	37	-29.48	1889.81	90.2	Pass
L38	41.65 - 40.75	Pole	P36x0.5125	38	-29.75	1889.81	91.5	Pass
L39	40.75 - 40.5	Pole	P36x0.7375	39	-29.84	2702.25	62.3	Pass
L40	40.5 - 40	Pole	P36x0.675	40	-30.00	2477.62	68.4	Pass
L41	40 - 39.75	Pole	P42x0.6875	41	-30.50	2951.23	50.0	Pass
L42	39.75 - 39.25	Pole	P42x0.6875	42	-30.70	2951.23	50.4	Pass
L43	39.25 - 39	Pole	P42x0.5	43	-30.78	2156.09	72.9	Pass
L44	39 - 34	Pole	P42x0.5	44	-32.35	2156.09	78.7	Pass
L45	34 - 29	Pole	P42x0.5	45	-33.94	2156.09	84.6	Pass
L46	29 - 24	Pole	P42x0.5	46	-35.53	2156.09	90.6	Pass
L47	24 - 19.5	Pole	P42x0.5	47	-36.97	2156.09	96.1	Pass
L48	19.5 - 19.25	Pole	P42x0.55	48	-37.06	2368.84	86.5	Pass
L49	19.25 - 14.25	Pole	P42x0.55	49	-38.84	2368.84	91.9	Pass
L50	14.25 - 13	Pole	P42x0.55	50	-39.31	2368.84	93.3	Pass
L51	13 - 12.75	Pole	P42x0.6375	51	-39.43	2739.91	79.0	Pass
L52	12.75 - 7.75	Pole	P42x0.6375	52	-41.58	2739.91	83.7	Pass
L53	7.75 - 3.67	Pole	P42x0.6375	53	-43.35	2739.91	87.7	Pass
L54	3.67 - 3.42	Pole	P42x0.725	54	-43.47	3109.39	75.7	Pass
L55	3.42 - 1.5	Pole	P42x0.725	55	-44.35	3109.39	77.3	Pass
L56	1.5 - 1.25	Pole	P42x0.675	56	-44.47	2898.45	84.3	Pass
L57	1.25 - 0.5	Pole	P42x0.675	57	-44.79	2898.45	85.0	Pass
L58	0.5 - 0.25	Pole	P42x0.7	58	-44.91	3003.99	81.7	Pass
L59	0.25 - 0	Pole	P42x0.7	59	-45.02	3003.99	81.9	Pass
							Summary	
						Pole (L47)	96.1	Pass
						RATING =	**96.1**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


CLIMBING ANGLE
W/ PEGS & SAFETY CLIMB
CLIMBING PEGS
W/ SAFETY CLIMB
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 103 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUITS)
(10) 5/16" TO 124 FT LEVEL
(4) 1/2" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1-1/4" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 113 FT LEVEL
(6) 3/4" TO 113 FT LEVEL
(12) 7/8" TO 113 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 50 FT LEVEL
Q4
Q3
Q1
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876333

Work Order: 1962707

CROWN CASTLE

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	137	12		0	12.75	12.75	0.375		A53-B-35
2	125	5		0	24.00	24	0.375		A53-B-35
3	120	40		0	24.00	24	0.375		A53-B-35
4	80	40		0	36.00	36	0.375		A53-B-35
5	40	40		0	42.00	42	0.5		A53-B-35

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	13	14	15	16	17	18
1	0	0.5	plate	(ARB) 1.25" x 4"	4	10	100	190	280														
2	0.5	13	plate	PL 4.625x1	3	80	172	294															
3	41.9	58.4	plate	PL 4.875x1	3	84	194	318															
4	81.15	85.66	plate	PL 3.75x0.75	3	79	207	323															
5	0	3.67	plate	(ARB) 1.25" x 3"	3	152	222	350															
6	1.5	19.5	plate	CCI-SFP-040075	3				110	204	324												
7	39.25	40	plate	MS-650 (1.25") - mod	3	25	135	255															
8	40	40.75	plate	MS-650 (1.25") - mod 2	3	25	135	255															
9	40.75	49.5	plate	MS-400 (1.25")	3	25	135	255															
10	57.5	65.5	plate	CCI-SFP-040075	3	60	180	300															
11	79	80	plate	MS-450 (1.25") - mod	3	25	135	255															
12	80	80.5	plate	MS-450 (1.25") - mod 2	3	25	135	255															
13	80.5	89.25	plate	MS-400 (1.25")	3	25	135	255															
14	40	41.9	plate	Knife Plate 2.5x1	3	40	160	280															
15	80	81.15	plate	Knife Plate 5.5x1	3	40	160	280															
16																							

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	1.25	3.25	4.0625	2.375	Welded	n/a	None	n/a	0.000	4.063	0.0000	A572-65
2	4.625	1	4.625	0.5	Welded	n/a	PC 8.8 - M20 (100)	15.000	12.000	3.375	1.1875	A572-50
3	4.875	1	4.875	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	18.000	3.625	1.1875	A572-50
4	3.75	0.75	2.8125	0.375	PC 8.8 - M20 (100)	9	PC 8.8 - M20 (100)	12.000	18.000	1.875	1.1875	A572-50
5	1.25	2.25	2.8125	1.875	Welded	n/a	None	n/a	0.000	2.813	0.0000	A572-65
6	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.000	2.063	1.1875	A572-65
7	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	42	None	n/a	18.000	6.484	1.2500	A572-65
8	6.5	1.25	8.125	3.625	None	n/a	PC 8.8 - M20 (100)	42.000	18.000	6.484	1.2500	A572-65
9	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.875	2.016	1.2500	A572-65
10	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.000	2.063	1.1875	A572-65
11	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	30	None	n/a	18.000	3.188	1.2500	A572-65
12	4.5	1	4.5	6.5	None	n/a	PC 8.8 - M20 (100)	30.000	18.000	3.188	1.2500	A572-65
13	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.875	2.016	1.2500	A572-65
14	1	1.75	1.75	1.625	Welded	n/a	Welded	n/a	0.750	1.750	0.0000	A572-50
15	1	4.75	4.75	3.125	Welded	n/a	Welded	n/a	0.750	4.750	0.0000	A572-50

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)
(ARB) 1.25" x 4"	Top					-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	6.5	0.625	45	0.625	-	-	-
PL 4.625x1	Top	5	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	None	-	-	-	-	12	0.375	-
PL 4.875x1	Top	6	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	6	N	3	3	-	-	-	-	-	-	-	-	-
PL 3.75x0.75	Top	4	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	3	N	3	3	-	-	-	-	-	-	-	-	-
(ARB) 1.25" x 3"	Top		N			-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	5.5	0.625	45	0.625	-	-	-
MS-650 (1.25") - mod	Top					-	-	-	-	-	-	-	-	-
	Bottom	14	N	3	3	-	-	-	-	-	-	-	-	-
MS-650 (1.25") - mod 2	Top	14	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	None	-	-	-	-	-	-	-
MS-450 (1.25") - mod	Top					-	-	-	-	-	-	-	-	-
	Bottom	10	N	3	3	-	-	-	-	-	-	-	-	-
MS-450 (1.25") - mod 2	Top	10	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	None	-	-	-	-	-	-	-
Knife Plate 2.5x1	Top	-	-	-	-	70	None	-	-	-	-	6	0.375	-
	Bottom	-	-	-	-	70	PJP Groove	3.5	0.375	45	0.375	-	-	-
Knife Plate 5.5x1	Top	-	-	-	-	70	None	-	-	-	-	14	0.375	-
	Bottom	-	-	-	-	70	PJP Groove	9.5	0.375	45	0.375	-	-	-

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	137 - 132	5		0	12.750	12.750	0.375	A53-B-35	1.000
2	132 - 127	5		0	12.750	12.750	0.375	A53-B-35	1.000
3	127 - 125	2	0	0	12.750	12.750	0.375	A53-B-35	1.000
4	125 - 120	5	0	0	24.000	24.000	0.375	A53-B-35	1.000
5	120 - 115	5		0	24.000	24.000	0.375	A53-B-35	1.000
6	115 - 110	5		0	24.000	24.000	0.375	A53-B-35	1.000
7	110 - 105	5		0	24.000	24.000	0.375	A53-B-35	1.000
8	105 - 100	5		0	24.000	24.000	0.375	A53-B-35	1.000
9	100 - 95	5		0	24.000	24.000	0.375	A53-B-35	1.000
10	95 - 90	5		0	24.000	24.000	0.375	A53-B-35	1.000
11	90 - 89.25	0.75		0	24.000	24.000	0.375	A53-B-35	1.000
12	89.25 - 89	0.25		0	24.000	24.000	0.5	A53-B-35	0.998
13	89 - 85.66	3.34		0	24.000	24.000	0.5	A53-B-35	0.998
14	85.66 - 85.41	0.25		0	24.000	24.000	0.5	A53-B-35	0.998
15	85.41 - 81.15	4.26		0	24.000	24.000	0.5	A53-B-35	0.998
16	81.15 - 80.9	0.25		0	24.000	24.000	0.8625	A53-B-35	0.815
17	80.9 - 80.5	0.4		0	24.000	24.000	0.8625	A53-B-35	0.815
18	80.5 - 80.25	0.25		0	24.000	24.000	1.225	A53-B-35	0.634
19	80.25 - 80	0.25	0	0	24.000	24.000	1.225	A53-B-35	0.634
20	80 - 79.75	0.25		0	36.000	36.000	0.5	A53-B-35	0.995
21	79.75 - 79	0.75		0	36.000	36.000	0.5	A53-B-35	0.995
22	79 - 78.75	0.25		0	36.000	36.000	0.375	A53-B-35	1.000
23	78.75 - 73.75	5		0	36.000	36.000	0.375	A53-B-35	1.000
24	73.75 - 68.75	5		0	36.000	36.000	0.375	A53-B-35	1.000
25	68.75 - 65.5	3.25		0	36.000	36.000	0.375	A53-B-35	1.000
26	65.5 - 65.25	0.25		0	36.000	36.000	0.4625	A53-B-35	0.987
27	65.25 - 60.25	5		0	36.000	36.000	0.4625	A53-B-35	0.987
28	60.25 - 58.4	1.85		0	36.000	36.000	0.4625	A53-B-35	0.987
29	58.4 - 58.15	0.25		0	36.000	36.000	0.6125	A53-B-35	0.963
30	58.15 - 57.5	0.65		0	36.000	36.000	0.6125	A53-B-35	0.963
31	57.5 - 57.25	0.25		0	36.000	36.000	0.5125	A53-B-35	0.991
32	57.25 - 52.25	5		0	36.000	36.000	0.5125	A53-B-35	0.991
33	52.25 - 49.5	2.75		0	36.000	36.000	0.5125	A53-B-35	0.991
34	49.5 - 49.25	0.25		0	36.000	36.000	0.625	A53-B-35	0.944
35	49.25 - 44.25	5		0	36.000	36.000	0.625	A53-B-35	0.944
36	44.25 - 41.9	2.35		0	36.000	36.000	0.625	A53-B-35	0.944
37	41.9 - 41.65	0.25		0	36.000	36.000	0.5125	A53-B-35	0.984
38	41.65 - 40.75	0.9		0	36.000	36.000	0.5125	A53-B-35	0.984
39	40.75 - 40.5	0.25		0	36.000	36.000	0.7375	A53-B-35	0.876
40	40.5 - 40	0.5	0	0	36.000	36.000	0.675	A53-B-35	0.886
41	40 - 39.75	0.25		0	42.000	42.000	0.6875	A53-B-35	1.004
42	39.75 - 39.25	0.5		0	42.000	42.000	0.6875	A53-B-35	1.004
43	39.25 - 39	0.25		0	42.000	42.000	0.5	A53-B-35	1.000
44	39 - 34	5		0	42.000	42.000	0.5	A53-B-35	1.000
45	34 - 29	5		0	42.000	42.000	0.5	A53-B-35	1.000
46	29 - 24	5		0	42.000	42.000	0.5	A53-B-35	1.000
47	24 - 19.5	4.5		0	42.000	42.000	0.5	A53-B-35	1.000
48	19.5 - 19.25	0.25		0	42.000	42.000	0.55	A53-B-35	1.036
49	19.25 - 14.25	5		0	42.000	42.000	0.55	A53-B-35	1.036
50	14.25 - 13	1.25		0	42.000	42.000	0.55	A53-B-35	1.036
51	13 - 12.75	0.25		0	42.000	42.000	0.6375	A53-B-35	1.063
52	12.75 - 7.75	5		0	42.000	42.000	0.6375	A53-B-35	1.063
53	7.75 - 3.67	4.08		0	42.000	42.000	0.6375	A53-B-35	1.063
54	3.67 - 3.42	0.25		0	42.000	42.000	0.725	A53-B-35	1.026
55	3.42 - 1.5	1.92		0	42.000	42.000	0.725	A53-B-35	1.026
56	1.5 - 1.25	0.25		0	42.000	42.000	0.675	A53-B-35	0.998
57	1.25 - 0.5	0.75		0	42.000	42.000	0.675	A53-B-35	0.998
58	0.5 - 0.25	0.25		0	42.000	42.000	0.7	A53-B-35	0.990
59	0.25 - 0	0.25		0	42.000	42.000	0.7	A53-B-35	0.990

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	137 - 132	0.28	0.48	0.19
2	132 - 127	0.61	3.94	0.79
3	127 - 125	0.72	5.61	0.87
4	125 - 120	5.21	30.49	6.25
5	120 - 115	5.82	62.91	6.69
6	115 - 110	10.82	130.04	14.34
7	110 - 105	11.51	202.56	14.67
8	105 - 100	15.22	286.79	18.36
9	100 - 95	15.97	379.28	18.65
10	95 - 90	16.75	473.11	18.90
11	90 - 89.25	16.87	487.29	18.93
12	89.25 - 89	16.93	492.02	18.94
13	89 - 85.66	17.56	555.89	19.31
14	85.66 - 85.41	17.62	560.73	19.34
15	85.41 - 81.15	18.48	644.15	19.82
16	81.15 - 80.9	18.55	649.11	19.84
17	80.9 - 80.5	18.65	657.06	19.89
18	80.5 - 80.25	18.72	662.04	19.92
19	80.25 - 80	18.79	667.02	19.94
20	80 - 79.75	19.16	672.08	20.23
21	79.75 - 79	19.36	687.28	20.29
22	79 - 78.75	19.42	692.36	20.32
23	78.75 - 73.75	20.48	795.11	20.84
24	73.75 - 68.75	21.56	900.35	21.24
25	68.75 - 65.5	22.27	969.81	21.49
26	65.5 - 65.25	22.34	975.18	21.50
27	65.25 - 60.25	23.61	1083.72	21.89
28	60.25 - 58.4	24.10	1124.55	22.19
29	58.4 - 58.15	24.19	1130.11	22.22
30	58.15 - 57.5	24.40	1144.62	22.33
31	57.5 - 57.25	24.48	1150.22	22.37
32	57.25 - 52.25	25.97	1263.18	22.74
33	52.25 - 49.5	26.87	1326.54	23.22
34	49.5 - 49.25	26.96	1332.36	23.25
35	49.25 - 44.25	28.61	1451.92	24.32
36	44.25 - 41.9	29.40	1509.59	24.68
37	41.9 - 41.65	29.48	1515.77	24.71
38	41.65 - 40.75	29.75	1538.11	24.85
39	40.75 - 40.5	29.84	1544.33	24.88
40	40.5 - 40	30.00	1556.80	24.95
41	40 - 39.75	30.50	1563.11	25.23
42	39.75 - 39.25	30.70	1575.74	25.28
43	39.25 - 39	30.78	1582.07	25.29
44	39 - 34	32.35	1709.54	25.67
45	34 - 29	33.93	1838.77	26.01
46	29 - 24	35.53	1969.63	26.32
47	24 - 19.5	36.97	2088.64	26.57
48	19.5 - 19.25	37.06	2095.28	26.57
49	19.25 - 14.25	38.84	2228.81	26.82
50	14.25 - 13	39.31	2262.49	26.98
51	13 - 12.75	39.43	2269.25	27.00
52	12.75 - 7.75	41.58	2406.07	27.62
53	7.75 - 3.67	43.35	2519.95	28.11
54	3.67 - 3.42	43.47	2526.99	28.13
55	3.42 - 1.5	44.35	2581.33	28.38
56	1.5 - 1.25	44.47	2588.44	28.39
57	1.25 - 0.5	44.79	2609.80	28.48
58	0.5 - 0.25	44.91	2616.94	28.50
59	0.25 - 0	45.02	2624.08	28.53

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
137 - 132	Pole	TP12.75x12.75x0.375	Pole	0.4%	Pass
132 - 127	Pole	TP12.75x12.75x0.375	Pole	2.6%	Pass
127 - 125	Pole	TP12.75x12.75x0.375	Pole	3.7%	Pass
125 - 120	Pole	TP24x24x0.375	Pole	6.0%	Pass
120 - 115	Pole	TP24x24x0.375	Pole	11.8%	Pass
115 - 110	Pole	TP24x24x0.375	Pole	24.4%	Pass
110 - 105	Pole	TP24x24x0.375	Pole	37.4%	Pass
105 - 100	Pole	TP24x24x0.375	Pole	52.8%	Pass
100 - 95	Pole	TP24x24x0.375	Pole	69.3%	Pass
95 - 90	Pole	TP24x24x0.375	Pole	85.9%	Pass
90 - 89.25	Pole	TP24x24x0.375	Pole	88.5%	Pass
89.25 - 89	Pole + Reinf.	TP24x24x0.5	Pole	68.2%	Pass
89 - 85.66	Pole + Reinf.	TP24x24x0.5	Pole	76.9%	Pass
85.66 - 85.41	Pole + Reinf.	TP24x24x0.5	Pole	77.6%	Pass
85.41 - 81.15	Pole + Reinf.	TP24x24x0.5	Pole	89.0%	Pass
81.15 - 80.9	Pole + Reinf.	TP24x24x0.8625	Reinf. 15 Compression	60.0%	Pass
80.9 - 80.5	Pole + Reinf.	TP24x24x0.8625	Reinf. 15 Compression	60.7%	Pass
80.5 - 80.25	Pole + Reinf.	TP24x24x1.225	Reinf. 12 Tension Rupture	58.0%	Pass
80.25 - 80	Pole + Reinf.	TP24x24x1.225	Reinf. 15 Weldment	68.9%	Pass
80 - 79.75	Pole + Reinf.	TP36x36x0.5	Pole	44.2%	Pass
79.75 - 79	Pole + Reinf.	TP36x36x0.5	Pole	45.2%	Pass
79 - 78.75	Pole	TP36x36x0.375	Pole	59.3%	Pass
78.75 - 73.75	Pole	TP36x36x0.375	Pole	67.9%	Pass
73.75 - 68.75	Pole	TP36x36x0.375	Pole	76.8%	Pass
68.75 - 65.5	Pole	TP36x36x0.375	Pole	82.6%	Pass
65.5 - 65.25	Pole + Reinf.	TP36x36x0.4625	Pole	67.4%	Pass
65.25 - 60.25	Pole + Reinf.	TP36x36x0.4625	Pole	74.8%	Pass
60.25 - 58.4	Pole + Reinf.	TP36x36x0.4625	Pole	77.6%	Pass
58.4 - 58.15	Pole + Reinf.	TP36x36x0.6125	Reinf. 3 Tension Rupture	62.9%	Pass
58.15 - 57.5	Pole + Reinf.	TP36x36x0.6125	Reinf. 3 Tension Rupture	63.7%	Pass
57.5 - 57.25	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	74.8%	Pass
57.25 - 52.25	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	82.1%	Pass
52.25 - 49.5	Pole + Reinf.	TP36x36x0.5125	Reinf. 3 Tension Rupture	86.2%	Pass
49.5 - 49.25	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	74.4%	Pass
49.25 - 44.25	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	81.0%	Pass
44.25 - 41.9	Pole + Reinf.	TP36x36x0.625	Reinf. 3 Tension Rupture	84.2%	Pass
41.9 - 41.65	Pole + Reinf.	TP36x36x0.5125	Pole	95.3%	Pass
41.65 - 40.75	Pole + Reinf.	TP36x36x0.5125	Pole	96.7%	Pass
40.75 - 40.5	Pole + Reinf.	TP36x36x0.7375	Pole	69.3%	Pass
40.5 - 40	Pole + Reinf.	TP36x36x0.675	Pole	76.0%	Pass
40 - 39.75	Pole + Reinf.	TP42x42x0.6875	Pole	53.3%	Pass
39.75 - 39.25	Pole + Reinf.	TP42x42x0.6875	Pole	53.7%	Pass
39.25 - 39	Pole	TP42x42x0.5	Pole	72.9%	Pass
39 - 34	Pole	TP42x42x0.5	Pole	78.7%	Pass
34 - 29	Pole	TP42x42x0.5	Pole	84.6%	Pass
29 - 24	Pole	TP42x42x0.5	Pole	90.6%	Pass
24 - 19.5	Pole	TP42x42x0.5	Pole	96.0%	Pass
19.5 - 19.25	Pole + Reinf.	TP42x42x0.55	Pole	88.3%	Pass
19.25 - 14.25	Pole + Reinf.	TP42x42x0.55	Pole	93.9%	Pass
14.25 - 13	Pole + Reinf.	TP42x42x0.55	Pole	95.3%	Pass
13 - 12.75	Pole + Reinf.	TP42x42x0.6375	Pole	83.8%	Pass
12.75 - 7.75	Pole + Reinf.	TP42x42x0.6375	Pole	88.8%	Pass
7.75 - 3.67	Pole + Reinf.	TP42x42x0.6375	Pole	93.0%	Pass
3.67 - 3.42	Pole + Reinf.	TP42x42x0.725	Reinf. 2 Tension Rupture	88.8%	Pass
3.42 - 1.5	Pole + Reinf.	TP42x42x0.725	Reinf. 2 Tension Rupture	90.7%	Pass
1.5 - 1.25	Pole + Reinf.	TP42x42x0.675	Reinf. 2 Tension Rupture	98.6%	Pass
1.25 - 0.5	Pole + Reinf.	TP42x42x0.675	Reinf. 2 Tension Rupture	99.4%	Pass
0.5 - 0.25	Pole + Reinf.	TP42x42x0.7	Pole	88.3%	Pass
0.25 - 0	Pole + Reinf.	TP42x42x0.7	Pole	88.5%	Pass
				Summary	
			Pole	96.7%	Pass
			Reinforcement	99.4%	Pass
			Overall	99.4%	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	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
137 - 132	279	n/a	279	14.58	n/a	14.58	0.4%															
132 - 127	279	n/a	279	14.58	n/a	14.58	2.6%															
127 - 125	279	n/a	279	14.58	n/a	14.58	3.7%															
125 - 120	1942	n/a	1942	27.83	n/a	27.83	6.0%															
120 - 115	1942	n/a	1942	27.83	n/a	27.83	11.8%															
115 - 110	1942	n/a	1942	27.83	n/a	27.83	24.4%															
110 - 105	1942	n/a	1942	27.83	n/a	27.83	37.4%															
105 - 100	1942	n/a	1942	27.83	n/a	27.83	52.8%															
100 - 95	1942	n/a	1942	27.83	n/a	27.83	69.3%															
95 - 90	1942	n/a	1942	27.83	n/a	27.83	85.9%															
90 - 89.25	1942	n/a	1942	27.83	n/a	27.83	88.5%															
89.25 - 89	1943	616	2559	27.83	9.00	36.83	68.2%													67.6%		
89 - 85.66	1943	616	2559	27.83	9.00	36.83	76.9%													76.2%		
85.66 - 85.41	1943	616	2559	27.83	9.00	36.83	77.6%													76.9%		
85.41 - 81.15	1943	616	2559	27.83	9.00	36.83	89.0%													88.1%		
81.15 - 80.9	1942	2261	4203	27.83	23.25	51.08	54.4%													54.5%		60.0%
80.9 - 80.5	1942	2261	4203	27.83	23.25	51.08	55.0%													55.1%		60.7%
80.5 - 80.25	1944	3731	5675	27.83	27.75	55.58	41.7%												58.0%			45.4%
80.25 - 80	1943	3702	5645	27.83	27.75	55.58	42.0%												58.4%			68.9%
80 - 79.75	6661	2056	8717	41.97	13.50	55.47	44.2%											38.6%				
79.75 - 79	6661	2056	8717	41.97	13.50	55.47	45.2%											39.5%				
79 - 78.75	6659	n/a	6659	41.97	n/a	41.97	59.3%															
78.75 - 73.75	6659	n/a	6659	41.97	n/a	41.97	67.9%															
73.75 - 68.75	6659	n/a	6659	41.97	n/a	41.97	76.8%															
68.75 - 65.5	6659	n/a	6659	41.97	n/a	41.97	82.6%															
65.5 - 65.25	6659	1526	8185	41.97	9.00	50.97	67.4%										62.0%					
65.25 - 60.25	6659	1526	8185	41.97	9.00	50.97	74.8%										68.8%					
60.25 - 58.4	6659	1526	8185	41.97	9.00	50.97	77.6%										71.4%					
58.4 - 58.15	6660	3917	10576	41.97	23.63	65.59	60.7%			62.9%							56.0%					
58.15 - 57.5	6660	3917	10576	41.97	23.63	65.59	61.5%			63.7%							56.7%					
57.5 - 57.25	6660	2391	9051	41.97	14.63	56.59	72.4%			74.8%												
57.25 - 52.25	6660	2391	9051	41.97	14.63	56.59	79.4%			82.1%												
52.25 - 49.5	6660	2391	9051	41.97	14.63	56.59	83.4%			86.2%												
49.5 - 49.25	6663	4140	10804	41.97	23.63	65.59	70.8%			74.4%						67.4%						
49.25 - 44.25	6663	4140	10804	41.97	23.63	65.59	77.1%			81.0%						73.4%						
44.25 - 41.9	6663	4140	10804	41.97	23.63	65.59	80.2%			84.2%						76.3%						
41.9 - 41.65	6660	2363	9023	41.97	14.25	56.22	95.3%									88.0%					84.9%	
41.65 - 40.75	6660	2363	9023	41.97	14.25	56.22	96.7%									89.3%					86.1%	
40.75 - 40.5	6663	6098	12762	41.97	29.63	71.59	69.3%								61.9%						60.6%	
40.5 - 40	6664	5085	11749	41.97	24.38	66.34	76.0%								67.6%							
40 - 39.75	14040	5088	19128	65.19	24.38	89.56	53.3%							42.2%								
39.75 - 39.25	14040	5088	19128	65.19	24.38	89.56	53.7%							42.5%								
39.25 - 39	14036	n/a	14036	65.19	n/a	65.19	72.9%															
39 - 34	14036	n/a	14036	65.19	n/a	65.19	78.7%															
34 - 29	14036	n/a	14036	65.19	n/a	65.19	84.6%															
29 - 24	14036	n/a	14036	65.19	n/a	65.19	90.6%															
24 - 19.5	14036	n/a	14036	65.19	n/a	65.19	96.0%															
19.5 - 19.25	14042	1468	15510	65.19	9.00	74.19	88.3%						79.0%									
19.25 - 14.25	14042	1468	15510	65.19	9.00	74.19	93.9%						84.0%									
14.25 - 13	14042	1468	15510	65.19	9.00	74.19	95.3%						85.3%									
13 - 12.75	14058	3830	17888	65.19	22.88	88.06	83.8%		83.3%				74.0%									
12.75 - 7.75	14058	3830	17888	65.19	22.88	88.06	88.8%		88.3%				78.5%									
7.75 - 3.67	14058	3830	17888	65.19	22.88	88.06	93.0%		92.5%				82.2%									
3.67 - 3.42	14049	6051	20100	65.19	31.31	96.50	82.7%		88.8%			55.6%	70.5%									
3.42 - 1.5	14049	6051	20100	65.19	31.31	96.50	84.5%		90.7%			56.8%	72.0%									
1.5 - 1.25	14041	4568	18608	65.19	22.31	87.50	90.8%		98.6%			62.0%										
1.25 - 0.5	14041	4568	18608	65.19	22.31	87.50	91.6%		99.4%			62.5%										
0.5 - 0.25	14043	5485	19529	65.19	24.69	89.88	88.3%	63.6%				57.8%										
0.25 - 0	14043	5485	19529	65.19	24.69	89.88	88.5%	63.8%				58.0%										

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

Monopole Flange Plate Connection

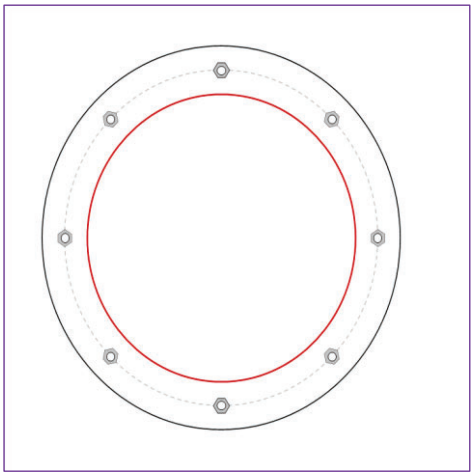
Elevation = 120 ft.

BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0
TIA-222 Revision	H

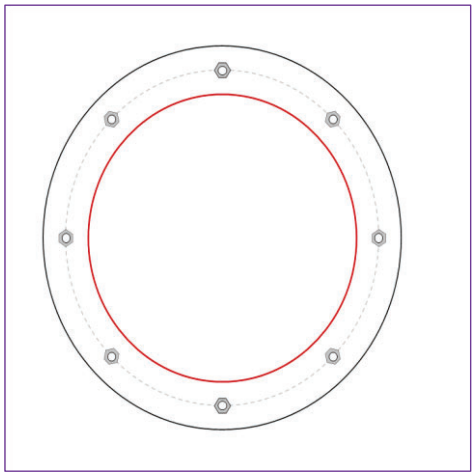
Applied Loads	
Moment (kip-ft)	30.49
Axial Force (kips)	5.21
Shear Force (kips)	6.25

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(8) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 28" BC

Top Plate Data

32" OD x 0.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

32" OD x 0.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

24" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	5.88	
Allowable (kips)	30.04	
Stress Rating:	**18.6%**	Pass

Top Plate Capacity

Max Stress (ksi):	7.08	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**20.8%**	Pass
Tension Side Stress Rating:	**7.4%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	7.08	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**20.8%**	Pass
Tension Side Stress Rating:	**7.4%**	Pass

Monopole Flange Plate Connection

Elevation = 80 ft.

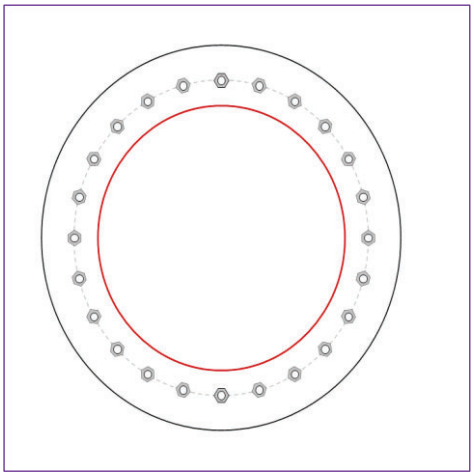
BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0

TIA-222 Revision	H

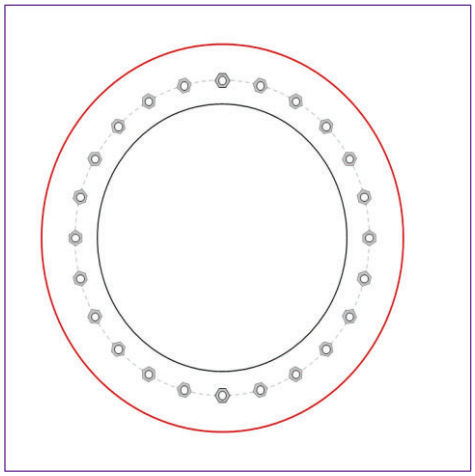
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	103.64	Moment (kip-ft)	563.38
Axial Force (kips)	18.79	Axial Force (kips)	0.00
Shear Force (kips)	19.94	Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(24) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 28.625" BC

Top Plate Data

35" OD x 1.875" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

24.25" ID x 1.875" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

36" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bridge Stiffener Group 1 Data

(3) Bolted, 4.5''x1'', A572-65, Lu=18", Neglect Flange in MOI: No

Bridge Stiffener Group 2 Data

(3) Welded, 3.5''x1'', A572-50, Lu=0.75", Upper Plate Width=10'', Lower Plate Width=4'', Neglect Flange in MOI: No

Analysis Results

Bolt Capacity

Max Load (kips)	6.46	
Allowable (kips)	30.03	
Stress Rating:	**20.5%**	Pass

Top Plate Capacity

Max Stress (ksi):	3.88	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**11.4%**	Pass
Tension Side Stress Rating:	**4.7%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	6.55	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**19.3%**	Pass
Tension Side Stress Rating:	**N/A**	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	126.11	
Max Tension (kip):	126.11	
Comp. Capacity (kip):	181.92	
Tens. Capacity (kip):	195.00	(Rupture)
Comp. Stress Rating:	**66.0%**	Pass
Tens. Stress Rating:	**61.6%**	Pass

Bridge Stiffener Group 2 Analysis Capacity

Max Compression (kip):	107.36	
Max Tension (kip):	107.36	
Comp. Capacity (kip):	157.42	
Tens. Capacity (kip):	157.50	(Yield)
Comp. Stress Rating:	**65.0%**	Pass
Tens. Stress Rating:	**64.9%**	Pass

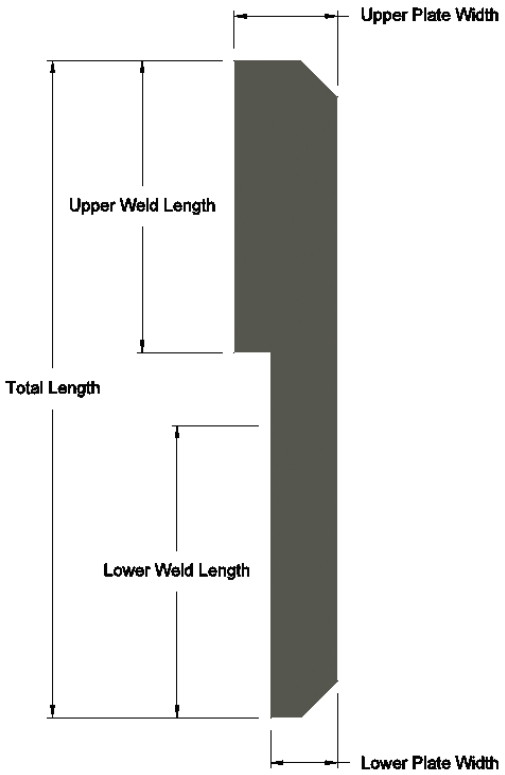
Welded Bridge Stiffener Design

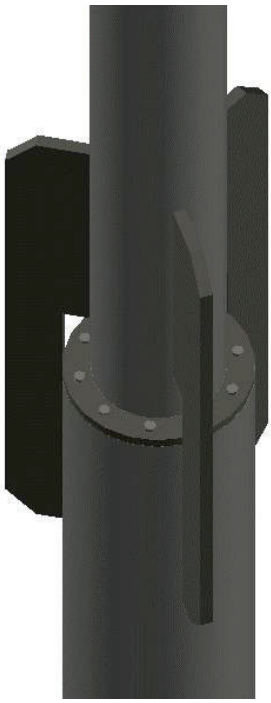
Elevation = 80 ft.

BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0
TIA-222 Revision	H

Applied Loads to Design Groups	
Moment (kip-ft)	271.76
Axial Force (kips)	0.00
Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*





Design Properties

Bridge Stiffener Group 2 Data

(3) Welded, 3.5''x1'', A572-50, Lu=0.75'', Upper Plate Width=10'', Lower Plate Width=4'', Neglect Flange in MOI: No

Total Length:	42.25	in
Weld Type:	Fillet (both sides)	
Weld Size:	0.375	in
Exx:	70	ksi
Upper Weld Length:	24.25	in
Upper Plate Width:	10	in
Lower Weld Length:	17.25	in
Lower Plate Width:	4	in
Stiffener Front EPA (No Ice):	2.79	ft²
Stiffener Side EPA (No Ice):	0.59	ft²
Stiffener Front EPA (1/2'' Ice):	3.06	ft²
Stiffener Side EPA (1/2'' Ice):	1.13	ft²
Stiffener Weight (No Ice):	0.089	kip
Stiffener Weight (1/2'' Ice):	0.101	kip

Upper Weld Size:	***Good***
Upper Weld Rating:	**32.12%**
Lower Weld Size:	***Good***
Lower Weld Rating:	**35.70%**
Top Plate Lateral-Torsional Buckling Rating:	**13.61%**
Top Plate Tension Yield Rating:	**14.05%**
Top Plate Tension Rupture Rating:	**14.42%**
Top Plate Interaction Rating:	**15.79%**
Bottom Plate Lateral-Torsional Buckling Rating:	**6.93%**
Bottom Plate Tension Yield Rating:	**19.76%**
Bottom Plate Tension Rupture Rating:	**20.26%**
Bottom Plate Interaction Rating:	**11.24%**
Top Pole Punching Shear Rating:	**36.43%**
Bottom Pole Punching Shear Rating:	**19.64%**

Monopole Flange Plate Connection

Elevation = 40 ft.

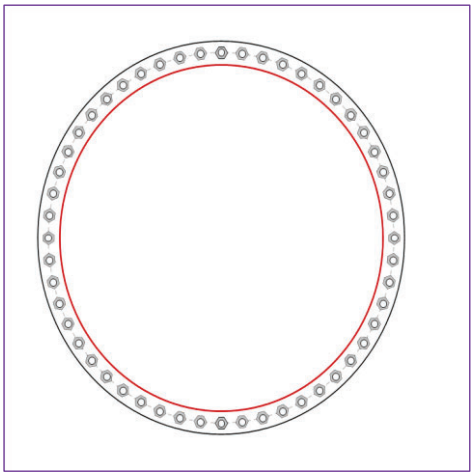
BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0

TIA-222 Revision: H

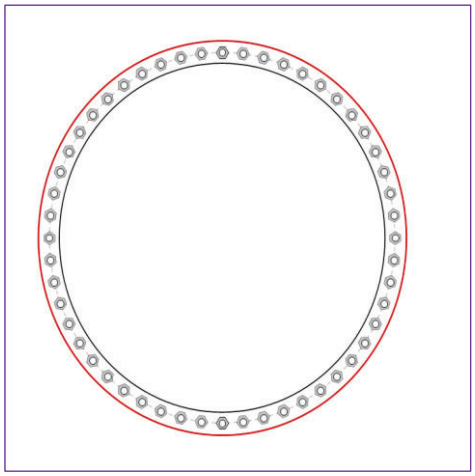
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	363.85	Moment (kip-ft)	1192.96
Axial Force (kips)	30.00	Axial Force (kips)	0.00
Shear Force (kips)	24.95	Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(52) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 38.5" BC

Top Plate Data

40.75" OD x 1.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

36.25" ID x 1.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

36" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

42" x 0.5" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bridge Stiffener Group 1 Data

(3) Bolted, 6.5''x1.25'', A572-65, Lu=18", Neglect Flange in MOI: No

Bridge Stiffener Group 2 Data

(3) Welded, 5.5''x1'', A572-50, Lu=0.75", Upper Plate Width=9'', Lower Plate Width=6'', Neglect Flange in MOI: No

Analysis Results

Bolt Capacity

Max Load (kips)	8.15	
Allowable (kips)	30.05	
Stress Rating:	**25.8%**	Pass

Top Plate Capacity

Max Stress (ksi):	4.44	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**13.1%**	Pass
Tension Side Stress Rating:	**4.8%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	6.13	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**18.0%**	Pass
Tension Side Stress Rating:	**N/A**	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	238.39	
Max Tension (kip):	238.39	
Comp. Capacity (kip):	375.20	
Tens. Capacity (kip):	393.75	(Rupture)
Comp. Stress Rating:	**60.5%**	Pass
Tens. Stress Rating:	**57.7%**	Pass

Bridge Stiffener Group 2 Analysis Capacity

Max Compression (kip):	180.96	
Max Tension (kip):	180.96	
Comp. Capacity (kip):	247.38	
Tens. Capacity (kip):	247.50	(Yield)
Comp. Stress Rating:	**69.7%**	Pass
Tens. Stress Rating:	**69.6%**	Pass

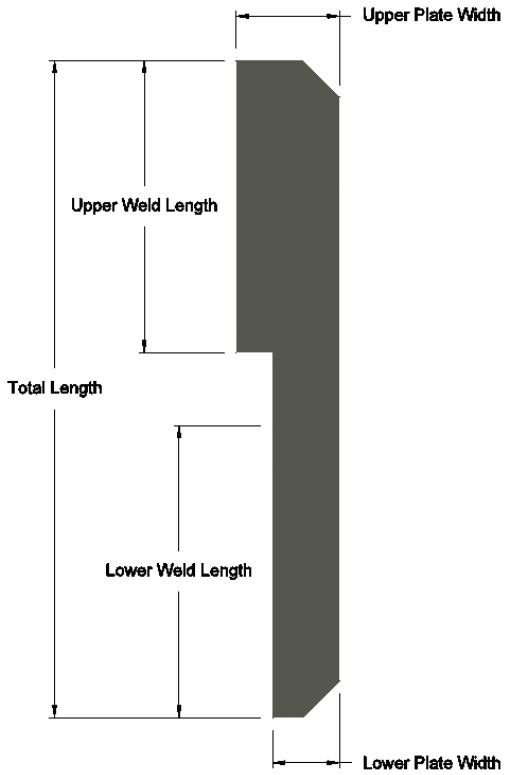
Welded Bridge Stiffener Design

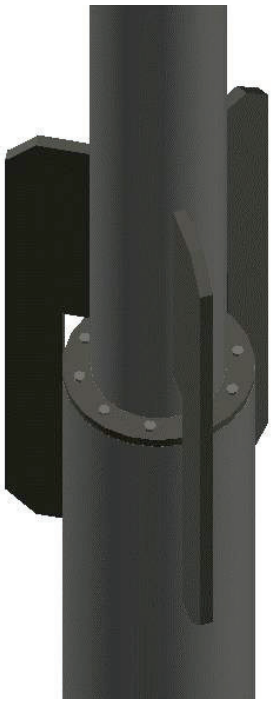
Elevation = 40 ft.

BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0
TIA-222 Revision	H

Applied Loads to Design Groups	
Moment (kip-ft)	548.55
Axial Force (kips)	0.00
Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*





Design Properties

Bridge Stiffener Group 2 Data

(3) Welded, 5.5''x1'', A572-50, Lu=0.75'', Upper Plate Width=9'', Lower Plate Width=6'', Neglect Flange in MOI: No

Total Length:	52	in
Weld Type:	Fillet (both sides)	
Weld Size:	0.375	in
Exx:	70	ksi
Upper Weld Length:	28	in
Upper Plate Width:	9	in
Lower Weld Length:	23.25	in
Lower Plate Width:	6	in
Stiffener Front EPA (No Ice):	3.70	ft²
Stiffener Side EPA (No Ice):	0.72	ft²
Stiffener Front EPA (1/2'' Ice):	4.01	ft²
Stiffener Side EPA (1/2'' Ice):	1.47	ft²
Stiffener Weight (No Ice):	0.112	kip
Stiffener Weight (1/2'' Ice):	0.127	kip

Upper Weld Size:	***Good***
Upper Weld Rating:	**40.03%**
Lower Weld Size:	***Good***
Lower Weld Rating:	**44.76%**
Top Plate Lateral-Torsional Buckling Rating:	**13.08%**
Top Plate Tension Yield Rating:	**20.52%**
Top Plate Tension Rupture Rating:	**21.04%**
Top Plate Interaction Rating:	**17.73%**
Bottom Plate Lateral-Torsional Buckling Rating:	**9.50%**
Bottom Plate Tension Yield Rating:	**24.71%**
Bottom Plate Tension Rupture Rating:	**25.34%**
Bottom Plate Interaction Rating:	**16.24%**
Top Pole Punching Shear Rating:	**34.89%**
Bottom Pole Punching Shear Rating:	**19.74%**

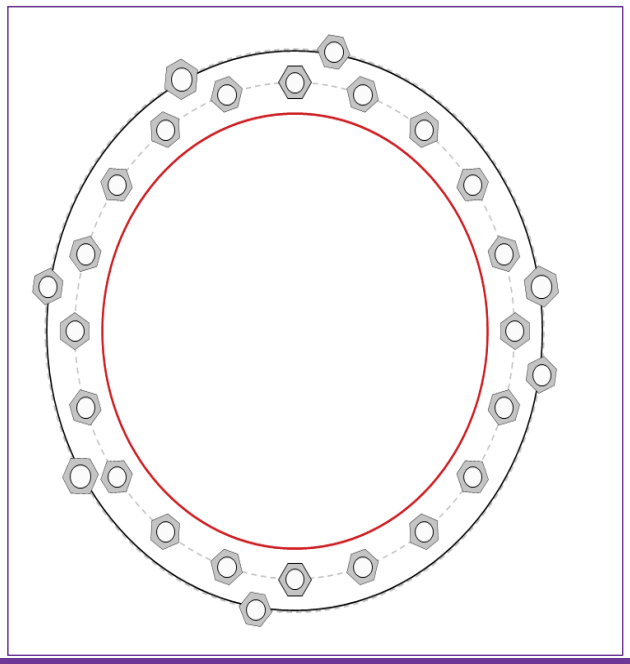
Monopole Base Plate Connection

Site Info	
BU #	876333
Site Name	CREATIVE DIMENSIONS
Order #	556608, Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	2624.08
Axial Force (kips)	45.02
Shear Force (kips)	28.53

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (20) 2" ø bolts (A36 N; Fy=36 ksi, Fu=58 ksi) on 48" BC
GROUP 2: (4) 2" ø bolts (OTHER N; Fy=56 ksi, Fu=67 ksi) on 54.5" BC
GROUP 3: (3) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 54.5" BC
pos. (deg): 9, 117, 211

Base Plate Data

54" OD x 2.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

N/A

Pole Data

42" x 0.5" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 96.72	ϕPn_c = 101.79	**Stress Rating**
Vu = 1.43	ϕVn = 45.8	**90.6%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 105.25	ϕPn_t = 125.63	**Stress Rating**
Vu = 0	ϕVn = 78.93	**79.8%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 3:		
Pu_t = 130.73	ϕPn_t = 304.69	**Stress Rating**
Vu = 0	ϕVn = 186.38	**40.9%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	17.17	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	**50.5%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

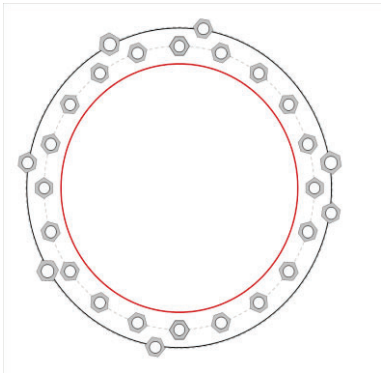
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	
3	No	No	No	No	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2	A36	48	0.5	0	N-Included		No
2	1	18	2	A36	48	0.5	0	N-Included		No
3	1	36	2	A36	48	0.5	0	N-Included		No
4	1	54	2	A36	48	0.5	0	N-Included		No
5	1	72	2	A36	48	0.5	0	N-Included		No
6	1	90	2	A36	48	0.5	0	N-Included		No
7	1	108	2	A36	48	0.5	0	N-Included		No
8	1	126	2	A36	48	0.5	0	N-Included		No
9	1	144	2	A36	48	0.5	0	N-Included		No
10	1	162	2	A36	48	0.5	0	N-Included		No
11	1	180	2	A36	48	0.5	0	N-Included		No
12	1	198	2	A36	48	0.5	0	N-Included		No
13	1	216	2	A36	48	0.5	0	N-Included		No
14	1	234	2	A36	48	0.5	0	N-Included		No
15	1	252	2	A36	48	0.5	0	N-Included		No
16	1	270	2	A36	48	0.5	0	N-Included		No
17	1	288	2	A36	48	0.5	0	N-Included		No
18	1	306	2	A36	48	0.5	0	N-Included		No
19	1	324	2	A36	48	0.5	0	N-Included		No
20	1	342	2	A36	48	0.5	0	N-Included		No
21	2	81	2	OTHER	54.5	0.5	0	N-Included		No
22	2	171	2	OTHER	54.5	0.5	0	N-Included		No
23	2	261	2	OTHER	54.5	0.5	0	N-Included		No
24	2	351	2	OTHER	54.5	0.5	0	N-Included		No
25	3	9	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No
26	3	117	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No
27	3	211	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	876333
Site Name:	CREATIVE DIMENSIO
Order Number:	556608, Rev. 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2624.08	
Axial Force (kips)	45.02	
Shear Force (kips)	28.53	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	60	ksi

Pier Design Data		
Depth	30	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 30' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	12	in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	7.02	-
Soil Safety Factor	5.07	-
Max Moment (kip-ft)	2789.81	-
Rating*	*25.0%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	278.08	-
End Bearing (kips)	1459.64	-
Weight of Concrete (kips)	127.50	-
Total Capacity (kips)	1737.72	-
Axial (kips)	172.52	-
Rating*	*9.5%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.45	-
Critical Moment (kip-ft)	2788.01	-
Critical Moment Capacity	3845.09	-
Rating*	*69.1%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	21.67	-
Critical Shear (kip)	258.10	-
Critical Shear Capacity	587.67	-
Rating*	*41.8%*	-

Soil Interaction Rating*	**25.0%**
Structural Foundation Rating*	**69.1%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	8	# of Layers	11

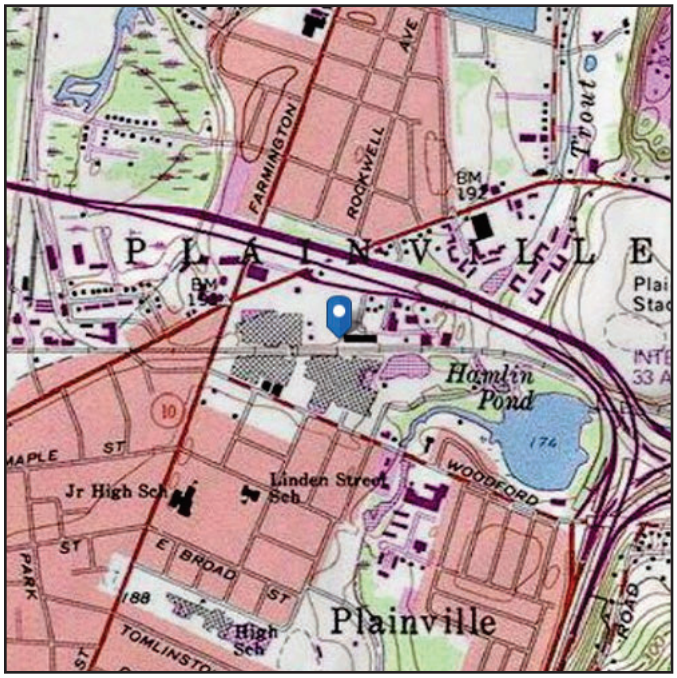
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	113	150			0.000	0.000					Cohesionless
2	2	3.33	1.33	112	150			0.000	0.000					Cohesionless
3	3.33	4	0.67	112	150		34	0.000	0.000	0.16	0.16			Cohesionless
4	4	6	2	113	150		39	0.000	0.000	0.31	0.31			Cohesionless
5	6	8	2	113	150		37	0.000	0.000	0.41	0.41			Cohesionless
6	8	10	2	50.6	87.6		37	0.000	0.000	0.50	0.50			Cohesionless
7	10	12	2	49.6	87.6		35	0.00	0.00	0.51	0.51			Cohesionless
8	12	14	2	49.6	87.6		34	0.00	0.00	0.54	0.54			Cohesionless
9	14	20	6	50.6	87.6		35	0.00	0.00	0.66	0.66			Cohesionless
10	20	25	5	51.6	87.6		41	0.00	0.00	0.96	0.96			Cohesionless
11	25	30	5	50.6	87.6		36	0.00	0.00	0.95	0.95	58.65		Cohesionless

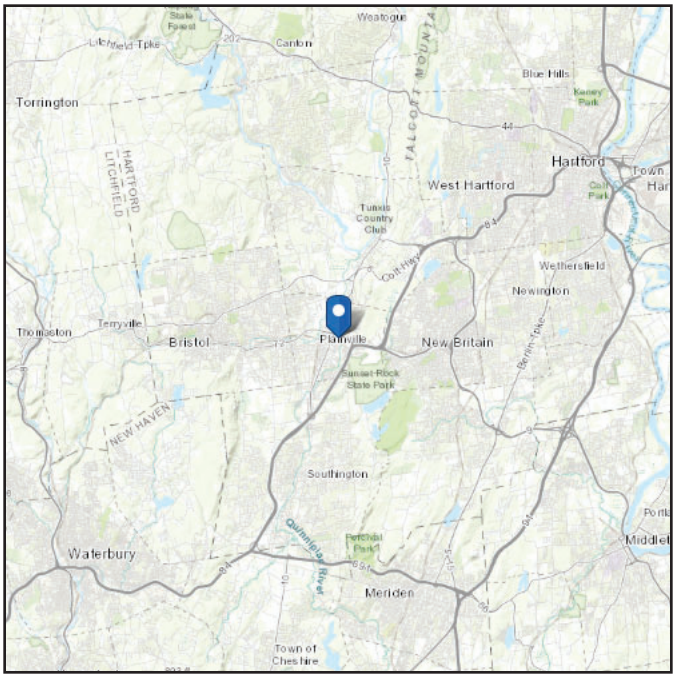
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 189.13 ft (NAVD 88)
Latitude: 41.673478
Longitude: -72.854492





Wind

Results:

Wind Speed:	121 Vmph	125 required per jurisdiction
10-year MRI	76 Vmph	
25-year MRI	86 Vmph	
50-year MRI	92 Vmph	
100-year MRI	99 Vmph	

Data Accessed: Mon Apr 19 2021

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

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

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Apr 19 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.

BU:	876333	Structure:	A
WO:	1962707		
Order:	556608	Rev:	0

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.673478	+	41	40	24.52
Long:	-72.854492	-	72	51	16.17

Code and Site Parameters

Seismic Design Code:	ASCE 7-10	
Site Soil:	D	Stiff Soil (Default)
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.1840	g
	S_1:	0.0640	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1	
Acceleration-based site coefficient, F_a:	1.6000	
Velocity-based site coefficient, F_v:	2.4000	
Design spectral response acceleration short period, S_{DS}:	0.1963	g
Design spectral response acceleration 1 s period, S_{D1}:	0.1024	g
Seismic Design Category Based on S_{DS}:	B	
Seismic Design Category Based on S_{D1}:	B	
Seismic Design Category Based on S_1:	N/A	
Controlling Seismic Design Category:	B	

Exhibit E

Mount Analysis

Date: **August 2, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**Dish Network Dish 5G**	
	Carrier Site Number:	BOBDL00085A
	Carrier Site Name:	CT-CCI-T-876333
Crown Castle Designation:	**Crown Castle BU Number:**	876333
	Crown Castle Site Name:	CREATIVE DIMENSIONS
	Crown Castle JDE Job Number:	650075
	Crown Castle Order Number:	556608 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	189038
Site Data:	**10 Sparks St., Plainville, Hartford County, CT, 06062** **Latitude 41°40'24.52" Longitude -72°51'16.17"**	
Structure Information:	**Tower Height & Type:**	**137.0 ft Monopole**
	Mount Elevation:	**103.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this **"Mount Replacement 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.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Ionela Neamtu

Respectfully Submitted by:
Cliff Abernathy, P.E.

Cliff Abernathy Digitally signed by Cliff Abernathy
Date: 2021.08.02 16:23:11 -04'00'

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 / 2018 CTSBS
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	2.00 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.184
Seismic S_1:	0.064
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
103.0	103.0	3	JMA Wireless	MX08FRO665-21	8.0 ft Platform **[Commscope, MC–PK8–C]**
		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	556608 Rev. 0	CCI Sites
Mount Manufacturer Drawings	Commscope	MC–PK8–C	Trylon

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP2	103.0	35.1	Pass
	Horizontal(s)	H1		11.4	Pass
	Standoff(s)	M2		56.9	Pass
	Bracing(s)	M1		45.6	Pass
	Handrail(s)	M19		12.4	Pass
	Plate(s)	M5		25.2	Pass
	Mount Connection(s)	--		22.8	Pass

Structure Rating (max from all components) =	**56.9%**

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

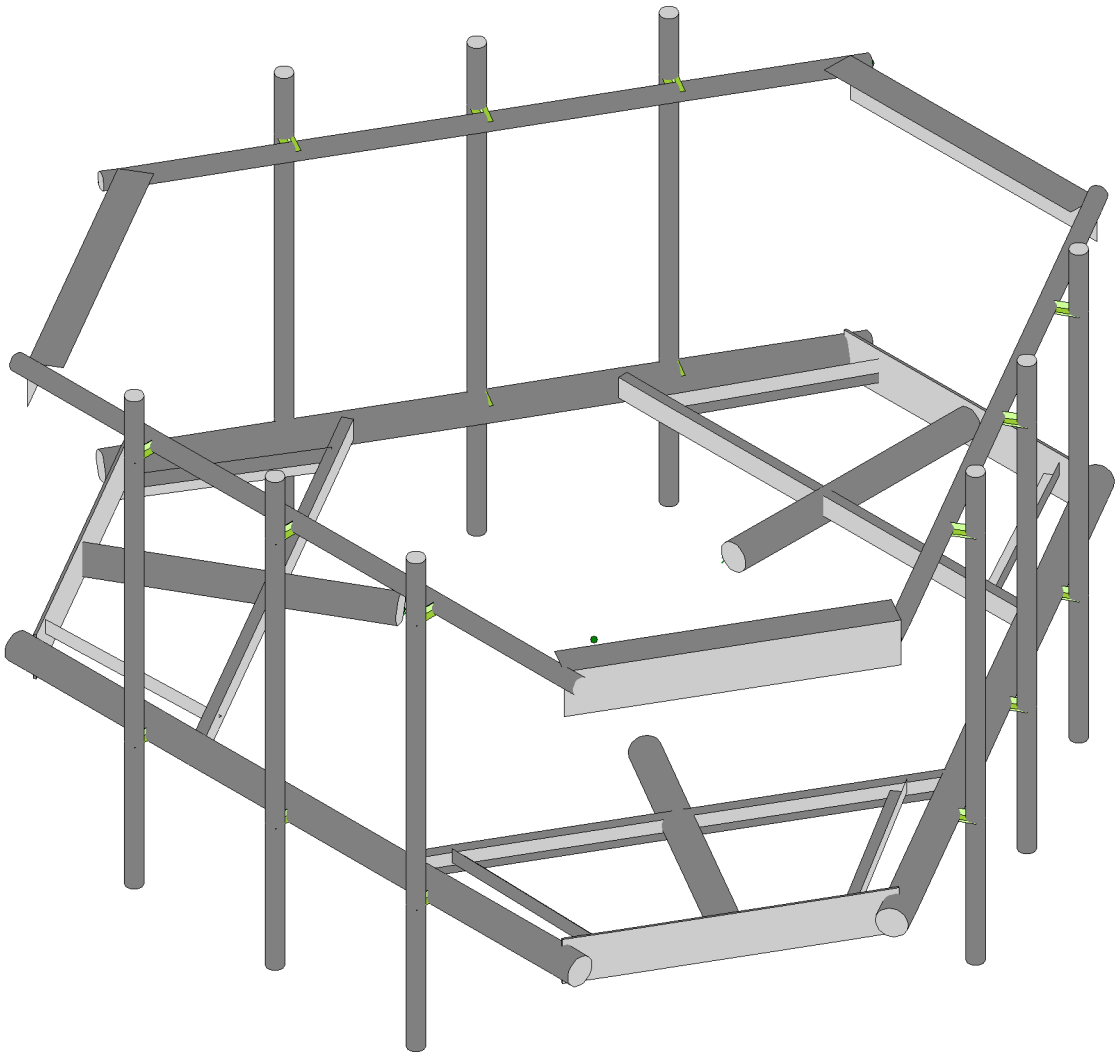
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MC-PK8-C.

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

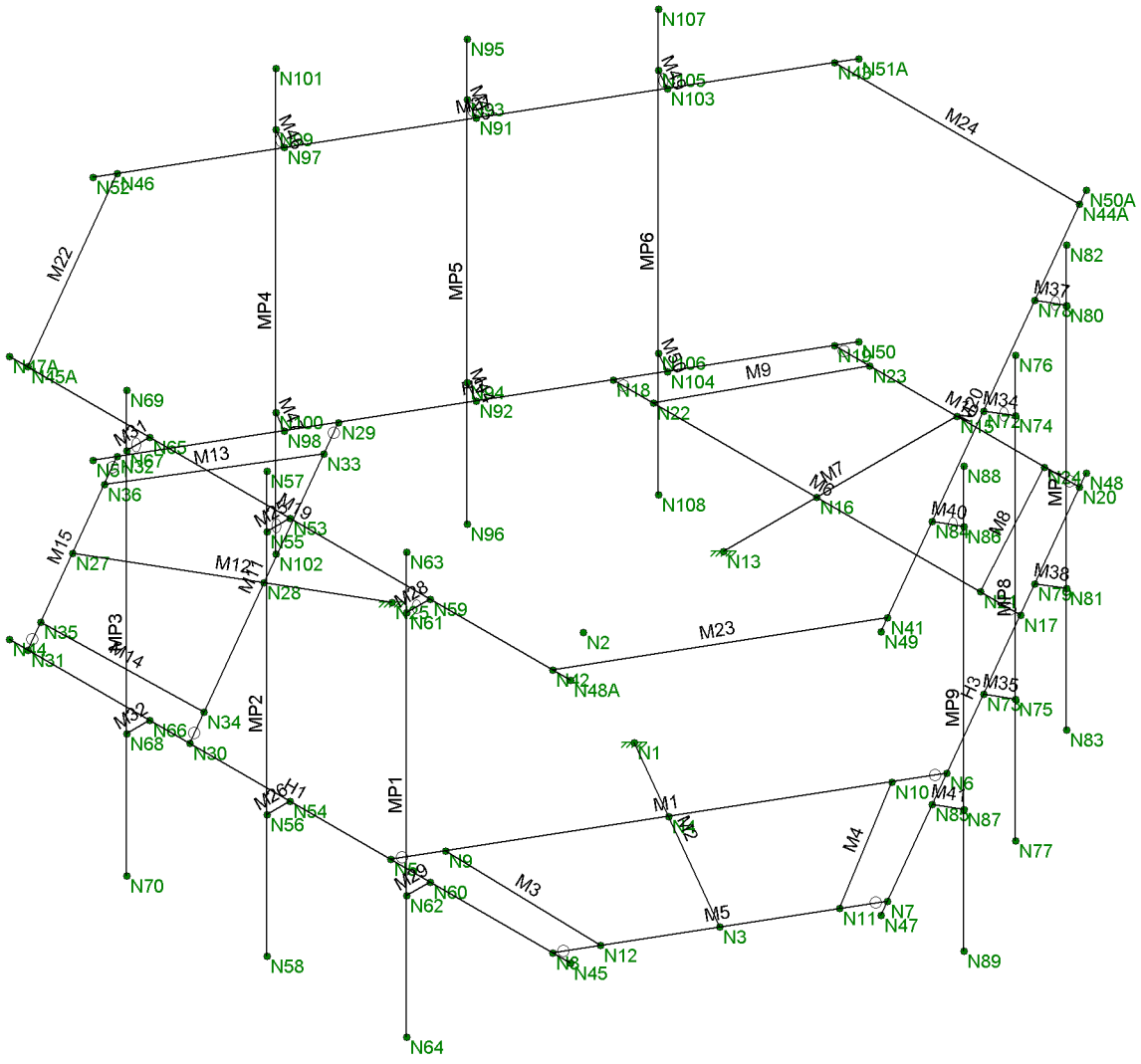
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	876333_CREATIVE DIMENSIONS	SK - 1
IN		July 29, 2021 at 11:40 AM
189038		876333_CREATIVE DIMENSIONS.r...



Envelope Only Solution

Trylon	876333_CREATIVE DIMENSIONS	SK - 2
IN		July 29, 2021 at 11:40 AM
189038		876333_CREATIVE DIMENSIONS.r...

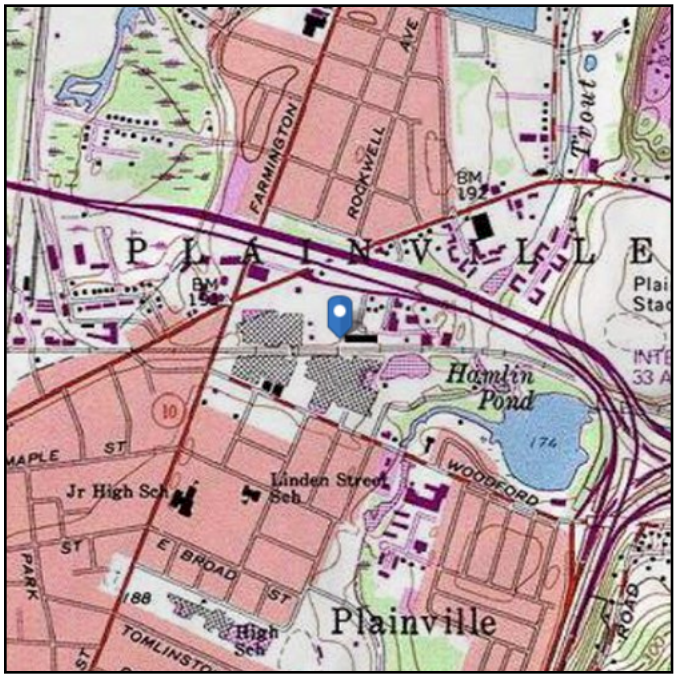
APPENDIX B

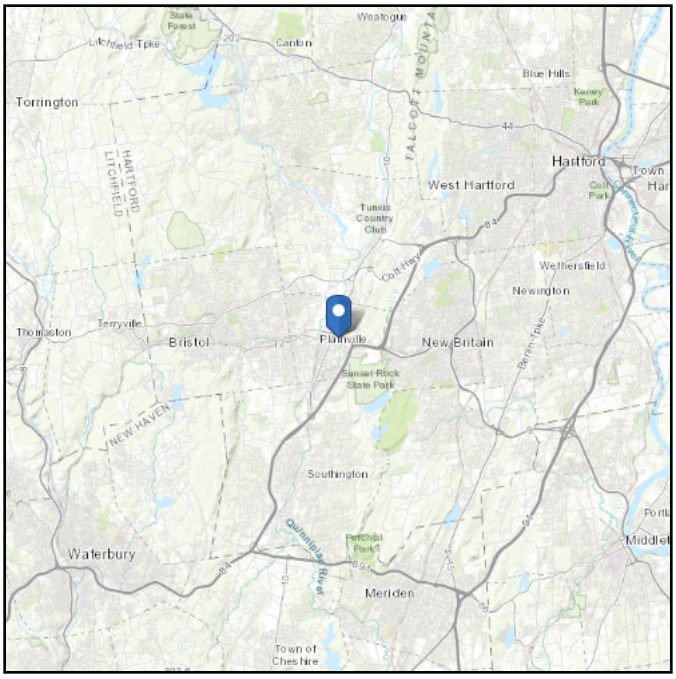
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	189.13 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.673478
Soil Class:	D - Stiff Soil	**Longitude:**	-72.854492





Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Jul 29 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.

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189038
Carrier Site ID:	BOBDL00085A
Carrier Site Name:	CT-CCI-T-876333

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	103.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	137.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	189.13	ft.

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

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.27	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	48.06	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	48.06	psf
Mount Ice Thickness (t_{iz}):	2.24	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	86.51	psf
Round Member Pressure:	51.91	psf
Ice Wind Pressure:	7.31	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.184	g
1 Second Accel (S_1):	0.064	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
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/Location	*Qty.*	*Elevation [ft]*	*--*	*EPA_N (ft2)*	*EPA_T (ft2)*	*Weight (lbs)*
MX08FRO665-21	3	103	No Ice	8.01	3.21	82.50
MP2/MP5/MP8, 0/120/240	--	--	w/ Ice	10.18	5.12	384.10
TA08025-B605	3	103	No Ice	1.96	1.13	75.00
MP2/MP5/MP8, 90/210/330	--	--	w/ Ice	2.53	1.59	103.45
TA08025-B604	3	103	No Ice	1.96	0.98	63.90
MP2/MP5/MP8, 90/210/330	--	--	w/ Ice	2.53	1.42	97.37
RDIDC-9181-PF-48	1	103	No Ice	2.01	1.17	21.85
MP2, 0	--	--	w/ Ice	2.59	1.65	102.04
			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			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name/Location	*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	103	1.00	1.27	0.95	2.24	48.06	7.69
TA08025-B605	3	103	1.00	1.27	0.95	2.24	48.06	7.69
TA08025-B604	3	103	1.00	1.27	0.95	2.24	48.06	7.69
RDIDC-9181-PF-48	1	103	1.00	1.27	0.95	2.24	48.06	7.69

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	346.49	190.76	294.58	138.86	294.58	190.76
MP2/MP5/MP8, 0/120/240	--	w/ Ice	70.48	44.19	61.72	35.43	61.72	44.19
TA08025-B605	3	No Ice	84.94	57.88	75.92	48.86	75.92	57.88
MP2/MP5/MP8, 90/210/330	--	w/ Ice	17.50	12.63	15.88	11.01	15.88	12.63
TA08025-B604	3	No Ice	84.94	53.06	74.31	42.44	74.31	53.06
MP2/MP5/MP8, 90/210/330	--	w/ Ice	17.50	11.77	15.59	9.86	15.59	11.77
RDIDC-9181-PF-48	1	No Ice	87.03	59.66	77.90	50.53	77.90	59.66
MP2, 0	--	w/ Ice	17.90	13.03	16.27	11.40	16.27	13.03
		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						
		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	103	82.5	9.72
TA08025-B605	3	103	75	8.83
TA08025-B604	3	103	63.9	7.52
RDIDC-9181-PF-48	1	103	21.85	2.57

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 S100-12: 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?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/...	Density[k/ft^3]	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

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_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6.6"X4.46"X0.25"	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	.055
7	Horizontals	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
8	Mount Pipes	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

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 Gr...	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(Me...	Surface(...
1	Self Weight	DL			-1		13		3	
2	Structure Wind X	WLX						33		
3	Structure Wind Y	WLY						33		
4	Wind Load 0 AZI	WLX					13			
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					13			
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	33	3	
13	Structure Ice Wind X	OL2						33		
14	Structure Ice Wind Y	OL3						33		
15	Ice Wind Load 0 AZI	OL2					13			
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					13			
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	-.117				13			
24	Seismic Load Y	ELY		-.117			13			
25	Live Load 1 (Lv)	LL				1				
26	Live Load 2 (Lv)	LL				1				
27	Live Load 3 (Lv)	LL				1				
28	Live Load 4 (Lv)	LL				1				
29	Live Load 5 (Lv)	LL				1				
30	Live Load 6 (Lv)	LL				1				
31	Maintenance Load 1 (Lm)	None				1				
32	Maintenance Load 2 (Lm)	None				1				
33	Maintenance Load 3 (Lm)	None				1				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
34	Maintenance Load 4 (Lm)	None				1				
35	Maintenance Load 5 (Lm)	None				1				
36	Maintenance Load 6 (Lm)	None				1				
37	Maintenance Load 7 (Lm)	None				1				
38	Maintenance Load 8 (Lm)	None				1				
39	Maintenance Load 9 (Lm)	None				1				
40	BLC 1 Transient Area Loads	None						9		
41	BLC 12 Transient Area Loads	None						9		

Load Combinations

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	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 A...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30 ...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi 45 ...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60 ...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90 ...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 12...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
40	1.2DL + 1DLi + 1WLi 13...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 15...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 18...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 21...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 22...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1										
45	1.2DL + 1DLi + 1WLi 24...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1										
46	1.2DL + 1DLi + 1WLi 27...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 30...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1										
48	1.2DL + 1DLi + 1WLi 31...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1										
49	1.2DL + 1DLi + 1WLi 33...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds) + 1.0E 0 AZI	Yes	Y		DL	1.239	E...	1	E...															
51	(1.2+0.2Sds) + 1.0E 30 ...	Yes	Y		DL	1.239	E...	.866	E...	.5														
52	(1.2+0.2Sds) + 1.0E 45 ...	Yes	Y		DL	1.239	E...	.707	E...	.707														
53	(1.2+0.2Sds) + 1.0E 60 ...	Yes	Y		DL	1.239	E...	.5	E...	.866														
54	(1.2+0.2Sds) + 1.0E 90 ...	Yes	Y		DL	1.239	E...		E...	1														
55	(1.2+0.2Sds) + 1.0E 120...	Yes	Y		DL	1.239	E...	-.5	E...	.866														
56	(1.2+0.2Sds) + 1.0E 135...	Yes	Y		DL	1.239	E...	-.707	E...	.707														
57	(1.2+0.2Sds) + 1.0E 150...	Yes	Y		DL	1.239	E...	-.866	E...	.5														
58	(1.2+0.2Sds) + 1.0E 180...	Yes	Y		DL	1.239	E...	-1	E...															
59	(1.2+0.2Sds) + 1.0E 210...	Yes	Y		DL	1.239	E...	-.866	E...	-.5														
60	(1.2+0.2Sds) + 1.0E 225...	Yes	Y		DL	1.239	E...	-.707	E...	-.707														
61	(1.2+0.2Sds) + 1.0E 240...	Yes	Y		DL	1.239	E...	-.5	E...	-.866														
62	(1.2+0.2Sds) + 1.0E 270...	Yes	Y		DL	1.239	E...		E...	-1														
63	(1.2+0.2Sds) + 1.0E 300...	Yes	Y		DL	1.239	E...	.5	E...	-.866														
64	(1.2+0.2Sds) + 1.0E 315...	Yes	Y		DL	1.239	E...	.707	E...	-.707														
65	(1.2+0.2Sds) + 1.0E 330...	Yes	Y		DL	1.239	E...	.866	E...	-.5														
66	(0.9-0.2Sds) + 1.0E 0 AZI	Yes	Y		DL	.861	E...	1	E...															
67	(0.9-0.2Sds) + 1.0E 30 A...	Yes	Y		DL	.861	E...	.866	E...	.5														
68	(0.9-0.2Sds) + 1.0E 45 A...	Yes	Y		DL	.861	E...	.707	E...	.707														
69	(0.9-0.2Sds) + 1.0E 60 A...	Yes	Y		DL	.861	E...	.5	E...	.866														
70	(0.9-0.2Sds) + 1.0E 90 A...	Yes	Y		DL	.861	E...		E...	1														
71	(0.9-0.2Sds) + 1.0E 120 ...	Yes	Y		DL	.861	E...	-.5	E...	.866														
72	(0.9-0.2Sds) + 1.0E 135 ...	Yes	Y		DL	.861	E...	-.707	E...	.707														
73	(0.9-0.2Sds) + 1.0E 150 ...	Yes	Y		DL	.861	E...	-.866	E...	.5														
74	(0.9-0.2Sds) + 1.0E 180 ...	Yes	Y		DL	.861	E...	-1	E...															
75	(0.9-0.2Sds) + 1.0E 210 ...	Yes	Y		DL	.861	E...	-.866	E...	-.5														
76	(0.9-0.2Sds) + 1.0E 225 ...	Yes	Y		DL	.861	E...	-.707	E...	-.707														
77	(0.9-0.2Sds) + 1.0E 240 ...	Yes	Y		DL	.861	E...	-.5	E...	-.866														
78	(0.9-0.2Sds) + 1.0E 270 ...	Yes	Y		DL	.861	E...		E...	-1														
79	(0.9-0.2Sds) + 1.0E 300 ...	Yes	Y		DL	.861	E...	.5	E...	-.866														
80	(0.9-0.2Sds) + 1.0E 315 ...	Yes	Y		DL	.861	E...	.707	E...	-.707														
81	(0.9-0.2Sds) + 1.0E 330 ...	Yes	Y		DL	.861	E...	.866	E...	-.5														
82	1.2D + 1.5 Lv1	Yes	Y		DL	1.2	25	1.5																
83	1.2D + 1.5 Lv2	Yes	Y		DL	1.2	26	1.5																
84	1.2D + 1.5 Lv3	Yes	Y		DL	1.2	27	1.5																
85	1.2D + 1.5 Lv4	Yes	Y		DL	1.2	28	1.5																
86	1.2D + 1.5 Lv5	Yes	Y		DL	1.2	29	1.5																
87	1.2D + 1.5 Lv6	Yes	Y		DL	1.2	30	1.5																
88	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	4	.058	2	.058	3											
89	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	5	.058	2	.05	3	.029										
90	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	6	.058	2	.041	3	.041										
91	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	7	.058	2	.029	3	.05										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
92	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	8	.058	2		3	.058										
93	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	9	.058	2	-.029	3	.05										
94	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	10	.058	2	-.041	3	.041										
95	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	11	.058	2	-.05	3	.029										
96	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	4	.058	2	-.058	3											
97	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	5	.058	2	-.05	3	-.029										
98	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	6	.058	2	-.041	3	-.041										
99	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	7	.058	2	-.029	3	-.05										
100	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	8	.058	2		3	-.058										
101	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	9	.058	2	.029	3	-.05										
102	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	10	.058	2	.041	3	-.041										
103	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	11	.058	2	.05	3	-.029										
104	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	4	.058	2	.058	3											
105	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	5	.058	2	.05	3	.029										
106	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	6	.058	2	.041	3	.041										
107	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	7	.058	2	.029	3	.05										
108	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	8	.058	2		3	.058										
109	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	9	.058	2	-.029	3	.05										
110	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	10	.058	2	-.041	3	.041										
111	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	11	.058	2	-.05	3	.029										
112	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	4	.058	2	-.058	3											
113	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	5	.058	2	-.05	3	-.029										
114	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	6	.058	2	-.041	3	-.041										
115	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	7	.058	2	-.029	3	-.05										
116	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	8	.058	2		3	-.058										
117	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	9	.058	2	.029	3	-.05										
118	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	10	.058	2	.041	3	-.041										
119	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	11	.058	2	.05	3	-.029										
120	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	4	.058	2	.058	3											
121	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	5	.058	2	.05	3	.029										
122	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	6	.058	2	.041	3	.041										
123	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	7	.058	2	.029	3	.05										
124	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	8	.058	2		3	.058										
125	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	9	.058	2	-.029	3	.05										
126	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	10	.058	2	-.041	3	.041										
127	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	11	.058	2	-.05	3	.029										
128	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	4	.058	2	-.058	3											
129	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	5	.058	2	-.05	3	-.029										
130	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	6	.058	2	-.041	3	-.041										
131	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	7	.058	2	-.029	3	-.05										
132	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	8	.058	2		3	-.058										
133	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	9	.058	2	.029	3	-.05										
134	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	10	.058	2	.041	3	-.041										
135	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	11	.058	2	.05	3	-.029										
136	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	4	.058	2	.058	3											
137	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	5	.058	2	.05	3	.029										
138	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	6	.058	2	.041	3	.041										
139	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	7	.058	2	.029	3	.05										
140	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	8	.058	2		3	.058										
141	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	9	.058	2	-.029	3	.05										
142	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	10	.058	2	-.041	3	.041										
143	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	11	.058	2	-.05	3	.029										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
144	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	4	.058	2	-.058	3											
145	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	5	.058	2	-.05	3	-.029										
146	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	6	.058	2	-.041	3	-.041										
147	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	7	.058	2	-.029	3	-.05										
148	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	8	.058	2		3	-.058										
149	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	9	.058	2	.029	3	-.05										
150	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	10	.058	2	.041	3	-.041										
151	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	11	.058	2	.05	3	-.029										
152	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	4	.058	2	.058	3											
153	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	5	.058	2	.05	3	.029										
154	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	6	.058	2	.041	3	.041										
155	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	7	.058	2	.029	3	.05										
156	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	8	.058	2		3	.058										
157	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	9	.058	2	-.029	3	.05										
158	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	10	.058	2	-.041	3	.041										
159	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	11	.058	2	-.05	3	.029										
160	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	4	.058	2	-.058	3											
161	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	5	.058	2	-.05	3	-.029										
162	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	6	.058	2	-.041	3	-.041										
163	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	7	.058	2	-.029	3	-.05										
164	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	8	.058	2		3	-.058										
165	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	9	.058	2	.029	3	-.05										
166	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	10	.058	2	.041	3	-.041										
167	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	11	.058	2	.05	3	-.029										
168	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	4	.058	2	.058	3											
169	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	5	.058	2	.05	3	.029										
170	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	6	.058	2	.041	3	.041										
171	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	7	.058	2	.029	3	.05										
172	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	8	.058	2		3	.058										
173	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	9	.058	2	-.029	3	.05										
174	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	10	.058	2	-.041	3	.041										
175	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	11	.058	2	-.05	3	.029										
176	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	4	.058	2	-.058	3											
177	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	5	.058	2	-.05	3	-.029										
178	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	6	.058	2	-.041	3	-.041										
179	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	7	.058	2	-.029	3	-.05										
180	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	8	.058	2		3	-.058										
181	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	9	.058	2	.029	3	-.05										
182	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	10	.058	2	.041	3	-.041										
183	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	11	.058	2	.05	3	-.029										
184	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	4	.058	2	.058	3											
185	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	5	.058	2	.05	3	.029										
186	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	6	.058	2	.041	3	.041										
187	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	7	.058	2	.029	3	.05										
188	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	8	.058	2		3	.058										
189	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	9	.058	2	-.029	3	.05										
190	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	10	.058	2	-.041	3	.041										
191	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	11	.058	2	-.05	3	.029										
192	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	4	.058	2	-.058	3											
193	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	5	.058	2	-.05	3	-.029										
194	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	6	.058	2	-.041	3	-.041										
195	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	7	.058	2	-.029	3	-.05										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
196	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	8	.058	2		3	-.058										
197	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	9	.058	2	.029	3	-.05										
198	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	10	.058	2	.041	3	-.041										
199	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	11	.058	2	.05	3	-.029										
200	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.058	2	.058	3											
201	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.058	2	.05	3	.029										
202	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.058	2	.041	3	.041										
203	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.058	2	.029	3	.05										
204	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.058	2		3	.058										
205	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.058	2	-.029	3	.05										
206	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.058	2	-.041	3	.041										
207	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.058	2	-.05	3	.029										
208	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.058	2	-.058	3											
209	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.058	2	-.05	3	-.029										
210	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.058	2	-.041	3	-.041										
211	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.058	2	-.029	3	-.05										
212	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.058	2		3	-.058										
213	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.058	2	.029	3	-.05										
214	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.058	2	.041	3	-.041										
215	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.058	2	.05	3	-.029										
216	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.058	2	.058	3											
217	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.058	2	.05	3	.029										
218	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.058	2	.041	3	.041										
219	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.058	2	.029	3	.05										
220	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.058	2		3	.058										
221	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.058	2	-.029	3	.05										
222	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.058	2	-.041	3	.041										
223	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.058	2	-.05	3	.029										
224	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.058	2	-.058	3											
225	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.058	2	-.05	3	-.029										
226	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.058	2	-.041	3	-.041										
227	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.058	2	-.029	3	-.05										
228	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.058	2		3	-.058										
229	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.058	2	.029	3	-.05										
230	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.058	2	.041	3	-.041										
231	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.058	2	.05	3	-.029										

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	1613.653	3	996.064	20	2360.093	39	323.52	31	415.81	33	1839.638	3
2		min	-1609.531	27	-1002.536	12	-25.666	31	-4060.539	39	-2505.207	41	-1839.022	27
3	N1	max	1613.648	17	1002.537	8	2360.08	45	4060.507	45	415.802	19	1839.019	25
4		min	-1609.526	25	-996.066	32	-25.663	21	-323.516	21	-2505.201	43	-1839.634	17
5	N13	max	436.014	18	1599.848	22	2265.42	34	654.515	192	4549.363	34	1516.452	30
6		min	-444.684	10	-1599.848	30	-65.939	26	-688.946	172	-473.877	26	-1516.452	22
7	Totals:	max	3346.203	18	3128.084	6	6734.588	41						
8		min	-3346.203	26	-3128.084	30	1366.261	81						

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc.....	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M12	PIPE_3.5	.598	40	39	.179	40	11	64491...	78750	7953.75	7953.75	2...	H1-1b
2	M2	PIPE_3.5	.598	40	45	.179	40	9	64491...	78750	7953.75	7953.75	2...	H1-1b
3	M7	PIPE_3.5	.572	40	34	.157	40	6	64491...	78750	7953.75	7953.75	2...	H1-1b
4	M11	C3X5	.479	34.856	39	.170	63.... y	34	32858...	47628	981.263	4104	1...	H1-1b
5	M1	C3X5	.479	34.856	45	.170	6.5... y	34	32858...	47628	981.263	4104	1...	H1-1b
6	M6	C3X5	.451	34.856	34	.162	63.... y	45	32858...	47628	981.263	4104	1...	H1-1b
7	MP2	PIPE_2.0	.369	51	14	.056	51	6	20866...	32130	1871....	1871....	2...	H1-1b
8	MP5	PIPE_2.0	.347	51	9	.054	51	10	20866...	32130	1871....	1871....	1	H1-1b
9	MP8	PIPE_2.0	.347	51	11	.054	51	10	20866...	32130	1871....	1871....	2...	H1-1b
10	MP1	PIPE_2.0	.347	51	15	.045	51	10	20866...	32130	1871....	1871....	2...	H1-1b
11	MP3	PIPE_2.0	.347	51	5	.045	51	10	20866...	32130	1871....	1871....	1	H1-1b
12	MP4	PIPE_2.0	.333	51	10	.026	51	5	20866...	32130	1871....	1871....	1	H1-1b
13	MP9	PIPE_2.0	.333	51	10	.026	51	15	20866...	32130	1871....	1871....	1...	H1-1b
14	MP6	PIPE_2.0	.302	51	17	.038	51	4	20866...	32130	1871....	1871....	2...	H1-1b
15	MP7	PIPE_2.0	.302	51	3	.038	51	16	20866...	32130	1871....	1871....	1	H1-1b
16	M15	6.5"x0.37" Plate	.265	21	8	.108	21 y	42	27548...	75757.5	583.963	6401....	1...	H1-1b
17	M5	6.5"x0.37" Plate	.265	21	12	.108	21 y	42	27548...	75757.5	583.963	6401....	1...	H1-1b
18	M10	6.5"x0.37" Plate	.262	21	2	.103	21 y	47	27548...	75757.5	583.963	6150....	1...	H1-1b
19	M4	L2x2x3	.166	0	13	.036	0 y	41	18084.2	23392.8	557.717	1182....	1	H2-1
20	M13	L2x2x3	.165	0	31	.036	0 z	43	18084.2	23392.8	557.717	1182....	1	H2-1
21	M9	L2x2x3	.148	0	2	.035	0 y	46	18084.2	23392.8	557.717	1182....	1	H2-1
22	M8	L2x2x3	.148	0	26	.035	0 z	38	18084.2	23392.8	557.717	1182....	1	H2-1
23	M14	L2x2x3	.139	0	8	.036	0 y	35	18084.2	23392.8	557.717	1182....	1	H2-1
24	M3	L2x2x3	.139	0	20	.036	0 z	49	18084.2	23392.8	557.717	1182....	1	H2-1
25	M19	PIPE_2.0	.130	24	10	.126	24	2	14916...	32130	1871....	1871....	1...	H1-1b
26	M21	PIPE_2.0	.125	72	4	.112	24	12	14916...	32130	1871....	1871....	1...	H1-1b
27	M20	PIPE_2.0	.125	24	16	.112	72	8	14916...	32130	1871....	1871....	1...	H1-1b
28	H1	PIPE_3.5	.120	48	105	.097	24	10	60666...	78750	7953.75	7953.75	1	H1-1b
29	H3	PIPE_3.5	.117	48	207	.089	24	15	60666...	78750	7953.75	7953.75	1	H1-1b
30	H2	PIPE_3.5	.115	48	159	.089	72	5	60666...	78750	7953.75	7953.75	1	H1-1b
31	M23	L6.6"X4.46"X0...	.054	42	32	.039	42 y	17	51170...	87561	2464....	7125....	1	H2-1
32	M22	L6.6"X4.46"X0...	.054	0	20	.039	0 y	3	51170...	87561	2464....	7125....	1	H2-1
33	M24	L6.6"X4.46"X0...	.045	21	18	.034	0 y	14	51170...	87561	2464....	7125....	1	H2-1

Envelope AISI S100-12: LRFD Cold Formed Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i...	Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

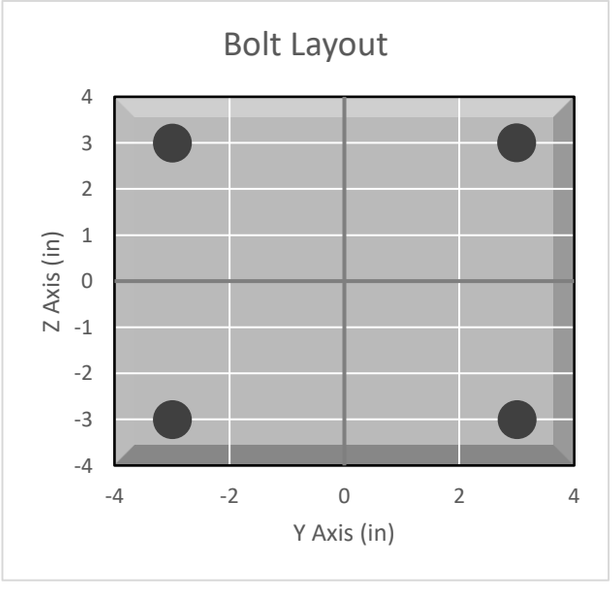
Analysis date: 29.07.2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189038
Carrier Site ID:	BOBDL00085A
Carrier Site Name:	CT-CCI-T-876333

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:	No	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Monopole

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	17257.3	lbs
Tension Force (T_u):	4878.8	lbs
Shear Force (V_u):	701.7	lbs
Tension Usage:	22.8%	--
Shear Usage:	3.9%	--
Interaction:	22.8%	Pass
Controlling Member:	M12	--
Controlling LC:	42	--

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

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

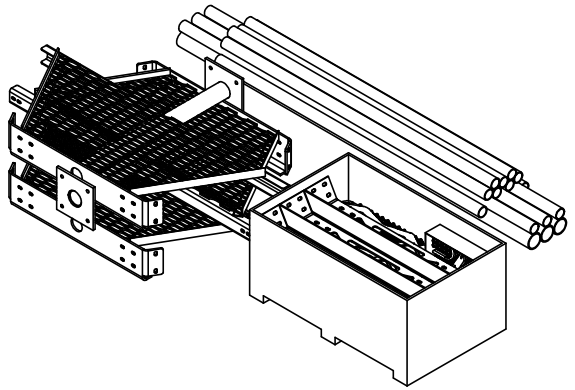
APPENDIX E

SUPPLEMENTAL DRAWINGS

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	402.64 LBS	
2	MCPK8CSB	PIPE STEEL BUNDLE FOR MC-PK8-C	1	464.27 LBS	
3	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	543.22 LBS	

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT, ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

FOR BOM ENTRY ONLY



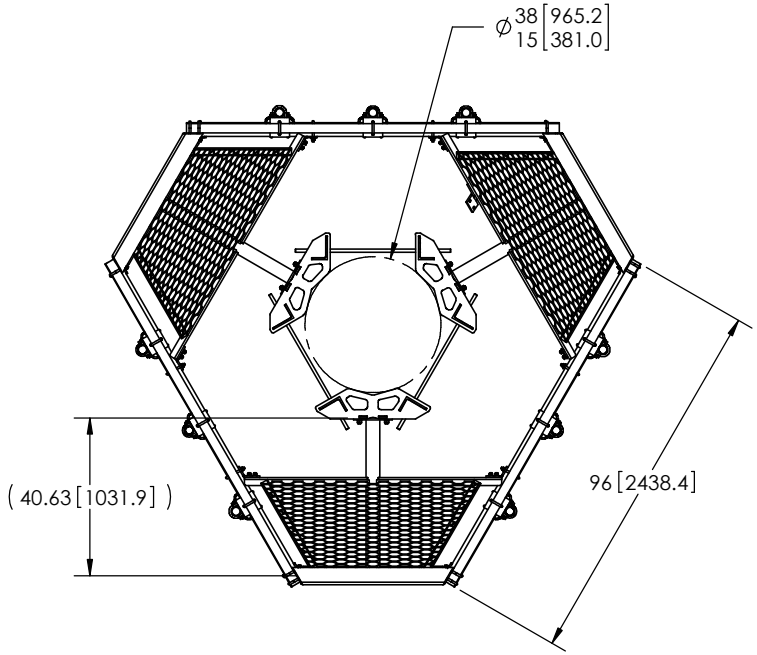
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

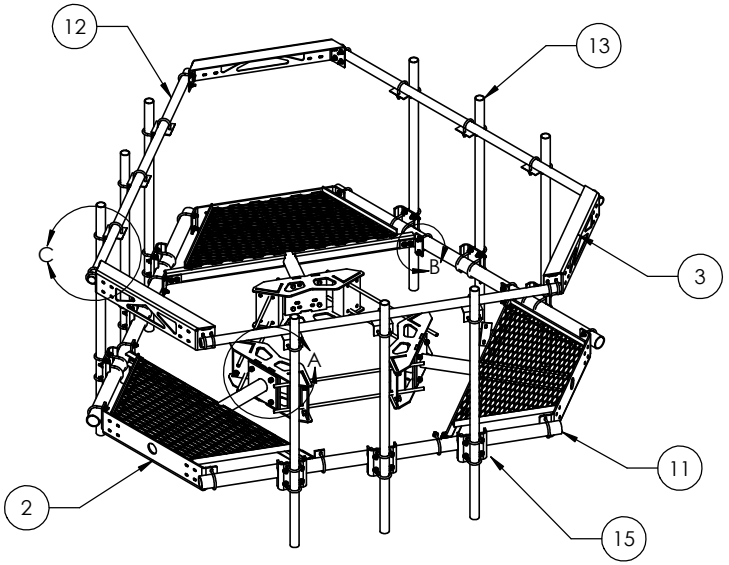
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03

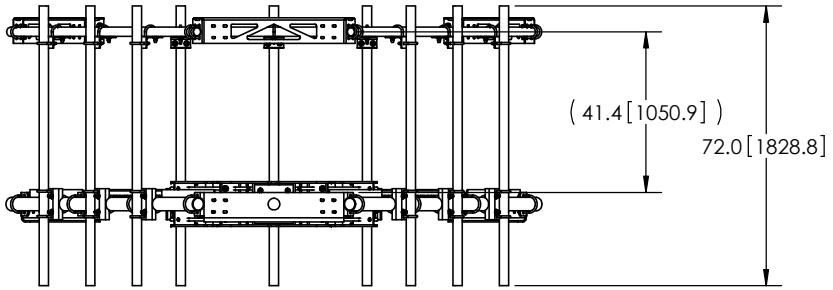
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

DRAWN BY: MSM	SHEET: 1 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: LOW PROFILE PLATFORM KIT 8' FACE	
DATE: 10/18/11	MATERIAL: A36, A500	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1410.14 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.





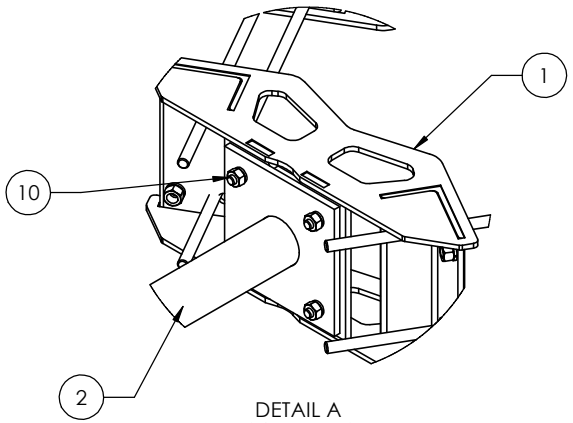


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C 1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18	0.82 LBS
6	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12	0.71 LBS
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48	0.56 LBS
8	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	12	0.13 LBS
9	GWF-04	1/2" GALV FLAT WASHER	24	0.03 LBS
10	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12	0.27 LBS
11	MT54796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	Ø2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT19617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

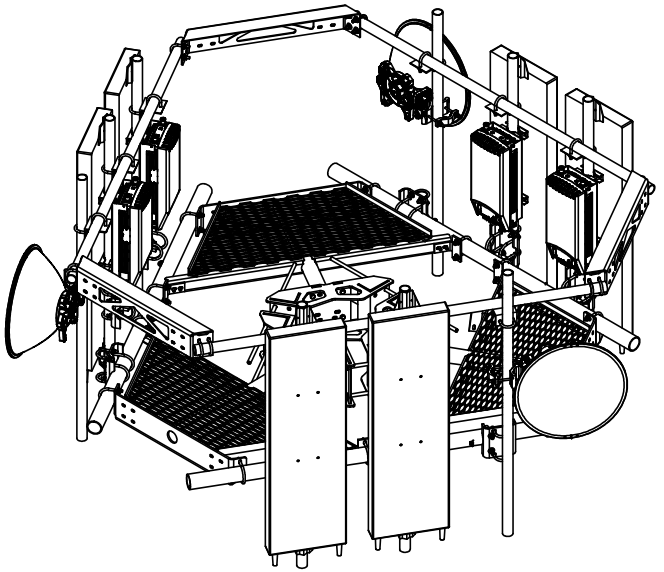
NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"–38" OD.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

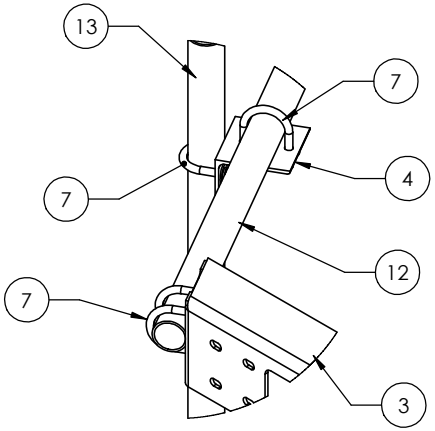
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	ANDREW® WESTCHESTER, IL. 60154 U.S.A.	
	WEIGHT: 1361.27 LBS		



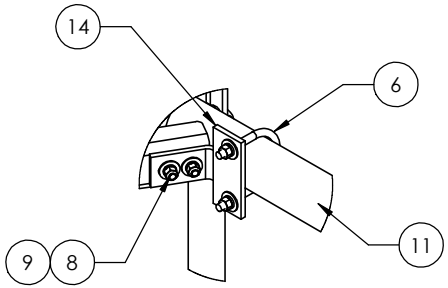
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL C
SCALE 1 : 8



DETAIL B
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

DRAWN BY: MSM	SHEET: 3 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	ANDREW® WESTCHESTER, IL. 60154 U.S.A.	
	WEIGHT: 1361.27 LBS		

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: 876333

BOBDL00085A
10 Sparks Street
Plainville, Connecticut 06062

June 24, 2021

EBI Project Number: 6221003207

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**29.13%**

June 24, 2021

Dish Wireless

Emissions Analysis for Site: 876333 - BOBDL00085A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **10 Sparks Street** in **Plainville, 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 10 Sparks Street in Plainville, 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 10 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 5G 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 5G 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) 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.

4) 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 10 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.

5) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 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 10 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.

6) The antenna mounting height centerline of the proposed antennas is 103 feet above ground level (AGL).

7) 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.

8) 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	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	36,123.20	ERP (W):	36,123.20	ERP (W):	36,123.20
Antenna A1 MPE %:	**17.63%**	Antenna B1 MPE %:	**17.63%**	Antenna C1 MPE %:	**17.63%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	17.63%
AT&T	9.49%
Metro PCS	1.64%
Clearwire	0.14%
Sprint	0.23%
Site Total MPE % :	29.13%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	17.63%
Dish Wireless Sector B Total:	17.63%
Dish Wireless Sector C Total:	17.63%
Site Total MPE % :	29.13%

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 5G	4	1667.71	103.0	25.49	600 MHz 5G	400	6.37%
Dish Wireless 1900 MHz 5G	4	7363.09	103.0	112.54	1900 MHz 5G	1000	11.25%
						Total:	**17.63%**

• 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:	17.63%
Sector B:	17.63%
Sector C:	17.63%
Dish Wireless Maximum MPE % (Sector A):	17.63%
Site Total:	29.13%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **29.13%** 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

3 Corporate Dr, Suite 101
Clifton Park, NY 12065

Phone: (201) 236-9224
Fax: (724) 416-6112
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:
10 SPARKS ST., PLAINVILLE, CT 06062

GLOBAL SIGNAL ACQUISITIONS II LLC ("Crown Castle") hereby authorizes DISH WIRELESS, LLC, including their Agent, to act as our Agent in the processing of all zoning applications and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

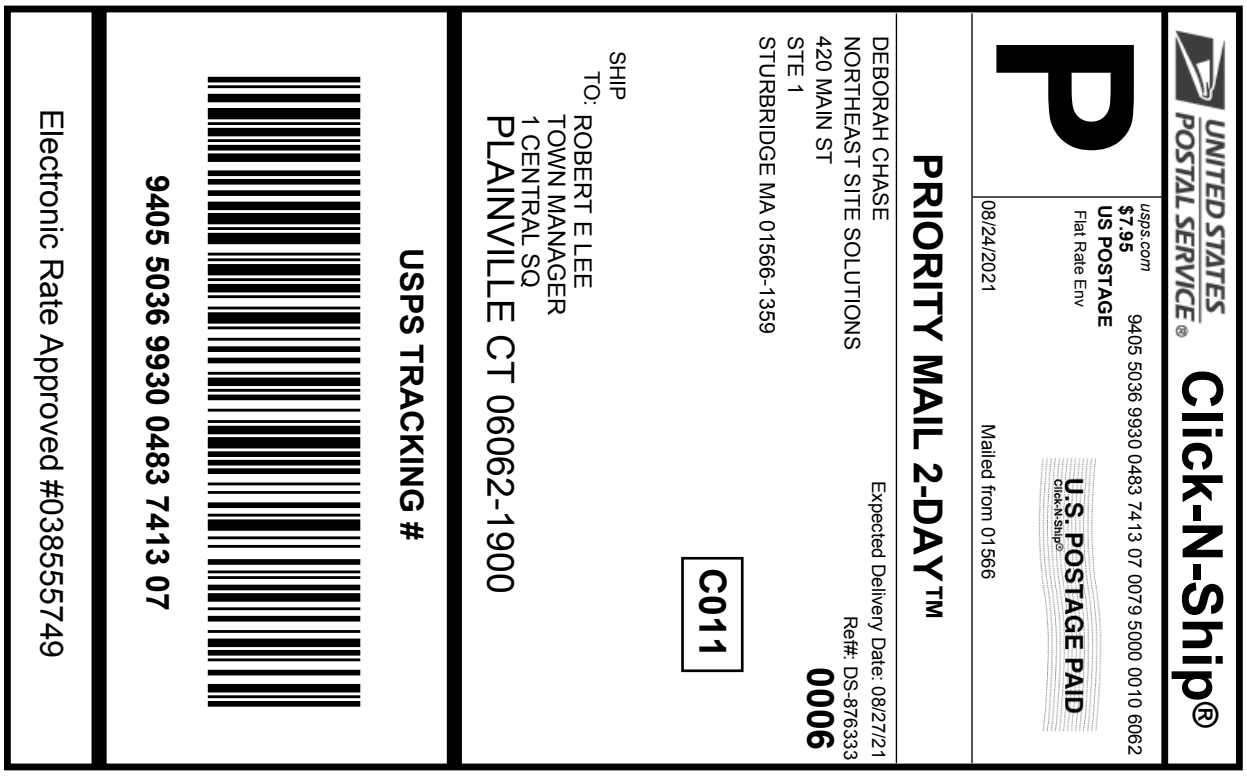
Crown Site ID/Name: 876333/CREATIVE DIMENSIONS
Customer Site ID: BOBDL00085A/CT-CCI-T-876333
Site Address: 10 Sparks St., PLAINVILLE, CT 06062

Crown Castle

By: Anne Marie Zsamba Date: 7/22/21
Anne Marie Zsamba
Project Manager – Site Acquisition

Exhibit H

Recipient Mailings



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
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.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0483 7413 07

Trans. #:	541637466
Print Date:	08/24/2021
Ship Date:	08/24/2021
Expected Delivery Date:	08/27/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

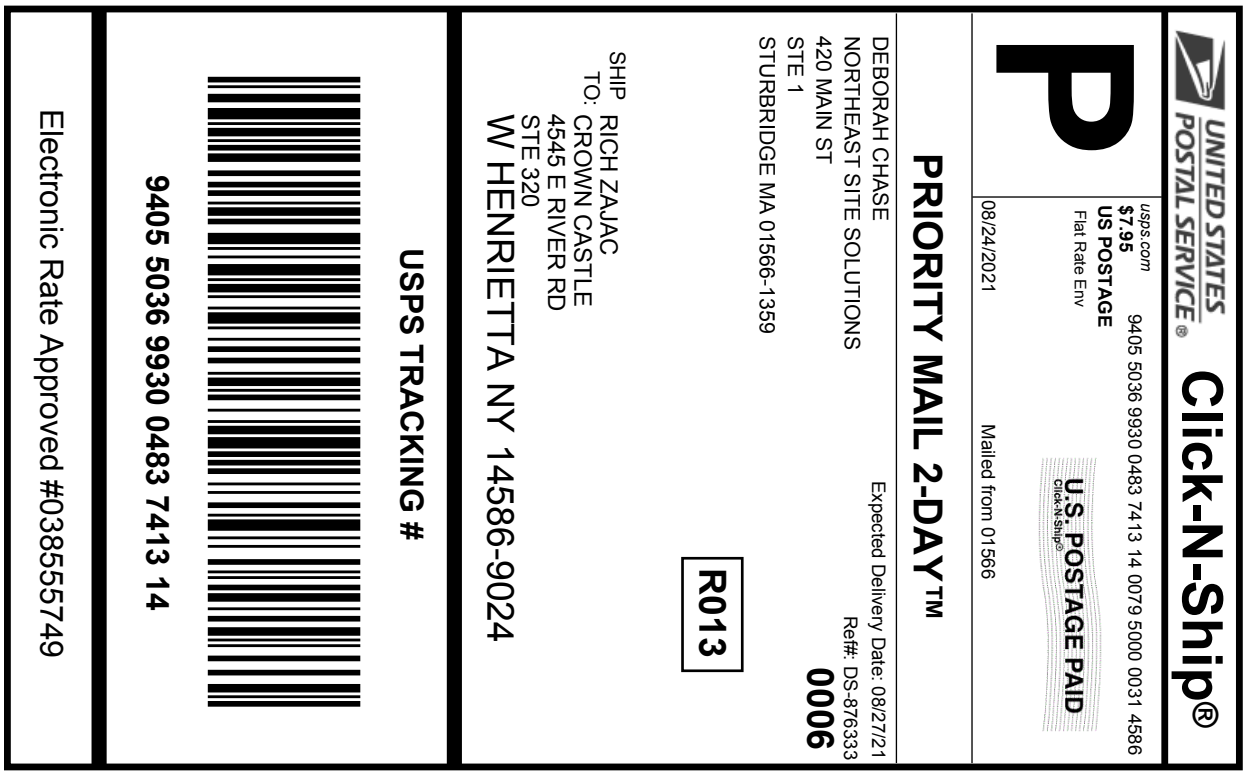
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876333

To: ROBERT E LEE
TOWN MANAGER
1 CENTRAL SQ
PLAINVILLE CT 06062-1900

* 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.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
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.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0483 7413 14

Trans. #:	541637466
Print Date:	08/24/2021
Ship Date:	08/24/2021
Expected Delivery Date:	08/27/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

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

Ref#: DS-876333

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

* 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.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0483 7413 45 0079 5000 0010 6062

usps.com
$7.95
US POSTAGE
Flat Rate Env

U.S. POSTAGE PAID
Click-N-Ship®

08/24/2021 Mailed from 01566

P

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 08/27/21

Ref#: DS-876333

0006

C011

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

SHIP TO: GARRETT DAIGLE
TOW PLANNER
1 CENTRAL SQ
RM 100
PLAINVILLE CT 06062-1900

USPS TRACKING #

9405 5036 9930 0483 7413 45

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
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.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0483 7413 45

Trans. #:	541637466
Print Date:	08/24/2021
Ship Date:	08/24/2021
Expected Delivery Date:	08/27/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

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

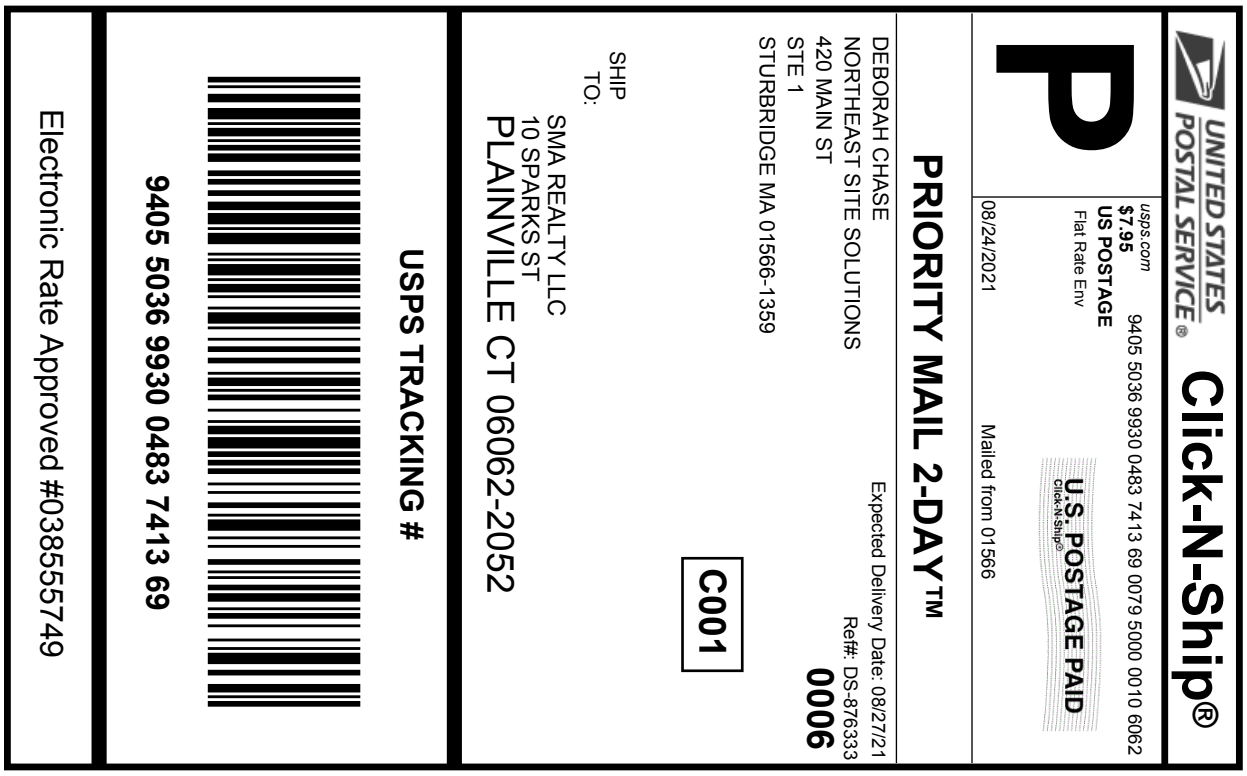
Ref#: DS-876333

To: GARRETT DAIGLE
TOW PLANNER
1 CENTRAL SQ
RM 100
PLAINVILLE CT 06062-1900

* 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.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
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.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0483 7413 69

Trans. #:	541637466
Print Date:	08/24/2021
Ship Date:	08/24/2021
Expected Delivery Date:	08/27/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

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

Ref#: DS-876333

To: SMA REALTY LLC
10 SPARKS ST
PLAINVILLE CT 06062-2052

* 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.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com