NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

October 27, 2021

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

RE: Tower Share Application
4 Oliver Road, Enfield CT 06082
Latitude: 41.960056
Longitude: 72.5922306
Site# 806373_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 4 Oliver Road in Enfield, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 127-foot level of the existing 160-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 October 8, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated September 1, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the CT Siting Council Petition No. 435 on October 21, 1999. 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 Christopher W. Bromson, Town Manager, and Jennifer Pachaca, Assistant Town Planner for the Town of Enfield, as well as the tower owner (Crown Castle) and property owner (Oliver Road Holding 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 160-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 127-feet.

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

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

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4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 11.94% 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 monopole in Enfield. 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 127-foot level of the existing 160-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing 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 Enfield.

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:

Christopher W. Bromson, Town Manager
Town of Enfield
820 Enfield Street Enfield, CT 06082

Jennifer Pachaca, Assistant Town Planner
Town of Enfield
820 Enfield Street Enfield, CT 06082

Oliver Road Holding LLC, Property Owner
c/o Crown Castle
PO Box 353, 4017 Washington Rd, McMurray PA 15317

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Petition No. 435
Docket 139
Crown Atlantic Company LLC
Staff Report
October 21, 1999

On October 20, 1999, Connecticut Siting Council (Council) member Daniel P. Lynch, Jr., and Council staff Steve Levine met Dean Olsen of Crown Atlantic Company (Crown) and Jennifer Young Gaudet, of Pinnacle Site Development (representing AT&T), to conduct a field review of Crown's Oliver Road telecommunications tower in Enfield. Crown proposes to modify the tower to permit use by AT&T, and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification. Crown submits that the proposed modification will not have a substantial adverse environmental effect, but instead will reduce the unnecessary proliferation of telecommunications towers by utilizing an existing structure and qualifies for an order of tower sharing pursuant to C.G.S. § 16-50aa.

The Oliver Road tower is a 150-foot-tall monopole tower. In 1991, the Council approved a maximum height of 163 feet above grade, *including antennas and appurtenances*, in Docket 139. According to a verbal communication from Crown's attorney in this matter, 13-foot antennas were originally mounted on this tower to a height of 163 feet, but were removed in the mid 1990's. The tower presently supports antennas owned by Bell Atlantic Mobile, Sprint, Nextel, and Omnipoint. The Council recently approved the shared use of this tower by Pagenet. An engineering study submitted by Crown indicates the tower is capable of supporting the proposed antennas in addition to its current actual and approved loading.

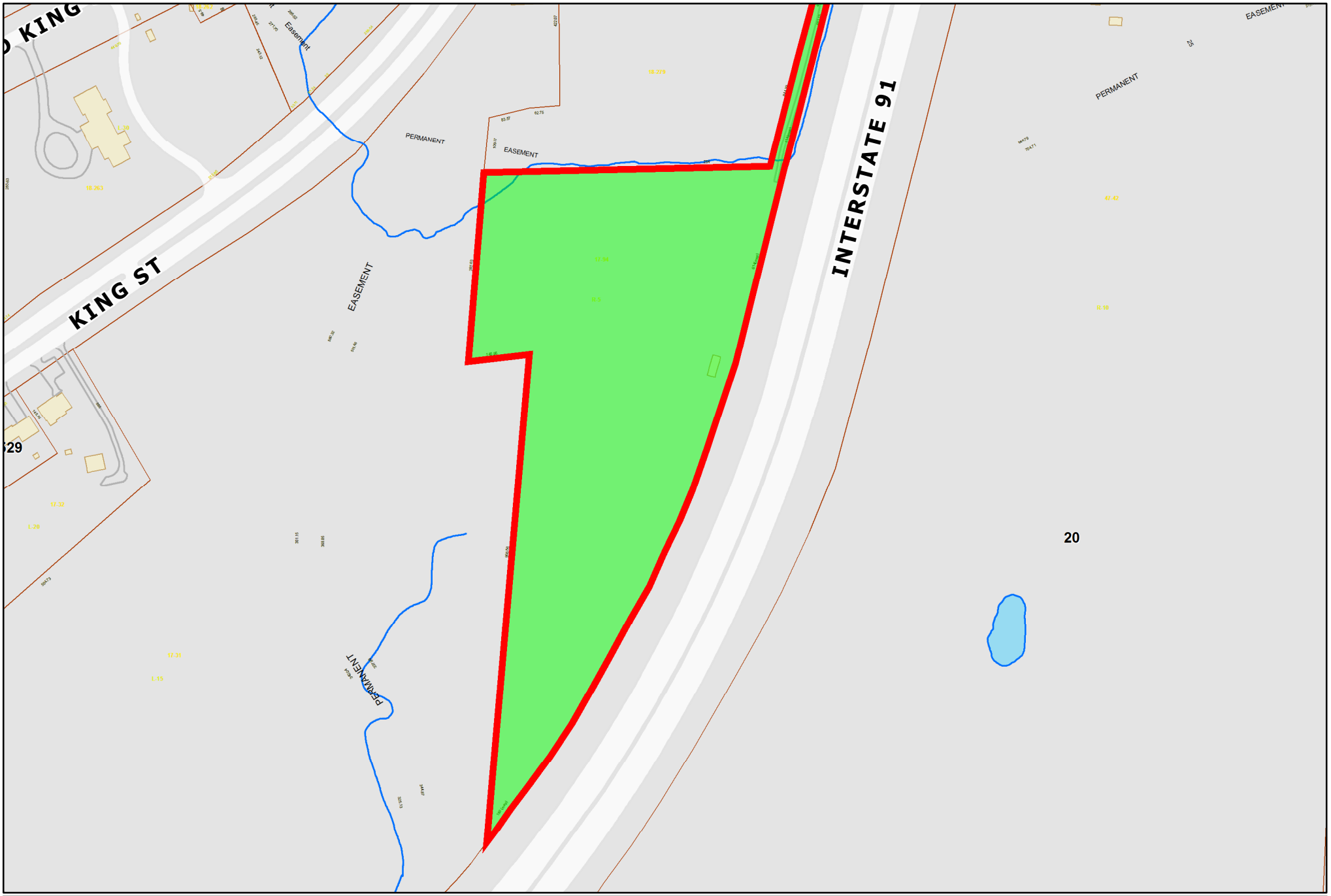
AT&T would install three panel-type antennas to a 4.5-inch diameter heavy-duty pipe mounted at the 150-foot top of the existing tower (7' 10" of pipe would be visible below the 4' 8"-high antennas). The antenna cluster itself would have a diameter of approximately 35". The AT&T antennas would extend to a total height of 162.5 feet above grade, six inches under the maximum height approved by the Council in 1991. AT&T also plans to install equipment on a new 8.5 x 14-foot pad within existing fencing at the base of the tower.

The proposed antennas and associated equipment will not increase the noise levels at the existing site, under normal operating conditions, by six decibels or more. The worst case power density for the telecommunications operations at the site has been calculated to be 16.3% of the applicable standard for uncontrolled environments, including a contribution of 1.1% by AT&T. Crown asserts that the proposed installation will not cause a substantial adverse environmental effect, and for this reason would not require a Certificate.

In the alternative, Crown suggests that action on this Petition is unnecessary because the proposed total height of 162.5 feet does not exceed the 163-foot height, including antennas, previously approved by the Council. The Petition explicitly gives notice of this work as an exempt modification under R.C.S.A. § 16-50j-72(b)(2) should the Council choose this course of action. Crown would withdraw the Petition aspect of this matter from further consideration if the Council chooses to acknowledge the addition of Omnipoint's antennas on the Oliver Road tower as an exempt modification.

Exhibit B

Property Card



Oliver Road 17-94

N
W E
S

Feet
0 50 100 200 300 400
1 inch = 248 feet

The Town of Enfield, CT shall assume no liability for any errors,omissions, or inaccuracies in the information provided regardless of how caused or any decision made or action taken or not taken by reader in reliance upon any information or data furnished hereunder.

OLIVER RD

Location	OLIVER RD	**Mblu**	017/ / 0094/ /
Acct#	002100020005	**Owner**	OLIVER ROAD HOLDING LLC
Assessment	$761,910	**Appraisal**	$1,121,510
PID	4299	**Building Count**	1
Fire District	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$884,020	$237,490	$1,121,510

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$618,810	$143,100	$761,910

Owner of Record

Owner	OLIVER ROAD HOLDING LLC
Co-Owner	C/O CROWN CASTLE
Address	PMB 353 - 4017 WASHINGTON RD MCMURRAY, PA 15317

Sale Price	$150,000
Certificate	
Book & Page	2520/ 875
Sale Date	10/25/2010
Instrument	28

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
OLIVER ROAD HOLDING LLC	$150,000		2520/ 875	28	10/25/2010
SMYTH MICHAEL E	$0	1	454/ 889		12/05/1980

Building Information

Building 1 : Section 1

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

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Bsmt Garage(s)	
Fin Bsmt	
FBM Quality	
Whirlpool(s)	
Walk Out	
Solar	

Building Photo

(http://images.vgsi.com/photos2/EnfieldCTPhotos//\00\01\64/56

Building Layout


Building Layout

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

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	300
Description	Ind Land
Zone	I-1
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	10.22
Frontage	
Depth	
Assessed Value	$143,100
Appraised Value	$237,490

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN2	FENCE-6' CHAIN			220 L.F.	$1,870	1
SHD1	Shed	FR	Frame	120 S.F.	$1,130	1
BRN8	Pole Barn	TY	Typical	11050 S.F.	$140,390	1
TWR5	Cell Twr5 Carriers			1 UNITS	$740,630	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$1,062,140	$237,490	$1,299,630
2015	$1,062,140	$237,490	$1,299,630
2014	$1,062,140	$237,490	$1,299,630

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$743,500	$143,100	$886,600
2015	$743,500	$131,370	$874,870
2014	$743,500	$131,370	$874,870

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Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00046A

DISH Wireless L.L.C. SITE ADDRESS:

4 OLIVER ROAD
ENFIELD, CT 06082

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

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

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:	CROWN ATLANTIC COMPANY, LLC
ADDRESS:	PO BOX 203127 HOUSTON, TX 77216-3127
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	806373
TOWER APP NUMBER:	556639
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 57' 36.20" N 41.960056 N
LONGITUDE (NAD 83):	72° 35' 32.30" W 72.592306 W
ZONING JURISDICTION:	CONNECTICUT SITTING COUNTY
ZONING DISTRICT:	R44-RESIDENTIAL 44
PARCEL NUMBER:	ENFI-000017-000000-000094
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	CROWN CASTLE

PROJECT DIRECTORY

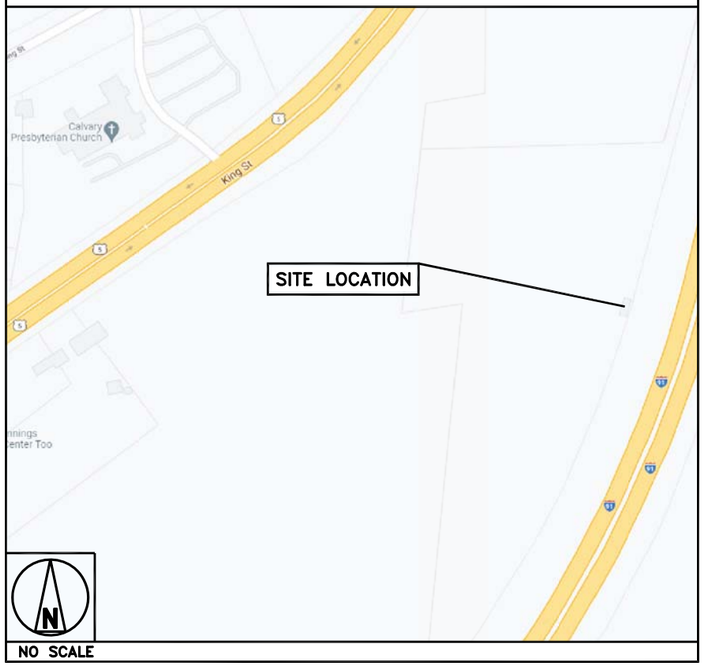
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	CORWIN DIXON CORWIN.DIXON@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

HEAD NORTHWEST ON BRADLEY INTERNATIONAL AIRPORT TOWARD BRADLEY INTERNATIONAL AIRPORT CONNECTOR,BEAR RIGHT ONTO BRADLEY INTERNATIONAL AIRPORT CONNECTOR,TAKE THE RAMP ON THE RIGHT FOR BRADLEY INTERNATIONAL AIRPORT CONNECTOR,KEEP STRAIGHT TO GET ONTO BRADLEY FIELD CONNECTOR E,ROAD NAME CHANGES TO CT-20 E,TAKE THE RAMP ON THE LEFT FOR I-91 NORTH AND HEAD TOWARD SPRINGFIELD,AT EXIT 47W, HEAD RIGHT ON THE RAMP FOR CT-190 WEST TOWARD SUFFIELD,AT EXIT 47E, HEAD RIGHT ON THE RAMP FOR I-91 SOUTH TOWARD HARTFORD,ARRIVE AT 4 OLIVER ROAD, ENFIELD, CT 06082

VICINITY MAP



NO SCALE

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
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2500 W. HIGGINS RD. SUITE 500 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
TSUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE

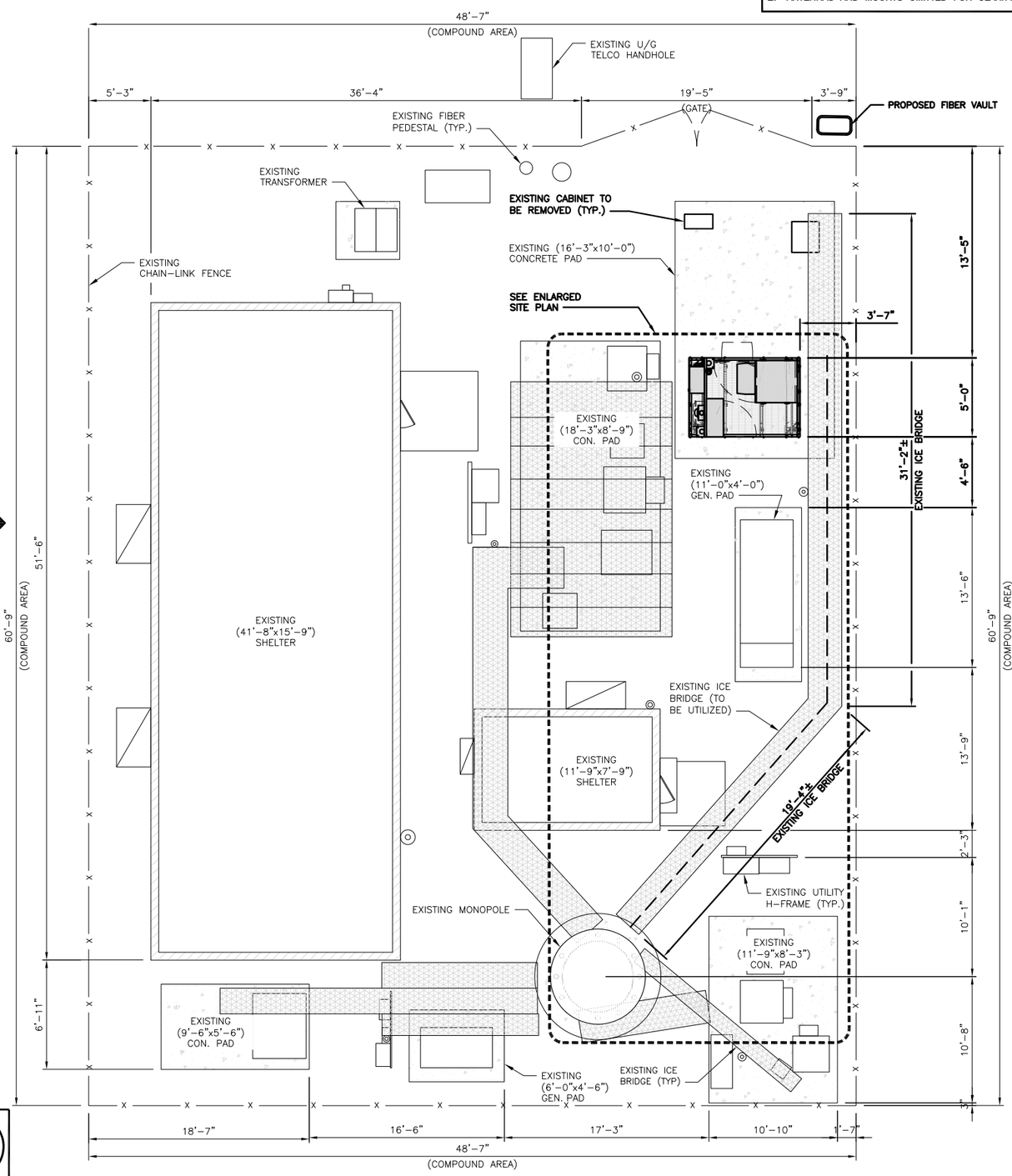
TITLE SHEET

SHEET NUMBER

T-1

NOTES

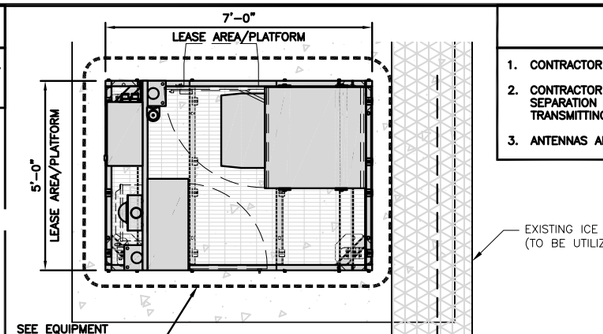
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



SITE PLAN

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

1



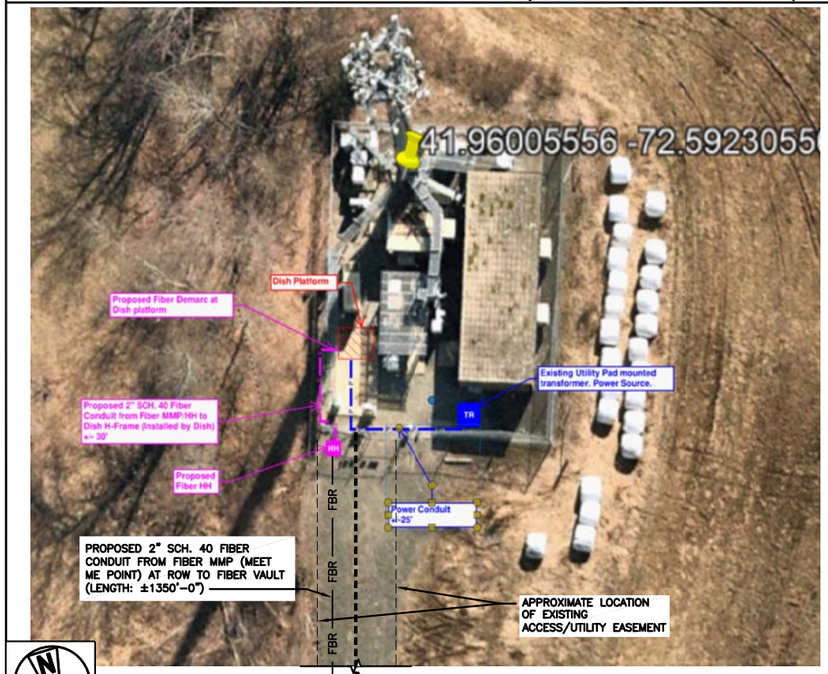
NOTES

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'
1/2"=1'-0"

2



OVERALL SITE PLAN

NO SCALE

3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
YUHEI SAKAMOTO
34916
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10/8/2021

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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

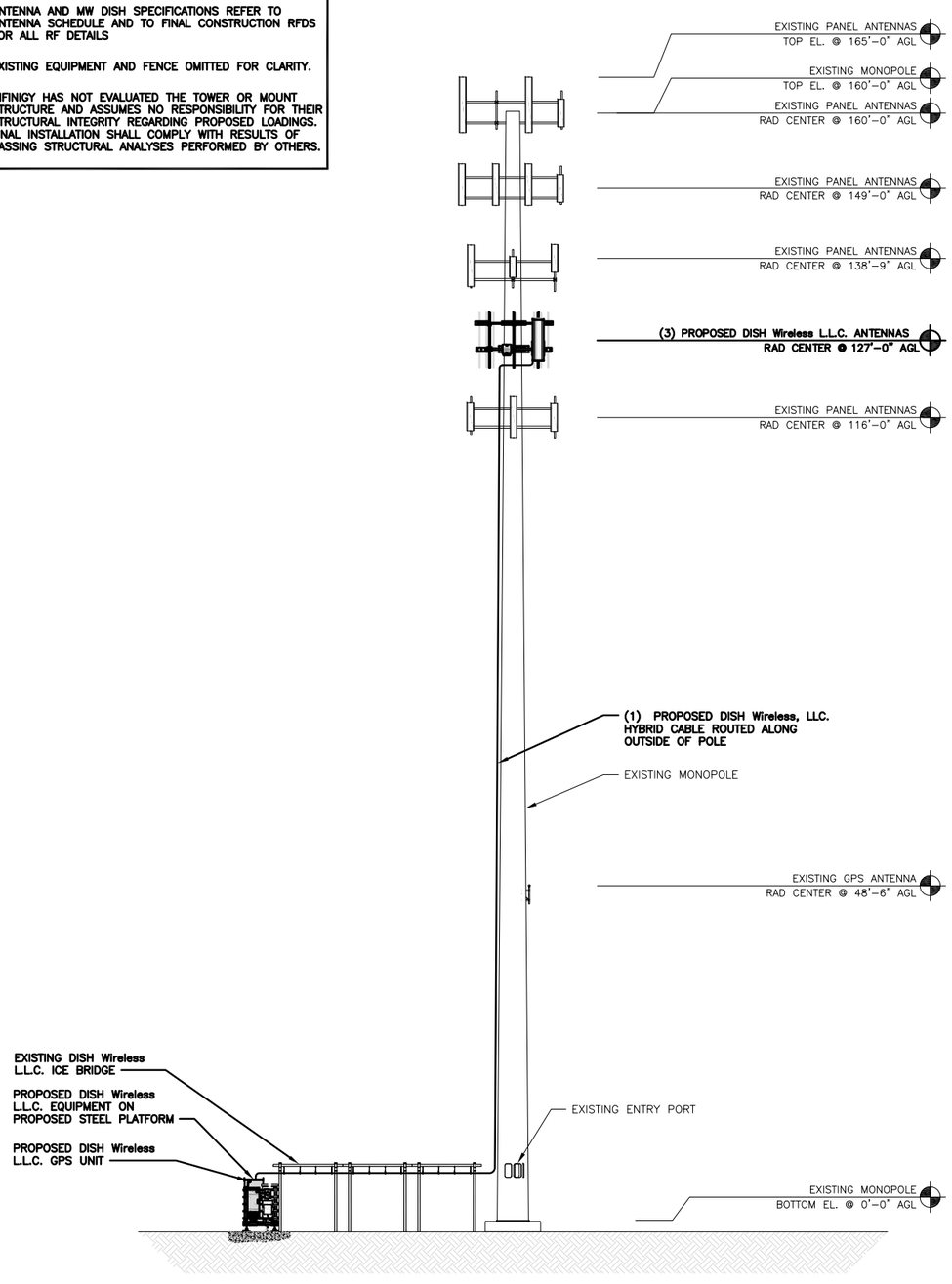
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

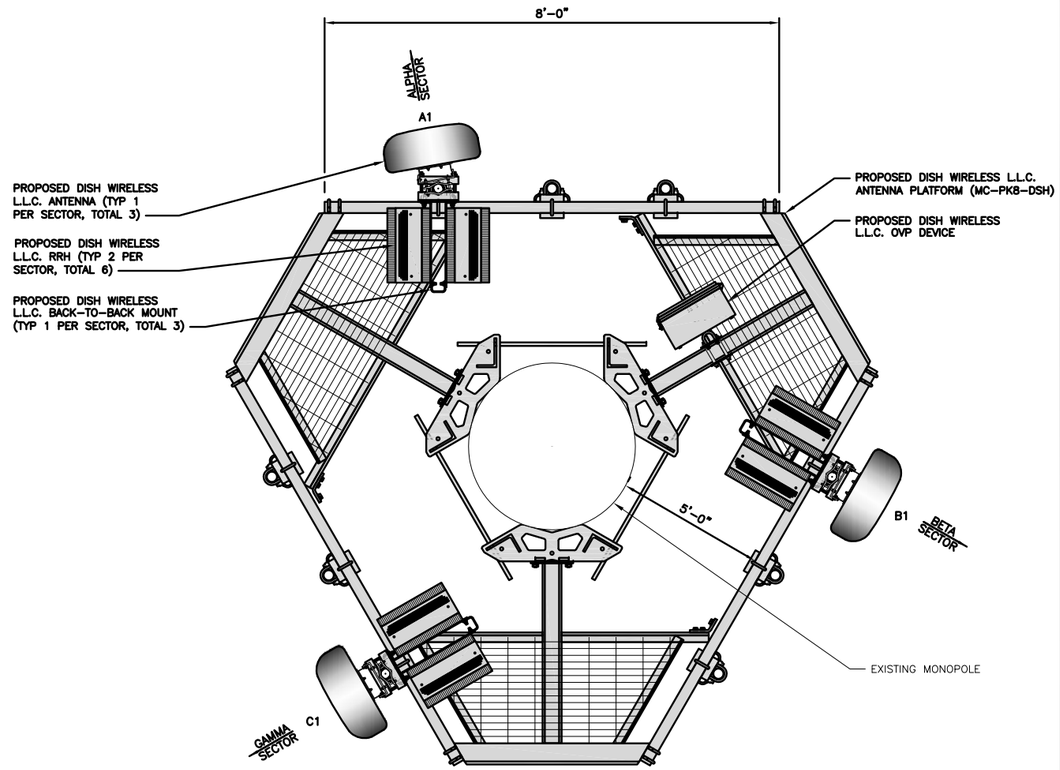
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



PROPOSED NORTH ELEVATION

12' 8' 4' 0 10' 20'
3/32"=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)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	350°	127'-0"	(1) HIGH-CAPACITY HYBRID CABLE (201' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	127'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	127'-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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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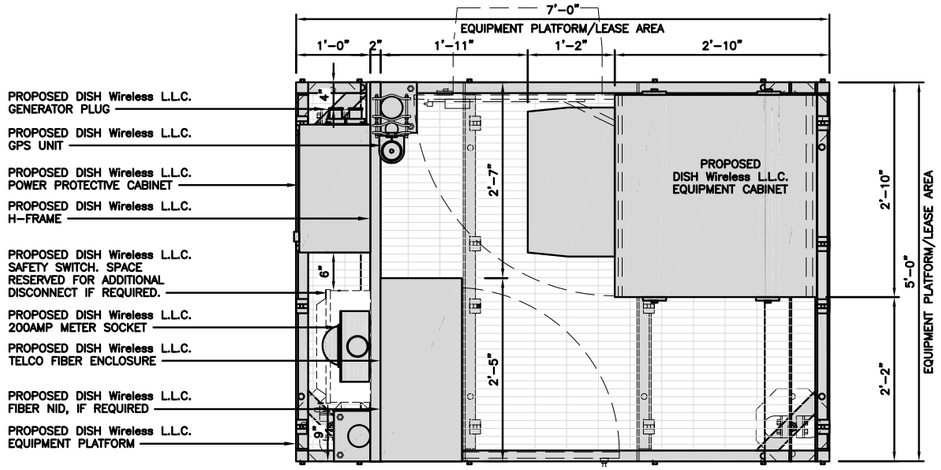
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



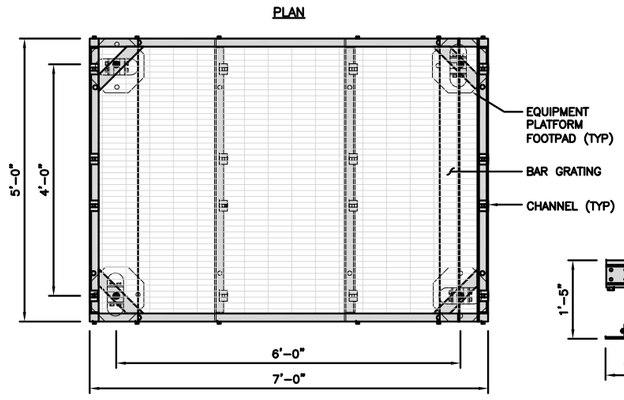
PLATFORM EQUIPMENT PLAN

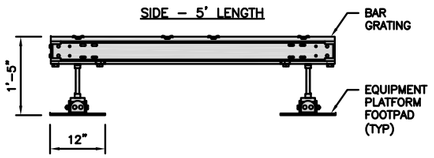
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

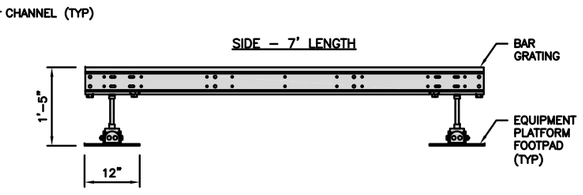
1

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"





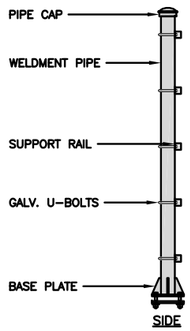


PLATFORM DETAIL

NO SCALE

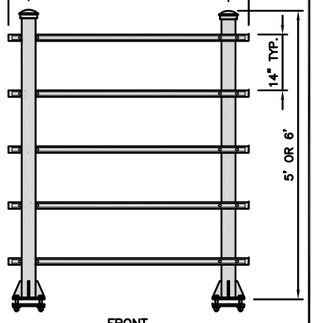
2

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



SIDE

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

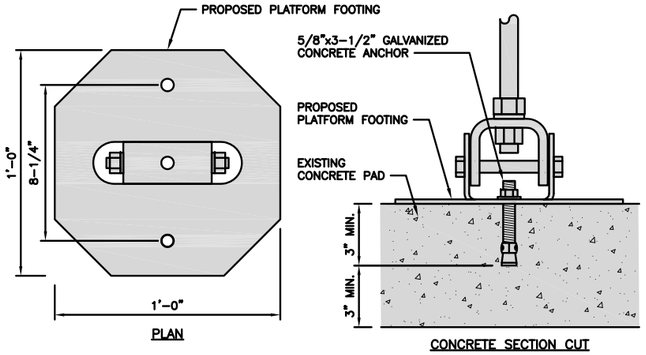


FRONT

H-FRAME DETAIL

NO SCALE

3



PLAN

CONCRETE SECTION CUT

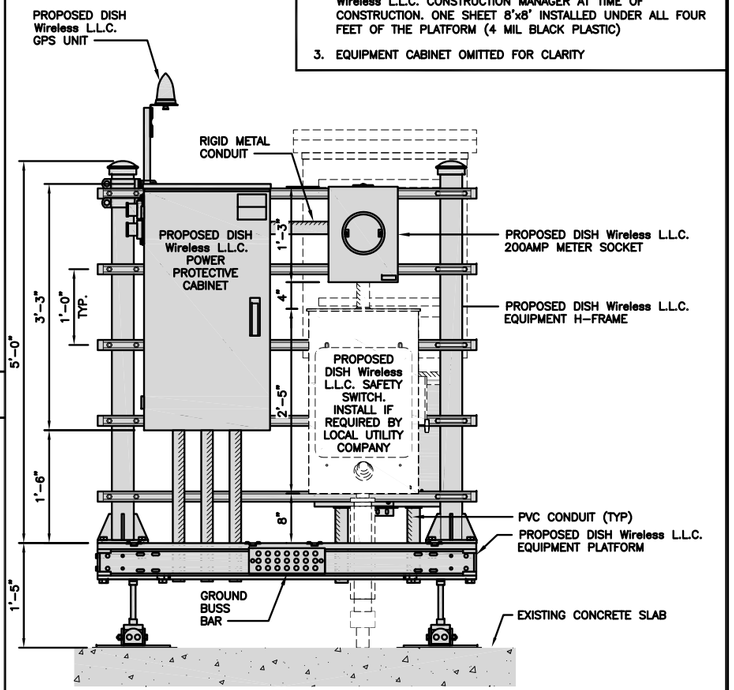
PLATFORM FOOTING ANCHORAGE DETAIL

NO SCALE

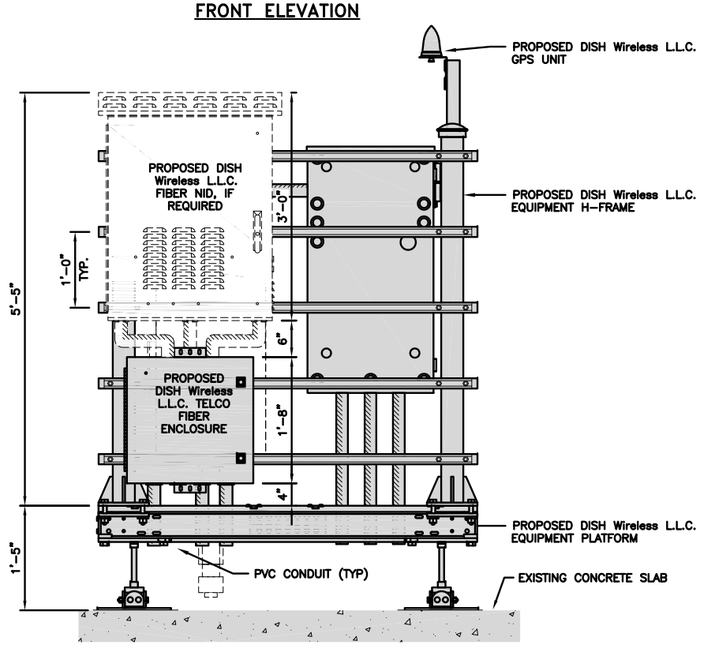
4

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

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

5

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TSUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

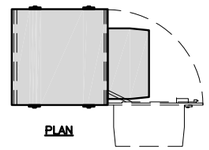
DISH Wireless L.L.C. PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

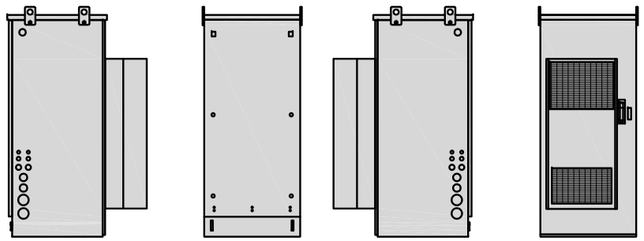
SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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



PLAN



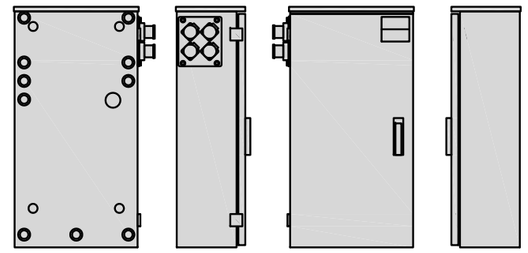
SIDE BACK SIDE FRONT

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



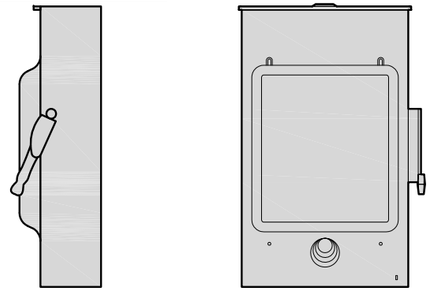
BACK SIDE FRONT SIDE

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

SQUARE D SAFETY SWITCHES D224NRB

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

TOP

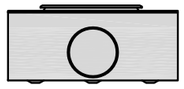


SIDE FRONT

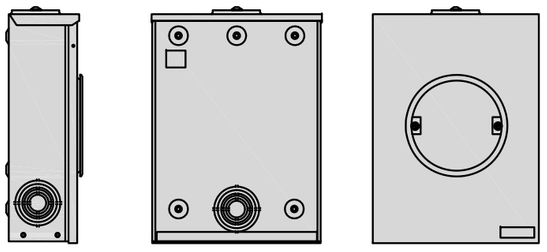
SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

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



PLAN

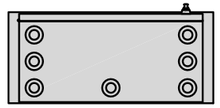


SIDE BACK FRONT

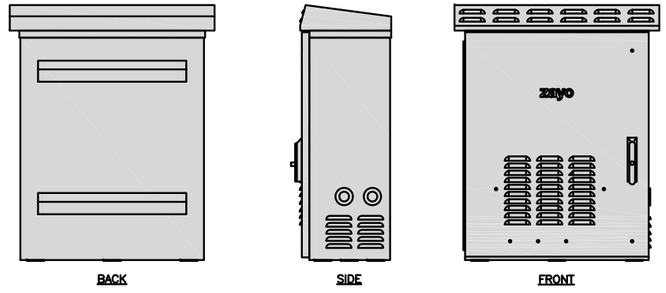
METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE

DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



BOTTOM

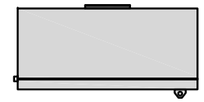


BACK SIDE FRONT

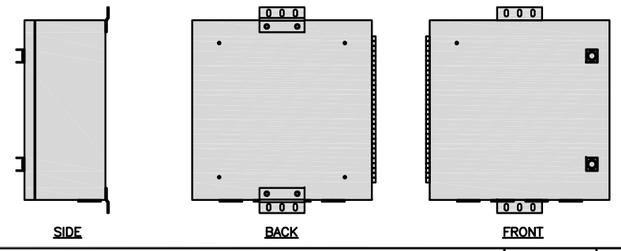
FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

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

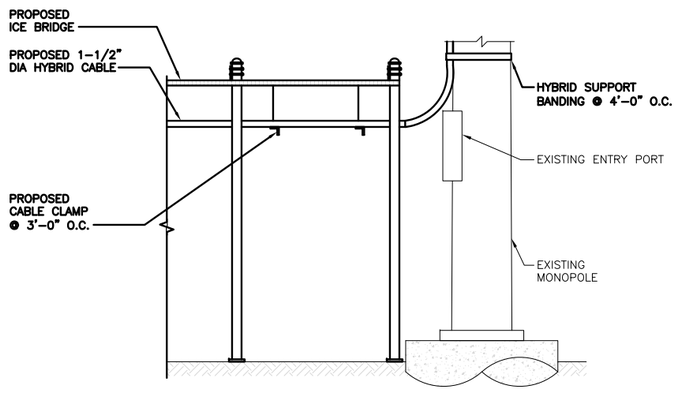


FRONT



SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6



HYBRID CABLE RUN | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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RFDS REV #: ---

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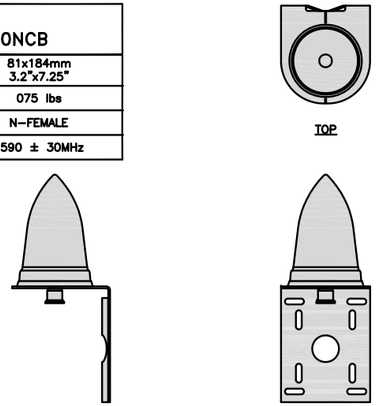
2039–Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

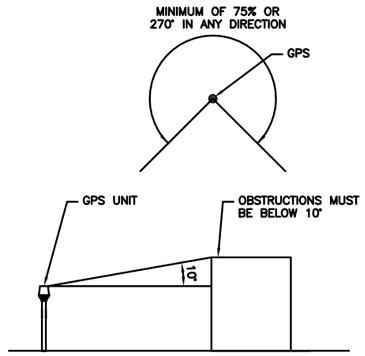
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

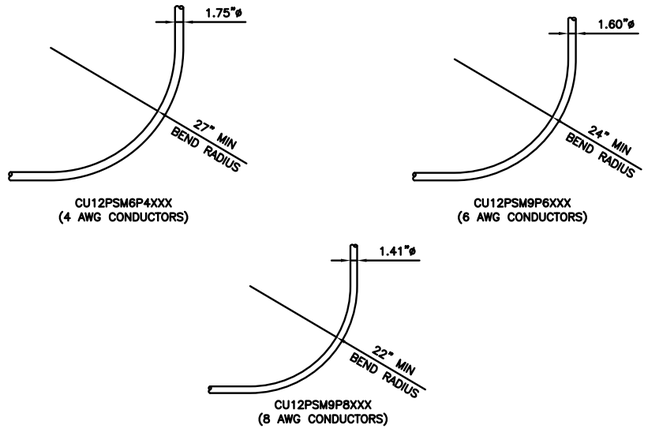
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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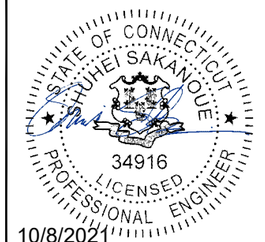

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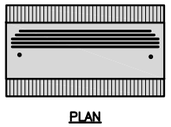
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

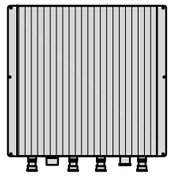
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

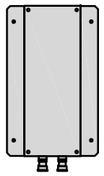
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



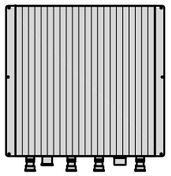
PLAN



BACK



SIDE

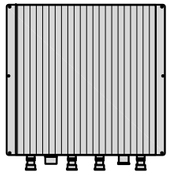


FRONT

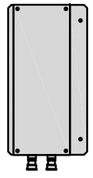
RRH DETAIL | NO SCALE | 1

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

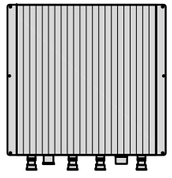
PLAN



BACK



SIDE

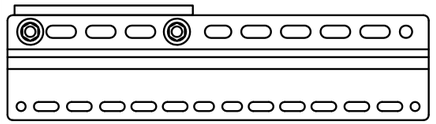


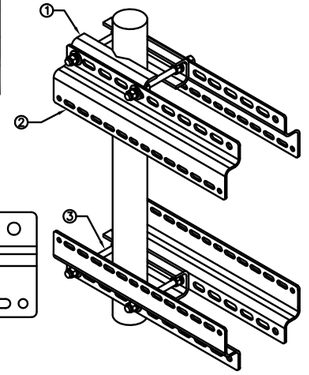
FRONT

RRH DETAIL | NO SCALE | 2

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

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





NOTE:
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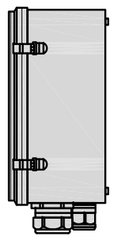
APPROVED EQUIVALENT

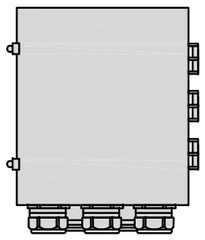
RRH MOUNT DETAIL | NO SCALE | 3

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

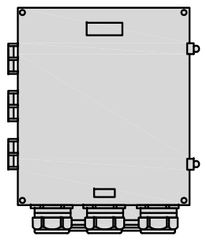
PLAN



SIDE



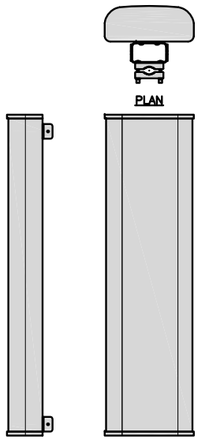
BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

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



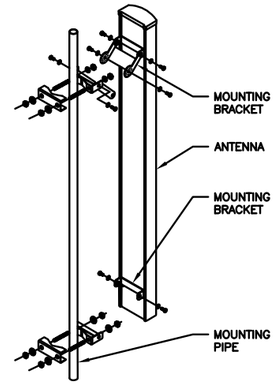
PLAN

SIDE

FRONT

ANTENNA DETAIL | NO SCALE | 5

M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5"
DEPTH	2"
HEIGHT	8"
TOTAL WEIGHT	1.5 lbs
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1x8-PIN DAISY CHAIN



NOTE:
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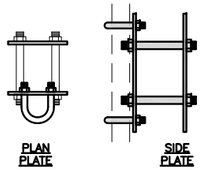
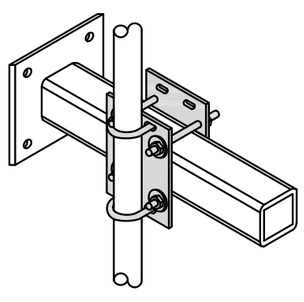
ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

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





RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

NOTE:
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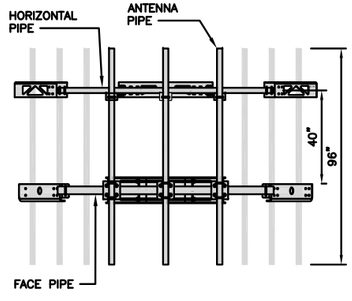

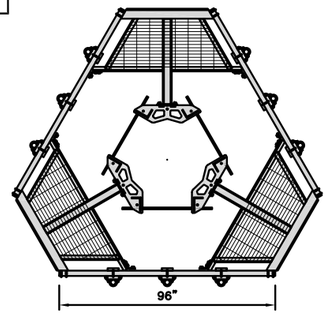

ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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KAZUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER
2039-Z5555C

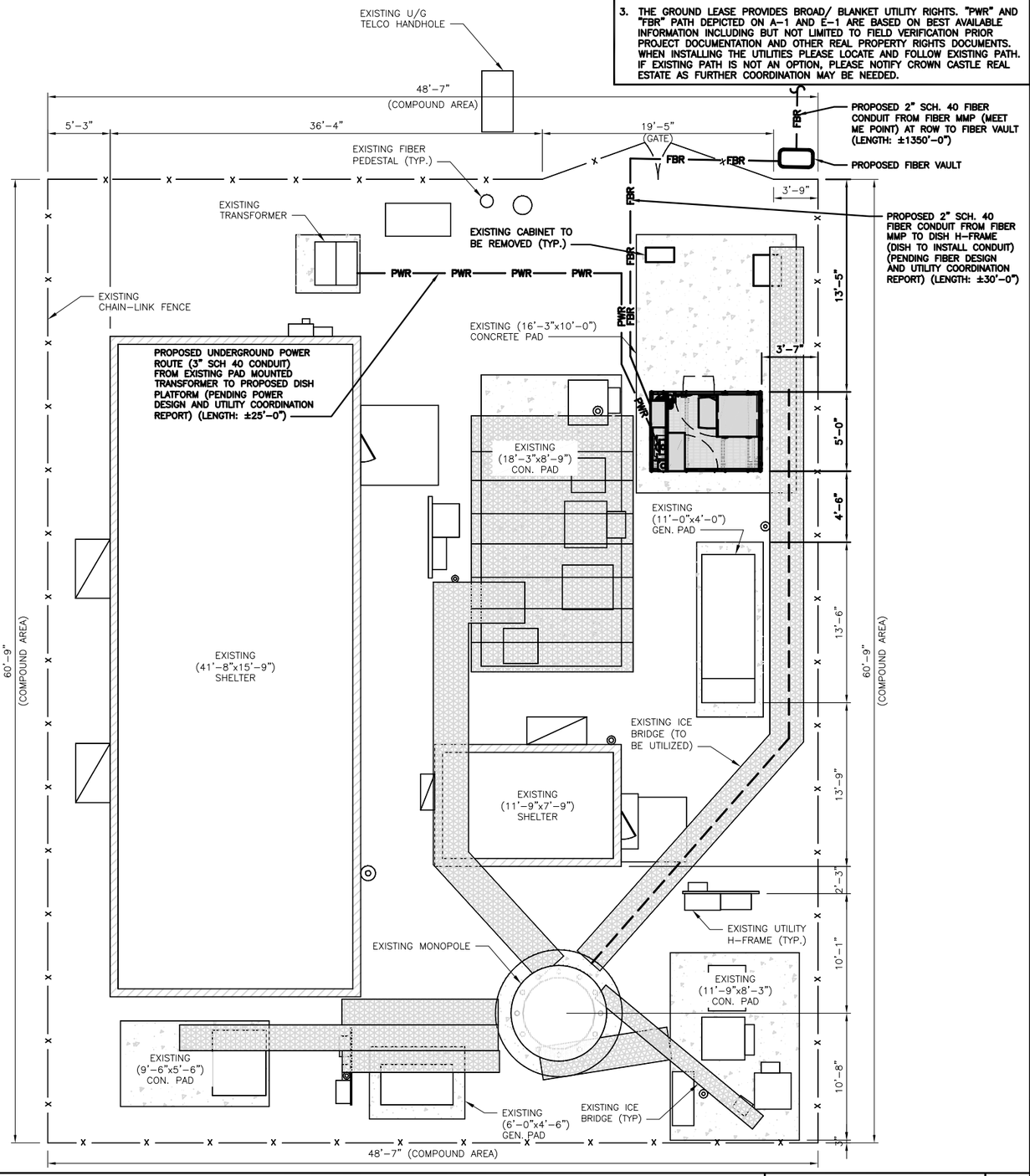
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



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

2

OVERALL UTILITY ROUTE PLAN

NO SCALE

3

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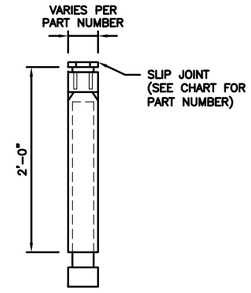
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

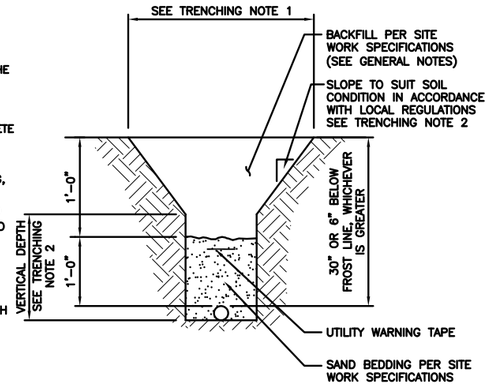


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

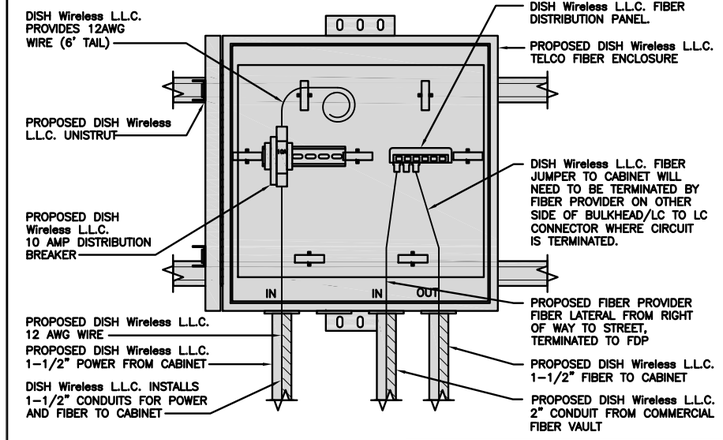
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

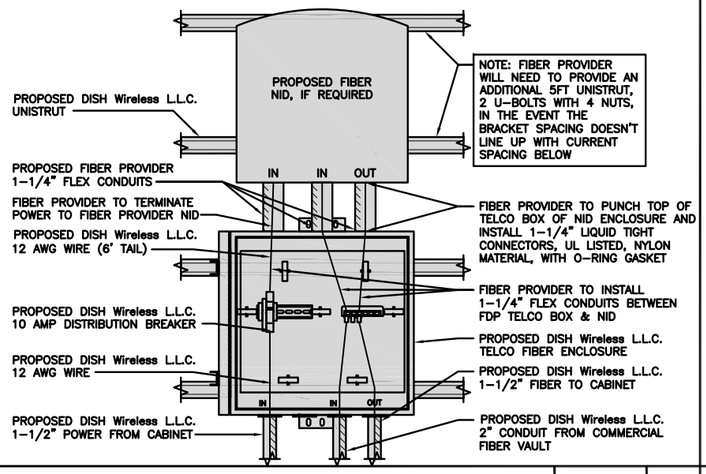
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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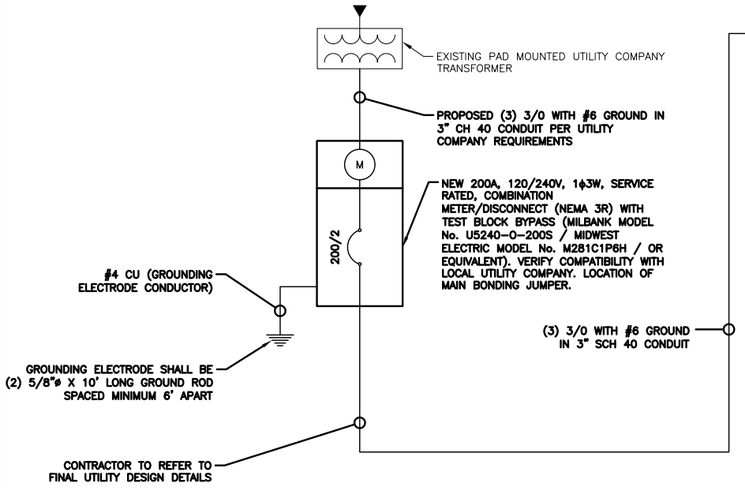
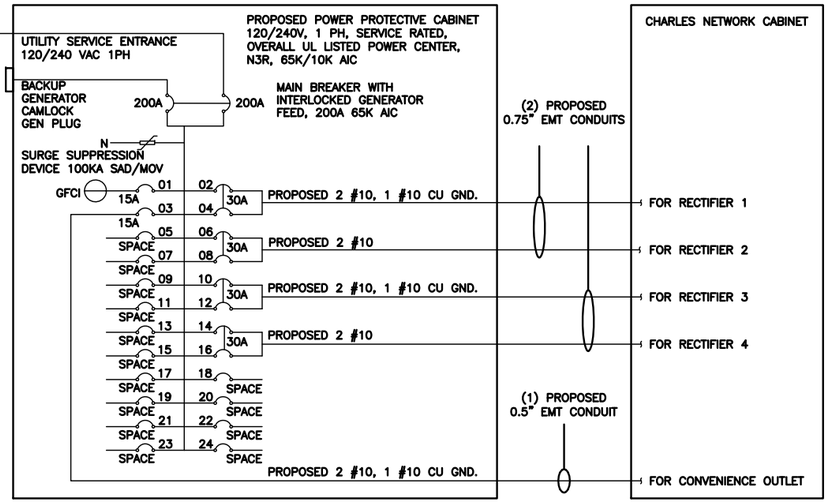
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

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

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.

PPC ONE-LINE DIAGRAM

NO SCALE | 1

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

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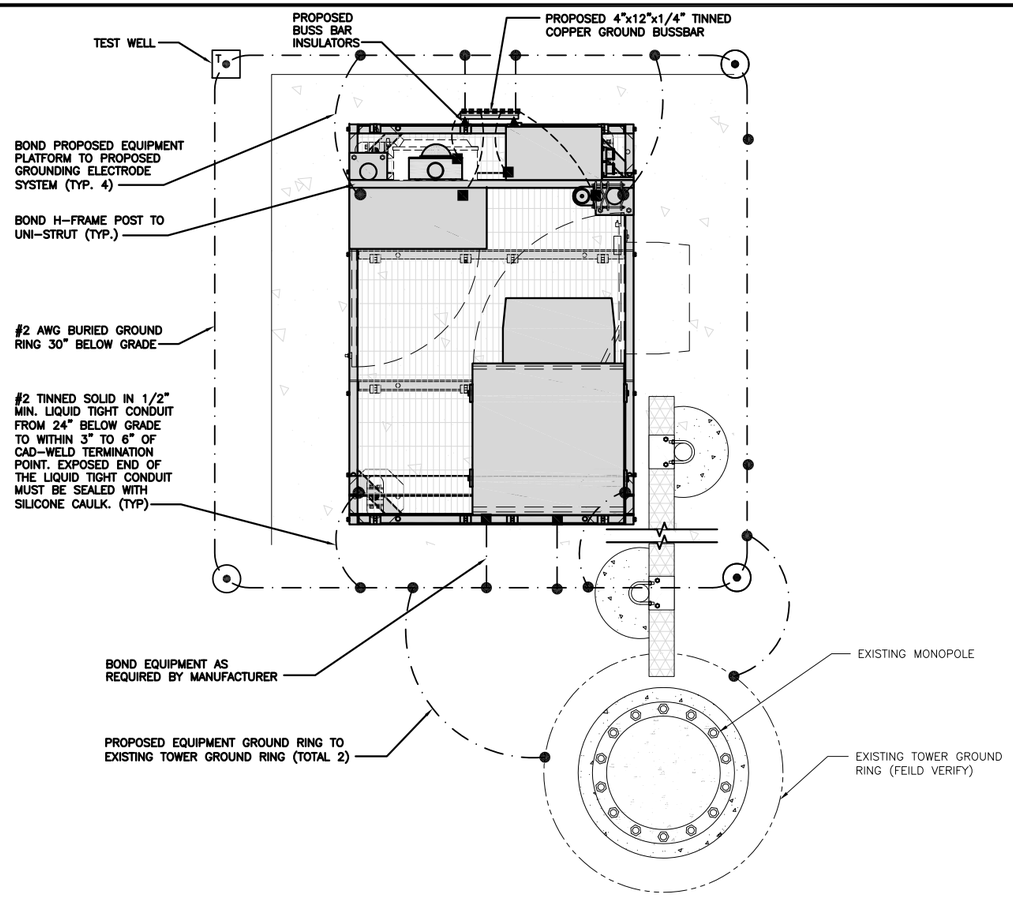
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

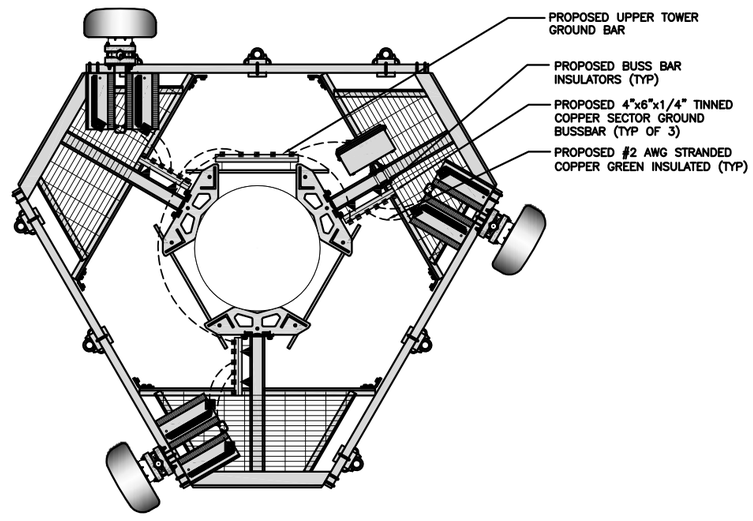
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

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

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

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YUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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RCD	PT	CJW

RFDS REV #: ---

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0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

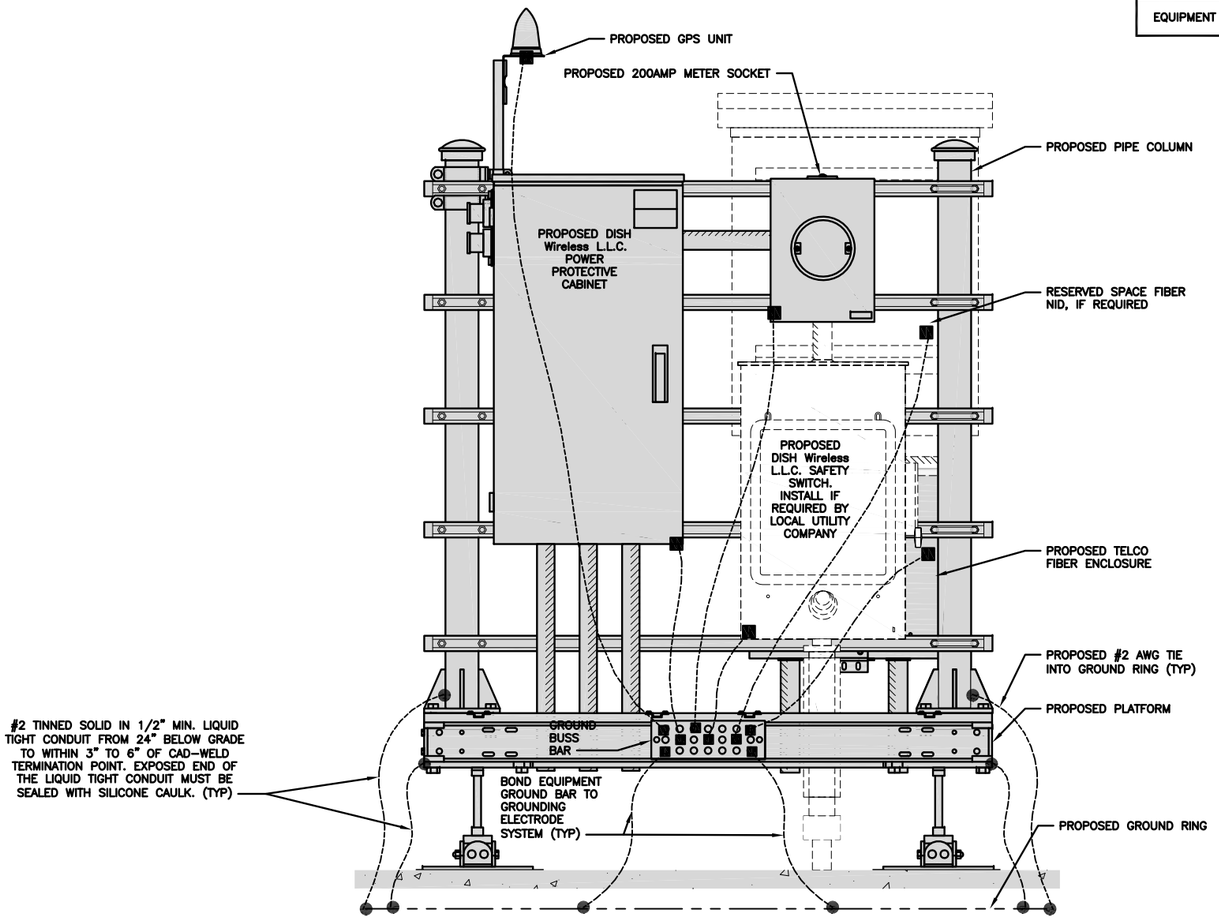
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

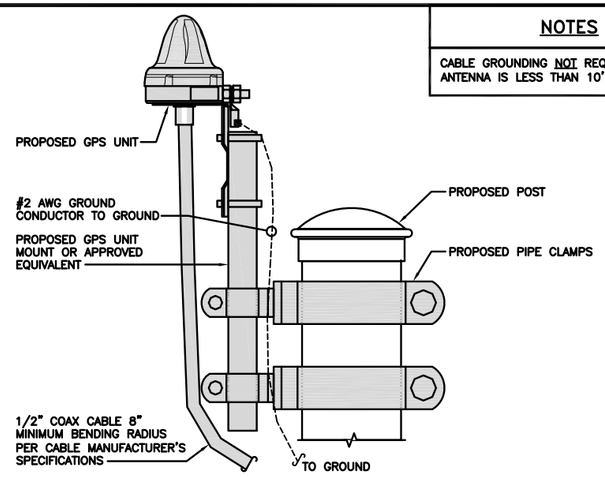
EQUIPMENT CABINET OMITTED FOR CLARITY



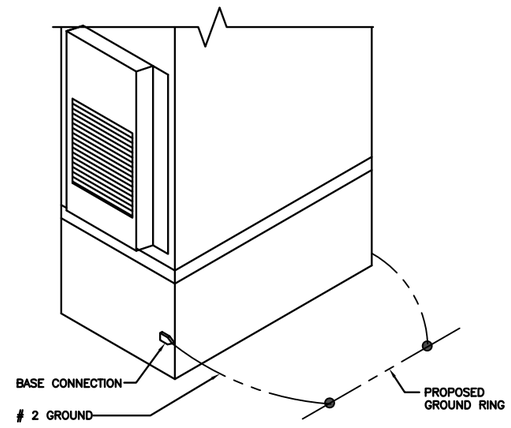
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

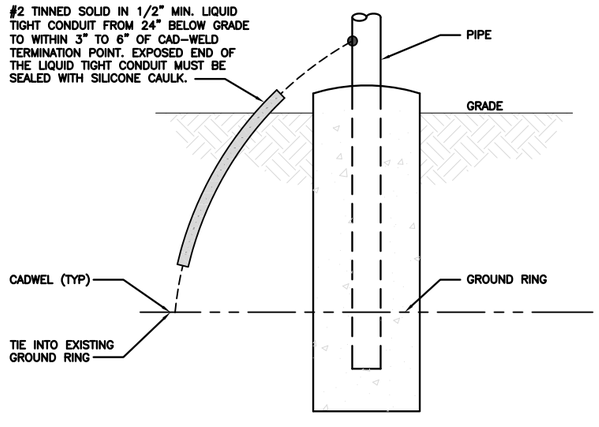
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



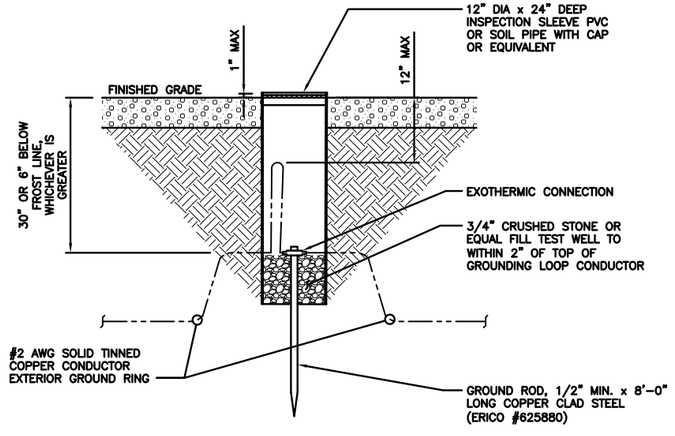
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



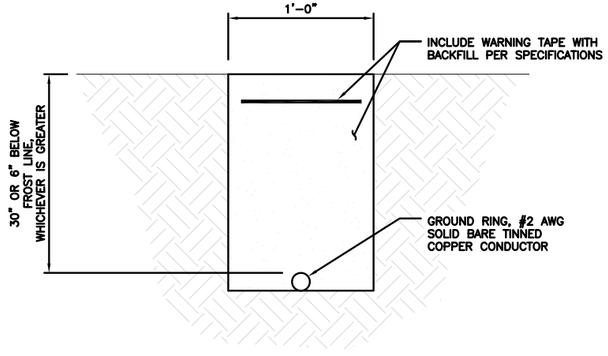
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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PROJECT INFORMATION

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4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE

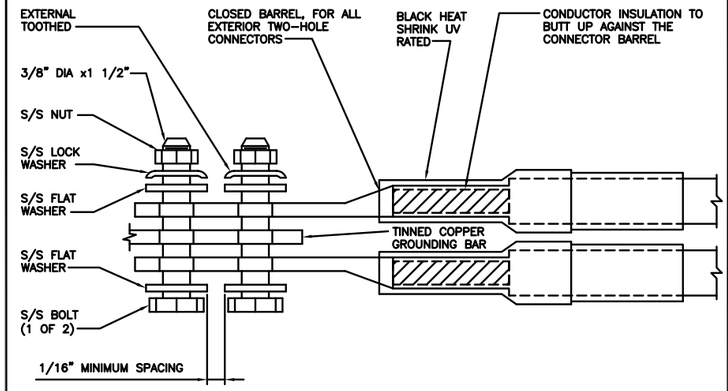
GROUNDING DETAILS

SHEET NUMBER

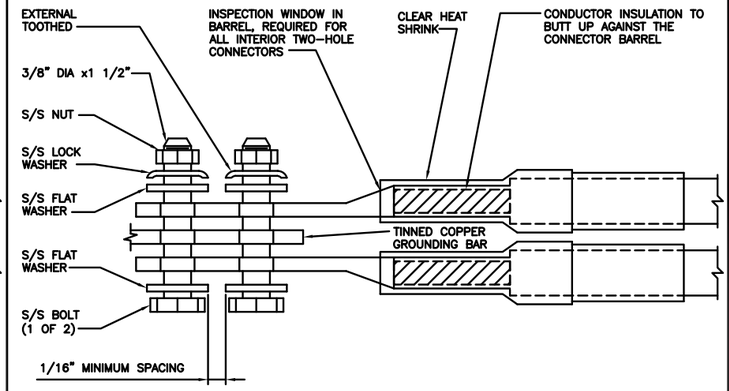
G-2

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

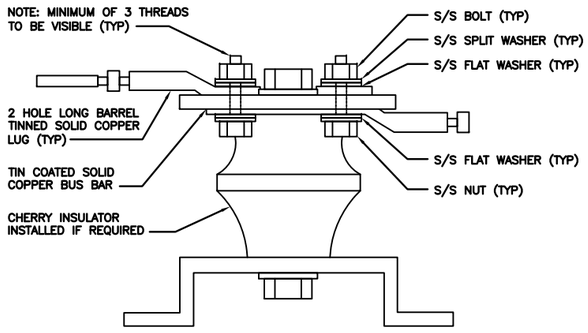
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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ENFIELD, CT 06082

SHEET TITLE
GROUNDING DETAILS

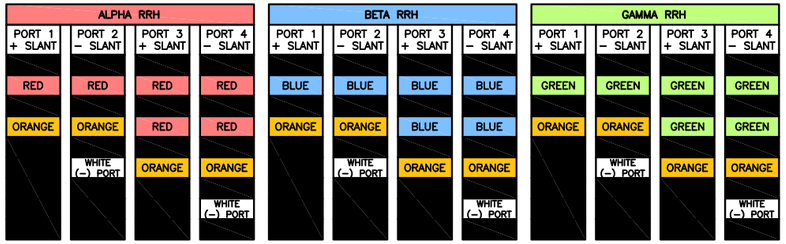
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

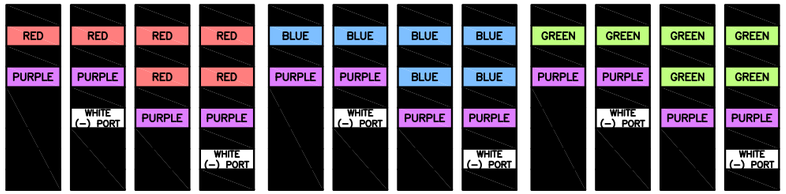
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

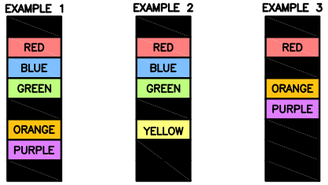


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

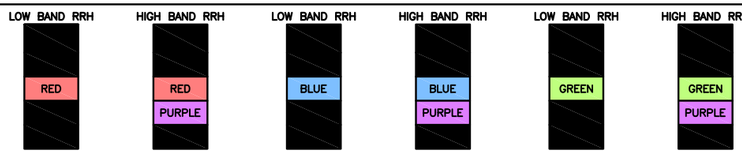
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



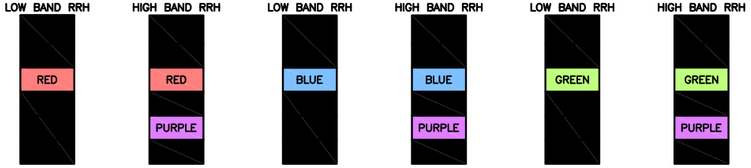
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

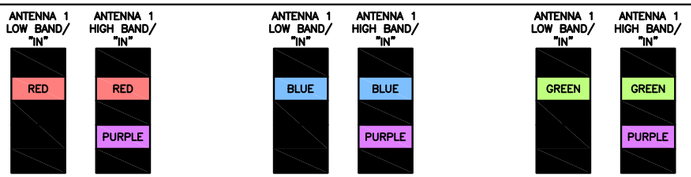


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



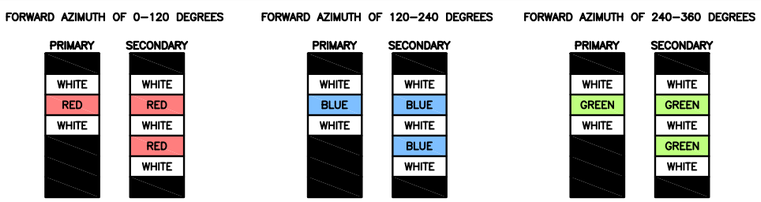
RET MOTORS AT ANTENNAS



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

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BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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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.
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STATE OF CONNECTICUT
YUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039–Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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STATE OF CONNECTICUT
TSUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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STATE OF CONNECTICUT
YUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	PT	CJW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00046A
4 OLIVER ROAD
ENFIELD, CT 06082

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **September 01, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00046A
	Site Name:	CT-CCI-T-806373
Crown Castle Designation:	**BU Number:**	806373
	Site Name:	HRT 101 943232
	JDE Job Number:	650041
	Work Order Number:	1987185
	Order Number:	556639 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1987185
Site Data:	**4 Oliver Road, ENFIELD, HARTFORD County, CT** **Latitude *41° 57' 36.2"*, Longitude *-72° 35' 32.3"*** **160 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:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

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:

Digitally signed by Maham Barimani
Date: 2021.09.01 15:49:14 -04'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT. 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)
127.0	127.0	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)
161.0	161.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	12 4 2	1-5/8 3/4 3/8
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 11 B12		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 303-1_HR-1]		
149.0	149.0	3	alcatel lucent	B13 RRH 4X30	6 2	7/8 1-5/8
		3	alcatel lucent	B25 RRH4X30		
		3	alcatel lucent	B66A RRH4X45		
		2	antel	BXA-70080/4CF w/ Mount Pipe		
		1	antel	BXA-80063/4CF w/ Mount Pipe		
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		1	tower mounts	Platform Mount [LP 713-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
135.0	137.0	1	tower mounts	Miscellaneous [NA 510-1]	3	1-5/8
		1	tower mounts	Side Arm Mount [SO 102-3]		
	137.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMOV1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	135.0	1	tower mounts	Platform Mount [LP 601-1]		
116.0	117.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	6 1	1-5/8 1-1/4
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		2	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 11 B12		
	116.0	1	ericsson	KRY 112 144/1		
		1	tower mounts	T-Arm Mount [TA 602-3]		
47.0	48.0	1	lucent	KS24019-L112A	1	1/2
	47.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	821582	CCISITES
4-POST-MODIFICATION INSPECTION	7162974	CCISITES
4-POST-MODIFICATION INSPECTION	3747614	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	821581	CCISITES
4-TOWER MANUFACTURER DRAWINGS	822743	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6488069	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3277409	CCISITES

3.1) Analysis Method

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

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are 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	160 - 155	Pole	TP20x20x0.25	Pole	19.7%	Pass
L2	155 - 150.5	Pole	TP20x20x0.25	Pole	35.5%	Pass
L3	150.5 - 150	Pole	TP20.3x20.3x0.25	Pole	36.4%	Pass
L4	150 - 145	Pole	TP21.341x20.3x0.25	Pole	29.5%	Pass
L5	145 - 140	Pole	TP22.382x21.341x0.25	Pole	39.4%	Pass
L6	140 - 135	Pole	TP23.423x22.382x0.25	Pole	48.5%	Pass
L7	135 - 130	Pole	TP24.464x23.423x0.25	Pole	62.1%	Pass
L8	130 - 125	Pole	TP25.505x24.464x0.25	Pole	74.6%	Pass
L9	125 - 120	Pole	TP26.546x25.505x0.25	Pole	87.1%	Pass
L10	120 - 119.58	Pole	TP26.633x26.546x0.25	Pole	88.1%	Pass
L11	119.58 - 119.33	Pole + Reinf.	TP26.685x26.633x0.375	Reinf. 4 Compression	69.6%	Pass
L12	119.33 - 114.33	Pole + Reinf.	TP27.726x26.685x0.3688	Reinf. 4 Compression	78.9%	Pass
L13	114.33 - 111.83	Pole + Reinf.	TP28.246x27.726x0.3688	Reinf. 4 Compression	83.4%	Pass
L14	111.83 - 111.58	Pole + Reinf.	TP28.299x28.246x0.4125	Reinf. 3 Compression	76.3%	Pass
L15	111.58 - 106.58	Pole + Reinf.	TP29.34x28.299x0.4	Reinf. 3 Compression	84.2%	Pass
L16	106.58 - 102	Pole + Reinf.	TP31.3x29.34x0.4	Reinf. 3 Compression	90.8%	Pass
L17	102 - 97	Pole + Reinf.	TP30.804x29.794x0.525	Reinf. 3 Compression	76.5%	Pass
L18	97 - 92	Pole + Reinf.	TP31.815x30.804x0.5125	Reinf. 3 Compression	81.0%	Pass
L19	92 - 87	Pole + Reinf.	TP32.826x31.815x0.5125	Reinf. 3 Compression	85.1%	Pass
L20	87 - 82	Pole + Reinf.	TP33.836x32.826x0.5063	Reinf. 3 Compression	88.9%	Pass
L21	82 - 79.33	Pole + Reinf.	TP34.375x33.836x0.5	Reinf. 3 Compression	90.7%	Pass
L22	79.33 - 79.08	Pole + Reinf.	TP34.426x34.375x0.7625	Reinf. 6 Tension Rupture	73.1%	Pass
L23	79.08 - 75.25	Pole + Reinf.	TP35.201x34.426x0.75	Reinf. 6 Tension Rupture	75.5%	Pass
L24	75.25 - 75	Pole + Reinf.	TP35.251x35.201x0.75	Reinf. 6 Tension Rupture	75.7%	Pass
L25	75 - 70	Pole + Reinf.	TP36.262x35.251x0.7375	Reinf. 6 Tension Rupture	78.7%	Pass
L26	70 - 65	Pole + Reinf.	TP37.273x36.262x0.725	Reinf. 6 Tension Rupture	81.7%	Pass
L27	65 - 63.25	Pole + Reinf.	TP37.626x37.273x0.725	Reinf. 6 Tension Rupture	82.8%	Pass
L28	63.25 - 63	Pole + Reinf.	TP37.677x37.626x0.8	Reinf. 5 Bolt Shear	74.5%	Pass
L29	63 - 58	Pole + Reinf.	TP38.688x37.677x0.7875	Reinf. 5 Compression	74.3%	Pass
L30	58 - 55	Pole + Reinf.	TP40.49x38.688x0.775	Reinf. 5 Compression	75.8%	Pass
L31	55 - 48.08	Pole + Reinf.	TP39.897x38.544x0.8375	Reinf. 5 Compression	75.6%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L32	48.08 - 43.08	Pole + Reinf.	TP40.875x39.897x0.825	Reinf. 5 Compression	77.8%	Pass
L33	43.08 - 38.42	Pole + Reinf.	TP41.787x40.875x0.8125	Reinf. 5 Compression	79.8%	Pass
L34	38.42 - 38.17	Pole + Reinf.	TP41.836x41.787x0.7125	Reinf. 5 Compression	91.5%	Pass
L35	38.17 - 37.58	Pole + Reinf.	TP41.95x41.836x0.7125	Reinf. 5 Compression	91.7%	Pass
L36	37.58 - 37.33	Pole + Reinf.	TP41.999x41.95x0.8625	Reinf. 5 Compression	76.2%	Pass
L37	37.33 - 35.75	Pole + Reinf.	TP42.309x41.999x0.8625	Reinf. 5 Bolt Shear	79.9%	Pass
L38	35.75 - 35.5	Pole + Reinf.	TP42.357x42.309x0.5875	Reinf. 1 Compression	86.6%	Pass
L39	35.5 - 30.5	Pole + Reinf.	TP43.335x42.357x0.575	Reinf. 1 Compression	88.3%	Pass
L40	30.5 - 25.5	Pole + Reinf.	TP44.313x43.335x0.575	Reinf. 1 Compression	89.8%	Pass
L41	25.5 - 20.5	Pole + Reinf.	TP45.291x44.313x0.575	Reinf. 1 Compression	91.3%	Pass
L42	20.5 - 15.5	Pole + Reinf.	TP46.269x45.291x0.575	Reinf. 1 Compression	92.6%	Pass
L43	15.5 - 10.5	Pole + Reinf.	TP47.247x46.269x0.5625	Reinf. 1 Compression	93.8%	Pass
L44	10.5 - 5.5	Pole + Reinf.	TP48.224x47.247x0.5625	Reinf. 1 Compression	94.9%	Pass
L45	5.5 - 0.5	Pole + Reinf.	TP49.202x48.224x0.5625	Pole	96.0%	Pass
L46	0.5 - 0	Pole + Reinf.	TP49.3x49.202x0.5625	Pole	96.2%	Pass
					Summary	
				Pole	96.2%	Pass
				Reinforcement	96.0%	Pass
				Overall	96.2%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	98.0	Pass
1	Base Plate	0	65.2	Pass
1	Base Foundation (Structure)	0	69.6	Pass
1	Base Foundation (Soil Interaction)	0	74.6	Pass

Structure Rating (max from all components) =	98.0%

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

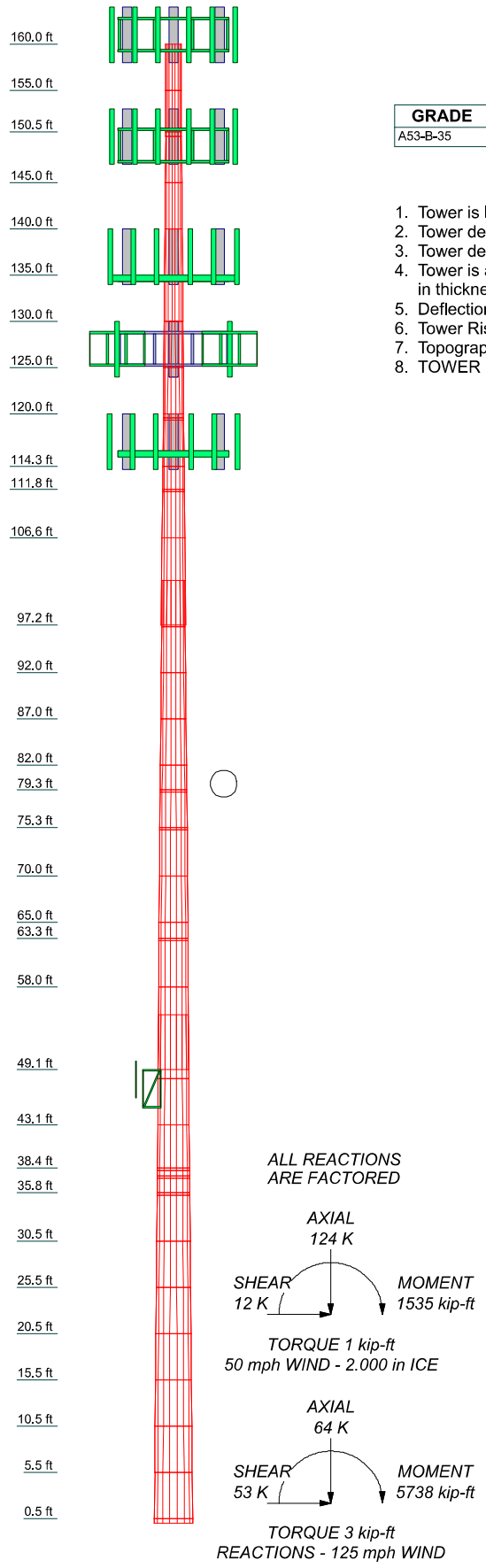
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.000	0	0.250		20.000	20.000	A53-B-35	0.3
2	5.000	0	0.250		20.000	20.320		0.2
3	5.000	0	0.250		20.320	20.640		0.2
4	5.000	12	0.250		20.640	21.341		0.3
5	5.000	12	0.250		21.341	22.382		0.3
6	5.000	12	0.250		22.382	23.423		0.3
7	5.000	12	0.250		23.423	24.464		0.3
8	5.000	12	0.250		24.464	25.505		0.3
9	5.000	12	0.250		25.505	26.546		0.4
10	5.000	12	0.250		26.546	27.587		0.4
11	5.000	12	0.250		27.587	28.628		0.4
12	5.000	12	0.360		28.628	29.669		0.5
13	5.000	12	0.369		29.669	30.710		0.5
14	5.000	12	0.378		30.710	31.751		0.5
15	5.000	12	0.400		31.751	32.792		0.6
16	5.000	12	0.400	4.833	32.792	33.833		1.2
17	5.000	12	0.425		33.833	34.874		0.8
18	5.000	12	0.512		34.874	35.915		0.8
19	5.000	12	0.512		35.915	36.956		0.9
20	5.000	12	0.506		36.956	37.997		0.9
21	5.000	12	0.500		37.997	39.038		0.5
22	5.000	12	0.500		39.038	40.079		0.5
23	5.000	12	0.500		40.079	41.120		0.5
24	5.000	12	0.500		41.120	42.161		0.5
25	5.000	12	0.738		42.161	43.202		1.4
26	5.000	12	0.725		43.202	44.243		1.4
27	5.000	12	0.712		44.243	45.284		1.4
28	5.000	12	0.700		45.284	46.325		1.4
29	5.000	12	0.787		46.325	47.366		1.5
30	6.917	12	0.775	5.917	47.366	48.407		2.8
31	6.917	12	0.838		48.407	49.448		2.3
32	5.000	12	0.825		49.448	50.489		1.7
33	5.000	12	0.813		50.489	51.530		1.6
34	5.000	12	0.800		51.530	52.571		1.6
35	5.000	12	0.788		52.571	53.612		1.6
36	5.000	12	0.775		53.612	54.653		1.6
37	5.000	12	0.763		54.653	55.694		1.6
38	5.000	12	0.750		55.694	56.735		1.6
39	5.000	12	0.575		56.735	57.776		1.3
40	5.000	12	0.575		57.776	58.817		1.3
41	5.000	12	0.575		58.817	59.858		1.4
42	5.000	12	0.575		59.858	60.899		1.4
43	5.000	12	0.563		60.899	61.940		1.4
44	5.000	12	0.563		61.940	62.981		1.4
45	6.000	12	0.563		62.981	64.022		1.5
46	0.500	12	0.563		64.022	64.272		0.1
	34.917			10.750				34.9



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 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 0.000 ft
8. TOWER RATING: 96.2%

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
The Pathway to Possible
Phone: (724) 416-2000
FAX:

Job: BU# 806373			
Project:			
Client: Crown Castle	Drawn by: MAtiles	App'd:	
Code: TIA-222-H	Date: 09/01/21	Scale: NTS	
Path: C:\Users\matiles\Desktop\Working from Home\806373\WO 1987185 - SA\Prod\806373 reinf.er		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 109.000 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: 0.000 ft.
- Nominal ice thickness of 2.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING:.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.000-155.000	5.000	0.000	Round	20.000	20.000	0.250		A53-B-35 (35 ksi)
L2	155.000-150.500	4.500	0.000	Round	20.000	20.000	0.250		A53-B-35 (35 ksi)
L3	150.500-150.000	0.500	0.000	Round	20.300	20.300	0.250		A53-B-35 (35 ksi)
L4	150.000-145.000	5.000	0.000	12	20.300	21.341	0.250	1.000	A572-65 (65 ksi)
L5	145.000-140.000	5.000	0.000	12	21.341	22.382	0.250	1.000	A572-65 (65 ksi)
L6	140.000-135.000	5.000	0.000	12	22.382	23.423	0.250	1.000	A572-65 (65 ksi)
L7	135.000-130.000	5.000	0.000	12	23.423	24.464	0.250	1.000	A572-65 (65 ksi)
L8	130.000-125.000	5.000	0.000	12	24.464	25.505	0.250	1.000	A572-65 (65 ksi)
L9	125.000-120.000	5.000	0.000	12	25.505	26.546	0.250	1.000	A572-65 (65 ksi)
L10	120.000-119.583	0.417	0.000	12	26.546	26.633	0.250	1.000	A572-65 (65 ksi)
L11	119.583-119.333	0.250	0.000	12	26.633	26.685	0.375	1.500	A572-65 (65 ksi)
L12	119.333-114.333	5.000	0.000	12	26.685	27.726	0.369	1.475	A572-65 (65 ksi)
L13	114.333-111.833	2.500	0.000	12	27.726	28.246	0.369	1.475	A572-65 (65 ksi)
L14	111.833-111.583	0.250	0.000	12	28.246	28.299	0.412	1.650	A572-65 (65 ksi)
L15	111.583-106.583	5.000	0.000	12	28.299	29.340	0.400	1.600	A572-65 (65 ksi)
L16	106.583-97.167	9.416	4.833	12	29.340	31.300	0.400	1.600	A572-65 (65 ksi)
L17	97.167-97.000	5.000	0.000	12	29.794	30.804	0.525	2.100	A572-65 (65 ksi)
L18	97.000-92.000	5.000	0.000	12	30.804	31.815	0.512	2.050	A572-65 (65 ksi)
L19	92.000-87.000	5.000	0.000	12	31.815	32.826	0.512	2.050	A572-65 (65 ksi)
L20	87.000-82.000	5.000	0.000	12	32.826	33.836	0.506	2.025	A572-65 (65 ksi)
L21	82.000-79.333	2.667	0.000	12	33.836	34.375	0.500	2.000	A572-65 (65 ksi)
L22	79.333-79.083	0.250	0.000	12	34.375	34.426	0.762	3.050	A572-65 (65 ksi)
L23	79.083-75.250	3.833	0.000	12	34.426	35.201	0.750	3.000	A572-65 (65 ksi)
L24	75.250-75.000	0.250	0.000	12	35.201	35.251	0.750	3.000	A572-65 (65 ksi)
L25	75.000-70.000	5.000	0.000	12	35.251	36.262	0.738	2.950	A572-65 (65 ksi)
L26	70.000-65.000	5.000	0.000	12	36.262	37.273	0.725	2.900	A572-65 (65 ksi)
L27	65.000-63.250	1.750	0.000	12	37.273	37.626	0.725	2.900	A572-65 (65 ksi)
L28	63.250-63.000	0.250	0.000	12	37.626	37.677	0.800	3.200	A572-65 (65 ksi)
L29	63.000-58.000	5.000	0.000	12	37.677	38.688	0.787	3.150	A572-65 (65 ksi)
L30	58.000-49.083	8.917	5.917	12	38.688	40.490	0.775	3.100	A572-65 (65 ksi)
L31	49.083-48.083	6.917	0.000	12	38.544	39.897	0.838	3.350	A572-65 (65 ksi)
L32	48.083-43.083	5.000	0.000	12	39.897	40.875	0.825	3.300	A572-65 (65 ksi)
L33	43.083-38.417	4.666	0.000	12	40.875	41.787	0.813	3.250	A572-65 (65 ksi)
L34	38.417-38.167	0.250	0.000	12	41.787	41.836	0.713	2.850	A572-65 (65 ksi)
L35	38.167-37.583	0.584	0.000	12	41.836	41.950	0.713	2.850	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L36	37.583-37.333	0.250	0.000	12	41.950	41.999	0.863	3.450	(65 ksi) A572-65 (65 ksi)
L37	37.333-35.750	1.583	0.000	12	41.999	42.309	0.863	3.450	A572-65 (65 ksi)
L38	35.750-35.500	0.250	0.000	12	42.309	42.357	0.588	2.350	A572-65 (65 ksi)
L39	35.500-30.500	5.000	0.000	12	42.357	43.335	0.575	2.300	A572-65 (65 ksi)
L40	30.500-25.500	5.000	0.000	12	43.335	44.313	0.575	2.300	A572-65 (65 ksi)
L41	25.500-20.500	5.000	0.000	12	44.313	45.291	0.575	2.300	A572-65 (65 ksi)
L42	20.500-15.500	5.000	0.000	12	45.291	46.269	0.575	2.300	A572-65 (65 ksi)
L43	15.500-10.500	5.000	0.000	12	46.269	47.247	0.563	2.250	A572-65 (65 ksi)
L44	10.500-5.500	5.000	0.000	12	47.247	48.224	0.563	2.250	A572-65 (65 ksi)
L45	5.500-0.500	5.000	0.000	12	48.224	49.202	0.563	2.250	A572-65 (65 ksi)
L46	0.500-0.000	0.500		12	49.202	49.300	0.563	2.250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
L2	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
	20.000	15.512	756.434	6.983	10.000	75.643	1512.867	7.751	0.000	0
L3	20.300	15.747	791.426	7.089	10.150	77.973	1582.853	7.869	0.000	0
	20.300	15.747	791.426	7.089	10.150	77.973	1582.853	7.869	0.000	0
L4	20.928	16.140	828.180	7.178	10.515	78.759	1678.118	7.944	4.770	19.082
	22.006	16.978	963.994	7.551	11.055	87.203	1953.313	8.356	5.049	20.198
L5	22.006	16.978	963.994	7.551	11.055	87.203	1953.313	8.356	5.049	20.198
	23.083	17.816	1113.899	7.923	11.594	96.076	2257.061	8.769	5.328	21.314
L6	23.083	17.816	1113.899	7.923	11.594	96.076	2257.061	8.769	5.328	21.314
	24.161	18.654	1278.590	8.296	12.133	105.380	2590.770	9.181	5.607	22.43
L7	24.161	18.654	1278.590	8.296	12.133	105.380	2590.770	9.181	5.607	22.43
	25.239	19.492	1458.764	8.669	12.672	115.114	2955.850	9.594	5.886	23.545
L8	25.239	19.492	1458.764	8.669	12.672	115.114	2955.850	9.594	5.886	23.545
	26.317	20.330	1655.115	9.041	13.212	125.277	3353.711	10.006	6.165	24.661
L9	26.317	20.330	1655.115	9.041	13.212	125.277	3353.711	10.006	6.165	24.661
	27.394	21.168	1868.339	9.414	13.751	135.871	3785.761	10.418	6.444	25.777
L10	27.394	21.168	1868.339	9.414	13.751	135.871	3785.761	10.418	6.444	25.777
	27.484	21.238	1886.906	9.445	13.796	136.773	3823.383	10.453	6.468	25.87
L11	27.440	31.706	2790.319	9.400	13.796	202.258	5653.943	15.605	6.133	16.354
	27.494	31.769	2806.946	9.419	13.823	203.066	5687.633	15.636	6.147	16.391
L12	27.496	31.247	2762.131	9.421	13.823	199.824	5596.826	15.379	6.163	16.714
	28.574	32.483	3103.062	9.794	14.362	216.060	6287.644	15.987	6.442	17.471
L13	28.574	32.483	3103.062	9.794	14.362	216.060	6287.644	15.987	6.442	17.471
	29.113	33.101	3283.573	9.980	14.632	224.415	6653.408	16.291	6.582	17.849
L14	29.097	36.970	3655.883	9.965	14.632	249.861	7407.810	18.196	6.465	15.672
	29.151	37.040	3676.431	9.983	14.659	250.803	7449.447	18.230	6.479	15.705
L15	29.156	35.933	3569.821	9.988	14.659	243.530	7233.424	17.685	6.512	16.28
	30.233	37.274	3984.534	10.360	15.198	262.177	8073.746	18.345	6.791	16.978
L16	30.233	37.274	3984.534	10.360	15.198	262.177	8073.746	18.345	6.791	16.978
	32.263	39.799	4850.397	11.062	16.213	299.160	9828.219	19.588	7.316	18.291
L17	31.671	49.479	5410.206	10.478	15.433	350.557	10962.545	24.352	6.578	12.529
	31.706	51.187	5990.232	10.840	15.957	375.406	12137.833	25.193	6.849	13.045
L18	31.710	49.989	5854.852	10.845	15.957	366.922	11863.518	24.603	6.882	13.428
	32.757	51.657	6460.648	11.206	16.480	392.025	13091.024	25.424	7.153	13.957
L19	32.757	51.657	6460.648	11.206	16.480	392.025	13091.024	25.424	7.153	13.957

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	33.803	53.325	7106.852	11.568	17.004	417.958	14400.410	26.245	7.424	14.485
L20	33.805	52.685	7024.258	11.570	17.004	413.101	14233.050	25.930	7.441	14.697
	34.851	54.332	7704.045	11.932	17.527	439.547	15610.484	26.741	7.711	15.232
L21	34.854	53.672	7613.215	11.934	17.527	434.364	15426.437	26.416	7.728	15.456
	35.412	54.540	7988.563	12.127	17.807	448.632	16186.994	26.843	7.873	15.745
L22	35.319	82.528	11901.541	12.033	17.807	668.382	24115.748	40.618	7.169	9.402
	35.371	82.652	11955.299	12.052	17.833	670.415	24224.677	40.679	7.183	9.42
L23	35.376	81.328	11772.415	12.056	17.833	660.160	23854.104	40.027	7.216	9.622
	36.178	83.199	12603.785	12.333	18.234	691.224	25538.685	40.948	7.424	9.898
L24	36.178	83.199	12603.785	12.333	18.234	691.224	25538.685	40.948	7.424	9.898
	36.230	83.321	12659.329	12.351	18.260	693.275	25651.232	41.008	7.437	9.916
L25	36.235	81.962	12461.875	12.356	18.260	682.461	25251.137	40.339	7.471	10.13
	37.281	84.362	13589.002	12.718	18.784	723.446	27535.001	41.520	7.742	10.497
L26	37.285	82.961	13372.786	12.722	18.784	711.935	27096.890	40.831	7.775	10.724
	38.332	85.321	14546.498	13.084	19.307	753.422	29475.149	41.992	8.046	11.098
L27	38.332	85.321	14546.498	13.084	19.307	753.422	29475.149	41.992	8.046	11.098
	38.698	86.146	14972.971	13.211	19.490	768.220	30339.298	42.399	8.141	11.229
L28	38.671	94.865	16421.364	13.184	19.490	842.533	33274.135	46.690	7.940	9.925
	38.724	94.995	16489.056	13.202	19.517	844.871	33411.299	46.754	7.953	9.942
L29	38.728	93.542	16247.926	13.206	19.517	832.516	32922.703	46.039	7.987	10.142
	39.775	96.105	17620.284	13.568	20.040	879.248	35703.472	47.300	8.258	10.486
L30	39.779	94.611	17357.760	13.573	20.040	866.148	35171.528	46.565	8.291	10.698
	41.645	99.109	19952.955	14.218	20.974	951.327	40430.097	48.778	8.774	11.322
L31	40.806	101.685	18453.327	13.499	19.966	924.248	37391.444	50.046	8.085	9.654
	41.009	105.333	20511.461	13.983	20.666	992.499	41561.782	51.842	8.448	10.087
L32	41.013	103.794	20224.725	13.988	20.666	978.624	40980.776	51.084	8.481	10.28
	42.025	106.392	21781.493	14.338	21.173	1028.739	44135.211	52.363	8.743	10.598
L33	42.030	104.812	21471.563	14.342	21.173	1014.101	43507.208	51.585	8.777	10.802
	42.974	107.200	22972.422	14.669	21.646	1061.294	46548.355	52.760	9.021	11.103
L34	43.010	94.235	20292.902	14.705	21.646	937.504	41118.920	46.380	9.289	13.038
	43.060	94.347	20365.452	14.722	21.671	939.756	41265.927	46.435	9.303	13.056
L35	43.060	94.347	20365.452	14.722	21.671	939.756	41265.927	46.435	9.303	13.056
	43.179	94.609	20535.603	14.763	21.730	945.028	41610.700	46.564	9.333	13.099
L36	43.126	114.111	24588.605	14.709	21.730	1131.543	49823.179	56.162	8.931	10.355
	43.176	114.246	24676.483	14.727	21.755	1134.265	50001.244	56.229	8.944	10.37
L37	43.176	114.246	24676.483	14.727	21.755	1134.265	50001.244	56.229	8.944	10.37
	43.497	115.106	25237.804	14.838	21.916	1151.578	51138.633	56.652	9.027	10.466
L38	43.594	78.926	17535.436	14.936	21.916	800.126	35531.547	38.845	9.764	16.62
	43.644	79.018	17597.155	14.954	21.941	802.015	35656.607	38.890	9.777	16.642
L39	43.649	77.360	17238.214	14.958	21.941	785.656	34929.296	38.074	9.811	17.062
	44.661	79.171	18477.017	15.308	22.448	823.115	37439.447	38.965	10.073	17.518
L40	44.661	79.171	18477.017	15.308	22.448	823.115	37439.447	38.965	10.073	17.518
	45.673	80.981	19773.792	15.658	22.954	861.446	40067.065	39.856	10.335	17.974
L41	45.673	80.981	19773.792	15.658	22.954	861.446	40067.065	39.856	10.335	17.974
	46.686	82.792	21129.865	16.008	23.461	900.649	42814.836	40.747	10.597	18.43
L42	46.686	82.792	21129.865	16.008	23.461	900.649	42814.836	40.747	10.597	18.43
	47.698	84.602	22546.560	16.358	23.967	940.725	45685.444	41.639	10.859	18.885
L43	47.703	82.785	22074.524	16.363	23.967	921.030	44728.970	40.744	10.893	19.364
	48.715	84.557	23521.808	16.713	24.474	961.104	47661.561	41.616	11.155	19.83
L44	48.715	84.557	23521.808	16.713	24.474	961.104	47661.561	41.616	11.155	19.83
	49.727	86.328	25031.008	17.063	24.980	1002.032	50719.609	42.488	11.417	20.296
L45	49.727	86.328	25031.008	17.063	24.980	1002.032	50719.609	42.488	11.417	20.296
	50.739	88.099	26603.421	17.413	25.487	1043.814	53905.744	43.359	11.679	20.762
L46	50.739	88.099	26603.421	17.413	25.487	1043.814	53905.744	43.359	11.679	20.762
	50.841	88.276	26764.189	17.448	25.537	1048.039	54231.504	43.447	11.705	20.809

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 160.000-155.000				1	1	1			
L2 155.000-150.500				1	1	1			
L3 150.500-150.000				1	1	1			
L4 150.000-145.000				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
L5 145.000-140.000				1	1	1			
L6 140.000-135.000				1	1	1			
L7 135.000-130.000				1	1	1			
L8 130.000-125.000				1	1	1			
L9 125.000-120.000				1	1	1			
L10 120.000-119.583				1	1	1			
L11 119.583-119.333				1	1	0.971264			
L12 119.333-114.333				1	1	0.975713			
L13 114.333-111.833				1	1	0.970154			
L14 111.833-111.583				1	1	0.954312			
L15 111.583-106.583				1	1	0.97079			
L16 106.583-97.167				1	1	0.959753			
L17 97.167-97.000				1	1	0.967266			
L18 97.000-92.000				1	1	0.982095			
L19 92.000-87.000				1	1	0.974264			
L20 87.000-82.000				1	1	0.978661			
L21 82.000-79.333				1	1	0.986878			
L22 79.333-79.083				1	1	0.947279			
L23 79.083-75.250				1	1	0.952303			
L24 75.250-75.000				1	1	0.951641			
L25 75.000-70.000				1	1	0.954363			
L26 70.000-65.000				1	1	0.957943			
L27 65.000-63.250				1	1	0.953718			
L28 63.250-63.000				1	1	0.944588			
L29 63.000-58.000				1	1	0.946374			
L30 58.000-49.083				1	1	0.953805			
L31 49.083-48.083				1	1	0.952002			
L32 48.083-43.083				1	1	0.955477			
L33 43.083-38.417				1	1	0.960266			
L34 38.417-38.167				1	1	0.956473			
L35 38.167-37.583				1	1	0.955524			
L36 37.583-37.333				1	1	0.949669			
L37 37.333-35.750				1	1	0.946365			
L38 35.750-				1	1	0.975477			

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
35.500									
L39 35.500-30.500				1	1	0.990999			
L40 30.500-25.500				1	1	0.985854			
L41 25.500-20.500				1	1	0.980934			
L42 20.500-15.500				1	1	0.976225			
L43 15.500-10.500				1	1	0.993041			
L44 10.500-5.500				1	1	0.988625			
L45 5.500-0.500				1	1	0.984386			
L46 0.500-0.000				1	1	0.983971			

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 klf
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	127.000 - 0.000	1	1	-0.120 -0.100	1.600		0.002
*										
HB158-1-08U8-S8J18(1-5/8)	A	No	Surface Ar (CaAa)	149.000 - 0.000	2	2	0.350 0.410	1.980		0.001
*										
*										
AL7-50(1-5/8)	A	No	Surface Ar (CaAa)	116.000 - 0.000	7	6	0.100 0.300	1.960		0.001
*										
*										
PL 6'x1"	A	No	Surface Af (CaAa)	40.500 - 0.500	1	1	-0.050 0.050	6.000	14.000	0.000
PL 6'x1"	B	No	Surface Af (CaAa)	40.500 - 0.500	1	1	-0.050 0.050	6.000	14.000	0.000
PL 6'x1"	C	No	Surface Af (CaAa)	40.500 - 0.500	1	1	-0.050 0.050	6.000	14.000	0.000
*										
PL 4.25"x1"	A	No	Surface Af (CaAa)	73.500 - 40.500	1	1	-0.050 0.050	4.250	10.500	0.000
PL 4.25"x1"	B	No	Surface Af (CaAa)	73.500 - 40.500	1	1	-0.050 0.050	4.250	10.500	0.000
PL 4.25"x1"	C	No	Surface Af (CaAa)	73.500 - 40.500	1	1	-0.050 0.050	4.250	10.500	0.000
*										
PL 4.25"x1"	A	No	Surface Af (CaAa)	113.500 - 73.500	1	1	-0.050 0.050	4.250	10.500	0.000
PL 4.25"x1"	B	No	Surface Af (CaAa)	113.500 - 73.500	1	1	-0.050 0.050	4.250	10.500	0.000
PL 4.25"x1"	C	No	Surface Af (CaAa)	113.500 - 73.500	1	1	-0.050 0.050	4.250	10.500	0.000
*										
PL 4.25"x1"	A	No	Surface Af (CaAa)	121.250 - 110.500	1	1	-0.150 -0.050	4.250	10.250	0.000
PL 4.25"x1"	B	No	Surface Af (CaAa)	121.250 - 110.500	1	1	-0.150 -0.050	4.250	10.250	0.000
PL 4.25"x1"	C	No	Surface Af (CaAa)	121.250 - 110.500	1	1	-0.150 -0.050	4.250	10.250	0.000
*										

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 klf
MC10x28.5	A	No	Surface Af (CaAa)	160.000 - 158.833	1	1	-0.050 0.050	10.000	28.000	0.019
MC10x28.5	B	No	Surface Af (CaAa)	160.000 - 158.833	1	1	-0.050 0.050	10.000	28.000	0.019
MC10x28.5	C	No	Surface Af (CaAa)	160.000 - 158.833	1	1	-0.050 0.050	10.000	28.000	0.019
*										
CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	67.000 - 32.000	1	1	-0.050 0.050	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	67.000 - 32.000	1	1	-0.050 0.050	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	67.000 - 32.000	1	1	-0.050 0.050	8.500	19.500	0.000
*										
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	82.083 - 67.083	1	1	-0.050 0.050	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	82.083 - 67.083	1	1	-0.050 0.050	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	82.083 - 67.083	1	1	-0.050 0.050	6.500	15.500	0.000
***										
LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	160.000 - 0.000	10	4	-0.320 -0.150	1.980		0.001
LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	160.000 - 0.000	2	2	-0.260 -0.210	0.000		0.001
WR-VG86ST-BRD(3/4)	A	No	Surface Ar (CaAa)	160.000 - 0.000	6	4	-0.320 -0.250	0.000		0.001
***										

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 klf
*									
LDF5-50A(7/8)	A	No	No	Inside Pole	149.000 - 0.000	6	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	135.000 - 0.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
*									
LDF4-50A(1/2)	C	No	No	Inside Pole	47.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.000-155.000	A	0.000	0.000	5.127	0.000	0.089
		B	0.000	0.000	1.167	0.000	0.022

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	1.167	0.000	0.022
L2	155.000-150.500	A	0.000	0.000	3.564	0.000	0.060
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L3	150.500-150.000	A	0.000	0.000	0.396	0.000	0.007
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L4	150.000-145.000	A	0.000	0.000	5.544	0.000	0.085
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L5	145.000-140.000	A	0.000	0.000	5.940	0.000	0.090
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L6	140.000-135.000	A	0.000	0.000	5.940	0.000	0.090
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L7	135.000-130.000	A	0.000	0.000	5.940	0.000	0.090
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.037
L8	130.000-125.000	A	0.000	0.000	5.940	0.000	0.090
		B	0.000	0.000	0.320	0.000	0.005
		C	0.000	0.000	0.000	0.000	0.037
L9	125.000-120.000	A	0.000	0.000	6.825	0.000	0.090
		B	0.000	0.000	1.685	0.000	0.012
		C	0.000	0.000	0.885	0.000	0.037
L10	120.000-119.583	A	0.000	0.000	0.791	0.000	0.007
		B	0.000	0.000	0.362	0.000	0.001
		C	0.000	0.000	0.295	0.000	0.003
L11	119.583-119.333	A	0.000	0.000	0.474	0.000	0.004
		B	0.000	0.000	0.217	0.000	0.001
		C	0.000	0.000	0.177	0.000	0.002
L12	119.333-114.333	A	0.000	0.000	11.442	0.000	0.096
		B	0.000	0.000	4.342	0.000	0.012
		C	0.000	0.000	3.542	0.000	0.037
L13	114.333-111.833	A	0.000	0.000	8.862	0.000	0.054
		B	0.000	0.000	3.352	0.000	0.006
		C	0.000	0.000	2.952	0.000	0.019
L14	111.833-111.583	A	0.000	0.000	0.945	0.000	0.005
		B	0.000	0.000	0.394	0.000	0.001
		C	0.000	0.000	0.354	0.000	0.002
L15	111.583-106.583	A	0.000	0.000	16.129	0.000	0.108
		B	0.000	0.000	5.109	0.000	0.012
		C	0.000	0.000	4.309	0.000	0.037
L16	106.583-97.167	A	0.000	0.000	28.929	0.000	0.203
		B	0.000	0.000	8.176	0.000	0.022
		C	0.000	0.000	6.670	0.000	0.071
L17	97.167-97.000	A	0.000	0.000	0.513	0.000	0.004
		B	0.000	0.000	0.145	0.000	0.000
		C	0.000	0.000	0.118	0.000	0.001
L18	97.000-92.000	A	0.000	0.000	15.362	0.000	0.108
		B	0.000	0.000	4.342	0.000	0.012
		C	0.000	0.000	3.542	0.000	0.037
L19	92.000-87.000	A	0.000	0.000	15.362	0.000	0.108
		B	0.000	0.000	4.342	0.000	0.012
		C	0.000	0.000	3.542	0.000	0.037
L20	87.000-82.000	A	0.000	0.000	15.452	0.000	0.108
		B	0.000	0.000	4.432	0.000	0.012
		C	0.000	0.000	3.632	0.000	0.037
L21	82.000-79.333	A	0.000	0.000	11.083	0.000	0.058
		B	0.000	0.000	5.205	0.000	0.006
		C	0.000	0.000	4.778	0.000	0.020
L22	79.333-79.083	A	0.000	0.000	1.039	0.000	0.005
		B	0.000	0.000	0.488	0.000	0.001
		C	0.000	0.000	0.448	0.000	0.002
L23	79.083-75.250	A	0.000	0.000	15.929	0.000	0.083
		B	0.000	0.000	7.481	0.000	0.009
		C	0.000	0.000	6.867	0.000	0.029
L24	75.250-75.000	A	0.000	0.000	1.039	0.000	0.005
		B	0.000	0.000	0.488	0.000	0.001

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	0.448	0.000	0.002
L25	75.000-70.000	A	0.000	0.000	20.778	0.000	0.108
		B	0.000	0.000	9.758	0.000	0.012
		C	0.000	0.000	8.958	0.000	0.037
L26	70.000-65.000	A	0.000	0.000	21.355	0.000	0.108
		B	0.000	0.000	10.335	0.000	0.012
		C	0.000	0.000	9.535	0.000	0.037
L27	65.000-63.250	A	0.000	0.000	7.856	0.000	0.038
		B	0.000	0.000	3.999	0.000	0.004
		C	0.000	0.000	3.719	0.000	0.013
L28	63.250-63.000	A	0.000	0.000	1.122	0.000	0.005
		B	0.000	0.000	0.571	0.000	0.001
		C	0.000	0.000	0.531	0.000	0.002
L29	63.000-58.000	A	0.000	0.000	22.445	0.000	0.108
		B	0.000	0.000	11.425	0.000	0.012
		C	0.000	0.000	10.625	0.000	0.037
L30	58.000-49.083	A	0.000	0.000	40.028	0.000	0.192
		B	0.000	0.000	20.375	0.000	0.021
		C	0.000	0.000	18.949	0.000	0.067
L31	49.083-48.083	A	0.000	0.000	4.489	0.000	0.022
		B	0.000	0.000	2.285	0.000	0.002
		C	0.000	0.000	2.125	0.000	0.007
L32	48.083-43.083	A	0.000	0.000	22.445	0.000	0.108
		B	0.000	0.000	11.425	0.000	0.012
		C	0.000	0.000	10.625	0.000	0.038
L33	43.083-38.417	A	0.000	0.000	21.553	0.000	0.101
		B	0.000	0.000	11.269	0.000	0.011
		C	0.000	0.000	10.523	0.000	0.036
L34	38.417-38.167	A	0.000	0.000	1.195	0.000	0.005
		B	0.000	0.000	0.644	0.000	0.001
		C	0.000	0.000	0.604	0.000	0.002
L35	38.167-37.583	A	0.000	0.000	2.792	0.000	0.013
		B	0.000	0.000	1.505	0.000	0.001
		C	0.000	0.000	1.411	0.000	0.004
L36	37.583-37.333	A	0.000	0.000	1.195	0.000	0.005
		B	0.000	0.000	0.644	0.000	0.001
		C	0.000	0.000	0.604	0.000	0.002
L37	37.333-35.750	A	0.000	0.000	7.568	0.000	0.034
		B	0.000	0.000	4.079	0.000	0.004
		C	0.000	0.000	3.826	0.000	0.012
L38	35.750-35.500	A	0.000	0.000	1.195	0.000	0.005
		B	0.000	0.000	0.644	0.000	0.001
		C	0.000	0.000	0.604	0.000	0.002
L39	35.500-30.500	A	0.000	0.000	21.778	0.000	0.108
		B	0.000	0.000	10.758	0.000	0.012
		C	0.000	0.000	9.958	0.000	0.038
L40	30.500-25.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L41	25.500-20.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L42	20.500-15.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L43	15.500-10.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L44	10.500-5.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L45	5.500-0.500	A	0.000	0.000	16.820	0.000	0.108
		B	0.000	0.000	5.800	0.000	0.012
		C	0.000	0.000	5.000	0.000	0.038
L46	0.500-0.000	A	0.000	0.000	1.182	0.000	0.011
		B	0.000	0.000	0.080	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.004

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.000-155.000	A	1.988	0.000	0.000	13.841	0.000	0.305
		B		0.000	0.000	1.438	0.000	0.054
		C		0.000	0.000	1.438	0.000	0.054
L2	155.000-150.500	A	1.982	0.000	0.000	11.143	0.000	0.225
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	150.500-150.000	A	1.978	0.000	0.000	1.237	0.000	0.025
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L4	150.000-145.000	A	1.975	0.000	0.000	16.309	0.000	0.319
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L5	145.000-140.000	A	1.968	0.000	0.000	17.264	0.000	0.336
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L6	140.000-135.000	A	1.961	0.000	0.000	17.229	0.000	0.334
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L7	135.000-130.000	A	1.953	0.000	0.000	17.192	0.000	0.333
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.037
L8	130.000-125.000	A	1.946	0.000	0.000	17.155	0.000	0.332
		B		0.000	0.000	1.098	0.000	0.022
		C		0.000	0.000	0.000	0.000	0.037
L9	125.000-120.000	A	1.938	0.000	0.000	18.318	0.000	0.347
		B		0.000	0.000	3.941	0.000	0.070
		C		0.000	0.000	1.202	0.000	0.054
L10	120.000-119.583	A	1.934	0.000	0.000	1.827	0.000	0.033
		B		0.000	0.000	0.629	0.000	0.010
		C		0.000	0.000	0.401	0.000	0.009
L11	119.583-119.333	A	1.933	0.000	0.000	1.095	0.000	0.020
		B		0.000	0.000	0.377	0.000	0.006
		C		0.000	0.000	0.240	0.000	0.005
L12	119.333-114.333	A	1.929	0.000	0.000	25.129	0.000	0.448
		B		0.000	0.000	7.534	0.000	0.119
		C		0.000	0.000	4.805	0.000	0.103
L13	114.333-111.833	A	1.923	0.000	0.000	17.619	0.000	0.298
		B		0.000	0.000	5.584	0.000	0.081
		C		0.000	0.000	4.223	0.000	0.074
L14	111.833-111.583	A	1.920	0.000	0.000	1.852	0.000	0.031
		B		0.000	0.000	0.649	0.000	0.009
		C		0.000	0.000	0.513	0.000	0.008
L15	111.583-106.583	A	1.916	0.000	0.000	33.246	0.000	0.565
		B		0.000	0.000	9.213	0.000	0.133
		C		0.000	0.000	6.497	0.000	0.118
L16	106.583-97.167	A	1.903	0.000	0.000	60.473	0.000	1.030
		B		0.000	0.000	15.343	0.000	0.222
		C		0.000	0.000	10.253	0.000	0.194
L17	97.167-97.000	A	1.894	0.000	0.000	1.073	0.000	0.018
		B		0.000	0.000	0.272	0.000	0.004
		C		0.000	0.000	0.182	0.000	0.003
L18	97.000-92.000	A	1.889	0.000	0.000	32.009	0.000	0.543
		B		0.000	0.000	8.119	0.000	0.117
		C		0.000	0.000	5.430	0.000	0.102
L19	92.000-87.000	A	1.878	0.000	0.000	31.935	0.000	0.540
		B		0.000	0.000	8.098	0.000	0.116
		C		0.000	0.000	5.420	0.000	0.102
L20	87.000-82.000	A	1.868	0.000	0.000	31.966	0.000	0.538
		B		0.000	0.000	8.186	0.000	0.116
		C		0.000	0.000	5.519	0.000	0.103
L21	82.000-79.333	A	1.859	0.000	0.000	20.469	0.000	0.328
		B		0.000	0.000	7.809	0.000	0.104
		C		0.000	0.000	6.391	0.000	0.097
L22	79.333-79.083	A	1.856	0.000	0.000	1.917	0.000	0.031
		B		0.000	0.000	0.732	0.000	0.010

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	0.599	0.000	0.009
L23	79.083-75.250	A	1.851	0.000	0.000	29.369	0.000	0.470
		B		0.000	0.000	11.207	0.000	0.149
		C		0.000	0.000	9.175	0.000	0.139
L24	75.250-75.000	A	1.846	0.000	0.000	1.914	0.000	0.031
		B		0.000	0.000	0.730	0.000	0.010
		C		0.000	0.000	0.598	0.000	0.009
L25	75.000-70.000	A	1.839	0.000	0.000	38.221	0.000	0.609
		B		0.000	0.000	14.591	0.000	0.193
		C		0.000	0.000	11.952	0.000	0.180
L26	70.000-65.000	A	1.826	0.000	0.000	38.949	0.000	0.609
		B		0.000	0.000	15.387	0.000	0.196
		C		0.000	0.000	12.761	0.000	0.183
L27	65.000-63.250	A	1.817	0.000	0.000	14.136	0.000	0.215
		B		0.000	0.000	5.906	0.000	0.071
		C		0.000	0.000	4.990	0.000	0.067
L28	63.250-63.000	A	1.814	0.000	0.000	2.018	0.000	0.031
		B		0.000	0.000	0.843	0.000	0.010
		C		0.000	0.000	0.713	0.000	0.010
L29	63.000-58.000	A	1.806	0.000	0.000	40.301	0.000	0.612
		B		0.000	0.000	16.844	0.000	0.203
		C		0.000	0.000	14.237	0.000	0.191
L30	58.000-49.083	A	1.784	0.000	0.000	71.549	0.000	1.078
		B		0.000	0.000	29.921	0.000	0.356
		C		0.000	0.000	25.312	0.000	0.336
L31	49.083-48.083	A	1.767	0.000	0.000	8.024	0.000	0.121
		B		0.000	0.000	3.356	0.000	0.040
		C		0.000	0.000	2.839	0.000	0.038
L32	48.083-43.083	A	1.756	0.000	0.000	39.885	0.000	0.595
		B		0.000	0.000	16.692	0.000	0.196
		C		0.000	0.000	14.137	0.000	0.186
L33	43.083-38.417	A	1.736	0.000	0.000	37.678	0.000	0.553
		B		0.000	0.000	16.130	0.000	0.185
		C		0.000	0.000	13.763	0.000	0.177
L34	38.417-38.167	A	1.725	0.000	0.000	2.055	0.000	0.030
		B		0.000	0.000	0.903	0.000	0.010
		C		0.000	0.000	0.777	0.000	0.010
L35	38.167-37.583	A	1.724	0.000	0.000	4.798	0.000	0.070
		B		0.000	0.000	2.109	0.000	0.024
		C		0.000	0.000	1.814	0.000	0.023
L36	37.583-37.333	A	1.722	0.000	0.000	2.053	0.000	0.030
		B		0.000	0.000	0.902	0.000	0.010
		C		0.000	0.000	0.776	0.000	0.010
L37	37.333-35.750	A	1.717	0.000	0.000	12.989	0.000	0.188
		B		0.000	0.000	5.710	0.000	0.064
		C		0.000	0.000	4.913	0.000	0.061
L38	35.750-35.500	A	1.713	0.000	0.000	2.050	0.000	0.030
		B		0.000	0.000	0.901	0.000	0.010
		C		0.000	0.000	0.775	0.000	0.010
L39	35.500-30.500	A	1.700	0.000	0.000	38.248	0.000	0.561
		B		0.000	0.000	15.348	0.000	0.174
		C		0.000	0.000	12.848	0.000	0.166
L40	30.500-25.500	A	1.672	0.000	0.000	31.899	0.000	0.494
		B		0.000	0.000	9.144	0.000	0.111
		C		0.000	0.000	6.672	0.000	0.104
L41	25.500-20.500	A	1.640	0.000	0.000	31.663	0.000	0.485
		B		0.000	0.000	9.079	0.000	0.109
		C		0.000	0.000	6.640	0.000	0.103
L42	20.500-15.500	A	1.600	0.000	0.000	31.375	0.000	0.474
		B		0.000	0.000	9.000	0.000	0.105
		C		0.000	0.000	6.600	0.000	0.101
L43	15.500-10.500	A	1.549	0.000	0.000	31.003	0.000	0.460
		B		0.000	0.000	8.897	0.000	0.101
		C		0.000	0.000	6.549	0.000	0.098
L44	10.500-5.500	A	1.475	0.000	0.000	30.470	0.000	0.440
		B		0.000	0.000	8.750	0.000	0.096
		C		0.000	0.000	6.475	0.000	0.094
L45	5.500-0.500	A	1.337	0.000	0.000	29.470	0.000	0.405
		B		0.000	0.000	8.474	0.000	0.085

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	6.337	0.000	0.088
L46	0.500-0.000	A	1.043	0.000	0.000	2.130	0.000	0.030
		B		0.000	0.000	0.184	0.000	0.003
		C		0.000	0.000	0.000	0.000	0.004

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.000-155.000	-2.940	-0.092	-3.904	-0.053
L2	155.000-150.500	-3.677	-0.116	-4.412	-0.060
L3	150.500-150.000	-3.680	-0.116	-4.448	-0.061
L4	150.000-145.000	-3.531	-1.182	-3.982	-1.130
L5	145.000-140.000	-3.538	-1.429	-4.000	-1.380
L6	140.000-135.000	-3.561	-1.445	-4.112	-1.422
L7	135.000-130.000	-3.582	-1.461	-4.221	-1.463
L8	130.000-125.000	-3.379	-1.605	-3.984	-1.689
L9	125.000-120.000	-2.721	-1.595	-3.338	-1.857
L10	120.000-119.583	-2.033	-1.195	-2.792	-1.555
L11	119.583-119.333	-2.036	-1.197	-2.798	-1.558
L12	119.333-114.333	-2.475	-1.886	-3.096	-2.095
L13	114.333-111.833	-2.704	-2.566	-3.131	-2.609
L14	111.833-111.583	-2.521	-2.393	-2.968	-2.474
L15	111.583-106.583	-3.072	-2.919	-3.425	-2.857
L16	106.583-97.167	-3.334	-3.175	-3.689	-3.081
L17	97.167-97.000	-3.359	-3.202	-3.729	-3.116
L18	97.000-92.000	-3.395	-3.238	-3.771	-3.154
L19	92.000-87.000	-3.464	-3.309	-3.854	-3.226
L20	87.000-82.000	-3.508	-3.355	-3.919	-3.284
L21	82.000-79.333	-2.548	-2.440	-3.206	-2.688
L22	79.333-79.083	-2.565	-2.456	-3.227	-2.706
L23	79.083-75.250	-2.586	-2.478	-3.254	-2.730
L24	75.250-75.000	-2.608	-2.500	-3.281	-2.754
L25	75.000-70.000	-2.635	-2.527	-3.315	-2.784
L26	70.000-65.000	-2.607	-2.503	-3.298	-2.772
L27	65.000-63.250	-2.502	-2.404	-3.200	-2.691
L28	63.250-63.000	-2.512	-2.414	-3.213	-2.703
L29	63.000-58.000	-2.537	-2.440	-3.244	-2.731
L30	58.000-49.083	-2.603	-2.506	-3.327	-2.804
L31	49.083-48.083	-2.613	-2.516	-3.340	-2.816
L32	48.083-43.083	-2.640	-2.544	-3.370	-2.845
L33	43.083-38.417	-2.603	-2.510	-3.363	-2.841
L34	38.417-38.167	-2.530	-2.441	-3.315	-2.803
L35	38.167-37.583	-2.533	-2.445	-3.319	-2.807
L36	37.583-37.333	-2.538	-2.449	-3.325	-2.811
L37	37.333-35.750	-2.545	-2.457	-3.334	-2.820
L38	35.750-35.500	-2.552	-2.463	-3.342	-2.827
L39	35.500-30.500	-2.840	-2.742	-3.623	-3.067
L40	30.500-25.500	-3.794	-3.666	-4.460	-3.781
L41	25.500-20.500	-3.847	-3.720	-4.518	-3.837
L42	20.500-15.500	-3.899	-3.774	-4.574	-3.891
L43	15.500-10.500	-3.951	-3.826	-4.625	-3.944
L44	10.500-5.500	-4.002	-3.879	-4.669	-3.995
L45	5.500-0.500	-4.053	-3.930	-4.694	-4.042
L46	0.500-0.000	-5.894	-5.718	-6.050	-5.285

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	43	MC10x28.5	158.83 - 160.00	1.0000	1.0000
L1	44	MC10x28.5	158.83 - 160.00	1.0000	1.0000
L1	45	MC10x28.5	158.83 - 160.00	1.0000	1.0000
L1	55	LDF7-50A(1-5/8)	155.00 - 160.00	1.0000	1.0000
L1	56	LDF7-50A(1-5/8)	155.00 - 160.00	1.0000	1.0000
L1	57	WR-VG86ST-BRD(3/4)	155.00 - 160.00	1.0000	1.0000
L2	55	LDF7-50A(1-5/8)	150.50 - 155.00	1.0000	1.0000
L2	56	LDF7-50A(1-5/8)	150.50 - 155.00	1.0000	1.0000
L2	57	WR-VG86ST-BRD(3/4)	150.50 - 155.00	1.0000	1.0000
L3	55	LDF7-50A(1-5/8)	150.00 - 150.50	1.0000	1.0000
L3	56	LDF7-50A(1-5/8)	150.00 - 150.50	1.0000	1.0000
L3	57	WR-VG86ST-BRD(3/4)	150.00 - 150.50	1.0000	1.0000
L4	10	HB158-1-08U8-S8J18(1-5/8)	145.00 - 149.00	1.0000	1.0000
L4	55	LDF7-50A(1-5/8)	145.00 - 150.00	1.0000	1.0000
L4	56	LDF7-50A(1-5/8)	145.00 - 150.00	1.0000	1.0000
L4	57	WR-VG86ST-BRD(3/4)	145.00 - 150.00	1.0000	1.0000
L5	10	HB158-1-08U8-S8J18(1-5/8)	140.00 - 145.00	1.0000	1.0000
L5	55	LDF7-50A(1-5/8)	140.00 - 145.00	1.0000	1.0000
L5	56	LDF7-50A(1-5/8)	140.00 - 145.00	1.0000	1.0000
L5	57	WR-VG86ST-BRD(3/4)	140.00 - 145.00	1.0000	1.0000
L6	10	HB158-1-08U8-S8J18(1-5/8)	135.00 - 140.00	1.0000	1.0000
L6	55	LDF7-50A(1-5/8)	135.00 - 140.00	1.0000	1.0000
L6	56	LDF7-50A(1-5/8)	135.00 - 140.00	1.0000	1.0000
L6	57	WR-VG86ST-BRD(3/4)	135.00 - 140.00	1.0000	1.0000
L7	10	HB158-1-08U8-S8J18(1-5/8)	130.00 - 135.00	1.0000	1.0000
L7	55	LDF7-50A(1-5/8)	130.00 - 135.00	1.0000	1.0000
L7	56	LDF7-50A(1-5/8)	130.00 - 135.00	1.0000	1.0000
L7	57	WR-VG86ST-BRD(3/4)	130.00 - 135.00	1.0000	1.0000
L8	1	CU12PSM9P6XXX(1-1/2)	125.00 - 127.00	1.0000	1.0000
L8	10	HB158-1-08U8-S8J18(1-5/8)	125.00 - 130.00	1.0000	1.0000
L8	55	LDF7-50A(1-5/8)	125.00 - 130.00	1.0000	1.0000
L8	56	LDF7-50A(1-5/8)	125.00 - 130.00	1.0000	1.0000
L8	57	WR-VG86ST-BRD(3/4)	125.00 - 130.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	1	CU12PSM9P6XXX(1-1/2)	120.00 - 125.00	1.0000	1.0000
L9	10	HB158-1-08U8-S8J18(1-5/8)	120.00 - 125.00	1.0000	1.0000
L9	39	PL 4.25"x1"	120.00 - 121.25	1.0000	1.0000
L9	40	PL 4.25"x1"	120.00 - 121.25	1.0000	1.0000
L9	41	PL 4.25"x1"	120.00 - 121.25	1.0000	1.0000
L9	55	LDF7-50A(1-5/8)	120.00 - 125.00	1.0000	1.0000
L9	56	LDF7-50A(1-5/8)	120.00 - 125.00	1.0000	1.0000
L9	57	WR-VG86ST-BRD(3/4)	120.00 - 125.00	1.0000	1.0000
L10	1	CU12PSM9P6XXX(1-1/2)	119.58 - 120.00	1.0000	1.0000
L10	10	HB158-1-08U8-S8J18(1-5/8)	119.58 - 120.00	1.0000	1.0000
L10	39	PL 4.25"x1"	119.58 - 120.00	1.0000	1.0000
L10	40	PL 4.25"x1"	119.58 - 120.00	1.0000	1.0000
L10	41	PL 4.25"x1"	119.58 - 120.00	1.0000	1.0000
L10	55	LDF7-50A(1-5/8)	119.58 - 120.00	1.0000	1.0000
L10	56	LDF7-50A(1-5/8)	119.58 - 120.00	1.0000	1.0000
L10	57	WR-VG86ST-BRD(3/4)	119.58 - 120.00	1.0000	1.0000
L11	1	CU12PSM9P6XXX(1-1/2)	119.33 - 119.58	1.0000	1.0000
L11	10	HB158-1-08U8-S8J18(1-5/8)	119.33 - 119.58	1.0000	1.0000
L11	39	PL 4.25"x1"	119.33 - 119.58	1.0000	1.0000
L11	40	PL 4.25"x1"	119.33 - 119.58	1.0000	1.0000
L11	41	PL 4.25"x1"	119.33 - 119.58	1.0000	1.0000
L11	55	LDF7-50A(1-5/8)	119.33 - 119.58	1.0000	1.0000
L11	56	LDF7-50A(1-5/8)	119.33 - 119.58	1.0000	1.0000
L11	57	WR-VG86ST-BRD(3/4)	119.33 - 119.58	1.0000	1.0000
L12	1	CU12PSM9P6XXX(1-1/2)	114.33 - 119.33	1.0000	1.0000
L12	10	HB158-1-08U8-S8J18(1-5/8)	114.33 - 119.33	1.0000	1.0000
L12	20	AL7-50(1-5/8)	114.33 - 116.00	1.0000	1.0000
L12	39	PL 4.25"x1"	114.33 - 119.33	1.0000	1.0000
L12	40	PL 4.25"x1"	114.33 - 119.33	1.0000	1.0000
L12	41	PL 4.25"x1"	114.33 - 119.33	1.0000	1.0000
L12	55	LDF7-50A(1-5/8)	114.33 - 119.33	1.0000	1.0000
L12	56	LDF7-50A(1-5/8)	114.33 - 119.33	1.0000	1.0000
L12	57	WR-VG86ST-BRD(3/4)	114.33 - 119.33	1.0000	1.0000
L13	1	CU12PSM9P6XXX(1-1/2)	111.83 - 114.33	1.0000	1.0000
L13	10	HB158-1-08U8-S8J18(1-	111.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		5/8)	114.33		
L13	20	AL7-50(1-5/8)	111.83 - 114.33	1.0000	1.0000
L13	35	PL 4.25"x1"	111.83 - 113.50	1.0000	1.0000
L13	36	PL 4.25"x1"	111.83 - 113.50	1.0000	1.0000
L13	37	PL 4.25"x1"	111.83 - 113.50	1.0000	1.0000
L13	39	PL 4.25"x1"	111.83 - 114.33	1.0000	1.0000
L13	40	PL 4.25"x1"	111.83 - 114.33	1.0000	1.0000
L13	41	PL 4.25"x1"	111.83 - 114.33	1.0000	1.0000
L13	55	LDF7-50A(1-5/8)	111.83 - 114.33	1.0000	1.0000
L13	56	LDF7-50A(1-5/8)	111.83 - 114.33	1.0000	1.0000
L13	57	WR-VG86ST-BRD(3/4)	111.83 - 114.33	1.0000	1.0000
L14	1	CU12PSM9P6XXX(1-1/2)	111.58 - 111.83	1.0000	1.0000
L14	10	HB158-1-08U8-S8J18(1-5/8)	111.58 - 111.83	1.0000	1.0000
L14	20	AL7-50(1-5/8)	111.58 - 111.83	1.0000	1.0000
L14	35	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	36	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	37	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	39	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	40	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	41	PL 4.25"x1"	111.58 - 111.83	1.0000	1.0000
L14	55	LDF7-50A(1-5/8)	111.58 - 111.83	1.0000	1.0000
L14	56	LDF7-50A(1-5/8)	111.58 - 111.83	1.0000	1.0000
L14	57	WR-VG86ST-BRD(3/4)	111.58 - 111.83	1.0000	1.0000
L15	1	CU12PSM9P6XXX(1-1/2)	106.58 - 111.58	1.0000	1.0000
L15	10	HB158-1-08U8-S8J18(1-5/8)	106.58 - 111.58	1.0000	1.0000
L15	20	AL7-50(1-5/8)	106.58 - 111.58	1.0000	1.0000
L15	35	PL 4.25"x1"	106.58 - 111.58	1.0000	1.0000
L15	36	PL 4.25"x1"	106.58 - 111.58	1.0000	1.0000
L15	37	PL 4.25"x1"	106.58 - 111.58	1.0000	1.0000
L15	39	PL 4.25"x1"	110.50 - 111.58	1.0000	1.0000
L15	40	PL 4.25"x1"	110.50 - 111.58	1.0000	1.0000
L15	41	PL 4.25"x1"	110.50 - 111.58	1.0000	1.0000
L15	55	LDF7-50A(1-5/8)	106.58 - 111.58	1.0000	1.0000
L15	56	LDF7-50A(1-5/8)	106.58 - 111.58	1.0000	1.0000
L15	57	WR-VG86ST-BRD(3/4)	106.58 - 111.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	1	CU12PSM9P6XXX(1-1/2)	97.17 - 106.58	1.0000	1.0000
L16	10	HB158-1-08U8-S8J18(1-5/8)	97.17 - 106.58	1.0000	1.0000
L16	20	AL7-50(1-5/8)	97.17 - 106.58	1.0000	1.0000
L16	35	PL 4.25"x1"	97.17 - 106.58	1.0000	1.0000
L16	36	PL 4.25"x1"	97.17 - 106.58	1.0000	1.0000
L16	37	PL 4.25"x1"	97.17 - 106.58	1.0000	1.0000
L16	55	LDF7-50A(1-5/8)	97.17 - 106.58	1.0000	1.0000
L16	56	LDF7-50A(1-5/8)	97.17 - 106.58	1.0000	1.0000
L16	57	WR-VG86ST-BRD(3/4)	97.17 - 106.58	1.0000	1.0000
L17	1	CU12PSM9P6XXX(1-1/2)	97.00 - 97.17	1.0000	1.0000
L17	10	HB158-1-08U8-S8J18(1-5/8)	97.00 - 97.17	1.0000	1.0000
L17	20	AL7-50(1-5/8)	97.00 - 97.17	1.0000	1.0000
L17	35	PL 4.25"x1"	97.00 - 97.17	1.0000	1.0000
L17	36	PL 4.25"x1"	97.00 - 97.17	1.0000	1.0000
L17	37	PL 4.25"x1"	97.00 - 97.17	1.0000	1.0000
L17	55	LDF7-50A(1-5/8)	97.00 - 97.17	1.0000	1.0000
L17	56	LDF7-50A(1-5/8)	97.00 - 97.17	1.0000	1.0000
L17	57	WR-VG86ST-BRD(3/4)	97.00 - 97.17	1.0000	1.0000
L18	1	CU12PSM9P6XXX(1-1/2)	92.00 - 97.00	1.0000	1.0000
L18	10	HB158-1-08U8-S8J18(1-5/8)	92.00 - 97.00	1.0000	1.0000
L18	20	AL7-50(1-5/8)	92.00 - 97.00	1.0000	1.0000
L18	35	PL 4.25"x1"	92.00 - 97.00	1.0000	1.0000
L18	36	PL 4.25"x1"	92.00 - 97.00	1.0000	1.0000
L18	37	PL 4.25"x1"	92.00 - 97.00	1.0000	1.0000
L18	55	LDF7-50A(1-5/8)	92.00 - 97.00	1.0000	1.0000
L18	56	LDF7-50A(1-5/8)	92.00 - 97.00	1.0000	1.0000
L18	57	WR-VG86ST-BRD(3/4)	92.00 - 97.00	1.0000	1.0000
L19	1	CU12PSM9P6XXX(1-1/2)	87.00 - 92.00	1.0000	1.0000
L19	10	HB158-1-08U8-S8J18(1-5/8)	87.00 - 92.00	1.0000	1.0000
L19	20	AL7-50(1-5/8)	87.00 - 92.00	1.0000	1.0000
L19	35	PL 4.25"x1"	87.00 - 92.00	1.0000	1.0000
L19	36	PL 4.25"x1"	87.00 - 92.00	1.0000	1.0000
L19	37	PL 4.25"x1"	87.00 - 92.00	1.0000	1.0000
L19	55	LDF7-50A(1-5/8)	87.00 - 92.00	1.0000	1.0000
L19	56	LDF7-50A(1-5/8)	87.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	57	WR-VG86ST-BRD(3/4)	92.00 87.00 - 92.00	1.0000	1.0000
L20	1	CU12PSM9P6XXX(1-1/2)	82.00 - 87.00	1.0000	1.0000
L20	10	HB158-1-08U8-S8J18(1-5/8)	82.00 - 87.00	1.0000	1.0000
L20	20	AL7-50(1-5/8)	82.00 - 87.00	1.0000	1.0000
L20	35	PL 4.25"x1"	82.00 - 87.00	1.0000	1.0000
L20	36	PL 4.25"x1"	82.00 - 87.00	1.0000	1.0000
L20	37	PL 4.25"x1"	82.00 - 87.00	1.0000	1.0000
L20	51	CCI 6.5" x 1.25" Plate	82.00 - 82.08	1.0000	1.0000
L20	52	CCI 6.5" x 1.25" Plate	82.00 - 82.08	1.0000	1.0000
L20	53	CCI 6.5" x 1.25" Plate	82.00 - 82.08	1.0000	1.0000
L20	55	LDF7-50A(1-5/8)	82.00 - 87.00	1.0000	1.0000
L20	56	LDF7-50A(1-5/8)	82.00 - 87.00	1.0000	1.0000
L20	57	WR-VG86ST-BRD(3/4)	82.00 - 87.00	1.0000	1.0000
L21	1	CU12PSM9P6XXX(1-1/2)	79.33 - 82.00	1.0000	1.0000
L21	10	HB158-1-08U8-S8J18(1-5/8)	79.33 - 82.00	1.0000	1.0000
L21	20	AL7-50(1-5/8)	79.33 - 82.00	1.0000	1.0000
L21	35	PL 4.25"x1"	79.33 - 82.00	1.0000	1.0000
L21	36	PL 4.25"x1"	79.33 - 82.00	1.0000	1.0000
L21	37	PL 4.25"x1"	79.33 - 82.00	1.0000	1.0000
L21	51	CCI 6.5" x 1.25" Plate	79.33 - 82.00	1.0000	1.0000
L21	52	CCI 6.5" x 1.25" Plate	79.33 - 82.00	1.0000	1.0000
L21	53	CCI 6.5" x 1.25" Plate	79.33 - 82.00	1.0000	1.0000
L21	55	LDF7-50A(1-5/8)	79.33 - 82.00	1.0000	1.0000
L21	56	LDF7-50A(1-5/8)	79.33 - 82.00	1.0000	1.0000
L21	57	WR-VG86ST-BRD(3/4)	79.33 - 82.00	1.0000	1.0000
L22	1	CU12PSM9P6XXX(1-1/2)	79.08 - 79.33	1.0000	1.0000
L22	10	HB158-1-08U8-S8J18(1-5/8)	79.08 - 79.33	1.0000	1.0000
L22	20	AL7-50(1-5/8)	79.08 - 79.33	1.0000	1.0000
L22	35	PL 4.25"x1"	79.08 - 79.33	1.0000	1.0000
L22	36	PL 4.25"x1"	79.08 - 79.33	1.0000	1.0000
L22	37	PL 4.25"x1"	79.08 - 79.33	1.0000	1.0000
L22	51	CCI 6.5" x 1.25" Plate	79.08 - 79.33	1.0000	1.0000
L22	52	CCI 6.5" x 1.25" Plate	79.08 - 79.33	1.0000	1.0000
L22	53	CCI 6.5" x 1.25" Plate	79.08 - 79.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	55	LDF7-50A(1-5/8)	79.08 - 79.33	1.0000	1.0000
L22	56	LDF7-50A(1-5/8)	79.08 - 79.33	1.0000	1.0000
L22	57	WR-VG86ST-BRD(3/4)	79.08 - 79.33	1.0000	1.0000
L23	1	CU12PSM9P6XXX(1-1/2)	75.25 - 79.08	1.0000	1.0000
L23	10	HB158-1-08U8-S8J18(1-5/8)	75.25 - 79.08	1.0000	1.0000
L23	20	AL7-50(1-5/8)	75.25 - 79.08	1.0000	1.0000
L23	35	PL 4.25"x1"	75.25 - 79.08	1.0000	1.0000
L23	36	PL 4.25"x1"	75.25 - 79.08	1.0000	1.0000
L23	37	PL 4.25"x1"	75.25 - 79.08	1.0000	1.0000
L23	51	CCI 6.5" x 1.25" Plate	75.25 - 79.08	1.0000	1.0000
L23	52	CCI 6.5" x 1.25" Plate	75.25 - 79.08	1.0000	1.0000
L23	53	CCI 6.5" x 1.25" Plate	75.25 - 79.08	1.0000	1.0000
L23	55	LDF7-50A(1-5/8)	75.25 - 79.08	1.0000	1.0000
L23	56	LDF7-50A(1-5/8)	75.25 - 79.08	1.0000	1.0000
L23	57	WR-VG86ST-BRD(3/4)	75.25 - 79.08	1.0000	1.0000
L24	1	CU12PSM9P6XXX(1-1/2)	75.00 - 75.25	1.0000	1.0000
L24	10	HB158-1-08U8-S8J18(1-5/8)	75.00 - 75.25	1.0000	1.0000
L24	20	AL7-50(1-5/8)	75.00 - 75.25	1.0000	1.0000
L24	35	PL 4.25"x1"	75.00 - 75.25	1.0000	1.0000
L24	36	PL 4.25"x1"	75.00 - 75.25	1.0000	1.0000
L24	37	PL 4.25"x1"	75.00 - 75.25	1.0000	1.0000
L24	51	CCI 6.5" x 1.25" Plate	75.00 - 75.25	1.0000	1.0000
L24	52	CCI 6.5" x 1.25" Plate	75.00 - 75.25	1.0000	1.0000
L24	53	CCI 6.5" x 1.25" Plate	75.00 - 75.25	1.0000	1.0000
L24	55	LDF7-50A(1-5/8)	75.00 - 75.25	1.0000	1.0000
L24	56	LDF7-50A(1-5/8)	75.00 - 75.25	1.0000	1.0000
L24	57	WR-VG86ST-BRD(3/4)	75.00 - 75.25	1.0000	1.0000
L25	1	CU12PSM9P6XXX(1-1/2)	70.00 - 75.00	1.0000	1.0000
L25	10	HB158-1-08U8-S8J18(1-5/8)	70.00 - 75.00	1.0000	1.0000
L25	20	AL7-50(1-5/8)	70.00 - 75.00	1.0000	1.0000
L25	31	PL 4.25"x1"	70.00 - 73.50	1.0000	1.0000
L25	32	PL 4.25"x1"	70.00 - 73.50	1.0000	1.0000
L25	33	PL 4.25"x1"	70.00 - 73.50	1.0000	1.0000
L25	35	PL 4.25"x1"	73.50 - 75.00	1.0000	1.0000
L25	36	PL 4.25"x1"	73.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	37	PL 4.25"x1"	73.50 - 75.00	1.0000	1.0000
L25	51	CCI 6.5" x 1.25" Plate	70.00 - 75.00	1.0000	1.0000
L25	52	CCI 6.5" x 1.25" Plate	70.00 - 75.00	1.0000	1.0000
L25	53	CCI 6.5" x 1.25" Plate	70.00 - 75.00	1.0000	1.0000
L25	55	LDF7-50A(1-5/8)	70.00 - 75.00	1.0000	1.0000
L25	56	LDF7-50A(1-5/8)	70.00 - 75.00	1.0000	1.0000
L25	57	WR-VG86ST-BRD(3/4)	70.00 - 75.00	1.0000	1.0000
L26	1	CU12PSM9P6XXX(1-1/2)	65.00 - 70.00	1.0000	1.0000
L26	10	HB158-1-08U8-S8J18(1-5/8)	65.00 - 70.00	1.0000	1.0000
L26	20	AL7-50(1-5/8)	65.00 - 70.00	1.0000	1.0000
L26	31	PL 4.25"x1"	65.00 - 70.00	1.0000	1.0000
L26	32	PL 4.25"x1"	65.00 - 70.00	1.0000	1.0000
L26	33	PL 4.25"x1"	65.00 - 70.00	1.0000	1.0000
L26	47	CCI 8.5" x 1.25" Plate	65.00 - 67.00	1.0000	1.0000
L26	48	CCI 8.5" x 1.25" Plate	65.00 - 67.00	1.0000	1.0000
L26	49	CCI 8.5" x 1.25" Plate	65.00 - 67.00	1.0000	1.0000
L26	51	CCI 6.5" x 1.25" Plate	67.08 - 70.00	1.0000	1.0000
L26	52	CCI 6.5" x 1.25" Plate	67.08 - 70.00	1.0000	1.0000
L26	53	CCI 6.5" x 1.25" Plate	67.08 - 70.00	1.0000	1.0000
L26	55	LDF7-50A(1-5/8)	65.00 - 70.00	1.0000	1.0000
L26	56	LDF7-50A(1-5/8)	65.00 - 70.00	1.0000	1.0000
L26	57	WR-VG86ST-BRD(3/4)	65.00 - 70.00	1.0000	1.0000
L27	1	CU12PSM9P6XXX(1-1/2)	63.25 - 65.00	1.0000	1.0000
L27	10	HB158-1-08U8-S8J18(1-5/8)	63.25 - 65.00	1.0000	1.0000
L27	20	AL7-50(1-5/8)	63.25 - 65.00	1.0000	1.0000
L27	31	PL 4.25"x1"	63.25 - 65.00	1.0000	1.0000
L27	32	PL 4.25"x1"	63.25 - 65.00	1.0000	1.0000
L27	33	PL 4.25"x1"	63.25 - 65.00	1.0000	1.0000
L27	47	CCI 8.5" x 1.25" Plate	63.25 - 65.00	1.0000	1.0000
L27	48	CCI 8.5" x 1.25" Plate	63.25 - 65.00	1.0000	1.0000
L27	49	CCI 8.5" x 1.25" Plate	63.25 - 65.00	1.0000	1.0000
L27	55	LDF7-50A(1-5/8)	63.25 - 65.00	1.0000	1.0000
L27	56	LDF7-50A(1-5/8)	63.25 - 65.00	1.0000	1.0000
L27	57	WR-VG86ST-BRD(3/4)	63.25 - 65.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	1	CU12PSM9P6XXX(1-1/2)	63.00 - 63.25	1.0000	1.0000
L28	10	HB158-1-08U8-S8J18(1-5/8)	63.00 - 63.25	1.0000	1.0000
L28	20	AL7-50(1-5/8)	63.00 - 63.25	1.0000	1.0000
L28	31	PL 4.25"x1"	63.00 - 63.25	1.0000	1.0000
L28	32	PL 4.25"x1"	63.00 - 63.25	1.0000	1.0000
L28	33	PL 4.25"x1"	63.00 - 63.25	1.0000	1.0000
L28	47	CCI 8.5" x 1.25" Plate	63.00 - 63.25	1.0000	1.0000
L28	48	CCI 8.5" x 1.25" Plate	63.00 - 63.25	1.0000	1.0000
L28	49	CCI 8.5" x 1.25" Plate	63.00 - 63.25	1.0000	1.0000
L28	55	LDF7-50A(1-5/8)	63.00 - 63.25	1.0000	1.0000
L28	56	LDF7-50A(1-5/8)	63.00 - 63.25	1.0000	1.0000
L28	57	WR-VG86ST-BRD(3/4)	63.00 - 63.25	1.0000	1.0000
L29	1	CU12PSM9P6XXX(1-1/2)	58.00 - 63.00	1.0000	1.0000
L29	10	HB158-1-08U8-S8J18(1-5/8)	58.00 - 63.00	1.0000	1.0000
L29	20	AL7-50(1-5/8)	58.00 - 63.00	1.0000	1.0000
L29	31	PL 4.25"x1"	58.00 - 63.00	1.0000	1.0000
L29	32	PL 4.25"x1"	58.00 - 63.00	1.0000	1.0000
L29	33	PL 4.25"x1"	58.00 - 63.00	1.0000	1.0000
L29	47	CCI 8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L29	48	CCI 8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L29	49	CCI 8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L29	55	LDF7-50A(1-5/8)	58.00 - 63.00	1.0000	1.0000
L29	56	LDF7-50A(1-5/8)	58.00 - 63.00	1.0000	1.0000
L29	57	WR-VG86ST-BRD(3/4)	58.00 - 63.00	1.0000	1.0000
L30	1	CU12PSM9P6XXX(1-1/2)	49.08 - 58.00	1.0000	1.0000
L30	10	HB158-1-08U8-S8J18(1-5/8)	49.08 - 58.00	1.0000	1.0000
L30	20	AL7-50(1-5/8)	49.08 - 58.00	1.0000	1.0000
L30	31	PL 4.25"x1"	49.08 - 58.00	1.0000	1.0000
L30	32	PL 4.25"x1"	49.08 - 58.00	1.0000	1.0000
L30	33	PL 4.25"x1"	49.08 - 58.00	1.0000	1.0000
L30	47	CCI 8.5" x 1.25" Plate	49.08 - 58.00	1.0000	1.0000
L30	48	CCI 8.5" x 1.25" Plate	49.08 - 58.00	1.0000	1.0000
L30	49	CCI 8.5" x 1.25" Plate	49.08 - 58.00	1.0000	1.0000
L30	55	LDF7-50A(1-5/8)	49.08 - 58.00	1.0000	1.0000
L30	56	LDF7-50A(1-5/8)	49.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L30	57	WR-VG86ST-BRD(3/4)	58.00 49.08 -	1.0000	1.0000
L31	1	CU12PSM9P6XXX(1-1/2)	58.00 48.08 -	1.0000	1.0000
L31	10	HB158-1-08U8-S8J18(1-5/8)	49.08 48.08 -	1.0000	1.0000
L31	20	AL7-50(1-5/8)	49.08 48.08 -	1.0000	1.0000
L31	31	PL 4.25"x1"	49.08 48.08 -	1.0000	1.0000
L31	32	PL 4.25"x1"	49.08 48.08 -	1.0000	1.0000
L31	33	PL 4.25"x1"	49.08 48.08 -	1.0000	1.0000
L31	47	CCI 8.5" x 1.25" Plate	49.08 48.08 -	1.0000	1.0000
L31	48	CCI 8.5" x 1.25" Plate	49.08 48.08 -	1.0000	1.0000
L31	49	CCI 8.5" x 1.25" Plate	49.08 48.08 -	1.0000	1.0000
L31	55	LDF7-50A(1-5/8)	49.08 48.08 -	1.0000	1.0000
L31	56	LDF7-50A(1-5/8)	49.08 48.08 -	1.0000	1.0000
L31	57	WR-VG86ST-BRD(3/4)	49.08 48.08 -	1.0000	1.0000
L32	1	CU12PSM9P6XXX(1-1/2)	48.08 43.08 -	1.0000	1.0000
L32	10	HB158-1-08U8-S8J18(1-5/8)	48.08 43.08 -	1.0000	1.0000
L32	20	AL7-50(1-5/8)	48.08 43.08 -	1.0000	1.0000
L32	31	PL 4.25"x1"	48.08 43.08 -	1.0000	1.0000
L32	32	PL 4.25"x1"	48.08 43.08 -	1.0000	1.0000
L32	33	PL 4.25"x1"	48.08 43.08 -	1.0000	1.0000
L32	47	CCI 8.5" x 1.25" Plate	48.08 43.08 -	1.0000	1.0000
L32	48	CCI 8.5" x 1.25" Plate	48.08 43.08 -	1.0000	1.0000
L32	49	CCI 8.5" x 1.25" Plate	48.08 43.08 -	1.0000	1.0000
L32	55	LDF7-50A(1-5/8)	48.08 43.08 -	1.0000	1.0000
L32	56	LDF7-50A(1-5/8)	48.08 43.08 -	1.0000	1.0000
L32	57	WR-VG86ST-BRD(3/4)	48.08 43.08 -	1.0000	1.0000
L33	1	CU12PSM9P6XXX(1-1/2)	48.08 38.42 -	1.0000	1.0000
L33	10	HB158-1-08U8-S8J18(1-5/8)	43.08 38.42 -	1.0000	1.0000
L33	20	AL7-50(1-5/8)	43.08 38.42 -	1.0000	1.0000
L33	27	PL 6'x1"	43.08 38.42 -	1.0000	1.0000
L33	28	PL 6'x1"	40.50 38.42 -	1.0000	1.0000
L33	29	PL 6'x1"	40.50 38.42 -	1.0000	1.0000
L33	31	PL 4.25"x1"	40.50 40.50 -	1.0000	1.0000
L33	32	PL 4.25"x1"	43.08 40.50 -	1.0000	1.0000
L33	33	PL 4.25"x1"	43.08 40.50 -	1.0000	1.0000
			43.08		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	47	CCI 8.5" x 1.25" Plate	38.42 - 43.08	1.0000	1.0000
L33	48	CCI 8.5" x 1.25" Plate	38.42 - 43.08	1.0000	1.0000
L33	49	CCI 8.5" x 1.25" Plate	38.42 - 43.08	1.0000	1.0000
L33	55	LDF7-50A(1-5/8)	38.42 - 43.08	1.0000	1.0000
L33	56	LDF7-50A(1-5/8)	38.42 - 43.08	1.0000	1.0000
L33	57	WR-VG86ST-BRD(3/4)	38.42 - 43.08	1.0000	1.0000
L34	1	CU12PSM9P6XXX(1-1/2)	38.17 - 38.42	1.0000	1.0000
L34	10	HB158-1-08U8-S8J18(1-5/8)	38.17 - 38.42	1.0000	1.0000
L34	20	AL7-50(1-5/8)	38.17 - 38.42	1.0000	1.0000
L34	27	PL 6'x1"	38.17 - 38.42	1.0000	1.0000
L34	28	PL 6'x1"	38.17 - 38.42	1.0000	1.0000
L34	29	PL 6'x1"	38.17 - 38.42	1.0000	1.0000
L34	47	CCI 8.5" x 1.25" Plate	38.17 - 38.42	1.0000	1.0000
L34	48	CCI 8.5" x 1.25" Plate	38.17 - 38.42	1.0000	1.0000
L34	49	CCI 8.5" x 1.25" Plate	38.17 - 38.42	1.0000	1.0000
L34	55	LDF7-50A(1-5/8)	38.17 - 38.42	1.0000	1.0000
L34	56	LDF7-50A(1-5/8)	38.17 - 38.42	1.0000	1.0000
L34	57	WR-VG86ST-BRD(3/4)	38.17 - 38.42	1.0000	1.0000
L35	1	CU12PSM9P6XXX(1-1/2)	37.58 - 38.17	1.0000	1.0000
L35	10	HB158-1-08U8-S8J18(1-5/8)	37.58 - 38.17	1.0000	1.0000
L35	20	AL7-50(1-5/8)	37.58 - 38.17	1.0000	1.0000
L35	27	PL 6'x1"	37.58 - 38.17	1.0000	1.0000
L35	28	PL 6'x1"	37.58 - 38.17	1.0000	1.0000
L35	29	PL 6'x1"	37.58 - 38.17	1.0000	1.0000
L35	47	CCI 8.5" x 1.25" Plate	37.58 - 38.17	1.0000	1.0000
L35	48	CCI 8.5" x 1.25" Plate	37.58 - 38.17	1.0000	1.0000
L35	49	CCI 8.5" x 1.25" Plate	37.58 - 38.17	1.0000	1.0000
L35	55	LDF7-50A(1-5/8)	37.58 - 38.17	1.0000	1.0000
L35	56	LDF7-50A(1-5/8)	37.58 - 38.17	1.0000	1.0000
L35	57	WR-VG86ST-BRD(3/4)	37.58 - 38.17	1.0000	1.0000
L36	1	CU12PSM9P6XXX(1-1/2)	37.33 - 37.58	1.0000	1.0000
L36	10	HB158-1-08U8-S8J18(1-5/8)	37.33 - 37.58	1.0000	1.0000
L36	20	AL7-50(1-5/8)	37.33 - 37.58	1.0000	1.0000
L36	27	PL 6'x1"	37.33 - 37.58	1.0000	1.0000
L36	28	PL 6'x1"	37.33 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	29	PL 6'x1"	37.58 - 37.33	1.0000	1.0000
L36	47	CCI 8.5" x 1.25" Plate	37.58 - 37.33	1.0000	1.0000
L36	48	CCI 8.5" x 1.25" Plate	37.58 - 37.33	1.0000	1.0000
L36	49	CCI 8.5" x 1.25" Plate	37.58 - 37.33	1.0000	1.0000
L36	55	LDF7-50A(1-5/8)	37.58 - 37.33	1.0000	1.0000
L36	56	LDF7-50A(1-5/8)	37.58 - 37.33	1.0000	1.0000
L36	57	WR-VG86ST-BRD(3/4)	37.58 - 37.33	1.0000	1.0000
L37	1	CU12PSM9P6XXX(1-1/2)	37.33 - 35.75	1.0000	1.0000
L37	10	HB158-1-08U8-S8J18(1-5/8)	37.33 - 35.75	1.0000	1.0000
L37	20	AL7-50(1-5/8)	37.33 - 35.75	1.0000	1.0000
L37	27	PL 6'x1"	37.33 - 35.75	1.0000	1.0000
L37	28	PL 6'x1"	37.33 - 35.75	1.0000	1.0000
L37	29	PL 6'x1"	37.33 - 35.75	1.0000	1.0000
L37	47	CCI 8.5" x 1.25" Plate	37.33 - 35.75	1.0000	1.0000
L37	48	CCI 8.5" x 1.25" Plate	37.33 - 35.75	1.0000	1.0000
L37	49	CCI 8.5" x 1.25" Plate	37.33 - 35.75	1.0000	1.0000
L37	55	LDF7-50A(1-5/8)	37.33 - 35.75	1.0000	1.0000
L37	56	LDF7-50A(1-5/8)	37.33 - 35.75	1.0000	1.0000
L37	57	WR-VG86ST-BRD(3/4)	37.33 - 35.75	1.0000	1.0000
L38	1	CU12PSM9P6XXX(1-1/2)	35.75 - 35.50	1.0000	1.0000
L38	10	HB158-1-08U8-S8J18(1-5/8)	35.75 - 35.50	1.0000	1.0000
L38	20	AL7-50(1-5/8)	35.75 - 35.50	1.0000	1.0000
L38	27	PL 6'x1"	35.75 - 35.50	1.0000	1.0000
L38	28	PL 6'x1"	35.75 - 35.50	1.0000	1.0000
L38	29	PL 6'x1"	35.75 - 35.50	1.0000	1.0000
L38	47	CCI 8.5" x 1.25" Plate	35.75 - 35.50	1.0000	1.0000
L38	48	CCI 8.5" x 1.25" Plate	35.75 - 35.50	1.0000	1.0000
L38	49	CCI 8.5" x 1.25" Plate	35.75 - 35.50	1.0000	1.0000
L38	55	LDF7-50A(1-5/8)	35.75 - 35.50	1.0000	1.0000
L38	56	LDF7-50A(1-5/8)	35.75 - 35.50	1.0000	1.0000
L38	57	WR-VG86ST-BRD(3/4)	35.75 - 35.50	1.0000	1.0000
L39	1	CU12PSM9P6XXX(1-1/2)	30.50 - 35.50	1.0000	1.0000
L39	10	HB158-1-08U8-S8J18(1-5/8)	30.50 - 35.50	1.0000	1.0000
L39	20	AL7-50(1-5/8)	30.50 - 35.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	27	PL 6'x1"	30.50 - 35.50	1.0000	1.0000
L39	28	PL 6'x1"	30.50 - 35.50	1.0000	1.0000
L39	29	PL 6'x1"	30.50 - 35.50	1.0000	1.0000
L39	47	CCI 8.5" x 1.25" Plate	32.00 - 35.50	1.0000	1.0000
L39	48	CCI 8.5" x 1.25" Plate	32.00 - 35.50	1.0000	1.0000
L39	49	CCI 8.5" x 1.25" Plate	32.00 - 35.50	1.0000	1.0000
L39	55	LDF7-50A(1-5/8)	30.50 - 35.50	1.0000	1.0000
L39	56	LDF7-50A(1-5/8)	30.50 - 35.50	1.0000	1.0000
L39	57	WR-VG86ST-BRD(3/4)	30.50 - 35.50	1.0000	1.0000
L40	1	CU12PSM9P6XXX(1-1/2)	25.50 - 30.50	1.0000	1.0000
L40	10	HB158-1-08U8-S8J18(1-5/8)	25.50 - 30.50	1.0000	1.0000
L40	20	AL7-50(1-5/8)	25.50 - 30.50	1.0000	1.0000
L40	27	PL 6'x1"	25.50 - 30.50	1.0000	1.0000
L40	28	PL 6'x1"	25.50 - 30.50	1.0000	1.0000
L40	29	PL 6'x1"	25.50 - 30.50	1.0000	1.0000
L40	55	LDF7-50A(1-5/8)	25.50 - 30.50	1.0000	1.0000
L40	56	LDF7-50A(1-5/8)	25.50 - 30.50	1.0000	1.0000
L40	57	WR-VG86ST-BRD(3/4)	25.50 - 30.50	1.0000	1.0000
L41	1	CU12PSM9P6XXX(1-1/2)	20.50 - 25.50	1.0000	1.0000
L41	10	HB158-1-08U8-S8J18(1-5/8)	20.50 - 25.50	1.0000	1.0000
L41	20	AL7-50(1-5/8)	20.50 - 25.50	1.0000	1.0000
L41	27	PL 6'x1"	20.50 - 25.50	1.0000	1.0000
L41	28	PL 6'x1"	20.50 - 25.50	1.0000	1.0000
L41	29	PL 6'x1"	20.50 - 25.50	1.0000	1.0000
L41	55	LDF7-50A(1-5/8)	20.50 - 25.50	1.0000	1.0000
L41	56	LDF7-50A(1-5/8)	20.50 - 25.50	1.0000	1.0000
L41	57	WR-VG86ST-BRD(3/4)	20.50 - 25.50	1.0000	1.0000
L42	1	CU12PSM9P6XXX(1-1/2)	15.50 - 20.50	1.0000	1.0000
L42	10	HB158-1-08U8-S8J18(1-5/8)	15.50 - 20.50	1.0000	1.0000
L42	20	AL7-50(1-5/8)	15.50 - 20.50	1.0000	1.0000
L42	27	PL 6'x1"	15.50 - 20.50	1.0000	1.0000
L42	28	PL 6'x1"	15.50 - 20.50	1.0000	1.0000
L42	29	PL 6'x1"	15.50 - 20.50	1.0000	1.0000
L42	55	LDF7-50A(1-5/8)	15.50 - 20.50	1.0000	1.0000
L42	56	LDF7-50A(1-5/8)	15.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			20.50		
L42	57	WR-VG86ST-BRD(3/4)	15.50 - 20.50	1.0000	1.0000
L43	1	CU12PSM9P6XXX(1-1/2)	10.50 - 15.50	1.0000	1.0000
L43	10	HB158-1-08U8-S8J18(1-5/8)	10.50 - 15.50	1.0000	1.0000
L43	20	AL7-50(1-5/8)	10.50 - 15.50	1.0000	1.0000
L43	27	PL 6'x1"	10.50 - 15.50	1.0000	1.0000
L43	28	PL 6'x1"	10.50 - 15.50	1.0000	1.0000
L43	29	PL 6'x1"	10.50 - 15.50	1.0000	1.0000
L43	55	LDF7-50A(1-5/8)	10.50 - 15.50	1.0000	1.0000
L43	56	LDF7-50A(1-5/8)	10.50 - 15.50	1.0000	1.0000
L43	57	WR-VG86ST-BRD(3/4)	10.50 - 15.50	1.0000	1.0000
L44	1	CU12PSM9P6XXX(1-1/2)	5.50 - 10.50	1.0000	1.0000
L44	10	HB158-1-08U8-S8J18(1-5/8)	5.50 - 10.50	1.0000	1.0000
L44	20	AL7-50(1-5/8)	5.50 - 10.50	1.0000	1.0000
L44	27	PL 6'x1"	5.50 - 10.50	1.0000	1.0000
L44	28	PL 6'x1"	5.50 - 10.50	1.0000	1.0000
L44	29	PL 6'x1"	5.50 - 10.50	1.0000	1.0000
L44	55	LDF7-50A(1-5/8)	5.50 - 10.50	1.0000	1.0000
L44	56	LDF7-50A(1-5/8)	5.50 - 10.50	1.0000	1.0000
L44	57	WR-VG86ST-BRD(3/4)	5.50 - 10.50	1.0000	1.0000
L45	1	CU12PSM9P6XXX(1-1/2)	0.50 - 5.50	1.0000	1.0000
L45	10	HB158-1-08U8-S8J18(1-5/8)	0.50 - 5.50	1.0000	1.0000
L45	20	AL7-50(1-5/8)	0.50 - 5.50	1.0000	1.0000
L45	27	PL 6'x1"	0.50 - 5.50	1.0000	1.0000
L45	28	PL 6'x1"	0.50 - 5.50	1.0000	1.0000
L45	29	PL 6'x1"	0.50 - 5.50	1.0000	1.0000
L45	55	LDF7-50A(1-5/8)	0.50 - 5.50	1.0000	1.0000
L45	56	LDF7-50A(1-5/8)	0.50 - 5.50	1.0000	1.0000
L45	57	WR-VG86ST-BRD(3/4)	0.50 - 5.50	1.0000	1.0000
L46	1	CU12PSM9P6XXX(1-1/2)	0.00 - 0.50	1.0000	1.0000
L46	10	HB158-1-08U8-S8J18(1-5/8)	0.00 - 0.50	1.0000	1.0000
L46	20	AL7-50(1-5/8)	0.00 - 0.50	1.0000	1.0000
L46	55	LDF7-50A(1-5/8)	0.00 - 0.50	1.0000	1.0000
L46	56	LDF7-50A(1-5/8)	0.00 - 0.50	1.0000	1.0000
L46	57	WR-VG86ST-BRD(3/4)	0.00 - 0.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L1	43	MC10x28.5	158.83 - 160.00	Auto	1.0000
L1	44	MC10x28.5	158.83 - 160.00	Auto	1.0000
L1	45	MC10x28.5	158.83 - 160.00	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L9	39	PL 4.25"x1"	120.00 - 121.25	Auto	0.0000
L9	40	PL 4.25"x1"	120.00 - 121.25	Auto	0.0000
L9	41	PL 4.25"x1"	120.00 - 121.25	Auto	0.0000
L10	39	PL 4.25"x1"	119.58 - 120.00	Auto	0.0000
L10	40	PL 4.25"x1"	119.58 - 120.00	Auto	0.0000
L10	41	PL 4.25"x1"	119.58 - 120.00	Auto	0.0000
L11	39	PL 4.25"x1"	119.33 - 119.58	Auto	0.0000
L11	40	PL 4.25"x1"	119.33 - 119.58	Auto	0.0000
L11	41	PL 4.25"x1"	119.33 - 119.58	Auto	0.0000
L12	39	PL 4.25"x1"	114.33 - 119.33	Auto	0.0000
L12	40	PL 4.25"x1"	114.33 - 119.33	Auto	0.0000
L12	41	PL 4.25"x1"	114.33 - 119.33	Auto	0.0000
L13	35	PL 4.25"x1"	111.83 - 113.50	Auto	0.0000
L13	36	PL 4.25"x1"	111.83 - 113.50	Auto	0.0000
L13	37	PL 4.25"x1"	111.83 - 113.50	Auto	0.0000
L13	39	PL 4.25"x1"	111.83 - 114.33	Auto	0.0000
L13	40	PL 4.25"x1"	111.83 - 114.33	Auto	0.0000
L13	41	PL 4.25"x1"	111.83 - 114.33	Auto	0.0000
L14	35	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L14	36	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L14	37	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L14	39	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L14	40	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L14	41	PL 4.25"x1"	111.58 - 111.83	Auto	0.0000
L15	35	PL 4.25"x1"	106.58 - 111.58	Auto	0.0000
L15	36	PL 4.25"x1"	106.58 - 111.58	Auto	0.0000
L15	37	PL 4.25"x1"	106.58 - 111.58	Auto	0.0000
L15	39	PL 4.25"x1"	110.50 - 111.58	Auto	0.0000
L15	40	PL 4.25"x1"	110.50 - 111.58	Auto	0.0000
L15	41	PL 4.25"x1"	110.50 - 111.58	Auto	0.0000
L16	35	PL 4.25"x1"	97.17 - 106.58	Auto	0.0000
L16	36	PL 4.25"x1"	97.17 - 106.58	Auto	0.0000
L16	37	PL 4.25"x1"	97.17 - 106.58	Auto	0.0000
L17	35	PL 4.25"x1"	97.00 - 97.17	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L17	36	PL 4.25"x1"	97.00 - 97.17	Auto	0.0000
L17	37	PL 4.25"x1"	97.00 - 97.17	Auto	0.0000
L18	35	PL 4.25"x1"	92.00 - 97.00	Auto	0.0000
L18	36	PL 4.25"x1"	92.00 - 97.00	Auto	0.0000
L18	37	PL 4.25"x1"	92.00 - 97.00	Auto	0.0000
L19	35	PL 4.25"x1"	87.00 - 92.00	Auto	0.0000
L19	36	PL 4.25"x1"	87.00 - 92.00	Auto	0.0000
L19	37	PL 4.25"x1"	87.00 - 92.00	Auto	0.0000
L20	35	PL 4.25"x1"	82.00 - 87.00	Auto	0.0000
L20	36	PL 4.25"x1"	82.00 - 87.00	Auto	0.0000
L20	37	PL 4.25"x1"	82.00 - 87.00	Auto	0.0000
L20	51	CCI 6.5" x 1.25" Plate	82.00 - 82.08	Auto	0.0000
L20	52	CCI 6.5" x 1.25" Plate	82.00 - 82.08	Auto	0.0000
L20	53	CCI 6.5" x 1.25" Plate	82.00 - 82.08	Auto	0.0000
L21	35	PL 4.25"x1"	79.33 - 82.00	Auto	0.0000
L21	36	PL 4.25"x1"	79.33 - 82.00	Auto	0.0000
L21	37	PL 4.25"x1"	79.33 - 82.00	Auto	0.0000
L21	51	CCI 6.5" x 1.25" Plate	79.33 - 82.00	Auto	0.0000
L21	52	CCI 6.5" x 1.25" Plate	79.33 - 82.00	Auto	0.0000
L21	53	CCI 6.5" x 1.25" Plate	79.33 - 82.00	Auto	0.0000
L22	35	PL 4.25"x1"	79.08 - 79.33	Auto	0.0000
L22	36	PL 4.25"x1"	79.08 - 79.33	Auto	0.0000
L22	37	PL 4.25"x1"	79.08 - 79.33	Auto	0.0000
L22	51	CCI 6.5" x 1.25" Plate	79.08 - 79.33	Auto	0.0000
L22	52	CCI 6.5" x 1.25" Plate	79.08 - 79.33	Auto	0.0000
L22	53	CCI 6.5" x 1.25" Plate	79.08 - 79.33	Auto	0.0000
L23	35	PL 4.25"x1"	75.25 - 79.08	Auto	0.0000
L23	36	PL 4.25"x1"	75.25 - 79.08	Auto	0.0000
L23	37	PL 4.25"x1"	75.25 - 79.08	Auto	0.0000
L23	51	CCI 6.5" x 1.25" Plate	75.25 - 79.08	Auto	0.0000
L23	52	CCI 6.5" x 1.25" Plate	75.25 - 79.08	Auto	0.0000
L23	53	CCI 6.5" x 1.25" Plate	75.25 - 79.08	Auto	0.0000
L24	35	PL 4.25"x1"	75.00 - 75.25	Auto	0.0000
L24	36	PL 4.25"x1"	75.00 - 75.25	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	37	PL 4.25"x1"	75.00 - 75.25	Auto	0.0000
L24	51	CCI 6.5" x 1.25" Plate	75.00 - 75.25	Auto	0.0000
L24	52	CCI 6.5" x 1.25" Plate	75.00 - 75.25	Auto	0.0000
L24	53	CCI 6.5" x 1.25" Plate	75.00 - 75.25	Auto	0.0000
L25	31	PL 4.25"x1"	70.00 - 73.50	Auto	0.0000
L25	32	PL 4.25"x1"	70.00 - 73.50	Auto	0.0000
L25	33	PL 4.25"x1"	70.00 - 73.50	Auto	0.0000
L25	35	PL 4.25"x1"	73.50 - 75.00	Auto	0.0000
L25	36	PL 4.25"x1"	73.50 - 75.00	Auto	0.0000
L25	37	PL 4.25"x1"	73.50 - 75.00	Auto	0.0000
L25	51	CCI 6.5" x 1.25" Plate	70.00 - 75.00	Auto	0.0000
L25	52	CCI 6.5" x 1.25" Plate	70.00 - 75.00	Auto	0.0000
L25	53	CCI 6.5" x 1.25" Plate	70.00 - 75.00	Auto	0.0000
L26	31	PL 4.25"x1"	65.00 - 70.00	Auto	0.0000
L26	32	PL 4.25"x1"	65.00 - 70.00	Auto	0.0000
L26	33	PL 4.25"x1"	65.00 - 70.00	Auto	0.0000
L26	47	CCI 8.5" x 1.25" Plate	65.00 - 67.00	Auto	0.0598
L26	48	CCI 8.5" x 1.25" Plate	65.00 - 67.00	Auto	0.0598
L26	49	CCI 8.5" x 1.25" Plate	65.00 - 67.00	Auto	0.0598
L26	51	CCI 6.5" x 1.25" Plate	67.08 - 70.00	Auto	0.0000
L26	52	CCI 6.5" x 1.25" Plate	67.08 - 70.00	Auto	0.0000
L26	53	CCI 6.5" x 1.25" Plate	67.08 - 70.00	Auto	0.0000
L27	31	PL 4.25"x1"	63.25 - 65.00	Auto	0.0000
L27	32	PL 4.25"x1"	63.25 - 65.00	Auto	0.0000
L27	33	PL 4.25"x1"	63.25 - 65.00	Auto	0.0000
L27	47	CCI 8.5" x 1.25" Plate	63.25 - 65.00	Auto	0.0478
L27	48	CCI 8.5" x 1.25" Plate	63.25 - 65.00	Auto	0.0478
L27	49	CCI 8.5" x 1.25" Plate	63.25 - 65.00	Auto	0.0478
L28	31	PL 4.25"x1"	63.00 - 63.25	Auto	0.0000
L28	32	PL 4.25"x1"	63.00 - 63.25	Auto	0.0000
L28	33	PL 4.25"x1"	63.00 - 63.25	Auto	0.0000
L28	47	CCI 8.5" x 1.25" Plate	63.00 - 63.25	Auto	0.0651
L28	48	CCI 8.5" x 1.25" Plate	63.00 - 63.25	Auto	0.0651
L28	49	CCI 8.5" x 1.25" Plate	63.00 - 63.25	Auto	0.0651

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L29	31	PL 4.25"x1"	58.00 - 63.00	Auto	0.0000
L29	32	PL 4.25"x1"	58.00 - 63.00	Auto	0.0000
L29	33	PL 4.25"x1"	58.00 - 63.00	Auto	0.0000
L29	47	CCI 8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.0444
L29	48	CCI 8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.0444
L29	49	CCI 8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.0444
L30	31	PL 4.25"x1"	49.08 - 58.00	Auto	0.0000
L30	32	PL 4.25"x1"	49.08 - 58.00	Auto	0.0000
L30	33	PL 4.25"x1"	49.08 - 58.00	Auto	0.0000
L30	47	CCI 8.5" x 1.25" Plate	49.08 - 58.00	Auto	0.0053
L30	48	CCI 8.5" x 1.25" Plate	49.08 - 58.00	Auto	0.0053
L30	49	CCI 8.5" x 1.25" Plate	49.08 - 58.00	Auto	0.0053
L31	31	PL 4.25"x1"	48.08 - 49.08	Auto	0.0000
L31	32	PL 4.25"x1"	48.08 - 49.08	Auto	0.0000
L31	33	PL 4.25"x1"	48.08 - 49.08	Auto	0.0000
L31	47	CCI 8.5" x 1.25" Plate	48.08 - 49.08	Auto	0.0092
L31	48	CCI 8.5" x 1.25" Plate	48.08 - 49.08	Auto	0.0092
L31	49	CCI 8.5" x 1.25" Plate	48.08 - 49.08	Auto	0.0092
L32	31	PL 4.25"x1"	43.08 - 48.08	Auto	0.0000
L32	32	PL 4.25"x1"	43.08 - 48.08	Auto	0.0000
L32	33	PL 4.25"x1"	43.08 - 48.08	Auto	0.0000
L32	47	CCI 8.5" x 1.25" Plate	43.08 - 48.08	Auto	0.0001
L32	48	CCI 8.5" x 1.25" Plate	43.08 - 48.08	Auto	0.0001
L32	49	CCI 8.5" x 1.25" Plate	43.08 - 48.08	Auto	0.0001
L33	27	PL 6'x1"	38.42 - 40.50	Auto	0.0000
L33	28	PL 6'x1"	38.42 - 40.50	Auto	0.0000
L33	29	PL 6'x1"	38.42 - 40.50	Auto	0.0000
L33	31	PL 4.25"x1"	40.50 - 43.08	Auto	0.0000
L33	32	PL 4.25"x1"	40.50 - 43.08	Auto	0.0000
L33	33	PL 4.25"x1"	40.50 - 43.08	Auto	0.0000
L33	47	CCI 8.5" x 1.25" Plate	38.42 - 43.08	Auto	0.0000
L33	48	CCI 8.5" x 1.25" Plate	38.42 - 43.08	Auto	0.0000
L33	49	CCI 8.5" x 1.25" Plate	38.42 - 43.08	Auto	0.0000
L34	27	PL 6'x1"	38.17 - 38.42	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L34	28	PL 6'x1"	38.17 - 38.42	Auto	0.0000
L34	29	PL 6'x1"	38.17 - 38.42	Auto	0.0000
L34	47	CCI 8.5" x 1.25" Plate	38.17 - 38.42	Auto	0.0000
L34	48	CCI 8.5" x 1.25" Plate	38.17 - 38.42	Auto	0.0000
L34	49	CCI 8.5" x 1.25" Plate	38.17 - 38.42	Auto	0.0000
L35	27	PL 6'x1"	37.58 - 38.17	Auto	0.0000
L35	28	PL 6'x1"	37.58 - 38.17	Auto	0.0000
L35	29	PL 6'x1"	37.58 - 38.17	Auto	0.0000
L35	47	CCI 8.5" x 1.25" Plate	37.58 - 38.17	Auto	0.0000
L35	48	CCI 8.5" x 1.25" Plate	37.58 - 38.17	Auto	0.0000
L35	49	CCI 8.5" x 1.25" Plate	37.58 - 38.17	Auto	0.0000
L36	27	PL 6'x1"	37.33 - 37.58	Auto	0.0000
L36	28	PL 6'x1"	37.33 - 37.58	Auto	0.0000
L36	29	PL 6'x1"	37.33 - 37.58	Auto	0.0000
L36	47	CCI 8.5" x 1.25" Plate	37.33 - 37.58	Auto	0.0000
L36	48	CCI 8.5" x 1.25" Plate	37.33 - 37.58	Auto	0.0000
L36	49	CCI 8.5" x 1.25" Plate	37.33 - 37.58	Auto	0.0000
L37	27	PL 6'x1"	35.75 - 37.33	Auto	0.0000
L37	28	PL 6'x1"	35.75 - 37.33	Auto	0.0000
L37	29	PL 6'x1"	35.75 - 37.33	Auto	0.0000
L37	47	CCI 8.5" x 1.25" Plate	35.75 - 37.33	Auto	0.0000
L37	48	CCI 8.5" x 1.25" Plate	35.75 - 37.33	Auto	0.0000
L37	49	CCI 8.5" x 1.25" Plate	35.75 - 37.33	Auto	0.0000
L38	27	PL 6'x1"	35.50 - 35.75	Auto	0.0000
L38	28	PL 6'x1"	35.50 - 35.75	Auto	0.0000
L38	29	PL 6'x1"	35.50 - 35.75	Auto	0.0000
L38	47	CCI 8.5" x 1.25" Plate	35.50 - 35.75	Auto	0.0000
L38	48	CCI 8.5" x 1.25" Plate	35.50 - 35.75	Auto	0.0000
L38	49	CCI 8.5" x 1.25" Plate	35.50 - 35.75	Auto	0.0000
L39	27	PL 6'x1"	30.50 - 35.50	Auto	0.0000
L39	28	PL 6'x1"	30.50 - 35.50	Auto	0.0000
L39	29	PL 6'x1"	30.50 - 35.50	Auto	0.0000
L39	47	CCI 8.5" x 1.25" Plate	32.00 - 35.50	Auto	0.0000
L39	48	CCI 8.5" x 1.25" Plate	32.00 - 35.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L39	49	CCI 8.5" x 1.25" Plate	32.00 - 35.50	Auto	0.0000
L40	27	PL 6'x1"	25.50 - 30.50	Auto	0.0000
L40	28	PL 6'x1"	25.50 - 30.50	Auto	0.0000
L40	29	PL 6'x1"	25.50 - 30.50	Auto	0.0000
L41	27	PL 6'x1"	20.50 - 25.50	Auto	0.0000
L41	28	PL 6'x1"	20.50 - 25.50	Auto	0.0000
L41	29	PL 6'x1"	20.50 - 25.50	Auto	0.0000
L42	27	PL 6'x1"	15.50 - 20.50	Auto	0.0000
L42	28	PL 6'x1"	15.50 - 20.50	Auto	0.0000
L42	29	PL 6'x1"	15.50 - 20.50	Auto	0.0000
L43	27	PL 6'x1"	10.50 - 15.50	Auto	0.0000
L43	28	PL 6'x1"	10.50 - 15.50	Auto	0.0000
L43	29	PL 6'x1"	10.50 - 15.50	Auto	0.0000
L44	27	PL 6'x1"	5.50 - 10.50	Auto	0.0000
L44	28	PL 6'x1"	5.50 - 10.50	Auto	0.0000
L44	29	PL 6'x1"	5.50 - 10.50	Auto	0.0000
L45	27	PL 6'x1"	0.50 - 5.50	Auto	0.0000
L45	28	PL 6'x1"	0.50 - 5.50	Auto	0.0000
L45	29	PL 6'x1"	0.50 - 5.50	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	161.000
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	161.000
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	161.000
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	161.000
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	161.000
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	161.000
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.000	161.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 0.000		
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	161.000
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11	A	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11	B	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11	C	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11 B12	A	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11 B12	B	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 11 B12	C	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32	A	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32	B	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32	C	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32 B2	A	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32 B2	B	From Leg	4.000 0.000 0.000	0.000	161.000
RRUS 32 B2	C	From Leg	4.000 0.000 0.000	0.000	161.000
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	0.000	161.000
DC6-48-60-18-8F	B	From Leg	4.000 0.000 0.000	0.000	161.000
(3) 5' x 2" Pipe Mount	A	From Leg	4.000 0.000 0.000	0.000	161.000
(3) 5' x 2" Pipe Mount	B	From Leg	4.000 0.000 0.000	0.000	161.000
(3) 5' x 2" Pipe Mount	C	From Leg	4.000 0.000 0.000	0.000	161.000
Platform Mount [LP 303-1_HR-1]*	C	None		0.000	161.000
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	149.000
BXA-70080/4CF w/ Mount Pipe	B	From Leg	4.000	0.000	149.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 1.000		
BXA-70080/4CF w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHHSS-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHHSS-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
NHHSS-65B-R2B w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
MT6407-77A w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
MT6407-77A w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
MT6407-77A w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
RRFDC-3315-PF-48	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
RRFDC-3315-PF-48	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
CBRS RT4401-48A	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
CBRS RT4401-48A	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
CBRS RT4401-48A	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4439D-25A	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4439D-25A	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4439D-25A	C	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4440D-13A	A	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4440D-13A	B	From Leg	4.000 0.000	0.000	149.000
			1.000		
RF4440D-13A	C	From Leg	4.000 0.000	0.000	149.000
			1.000		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Platform Mount [LP 303-1_HR-1]	C	None		0.000	149.000
*					
*					
*					
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	135.000
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	135.000
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	135.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	135.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	135.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4480 B71_TMO	A	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4480 B71_TMO	B	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4480 B71_TMO	C	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0.000 2.000	0.000	135.000
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0.000 2.000	0.000	135.000
Platform Mount [LP 602-1]	C	None		0.000	135.000
Miscellaneous [NA 510-1]	C	None		0.000	135.000
Miscellaneous [NA 509-1]	A	From Leg	2.000 0.000 0.000	0.000	135.000
Miscellaneous [NA 509-1]	B	From Leg	2.000 0.000 0.000	0.000	135.000
Miscellaneous [NA 509-1]	C	From Leg	2.000 0.000 0.000	0.000	135.000
Side Arm Mount [SO 102-3]	C	None		0.000	137.000
*					
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	116.000
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	116.000
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	116.000
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	116.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	116.000
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	116.000
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	116.000
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	116.000
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	116.000
RRUS 11 B12	A	From Leg	4.000 0.000 1.000	0.000	116.000
RRUS 11 B12	B	From Leg	4.000 0.000 1.000	0.000	116.000
RRUS 11 B12	C	From Leg	4.000 0.000 1.000	0.000	116.000
KRY 112 144/1	A	From Leg	4.000 0.000 1.000	0.000	116.000
KRY 112 144/1	B	From Leg	4.000 0.000 0.000	0.000	116.000
KRY 112 144/1	C	From Leg	4.000 0.000 1.000	0.000	116.000
T-Arm Mount [TA 602-3]	C	None		0.000	116.000
*					
KS24019-L112A	C	From Leg	3.000 0.000 1.000	0.000	47.000
Side Arm Mount [SO 701-1]	C	From Leg	1.000 0.000 0.000	0.000	47.000
*					
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	127.000
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	127.000
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	127.000
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	127.000
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	127.000
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	127.000
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	127.000
TA08025-B605	B	From Leg	4.000 0.000	0.000	127.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TA08025-B605	C	From Leg	0.000 4.000 0.000	0.000	127.000
RDIDC-9181-PF-48	B	From Leg	0.000 4.000 0.000	0.000	127.000
(2) 8' x 2" Mount Pipe	A	From Leg	0.000 4.000 0.000	0.000	127.000
(2) 8' x 2" Mount Pipe	B	From Leg	0.000 4.000 0.000	0.000	127.000
(2) 8' x 2" Mount Pipe	C	From Leg	0.000 4.000 0.000	0.000	127.000
Commscope MC-PK8-DSH ***	C	None	0.000	0.000	127.000

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
*								

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

Comb. No.	Description
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	26	0.000	-0.000	-0.000
			Max. Compression	26	-12.173	-0.290	0.477
			Max. Mx	8	-3.139	-45.936	0.075
			Max. My	2	-2.917	-0.001	47.540
			Max. Vy	20	-7.927	45.873	0.082
			Max. Vx	2	-8.497	-0.001	47.540
			Max. Torque	24			-0.322
L2	155 - 150.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-12.935	-0.063	0.627
			Max. Mx	20	-3.469	82.254	0.125
			Max. My	2	-3.178	0.036	87.427
			Max. Vy	20	-8.216	82.254	0.125
			Max. Vx	2	-9.215	0.036	87.427
			Max. Torque	10			0.293
L3	150.5 - 150	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-13.020	-0.037	0.644
			Max. Mx	20	-3.509	86.377	0.130
			Max. My	2	-3.210	0.040	92.058
			Max. Vy	20	-8.248	86.377	0.130
			Max. Vx	2	-9.295	0.040	92.058
			Max. Torque	10			0.293
L4	150 - 145	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-23.449	-0.436	1.171
			Max. Mx	8	-6.867	-148.104	0.104
			Max. My	2	-6.438	0.121	160.313
			Max. Vy	20	-12.876	148.023	0.353
			Max. Vx	2	-14.330	0.121	160.313
			Max. Torque	22			-0.649
L5	145 - 140	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-24.452	-0.077	1.411
			Max. Mx	20	-7.312	213.742	0.528
			Max. My	2	-6.839	0.308	234.085
			Max. Vy	20	-13.386	213.742	0.528
			Max. Vx	2	-15.170	0.308	234.085
			Max. Torque	22			-0.649
L6	140 - 135	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.689	0.297	1.656
			Max. Mx	20	-7.855	282.444	0.705
			Max. My	2	-7.338	0.500	312.494
			Max. Vy	20	-14.110	282.444	0.705

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-16.227	0.500	312.494
			Max. Torque	22			-0.649
L7	135 - 130	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.120	0.705	1.930
			Max. Mx	20	-11.859	386.611	0.889
			Max. My	2	-11.227	0.702	428.299
			Max. Vy	20	-20.116	386.611	0.889
			Max. Vx	2	-22.620	0.702	428.299
			Max. Torque	22			-0.648
L8	130 - 125	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-46.181	0.589	1.926
			Max. Mx	20	-15.314	495.679	1.067
			Max. My	2	-14.614	0.860	550.780
			Max. Vy	20	-24.264	495.679	1.067
			Max. Vx	2	-27.124	0.860	550.780
			Max. Torque	22			-0.647
L9	125 - 120	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.444	0.976	2.251
			Max. Mx	20	-16.029	618.263	1.358
			Max. My	2	-15.323	1.163	688.490
			Max. Vy	20	-24.760	618.263	1.358
			Max. Vx	2	-27.962	1.163	688.490
			Max. Torque	22			-0.646
L10	120 - 119.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.563	1.009	2.279
			Max. Mx	20	-16.102	628.599	1.383
			Max. My	2	-15.400	1.189	700.165
			Max. Vy	20	-24.795	628.599	1.383
			Max. Vx	2	-28.025	1.189	700.165
			Max. Torque	22			-0.646
L11	119.583 - 119.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.644	1.029	2.296
			Max. Mx	20	-16.150	634.804	1.398
			Max. My	2	-15.449	1.204	707.179
			Max. Vy	20	-24.821	634.804	1.398
			Max. Vx	14	28.068	-0.569	-706.154
			Max. Torque	22			-0.646
L12	119.333 - 114.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.862	1.491	2.663
			Max. Mx	20	-19.042	766.143	1.694
			Max. My	2	-18.295	1.521	855.639
			Max. Vy	20	-27.899	766.143	1.694
			Max. Vx	2	-31.519	1.521	855.639
			Max. Torque	22			-0.645
L13	114.333 - 111.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.836	1.792	2.888
			Max. Mx	20	-19.505	836.340	1.850
			Max. My	2	-18.762	1.691	935.015
			Max. Vy	20	-28.240	836.340	1.850
			Max. Vx	2	-31.977	1.691	935.015
			Max. Torque	22			-0.645
L14	111.833 - 111.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.940	1.823	2.912
			Max. Mx	20	-19.573	843.407	1.866
			Max. My	2	-18.835	1.708	943.015
			Max. Vy	20	-28.266	843.407	1.866
			Max. Vx	14	32.011	-0.732	-941.730
			Max. Torque	22			-0.645
L15	111.583 - 106.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.881	2.434	3.368
			Max. Mx	20	-20.574	986.493	2.179
			Max. My	2	-19.843	2.051	1105.411
			Max. Vy	20	-28.941	986.493	2.179

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-32.933	2.051	1105.411
			Max. Torque	22			-0.645
L16	106.583 - 97.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.646	3.013	3.797
			Max. Mx	20	-21.531	1120.534	2.470
			Max. My	2	-20.830	2.378	1257.870
			Max. Vy	20	-29.533	1120.534	2.470
			Max. Vx	2	-33.595	2.378	1257.870
			Max. Torque	22			-0.644
L17	97.167 - 97	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-63.939	3.648	4.267
			Max. Mx	20	-23.494	1270.284	2.788
			Max. My	2	-22.806	2.734	1428.125
			Max. Vy	20	-30.339	1270.284	2.788
			Max. Vx	14	34.492	-0.974	-1426.277
			Max. Torque	5			0.647
L18	97 - 92	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.144	4.289	4.739
			Max. Mx	20	-24.792	1423.733	3.108
			Max. My	2	-24.131	3.094	1602.515
			Max. Vy	20	-31.015	1423.733	3.108
			Max. Vx	2	-35.252	3.094	1602.515
			Max. Torque	5			0.828
L19	92 - 87	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.380	4.943	5.219
			Max. Mx	20	-26.140	1580.531	3.430
			Max. My	2	-25.512	3.457	1780.651
			Max. Vy	20	-31.681	1580.531	3.430
			Max. Vx	2	-35.996	3.457	1780.651
			Max. Torque	5			1.012
L20	87 - 82	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-70.649	5.607	5.705
			Max. Mx	20	-27.522	1740.639	3.754
			Max. My	2	-26.931	3.823	1962.477
			Max. Vy	20	-32.339	1740.639	3.754
			Max. Vx	2	-36.728	3.823	1962.477
			Max. Torque	5			1.197
L21	82 - 79.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.001	5.965	5.966
			Max. Mx	20	-28.267	1827.430	3.928
			Max. My	2	-27.697	4.019	2060.952
			Max. Vy	20	-32.728	1827.430	3.928
			Max. Vx	2	-37.119	4.019	2060.952
			Max. Torque	5			1.264
L22	79.333 - 79.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.153	6.001	5.993
			Max. Mx	20	-28.381	1835.619	3.945
			Max. My	2	-27.819	4.037	2070.236
			Max. Vy	20	-32.753	1835.619	3.945
			Max. Vx	14	37.141	-1.228	-2067.640
			Max. Torque	5			1.270
L23	79.083 - 75.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-74.487	6.519	6.370
			Max. Mx	20	-29.796	1962.408	4.196
			Max. My	2	-29.252	4.321	2213.836
			Max. Vy	20	-33.369	1962.408	4.196
			Max. Vx	2	-37.768	4.321	2213.836
			Max. Torque	5			1.368
L24	75.25 - 75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-74.640	6.555	6.397
			Max. Mx	20	-29.904	1970.759	4.212
			Max. My	2	-29.364	4.340	2223.284
			Max. Vy	20	-33.401	1970.759	4.212
			Max. Vx	14	37.797	-1.279	-2220.508
			Max. Torque	5			1.374
L25	75 - 70	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-77.707	7.240	6.895
			Max. Mx	20	-31.785	2139.824	4.542
			Max. My	2	-31.272	4.713	2414.319
			Max. Vy	20	-34.188	2139.824	4.542
			Max. Vx	2	-38.595	4.713	2414.319
			Max. Torque	5			1.503
L26	70 - 65	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.813	7.938	7.401
			Max. Mx	20	-33.709	2312.768	4.874
			Max. My	2	-33.226	5.090	2609.268
			Max. Vy	20	-34.957	2312.768	4.874
			Max. Vx	2	-39.371	5.090	2609.268
			Max. Torque	5			1.627
L27	65 - 63.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-81.919	8.183	7.579
			Max. Mx	20	-34.381	2374.207	4.991
			Max. My	2	-33.907	5.223	2678.416
			Max. Vy	20	-35.234	2374.207	4.991
			Max. Vx	2	-39.651	5.223	2678.416
			Max. Torque	5			1.668
L28	63.25 - 63	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.085	8.221	7.607
			Max. Mx	20	-34.507	2383.023	5.008
			Max. My	2	-34.040	5.242	2688.333
			Max. Vy	20	-35.258	2383.023	5.008
			Max. Vx	14	39.670	-1.414	-2685.006
			Max. Torque	5			1.673
L29	63 - 58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.406	8.928	8.118
			Max. Mx	20	-36.605	2561.346	5.344
			Max. My	2	-36.164	5.624	2888.702
			Max. Vy	20	-36.032	2561.346	5.344
			Max. Vx	2	-40.454	5.624	2888.702
			Max. Torque	5			1.790
L30	58 - 49.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.412	9.361	8.431
			Max. Mx	20	-37.888	2670.167	5.547
			Max. My	2	-37.465	5.856	3010.761
			Max. Vy	20	-36.479	2670.167	5.547
			Max. Vx	2	-40.902	5.856	3010.761
			Max. Torque	5			1.859
L31	49.083 - 48.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-95.044	10.360	9.153
			Max. Mx	20	-43.233	2926.959	6.017
			Max. My	2	-42.829	6.392	3298.185
			Max. Vy	20	-37.704	2926.959	6.017
			Max. Vx	2	-42.154	6.392	3298.185
			Max. Torque	5			2.023
L32	48.083 - 43.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-98.704	11.424	9.478
			Max. Mx	20	-45.657	3117.756	6.305
			Max. My	2	-45.282	7.038	3510.927
			Max. Vy	20	-38.469	3117.756	6.305
			Max. Vx	2	-42.937	7.038	3510.927
			Max. Torque	5			2.246
L33	43.083 - 38.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.024	12.102	9.967
			Max. Mx	20	-47.871	3298.831	6.697
			Max. My	2	-47.525	7.475	3712.795
			Max. Vy	20	-39.116	3298.831	6.697
			Max. Vx	2	-43.582	7.475	3712.795
			Max. Torque	5			2.349
L34	38.417 - 38.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.191	12.140	9.995
			Max. Mx	20	-47.992	3308.618	6.718

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	-47.650	7.499	3723.695
			Max. Vy	20	-39.138	3308.618	6.718
			Max. Vx	14	43.601	-1.570	-3719.375
			Max. Torque	5			2.354
L35	38.167 - 37.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.581	12.224	10.055
			Max. Mx	20	-48.239	3331.510	6.767
			Max. My	2	-47.901	7.553	3749.189
			Max. Vy	20	-39.216	3331.510	6.767
			Max. Vx	2	-43.679	7.553	3749.189
			Max. Torque	5			2.367
L36	37.583 - 37.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.767	12.262	10.083
			Max. Mx	20	-48.370	3341.324	6.788
			Max. My	2	-48.035	7.577	3760.116
			Max. Vy	20	-39.247	3341.324	6.788
			Max. Vx	14	43.709	-1.589	-3755.753
			Max. Torque	5			2.372
L37	37.333 - 35.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-103.940	12.491	10.247
			Max. Mx	20	-49.147	3403.663	6.921
			Max. My	2	-48.816	7.726	3829.506
			Max. Vy	20	-39.481	3403.663	6.921
			Max. Vx	2	-43.946	7.726	3829.506
			Max. Torque	5			2.405
L38	35.75 - 35.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-104.093	12.529	10.274
			Max. Mx	20	-49.259	3413.540	6.943
			Max. My	2	-48.935	7.749	3840.495
			Max. Vy	20	-39.496	3413.540	6.943
			Max. Vx	14	43.956	-1.630	-3836.036
			Max. Torque	5			2.410
L39	35.5 - 30.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-107.084	13.256	10.796
			Max. Mx	20	-51.188	3612.505	7.364
			Max. My	2	-50.904	8.221	4061.730
			Max. Vy	20	-40.058	3612.505	7.364
			Max. Vx	2	-44.525	8.221	4061.730
			Max. Torque	5			2.525
L40	30.5 - 25.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-109.913	13.981	11.316
			Max. Mx	20	-53.164	3814.051	7.787
			Max. My	2	-52.925	8.694	4285.647
			Max. Vy	20	-40.540	3814.051	7.787
			Max. Vx	2	-45.047	8.694	4285.647
			Max. Torque	5			2.685
L41	25.5 - 20.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-112.757	14.675	11.811
			Max. Mx	20	-55.173	4017.935	8.210
			Max. My	2	-54.979	9.167	4512.081
			Max. Vy	20	-40.993	4017.935	8.210
			Max. Vx	2	-45.532	9.167	4512.081
			Max. Torque	5			2.685
L42	20.5 - 15.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-115.611	15.351	12.291
			Max. Mx	20	-57.212	4224.004	8.633
			Max. My	2	-57.063	9.642	4740.834
			Max. Vy	20	-41.413	4224.004	8.633
			Max. Vx	2	-45.975	9.642	4740.834
			Max. Torque	5			2.684
L43	15.5 - 10.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-118.467	16.022	12.767
			Max. Mx	20	-59.286	4432.098	9.057
			Max. My	2	-59.183	10.117	4971.706
			Max. Vy	20	-41.804	4432.098	9.057
			Max. Vx	2	-46.380	10.117	4971.706

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	5			2.683
L44	10.5 - 5.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-121.308	16.680	13.233
			Max. Mx	20	-61.390	4642.142	9.481
			Max. My	2	-61.334	10.593	5204.584
			Max. Vy	20	-42.193	4642.142	9.481
			Max. Vx	2	-46.778	10.593	5204.584
			Max. Torque	5			2.683
L45	5.5 - 0.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.089	17.303	13.672
			Max. Mx	20	-63.524	4854.133	9.904
			Max. My	2	-63.515	11.069	5439.438
			Max. Vy	20	-42.582	4854.133	9.904
			Max. Vx	2	-47.170	11.069	5439.438
			Max. Torque	5			2.682
L46	0.5 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.339	17.356	13.709
			Max. Mx	20	-63.749	4875.439	9.946
			Max. My	2	-63.747	11.116	5463.031
			Max. Vy	20	-42.607	4875.439	9.946
			Max. Vx	2	-47.193	11.116	5463.031
			Max. Torque	5			2.682

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	124.339	0.000	0.000
	Max. H_x	20	63.759	42.592	0.056
	Max. H_z	3	47.819	0.056	47.177
	Max. M_x	2	5463.031	0.056	47.177
	Max. M_z	8	4866.650	-42.592	-0.056
	Max. Torsion	5	2.682	-26.310	45.652
	Min. Vert	25	47.819	24.306	42.070
	Min. H_x	8	63.759	-42.592	-0.056
	Min. H_z	14	63.759	-0.056	-47.177
	Min. M_x	14	-5456.618	-0.056	-47.177
	Min. M_z	20	-4875.439	42.592	0.056
	Min. Torsion	17	-2.678	26.310	-45.652

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	53.132	-0.000	-0.000	-2.571	3.530	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	63.759	-0.056	-47.177	-5463.031	11.116	-0.737
0.9 Dead+1.0 Wind 0 deg - No Ice	47.819	-0.056	-47.177	-5388.672	9.884	-0.751
1.2 Dead+1.0 Wind 30 deg - No Ice	63.759	26.310	-45.652	-4974.505	-2860.243	-2.670
0.9 Dead+1.0 Wind 30 deg - No Ice	47.819	26.310	-45.652	-4908.584	-2823.882	-2.682
1.2 Dead+1.0 Wind 60 deg - No Ice	63.759	37.277	-21.505	-2455.867	-4247.503	0.267
0.9 Dead+1.0 Wind 60 deg - No Ice	47.819	37.277	-21.505	-2422.064	-4191.511	0.262
1.2 Dead+1.0 Wind 90 deg - No Ice	63.759	42.592	0.056	3.496	-4866.650	-0.080
0.9 Dead+1.0 Wind 90 deg - No Ice	47.819	42.592	0.056	4.245	-4802.232	-0.078
1.2 Dead+1.0 Wind 120 deg	63.759	35.587	20.593	2380.592	-4114.853	-0.450

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
0.9 Dead+1.0 Wind 120 deg - No Ice	47.819	35.587	20.593	2349.074	-4060.090	-0.443
1.2 Dead+1.0 Wind 150 deg - No Ice	63.759	24.306	42.070	4752.096	-2743.280	-0.048
0.9 Dead+1.0 Wind 150 deg - No Ice	47.819	24.306	42.070	4689.696	-2707.886	-0.035
1.2 Dead+1.0 Wind 180 deg - No Ice	63.759	0.056	47.177	5456.618	-2.317	0.735
0.9 Dead+1.0 Wind 180 deg - No Ice	47.819	0.056	47.177	5383.930	-3.367	0.749
1.2 Dead+1.0 Wind 210 deg - No Ice	63.759	-26.310	45.652	4968.088	2869.028	2.666
0.9 Dead+1.0 Wind 210 deg - No Ice	47.819	-26.310	45.652	4903.838	2830.389	2.678
1.2 Dead+1.0 Wind 240 deg - No Ice	63.759	-37.277	21.505	2449.393	4256.321	-0.268
0.9 Dead+1.0 Wind 240 deg - No Ice	47.819	-37.277	21.505	2417.277	4198.042	-0.264
1.2 Dead+1.0 Wind 270 deg - No Ice	63.759	-42.592	-0.056	-9.946	4875.439	0.081
0.9 Dead+1.0 Wind 270 deg - No Ice	47.819	-42.592	-0.056	-9.015	4808.743	0.079
1.2 Dead+1.0 Wind 300 deg - No Ice	63.759	-35.587	-20.593	-2387.006	4123.649	0.453
0.9 Dead+1.0 Wind 300 deg - No Ice	47.819	-35.587	-20.593	-2353.818	4066.607	0.446
1.2 Dead+1.0 Wind 330 deg - No Ice	63.759	-24.306	-42.070	-4758.491	2752.084	0.050
0.9 Dead+1.0 Wind 330 deg - No Ice	47.819	-24.306	-42.070	-4694.426	2714.407	0.037
1.2 Dead+1.0 Ice+1.0 Temp	124.339	-0.000	-0.000	-13.709	17.356	0.001
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	124.339	-0.014	-11.380	-1514.124	18.951	-0.081
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	124.339	6.098	-10.590	-1341.106	-746.972	-0.549
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	124.339	9.238	-5.334	-709.577	-1187.365	0.091
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	124.339	10.637	0.014	-12.304	-1369.763	-0.015
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	124.339	9.218	5.338	682.146	-1184.658	-0.133
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	124.339	5.734	9.933	1271.053	-724.169	-0.051
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	124.339	0.014	11.380	1486.553	15.972	0.083
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	124.339	-6.098	10.590	1313.525	781.894	0.550
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	124.339	-9.238	5.334	681.982	1222.287	-0.090
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	124.339	-10.637	-0.014	-15.284	1404.673	0.017
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	124.339	-9.218	-5.338	-709.720	1219.569	0.135
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	124.339	-5.734	-9.933	-1298.620	759.087	0.053
Dead+Wind 0 deg - Service	53.132	-0.012	-10.240	-1180.564	5.105	-0.159
Dead+Wind 30 deg - Service	53.132	5.711	-9.909	-1075.355	-614.463	-0.584
Dead+Wind 60 deg - Service	53.132	8.091	-4.668	-531.522	-913.165	0.059
Dead+Wind 90 deg - Service	53.132	9.245	0.012	-1.223	-1046.638	-0.021
Dead+Wind 120 deg - Service	53.132	7.725	4.470	511.280	-884.461	-0.105
Dead+Wind 150 deg - Service	53.132	5.276	9.131	1023.212	-589.114	-0.017
Dead+Wind 180 deg - Service	53.132	0.012	10.240	1175.222	2.208	0.159
Dead+Wind 210 deg - Service	53.132	-5.711	9.909	1070.013	621.775	0.584
Dead+Wind 240 deg -	53.132	-8.091	4.668	526.178	920.478	-0.059

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
Service						
Dead+Wind 270 deg - Service	53.132	-9.245	-0.012	-4.120	1053.951	0.021
Dead+Wind 300 deg - Service	53.132	-7.725	-4.470	-516.621	891.774	0.106
Dead+Wind 330 deg - Service	53.132	-5.276	-9.131	-1028.553	596.427	0.017

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-53.132	0.000	0.000	53.132	0.000	0.000%
2	-0.056	-63.759	-47.177	0.056	63.759	47.177	0.000%
3	-0.056	-47.819	-47.177	0.056	47.819	47.177	0.000%
4	26.310	-63.759	-45.652	-26.310	63.759	45.652	0.000%
5	26.310	-47.819	-45.652	-26.310	47.819	45.652	0.000%
6	37.277	-63.759	-21.505	-37.277	63.759	21.505	0.000%
7	37.277	-47.819	-21.505	-37.277	47.819	21.505	0.000%
8	42.592	-63.759	0.056	-42.592	63.759	-0.056	0.000%
9	42.592	-47.819	0.056	-42.592	47.819	-0.056	0.000%
10	35.587	-63.759	20.593	-35.587	63.759	-20.593	0.000%
11	35.587	-47.819	20.593	-35.587	47.819	-20.593	0.000%
12	24.306	-63.759	42.070	-24.306	63.759	-42.070	0.000%
13	24.306	-47.819	42.070	-24.306	47.819	-42.070	0.000%
14	0.056	-63.759	47.177	-0.056	63.759	-47.177	0.000%
15	0.056	-47.819	47.177	-0.056	47.819	-47.177	0.000%
16	-26.310	-63.759	45.652	26.310	63.759	-45.652	0.000%
17	-26.310	-47.819	45.652	26.310	47.819	-45.652	0.000%
18	-37.277	-63.759	21.505	37.277	63.759	-21.505	0.000%
19	-37.277	-47.819	21.505	37.277	47.819	-21.505	0.000%
20	-42.592	-63.759	-0.056	42.592	63.759	0.056	0.000%
21	-42.592	-47.819	-0.056	42.592	47.819	0.056	0.000%
22	-35.587	-63.759	-20.593	35.587	63.759	20.593	0.000%
23	-35.587	-47.819	-20.593	35.587	47.819	20.593	0.000%
24	-24.306	-63.759	-42.070	24.306	63.759	42.070	0.000%
25	-24.306	-47.819	-42.070	24.306	47.819	42.070	0.000%
26	0.000	-124.339	0.000	0.000	124.339	0.000	0.000%
27	-0.014	-124.339	-11.380	0.014	124.339	11.380	0.000%
28	6.098	-124.339	-10.590	-6.098	124.339	10.590	0.000%
29	9.238	-124.339	-5.334	-9.238	124.339	5.334	0.000%
30	10.636	-124.339	0.014	-10.637	124.339	-0.014	0.000%
31	9.218	-124.339	5.338	-9.218	124.339	-5.338	0.000%
32	5.734	-124.339	9.933	-5.734	124.339	-9.933	0.000%
33	0.014	-124.339	11.380	-0.014	124.339	-11.380	0.000%
34	-6.098	-124.339	10.590	6.098	124.339	-10.590	0.000%
35	-9.238	-124.339	5.334	9.238	124.339	-5.334	0.000%
36	-10.636	-124.339	-0.014	10.637	124.339	0.014	0.000%
37	-9.218	-124.339	-5.338	9.218	124.339	5.338	0.000%
38	-5.734	-124.339	-9.933	5.734	124.339	9.933	0.000%
39	-0.012	-53.132	-10.240	0.012	53.132	10.240	0.000%
40	5.711	-53.132	-9.909	-5.711	53.132	9.909	0.000%
41	8.091	-53.132	-4.668	-8.091	53.132	4.668	0.000%
42	9.245	-53.132	0.012	-9.245	53.132	-0.012	0.000%
43	7.725	-53.132	4.470	-7.725	53.132	-4.470	0.000%
44	5.276	-53.132	9.131	-5.276	53.132	-9.131	0.000%
45	0.012	-53.132	10.240	-0.012	53.132	-10.240	0.000%
46	-5.711	-53.132	9.909	5.711	53.132	-9.909	0.000%
47	-8.091	-53.132	4.668	8.091	53.132	-4.668	0.000%
48	-9.245	-53.132	-0.012	9.245	53.132	0.012	0.000%
49	-7.725	-53.132	-4.470	7.725	53.132	4.470	0.000%
50	-5.276	-53.132	-9.131	5.276	53.132	9.131	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000308
2	Yes	6	0.00000001	0.00005764
3	Yes	5	0.00000001	0.00040891
4	Yes	7	0.00000001	0.00019815
5	Yes	7	0.00000001	0.00003875
6	Yes	7	0.00000001	0.00018050
7	Yes	6	0.00000001	0.00095793
8	Yes	5	0.00000001	0.00043150
9	Yes	5	0.00000001	0.00014567
10	Yes	7	0.00000001	0.00017524
11	Yes	6	0.00000001	0.00093525
12	Yes	7	0.00000001	0.00019869
13	Yes	7	0.00000001	0.00003976
14	Yes	5	0.00000001	0.00063112
15	Yes	5	0.00000001	0.00024069
16	Yes	7	0.00000001	0.00020464
17	Yes	7	0.00000001	0.00004033
18	Yes	7	0.00000001	0.00018156
19	Yes	6	0.00000001	0.00096386
20	Yes	5	0.00000001	0.00061094
21	Yes	5	0.00000001	0.00023288
22	Yes	7	0.00000001	0.00017818
23	Yes	6	0.00000001	0.00095065
24	Yes	7	0.00000001	0.00019802
25	Yes	7	0.00000001	0.00003950
26	Yes	5	0.00000001	0.00044230
27	Yes	7	0.00000001	0.00092442
28	Yes	8	0.00000001	0.00023589
29	Yes	8	0.00000001	0.00021203
30	Yes	7	0.00000001	0.00083974
31	Yes	8	0.00000001	0.00020566
32	Yes	8	0.00000001	0.00022547
33	Yes	7	0.00000001	0.00090672
34	Yes	8	0.00000001	0.00023900
35	Yes	8	0.00000001	0.00021159
36	Yes	7	0.00000001	0.00085723
37	Yes	8	0.00000001	0.00021755
38	Yes	8	0.00000001	0.00023676
39	Yes	5	0.00000001	0.00011269
40	Yes	6	0.00000001	0.00006044
41	Yes	5	0.00000001	0.00078606
42	Yes	5	0.00000001	0.00009358
43	Yes	5	0.00000001	0.00073093
44	Yes	6	0.00000001	0.00005844
45	Yes	5	0.00000001	0.00011005
46	Yes	6	0.00000001	0.00006543
47	Yes	5	0.00000001	0.00079739
48	Yes	5	0.00000001	0.00009481
49	Yes	5	0.00000001	0.00077594
50	Yes	6	0.00000001	0.00005897

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	33.791	40	2.013	0.002
L2	155 - 150.5	31.688	40	2.002	0.002
L3	150.5 - 150	29.813	40	1.977	0.002
L4	150 - 145	29.606	40	1.973	0.002
L5	145 - 140	27.561	40	1.931	0.002
L6	140 - 135	25.570	40	1.873	0.001
L7	135 - 130	23.645	40	1.803	0.001
L8	130 - 125	21.799	40	1.720	0.001
L9	125 - 120	20.048	40	1.625	0.001
L10	120 - 119.583	18.401	40	1.518	0.001
L11	119.583 - 119.333	18.269	40	1.509	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L12	119.333 - 114.333	18.190	40	1.505	0.001
L13	114.333 - 111.833	16.656	40	1.425	0.001
L14	111.833 - 111.583	15.921	40	1.383	0.001
L15	111.583 - 106.583	15.848	40	1.379	0.001
L16	106.583 - 97.167	14.447	40	1.297	0.001
L17	102 - 97	13.239	40	1.219	0.001
L18	97 - 92	11.983	40	1.179	0.001
L19	92 - 87	10.787	40	1.105	0.001
L20	87 - 82	9.670	40	1.029	0.001
L21	82 - 79.333	8.632	40	0.952	0.001
L22	79.333 - 79.083	8.112	40	0.910	0.001
L23	79.083 - 75.25	8.064	40	0.908	0.001
L24	75.25 - 75	7.352	40	0.867	0.001
L25	75 - 70	7.307	40	0.864	0.001
L26	70 - 65	6.431	40	0.810	0.001
L27	65 - 63.25	5.612	40	0.754	0.001
L28	63.25 - 63	5.339	40	0.735	0.001
L29	63 - 58	5.300	40	0.733	0.001
L30	58 - 49.083	4.559	40	0.682	0.001
L31	55 - 48.083	4.141	40	0.651	0.000
L32	48.083 - 43.083	3.223	40	0.611	0.000
L33	43.083 - 38.417	2.609	40	0.561	0.000
L34	38.417 - 38.167	2.084	40	0.513	0.000
L35	38.167 - 37.583	2.057	40	0.510	0.000
L36	37.583 - 37.333	1.995	40	0.504	0.000
L37	37.333 - 35.75	1.969	40	0.501	0.000
L38	35.75 - 35.5	1.805	40	0.486	0.000
L39	35.5 - 30.5	1.780	40	0.483	0.000
L40	30.5 - 25.5	1.311	40	0.413	0.000
L41	25.5 - 20.5	0.914	40	0.344	0.000
L42	20.5 - 15.5	0.589	40	0.276	0.000
L43	15.5 - 10.5	0.336	40	0.208	0.000
L44	10.5 - 5.5	0.153	40	0.140	0.000
L45	5.5 - 0.5	0.042	40	0.073	0.000
L46	0.5 - 0	0.000	40	0.007	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
161.000	7770.00 w/ Mount Pipe	40	33.791	2.013	0.002	14614
149.000	BXA-80063/4CF w/ Mount Pipe	40	29.194	1.966	0.002	7430
137.000	Side Arm Mount [SO 102-3]	40	24.406	1.832	0.001	3992
135.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	40	23.645	1.803	0.001	3733
127.000	MX08FRO665-21 w/ Mount Pipe	40	20.736	1.664	0.001	2938
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	17.158	1.454	0.001	3416
47.000	KS24019-L112A	40	3.086	0.602	0.000	6552

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	155.995	4	9.317	0.009
L2	155 - 150.5	146.332	4	9.267	0.009
L3	150.5 - 150	137.712	4	9.153	0.008
L4	150 - 145	136.761	4	9.137	0.008
L5	145 - 140	127.357	4	8.941	0.007

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L6	140 - 135	118.191	4	8.674	0.006
L7	135 - 130	109.329	4	8.353	0.005
L8	130 - 125	100.827	4	7.970	0.005
L9	125 - 120	92.750	4	7.530	0.004
L10	120 - 119.583	85.153	4	7.038	0.004
L11	119.583 - 119.333	84.543	4	6.995	0.004
L12	119.333 - 114.333	84.179	4	6.977	0.004
L13	114.333 - 111.833	77.093	4	6.606	0.004
L14	111.833 - 111.583	73.698	4	6.410	0.004
L15	111.583 - 106.583	73.364	4	6.392	0.004
L16	106.583 - 97.167	66.889	4	6.014	0.004
L17	102 - 97	61.305	4	5.653	0.004
L18	97 - 92	55.494	4	5.467	0.004
L19	92 - 87	49.963	4	5.122	0.004
L20	87 - 82	44.793	4	4.773	0.004
L21	82 - 79.333	39.991	4	4.415	0.003
L22	79.333 - 79.083	37.582	4	4.221	0.003
L23	79.083 - 75.25	37.362	4	4.209	0.003
L24	75.25 - 75	34.064	4	4.019	0.003
L25	75 - 70	33.854	4	4.006	0.003
L26	70 - 65	29.796	4	3.754	0.003
L27	65 - 63.25	26.003	4	3.498	0.003
L28	63.25 - 63	24.739	4	3.410	0.003
L29	63 - 58	24.561	4	3.398	0.002
L30	58 - 49.083	21.128	4	3.163	0.002
L31	55 - 48.083	19.188	4	3.020	0.002
L32	48.083 - 43.083	14.934	4	2.835	0.002
L33	43.083 - 38.417	12.091	4	2.600	0.002
L34	38.417 - 38.167	9.659	4	2.380	0.002
L35	38.167 - 37.583	9.535	4	2.367	0.002
L36	37.583 - 37.333	9.247	4	2.336	0.002
L37	37.333 - 35.75	9.125	4	2.325	0.002
L38	35.75 - 35.5	8.366	4	2.255	0.002
L39	35.5 - 30.5	8.249	4	2.239	0.002
L40	30.5 - 25.5	6.074	4	1.916	0.001
L41	25.5 - 20.5	4.236	4	1.596	0.001
L42	20.5 - 15.5	2.732	4	1.279	0.001
L43	15.5 - 10.5	1.557	4	0.966	0.001
L44	10.5 - 5.5	0.711	4	0.650	0.000
L45	5.5 - 0.5	0.194	4	0.338	0.000
L46	0.5 - 0	0.002	4	0.030	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
161.000	7770.00 w/ Mount Pipe	4	155.995	9.317	0.010	3349
149.000	BXA-80063/4CF w/ Mount Pipe	4	134.865	9.103	0.008	1697
137.000	Side Arm Mount [SO 102-3]	4	112.834	8.488	0.005	903
135.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	4	109.329	8.353	0.005	843
127.000	MX08FRO665-21 w/ Mount Pipe	4	95.926	7.711	0.004	658
116.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	79.413	6.738	0.004	758
47.000	KS24019-L112A	4	14.300	2.792	0.002	1420

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	160 - 155 (1)	TP20x20x0.25	5.000	0.000	0.0	15.512	-2.917	488.616	0.006
L2	155 - 150.5 (2)	TP20x20x0.25	4.500	0.000	0.0	15.512	-3.178	488.616	0.007
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	0.500	0.000	0.0	15.747	-3.210	496.038	0.006
L4	150 - 145 (4)	TP21.341x20.3x0.25	5.000	0.000	0.0	16.978	-6.438	993.229	0.006
L5	145 - 140 (5)	TP22.382x21.341x0.25	5.000	0.000	0.0	17.816	-6.839	1042.250	0.007
L6	140 - 135 (6)	TP23.423x22.382x0.25	5.000	0.000	0.0	18.654	-7.338	1091.280	0.007
L7	135 - 130 (7)	TP24.464x23.423x0.25	5.000	0.000	0.0	19.492	-11.227	1140.300	0.010
L8	130 - 125 (8)	TP25.505x24.464x0.25	5.000	0.000	0.0	20.330	-14.614	1189.320	0.012
L9	125 - 120 (9)	TP26.546x25.505x0.25	5.000	0.000	0.0	21.168	-15.323	1238.350	0.012
L10	120 - 119.583 (10)	TP26.633x26.546x0.25	0.417	0.000	0.0	21.238	-15.400	1242.440	0.012
L11	119.583 - 119.333 (11)	TP26.685x26.633x0.375	0.250	0.000	0.0	31.769	-15.449	1858.500	0.008
L12	119.333 - 114.333 (12)	TP27.726x26.685x0.369	5.000	0.000	0.0	32.483	-18.295	1900.270	0.010
L13	114.333 - 111.833 (13)	TP28.246x27.726x0.369	2.500	0.000	0.0	33.101	-18.762	1936.430	0.010
L14	111.833 - 111.583 (14)	TP28.299x28.246x0.413	0.250	0.000	0.0	37.040	-18.835	2166.820	0.009
L15	111.583 - 106.583 (15)	TP29.34x28.299x0.4	5.000	0.000	0.0	37.274	-19.843	2180.540	0.009
L16	106.583 - 97.167 (16)	TP31.3x29.34x0.4	9.416	0.000	0.0	38.503	-20.830	2252.430	0.009
L17	97.167 - 97 (17)	TP30.804x29.794x0.525	5.000	0.000	0.0	51.187	-22.806	2994.460	0.008
L18	97 - 92 (18)	TP31.815x30.804x0.513	5.000	0.000	0.0	51.657	-24.131	3021.940	0.008
L19	92 - 87 (19)	TP32.826x31.815x0.513	5.000	0.000	0.0	53.325	-25.512	3119.510	0.008
L20	87 - 82 (20)	TP33.836x32.826x0.506	5.000	0.000	0.0	54.332	-26.931	3178.440	0.008
L21	82 - 79.333 (21)	TP34.375x33.836x0.5	2.667	0.000	0.0	54.540	-27.697	3190.560	0.009
L22	79.333 - 79.083 (22)	TP34.426x34.375x0.763	0.250	0.000	0.0	82.652	-27.819	4835.160	0.006
L23	79.083 - 75.25 (23)	TP35.201x34.426x0.75	3.833	0.000	0.0	83.199	-29.252	4867.120	0.006
L24	75.25 - 75 (24)	TP35.251x35.201x0.75	0.250	0.000	0.0	83.321	-29.364	4874.260	0.006
L25	75 - 70 (25)	TP36.262x35.251x0.738	5.000	0.000	0.0	84.362	-31.272	4935.170	0.006
L26	70 - 65 (26)	TP37.273x36.262x0.725	5.000	0.000	0.0	85.321	-33.035	4991.250	0.007
L27	65 - 63.25 (27)	TP37.626x37.273x0.725	1.750	0.000	0.0	86.146	-33.709	5039.560	0.007
L28	63.25 - 63 (28)	TP37.677x37.626x0.8	0.250	0.000	0.0	94.995	-33.843	5557.200	0.006
L29	63 - 58 (29)	TP38.688x37.677x0.788	5.000	0.000	0.0	96.105	-35.954	5622.150	0.006
L30	58 - 49.083 (30)	TP40.49x38.688x0.775	8.917	0.000	0.0	96.124	-37.250	5623.260	0.007
L31	49.083 - 48.083 (31)	TP39.897x38.544x0.838	6.917	0.000	0.0	105.333	-42.596	6161.970	0.007
L32	48.083 - 43.083 (32)	TP40.875x39.897x0.825	5.000	0.000	0.0	106.392	-45.048	6223.910	0.007
L33	43.083 - 38.417 (33)	TP41.787x40.875x0.813	4.666	0.000	0.0	107.200	-47.292	6271.180	0.008
L34	38.417 - 38.167 (34)	TP41.836x41.787x0.713	0.250	0.000	0.0	94.347	-47.420	5519.320	0.009
L35	38.167 - 37.583 (35)	TP41.95x41.836x0.713	0.584	0.000	0.0	94.609	-47.670	5534.650	0.009
L36	37.583 - 37.333 (36)	TP41.999x41.95x0.863	0.250	0.000	0.0	114.246	-47.805	6683.410	0.007
L37	37.333 - 35.75 (37)	TP42.309x41.999x0.863	1.583	0.000	0.0	115.106	-48.585	6733.710	0.007
L38	35.75 - 35.5 (38)	TP42.357x42.309x0.588	0.250	0.000	0.0	79.018	-48.707	4622.570	0.011
L39	35.5 - 30.5 (39)	TP43.335x42.357x0.575	5.000	0.000	0.0	79.171	-50.691	4631.490	0.011
L40	30.5 - 25.5	TP44.313x43.335x0.575	5.000	0.000	0.0	80.981	-52.735	4737.400	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L41	25.5 - 20.5 (40)	TP45.291x44.313x0.575	5.000	0.000	0.0	82.792	-54.821	4843.310	0.011
L42	20.5 - 15.5 (41)	TP46.269x45.291x0.575	5.000	0.000	0.0	84.602	-56.940	4949.220	0.012
L43	15.5 - 10.5 (42)	TP47.247x46.269x0.563	5.000	0.000	0.0	84.557	-59.096	4946.560	0.012
L44	10.5 - 5.5 (43)	TP48.224x47.247x0.563	5.000	0.000	0.0	86.328	-61.286	5050.170	0.012
L45	5.5 - 0.5 (44)	TP49.202x48.224x0.563	5.000	0.000	0.0	88.099	-63.506	5153.770	0.012
L46	0.5 - 0 (45)	TP49.3x49.202x0.563	0.500	0.000	0.0	88.276	-63.745	5164.130	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 155 (1)	TP20x20x0.25	47.540	241.134	0.197	0.000	241.134	0.000
L2	155 - 150.5 (2)	TP20x20x0.25	87.427	241.134	0.363	0.000	241.134	0.000
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	92.058	247.912	0.371	0.000	247.912	0.000
L4	150 - 145 (4)	TP21.341x20.3x0.25	160.313	531.227	0.302	0.000	531.227	0.000
L5	145 - 140 (5)	TP22.382x21.341x0.25	234.085	576.513	0.406	0.000	576.513	0.000
L6	140 - 135 (6)	TP23.423x22.382x0.25	312.494	622.721	0.502	0.000	622.721	0.000
L7	135 - 130 (7)	TP24.464x23.423x0.25	428.300	669.732	0.640	0.000	669.732	0.000
L8	130 - 125 (8)	TP25.505x24.464x0.25	550.781	717.427	0.768	0.000	717.427	0.000
L9	125 - 120 (9)	TP26.546x25.505x0.25	688.492	765.689	0.899	0.000	765.689	0.000
L10	120 - 119.583 (10)	TP26.633x26.546x0.25	700.166	769.737	0.910	0.000	769.737	0.000
L11	119.583 - 119.333 (11)	TP26.685x26.633x0.375	707.180	1247.333	0.567	0.000	1247.333	0.000
L12	119.333 - 114.333 (12)	TP27.726x26.685x0.369	855.642	1327.150	0.645	0.000	1327.150	0.000
L13	114.333 - 111.833 (13)	TP28.246x27.726x0.369	935.017	1378.467	0.678	0.000	1378.467	0.000
L14	111.833 - 111.583 (14)	TP28.299x28.246x0.413	943.017	1540.558	0.612	0.000	1540.558	0.000
L15	111.583 - 106.583 (15)	TP29.34x28.299x0.4	1105.417	1610.425	0.686	0.000	1610.425	0.000
L16	106.583 - 97.167 (16)	TP31.3x29.34x0.4	1257.875	1719.117	0.732	0.000	1719.117	0.000
L17	97.167 - 97 (17)	TP30.804x29.794x0.525	1428.125	2305.933	0.619	0.000	2305.933	0.000
L18	97 - 92 (18)	TP31.815x30.804x0.513	1602.517	2408.008	0.665	0.000	2408.008	0.000
L19	92 - 87 (19)	TP32.826x31.815x0.513	1780.658	2567.308	0.694	0.000	2567.308	0.000
L20	87 - 82 (20)	TP33.836x32.826x0.506	1962.483	2699.917	0.727	0.000	2699.917	0.000
L21	82 - 79.333 (21)	TP34.375x33.836x0.5	2060.958	2755.717	0.748	0.000	2755.717	0.000
L22	79.333 - 79.083 (22)	TP34.426x34.375x0.763	2070.242	4118.025	0.503	0.000	4118.025	0.000
L23	79.083 - 75.25 (23)	TP35.201x34.426x0.75	2213.842	4245.842	0.521	0.000	4245.842	0.000
L24	75.25 - 75 (24)	TP35.251x35.201x0.75	2223.292	4258.442	0.522	0.000	4258.442	0.000
L25	75 - 70 (25)	TP36.262x35.251x0.738	2414.325	4443.767	0.543	0.000	4443.767	0.000
L26	70 - 65 (26)	TP37.273x36.262x0.725	2613.558	4627.892	0.565	0.000	4627.892	0.000
L27	65 - 63.25 (27)	TP37.626x37.273x0.725	2686.383	4718.792	0.569	0.000	4718.792	0.000
L28	63.25 - 63 (28)	TP37.677x37.626x0.8	2696.842	5189.625	0.520	0.000	5189.625	0.000
L29	63 - 58 (29)	TP38.688x37.677x0.788	2909.075	5400.783	0.539	0.000	5400.783	0.000
L30	58 - 49.083 (30)	TP40.49x38.688x0.775	3039.142	5493.600	0.553	0.000	5493.600	0.000
L31	49.083 - 48.083 (31)	TP39.897x38.544x0.838	3347.650	6096.425	0.549	0.000	6096.425	0.000
L32	48.083 -	TP40.875x39.897x0.825	3577.725	6319.033	0.566	0.000	6319.033	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 $\frac{M_{uy}}{\phi M_{ny}}$
	43.083 (32)							
L33	43.083 - 38.417 (33)	TP41.787x40.875x0.813	3797.508	6519.000	0.583	0.000	6519.000	0.000
L34	38.417 - 38.167 (34)	TP41.836x41.787x0.713	3809.408	5772.450	0.660	0.000	5772.450	0.000
L35	38.167 - 37.583 (35)	TP41.95x41.836x0.713	3837.275	5804.833	0.661	0.000	5804.833	0.000
L36	37.583 - 37.333 (36)	TP41.999x41.95x0.863	3849.217	6967.225	0.552	0.000	6967.225	0.000
L37	37.333 - 35.75 (37)	TP42.309x41.999x0.863	3925.183	7073.567	0.555	0.000	7073.567	0.000
L38	35.75 - 35.5 (38)	TP42.357x42.309x0.588	3937.225	4926.375	0.799	0.000	4926.375	0.000
L39	35.5 - 30.5 (39)	TP43.335x42.357x0.575	4180.492	5055.983	0.827	0.000	5055.983	0.000
L40	30.5 - 25.5 (40)	TP44.313x43.335x0.575	4428.158	5291.433	0.837	0.000	5291.433	0.000
L41	25.5 - 20.5 (41)	TP45.291x44.313x0.575	4679.442	5532.233	0.846	0.000	5532.233	0.000
L42	20.5 - 15.5 (42)	TP46.269x45.291x0.575	4933.600	5778.400	0.854	0.000	5778.400	0.000
L43	15.5 - 10.5 (43)	TP47.247x46.269x0.563	5190.442	5883.783	0.882	0.000	5883.783	0.000
L44	10.5 - 5.5 (44)	TP48.224x47.247x0.563	5449.867	6096.158	0.894	0.000	6096.158	0.000
L45	5.5 - 0.5 (45)	TP49.202x48.224x0.563	5711.841	6310.567	0.905	0.000	6310.567	0.000
L46	0.5 - 0 (46)	TP49.3x49.202x0.563	5738.175	6332.117	0.906	0.000	6332.117	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP20x20x0.25	8.497	146.585	0.058	0.182	254.528	0.001
L2	155 - 150.5 (2)	TP20x20x0.25	9.215	146.585	0.063	0.041	254.528	0.000
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	9.295	148.811	0.062	0.063	262.319	0.000
L4	150 - 145 (4)	TP21.341x20.3x0.25	14.331	297.969	0.048	0.220	552.800	0.000
L5	145 - 140 (5)	TP22.382x21.341x0.25	15.169	312.676	0.049	0.050	608.717	0.000
L6	140 - 135 (6)	TP23.423x22.382x0.25	16.227	327.383	0.050	0.158	667.327	0.000
L7	135 - 130 (7)	TP24.464x23.423x0.25	22.621	342.090	0.066	0.336	728.632	0.000
L8	130 - 125 (8)	TP25.505x24.464x0.25	27.124	356.797	0.076	0.251	792.630	0.000
L9	125 - 120 (9)	TP26.546x25.505x0.25	27.962	371.505	0.075	0.359	859.325	0.000
L10	120 - 119.583 (10)	TP26.633x26.546x0.25	28.025	372.731	0.075	0.364	865.008	0.000
L11	119.583 - 119.333 (11)	TP26.685x26.633x0.375	28.067	557.551	0.050	0.367	1290.342	0.000
L12	119.333 - 114.333 (12)	TP27.726x26.685x0.369	31.519	570.082	0.055	0.442	1371.858	0.000
L13	114.333 - 111.833 (13)	TP28.246x27.726x0.369	31.977	580.928	0.055	0.476	1424.558	0.000
L14	111.833 - 111.583 (14)	TP28.299x28.246x0.413	32.010	650.046	0.049	0.479	1594.525	0.000
L15	111.583 - 106.583 (15)	TP29.34x28.299x0.4	32.933	654.161	0.050	0.556	1665.242	0.000
L16	106.583 - 97.167 (16)	TP31.3x29.34x0.4	33.595	675.730	0.050	0.555	1776.858	0.000
L17	97.167 - 97 (17)	TP30.804x29.794x0.525	34.486	898.338	0.038	0.555	2392.692	0.000
L18	97 - 92 (18)	TP31.815x30.804x0.513	35.252	906.582	0.039	0.554	2496.242	0.000
L19	92 - 87 (19)	TP32.826x31.815x0.513	35.996	935.853	0.038	0.554	2660.042	0.000
L20	87 - 82 (20)	TP33.836x32.826x0.506	36.728	953.532	0.039	0.553	2795.583	0.000
L21	82 - 79.333 (21)	TP34.375x33.836x0.5	37.119	957.169	0.039	0.553	2852.158	0.000
L22	79.333 - 79.083 (22)	TP34.426x34.375x0.763	37.139	1450.550	0.026	0.553	4295.283	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L23	79.083 - 75.25 (23)	TP35.201x34.426x0.75	37.768	1460.140	0.026	0.553	4424.792	0.000
L24	75.25 - 75 (24)	TP35.251x35.201x0.75	37.795	1462.280	0.026	0.553	4437.783	0.000
L25	75 - 70 (25)	TP36.262x35.251x0.738	38.595	1480.550	0.026	0.552	4626.483	0.000
L26	70 - 65 (26)	TP37.273x36.262x0.725	41.427	1497.370	0.028	1.614	4813.825	0.000
L27	65 - 63.25 (27)	TP37.626x37.273x0.725	41.837	1511.870	0.028	1.655	4907.458	0.000
L28	63.25 - 63 (28)	TP37.677x37.626x0.8	41.873	1667.160	0.025	1.661	5407.942	0.000
L29	63 - 58 (29)	TP38.688x37.677x0.788	43.032	1686.650	0.026	1.777	5622.941	0.000
L30	58 - 49.083 (30)	TP40.49x38.688x0.775	43.705	1686.980	0.026	1.847	5715.891	0.000
L31	49.083 - 48.083 (31)	TP39.897x38.544x0.838	45.485	1848.590	0.025	2.010	6351.325	0.000
L32	48.083 - 43.083 (32)	TP40.875x39.897x0.825	46.624	1867.170	0.025	2.234	6577.808	0.000
L33	43.083 - 38.417 (33)	TP41.787x40.875x0.813	47.616	1881.350	0.025	2.337	6780.850	0.000
L34	38.417 - 38.167 (34)	TP41.836x41.787x0.713	47.650	1655.800	0.029	2.342	5989.575	0.000
L35	38.167 - 37.583 (35)	TP41.95x41.836x0.713	47.775	1660.400	0.029	2.355	6022.891	0.000
L36	37.583 - 37.333 (36)	TP41.999x41.95x0.863	47.820	2005.020	0.024	2.360	7255.158	0.000
L37	37.333 - 35.75 (37)	TP42.309x41.999x0.863	48.178	2020.110	0.024	2.393	7364.767	0.000
L38	35.75 - 35.5 (38)	TP42.357x42.309x0.588	48.202	1386.770	0.035	2.398	5095.292	0.000
L39	35.5 - 30.5 (39)	TP43.335x42.357x0.575	49.132	1389.450	0.035	2.513	5226.150	0.000
L40	30.5 - 25.5 (40)	TP44.313x43.335x0.575	49.984	1421.220	0.035	2.673	5467.900	0.000
L41	25.5 - 20.5 (41)	TP45.291x44.313x0.575	50.581	1452.990	0.035	2.672	5715.117	0.000
L42	20.5 - 15.5 (42)	TP46.269x45.291x0.575	51.135	1484.770	0.034	2.671	5967.800	0.000
L43	15.5 - 10.5 (43)	TP47.247x46.269x0.563	51.654	1483.970	0.035	2.671	6093.867	0.000
L44	10.5 - 5.5 (44)	TP48.224x47.247x0.563	52.170	1515.050	0.034	2.670	6351.817	0.000
L45	5.5 - 0.5 (45)	TP49.202x48.224x0.563	52.678	1546.130	0.034	2.670	6615.117	0.000
L46	0.5 - 0 (46)	TP49.3x49.202x0.563	52.707	1549.240	0.034	2.670	6641.741	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 155 (1)	0.006	0.197	0.000	0.058	0.001	0.207	1.050	4.8.2
L2	155 - 150.5 (2)	0.007	0.363	0.000	0.063	0.000	0.373	1.050	4.8.2
L3	150.5 - 150 (3)	0.006	0.371	0.000	0.062	0.000	0.382	1.050	4.8.2
L4	150 - 145 (4)	0.006	0.302	0.000	0.048	0.000	0.311	1.050	4.8.2
L5	145 - 140 (5)	0.007	0.406	0.000	0.049	0.000	0.415	1.050	4.8.2
L6	140 - 135 (6)	0.007	0.502	0.000	0.050	0.000	0.511	1.050	4.8.2
L7	135 - 130 (7)	0.010	0.640	0.000	0.066	0.000	0.654	1.050	4.8.2
L8	130 - 125 (8)	0.012	0.768	0.000	0.076	0.000	0.786	1.050	4.8.2
L9	125 - 120 (9)	0.012	0.899	0.000	0.075	0.000	0.917	1.050	4.8.2
L10	120 - 119.583 (10)	0.012	0.910	0.000	0.075	0.000	0.928	1.050	4.8.2
L11	119.583 - 119.333 (11)	0.008	0.567	0.000	0.050	0.000	0.578	1.050	4.8.2
L12	119.333 - 114.333 (12)	0.010	0.645	0.000	0.055	0.000	0.657	1.050	4.8.2
L13	114.333 -	0.010	0.678	0.000	0.055	0.000	0.691	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
	111.833 (13)								
L14	111.833 - 111.583 (14)	0.009	0.612	0.000	0.049	0.000	0.623	1.050	4.8.2
L15	111.583 - 106.583 (15)	0.009	0.686	0.000	0.050	0.000	0.698	1.050	4.8.2
L16	106.583 - 97.167 (16)	0.009	0.732	0.000	0.050	0.000	0.743	1.050	4.8.2
L17	97.167 - 97 (17)	0.008	0.619	0.000	0.038	0.000	0.628	1.050	4.8.2
L18	97 - 92 (18)	0.008	0.665	0.000	0.039	0.000	0.675	1.050	4.8.2
L19	92 - 87 (19)	0.008	0.694	0.000	0.038	0.000	0.703	1.050	4.8.2
L20	87 - 82 (20)	0.008	0.727	0.000	0.039	0.000	0.737	1.050	4.8.2
L21	82 - 79.333 (21)	0.009	0.748	0.000	0.039	0.000	0.758	1.050	4.8.2
L22	79.333 - 79.083 (22)	0.006	0.503	0.000	0.026	0.000	0.509	1.050	4.8.2
L23	79.083 - 75.25 (23)	0.006	0.521	0.000	0.026	0.000	0.528	1.050	4.8.2
L24	75.25 - 75 (24)	0.006	0.522	0.000	0.026	0.000	0.529	1.050	4.8.2
L25	75 - 70 (25)	0.006	0.543	0.000	0.026	0.000	0.550	1.050	4.8.2
L26	70 - 65 (26)	0.007	0.565	0.000	0.028	0.000	0.572	1.050	4.8.2
L27	65 - 63.25 (27)	0.007	0.569	0.000	0.028	0.000	0.577	1.050	4.8.2
L28	63.25 - 63 (28)	0.006	0.520	0.000	0.025	0.000	0.526	1.050	4.8.2
L29	63 - 58 (29)	0.006	0.539	0.000	0.026	0.000	0.546	1.050	4.8.2
L30	58 - 49.083 (30)	0.007	0.553	0.000	0.026	0.000	0.561	1.050	4.8.2
L31	49.083 - 48.083 (31)	0.007	0.549	0.000	0.025	0.000	0.557	1.050	4.8.2
L32	48.083 - 43.083 (32)	0.007	0.566	0.000	0.025	0.000	0.574	1.050	4.8.2
L33	43.083 - 38.417 (33)	0.008	0.583	0.000	0.025	0.000	0.591	1.050	4.8.2
L34	38.417 - 38.167 (34)	0.009	0.660	0.000	0.029	0.000	0.669	1.050	4.8.2
L35	38.167 - 37.583 (35)	0.009	0.661	0.000	0.029	0.000	0.671	1.050	4.8.2
L36	37.583 - 37.333 (36)	0.007	0.552	0.000	0.024	0.000	0.560	1.050	4.8.2
L37	37.333 - 35.75 (37)	0.007	0.555	0.000	0.024	0.000	0.563	1.050	4.8.2
L38	35.75 - 35.5 (38)	0.011	0.799	0.000	0.035	0.000	0.811	1.050	4.8.2
L39	35.5 - 30.5 (39)	0.011	0.827	0.000	0.035	0.000	0.839	1.050	4.8.2
L40	30.5 - 25.5 (40)	0.011	0.837	0.000	0.035	0.000	0.849	1.050	4.8.2
L41	25.5 - 20.5 (41)	0.011	0.846	0.000	0.035	0.000	0.858	1.050	4.8.2
L42	20.5 - 15.5 (42)	0.012	0.854	0.000	0.034	0.000	0.867	1.050	4.8.2
L43	15.5 - 10.5 (43)	0.012	0.882	0.000	0.035	0.000	0.895	1.050	4.8.2
L44	10.5 - 5.5 (44)	0.012	0.894	0.000	0.034	0.000	0.907	1.050	4.8.2
L45	5.5 - 0.5 (45)	0.012	0.905	0.000	0.034	0.000	0.919	1.050	4.8.2
L46	0.5 - 0 (46)	0.012	0.906	0.000	0.034	0.000	0.920	1.050	4.8.2

Section Capacity Table

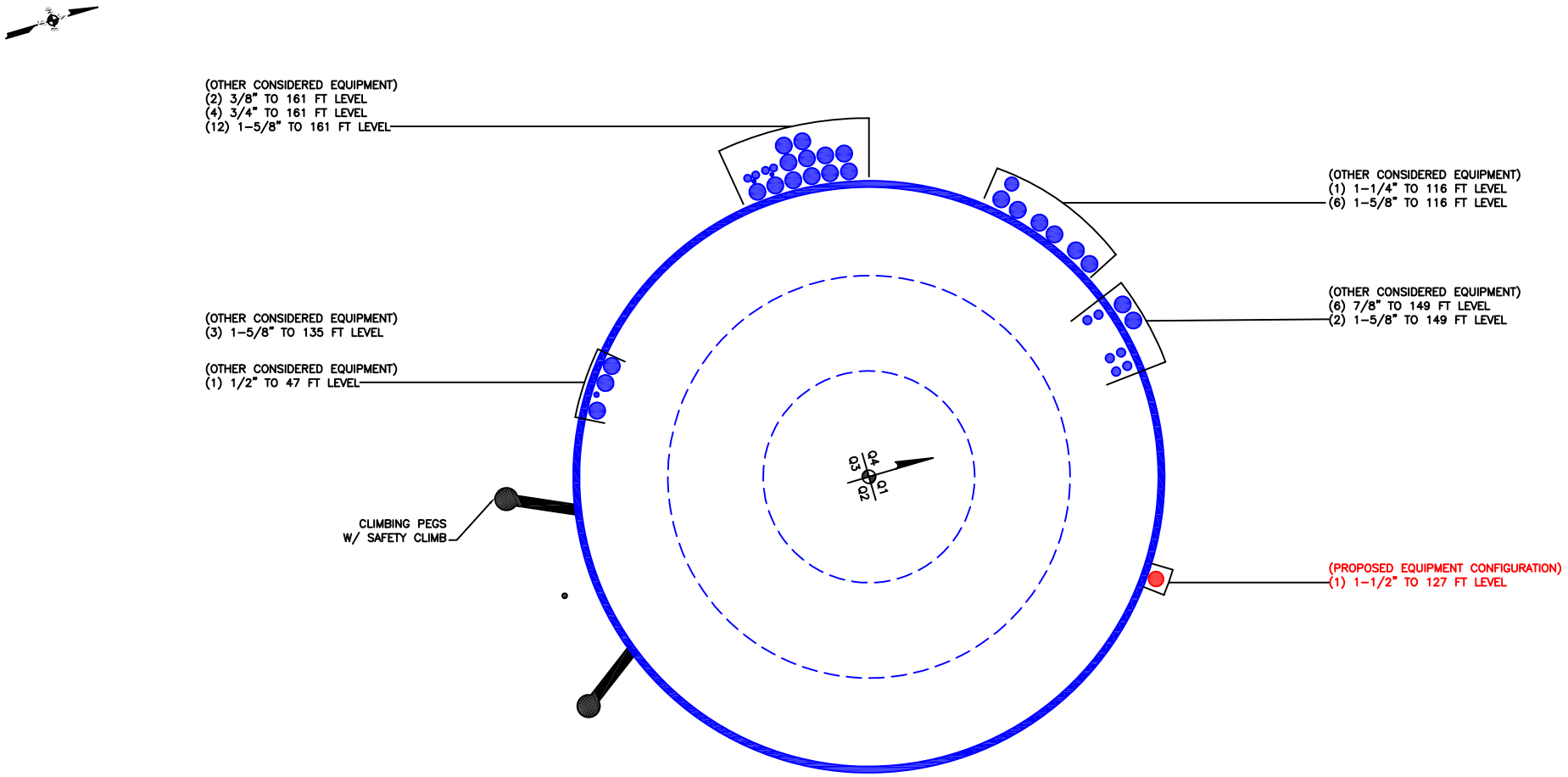
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 155	Pole	TP20x20x0.25	1	-2.917	513.047	19.7	Pass
L2	155 - 150.5	Pole	TP20x20x0.25	2	-3.178	513.047	35.5	Pass
L3	150.5 - 150	Pole	TP20.3x20.3x0.25	3	-3.210	520.840	36.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L4	150 - 145	Pole	TP21.341x20.3x0.25	4	-6.438	1042.890	29.6	Pass
L5	145 - 140	Pole	TP22.382x21.341x0.25	5	-6.839	1094.362	39.5	Pass
L6	140 - 135	Pole	TP23.423x22.382x0.25	6	-7.338	1145.844	48.7	Pass
L7	135 - 130	Pole	TP24.464x23.423x0.25	7	-11.227	1197.315	62.3	Pass
L8	130 - 125	Pole	TP25.505x24.464x0.25	8	-14.614	1248.786	74.8	Pass
L9	125 - 120	Pole	TP26.546x25.505x0.25	9	-15.323	1300.267	87.4	Pass
L10	120 - 119.583	Pole	TP26.633x26.546x0.25	10	-15.400	1304.562	88.4	Pass
L11	119.583 - 119.333	Pole	TP26.685x26.633x0.375	11	-15.449	1951.425	55.0	Pass
L12	119.333 - 114.333	Pole	TP27.726x26.685x0.369	12	-18.295	1995.283	62.6	Pass
L13	114.333 - 111.833	Pole	TP28.246x27.726x0.369	13	-18.762	2033.251	65.8	Pass
L14	111.833 - 111.583	Pole	TP28.299x28.246x0.413	14	-18.835	2275.161	59.4	Pass
L15	111.583 - 106.583	Pole	TP29.34x28.299x0.4	15	-19.843	2289.567	66.5	Pass
L16	106.583 - 97.167	Pole	TP31.3x29.34x0.4	16	-20.830	2365.051	70.8	Pass
L17	97.167 - 97	Pole	TP30.804x29.794x0.525	17	-22.806	3144.183	59.9	Pass
L18	97 - 92	Pole	TP31.815x30.804x0.513	18	-24.131	3173.037	64.3	Pass
L19	92 - 87	Pole	TP32.826x31.815x0.513	19	-25.512	3275.485	67.0	Pass
L20	87 - 82	Pole	TP33.836x32.826x0.506	20	-26.931	3337.362	70.2	Pass
L21	82 - 79.333	Pole	TP34.375x33.836x0.5	21	-27.697	3350.088	72.2	Pass
L22	79.333 - 79.083	Pole	TP34.426x34.375x0.763	22	-27.819	5076.918	48.5	Pass
L23	79.083 - 75.25	Pole	TP35.201x34.426x0.75	23	-29.252	5110.476	50.3	Pass
L24	75.25 - 75	Pole	TP35.251x35.201x0.75	24	-29.364	5117.973	50.4	Pass
L25	75 - 70	Pole	TP36.262x35.251x0.738	25	-31.272	5181.928	52.4	Pass
L26	70 - 65	Pole	TP37.273x36.262x0.725	26	-33.035	5240.812	54.5	Pass
L27	65 - 63.25	Pole	TP37.626x37.273x0.725	27	-33.709	5291.538	54.9	Pass
L28	63.25 - 63	Pole	TP37.677x37.626x0.8	28	-33.843	5835.060	50.1	Pass
L29	63 - 58	Pole	TP38.688x37.677x0.788	29	-35.954	5903.257	52.0	Pass
L30	58 - 49.083	Pole	TP40.49x38.688x0.775	30	-37.250	5904.423	53.4	Pass
L31	49.083 - 48.083	Pole	TP39.897x38.544x0.838	31	-42.596	6470.068	53.0	Pass
L32	48.083 - 43.083	Pole	TP40.875x39.897x0.825	32	-45.048	6535.105	54.7	Pass
L33	43.083 - 38.417	Pole	TP41.787x40.875x0.813	33	-47.292	6584.739	56.3	Pass
L34	38.417 - 38.167	Pole	TP41.836x41.787x0.713	34	-47.420	5795.286	63.7	Pass
L35	38.167 - 37.583	Pole	TP41.95x41.836x0.713	35	-47.670	5811.382	63.9	Pass
L36	37.583 - 37.333	Pole	TP41.999x41.95x0.863	36	-47.805	7017.580	53.4	Pass
L37	37.333 - 35.75	Pole	TP42.309x41.999x0.863	37	-48.585	7070.395	53.6	Pass
L38	35.75 - 35.5	Pole	TP42.357x42.309x0.588	38	-48.707	4853.698	77.2	Pass
L39	35.5 - 30.5	Pole	TP43.335x42.357x0.575	39	-50.691	4863.064	79.9	Pass
L40	30.5 - 25.5	Pole	TP44.313x43.335x0.575	40	-52.735	4974.270	80.9	Pass
L41	25.5 - 20.5	Pole	TP45.291x44.313x0.575	41	-54.821	5085.475	81.8	Pass
L42	20.5 - 15.5	Pole	TP46.269x45.291x0.575	42	-56.940	5196.681	82.5	Pass
L43	15.5 - 10.5	Pole	TP47.247x46.269x0.563	43	-59.096	5193.888	85.3	Pass
L44	10.5 - 5.5	Pole	TP48.224x47.247x0.563	44	-61.286	5302.678	86.4	Pass
L45	5.5 - 0.5	Pole	TP49.202x48.224x0.563	45	-63.506	5411.458	87.5	Pass
L46	0.5 - 0	Pole	TP49.3x49.202x0.563	46	-63.745	5422.336	87.6	Pass
							Summary	
						Pole (L10)	88.4	Pass
						RATING =	**88.4**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 161 FT LEVEL
(4) 3/4" TO 161 FT LEVEL
(12) 1-5/8" TO 161 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 116 FT LEVEL
(6) 1-5/8" TO 116 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 149 FT LEVEL
(2) 1-5/8" TO 149 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 135 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 47 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
Q4
Q3
Q1
Q2
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 127 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 806373

Work Order: 1987185

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160	9.5	0	0	20	20	0.25		A53-B-35
2	150.5	0.5	0	0	20.30	20.3	0.25		A53-B-35
3	150	52.833	4.833	12	20.30	31.3	0.25	Auto	A572-65
4	102	52.917	5.917	12	29.79	40.49	0.375	Auto	A572-65
5	55	55	0	12	38.54	49.3	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	37.583	plate	PL 6"x1"	3				E1				E1				E1
2	38.417	75.25	plate	PL 4.25"x1"	3	E1				E1				E1			
3	75.25	111.833	plate	PL 4.25"x1"	3				E1				E1				E1
4	111.833	119.583	plate	PL 4.25"x0.75"	3	E1				E1				E1			
5	35.75	63.25	plate	CCI-SFP-085125	3		E2				E2				E2		
6	63.25	79.333	plate	CCI-SFP-065125	3		E2				E2				E2		
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	PC 8.8 - M20 (100)	35	PC 8.8 - M20 (100)	35.000	17.000	4.750	1.1875	A514-GR100
2	4.25	1	4.25	0.5	PC 8.8 - M20 (100)	20	PC 8.8 - M20 (100)	20.000	20.000	3.000	1.1875	A514-GR100
3	4.25	1	4.25	0.5	PC 8.8 - M20 (100)	20	PC 8.8 - M20 (100)	20.000	20.000	3.000	1.1875	A514-GR100
4	4.25	0.75	3.1875	0.375	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	15.000	2.250	1.1875	A514-GR100
5	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	45	PC 8.8 - M20 (100)	45.000	17.000	9.063	1.1875	A572-65
6	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
PL 6"x1"	Top	12	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	12	N	3	2	-	-	-	-	-	-	-	-	-
PL 4.25"x1"	Top	7	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	7	N	3	2	-	-	-	-	-	-	-	-	-
PL 4.25"x0.75"	Top	6	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	6	N	3	2	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	160 - 155	5		0	20.000	20.000	0.25	A53-B-35	1.000
2	155 - 150.5	4.5	0	0	20.000	20.000	0.25	A53-B-35	1.000
3	150.5 - 150	0.5	0	0	20.300	20.300	0.25	A53-B-35	1.000
4	150 - 145	5		12	20.300	21.341	0.25	A572-65	1.000
5	145 - 140	5		12	21.341	22.382	0.25	A572-65	1.000
6	140 - 135	5		12	22.382	23.423	0.25	A572-65	1.000
7	135 - 130	5		12	23.423	24.464	0.25	A572-65	1.000
8	130 - 125	5		12	24.464	25.505	0.25	A572-65	1.000
9	125 - 120	5		12	25.505	26.546	0.25	A572-65	1.000
10	120 - 119.583	0.417		12	26.546	26.633	0.25	A572-65	1.000
11	119.583 - 119.333	0.25		12	26.633	26.685	0.375	A572-65	0.971
12	119.333 - 114.333	5		12	26.685	27.726	0.36875	A572-65	0.976
13	114.333 - 111.833	2.5		12	27.726	28.246	0.36875	A572-65	0.970
14	111.833 - 111.583	0.25		12	28.246	28.299	0.4125	A572-65	0.954
15	111.583 - 106.583	5		12	28.299	29.340	0.4	A572-65	0.971
16	106.583 - 102	9.416	4.833	12	29.340	31.300	0.4	A572-65	0.960
17	102 - 97	5		12	29.794	30.804	0.525	A572-65	0.967
18	97 - 92	5		12	30.804	31.815	0.5125	A572-65	0.982
19	92 - 87	5		12	31.815	32.826	0.5125	A572-65	0.974
20	87 - 82	5		12	32.826	33.836	0.50625	A572-65	0.979
21	82 - 79.333	2.667		12	33.836	34.375	0.5	A572-65	0.987
22	79.333 - 79.083	0.25		12	34.375	34.426	0.7625	A572-65	0.947
23	79.083 - 75.25	3.833		12	34.426	35.201	0.75	A572-65	0.952
24	75.25 - 75	0.25		12	35.201	35.251	0.75	A572-65	0.952
25	75 - 70	5		12	35.251	36.262	0.7375	A572-65	0.954
26	70 - 65	5		12	36.262	37.273	0.725	A572-65	0.958
27	65 - 63.25	1.75		12	37.273	37.626	0.725	A572-65	0.954
28	63.25 - 63	0.25		12	37.626	37.677	0.8	A572-65	0.945
29	63 - 58	5		12	37.677	38.688	0.7875	A572-65	0.946
30	58 - 55	8.917	5.917	12	38.688	40.490	0.775	A572-65	0.954
31	55 - 48.083	6.917		12	38.544	39.897	0.8375	A572-65	0.952
32	48.083 - 43.083	5		12	39.897	40.875	0.825	A572-65	0.955
33	43.083 - 38.417	4.666		12	40.875	41.787	0.8125	A572-65	0.960
34	38.417 - 38.167	0.25		12	41.787	41.836	0.7125	A572-65	0.956
35	38.167 - 37.583	0.584		12	41.836	41.950	0.7125	A572-65	0.956
36	37.583 - 37.333	0.25		12	41.950	41.999	0.8625	A572-65	0.950
37	37.333 - 35.75	1.583		12	41.999	42.309	0.8625	A572-65	0.946
38	35.75 - 35.5	0.25		12	42.309	42.357	0.5875	A572-65	0.975
39	35.5 - 30.5	5		12	42.357	43.335	0.575	A572-65	0.991
40	30.5 - 25.5	5		12	43.335	44.313	0.575	A572-65	0.986
41	25.5 - 20.5	5		12	44.313	45.291	0.575	A572-65	0.981
42	20.5 - 15.5	5		12	45.291	46.269	0.575	A572-65	0.976
43	15.5 - 10.5	5		12	46.269	47.247	0.5625	A572-65	0.993
44	10.5 - 5.5	5		12	47.247	48.224	0.5625	A572-65	0.989
45	5.5 - 0.5	5		12	48.224	49.202	0.5625	A572-65	0.984
46	0.5 - 0	0.5		12	49.202	49.300	0.5625	A572-65	0.984

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160 - 155	2.92	47.54	8.50
2	155 - 150.5	3.18	87.43	9.22
3	150.5 - 150	3.21	92.06	9.29
4	150 - 145	6.44	160.31	14.33
5	145 - 140	6.84	234.09	15.17
6	140 - 135	7.34	312.49	16.23
7	135 - 130	11.23	428.30	22.62
8	130 - 125	14.61	550.78	27.12
9	125 - 120	15.32	688.49	27.96
10	120 - 119.583	15.40	700.17	28.02
11	119.583 - 119.333	15.45	707.18	28.07
12	119.333 - 114.333	18.29	855.64	31.52
13	114.333 - 111.833	18.76	935.02	31.98
14	111.833 - 111.583	18.83	943.02	32.01
15	111.583 - 106.583	19.84	1105.41	32.93
16	106.583 - 102	20.83	1257.87	33.60
17	102 - 97	22.81	1428.13	34.49
18	97 - 92	24.13	1602.52	35.25
19	92 - 87	25.51	1780.65	36.00
20	87 - 82	26.93	1962.48	36.73
21	82 - 79.333	27.70	2060.96	37.12
22	79.333 - 79.083	27.82	2070.24	37.14
23	79.083 - 75.25	29.25	2213.84	37.77
24	75.25 - 75	29.36	2223.29	37.79
25	75 - 70	31.27	2414.32	38.60
26	70 - 65	33.03	2613.56	41.43
27	65 - 63.25	33.71	2686.38	41.84
28	63.25 - 63	33.84	2696.84	41.87
29	63 - 58	35.95	2909.07	43.03
30	58 - 55	37.25	3039.14	43.70
31	55 - 48.083	42.60	3347.65	45.49
32	48.083 - 43.083	45.05	3577.72	46.62
33	43.083 - 38.417	47.29	3797.50	47.62
34	38.417 - 38.167	47.42	3809.41	47.65
35	38.167 - 37.583	47.67	3837.27	47.77
36	37.583 - 37.333	47.81	3849.22	47.82
37	37.333 - 35.75	48.59	3925.18	48.18
38	35.75 - 35.5	48.71	3937.23	48.20
39	35.5 - 30.5	50.69	4180.49	49.13
40	30.5 - 25.5	52.74	4428.16	49.98
41	25.5 - 20.5	54.82	4679.44	50.58
42	20.5 - 15.5	56.94	4933.60	51.14
43	15.5 - 10.5	59.10	5190.44	51.65
44	10.5 - 5.5	61.29	5449.86	52.17
45	5.5 - 0.5	63.51	5711.84	52.68
46	0.5 - 0	63.74	5738.18	52.71

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20x20x0.25	Pole	19.7%	Pass
155 - 150.5	Pole	TP20x20x0.25	Pole	35.5%	Pass
150.5 - 150	Pole	TP20.3x20.3x0.25	Pole	36.4%	Pass
150 - 145	Pole	TP21.341x20.3x0.25	Pole	29.5%	Pass
145 - 140	Pole	TP22.382x21.341x0.25	Pole	39.4%	Pass
140 - 135	Pole	TP23.423x22.382x0.25	Pole	48.5%	Pass
135 - 130	Pole	TP24.464x23.423x0.25	Pole	62.1%	Pass
130 - 125	Pole	TP25.505x24.464x0.25	Pole	74.6%	Pass
125 - 120	Pole	TP26.546x25.505x0.25	Pole	87.1%	Pass
120 - 119.58	Pole	TP26.633x26.546x0.25	Pole	88.1%	Pass
119.58 - 119.33	Pole + Reinf.	TP26.685x26.633x0.375	Reinf. 4 Compression	69.6%	Pass
119.33 - 114.33	Pole + Reinf.	TP27.726x26.685x0.3688	Reinf. 4 Compression	78.9%	Pass
114.33 - 111.83	Pole + Reinf.	TP28.246x27.726x0.3688	Reinf. 4 Compression	83.4%	Pass
111.83 - 111.58	Pole + Reinf.	TP28.299x28.246x0.4125	Reinf. 3 Compression	76.3%	Pass
111.58 - 106.58	Pole + Reinf.	TP29.34x28.299x0.4	Reinf. 3 Compression	84.2%	Pass
106.58 - 102	Pole + Reinf.	TP31.3x29.34x0.4	Reinf. 3 Compression	90.8%	Pass
102 - 97	Pole + Reinf.	TP30.804x29.794x0.525	Reinf. 3 Compression	76.5%	Pass
97 - 92	Pole + Reinf.	TP31.815x30.804x0.5125	Reinf. 3 Compression	81.0%	Pass
92 - 87	Pole + Reinf.	TP32.826x31.815x0.5125	Reinf. 3 Compression	85.1%	Pass
87 - 82	Pole + Reinf.	TP33.836x32.826x0.5063	Reinf. 3 Compression	88.9%	Pass
82 - 79.33	Pole + Reinf.	TP34.375x33.836x0.5	Reinf. 3 Compression	90.7%	Pass
79.33 - 79.08	Pole + Reinf.	TP34.426x34.375x0.7625	Reinf. 6 Tension Rupture	73.1%	Pass
79.08 - 75.25	Pole + Reinf.	TP35.201x34.426x0.75	Reinf. 6 Tension Rupture	75.5%	Pass
75.25 - 75	Pole + Reinf.	TP35.251x35.201x0.75	Reinf. 6 Tension Rupture	75.7%	Pass
75 - 70	Pole + Reinf.	TP36.262x35.251x0.7375	Reinf. 6 Tension Rupture	78.7%	Pass
70 - 65	Pole + Reinf.	TP37.273x36.262x0.725	Reinf. 6 Tension Rupture	81.7%	Pass
65 - 63.25	Pole + Reinf.	TP37.626x37.273x0.725	Reinf. 6 Tension Rupture	82.8%	Pass
63.25 - 63	Pole + Reinf.	TP37.677x37.626x0.8	Reinf. 5 Bolt Shear	74.5%	Pass
63 - 58	Pole + Reinf.	TP38.688x37.677x0.7875	Reinf. 5 Compression	74.3%	Pass
58 - 55	Pole + Reinf.	TP40.49x38.688x0.775	Reinf. 5 Compression	75.8%	Pass
55 - 48.08	Pole + Reinf.	TP39.897x38.544x0.8375	Reinf. 5 Compression	75.6%	Pass
48.08 - 43.08	Pole + Reinf.	TP40.875x39.897x0.825	Reinf. 5 Compression	77.8%	Pass
43.08 - 38.42	Pole + Reinf.	TP41.787x40.875x0.8125	Reinf. 5 Compression	79.8%	Pass
38.42 - 38.17	Pole + Reinf.	TP41.836x41.787x0.7125	Reinf. 5 Compression	91.5%	Pass
38.17 - 37.58	Pole + Reinf.	TP41.95x41.836x0.7125	Reinf. 5 Compression	91.7%	Pass
37.58 - 37.33	Pole + Reinf.	TP41.999x41.95x0.8625	Reinf. 5 Compression	76.2%	Pass
37.33 - 35.75	Pole + Reinf.	TP42.309x41.999x0.8625	Reinf. 5 Bolt Shear	79.9%	Pass
35.75 - 35.5	Pole + Reinf.	TP42.357x42.309x0.5875	Reinf. 1 Compression	86.6%	Pass
35.5 - 30.5	Pole + Reinf.	TP43.335x42.357x0.575	Reinf. 1 Compression	88.3%	Pass
30.5 - 25.5	Pole + Reinf.	TP44.313x43.335x0.575	Reinf. 1 Compression	89.8%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.291x44.313x0.575	Reinf. 1 Compression	91.3%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.269x45.291x0.575	Reinf. 1 Compression	92.6%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.247x46.269x0.5625	Reinf. 1 Compression	93.8%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.224x47.247x0.5625	Reinf. 1 Compression	94.9%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.202x48.224x0.5625	Pole	96.0%	Pass
0.5 - 0	Pole + Reinf.	TP49.3x49.202x0.5625	Pole	96.2%	Pass
				Summary	
			Pole	96.2%	Pass
			Reinforcement	96.0%	Pass
			Overall	96.2%	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
160 - 155	756	n/a	756	15.51	n/a	15.51	19.7%						
155 - 150.5	756	n/a	756	15.51	n/a	15.51	35.5%						
150.5 - 150	791	n/a	791	15.75	n/a	15.75	36.4%						
150 - 145	965	n/a	965	16.95	n/a	16.95	29.5%						
145 - 140	1115	n/a	1115	17.79	n/a	17.79	39.4%						
140 - 135	1280	n/a	1280	18.63	n/a	18.63	48.5%						
135 - 130	1461	n/a	1461	19.46	n/a	19.46	62.1%						
130 - 125	1657	n/a	1657	20.30	n/a	20.30	74.6%						
125 - 120	1871	n/a	1871	21.14	n/a	21.14	87.1%						
120 - 119.58	1889	n/a	1889	21.21	n/a	21.21	88.1%						
119.58 - 119.33	1901	907	2808	21.25	9.56	30.81	57.8%				69.6%		
119.33 - 114.33	2134	977	3111	22.09	9.56	31.65	66.7%				78.9%		
114.33 - 111.83	2258	1012	3270	22.50	9.56	32.07	71.2%				83.4%		
111.83 - 111.58	2270	1378	3649	22.55	12.75	35.30	64.5%			76.3%			
111.58 - 106.58	2533	1477	4010	23.38	12.75	36.13	72.5%			84.2%			
106.58 - 102	2790	1571	4361	24.15	12.75	36.90	79.4%			90.8%			
102 - 97	4349	1622	5971	36.69	12.75	49.44	57.9%			76.5%			
97 - 92	4796	1726	6523	37.91	12.75	50.66	61.8%			81.0%			
92 - 87	5274	1834	7108	39.13	12.75	51.88	65.7%			85.1%			
87 - 82	5782	1944	7727	40.35	12.75	53.10	69.3%			88.9%			
82 - 79.33	6066	2005	8071	41.00	12.75	53.75	71.1%			90.7%			
79.33 - 79.08	6093	5933	12026	41.06	37.13	78.18	48.1%			61.3%			73.1%
79.08 - 75.25	6519	6191	12710	41.99	37.13	79.12	50.1%			63.4%			75.5%
75.25 - 75	6547	6209	12756	42.05	37.13	79.18	50.2%		63.5%				75.7%
75 - 70	7133	6555	13688	43.27	37.13	80.40	52.8%		66.0%				78.7%
70 - 65	7753	6911	14663	44.49	37.13	81.62	55.4%		68.5%				81.7%
65 - 63.25	7978	7037	15015	44.92	37.13	82.04	56.4%		69.4%				82.8%
63.25 - 63	8010	8530	16540	44.98	44.63	89.60	51.5%		63.4%			74.5%	
63 - 58	8679	8974	17653	46.20	44.63	90.82	54.0%		65.7%			74.3%	
58 - 55	9098	9245	18343	46.93	44.63	91.55	55.4%		67.1%			75.8%	
55 - 48.08	11063	9520	20582	55.51	44.63	100.13	52.6%		66.9%			75.6%	
48.08 - 43.08	11905	9973	21878	56.88	44.63	101.51	54.6%		68.9%			77.8%	
43.08 - 38.42	12730	10406	23135	58.17	44.63	102.79	56.5%		70.6%			79.8%	
38.42 - 38.17	12775	7495	20270	58.24	31.88	90.11	64.8%					91.5%	
38.17 - 37.58	12881	7534	20415	58.40	31.88	90.27	65.0%					91.7%	
37.58 - 37.33	12927	11739	24665	58.47	49.88	108.34	54.0%	59.7%				76.2%	
37.33 - 35.75	13218	11906	25123	58.90	49.88	108.78	54.6%	60.2%				79.9%	
35.75 - 35.5	13264	4257	17521	58.97	18.00	76.97	78.7%	86.6%					
35.5 - 30.5	14214	4450	18664	60.35	18.00	78.35	80.9%	88.3%					
30.5 - 25.5	15208	4648	19856	61.72	18.00	79.72	83.1%	89.8%					
25.5 - 20.5	16248	4849	21097	63.10	18.00	81.10	85.2%	91.3%					
20.5 - 15.5	17334	5055	22389	64.47	18.00	82.47	87.2%	92.6%					
15.5 - 10.5	18467	5265	23732	65.85	18.00	83.85	89.1%	93.8%					
10.5 - 5.5	19649	5480	25128	67.22	18.00	85.22	91.0%	94.9%					
5.5 - 0.5	20880	5698	26578	68.60	18.00	86.60	96.0%	95.9%					
0.5 - 0	21005	5720	26726	68.74	18.00	86.74	96.2%	96.0%					

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

Bolted Monopole Extension

TIA Rev. H

Description:

This sheet is for the design of a bolted monopole extension

Assumptions / Notes:

1. The plastification of the pole is not considered.

1. PARAMETERS

Flange Elevation: Extension

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5? No / Yes

Moment: $M := 92.058kip \cdot ft$

Axial Load: $P := 3.21kip$

Shear Load: $V := 9.295kip$

1.2 Shaft Properties at the Flange

Upper Shaft Diameter: $D_{shaft1} := 20in$

Upper Shaft Thickness: $t_1 := 0.25in$

Upper Shaft Grade: $Fy_{ext} := 35ksi$ $Fu_{ext} := 58ksi$

Lower Shaft Diameter: $D_{shaft2} := 20in$

Lower Shaft Thickness: $t_2 := 0.25in$

Lower Shaft Grade: $Fy_{shaft} := 65ksi$ $Fu_{shaft} := 80ksi$

1.3 Proposed Channel Properties

Channel Member: MC-10 X 28.5

Number of Proposed Channels: $N_{new} := 3$

Channel Face-to-Centroid Distance: $centroid_{new} := 1.12in$

Web Thickness of Proposed Channel: $t_{new} := .425in$

Width of Proposed Channels: $w_{new} := 10in$

Diameter to the Centroid of Proposed Channels: $BC_{centroid} := D_{shaft2} + 2 \cdot centroid_{new} = 22.24 \cdot in$

Gross Area of One Channel: $A_{g\_new} := 7.37in^2$

Unbraced Length: $L_u := 18in$

Strength of Channel: $F_y := 50ksi$ $F_{uu} := 65ksi$

Moment of Inertia of Proposed Channels: $I_{new} := \frac{N_{new} \cdot BC_{centroid}^2 \cdot A_{g\_new}}{8} = 1367 \cdot in^4$

1.4 Bolt Properties

Number of Bolts in the Top Bolt Group: $N_{be} := 6$

Number of Bolts in Bottom Bolt Group: $N_{bs} := 6$

Intermediate Bolt Spacing: $L_b := 3in$

Bolt Diameter: $D_b := 1in$

Bolt Hole Diameter: $D_h := 1.125in$

Washer Diameter: $D_w := 2in$

Ultimate Strength: $Fu_{bolt} := 120ksi$

Thread Type:

Distance between Centroid of Bolt Groups: $L_t := L_u + L_b \cdot (N_{be} - 1) = 33 \cdot in$

Length of One Bolt Group: $L_{group} := L_b \cdot (N_{be} - 1) = 15 \cdot in$

Gross Area: $A_{gb} := \frac{\pi}{4} \cdot D_b^{\,2} = 0.79 \cdot in^2$

2. Determine Maximum Forces on Channels

2.1 Division of Forces For New Channel Design

Total Gross Area: $A_{g\_total} := N_{new} \cdot A_{g\_new} = 22.11 \cdot in^2$

Total Moment of Inertia: $I_{total} := I_{new} = 1367 \cdot in^4$

2.2 Maximum Axial Forces in Single Proposed Channel

Outer Radius to Centroid of Channels: $C := \frac{BC_{centroid}}{2} = 11.12 \cdot in$

Critical Compression Bending Stress: $P_{comp} := \frac{M \cdot C}{I_{new}} \cdot A_{g\_new} + \frac{P}{N_{new}} = 67.3 \cdot kip$

Critical Tension Bending Stress: $P_{tens} := \frac{M \cdot C}{I_{new}} \cdot A_{g\_new} - \frac{P}{N_{new}} = 65.16 \cdot kip$

Maximum Axial Reaction: $P_{max} := \max(P_{comp}, P_{tens}) = 67.3 \cdot kip$

3. Channel Calculations

3.1 Available Compression Strength

[AISC 15th Edition E3 and E4]

Resistance Factor:

$$\phi_c := 0.9$$

Effective Length Factors:

$$K_x := 1 \qquad K_y := 1 \qquad K_z := 1$$

Effective Length of Member:

$$L_{cx} := K_x \cdot L_u = 18 \cdot in \qquad L_{cy} := K_y \cdot L_u = 18 \cdot in \qquad L_{cz} := K_z \cdot L_u = 18 \cdot in$$

$$L_c := \max(L_{cx}, L_{cy}, L_{cz}) = 18 \cdot in$$

Warping Constant:

$$C_w := 193 in^6$$

Shear Modulus of Elasticity:

$$G := 11200 ksi$$

Torsional Constant:

$$J := 0.791 in^4$$

Moments of Inertia:

$$I_x := 11.3 in^4 \qquad I_y := 126 in^4$$

Radii of Gyration:

$$r_x := \sqrt{\frac{I_x}{A_{g\_new}}} = 1.238 \cdot in \qquad r_y := \sqrt{\frac{I_y}{A_{g\_new}}} = 4.135 \cdot in$$

$$r_{min} := \min(r_x, r_y) = 1.24 \cdot in$$

Coordinates of Shear Center with Respect to the Centroid:

$$x_0 := -0.26 in + centroid_{new} = 0.86 \cdot in \qquad y_0 := 0$$

Squared Polar Radius of Gyration about the Shear Center:

$$r_{0.squared} := x_0^2 + y_0^2 + \frac{I_x + I_y}{A_{g\_new}} = 19.37 \cdot in^2$$

$$F_{ey} := \frac{\pi^2 \cdot E}{\left(\frac{L_{cy}}{r_y}\right)^2} = 15102.74 \cdot ksi$$

[AISC 15th Ed., Eq.E4-6]

$$F_{ez} := \left[\frac{\pi^2 \cdot E \cdot C_w}{(L_{cz})^2} + G \cdot J\right] \cdot \frac{1}{A_{g\_new} \cdot r_{0.squared}} = 1256.41 \cdot ksi$$

[AISC 15th Ed., Eq.E4-7]

Flexural Constant:

[AISC 15th Ed., Eq.E4-8]

$$H := 1 - \frac{x_0^2 + y_0^2}{r_{0.squared}} = 0.96$$

Elastic Buckling Stress: [AISC 15th Edition E3-4 and E4-3]

$$F_e := \min\left[\frac{\pi^2 \cdot 29000\,ksi}{\left(\frac{L_c}{r_{min}}\right)^2}, \left(\frac{F_{ey} + F_{ez}}{2 \cdot H}\right)\left[1 - \sqrt{1 - \frac{4 \cdot F_{ey} \cdot F_{ez} \cdot H}{\left(F_{ey} + F_{ez}\right)^2}}\right]\right] = 1252.09\,ksi$$

Determination of Crticial Stress: [AISC 15th Ed., Eqs. E3-2 and E3-3] [AISC 15th Edition E3-2]

$$F_{cr} := \begin{cases} \left(0.658^{\frac{F_y}{F_e}} \cdot F_y\right) & \text{if } 4.71 \cdot \sqrt{\frac{E}{F_y}} \geq \frac{L_c}{r_{min}} \\ \left(0.877 \cdot F_e\right) & \text{otherwise} \end{cases}$$

$$F_{cr} = 49.17\,ksi$$

Allowable Compressive Strength: [AISC 15th Ed., Eqs. J4-6 and E3-1]

$$\phi P_n := \begin{cases} \left(\phi_c \cdot F_y \cdot A_{g\_new}\right) & \text{if } \frac{L_c}{r_x} \leq 25 \\ \left(\phi_c \cdot F_{cr} \cdot A_{g\_new}\right) & \text{otherwise} \end{cases}$$

Check Compressive Strength:

$$\phi P_n = 331.65\,kip$$

$$Capacity_{comp} := \begin{cases} \frac{P_{comp}}{\phi P_n} & \text{if S15Allowable} = \text{"No"} \\ \frac{P_{comp}}{\phi P_n} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable} = \text{"Yes"} \end{cases} = 19.33\,\%$$

$$Capacity_{comp} = 19.33\,\%$$

3.2 Available Tension Strength

Gross Section Yield [AISC 15th Edition Ch. D2]

Available Tension Yield Strength: $\phi P_{ty} := 0.9 \cdot F_y \cdot A_{g\_new} = 331.65 \cdot kip$

Net Section Fracture

Bolt Hole Diameter: $BH := D_h = 1.13 \cdot in$

Thickness: $T := t_{new} = 0.43 \cdot in$

Net Area: $A_{net} := A_{g\_new} - \left(BH + \frac{1}{16} in \right) \cdot T = 6.87 \cdot in^2$

Shear Lag Factor: $U := 1 - \frac{centroid_{new}}{L_b \cdot N_{be}} = 0.94$

Net Area Limitation: $A_e := U \cdot A_{net} = 6.44 \cdot in^2$

Available Fractile Strength: $\phi P_{tr} := 0.75 \cdot F_u \cdot A_e = 313.86 \cdot kip$

Tension Check

Controlling Mode of Failure:

$$Check_{mode} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{tens}}{\phi P_{tr}} > \frac{P_{tens}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$Check_{mode} = \text{"Fracture Controls"}$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } Check_{mode} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases} = 313.86 \cdot kip$$

Tension Check:

$$Capacity_{tension} := \begin{cases} \frac{P_{tens}}{\phi P_{nt}} & \text{if } S15Allowable = \text{"No"} \\ \frac{P_{tens}}{\phi P_{nt}} \cdot \left(\frac{1}{1.05} \right) & \text{if } S15Allowable = \text{"Yes"} \end{cases}$$

$Capacity_{tension} = 19.77 \cdot \%$

3.3 Available Flexural Strength

Elastic Section Modulus: $S_{min} := 3.99in^3$

Plastic Section Modulus: $Z_{min} := 7.59in^3$

Shear in One Channel: $V_{one\_channel} := \frac{V}{N_{new}} = 3.1 \cdot kip$

Flexure in One Channel: $M_{shear} := V_{one\_channel} \cdot L_{group} + P_{max} \cdot centroid_{new} = 121.85 \cdot kip \cdot in$

Allowable Flexural Strength: $\phi M_n := 0.9 \cdot \min\left(F_y \cdot Z_{min}, 1.6 \cdot F_y \cdot S_{min}\right) = 287.28 \cdot kip \cdot in$ [AISC 15th Edition Ch. F6]

Check Flexural Strength:

$$Capacity_{flexure} := \begin{cases} \frac{M_{shear}}{\phi M_n} & \text{if S15Allowable = "No"} \\ \frac{M_{shear}}{\phi M_n} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 40.4 \cdot \%$$

$Capacity_{flexure} = 40.4 \cdot \%$

3.4 Combined Flexure and Compression Check

Required Axial Strength: $P_r := P_{max} = 67.3 \cdot kip$

Available Axial Strength: $P_c := \phi P_n = 331.65 \cdot kip$ [AISC 15th Edition Ch. H1]

Combined Capacity:

$$Combined := \begin{cases} \frac{P_r}{P_c} + \frac{8}{9} \cdot \frac{M_{shear}}{\phi M_n} & \text{if } \frac{P_r}{P_c} \geq 0.2 \\ \frac{P_r}{2P_c} + \frac{M_{shear}}{\phi M_n} & \text{otherwise} \end{cases} = 57.99 \cdot \%$$

Check Combined Strength:

$$Capacity_{combined} := \begin{cases} Combined & \text{if S15Allowable = "No"} \\ Combined \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 55.23 \cdot \%$$

$Capacity_{combined} = 55.23 \cdot \%$

4. Bolt Checks

Checked to applied loads

Bolt Shear Resistance Factor: $\phi_b := 0.75$ [TIA-222-H Section 4.9.6.3]

Connection Length Reduction Factor:

$$R_b := \begin{cases} 1 & \text{if } L_b \le 16in \\ 0.9 & \text{if } 16in \le L_b \le 38in \\ 0.75 & \text{if } L_b > 38in \end{cases} = 1$$

Allowable Bolt Shear: $\phi R_{nv} := \phi_b \cdot 0.625 \cdot R_b \cdot Fu_{bolt} \cdot Thread \cdot A_{gb} = 35.34 \cdot kip$

4.1 Connection on Extension

Bolt Shear Capacity:

$$\phi R_{nv2} := \begin{cases} \phi R_{nv} & \text{if } N_{be} \cdot L_b \le 38in \\ (\phi R_{nv} \cdot 0.833) & \text{if } N_{bs} \cdot 3in > 38in \end{cases}$$

[AISC 15th Edition Table J3.2 Note (b)]

$\phi R_{nv2} = 35.34 \cdot kip$

$$V_{max2} := \frac{P_{max}}{N_{bs}} = 11.22 \cdot kip$$

$$Capacity_{shear} := \begin{cases} \frac{V_{max2}}{\phi R_{nv2}} & \text{if S15Allowable = "No"} \\ \frac{V_{max2}}{\phi R_{nv2}} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 30.22 \cdot \%$$

4.2 Connection on Existing Tower

Bolt Shear Capacity:

$$\phi R_{nv1} := \begin{cases} \phi R_{nv} & \text{if } N_{bs} \cdot L_b \le 38in \\ (\phi R_{nv} \cdot 0.833) & \text{if } N_{be} \cdot L_b > 38in \end{cases}$$

[AISC 15th Edition Table J3.2 Note (b)]

$\phi R_{nv1} = 35.34 \cdot kip$

Applied Bolt Shear:

$$V_{max} := \frac{P_{max}}{N_{be}} = 11.22 \cdot kip$$

$$Capacity_{shear.eccentric} := \begin{cases} \frac{V_{max}}{\phi R_{nv1}} & \text{if S15Allowable = "No"} \\ \frac{V_{max}}{\phi R_{nv1}} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 30.22 \cdot \%$$

Tension Check Due to Shear

(Conservatively assuming the neutral axis of the bolt group is at the center of gravity.)

Number of Bolts Above Neutral Axis:

$$n' := \text{floor}\left(\frac{N_{be}}{2}\right) = 3$$

Moment Arm Between Resultant Tensile and Resultant Compressive Force:

$$d_m := L_b \cdot \text{ceil}\left(\frac{N_{be}}{2}\right) = 9 \cdot \text{in}$$

Tension Force due to Shear:

$$r_{ut} := \frac{V_{one\_channel} \cdot L_t}{n' \cdot d_m} = 3.79 \cdot \text{kip}$$

Design Tensile Strength:

$$\phi R_{nt} := 0.75 \cdot \left(0.75 Fu_{bolt} \cdot A_{gb}\right) = 53.01 \cdot \text{kip}$$

$$\text{Capacity}_{tension.eccentric} := \begin{cases} \frac{r_{ut}}{\phi R_{nt}} & \text{if S15Allowable = "No"} \\ \frac{r_{ut}}{\phi R_{nt}} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 6.8 \cdot \%$$

Combined Shear and Tension Check: [TIA-222-H Section 4.9.6.4]

$$\text{Capacity}_{interaction} := \begin{cases} \left(\frac{V_{max}}{\phi R_{nv1}}\right)^2 + \left(\frac{r_{ut}}{\phi R_{nt}}\right)^2 & \text{if S15Allowable = "No"} \\ \left[\left(\frac{V_{max}}{\phi R_{nv1}}\right)^2 + \left(\frac{r_{ut}}{\phi R_{nt}}\right)^2\right] \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases}$$

$$\text{Capacity}_{interaction} = 10.08 \cdot \%$$

4.3 Bolt Torsion due to Shear Offset

Check for torsion applied to two channels

Applied Shear Per Bolt: $r_{nv} := \frac{V_{one\_channel}}{N_{be}} = 0.52 \cdot kip$

Reduction for Torsional Shear: $\phi := 0.75$

Polar Moment of Inertia: $J = A_g \cdot \Sigma r_i^2$

Furthest bolt from centroid: $r_e := \frac{L_{group}}{2} = 7.5 \cdot in$

Angle between Direct Shear and Torsional Shear (degrees): $\theta := 0$

Distances from bolt group centroid to each individual bolt: $r_{i1} := L_b = 3 \cdot in$

Sum of squared polar distances: $R_i := r_{i1}^2 + r_{i1}^2 = 0.13\ ft^2$

Polar Moment of Inertia: $J := \left(floor\left(\frac{N_{be}}{2}\right) \cdot 2\right) A_{gb} \cdot \left(R_i\right) = 84.82 \cdot in^4$

Worst Case Torsional Stress on One Rod: $\tau_t := \frac{V_{one\_channel} \cdot L_t \cdot r_e}{J} = 9.04 \cdot ksi$

Worst Case Torsional Shear: $r_\tau := \tau_t \cdot A_{gb} = 7.1 \cdot kip$

X Component of Torsional Shear: $r_{\tau x} := r_\tau \cdot \cos\left(\theta \cdot \frac{\pi}{180}\right) = 7.1 \cdot kip$

Y Component of Torsional Shear: $r_{\tau y} := r_\tau \cdot \sin\left(\theta \cdot \frac{\pi}{180}\right) = 0 \cdot kip$

Resultant Shear: $R_\tau := \sqrt{\left(r_{nv} + r_{\tau x}\right)^2 + \left(V_{max} + r_{\tau x}\right)^2} = 19.84 \cdot kip$

Available Shear Strength per Bolt: $\phi P_{nv} := \phi R_{nv1} = 35.34 \cdot kip$

Torsional Shear Capacity:

$$Capacity_{bolt\_torsion} := \begin{cases} \frac{R_\tau}{\phi P_{nv}} & \text{if } S15Allowable = \text{"No"} \\ \left(\frac{R_\tau}{\phi P_{nv}}\right) \cdot \left(\frac{1}{1.05}\right) & \text{if } S15Allowable = \text{"Yes"} \end{cases}$$

$Capacity_{bolt\_torsion} = 53.46 \cdot \%$

5. Pole/ Shaft Checks

5.1 Shaft Bearing

[AISC 15th Ed., Eqs. J3-6a and J3-6c]

Minimum Thickness to Bear On:

$$t := \min(t_1, t_2) = 0.25 \cdot in$$

Clear Distance from Edge of Hole to Edge of Adjacent Hole:

$$L_c := L_b - D_h = 1.87 \cdot in$$

Bearing By Tear-out:

$$Rn_{shaft1} := 1.2 \cdot L_c \cdot t_2 \cdot Fu_{shaft} = 45 \cdot kip$$

$$Rn_{ext1} := 1.2 L_c \cdot t_1 \cdot Fu_{ext} = 32.62 \cdot kip$$

Bearing By Hole Deformation:

$$Rn_{shaft2} := 2.4 \cdot D_b \cdot t_2 \cdot Fu_{shaft} = 48 \cdot kip$$

$$Rn_{ext2} := 2.4 \cdot D_b \cdot t_1 \cdot Fu_{ext} = 34.8 \cdot kip$$

Bearing Capacity:

$$\phi Rn_{shaft} := 0.75 \cdot \min(Rn_{shaft1}, Rn_{shaft2}, Rn_{ext1}, Rn_{ext2}) = 24.47 \cdot kip$$

$$Capacity_{shaft.bearing} := \begin{cases} \frac{V_{max}}{\phi Rn_{shaft}} & \text{if S15Allowable = "No"} \\ \frac{V_{max}}{\phi Rn_{shaft}} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 43.66 \cdot \%$$

5.2 Pull-Out Check (through shaft wall)

[AISC Design Guide 24 Ch. 3]

Reduction Factor:

$$\phi := 0.67$$

Hollow Member Pull-Out Capacity:

$$\phi R_n := \phi \cdot (0.6 \cdot \pi D_w \cdot t) \cdot Fu_{shaft} = 50.52 \cdot kip$$

$$r_{ut} = 3.79 \cdot kip$$

$$Capacity_{pullout} := \begin{cases} \frac{r_{ut}}{\phi R_n} & \text{if S15Allowable = "No"} \\ \frac{r_{ut}}{\phi R_n} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 7.14 \cdot \%$$

6. Weld Connection to Shim Plates

6.1 Weld Sizing

Length of Shim Plate: $L_{be} := ((N_{be} + 1)) \cdot L_b = 21 \cdot in$

Weld Material Grade:

Electrode Strength Coefficient: $C_1 = 1$

Coefficient for Eccentrically Loaded Weld Groups: $C := 3.71$ [AISC 15th Edition Table 8-4]

Weld Reduction Factor: $\phi_w := 0.75$

Minimum Weld Size for Eccentrically Loaded Weld: $D_{min} := \frac{P_{max}}{\phi_w \cdot C \cdot C_1 \cdot L_{be} \cdot \frac{kip}{in^2}} = 1.15 \cdot in$ *(In sixteenths of an inch)*

$D_{min1} := ceil\left(\frac{D_{min}}{in}\right) \cdot in = 2 \cdot in$ *(In sixteenths of an inch)*

Material Thickness of Filler Shim: [AISC 15th Edition Table J2.3]

Minimum Fillet Size per Material Thickness: $D_{min2} = 2 \cdot in$ *(In sixteenths of an inch)*

Design Weld Size: $D := 3in$ *(In sixteenths of an inch)*

6.2 Weld Capacity

Weld Capacity: $\phi R_n := \phi_w \cdot C \cdot C_1 \cdot L_{be} \cdot D \cdot \frac{kip}{in^2} = 175.3 \cdot kip$

$$Capacity_{weld} := \begin{cases} \frac{P_{max}}{\phi R_n} & \text{if S15Allowable = "No"} \\ \left(\frac{P_{max}}{\phi R_n}\right) \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable = "Yes"} \end{cases} = 36.56 \cdot \%$$

Weld Size Used: $D = \frac{3}{16} \cdot in$

7. Summary

Controlling Capacity: $Capacity_{overall} = 55.23 \cdot \%$

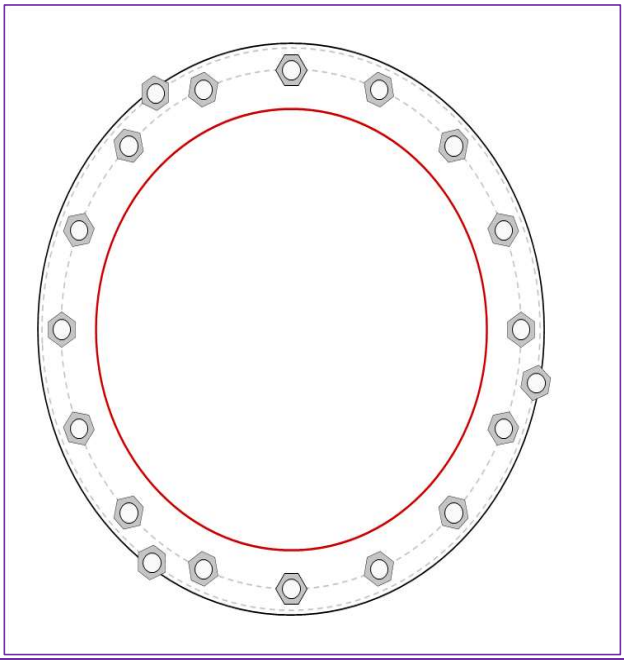
Monopole Base Plate Connection

Site Info	
BU #	806373
Site Name	HRT 101 943232, CT
Order #	556639, Rev. 1

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

Applied Loads	
Moment (kip-ft)	5738.18
Axial Force (kips)	63.74
Shear Force (kips)	52.71

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 58.06" BC

GROUP 2: (3) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 63" BC

pos. (deg): 123, 236, 349

Base Plate Data

64.06" OD x 2.75" Plate (S-128; Fy=60 ksi, Fu=80 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

GROUP 1:		
Pu_t = 247.26	ϕPn_t = 243.75	**Stress Rating**
Vu = 3.29	ϕVn = 149.1	**98.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 266.65	ϕPn_t = 304.69	**Stress Rating**
Vu = 0	ϕVn = 186.38	**83.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	36.97	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**65.2%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

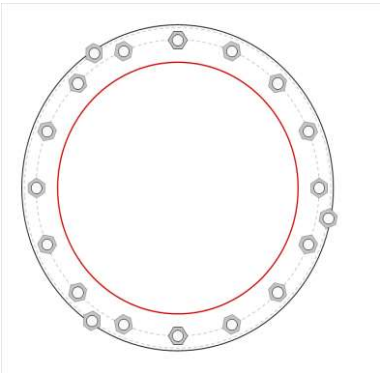
note: Bending interaction not considered when Grout Considered = "Yes"

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	

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	2.25	A615-75	58.06	0.5	0	N-Included		No
2	1	22.5	2.25	A615-75	58.06	0.5	0	N-Included		No
3	1	45	2.25	A615-75	58.06	0.5	0	N-Included		No
4	1	67.5	2.25	A615-75	58.06	0.5	0	N-Included		No
5	1	90	2.25	A615-75	58.06	0.5	0	N-Included		No
6	1	112.5	2.25	A615-75	58.06	0.5	0	N-Included		No
7	1	135	2.25	A615-75	58.06	0.5	0	N-Included		No
8	1	157.5	2.25	A615-75	58.06	0.5	0	N-Included		No
9	1	180	2.25	A615-75	58.06	0.5	0	N-Included		No
10	1	202.5	2.25	A615-75	58.06	0.5	0	N-Included		No
11	1	225	2.25	A615-75	58.06	0.5	0	N-Included		No
12	1	247.5	2.25	A615-75	58.06	0.5	0	N-Included		No
13	1	270	2.25	A615-75	58.06	0.5	0	N-Included		No
14	1	292.5	2.25	A615-75	58.06	0.5	0	N-Included		No
15	1	315	2.25	A615-75	58.06	0.5	0	N-Included		No
16	1	337.5	2.25	A615-75	58.06	0.5	0	N-Included		No
17	2	123	2.25	A193 Gr. B7	63	0.5	0	N-Included		No
18	2	236	2.25	A193 Gr. B7	63	0.5	0	N-Included		No
19	2	349	2.25	A193 Gr. B7	63	0.5	0	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	806373
Site Name:	HRT 101 943232, CT
Order Number:	556639, Rev. 1
TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5738.18	
Axial Force (kips)	63.76	
Shear Force (kips)	52.69	

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

Pier Design Data		
Depth	24.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 24.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	36	
Rebar Size	11	
Clear Cover to Ties	3.5	in
Tie Size	4	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.52	-
Soil Safety Factor	1.70	-
Max Moment (kip-ft)	6168.02	-
Rating*	*74.6%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	281.25	-
End Bearing (kips)	750.00	-
Weight of Concrete (kips)	120.43	-
Total Capacity (kips)	1031.25	-
Axial (kips)	184.19	-
Rating*	*17.0%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.49	-
Critical Moment (kip-ft)	6168.01	-
Critical Moment Capacity	8434.98	-
Rating*	*69.6%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	21.08	-
Critical Shear (kip)	454.74	-
Critical Shear Capacity	731.43	-
Rating*	*59.2%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**69.6%**
Soil Interaction Rating*	**74.6%**

*Rating per TIA-222-H Section 15.5

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

Go to Soil Calculations

Soil Profile

Groundwater Depth	5	# of Layers	4

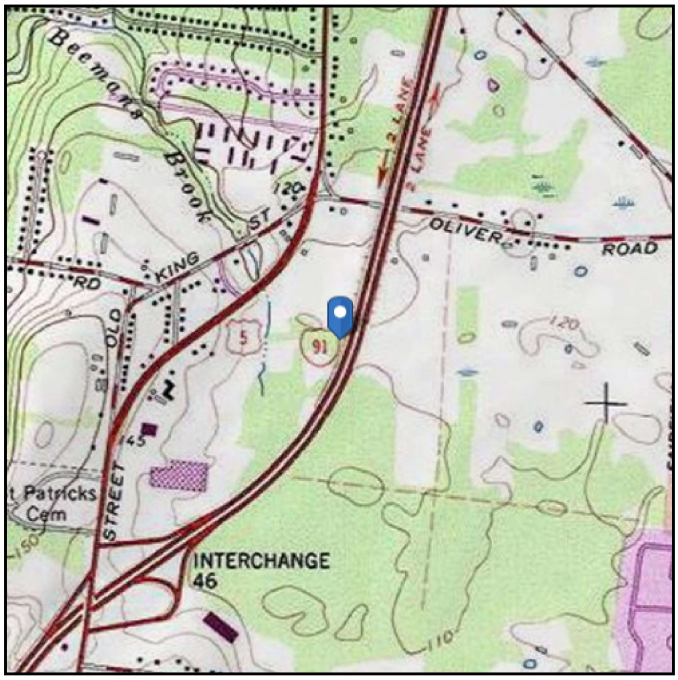
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	4	0.5	100	150	0	28	0.000	0.000	0.81	0.81			Cohesionless
3	4	5	1	125	150	0	42	0.000	0.000	0.81	0.81			Cohesionless
4	5	24.5	19.5	65	87.6	0	42	0.000	0.000	0.81	0.81	25.98448		Cohesionless

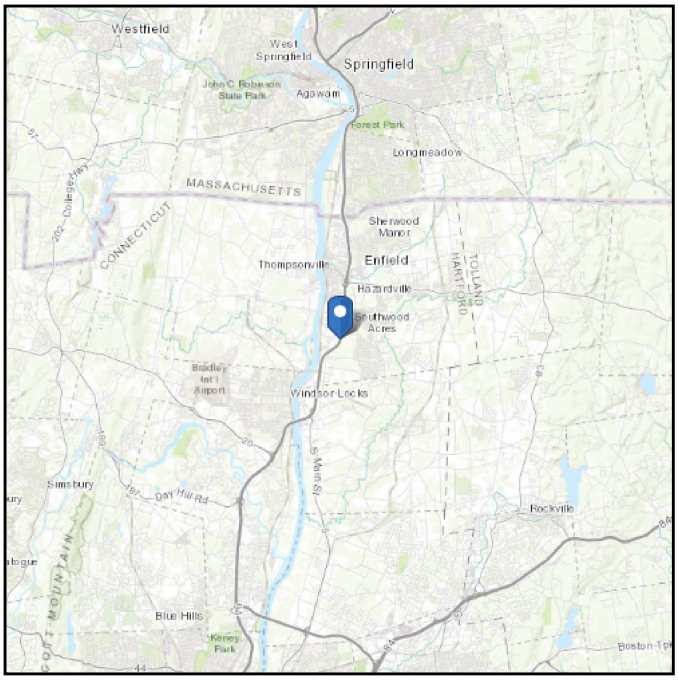
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 109.14 ft (NAVD 88)
Latitude: 41.960056
Longitude: -72.592306





Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Tue Oct 13 2020

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.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

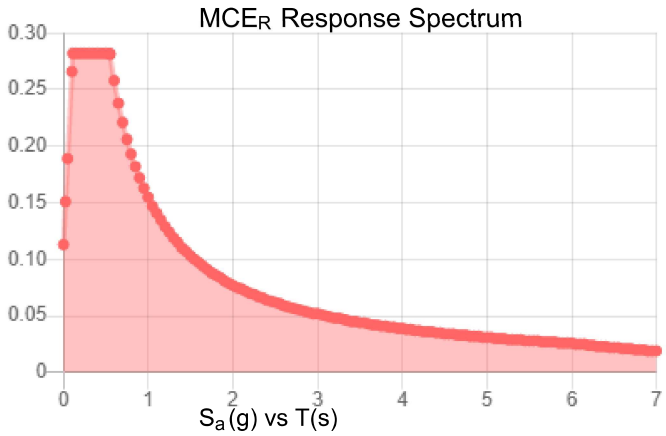
Seismic

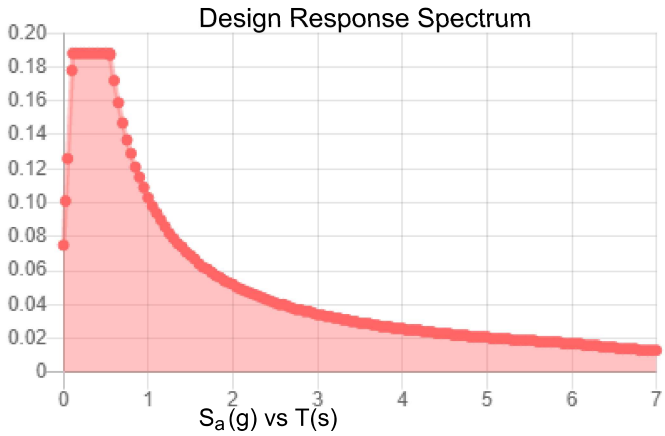
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.176	S_{DS} :	0.188
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.282	PGA_M :	0.139
S_{M1} :	0.155	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Oct 13 2020

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

Ice

Results:

Ice Thickness:	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:	Tue Oct 13 2020

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.

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Exhibit E

Mount Analysis

Date: September 8, 2021

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network Co-Locate**	
	Carrier Site Number:	BOBDL00046A
	Carrier Site Name:	CT-CCI-T-806373
Crown Castle Designation:	**BU Number:**	806373
	Site Name:	HRT 101 943232
	JDE Job Number:	650041
	Order Number:	556639, Rev. 1
Engineering Firm Designation:	**B+T Group Report Designation:**	89211.010.01
Site Data:	**4 Oliver Road, Enfield, CT, Hartford County, 06082** **Latitude 41° 57' 36.20" Longitude -72° 35' 32.30"**	
Structure Information:	**Tower Height & Type:**	**160 ft. Monopole**
	Mount Elevation:	**127 ft.**
	Mount Type:	**8 ft. Platform Mount**

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

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

Platform Mount **Sufficient**

"This analysis utilizes an ultimate 3-second gust wind speed of 116 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria."

Mount structural analysis prepared by: Erika Ruiz

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

Chad e. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 8' Platform Mount, designed by Commscope Platform Mount (Part #MC-PK8-DSH).

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	116 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.174
Seismic S_1:	0.055
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.)	Qty.	Manufacturer	Model/Type	Mount / Modification Details
127	127	3	JMA Wireless	MX08FRO665-21	8' Platform Mount
		3	Fujitsu	TA08025-B604	
		3	Fujitsu	TA08025-B605	
		1	Raycap	RDIDC-9181-PF-48	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Proposed Loading	Date: 06/11/2021	Crown Castle

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by B+T Group, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision D). In addition, this analysis is in accordance with OTHER SOW.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
5. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
6. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
7. 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.
8. The following material grades were assumed (Unless Noted Otherwise):
   (a) Connection Bolts : ASTM A325
   (b) Steel Pipe : ASTM A53 (GR. 35)
   (c) HSS (Round) : ASTM 500 (GR. B-42)
   (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
   (e) Channel : ASTM A36 (GR. 36)
   (f) Steel Solid Rod : ASTM A36 (GR. 36)
   (g) Steel Plate : ASTM A36 (GR. 36)
   (h) Steel Angle : ASTM A36 (GR. 36)
   (i) UNISTRUT : ASTM A570 (GR. 33)

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1	Main Horizontals	127	69	7.2	Pass
	Support Rails	127	20	11.9	Pass
	Support Tubes	127	31	55.4	Pass
	Support Channels	127	32	43.1	Pass
	Support Angles	127	11	31.6	Pass
	Mount Pipes	127	73	14.3	Pass
	Connection Plates	127	7	23.8	Pass
	Connection Angles	127	49	22.3	Pass
2	Connection Bolts	127	-	29.9	Pass

Structure Rating (max from all components) =	**55.4%**

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity reported.

4.1) Recommendations

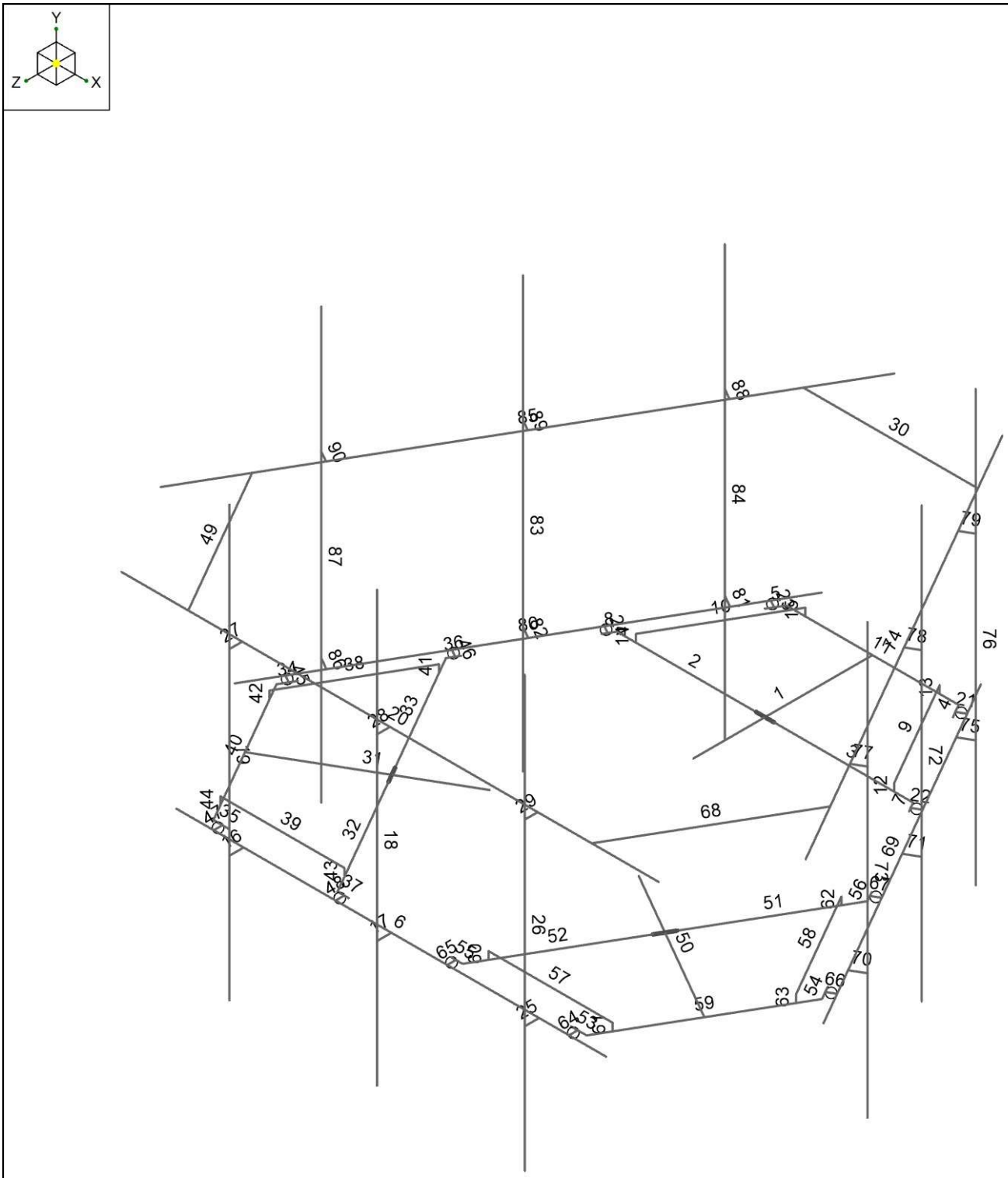
The Commscope Platform Mount, Part #MC-PK8-DSH has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS

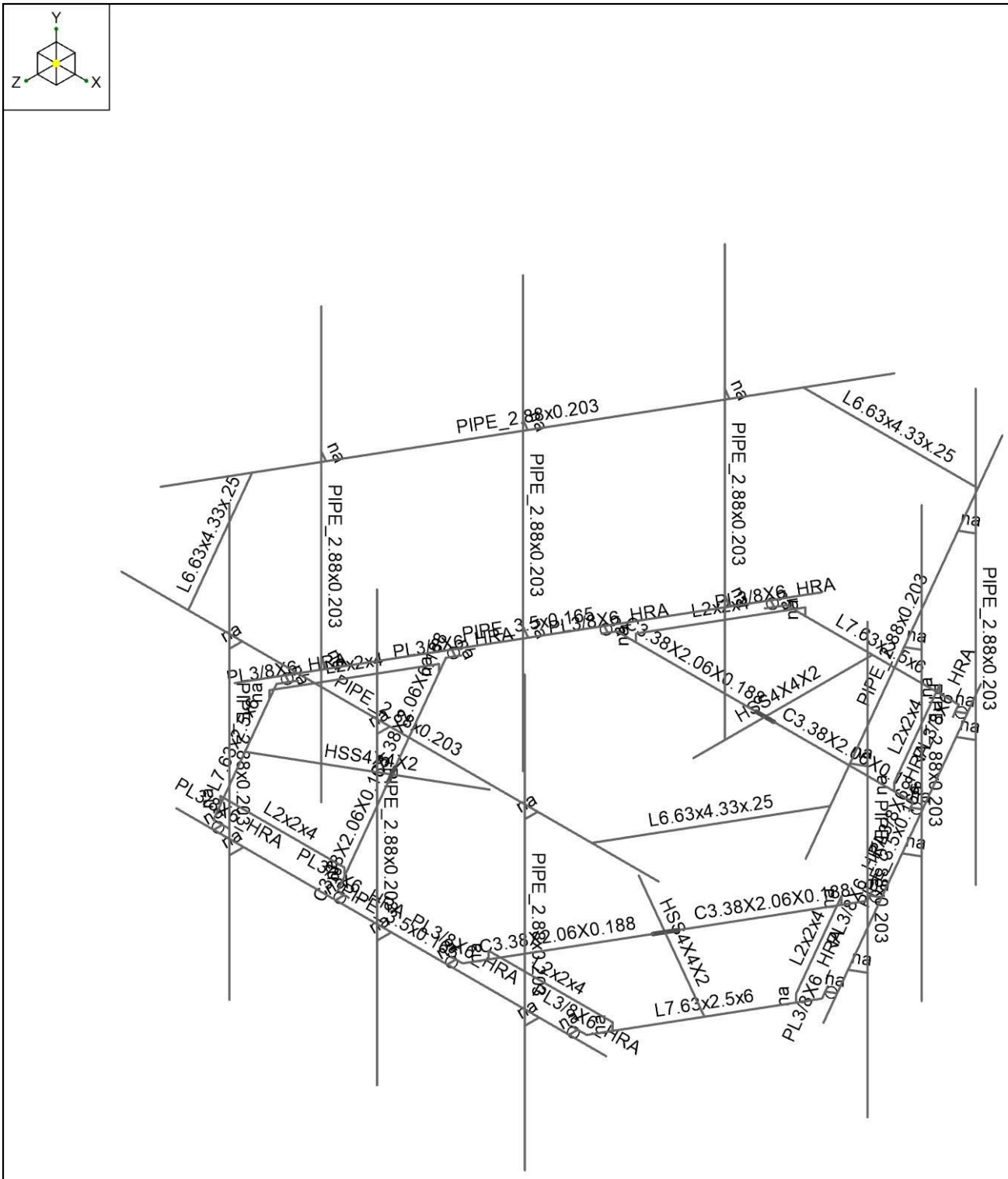
Envelope Only Solution

B+T Group	806373 - HRT 101 943232	SK-1
APK		Sep 08, 2021
89211.010.01		89211_010_01_HRT 101 943232_...



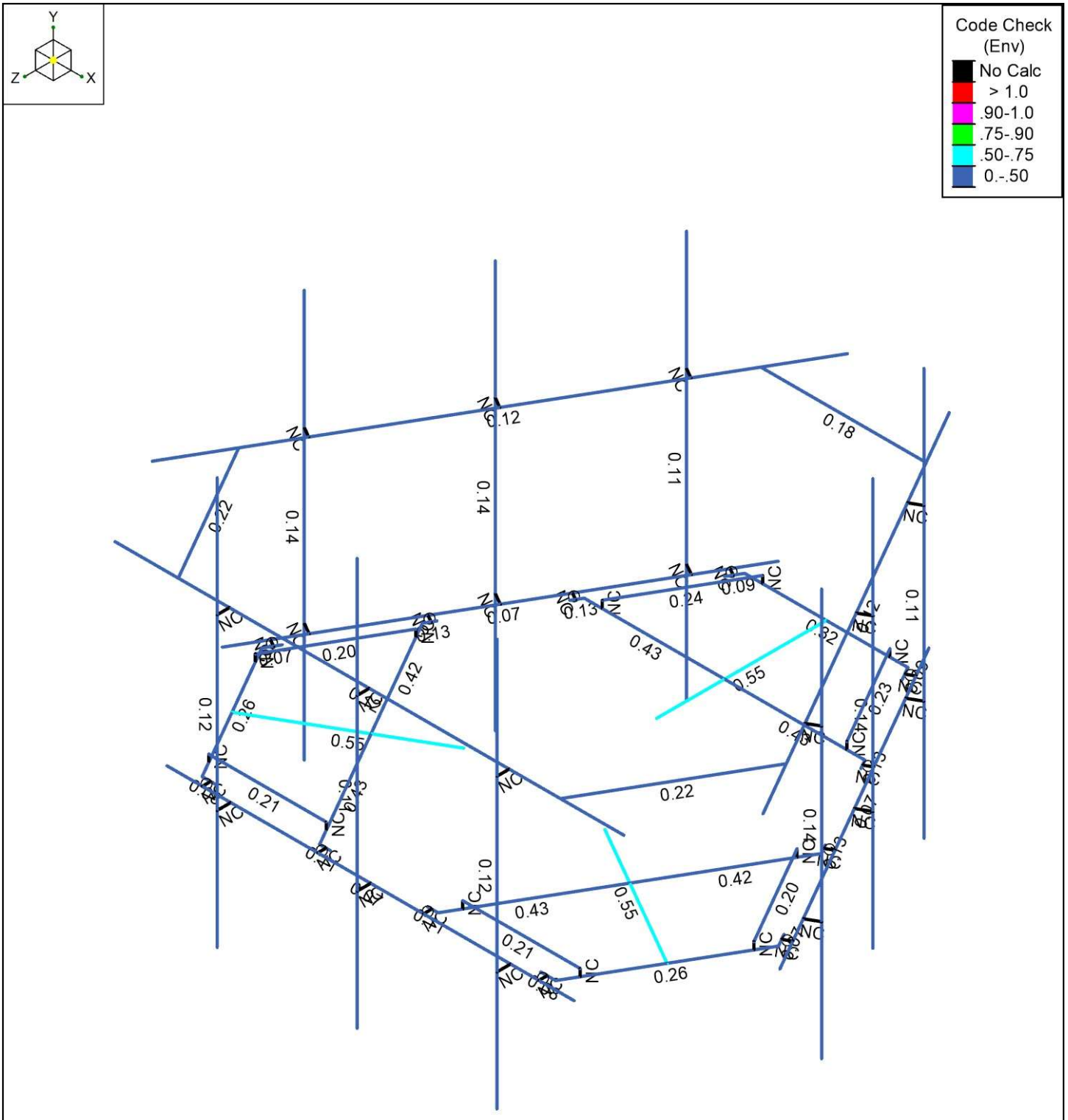
Envelope Only Solution

B+T Group	806373 - HRT 101 943232	SK-2
APK		Sep 08, 2021
89211.010.01		89211_010_01_HRT 101 943232_...



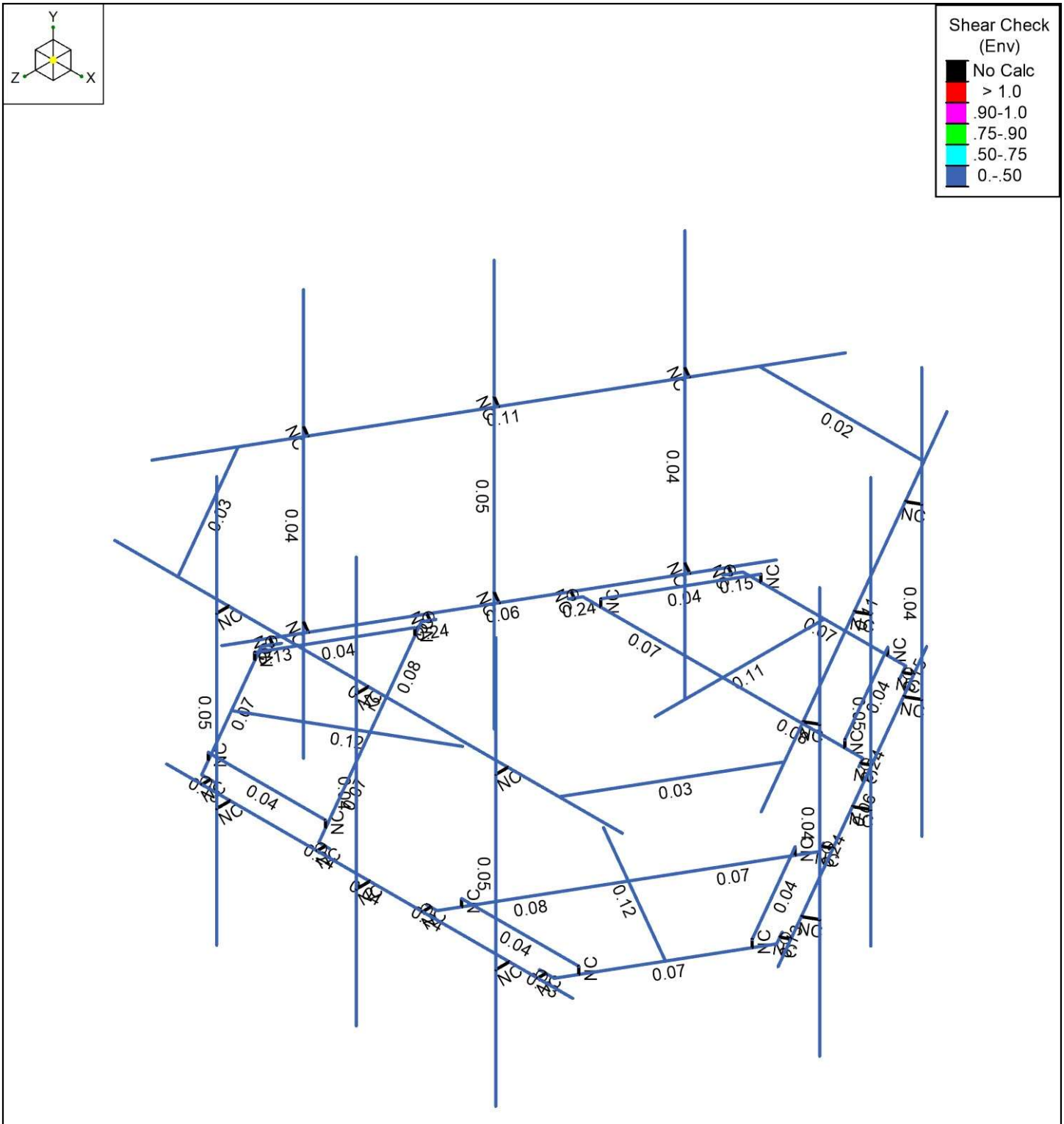
Envelope Only Solution

B+T Group	806373 - HRT 101 943232	SK-3
APK		Sep 08, 2021
89211.010.01		89211_010_01_HRT 101 943232_...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806373 - HRT 101 943232	SK-4
APK		Sep 08, 2021
89211.010.01		89211_010_01_HRT 101 943232_...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806373 - HRT 101 943232	SK-5
APK		Sep 08, 2021
89211.010.01		89211_010_01_HRT 101 943232_...

APPENDIX B

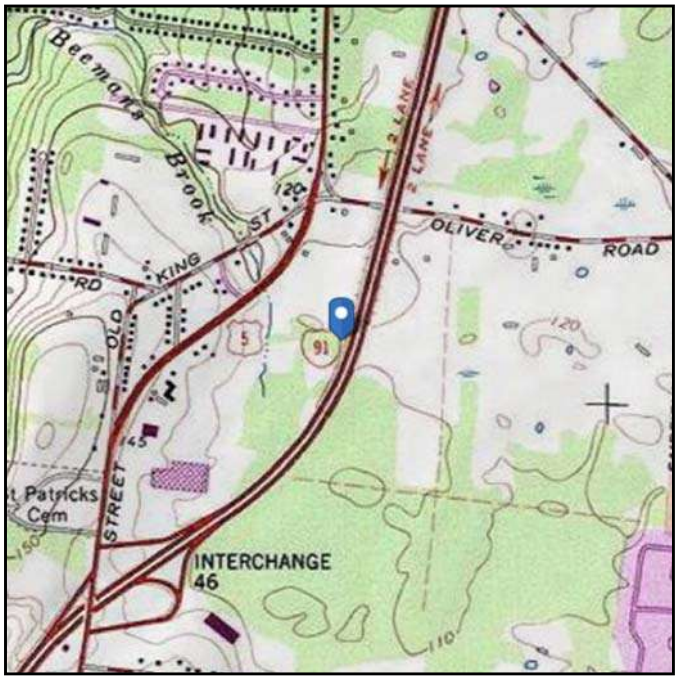
SOFTWARE INPUT CALCULATIONS

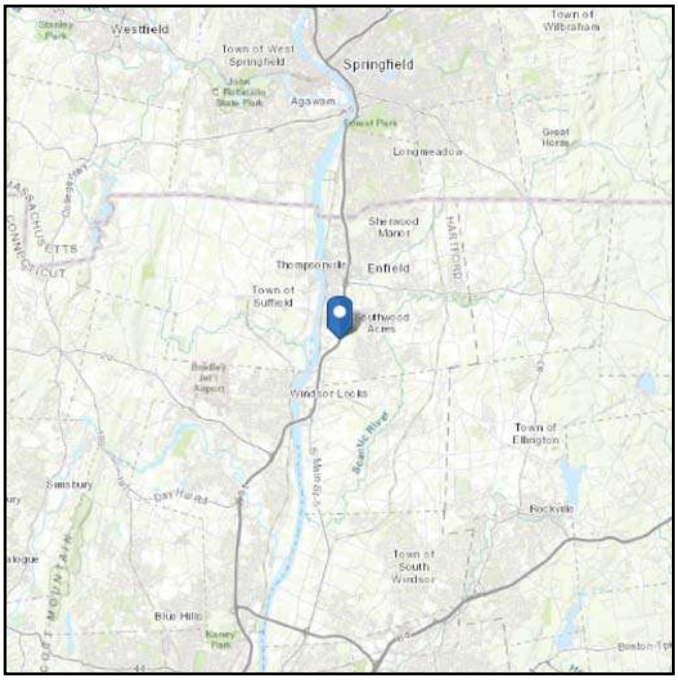
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 109.14 ft (NAVD 88)
Latitude: 41.960056
Longitude: -72.592306





Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Sep 08 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

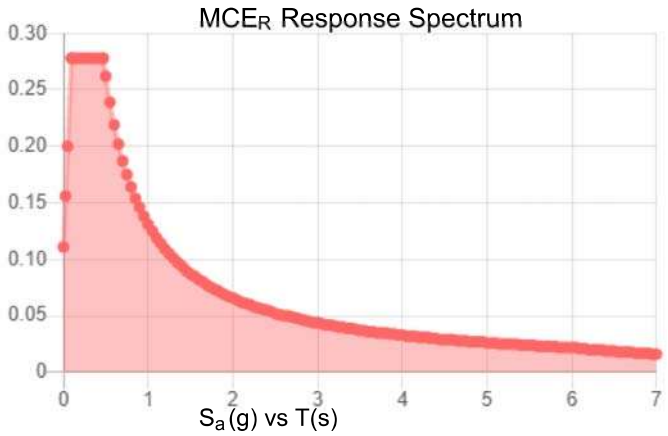
Seismic

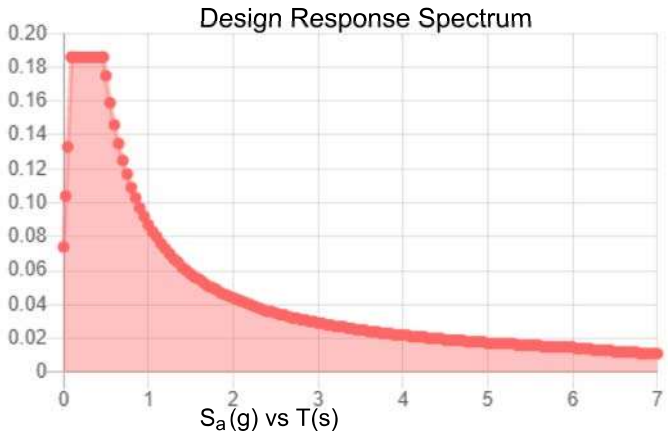
Site Soil Class: D - Default (see Section 11.4.3)

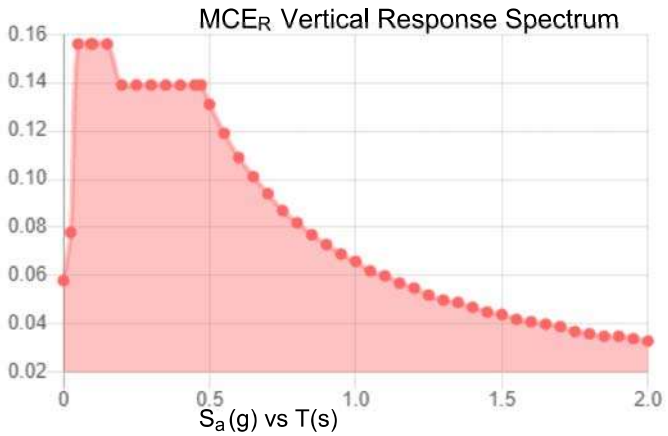
Results:

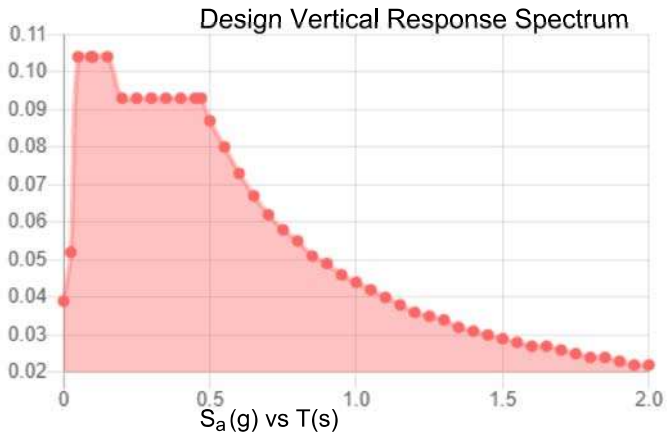
S_S :	0.174	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.091
F_v :	2.4	PGA_M :	0.146
S_{MS} :	0.278	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.186	C_v :	0.7

Seismic Design Category B









Data Accessed: Wed Sep 08 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Sep 08 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 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

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PROJECT	**89211.010.01 - HRT 101 943**		**KSC**
SUBJECT	**Platform Mount Analysis**		
DATE	**09-08-21**	PAGE	OF

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	109	ft	[ASCE7 Hazard Tool]
Tower Height		:	160.00	ft	
Mount Elevation		:	127.00	ft	
Antenna Elevation		:	127.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	116	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.50	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.17		
	S_1	:	0.06		
	S_{DS}	:	0.19		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.33		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	1.00		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.72	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.093		[Sec. 2.7.7.1]
Amplification	A_s	:	2.175		[Sec. 16.7]
	q_z	:	43.38	psf	

PROJECT	**89211.010.01 - HRT 101 943**		**KSC**
SUBJECT	**Platform Mount Analysis**		
DATE	**09-08-21**	PAGE	OF

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

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.45	1.60	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.45	1.44	0.08	0.04	0.01	0.01
RAYCAP	RDIDC-9181-PF-48	1	1.14	1.20	1.68	0.97	2.50	1.65	0.08	0.05	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.45	1.60	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.45	1.44	0.08	0.04	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.80	2.30	0.17	0.07	0.04	0.02
FUJITSU	TA08025-B605	1	0.95	1.20	1.64	0.94	2.45	1.60	0.08	0.04	0.01	0.01
FUJITSU	TA08025-B604	1	0.95	1.20	1.64	0.82	2.45	1.44	0.08	0.04	0.01	0.01

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	-1.603689	
2	2	0	0	-4.937023	
3	3	0	0	-2.937023	
4	4	2.758333	0	-2.937023	
5	5	-2.758333	0	-2.937023	
6	6	-1.603633	0	-4.937023	
7	7	1.603633	0	-4.937023	
8	8	1.749466	0	-4.684432	
9	9	-1.749466	0	-4.684432	
10	10	1.686966	0	-4.792685	
11	11	1.826791	0	-4.873413	
12	12	-1.686966	0	-4.792685	
13	13	-1.826791	0	-4.873413	
14	14	-3.999998	0	4.018754	
15	15	3.999998	0	4.018754	
16	16	2.8625	0	-2.756601	
17	17	2.820833	0	-2.82877	
18	18	2.960658	0	-2.909498	
19	19	-2.8625	0	-2.756601	
20	20	-2.820833	0	-2.82877	
21	21	-2.960658	0	-2.909498	
22	22	-1.25	0.140833	-4.937023	
23	23	-2.404701	0.140833	-2.937023	
24	24	2.404701	0.140833	-2.937023	
25	25	1.25	0.140833	-4.937023	
26	26	-1.25	0	-4.937023	
27	27	-2.404701	0	-2.937023	
28	28	2.404701	0	-2.937023	
29	29	1.25	0	-4.937023	
30	30	-2.749998	0	4.018754	
31	31	0.000002	0	4.018754	
32	32	-2.749998	0	4.284587	
33	33	0.000002	0	4.284587	
34	34	-2.749998	5.666663	4.284587	
35	35	0.000002	5.666663	4.284587	
36	36	-2.749998	-2.333337	4.284587	
37	37	0.000002	-2.333337	4.284587	
38	38	-5	3.33333	4.044587	
39	39	5	3.33333	4.044587	
40	40	2.749998	0	4.018754	
41	41	2.749998	0	4.284587	
42	42	2.749998	5.666663	4.284587	
43	43	2.749998	-2.333337	4.284587	
44	44	0	0	0	
45	45	-2.749998	3.3333	4.284587	
46	46	0.000002	3.3333	4.284587	
47	47	2.749998	3.3333	4.284587	
48	48	-2.749998	3.33333	4.044587	
49	49	0.000002	3.33333	4.044587	
50	50	2.749998	3.33333	4.044587	
51	51	-1.625002	3.33333	-5.274589	
52	52	1.625002	3.33333	-5.274589	
53	53	-1.388836	0	0.801845	
54	54	-4.275587	0	2.468511	
55	55	-2.543536	0	1.468511	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-3.922703	0	-0.920275	
57	57	-1.164369	0	3.857298	
58	58	-3.473771	0	3.857298	
59	59	-5.077403	0	1.079725	
60	60	-4.93157	0	0.827134	
61	61	-3.182104	0	3.857298	
62	62	-4.99407	0	0.935387	
63	63	-5.133895	0	0.854659	
64	64	-3.307104	0	3.857298	
65	65	-3.307104	0	4.018754	
66	66	-3.818536	0	-1.100697	
67	67	-3.860203	0	-1.028528	
68	68	-4.000028	0	-1.109256	
69	69	-0.956036	0	3.857298	
70	70	-1.039371	0	3.857298	
71	71	-1.039371	0	4.018754	
72	72	-3.650587	0.140833	3.551043	
73	73	-1.341186	0.140833	3.551043	
74	74	-3.745886	0.140833	-0.61402	
75	75	-4.900587	0.140833	1.38598	
76	76	-3.650587	0	3.551043	
77	77	-1.341186	0	3.551043	
78	78	-3.745886	0	-0.61402	
79	79	-4.900587	0	1.38598	
80	80	-3.755427	3.33333	4.044587	
81	81	-5.380429	3.33333	1.230002	
82	82	1.388836	0	0.801845	
83	83	4.275587	0	2.468511	
84	84	2.543536	0	1.468511	
85	85	1.164369	0	3.857298	
86	86	3.922703	0	-0.920275	
87	87	5.077403	0	1.079725	
88	88	3.473771	0	3.857298	
89	89	3.182104	0	3.857298	
90	90	4.93157	0	0.827134	
91	91	3.307104	0	3.857298	
92	92	3.307104	0	4.018754	
93	93	4.99407	0	0.935387	
94	94	5.133895	0	0.854659	
95	95	0.956036	0	3.857298	
96	96	1.039371	0	3.857298	
97	97	1.039371	0	4.018754	
98	98	3.818536	0	-1.100697	
99	99	3.860203	0	-1.028528	
100	100	4.000028	0	-1.109256	
101	101	4.900587	0.140833	1.38598	
102	102	3.745886	0.140833	-0.61402	
103	103	1.341186	0.140833	3.551043	
104	104	3.650587	0.140833	3.551043	
105	105	4.900587	0	1.38598	
106	106	3.745886	0	-0.61402	
107	107	1.341186	0	3.551043	
108	108	3.650587	0	3.551043	
109	109	5.380429	3.33333	1.230002	
110	110	3.755427	3.33333	4.044587	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.480342	0	1.454723	
112	112	1.480344	0	-5.473477	
113	113	4.855342	0	0.372191	
114	114	3.480342	0	-2.009379	
115	115	5.08556	0	0.239275	
116	116	3.71056	0	-2.142295	
117	117	5.08556	5.666663	0.239275	
118	118	3.71056	5.666663	-2.142295	
119	119	5.08556	-2.333337	0.239275	
120	120	3.71056	-2.333337	-2.142295	
121	121	6.002715	3.33333	2.307834	
122	122	1.002715	3.33333	-6.352421	
123	123	2.105344	0	-4.390945	
124	124	2.335562	0	-4.523862	
125	125	2.335562	5.666663	-4.523862	
126	126	2.335562	-2.333337	-4.523862	
127	127	5.08556	3.3333	0.239275	
128	128	3.71056	3.3333	-2.142295	
129	129	2.335562	3.3333	-4.523862	
130	130	4.877714	3.33333	0.359275	
131	131	3.502714	3.33333	-2.022295	
132	132	2.127716	3.33333	-4.403862	
133	133	-1.480344	0	-5.473477	
134	134	-5.480342	0	1.454723	
135	135	-2.105344	0	-4.390945	
136	136	-3.480344	0	-2.009375	
137	137	-2.335562	0	-4.523862	
138	138	-3.710562	0	-2.142292	
139	139	-2.335562	5.666663	-4.523862	
140	140	-3.710562	5.666663	-2.142292	
141	141	-2.335562	-2.333337	-4.523862	
142	142	-3.710562	-2.333337	-2.142292	
143	143	-1.002715	3.33333	-6.352421	
144	144	-6.002715	3.33333	2.307834	
145	145	-4.855342	0	0.372191	
146	146	-5.08556	0	0.239275	
147	147	-5.08556	5.666663	0.239275	
148	148	-5.08556	-2.333337	0.239275	
149	149	-2.335562	3.3333	-4.523862	
150	150	-3.710562	3.3333	-2.142292	
151	151	-5.08556	3.3333	0.239275	
152	152	-2.127716	3.33333	-4.403862	
153	153	-3.502716	3.33333	-2.022292	
154	154	-4.877714	3.33333	0.359275	

Node Boundary Conditions

	Node 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	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	2						
3	3						
4	4						
5	5						
6	16						
7	17						
8	19						

Node Boundary Conditions (Continued)

	Node 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]
9	20						
10	22						
11	25						
12	26						
13	29						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	66						
20	67						
21	69						
22	70						
23	72						
24	75						
25	76						
26	79						
27	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	83						
29	84						
30	85						
31	86						
32	95						
33	96						
34	98						
35	99						
36	101						
37	104						
38	105						
39	108						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	MF-H1	PIPE_3.5x0.165	Beam	Pipe	A500 Gr.C	Typical	1.729	2.409	2.409	4.819
2	MF-H2	PIPE_2.88x0.203	Beam	Pipe	A500 Gr.C	Typical	1.707	1.538	1.538	3.076
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38X2.06X0.188	Beam	Channel	A36 Gr.36	Typical	1.339	0.562	2.4	0.015
5	SF-H3	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
6	SF-H4	L7.63x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	3.658	1.307	22.092	0.163
7	MF-P1	PIPE_2.88x0.203	Column	Pipe	A500 Gr.C	Typical	1.707	1.538	1.538	3.076
8	MF-CP1	PL3/8X6_HRA	Beam	RECT	A36 Gr.36	Typical	2.28	0.027	6.84	0.105

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
9	MF-H3	L6.63x4.33x.25	Beam	Single Angle	A36 Gr.36	Typical	2.678	4.383	12.502	0.054

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	25	24		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24		RIGID	None	None	RIGID	Typical
13	13	29	25		RIGID	None	None	RIGID	Typical
14	14	27	23		RIGID	None	None	RIGID	Typical
15	15	26	22		RIGID	None	None	RIGID	Typical
16	16	32	30		RIGID	None	None	RIGID	Typical
17	17	33	31		RIGID	None	None	RIGID	Typical
18	18	35	37		MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	34	36		MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	38	39		MF-H2	Beam	Pipe	A500 Gr.C	Typical
21	21	11	10		RIGID	None	None	RIGID	Typical
22	22	18	17		RIGID	None	None	RIGID	Typical
23	23	13	12		RIGID	None	None	RIGID	Typical
24	24	21	20		RIGID	None	None	RIGID	Typical
25	25	41	40		RIGID	None	None	RIGID	Typical
26	26	42	43		MF-P1	Column	Pipe	A500 Gr.C	Typical
27	27	45	48		RIGID	None	None	RIGID	Typical
28	28	46	49		RIGID	None	None	RIGID	Typical
29	29	47	50		RIGID	None	None	RIGID	Typical
30	30	52	51	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
31	31	53	54		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74		RIGID	None	None	RIGID	Typical
42	42	79	75		RIGID	None	None	RIGID	Typical
43	43	77	73		RIGID	None	None	RIGID	Typical
44	44	76	72		RIGID	None	None	RIGID	Typical
45	45	63	62		RIGID	None	None	RIGID	Typical
46	46	68	67		RIGID	None	None	RIGID	Typical
47	47	65	64		RIGID	None	None	RIGID	Typical
48	48	71	70		RIGID	None	None	RIGID	Typical
49	49	81	80	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
50	50	82	83		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
51	51	86	84	180	SF-H2	Beam	Channel	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
53	53	88	89		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	92	91		RIGID	None	None	RIGID	Typical
65	65	97	96		RIGID	None	None	RIGID	Typical
66	66	94	93		RIGID	None	None	RIGID	Typical
67	67	100	99		RIGID	None	None	RIGID	Typical
68	68	110	109	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
69	69	111	112		MF-H1	Beam	Pipe	A500 Gr.C	Typical
70	70	115	113		RIGID	None	None	RIGID	Typical
71	71	116	114		RIGID	None	None	RIGID	Typical
72	72	118	120		MF-P1	Column	Pipe	A500 Gr.C	Typical
73	73	117	119		MF-P1	Column	Pipe	A500 Gr.C	Typical
74	74	121	122		MF-H2	Beam	Pipe	A500 Gr.C	Typical
75	75	124	123		RIGID	None	None	RIGID	Typical
76	76	125	126		MF-P1	Column	Pipe	A500 Gr.C	Typical
77	77	127	130		RIGID	None	None	RIGID	Typical
78	78	128	131		RIGID	None	None	RIGID	Typical
79	79	129	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A500 Gr.C	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	140	142		MF-P1	Column	Pipe	A500 Gr.C	Typical
84	84	139	141		MF-P1	Column	Pipe	A500 Gr.C	Typical
85	85	143	144		MF-H2	Beam	Pipe	A500 Gr.C	Typical
86	86	146	145		RIGID	None	None	RIGID	Typical
87	87	147	148		MF-P1	Column	Pipe	A500 Gr.C	Typical
88	88	149	152		RIGID	None	None	RIGID	Typical
89	89	150	153		RIGID	None	None	RIGID	Typical
90	90	151	154		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
1	1				Yes	N/A	None
2	2			2	Yes	N/A	None
3	3		2		Yes	N/A	None
4	4				Yes	Default	None
5	5				Yes	Default	None
6	6				Yes	N/A	None
7	7				Yes	Default	None
8	8				Yes	Default	None
9	9				Yes	N/A	None
10	10				Yes	N/A	None
11	11				Yes	N/A	None
12	12				Yes	** NA **	None
13	13				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
14	14				Yes	** NA **	None
15	15				Yes	** NA **	None
16	16				Yes	** NA **	None
17	17				Yes	** NA **	None
18	18				Yes	** NA **	None
19	19				Yes	** NA **	None
20	20				Yes	N/A	None
21	21	OOOOOX			Yes	** NA **	None
22	22	OOOOOX			Yes	** NA **	None
23	23	OOOOOX			Yes	** NA **	None
24	24	OOOOOX			Yes	** NA **	None
25	25				Yes	** NA **	None
26	26				Yes	** NA **	None
27	27				Yes	** NA **	None
28	28				Yes	** NA **	None
29	29				Yes	** NA **	None
30	30				Yes	Default	None
31	31				Yes	N/A	None
32	32			2	Yes	N/A	None
33	33		2		Yes	N/A	None
34	34				Yes	Default	None
35	35				Yes	Default	None
36	36				Yes	Default	None
37	37				Yes	Default	None
38	38				Yes	N/A	None
39	39				Yes	N/A	None
40	40				Yes	N/A	None
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44				Yes	** NA **	None
45	45	OOOOOX			Yes	** NA **	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48	OOOOOX			Yes	** NA **	None
49	49				Yes	Default	None
50	50				Yes	N/A	None
51	51			2	Yes	N/A	None
52	52		2		Yes	N/A	None
53	53				Yes	Default	None
54	54				Yes	Default	None
55	55				Yes	Default	None
56	56				Yes	Default	None
57	57				Yes	N/A	None
58	58				Yes	N/A	None
59	59				Yes	N/A	None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62				Yes	** NA **	None
63	63				Yes	** NA **	None
64	64	OOOOOX			Yes	** NA **	None
65	65	OOOOOX			Yes	** NA **	None
66	66	OOOOOX			Yes	** NA **	None
67	67	OOOOOX			Yes	** NA **	None
68	68				Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
69	69				Yes	N/A	None
70	70				Yes	** NA **	None
71	71				Yes	** NA **	None
72	72				Yes	** NA **	None
73	73				Yes	** NA **	None
74	74				Yes	N/A	None
75	75				Yes	** NA **	None
76	76				Yes	** NA **	None
77	77				Yes	** NA **	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes	N/A	None
81	81				Yes	** NA **	None
82	82				Yes	** NA **	None
83	83				Yes	** NA **	None
84	84				Yes	** NA **	None
85	85				Yes	N/A	None
86	86				Yes	** NA **	None
87	87				Yes	** NA **	None
88	88				Yes	** NA **	None
89	89				Yes	** NA **	None
90	90				Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	SF-H1	3.333	Lbyy	Lateral
2	2	SF-H2	2.758	Lbyy	Lateral
3	3	SF-H2	2.758	Lbyy	Lateral
4	4	MF-CP1	0.292	Lbyy	Lateral
5	5	MF-CP1	0.292	Lbyy	Lateral
6	6	MF-H1	8	Lbyy	Lateral
7	7	MF-CP1	0.208	Lbyy	Lateral
8	8	MF-CP1	0.208	Lbyy	Lateral
9	9	SF-H3	2.309	Lbyy	Lateral
10	10	SF-H3	2.309	Lbyy	Lateral
11	11	SF-H4	3.207	Lbyy	Lateral
12	18	MF-P1	8	Lbyy	Lateral
13	19	MF-P1	8	Lbyy	Lateral
14	20	MF-H2	10	Lbyy	Lateral
15	26	MF-P1	8	Lbyy	Lateral
16	30	MF-H3	3.25	Lbyy	Lateral
17	31	SF-H1	3.333	Lbyy	Lateral
18	32	SF-H2	2.758	Lbyy	Lateral
19	33	SF-H2	2.758	Lbyy	Lateral
20	34	MF-CP1	0.292	Lbyy	Lateral
21	35	MF-CP1	0.292	Lbyy	Lateral
22	36	MF-CP1	0.208	Lbyy	Lateral
23	37	MF-CP1	0.208	Lbyy	Lateral
24	38	SF-H3	2.309	Lbyy	Lateral
25	39	SF-H3	2.309	Lbyy	Lateral
26	40	SF-H4	3.207	Lbyy	Lateral
27	49	MF-H3	3.25	Lbyy	Lateral
28	50	SF-H1	3.333	Lbyy	Lateral
29	51	SF-H2	2.758	Lbyy	Lateral
30	52	SF-H2	2.758	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
31	53	MF-CP1	0.292	Lbyy	Lateral
32	54	MF-CP1	0.292	Lbyy	Lateral
33	55	MF-CP1	0.208	Lbyy	Lateral
34	56	MF-CP1	0.208	Lbyy	Lateral
35	57	SF-H3	2.309	Lbyy	Lateral
36	58	SF-H3	2.309	Lbyy	Lateral
37	59	SF-H4	3.207	Lbyy	Lateral
38	68	MF-H3	3.25	Lbyy	Lateral
39	69	MF-H1	8	Lbyy	Lateral
40	72	MF-P1	8	Lbyy	Lateral
41	73	MF-P1	8	Lbyy	Lateral
42	74	MF-H2	10	Lbyy	Lateral
43	76	MF-P1	8	Lbyy	Lateral
44	80	MF-H1	8	Lbyy	Lateral
45	83	MF-P1	8	Lbyy	Lateral
46	84	MF-P1	8	Lbyy	Lateral
47	85	MF-H2	10	Lbyy	Lateral
48	87	MF-P1	8	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.041	%15
2	18	Y	-0.041	%85
3	18	Y	-0.075	%20
4	18	Y	-0.064	%50
5	18	Y	0	0
6	31	Y	-0.022	%15
7	31	Y	0	0
8	31	Y	0	0
9	31	Y	0	0
10	31	Y	0	0
11	83	Y	-0.041	%15
12	83	Y	-0.041	%85
13	83	Y	-0.075	%20
14	83	Y	-0.064	%50
15	83	Y	0	0
16	72	Y	-0.041	%15
17	72	Y	-0.041	%85
18	72	Y	-0.075	%20
19	72	Y	-0.064	%50
20	72	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.174	%15
2	18	Z	-0.174	%85
3	18	Z	-0.077	%20
4	18	Z	-0.077	%50
5	18	Z	0	0
6	31	Z	-0.079	%15
7	31	Z	0	0
8	31	Z	0	0
9	31	Z	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	31	Z	0	0
11	83	Z	-0.174	%15
12	83	Z	-0.174	%85
13	83	Z	-0.077	%20
14	83	Z	-0.077	%50
15	83	Z	0	0
16	72	Z	-0.174	%15
17	72	Z	-0.174	%85
18	72	Z	-0.077	%20
19	72	Z	-0.077	%50
20	72	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.07	%15
2	18	X	-0.07	%85
3	18	X	-0.044	%20
4	18	X	-0.038	%50
5	18	X	0	0
6	31	X	-0.046	%15
7	31	X	0	0
8	31	X	0	0
9	31	X	0	0
10	31	X	0	0
11	83	X	-0.07	%15
12	83	X	-0.07	%85
13	83	X	-0.044	%20
14	83	X	-0.038	%50
15	83	X	0	0
16	72	X	-0.07	%15
17	72	X	-0.07	%85
18	72	X	-0.044	%20
19	72	X	-0.038	%50
20	72	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.039	%15
2	18	Z	-0.039	%85
3	18	Z	-0.014	%20
4	18	Z	-0.014	%50
5	18	Z	0	0
6	31	Z	-0.015	%15
7	31	Z	0	0
8	31	Z	0	0
9	31	Z	0	0
10	31	Z	0	0
11	83	Z	-0.039	%15
12	83	Z	-0.039	%85
13	83	Z	-0.014	%20
14	83	Z	-0.014	%50
15	83	Z	0	0
16	72	Z	-0.039	%15

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	72	Z	-0.039	%85
18	72	Z	-0.014	%20
19	72	Z	-0.014	%50
20	72	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.019	%15
2	18	X	-0.019	%85
3	18	X	-0.008	%20
4	18	X	-0.007	%50
5	18	X	0	0
6	31	X	-0.009	%15
7	31	X	0	0
8	31	X	0	0
9	31	X	0	0
10	31	X	0	0
11	83	X	-0.019	%15
12	83	X	-0.019	%85
13	83	X	-0.008	%20
14	83	X	-0.007	%50
15	83	X	0	0
16	72	X	-0.019	%15
17	72	X	-0.019	%85
18	72	X	-0.008	%20
19	72	X	-0.007	%50
20	72	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.012	%15
2	18	Z	-0.012	%85
3	18	Z	-0.005	%20
4	18	Z	-0.005	%50
5	18	Z	0	0
6	31	Z	-0.005	%15
7	31	Z	0	0
8	31	Z	0	0
9	31	Z	0	0
10	31	Z	0	0
11	83	Z	-0.012	%15
12	83	Z	-0.012	%85
13	83	Z	-0.005	%20
14	83	Z	-0.005	%50
15	83	Z	0	0
16	72	Z	-0.012	%15
17	72	Z	-0.012	%85
18	72	Z	-0.005	%20
19	72	Z	-0.005	%50
20	72	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.005	%15
2	18	X	-0.005	%85
3	18	X	-0.003	%20
4	18	X	-0.003	%50
5	18	X	0	0
6	31	X	-0.003	%15
7	31	X	0	0
8	31	X	0	0
9	31	X	0	0
10	31	X	0	0
11	83	X	-0.005	%15
12	83	X	-0.005	%85
13	83	X	-0.003	%20
14	83	X	-0.003	%50
15	83	X	0	0
16	72	X	-0.005	%15
17	72	X	-0.005	%85
18	72	X	-0.003	%20
19	72	X	-0.003	%50
20	72	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.164	%15
2	18	Y	-0.164	%85
3	18	Y	-0.052	%20
4	18	Y	-0.051	%50
5	18	Y	0	0
6	31	Y	-0.054	%15
7	31	Y	0	0
8	31	Y	0	0
9	31	Y	0	0
10	31	Y	0	0
11	83	Y	-0.164	%15
12	83	Y	-0.164	%85
13	83	Y	-0.052	%20
14	83	Y	-0.051	%50
15	83	Y	0	0
16	72	Y	-0.164	%15
17	72	Y	-0.164	%85
18	72	Y	-0.052	%20
19	72	Y	-0.051	%50
20	72	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Z	-0.017	%15
2	18	Z	-0.017	%85
3	18	Z	-0.015	%20
4	18	Z	-0.013	%50
5	18	Z	0	0
6	31	Z	-0.004	%15

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	31	Z	0	0
8	31	Z	0	0
9	31	Z	0	0
10	31	Z	0	0
11	83	Z	-0.017	%15
12	83	Z	-0.017	%85
13	83	Z	-0.015	%20
14	83	Z	-0.013	%50
15	83	Z	0	0
16	72	Z	-0.017	%15
17	72	Z	-0.017	%85
18	72	Z	-0.015	%20
19	72	Z	-0.013	%50
20	72	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	X	-0.017	%15
2	18	X	-0.017	%85
3	18	X	-0.015	%20
4	18	X	-0.013	%50
5	18	X	0	0
6	31	X	-0.004	%15
7	31	X	0	0
8	31	X	0	0
9	31	X	0	0
10	31	X	0	0
11	83	X	-0.017	%15
12	83	X	-0.017	%85
13	83	X	-0.015	%20
14	83	X	-0.013	%50
15	83	X	0	0
16	72	X	-0.017	%15
17	72	X	-0.017	%85
18	72	X	-0.015	%20
19	72	X	-0.013	%50
20	72	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	20	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	85	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	74	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	20	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	85	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	74	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	Y	-0.25	%90

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%90

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	50	Y	-0.25	%90

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.019	-0.019	0	%100
2	2	Z	-0.016	-0.016	0	%100
3	3	Z	-0.016	-0.016	0	%100
4	4	Z	-0.023	-0.023	0	%100
5	5	Z	-0.023	-0.023	0	%100
6	6	Z	-0.014	-0.014	0	%100
7	7	Z	-0.023	-0.023	0	%100
8	8	Z	-0.023	-0.023	0	%100
9	9	Z	-0.01	-0.01	0	%100
10	10	Z	-0.01	-0.01	0	%100
11	11	Z	-0.032	-0.032	0	%100
12	18	Z	-0.011	-0.011	0	%100
13	19	Z	-0.011	-0.011	0	%100
14	20	Z	-0.011	-0.011	0	%100
15	26	Z	-0.011	-0.011	0	%100
16	30	Z	-0.029	-0.029	0	%100
17	31	Z	-0.019	-0.019	0	%100
18	32	Z	-0.016	-0.016	0	%100
19	33	Z	-0.016	-0.016	0	%100
20	34	Z	-0.023	-0.023	0	%100
21	35	Z	-0.023	-0.023	0	%100
22	36	Z	-0.023	-0.023	0	%100
23	37	Z	-0.023	-0.023	0	%100
24	38	Z	-0.01	-0.01	0	%100
25	39	Z	-0.01	-0.01	0	%100
26	40	Z	-0.032	-0.032	0	%100
27	49	Z	-0.029	-0.029	0	%100
28	50	Z	-0.019	-0.019	0	%100
29	51	Z	-0.016	-0.016	0	%100
30	52	Z	-0.016	-0.016	0	%100
31	53	Z	-0.023	-0.023	0	%100
32	54	Z	-0.023	-0.023	0	%100
33	55	Z	-0.023	-0.023	0	%100
34	56	Z	-0.023	-0.023	0	%100
35	57	Z	-0.01	-0.01	0	%100
36	58	Z	-0.01	-0.01	0	%100
37	59	Z	-0.032	-0.032	0	%100
38	68	Z	-0.029	-0.029	0	%100
39	69	Z	-0.014	-0.014	0	%100
40	72	Z	-0.011	-0.011	0	%100
41	73	Z	-0.011	-0.011	0	%100
42	74	Z	-0.011	-0.011	0	%100
43	76	Z	-0.011	-0.011	0	%100
44	80	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
45	83	Z	-0.011	-0.011	0	%100
46	84	Z	-0.011	-0.011	0	%100
47	85	Z	-0.011	-0.011	0	%100
48	87	Z	-0.011	-0.011	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.019	-0.019	0	%100
2	2	X	-0.016	-0.016	0	%100
3	3	X	-0.016	-0.016	0	%100
4	4	X	-0.023	-0.023	0	%100
5	5	X	-0.023	-0.023	0	%100
6	6	X	-0.014	-0.014	0	%100
7	7	X	-0.023	-0.023	0	%100
8	8	X	-0.023	-0.023	0	%100
9	9	X	-0.01	-0.01	0	%100
10	10	X	-0.01	-0.01	0	%100
11	11	X	-0.032	-0.032	0	%100
12	18	X	-0.011	-0.011	0	%100
13	19	X	-0.011	-0.011	0	%100
14	20	X	-0.011	-0.011	0	%100
15	26	X	-0.011	-0.011	0	%100
16	30	X	-0.029	-0.029	0	%100
17	31	X	-0.019	-0.019	0	%100
18	32	X	-0.016	-0.016	0	%100
19	33	X	-0.016	-0.016	0	%100
20	34	X	-0.023	-0.023	0	%100
21	35	X	-0.023	-0.023	0	%100
22	36	X	-0.023	-0.023	0	%100
23	37	X	-0.023	-0.023	0	%100
24	38	X	-0.01	-0.01	0	%100
25	39	X	-0.01	-0.01	0	%100
26	40	X	-0.032	-0.032	0	%100
27	49	X	-0.029	-0.029	0	%100
28	50	X	-0.019	-0.019	0	%100
29	51	X	-0.016	-0.016	0	%100
30	52	X	-0.016	-0.016	0	%100
31	53	X	-0.023	-0.023	0	%100
32	54	X	-0.023	-0.023	0	%100
33	55	X	-0.023	-0.023	0	%100
34	56	X	-0.023	-0.023	0	%100
35	57	X	-0.01	-0.01	0	%100
36	58	X	-0.01	-0.01	0	%100
37	59	X	-0.032	-0.032	0	%100
38	68	X	-0.029	-0.029	0	%100
39	69	X	-0.014	-0.014	0	%100
40	72	X	-0.011	-0.011	0	%100
41	73	X	-0.011	-0.011	0	%100
42	74	X	-0.011	-0.011	0	%100
43	76	X	-0.011	-0.011	0	%100
44	80	X	-0.014	-0.014	0	%100
45	83	X	-0.011	-0.011	0	%100
46	84	X	-0.011	-0.011	0	%100
47	85	X	-0.011	-0.011	0	%100
48	87	X	-0.011	-0.011	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.007	-0.007	0	%100
2	2	Z	-0.007	-0.007	0	%100
3	3	Z	-0.007	-0.007	0	%100
4	4	Z	-0.014	-0.014	0	%100
5	5	Z	-0.014	-0.014	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.016	-0.016	0	%100
8	8	Z	-0.016	-0.016	0	%100
9	9	Z	-0.006	-0.006	0	%100
10	10	Z	-0.006	-0.006	0	%100
11	11	Z	-0.009	-0.009	0	%100
12	18	Z	-0.002	-0.002	0	%100
13	19	Z	-0.002	-0.002	0	%100
14	20	Z	-0.002	-0.002	0	%100
15	26	Z	-0.002	-0.002	0	%100
16	30	Z	-0.009	-0.009	0	%100
17	31	Z	-0.007	-0.007	0	%100
18	32	Z	-0.007	-0.007	0	%100
19	33	Z	-0.007	-0.007	0	%100
20	34	Z	-0.014	-0.014	0	%100
21	35	Z	-0.014	-0.014	0	%100
22	36	Z	-0.016	-0.016	0	%100
23	37	Z	-0.016	-0.016	0	%100
24	38	Z	-0.006	-0.006	0	%100
25	39	Z	-0.006	-0.006	0	%100
26	40	Z	-0.009	-0.009	0	%100
27	49	Z	-0.009	-0.009	0	%100
28	50	Z	-0.007	-0.007	0	%100
29	51	Z	-0.007	-0.007	0	%100
30	52	Z	-0.007	-0.007	0	%100
31	53	Z	-0.014	-0.014	0	%100
32	54	Z	-0.014	-0.014	0	%100
33	55	Z	-0.016	-0.016	0	%100
34	56	Z	-0.016	-0.016	0	%100
35	57	Z	-0.006	-0.006	0	%100
36	58	Z	-0.006	-0.006	0	%100
37	59	Z	-0.009	-0.009	0	%100
38	68	Z	-0.009	-0.009	0	%100
39	69	Z	-0.003	-0.003	0	%100
40	72	Z	-0.002	-0.002	0	%100
41	73	Z	-0.002	-0.002	0	%100
42	74	Z	-0.002	-0.002	0	%100
43	76	Z	-0.002	-0.002	0	%100
44	80	Z	-0.003	-0.003	0	%100
45	83	Z	-0.002	-0.002	0	%100
46	84	Z	-0.002	-0.002	0	%100
47	85	Z	-0.002	-0.002	0	%100
48	87	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.007	-0.007	0	%100
2	2	X	-0.007	-0.007	0	%100
3	3	X	-0.007	-0.007	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	4	X	-0.014	-0.014	0	%100
5	5	X	-0.014	-0.014	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.016	-0.016	0	%100
8	8	X	-0.016	-0.016	0	%100
9	9	X	-0.006	-0.006	0	%100
10	10	X	-0.006	-0.006	0	%100
11	11	X	-0.009	-0.009	0	%100
12	18	X	-0.002	-0.002	0	%100
13	19	X	-0.002	-0.002	0	%100
14	20	X	-0.002	-0.002	0	%100
15	26	X	-0.002	-0.002	0	%100
16	30	X	-0.009	-0.009	0	%100
17	31	X	-0.007	-0.007	0	%100
18	32	X	-0.007	-0.007	0	%100
19	33	X	-0.007	-0.007	0	%100
20	34	X	-0.014	-0.014	0	%100
21	35	X	-0.014	-0.014	0	%100
22	36	X	-0.016	-0.016	0	%100
23	37	X	-0.016	-0.016	0	%100
24	38	X	-0.006	-0.006	0	%100
25	39	X	-0.006	-0.006	0	%100
26	40	X	-0.009	-0.009	0	%100
27	49	X	-0.009	-0.009	0	%100
28	50	X	-0.007	-0.007	0	%100
29	51	X	-0.007	-0.007	0	%100
30	52	X	-0.007	-0.007	0	%100
31	53	X	-0.014	-0.014	0	%100
32	54	X	-0.014	-0.014	0	%100
33	55	X	-0.016	-0.016	0	%100
34	56	X	-0.016	-0.016	0	%100
35	57	X	-0.006	-0.006	0	%100
36	58	X	-0.006	-0.006	0	%100
37	59	X	-0.009	-0.009	0	%100
38	68	X	-0.009	-0.009	0	%100
39	69	X	-0.003	-0.003	0	%100
40	72	X	-0.002	-0.002	0	%100
41	73	X	-0.002	-0.002	0	%100
42	74	X	-0.002	-0.002	0	%100
43	76	X	-0.002	-0.002	0	%100
44	80	X	-0.003	-0.003	0	%100
45	83	X	-0.002	-0.002	0	%100
46	84	X	-0.002	-0.002	0	%100
47	85	X	-0.002	-0.002	0	%100
48	87	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.0005	-0.0005	0	%100
7	7	Z	-0.002	-0.002	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.0004	-0.0004	0	%100
13	19	Z	-0.0004	-0.0004	0	%100
14	20	Z	-0.0004	-0.0004	0	%100
15	26	Z	-0.0004	-0.0004	0	%100
16	30	Z	-0.002	-0.002	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.0007	-0.0007	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	49	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	58	Z	-0.0007	-0.0007	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	68	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0004	-0.0004	0	%100
41	73	Z	-0.0004	-0.0004	0	%100
42	74	Z	-0.0004	-0.0004	0	%100
43	76	Z	-0.0004	-0.0004	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0004	-0.0004	0	%100
46	84	Z	-0.0004	-0.0004	0	%100
47	85	Z	-0.0004	-0.0004	0	%100
48	87	Z	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.0005	-0.0005	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
12	18	X	-0.0004	-0.0004	0	%100
13	19	X	-0.0004	-0.0004	0	%100
14	20	X	-0.0004	-0.0004	0	%100
15	26	X	-0.0004	-0.0004	0	%100
16	30	X	-0.002	-0.002	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.0007	-0.0007	0	%100
26	40	X	-0.002	-0.002	0	%100
27	49	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	58	X	-0.0007	-0.0007	0	%100
37	59	X	-0.002	-0.002	0	%100
38	68	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0004	-0.0004	0	%100
41	73	X	-0.0004	-0.0004	0	%100
42	74	X	-0.0004	-0.0004	0	%100
43	76	X	-0.0004	-0.0004	0	%100
44	80	X	-0.0005	-0.0005	0	%100
45	83	X	-0.0004	-0.0004	0	%100
46	84	X	-0.0004	-0.0004	0	%100
47	85	X	-0.0004	-0.0004	0	%100
48	87	X	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.015	-0.015	0	%100
2	2	Y	-0.012	-0.012	0	%100
3	3	Y	-0.012	-0.012	0	%100
4	4	Y	-0.016	-0.016	0	%100
5	5	Y	-0.016	-0.016	0	%100
6	6	Y	-0.011	-0.011	0	%100
7	7	Y	-0.016	-0.016	0	%100
8	8	Y	-0.016	-0.016	0	%100
9	9	Y	-0.01	-0.01	0	%100
10	10	Y	-0.01	-0.01	0	%100
11	11	Y	-0.02	-0.02	0	%100
12	18	Y	-0.01	-0.01	0	%100
13	19	Y	-0.01	-0.01	0	%100
14	20	Y	-0.01	-0.01	0	%100
15	26	Y	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	30	Y	-0.02	-0.02	0	%100
17	31	Y	-0.015	-0.015	0	%100
18	32	Y	-0.012	-0.012	0	%100
19	33	Y	-0.012	-0.012	0	%100
20	34	Y	-0.016	-0.016	0	%100
21	35	Y	-0.016	-0.016	0	%100
22	36	Y	-0.016	-0.016	0	%100
23	37	Y	-0.016	-0.016	0	%100
24	38	Y	-0.01	-0.01	0	%100
25	39	Y	-0.01	-0.01	0	%100
26	40	Y	-0.02	-0.02	0	%100
27	49	Y	-0.02	-0.02	0	%100
28	50	Y	-0.015	-0.015	0	%100
29	51	Y	-0.012	-0.012	0	%100
30	52	Y	-0.012	-0.012	0	%100
31	53	Y	-0.016	-0.016	0	%100
32	54	Y	-0.016	-0.016	0	%100
33	55	Y	-0.016	-0.016	0	%100
34	56	Y	-0.016	-0.016	0	%100
35	57	Y	-0.01	-0.01	0	%100
36	58	Y	-0.01	-0.01	0	%100
37	59	Y	-0.02	-0.02	0	%100
38	68	Y	-0.02	-0.02	0	%100
39	69	Y	-0.011	-0.011	0	%100
40	72	Y	-0.01	-0.01	0	%100
41	73	Y	-0.01	-0.01	0	%100
42	74	Y	-0.01	-0.01	0	%100
43	76	Y	-0.01	-0.01	0	%100
44	80	Y	-0.011	-0.011	0	%100
45	83	Y	-0.01	-0.01	0	%100
46	84	Y	-0.01	-0.01	0	%100
47	85	Y	-0.01	-0.01	0	%100
48	87	Y	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.0006	-0.0006	0	%100
3	3	Z	-0.0006	-0.0006	0	%100
4	4	Z	-0.001	-0.001	0	%100
5	5	Z	-0.001	-0.001	0	%100
6	6	Z	-0.001	-0.001	0	%100
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.001	-0.001	0	%100
9	9	Z	-0.0006	-0.0006	0	%100
10	10	Z	-0.0006	-0.0006	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.001	-0.001	0	%100
13	19	Z	-0.001	-0.001	0	%100
14	20	Z	-0.001	-0.001	0	%100
15	26	Z	-0.001	-0.001	0	%100
16	30	Z	-0.003	-0.003	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.0006	-0.0006	0	%100
19	33	Z	-0.0006	-0.0006	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
20	34	Z	-0.001	-0.001	0	%100
21	35	Z	-0.001	-0.001	0	%100
22	36	Z	-0.001	-0.001	0	%100
23	37	Z	-0.001	-0.001	0	%100
24	38	Z	-0.0006	-0.0006	0	%100
25	39	Z	-0.0006	-0.0006	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	49	Z	-0.003	-0.003	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.0006	-0.0006	0	%100
30	52	Z	-0.0006	-0.0006	0	%100
31	53	Z	-0.001	-0.001	0	%100
32	54	Z	-0.001	-0.001	0	%100
33	55	Z	-0.001	-0.001	0	%100
34	56	Z	-0.001	-0.001	0	%100
35	57	Z	-0.0006	-0.0006	0	%100
36	58	Z	-0.0006	-0.0006	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	68	Z	-0.003	-0.003	0	%100
39	69	Z	-0.001	-0.001	0	%100
40	72	Z	-0.001	-0.001	0	%100
41	73	Z	-0.001	-0.001	0	%100
42	74	Z	-0.001	-0.001	0	%100
43	76	Z	-0.001	-0.001	0	%100
44	80	Z	-0.001	-0.001	0	%100
45	83	Z	-0.001	-0.001	0	%100
46	84	Z	-0.001	-0.001	0	%100
47	85	Z	-0.001	-0.001	0	%100
48	87	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.0006	-0.0006	0	%100
3	3	X	-0.0006	-0.0006	0	%100
4	4	X	-0.001	-0.001	0	%100
5	5	X	-0.001	-0.001	0	%100
6	6	X	-0.001	-0.001	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.001	-0.001	0	%100
9	9	X	-0.0006	-0.0006	0	%100
10	10	X	-0.0006	-0.0006	0	%100
11	11	X	-0.002	-0.002	0	%100
12	18	X	-0.001	-0.001	0	%100
13	19	X	-0.001	-0.001	0	%100
14	20	X	-0.001	-0.001	0	%100
15	26	X	-0.001	-0.001	0	%100
16	30	X	-0.003	-0.003	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.0006	-0.0006	0	%100
19	33	X	-0.0006	-0.0006	0	%100
20	34	X	-0.001	-0.001	0	%100
21	35	X	-0.001	-0.001	0	%100
22	36	X	-0.001	-0.001	0	%100
23	37	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	38	X	-0.0006	-0.0006	0	%100
25	39	X	-0.0006	-0.0006	0	%100
26	40	X	-0.002	-0.002	0	%100
27	49	X	-0.003	-0.003	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.0006	-0.0006	0	%100
30	52	X	-0.0006	-0.0006	0	%100
31	53	X	-0.001	-0.001	0	%100
32	54	X	-0.001	-0.001	0	%100
33	55	X	-0.001	-0.001	0	%100
34	56	X	-0.001	-0.001	0	%100
35	57	X	-0.0006	-0.0006	0	%100
36	58	X	-0.0006	-0.0006	0	%100
37	59	X	-0.002	-0.002	0	%100
38	68	X	-0.003	-0.003	0	%100
39	69	X	-0.001	-0.001	0	%100
40	72	X	-0.001	-0.001	0	%100
41	73	X	-0.001	-0.001	0	%100
42	74	X	-0.001	-0.001	0	%100
43	76	X	-0.001	-0.001	0	%100
44	80	X	-0.001	-0.001	0	%100
45	83	X	-0.001	-0.001	0	%100
46	84	X	-0.001	-0.001	0	%100
47	85	X	-0.001	-0.001	0	%100
48	87	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	10	Y	-0.02	-0.026	1.27	2.309
2	38	Y	-0.035	-0.016	0	1.155
3	38	Y	-0.016	0.0006163	1.155	2.309
4	39	Y	-0.018	-0.016	0.231	2.309
5	57	Y	-0.018	-0.016	0	2.078
6	58	Y	0.0006164	-0.016	0	1.155
7	58	Y	-0.016	-0.035	1.155	2.309
8	9	Y	-0.015	-0.015	0	2.078
9	10	Y	-0.014	-0.02	0.231	1.27

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	9	Y	-0.012	-0.012	0	2.078
2	10	Y	-0.012	-0.016	0.231	1.27
3	10	Y	-0.016	-0.021	1.27	2.309
4	38	Y	-0.028	-0.013	0	1.155
5	38	Y	-0.013	0.0004931	1.155	2.309
6	39	Y	-0.014	-0.013	0.231	2.309
7	57	Y	-0.014	-0.013	0	2.078
8	58	Y	0.0004931	-0.013	0	1.155
9	58	Y	-0.013	-0.028	1.155	2.309

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.01
2	73	72	75	74	Y	Two Way	-0.01
3	102	101	104	103	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	23	22	25	24	Y	Two Way	-0.008
2	73	72	75	74	Y	Two Way	-0.008
3	102	101	104	103	Y	Two Way	-0.008

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

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	30	L	Y	-0.5
2	113	L	Y	-0.5
3	135	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	31	L	Y	-0.5
2	114	L	Y	-0.5
3	136	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	40	L	Y	-0.5
2	123	L	Y	-0.5
3	145	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	48	
3	90 Wind - No Ice	WLX			20	48	
4	0 Wind - Ice	WLZ			20	48	
5	90 Wind - Ice	WLX			20	48	
6	0 Wind - Service	WLZ			20	48	
7	90 Wind - Service	WLX			20	48	
8	Ice	OL1			20	48	3
9	0 Seismic	ELZ			20	48	
10	90 Seismic	ELX			20	48	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				9	
31	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	1	max	1.217	5	2.24	14	1.187	2	4.417	14	1.2	11	0.274	11
2		min	-1.217	11	-0.118	8	-1.313	8	-0.885	8	-1.199	5	-0.287	5
3	53	max	1.071	5	2.291	18	1.591	2	0.334	13	1.471	3	0.327	12
4		min	-1.178	11	0.086	12	-1.529	8	-2.212	19	-1.471	9	-3.793	18
5	82	max	1.134	5	2.206	22	1.514	2	0.34	3	1.439	7	3.748	22
6		min	-1.026	11	0.056	4	-1.451	8	-2.193	21	-1.44	13	-0.345	4
7	Totals:	max	3.421	5	6.177	25	4.292	2						
8		min	-3.421	11	2.462	7	-4.292	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	7	PL3/8X6_HRA	0.13	0.208	3	0.238	0.208	y	25	71.879	73.872	0.585	9.234	2.942	H1-1b
2	36	PL3/8X6_HRA	0.135	0.208	7	0.237	0.208	y	17	71.879	73.872	0.585	9.234	2.97	H1-1b
3	37	PL3/8X6_HRA	0.111	0	5	0.237	0	y	19	71.879	73.872	0.585	9.234	2.999	H1-1b
4	55	PL3/8X6_HRA	0.111	0.208	11	0.237	0.208	y	21	71.879	73.872	0.585	9.234	2.996	H1-1b
5	8	PL3/8X6_HRA	0.131	0	13	0.237	0	y	15	71.879	73.872	0.585	9.234	2.946	H1-1b
6	56	PL3/8X6_HRA	0.134	0	9	0.236	0	y	23	71.879	73.872	0.585	9.234	2.968	H1-1b
7	4	PL3/8X6_HRA	0.086	0	13	0.148	0	y	2	70.017	73.872	0.585	9.234	2.21	H1-1b
8	5	PL3/8X6_HRA	0.086	0	3	0.146	0	y	2	70.017	73.872	0.585	9.234	2.229	H1-1b
9	35	PL3/8X6_HRA	0.082	0	7	0.132	0	y	42	70.017	73.872	0.585	9.234	2.106	H1-1b
10	53	PL3/8X6_HRA	0.082	0	9	0.132	0	y	70	70.017	73.872	0.585	9.234	2.108	H1-1b
11	34	PL3/8X6_HRA	0.07	0	5	0.13	0	y	66	70.017	73.872	0.585	9.234	2.087	H1-1b
12	54	PL3/8X6_HRA	0.07	0	11	0.13	0	y	46	70.017	73.872	0.585	9.234	2.088	H1-1b
13	31	HSS4X4X2	0.554	0	19	0.124	0	z	3	70.173	73.278	8.24	8.24	2.225	H1-1b
14	50	HSS4X4X2	0.548	0	21	0.121	0	z	7	70.173	73.278	8.24	8.24	2.212	H1-1b
15	20	PIPE_2.88x0.203	0.119	2.188	9	0.117	8.75		2	24.131	70.68	5.029	5.029	2.236	H1-1b
16	1	HSS4X4X2	0.548	0	25	0.111	0	y	15	70.173	73.278	8.24	8.24	2.21	H1-1b
17	74	PIPE_2.88x0.203	0.118	2.187	13	0.111	1.25		7	24.131	70.68	5.029	5.029	2.049	H1-1b
18	85	PIPE_2.88x0.203	0.118	7.812	3	0.111	8.75		9	24.131	70.68	5.029	5.029	2.054	H1-1b
19	33	C3.38X2.06X0.188	0.425	0	17	0.079	2.241	y	25	35.676	43.394	1.694	4.483	1.629	H1-1b
20	52	C3.38X2.06X0.188	0.43	0	21	0.078	2.241	y	17	35.676	43.394	1.694	4.483	1.63	H1-1b
21	3	C3.38X2.06X0.188	0.431	0	25	0.078	2.241	y	21	35.676	43.394	1.694	4.483	1.63	H1-1b
22	11	L7.63x2.5x6	0.316	1.604	8	0.074	2.873	y	25	75.414	118.523	1.798	13.581	1.207	H2-1
23	40	L7.63x2.5x6	0.264	1.604	12	0.074	0.334	y	19	75.414	118.523	1.798	13.45	1.18	H2-1
24	59	L7.63x2.5x6	0.265	1.604	4	0.073	2.873	y	21	75.414	118.523	1.798	13.443	1.178	H2-1
25	32	C3.38X2.06X0.188	0.431	2.592	19	0.07	0.351	y	21	35.676	43.394	1.694	4.483	1.631	H1-1b
26	51	C3.38X2.06X0.188	0.423	2.592	23	0.069	0.351	y	25	35.676	43.394	1.694	4.483	1.629	H1-1b
27	2	C3.38X2.06X0.188	0.431	2.592	15	0.069	0.351	y	16	35.676	43.394	1.694	4.483	1.631	H1-1b
28	80	PIPE_3.5x0.165	0.072	6.75	2	0.056	5		7	45.872	71.57	6.336	6.336	1.727	H1-1b
29	69	PIPE_3.5x0.165	0.072	1.25	2	0.056	3		9	45.872	71.57	6.336	6.336	1.728	H1-1b
30	83	PIPE_2.88x0.203	0.14	5.667	7	0.05	5.667		7	35.519	70.68	5.029	5.029	3	H1-1b
31	72	PIPE_2.88x0.203	0.139	5.667	9	0.05	5.667		3	35.519	70.68	5.029	5.029	3	H1-1b
32	19	PIPE_2.88x0.203	0.122	2.333	9	0.048	5.667		8	35.519	70.68	5.029	5.029	3	H1-1b
33	26	PIPE_2.88x0.203	0.122	2.333	7	0.048	5.667		8	35.519	70.68	5.029	5.029	3	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
34	6	PIPE_3.5x0.165	0.068	4	52	0.044	3		4	45.872	71.57	6.336	6.336	1.735	H1-1b
35	87	PIPE_2.88x0.203	0.143	2.333	2	0.042	5.667		3	35.519	70.68	5.029	5.029	3	H1-1b
36	73	PIPE_2.88x0.203	0.143	2.333	2	0.042	5.667		13	35.519	70.68	5.029	5.029	3	H1-1b
37	18	PIPE_2.88x0.203	0.11	5.667	5	0.039	5.667		5	35.519	70.68	5.029	5.029	3	H1-1b
38	39	L2x2x4	0.214	2.309	13	0.037	0	y	21	23.349	30.586	0.691	1.577	1.5	H2-1
39	38	L2x2x4	0.2	0	12	0.037	0	y	16	23.349	30.586	0.691	1.577	1.5	H2-1
40	57	L2x2x4	0.215	0	3	0.037	2.309	y	19	23.349	30.586	0.691	1.577	1.5	H2-1
41	10	L2x2x4	0.235	2.309	8	0.037	0	y	16	23.349	30.586	0.691	1.577	1.5	H2-1
42	58	L2x2x4	0.201	2.309	4	0.037	2.309	y	24	23.349	30.586	0.691	1.577	1.5	H2-1
43	84	PIPE_2.88x0.203	0.113	2.333	6	0.036	5.667		4	35.519	70.68	5.029	5.029	3	H1-1b
44	9	L2x2x4	0.233	0	8	0.036	2.309	y	24	23.349	30.586	0.691	1.577	1.5	H2-1
45	76	PIPE_2.88x0.203	0.114	2.333	10	0.036	5.667		12	35.519	70.68	5.029	5.029	3	H1-1b
46	49	L6.63x4.33x.25	0.223	0	2	0.027	3.25	y	9	51.794	86.751	2.311	6.976	1.5	H2-1
47	68	L6.63x4.33x.25	0.223	3.25	2	0.027	0	y	7	51.794	86.751	2.311	6.976	1.5	H2-1
48	30	L6.63x4.33x.25	0.177	0	10	0.02	0	y	11	51.794	86.751	2.311	6.976	1.5	H2-1

APPENDIX D

ADDITIONAL CALCULATIONS

PROJECT	**89211.010.01 - HRT 101 943232, CT**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**09/08/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.187	k
Vertical Shear	:	2.24	k
Horizontal Shear	:	1.217	k
Torsion	:	0.274	k.ft
Moment from Horizontal Forces	:	1.2	k.ft
Moment from Vertical Forces	:	4.417	k.ft

Bolt Parameters

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

Summary of Forces

Shear Resultant Force	:	2.55	k
Force from Horz. Moment	:	2.17	k
Force from Vert. Moment	:	8.00	k
Shear Load / Bolt	:	0.64	k
Tension Load / Bolt	:	0.30	k
Resultant from Moments / Bolt	:	4.15	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**21.44%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**8.45%**		**OKAY**
Unity Check, Combined	:	**29.89%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**1.84%**		**OKAY**

PROJECT	**89211.010.01 - HRT 101 943232, CT**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**09/08/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Connecting Member Parameters

Plate Yield Strength, F_y	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, F_u	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	9.00	in	
Plate Width	:	9.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	1.06	in	
Gross Tension Area, A_{gt}	:	4.50	in^2	
Gross Shear Area, A_{gv}	:	0.75	in^2	
Net Area for tension, A_{nv}	:	4.16	in^2	
Net Area for shear, A_{nt}	:	3.00	in^2	

Plate Check

Available Tensile Yield	:	145.80	k	[Eq. J4-1]
Available Tensile Rupture	:	180.80	k	[Eq. J4-2]
Unity Check, Plate Tension	:	**3.05%**		**OKAY**
Available Shear Yield	:	16.20	k	[Eq. J4-3]
Available Shear Rupture	:	104.40	k	[Eq. J4-4]
Unity Check, Plate Shear	:	**15.74%**		**OKAY**
Available Block Shear, ΦRn	:	77.40	k	[Eq. J4-5]
Unity Check, Block Shear	:	**3.29%**		**OKAY**

APPENDIX E

SUPPLEMENTAL DRAWINGS

NOTES:

1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM

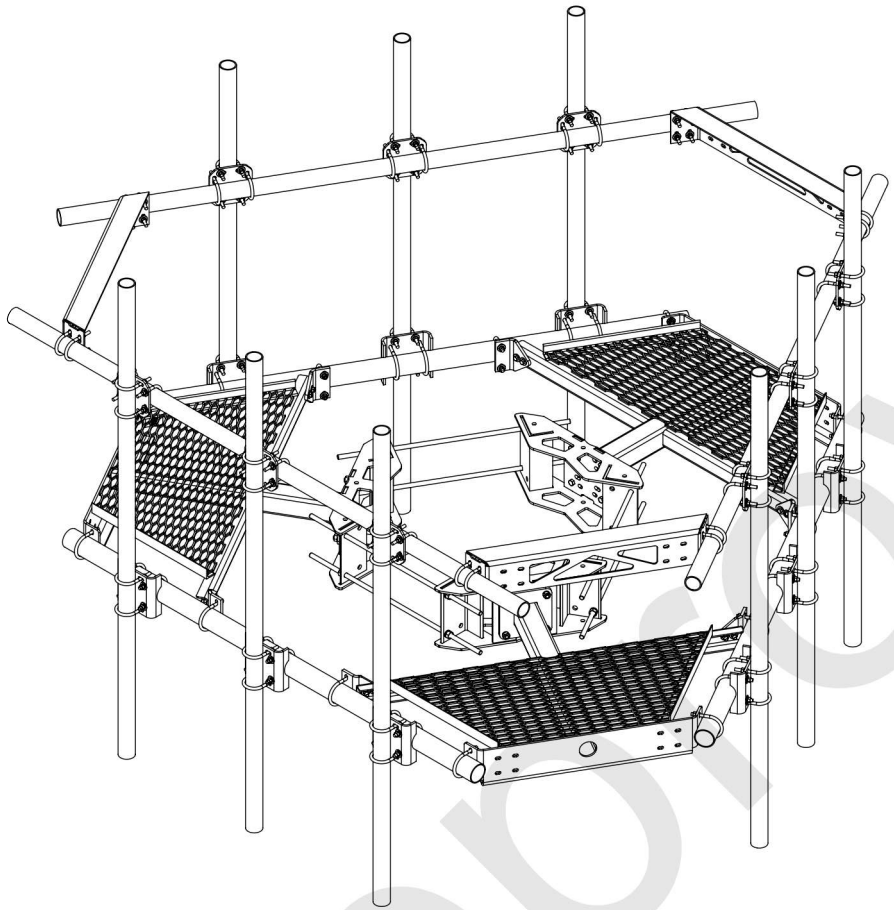
2.0 DESIGN NOTES
- 2.1 TORQUE U-BOLTS TO 44 FT-LBS

3.0 MANUFACTURING/SPECIAL REQUIREMENTS

4.0 TEST

5.0 PACKAGING

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/08/2021



Approved

PATENT PENDING

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

COMMSCOPE, INC. OF NORTH CAROLINA

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

SAP MATERIAL MASTER: MC-PK8-DSH

FINISH: GALV A123

MATERIAL: A500, A1011/A1018

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

	NAME	DATE
CE	MRC	02/17/20
RW	ROGHANSON	03/16/2021
AD	BCROSS	03/17/2021
RE	FA1024	02/27/2020
ECN	10272PC	

TITLE: **LOW PROFILE PLATFORM FACE**

SCALE: 1:32

DOCUMENT NO.: MC-PK8-DSH

SIZE	Auth Group	MODEL			DRAWING			SHEET
	INSL	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C		01	AD		00	AD	A	1 OF 3

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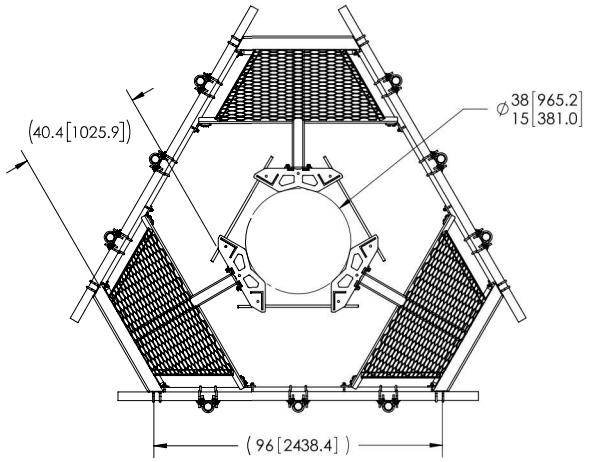
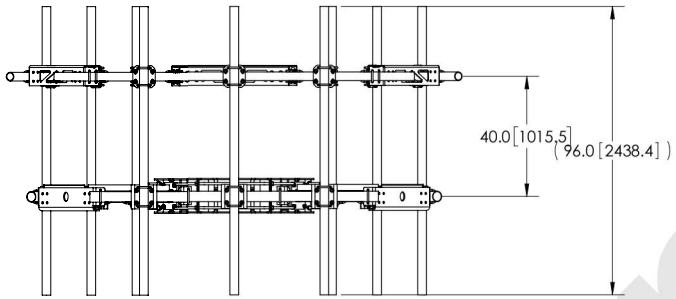
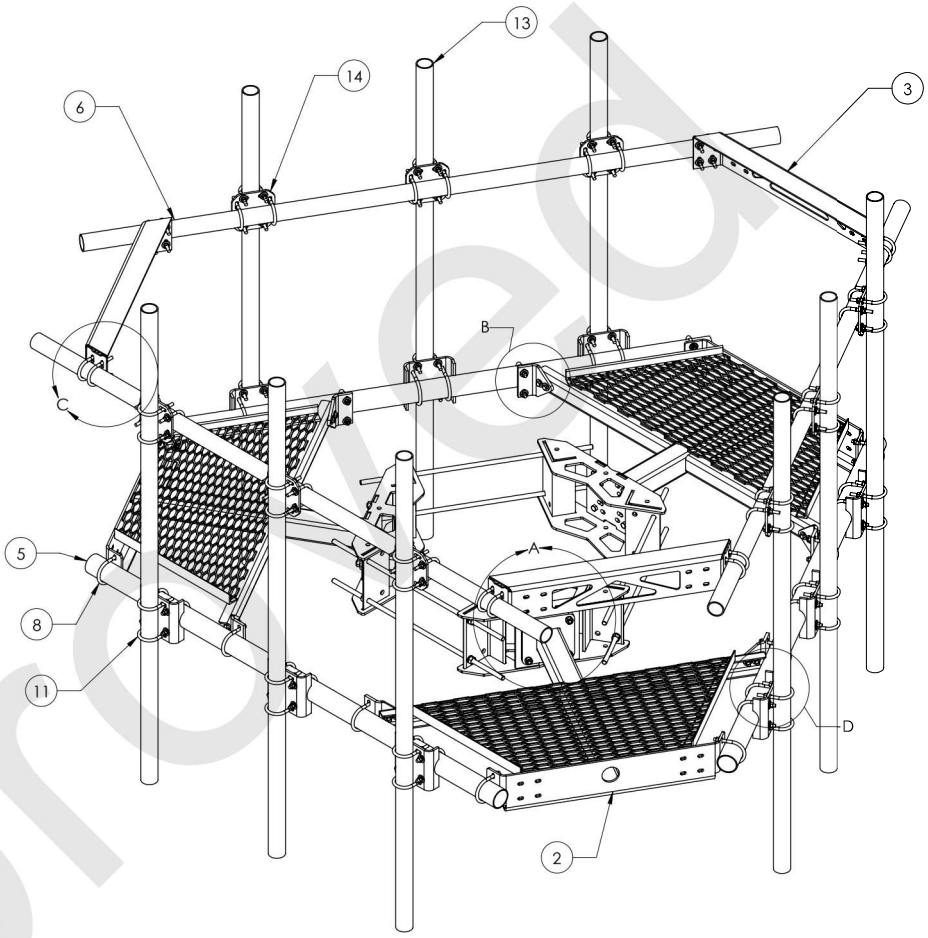
NOTES:







ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MTC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MT195801	Corner Weldment Snub Nose Handrail	3
4	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
5	MT54796	3.50" OD X 96" GALV PIPE	3
6	MT546120	2.875" O.D. X 120" PIPE	3
7	GWF-04	1/2" GALV FLAT WASHER	12
8	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MTC300618	MOUNTING PLATE FOR MT-196	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MT-219M-H	3.5" OD X 2-7/8" OD Clamp Bracket Assembly	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MT54696	Ø 2.875" O.D. X 96 PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

Approved

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

LOW PROFILE PLATFORM FACE

SIZE	SCALE	DOCUMENT NO.
C	1:32	MC-PK8-DSH

DRAWING			SHEET
VERSION	STATUS	REVISION	
00	AD	A	

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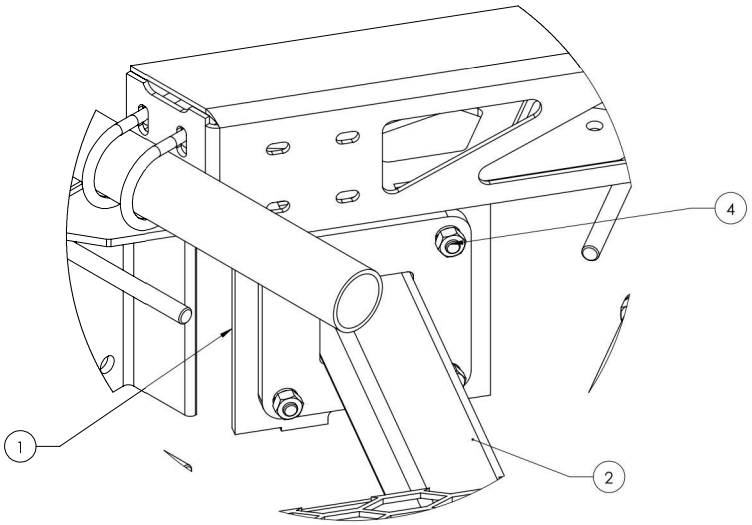
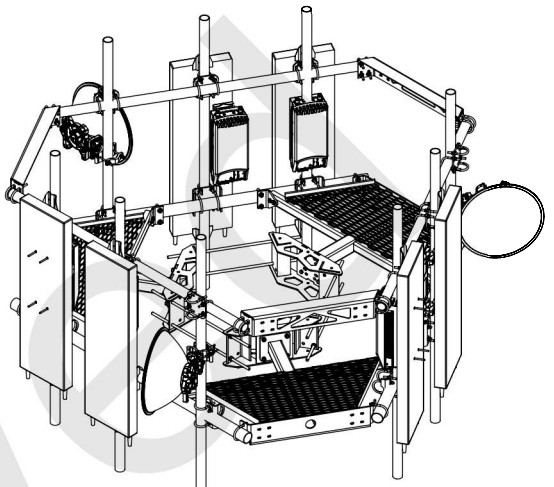
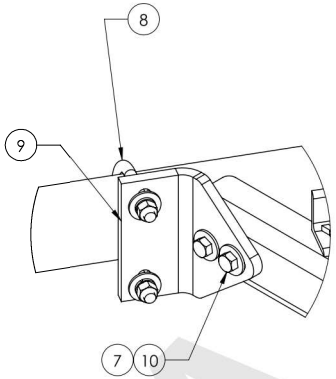
NOTES:



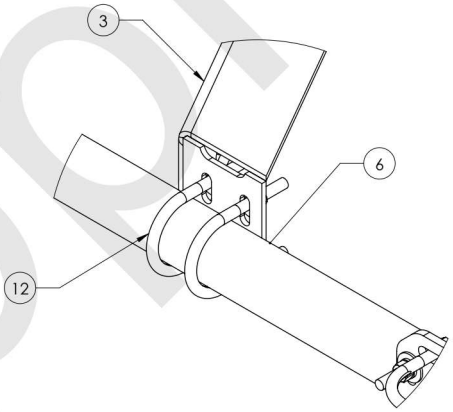
DETAIL A
SCALE 1 : 4



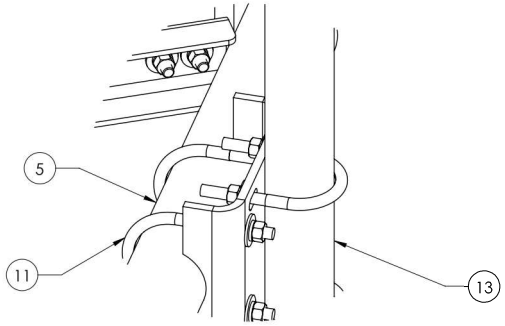
WITH ANTENNAS



DETAIL B
SCALE 1 : 4



DETAIL C
SCALE 1 : 4



DETAIL D
SCALE 1 : 4

Approved

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COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: LOW PROFILE PLATFORM FACE			
SIZE: C	SCALE: 1:24	DOCUMENT NO.: MC-PK8-DSH	
		DRAWING: VERSION 00 / STATUS AD / REVISION A	SHEET: 3 OF 3

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00046A

806373
4 Oliver Road
Enfield, Connecticut 06082

October 26, 2021

EBI Project Number: 6221006486

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.94%**

October 26, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00046A - 806373

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **4 Oliver Road** in **Enfield, 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 4 Oliver Road in Enfield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

3) 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 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

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 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antenna mounting height centerline of the proposed antennas is 127 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):	127 feet	Height (AGL):	127 feet	Height (AGL):	127 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):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**1.08%**	Antenna B1 MPE %:	**1.08%**	Antenna C1 MPE %:	**1.08%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.08%
AT&T	3.25%
Verizon	3.17%
T-Mobile	3.27%
Clearwire	0.11%
Sprint	0.38%
Nextel	0.28%
XM Sat Radio	0.13%
Page Net	0.27%
Site Total MPE % :	11.94%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.08%
Dish Wireless Sector B Total:	1.08%
Dish Wireless Sector C Total:	1.08%
Site Total MPE % :	11.94%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	127.0	2.20	600 MHz n71	400	0.55%
Dish Wireless 1900 MHz n70	4	542.70	127.0	5.33	1900 MHz n70	1000	0.53%
						Total:	**1.08%**

• 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:	1.08%
Sector B:	1.08%
Sector C:	1.08%
Dish Wireless Maximum MPE % (Sector A):	1.08%
Site Total:	11.94%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.94%** 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

4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
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:
4 OLIVER ROAD, ENFIELD, CT 06082

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

Crown Site ID/Name: 806373/HRT 101 943232
Customer Site ID: BOBDL00046A/CT-CCI-T-806373
Site Address: 4 Oliver Road, ENFIELD, CT 06082

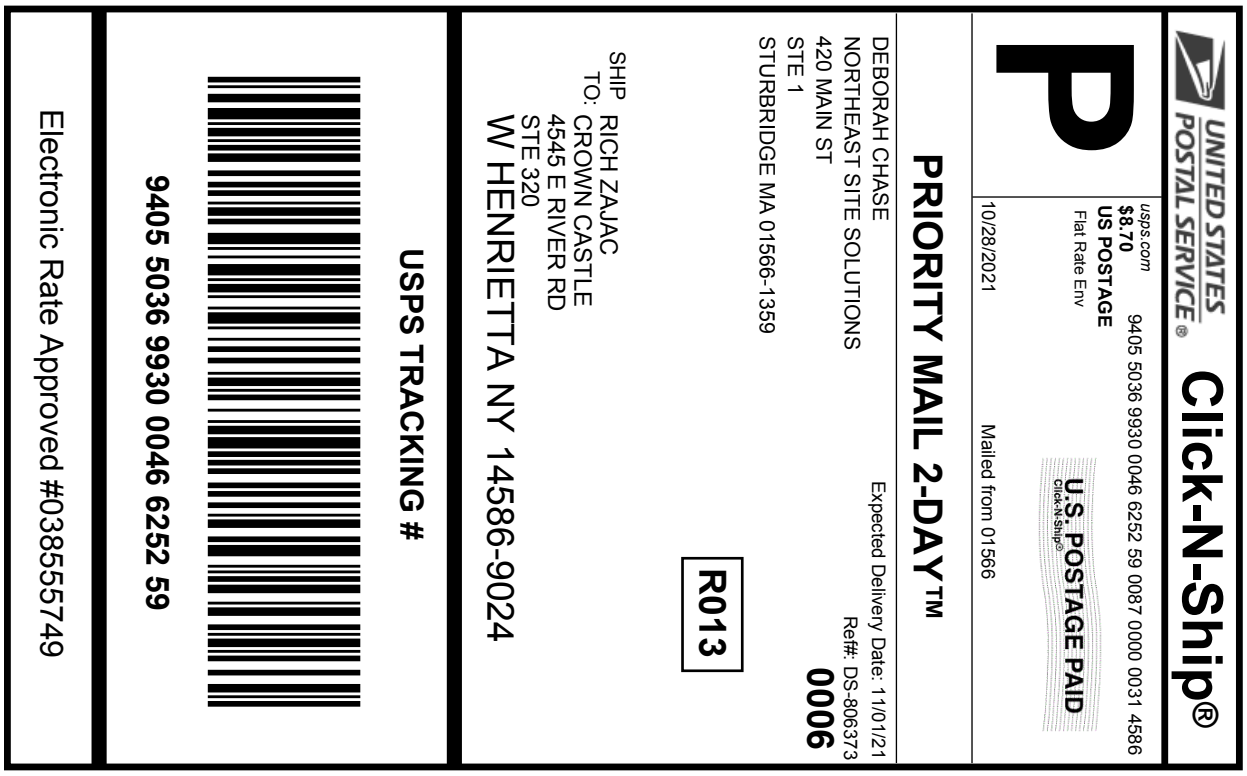
Crown Castle

By: _____ Date: 10/26/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
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.**
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USPS TRACKING # :
9405 5036 9930 0046 6252 59

Trans. #:	547088552
Print Date:	10/28/2021
Ship Date:	10/28/2021
Expected Delivery Date:	11/01/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

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

Ref#: DS-806373

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

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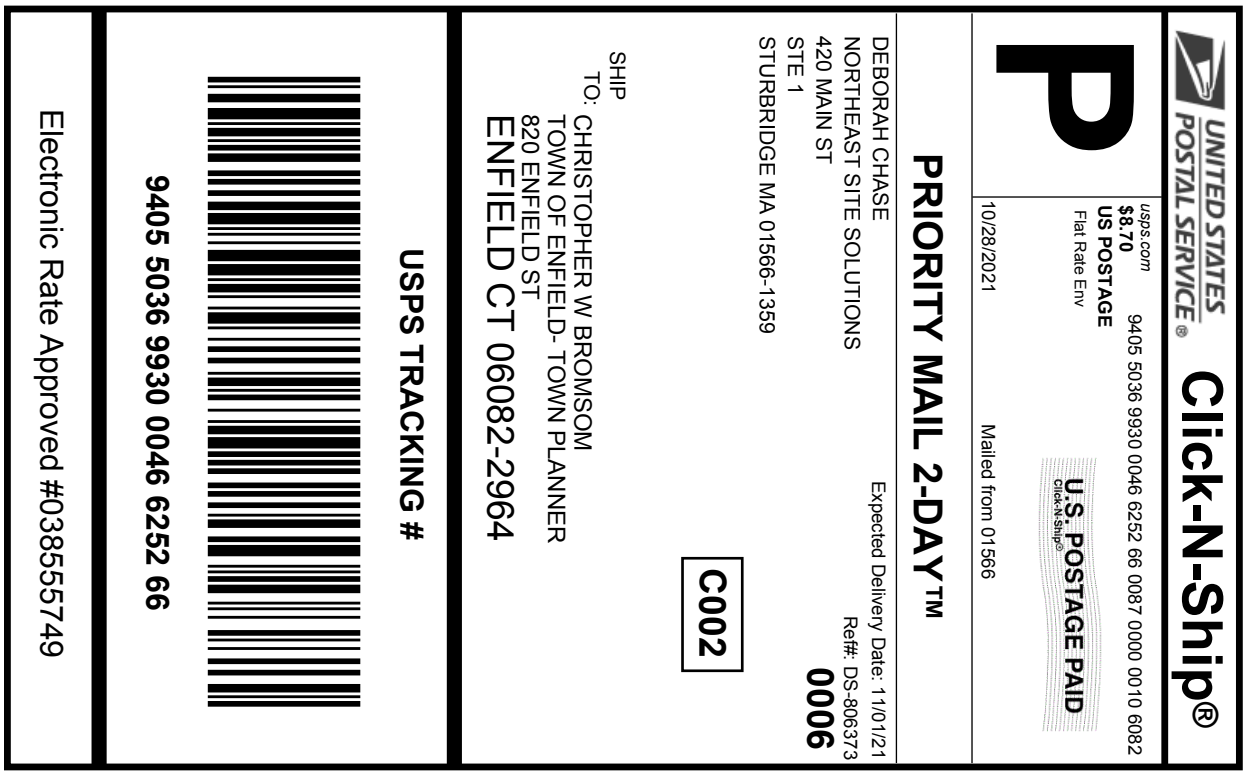

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Ship Date:	10/28/2021
Expected Delivery Date:	11/01/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

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

Ref#: DS-806373

To: CHRISTOPHER W BROMSOM
TOWN OF ENFIELD- TOWN PLANNER
820 ENFIELD ST
ENFIELD CT 06082-2964

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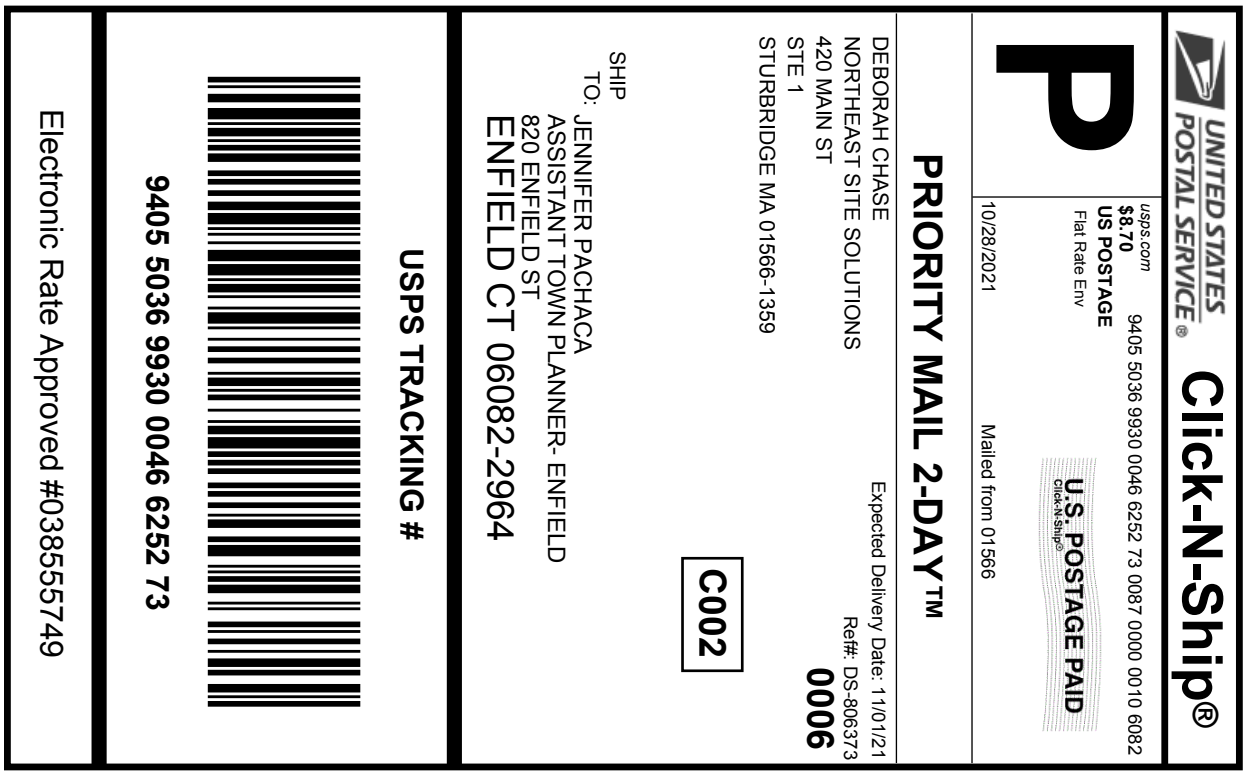

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9405 5036 9930 0046 6252 73

Trans. #:	547088552
Print Date:	10/28/2021
Ship Date:	10/28/2021
Expected Delivery Date:	11/01/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

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

Ref#: DS-806373

To: JENNIFER PACHACA
ASSISTANT TOWN PLANNER- ENFIELD
820 ENFIELD ST
ENFIELD CT 06082-2964

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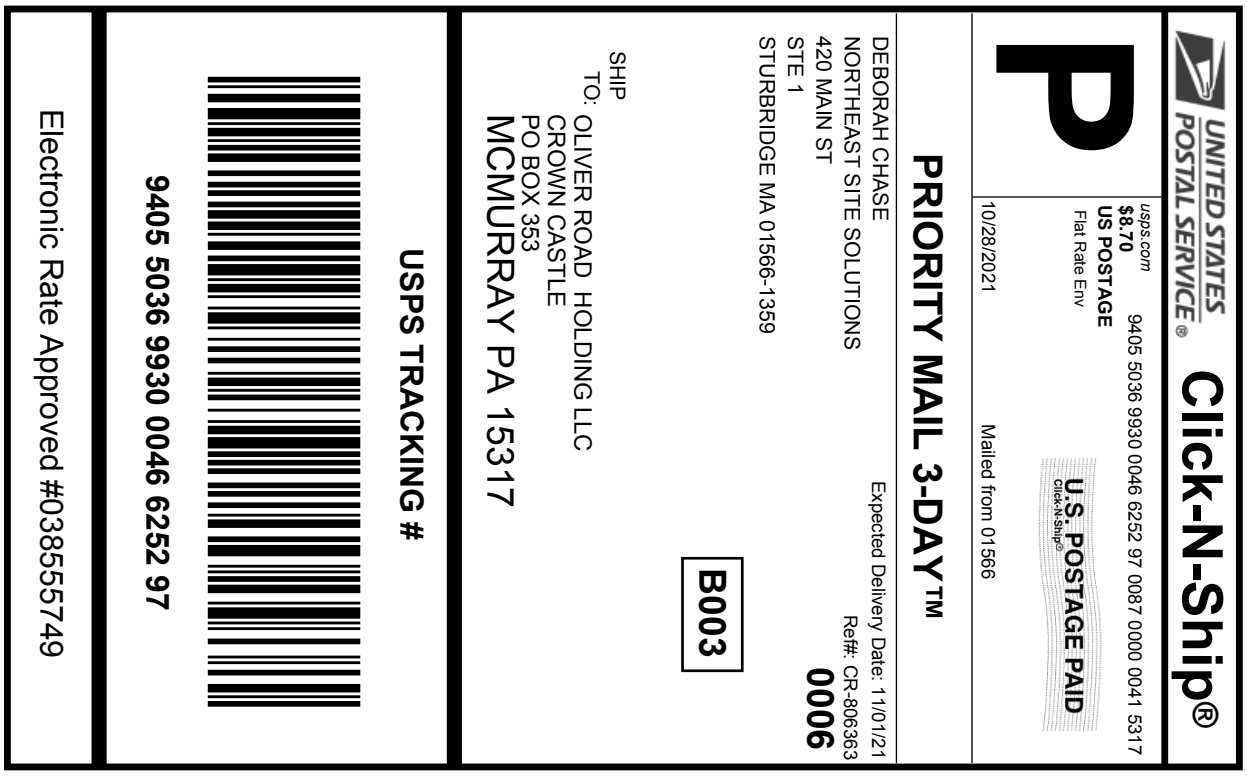

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9405 5036 9930 0046 6252 97

Trans. #:	547088552
Print Date:	10/28/2021
Ship Date:	10/28/2021
Expected Delivery Date:	11/01/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

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

Ref#: CR-806363

To: OLIVER ROAD HOLDING LLC
CROWN CASTLE
PO BOX 353
MCMURRAY PA 15317

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806373

UNITED STATES POSTAL SERVICE.

UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

10/29/2021 02:28 PM

Product	Qty	Unit Price	Price
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Prepaid Mail Canonsburg, PA 15317 Weight: 1 lb 0.50 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 6252 97	1		$0.00
Prepaid Mail Enfield, CT 06082 Weight: 1 lb 0.50 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 6252 66	1		$0.00
Prepaid Mail Enfield, CT 06082 Weight: 1 lb 0.50 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 6252 73	1		$0.00
Grand Total:			$0.00