NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

August 11, 2021

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

RE: Tower Share Application
625 Spring Street, Southington CT 06489
Latitude: 41.63247222
Longitude: -72.89425
Site# 876334_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 625 Spring Street in Southington, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antenna and six (6) RRUs, at the 114-foot level of the existing 161-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated July 7, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated May 24, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Southington Planning and Zoning on May 18, 1998. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Mr. Mark J. Sciota -Town Manager for the Town of Southington, Mr. Matthew Reimondo – Zoning Enforcement Officer, as well as the tower owner (Crown Castle) and property owner (Crown Castle).

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 161-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 114-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 34.29% as evidenced by Exhibit F.

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

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this support tower in Southington. 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 114-foot level of the existing 161-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 Southington.

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:

Mr. Mark J. Sciota -Town Manager (sciotam@southington.org)
Town of Southington
75 Main Street Southington, CT 06489
860-276-6200

Mr. Matthew Reimondo – Zoning Enforcement Officer (reimondom@southington.org)
Town of Southington Municipal Center
196 North Main Street, Southington, CT 06489
860-276-6248

Crown Castle, Property and Tower Owner

Exhibit A

Original Facility Approval

5/11/98
CK#1803
5MM

PLANNING AND ZONING DEPARTMENT

P.O. BOX 610 • SOUTHINGTON, CONN. 06489 • 203/276-6248

TOWN FEE: $10.00
STATE FEE: $10.00
TOTAL FEE: $20.00

Z.P. # 5625

ZONING PERMIT APPLICATION

Applicant (please print):	Owner (please print):
~~Sprint PCS~~	Josephine Smoron
~~9 Barnes Industrial Road~~	55 Smoron Drive
~~Wallingford, CT. 06492~~	Southington, CT. 06489
Telephone: 203-294-5676	Telephone: ~~860-628-6243~~

Address of Property: 625 Spring Street Zone: R-40
Utilities: Sewer N/A Septic System N/A Well N/A Town Water N/A

Proposed Activity: install Telecommunication Facility
Does proposed activity entail construction or land alteration within 50 feet of a wetland/wet area/waterbody? Yes X No ____

Date of following approvals: Special Permit* 12/9/97 Subdivision ____
Site Plan ~~12/9/97~~ Inland/Wetland ~~12/2/97~~ Filling of Floodplain ____
Variance ____ Special Exception* ____ Home Occupation* ____
Expansion of Non-Conforming Use* ____

Submit 7 set of plans. * NOTE: Provide one copy each of certain approval letters stamped by the Town Clerk and noting the volume and page number of the approval in the land records.

- -

OFFICE USE ONLY	Approved	Denied
Planner/Inland Wetlands:	5/18/98	
Zoning Officer:	5/18/98	
Town Engineer:	5/15/98	
Water Department:	—	
Health Department:	—	

Approved for Zoning Permit. A copy of this approval shall be presented to the Building Official prior to issuance of a Building Permit.

[signature] 5/18/98
Zoning Enforcement Officer / Date

- -

CERTIFICATE OF ZONING COMPLIANCE Z.P. # ____
I hereby certify that all improvements were installed in compliance with the Zoning Permit.

	Approved	Denied
Planner/Inland Wetlands:		
Zoning Officer:		
Town Engineer:		
Water Department:		
Health Department:		

Approved for Certificate of Zoning Compliance. A copy of this approval shall be presented to the Building Official prior to issuance of a Certificate of Occupancy.

1/94

Zoning Enforcement Officer Date

** I have received a copy of the ordinance requiring the fencing of pools
Signed ____
Print ____

Exhibit B

Property Card

625 SPRING ST

Location	625 SPRING ST	**Mblu**	168/ / 020/ /
Acct#	19111	**Owner**	GLOBAL SIGNAL ACQUISITIONS II LLC
Assessment	$253,850	**Appraisal**	$362,630
PID	15908	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$23,750	$338,880	$362,630
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$16,630	$237,220	$253,850

Owner of Record

Owner	GLOBAL SIGNAL ACQUISITIONS II LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	4017 WASHINGTON RD PMB 331 CANONSBURG, PA 15317	**Book & Page**	0788/0214
		Sale Date	04/25/2001
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
GLOBAL SIGNAL ACQUISITIONS II LLC	$0		0788/0214		04/25/2001

Building Information

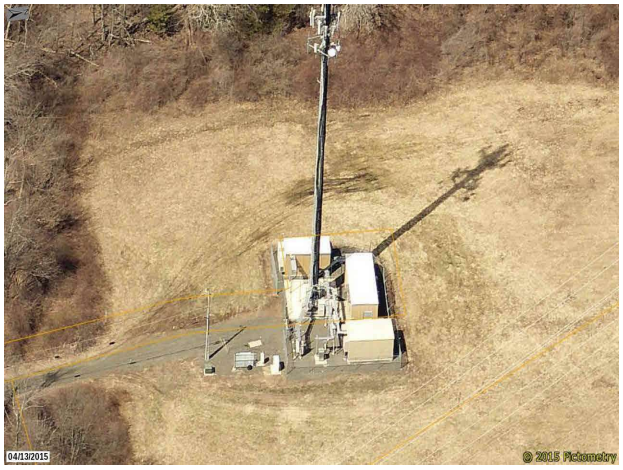
Building 1 : Section 1

Year Built:
Living Area: 0
Building Percent Good:

Building Attributes	
Field	**Description**

Style	Vacant w/OB
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:	
Total Kitchens	
Fireplaces	
Whirlpool Tubs	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	
.	
Bsmt Type	
Attic Type	
Cath Ceiling	

Building Photo



(http://images.vgsi.com/photos2/SouthingtonCTPhotos//\00\05\81\46.jpg)

Building Layout

(http://images.vgsi.com/photos2/SouthingtonCTPhotos//Sketches/15908_1

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	438
Description	Cell Site
Zone	R-40
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.62
Depth	

Outbuildings

Outbuildings					Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Bldg #**
FN5	Fence-10'Chain			233.00 L.F.	1
SHD5	Cell Shed			360.00 units	1
SHD5	Cell Shed			240.00 units	1
SHD5	Cell Shed			180.00 units	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$23,750	$338,880	$362,630
2019	$23,750	$206,120	$229,870
2018	$23,750	$206,120	$229,870
2017	$3,500	$206,120	$209,620
2016	$3,500	$206,120	$209,620

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$16,630	$237,220	$253,850
2019	$16,630	$144,280	$160,910
2018	$16,630	$144,280	$160,910
2017	$2,450	$144,280	$146,730
2016	$2,450	$144,280	$146,730


Cava
Takeout
229
Western Little League
New England
Baptist College
West St
Central Baptist Church
Central Christian
Academy
625 Spring St,
Southington, CT 06489
Spring St
Spring St
Spring St
Spring Hill Rd
Summit Farms Rd
Dr
229
Spring St
The Tabernacle
Christian Church

Exhibit C

Construction Drawings

dish wireless™

DISH WIRELESS L.L.C. SITE ID:

BOBDL00086A

DISH WIRELESS L.L.C. SITE ADDRESS:

625 SPRING STREET SOUTHINGTON, CT 06489

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	GLOBAL SIGNAL ACQUISITIONS II LLC
ADDRESS:	4017 WASHINGTON RD PMB 331 CANONSBURG, PA 15317
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876334
TOWER APP NUMBER:	556607
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 37' 56.90" N 41.63247222 N
LONGITUDE (NAD 83):	72° 53' 39.30" W 72.89425 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	R-40
PARCEL NUMBER:	168020
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	CLEARWIRE PHONE

PROJECT DIRECTORY

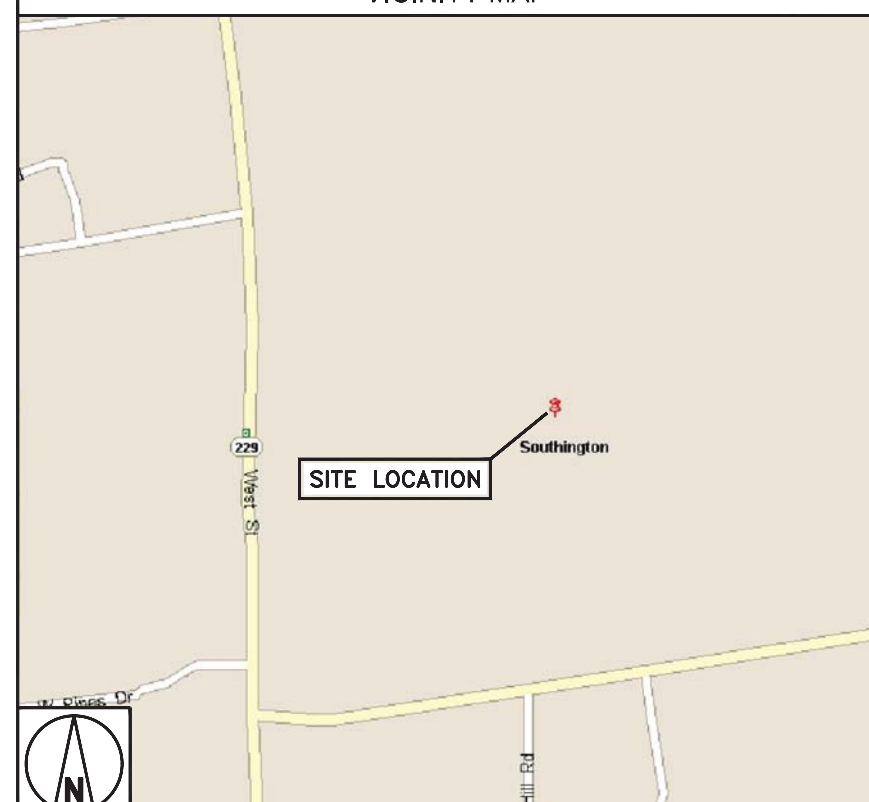
APPLICANT:	DISH WIRELESS L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	NICHOLAS CURRY NICHOLAS.CURRY@CROWNCASTLE.COM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

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 32A-32B, TURN RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTO I-84 [US-6]. AT EXIT 32, TURN RIGHT ONTO RAMP. TURN LEFT ONTO CT-10 [QUEEN ST], THEN IMMEDIATELY TURN LEFT ONTO SPRING ST. ARRIVE AT SITE.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT No. 23804 LICENSED PROFESSIONAL ENGINEER
7/7/21

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

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:
BLJ	RMC	MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

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

A&E PROJECT NUMBER
127834.004.01

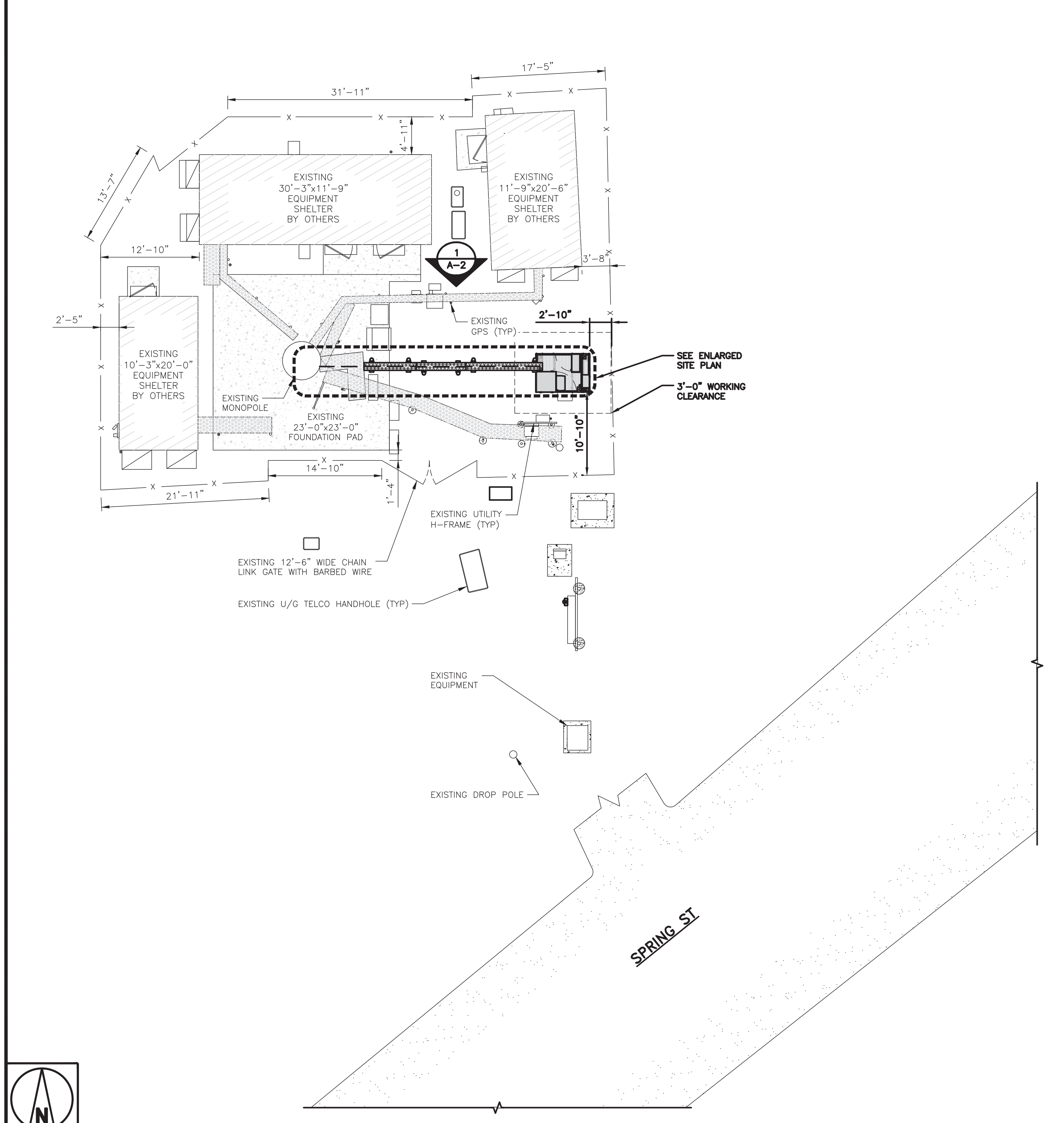
DISH WIRELESS L.L.C. PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

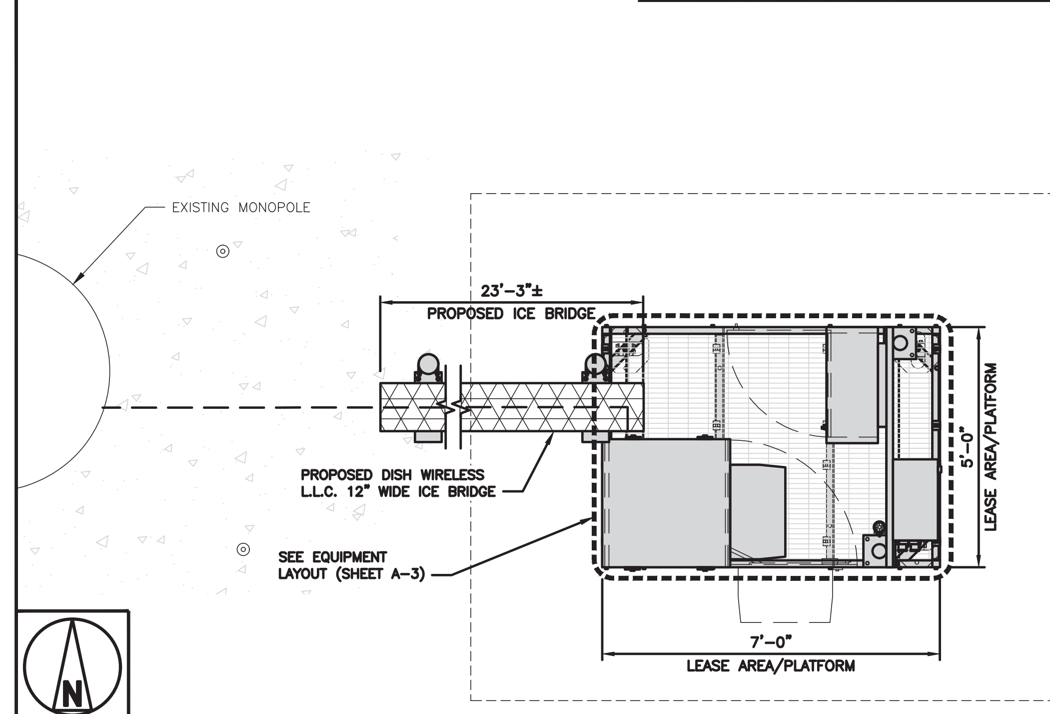
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



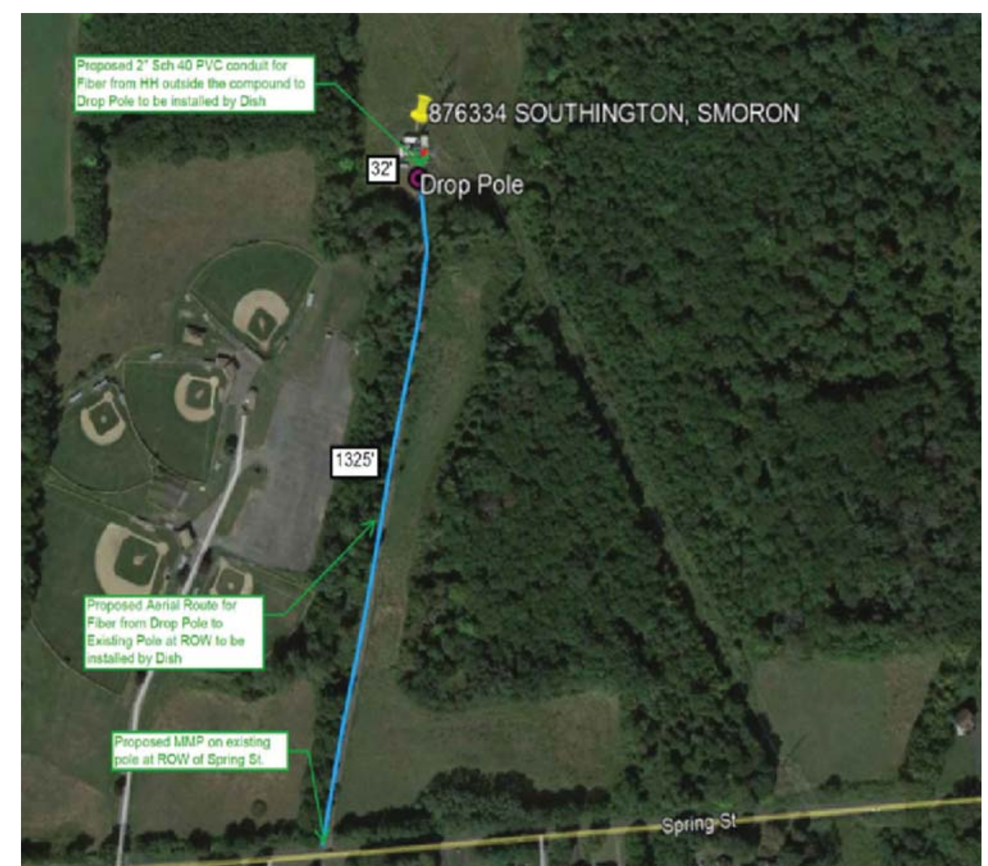
OVERALL SITE PLAN | 16' 12' 8' 4' 0 16' 32' 1/16"=1'-0" | 1

NOTES

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



ENLARGED SITE PLAN | 12" 6" 0 1' 2' 3' 4' 5' 6' 7' 3/8"=1'-0" | 2



OVERALL UTILITY PLAN | NO SCALE | 3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

7/7/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	RMC	MDW

RFDS REV #: ---

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A&E PROJECT NUMBER
127834.004.01

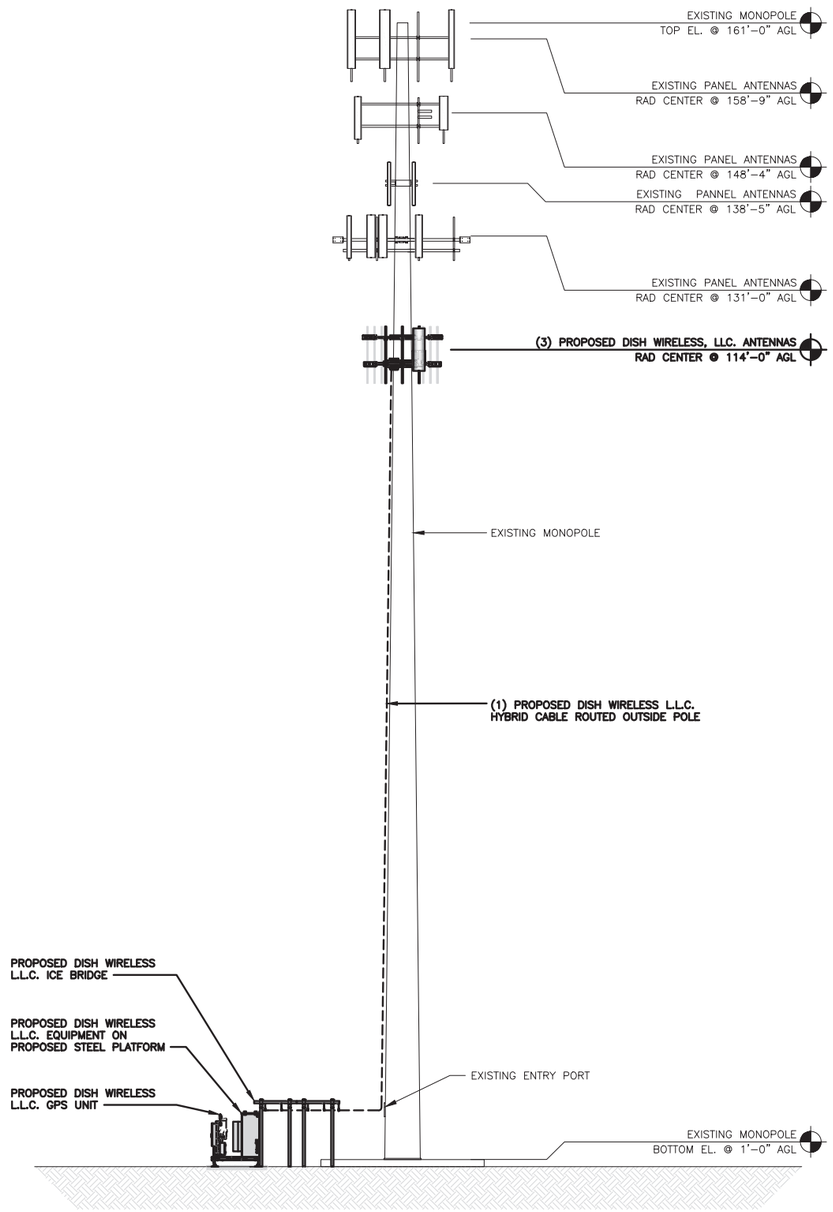
DISH WIRELESS L.L.C. PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

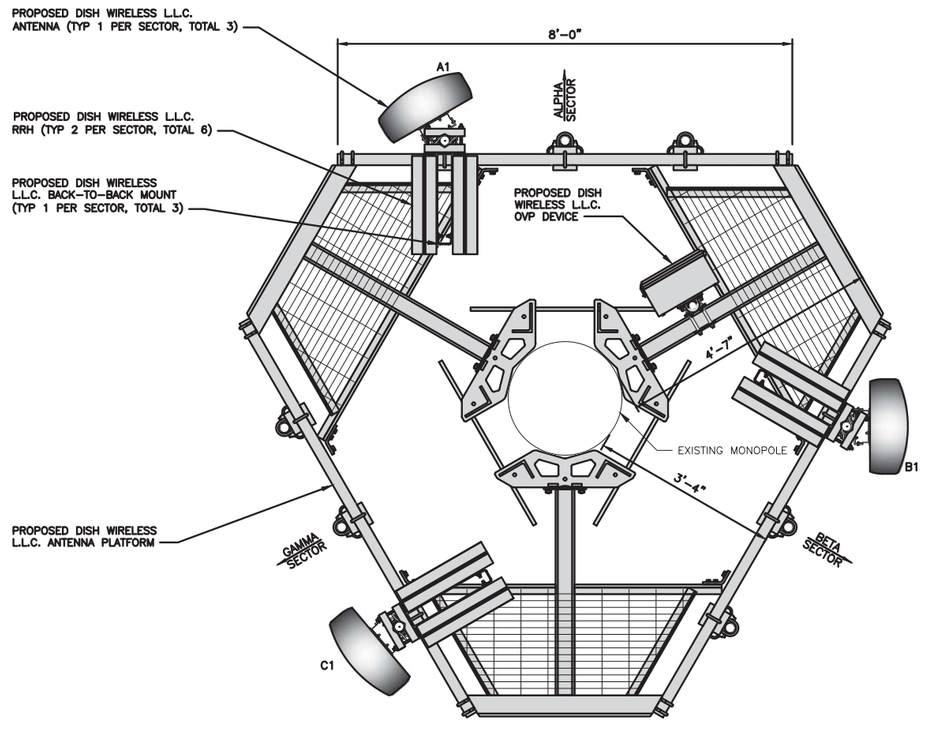
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

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

1



N

ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	330°	114'–0"	(1) HIGH–CAPACITY HYBRID CABLE (160' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	90°	114'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	230°	114'–0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025–B605	5G
	A1	FUJITSU – TA08025–B604	5G
BETA	B1	FUJITSU – TA08025–B605	5G
	B1	FUJITSU – TA08025–B604	5G
GAMMA	C1	FUJITSU – TA08025–B605	5G
	C1	FUJITSU – TA08025–B604	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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STATE OF CONNECTICUT · No. 23924 · LICENSED PROFESSIONAL ENGINEER
7/7/21

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
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DISH WIRELESS L.L.C.
PROJECT INFORMATION

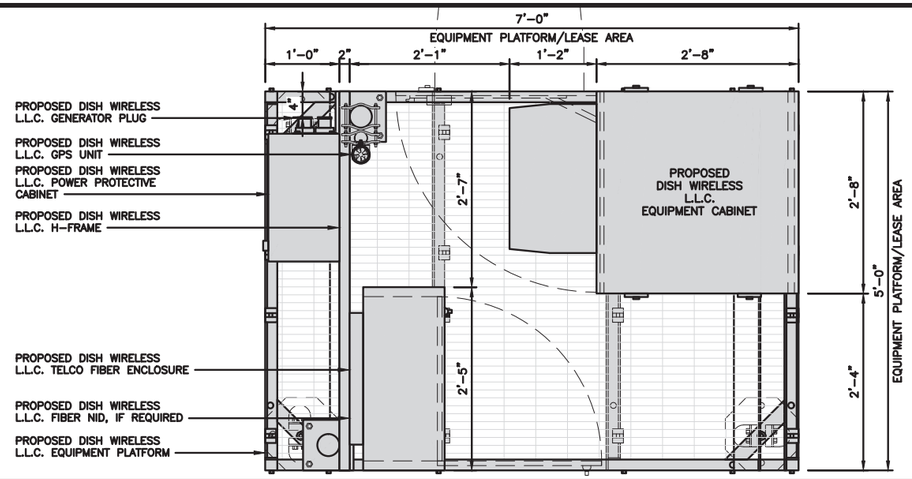
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



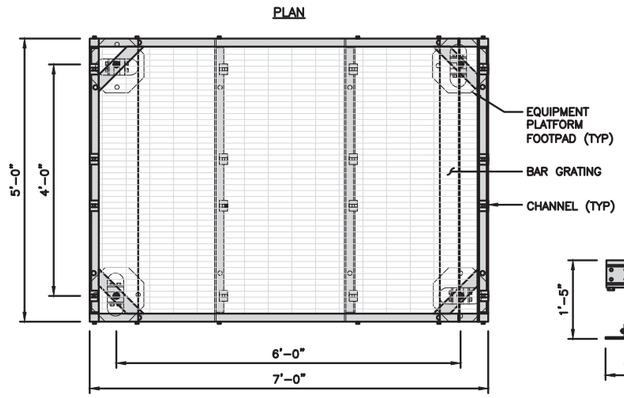
PLATFORM EQUIPMENT PLAN

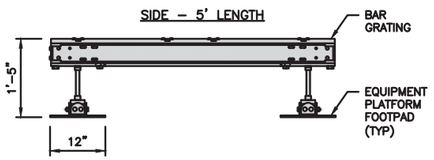
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

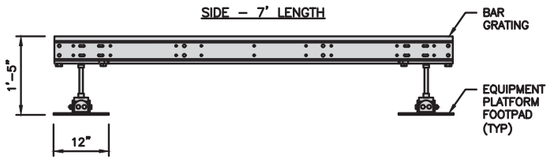
1

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

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





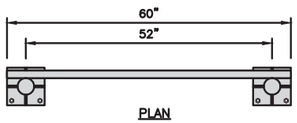


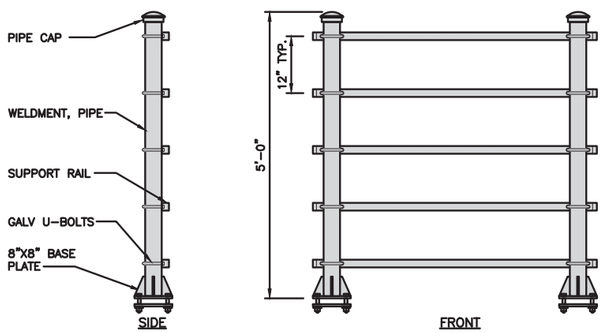
PLATFORM DETAIL

NO SCALE

2

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





H-FRAME DETAIL

NO SCALE

3

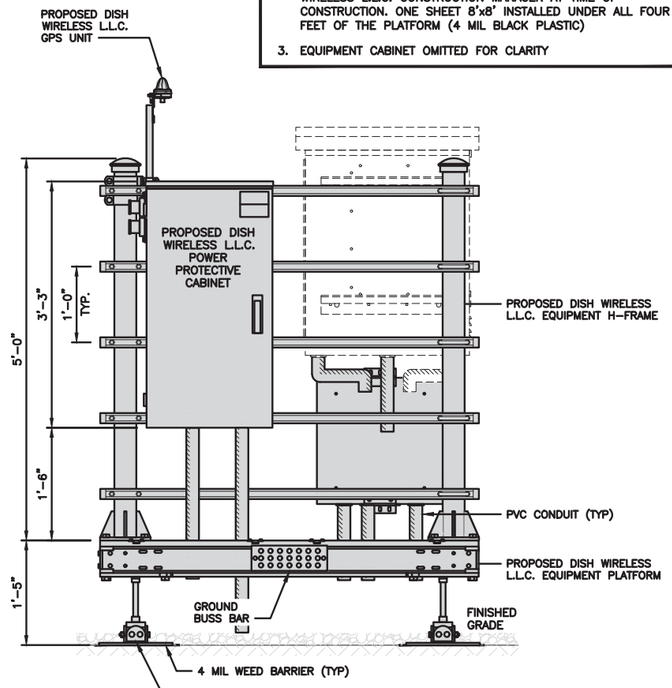
NOT USED

NO SCALE

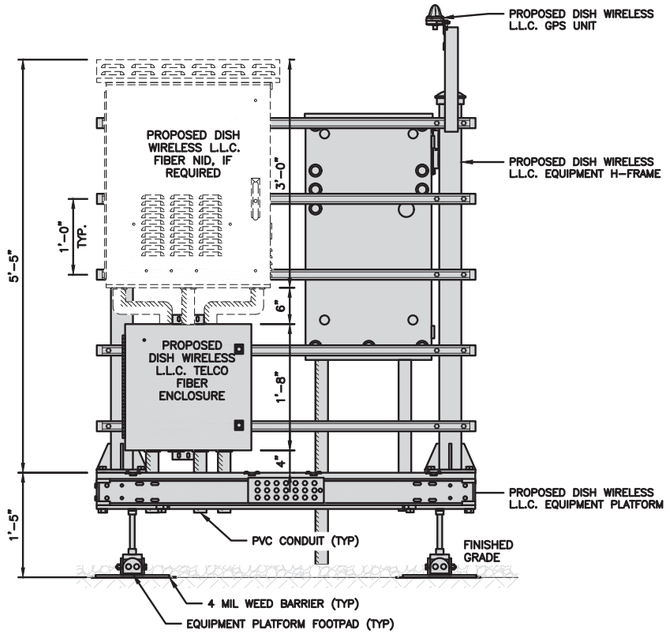
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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BLJ	RMC	MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

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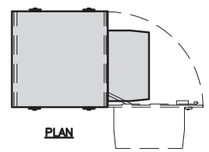
A&E PROJECT NUMBER
127834.004.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

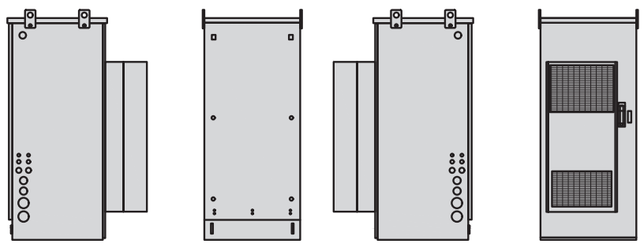
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

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



PLAN

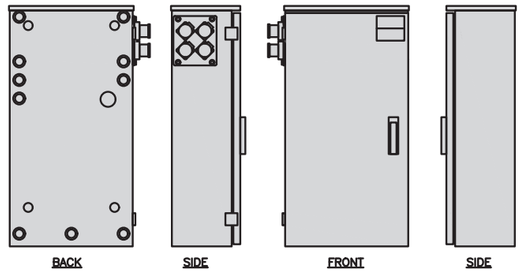


SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

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

TOP



BACK SIDE FRONT SIDE

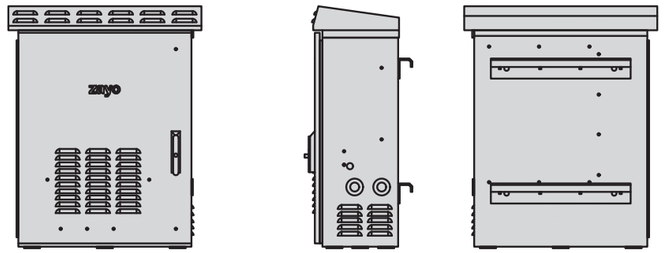
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

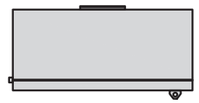
PLAN



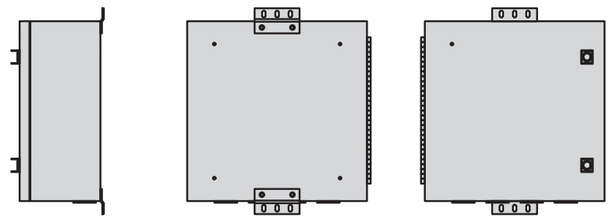
FRONT SIDE BACK

NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

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



FRONT

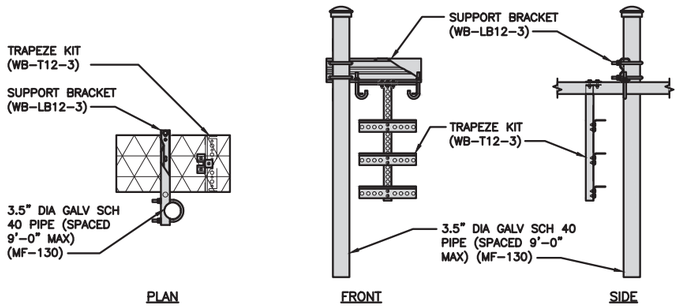


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

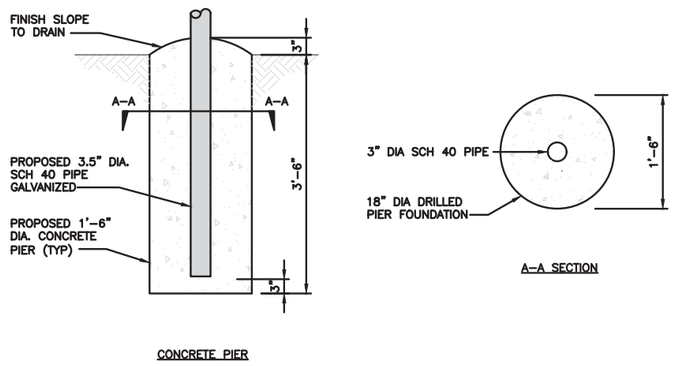
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

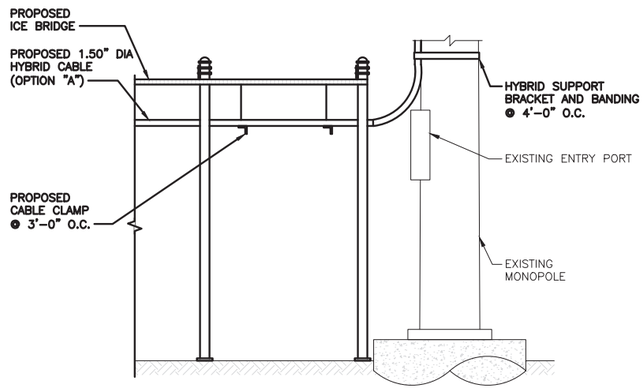
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

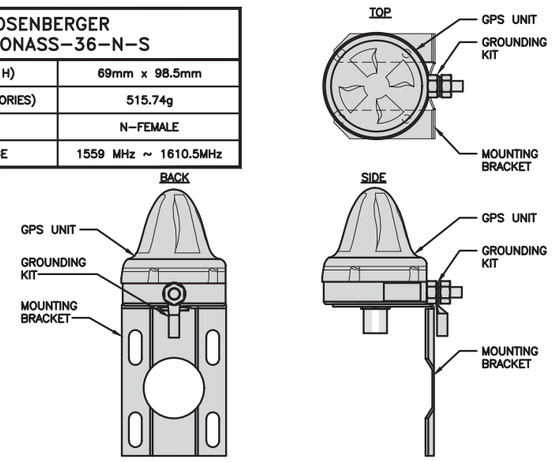
SHEET TITLE

EQUIPMENT DETAILS

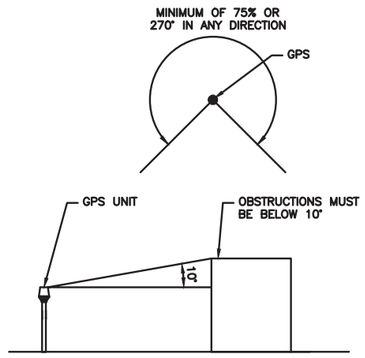
SHEET NUMBER

A-4

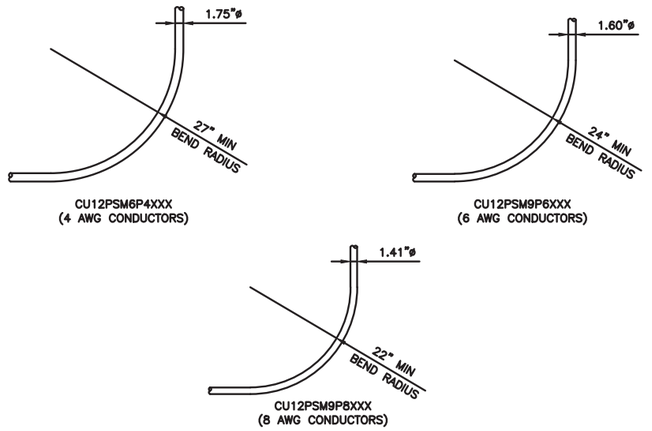
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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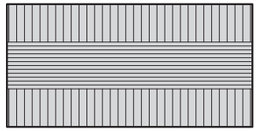
PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

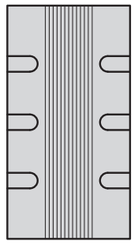
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

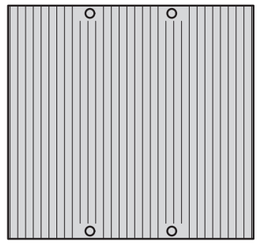
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



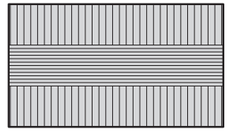
SIDE



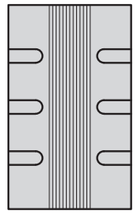
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

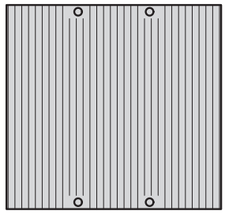
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

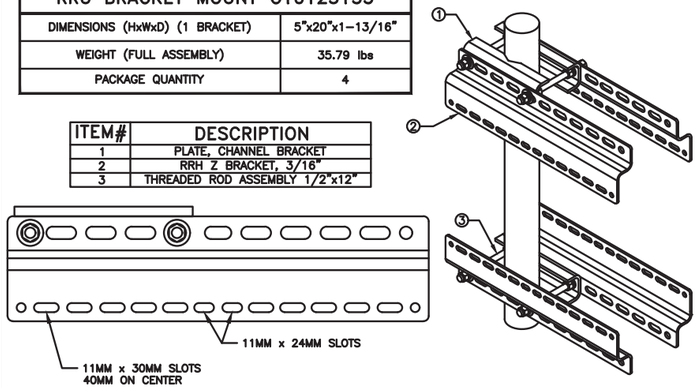


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

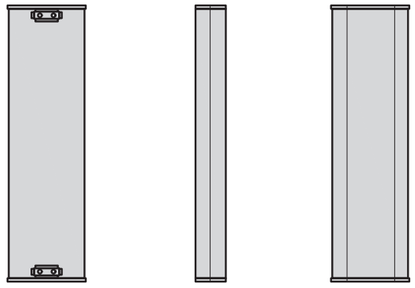
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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

PLAN

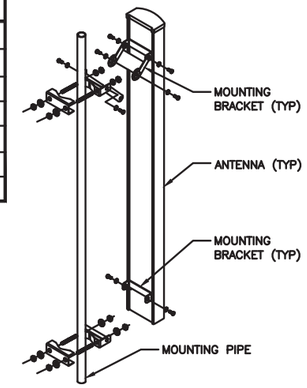


BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

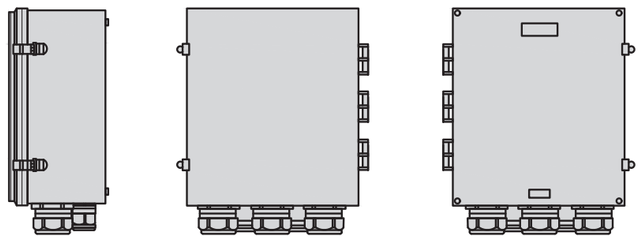
M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5" (135mm)
DEPTH	2" (51mm)
HEIGHT	8" (213mm)
TOTAL WEIGHT (WITH BRACKETS)	1.5 LBS (15.50 Kg)
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1X8-PIN DAISY CHAIN



ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

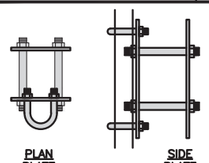
PLAN



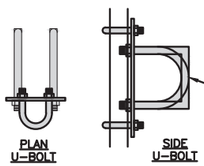
SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

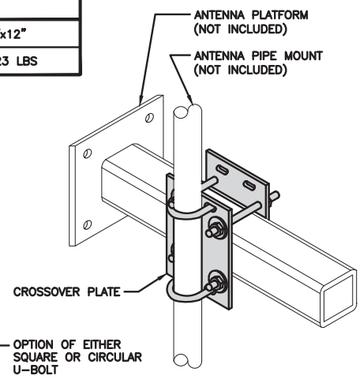
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



PLAN PLATE SIDE PLATE

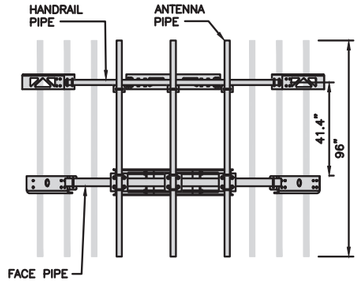


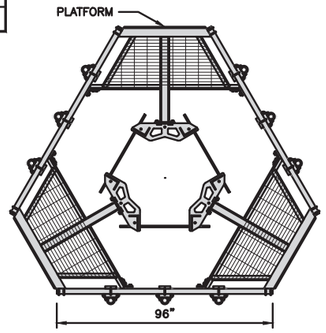
PLAN U-BOLT SIDE U-BOLT



RRH/OVP MOUNT DETAIL | NO SCALE | 8

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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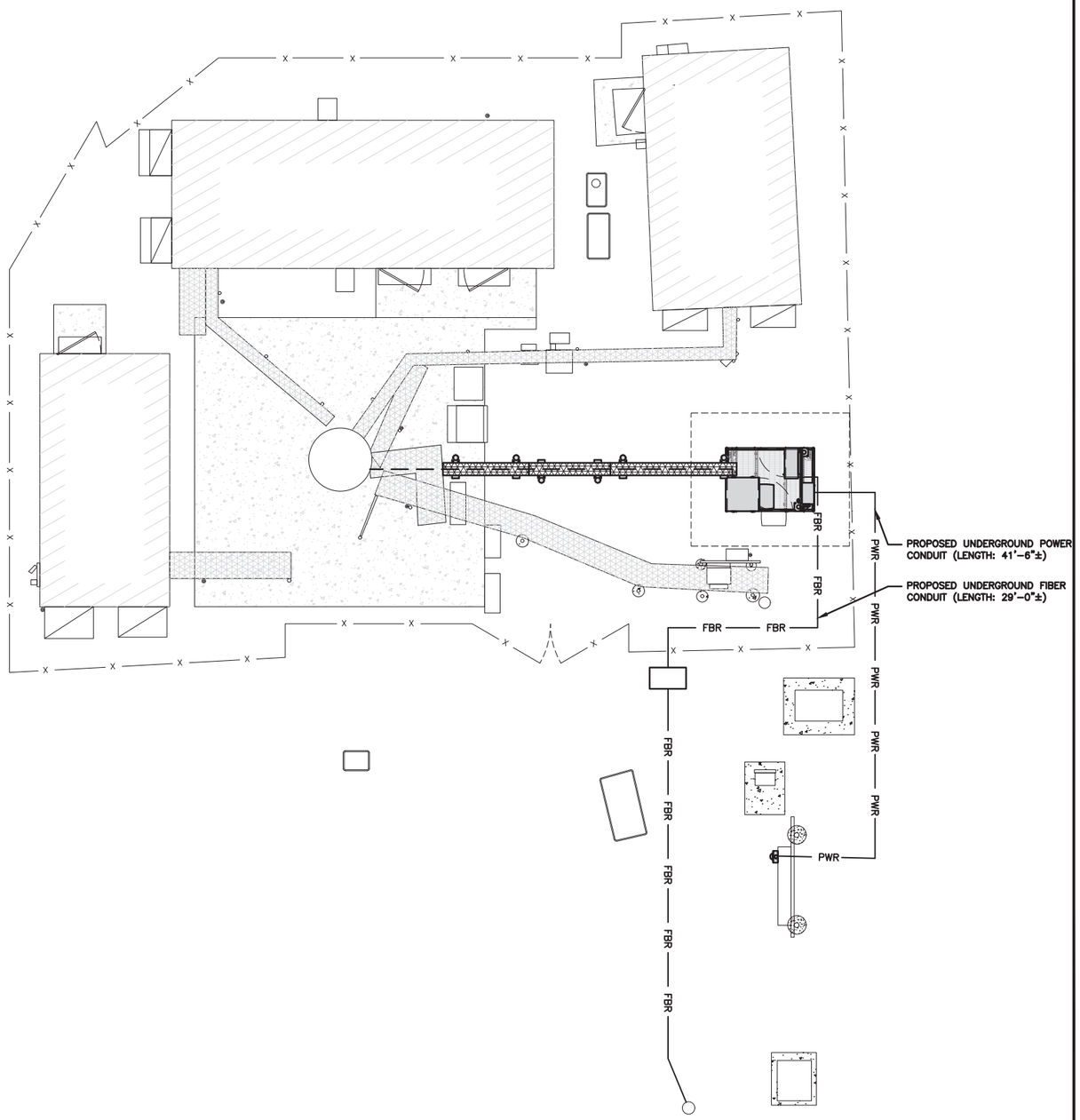
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

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.



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

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BLJ	RMC	MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	7/7/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

127834.004.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

UTILITY ROUTE PLAN

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

1

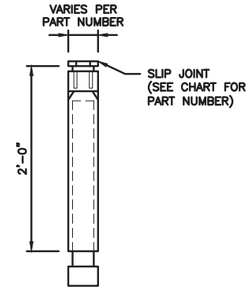
ELECTRICAL NOTES

NO SCALE

2

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"

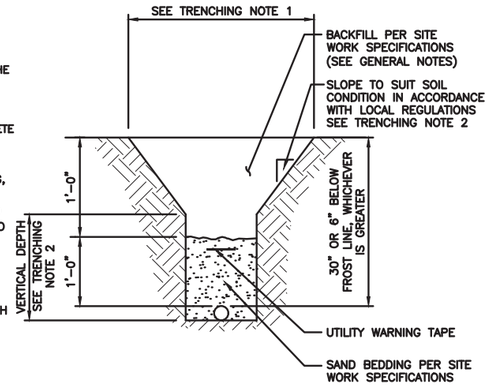


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

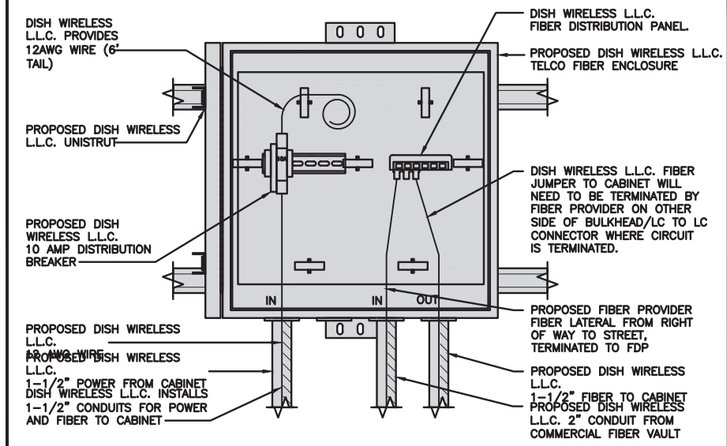
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

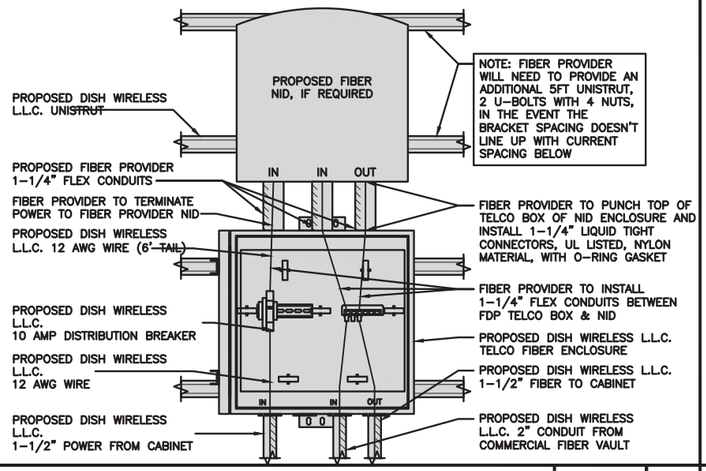
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

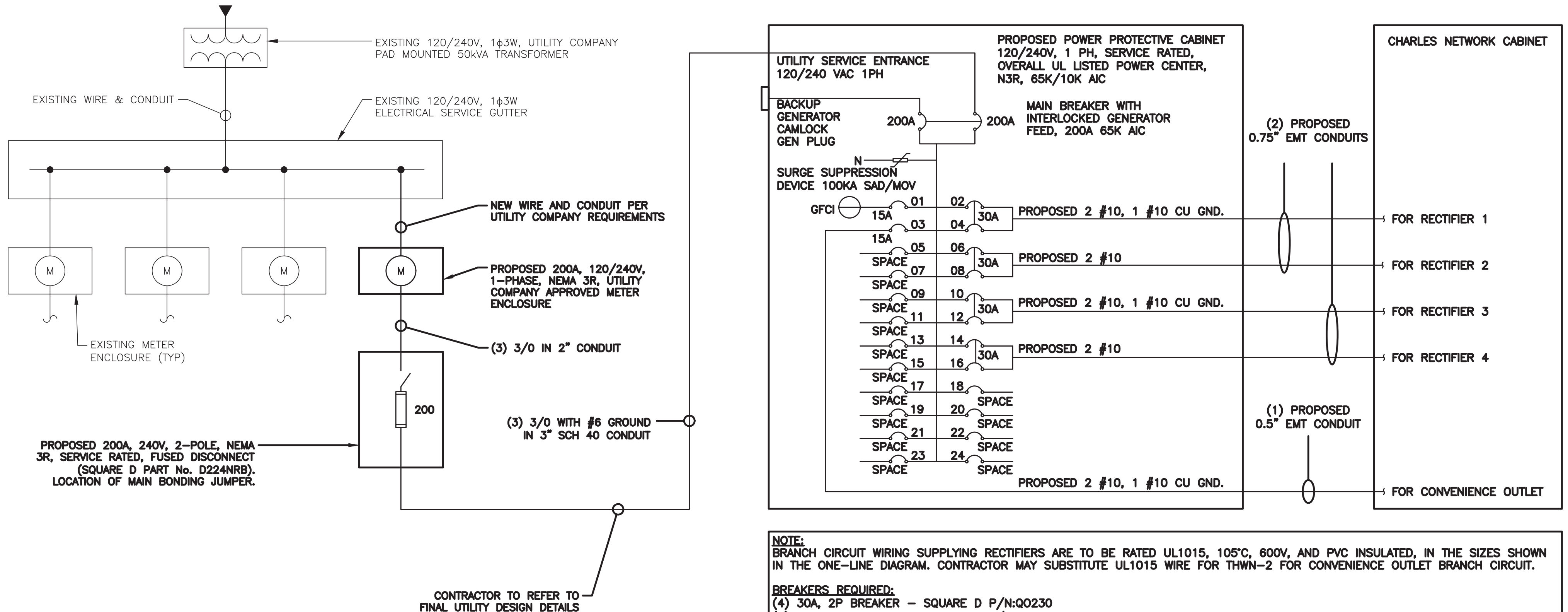
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

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
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	RECTIFIER 1
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY
-SPACE-				7	B	8			2880	RECTIFIER 2
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY
-SPACE-				11	B	12			2880	RECTIFIER 3
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY
-SPACE-				15	B	16			2880	RECTIFIER 4
-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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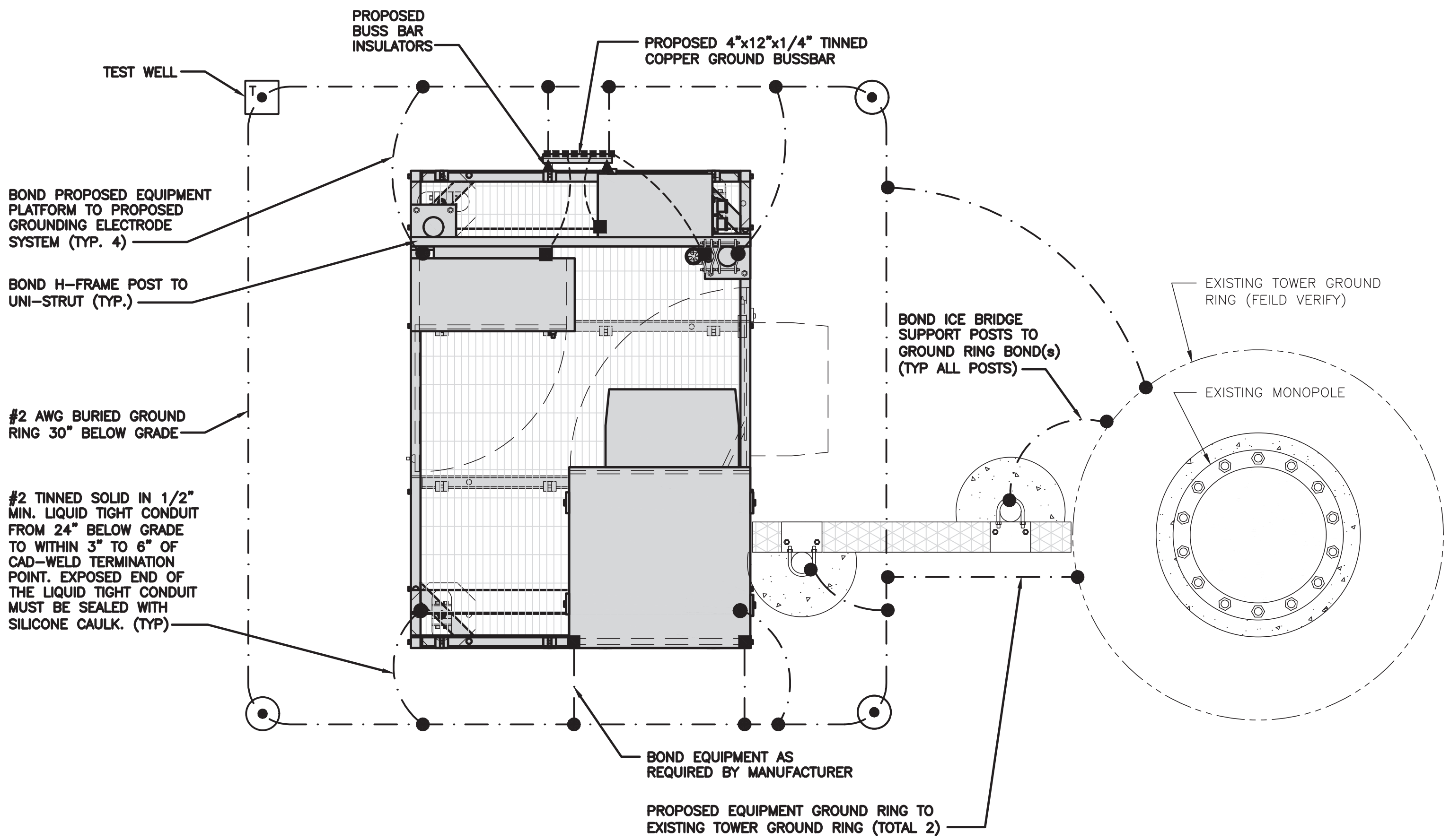
127834.004.01

DISH WIRELESS L.L.C. PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

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

SHEET NUMBER
E-3

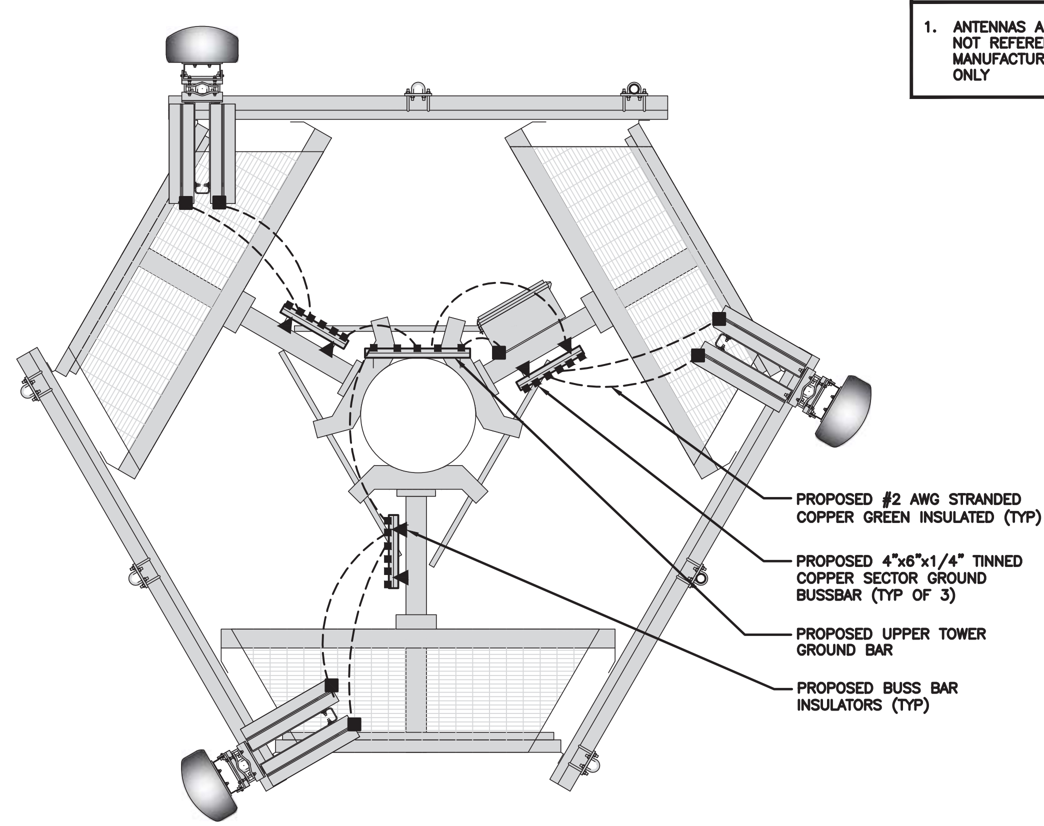


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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127834.004.01

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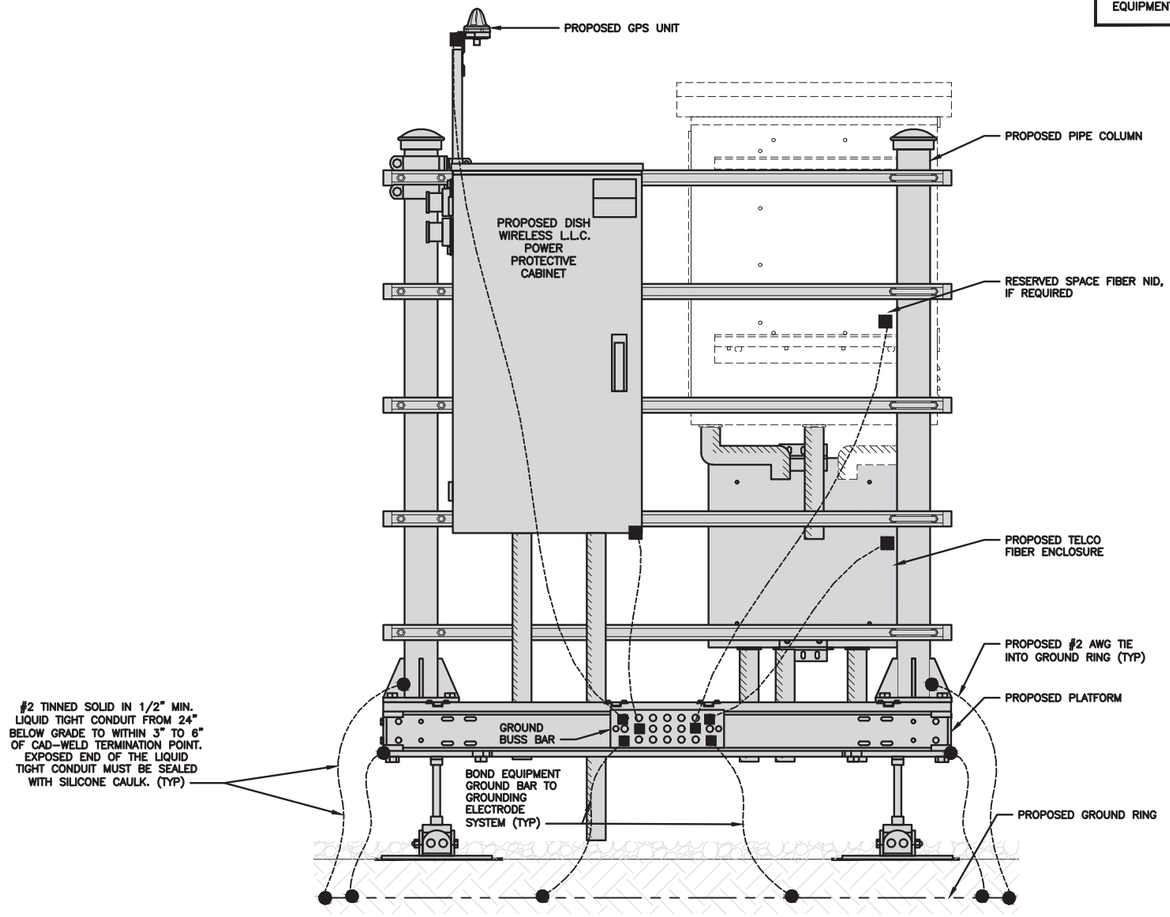
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

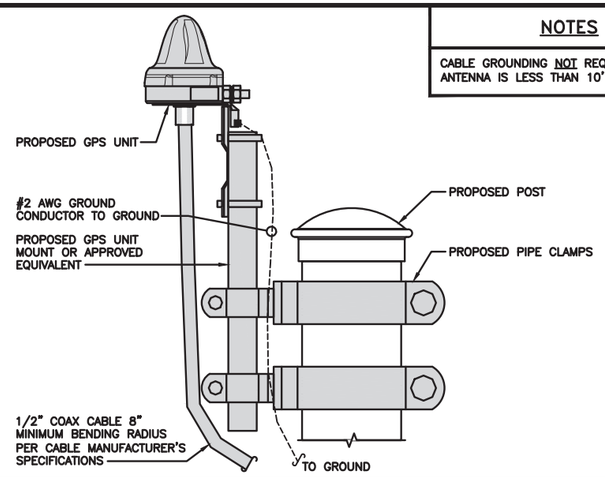
EQUIPMENT CABINET OMITTED FOR CLARITY



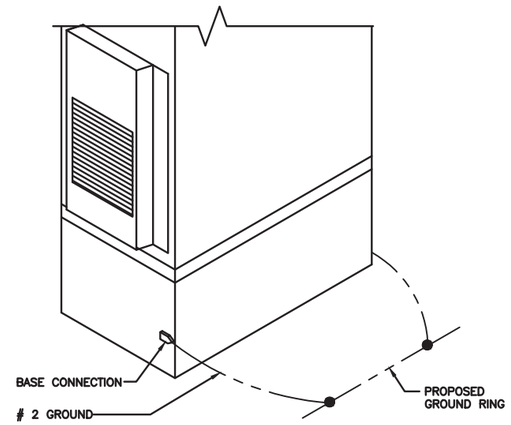
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

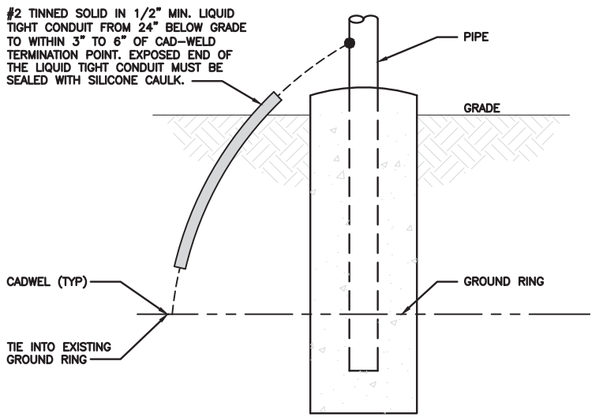
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



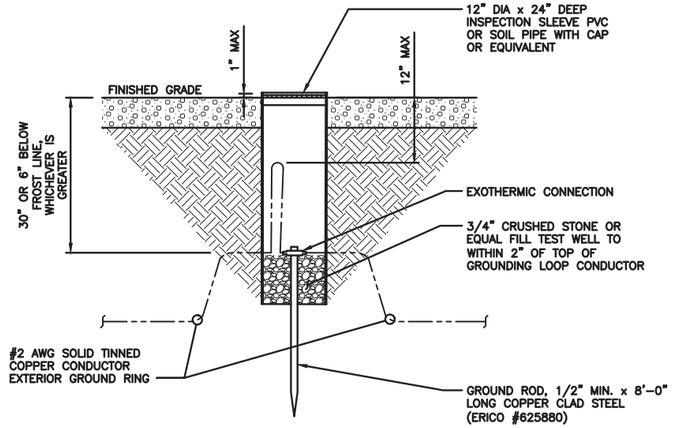
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



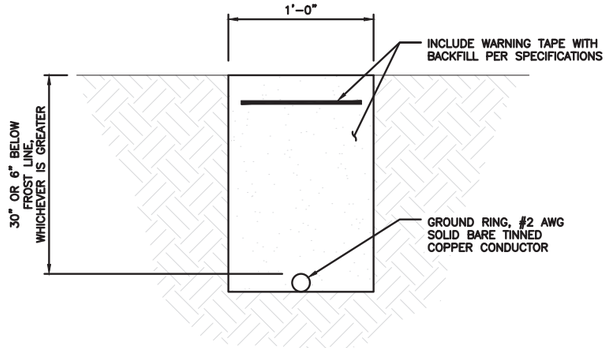
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

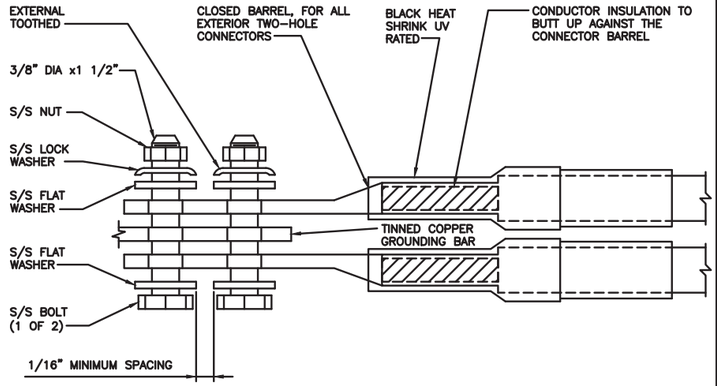
GROUNDING DETAILS

SHEET NUMBER

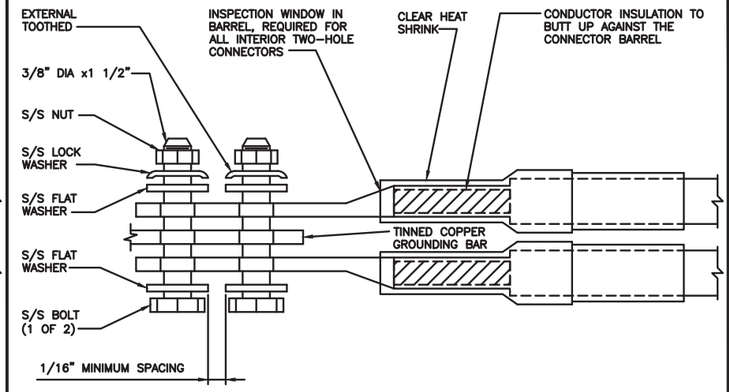
G-2

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).

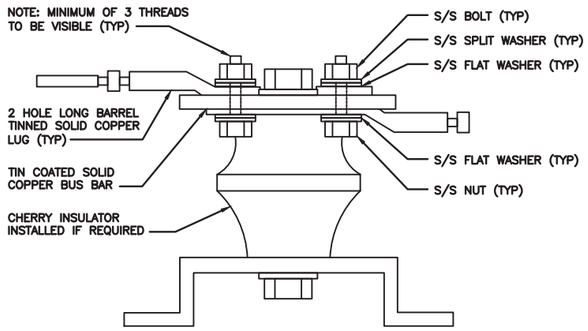
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	RMC	MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

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

A&E PROJECT NUMBER
127834.004.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
GROUNDING DETAILS

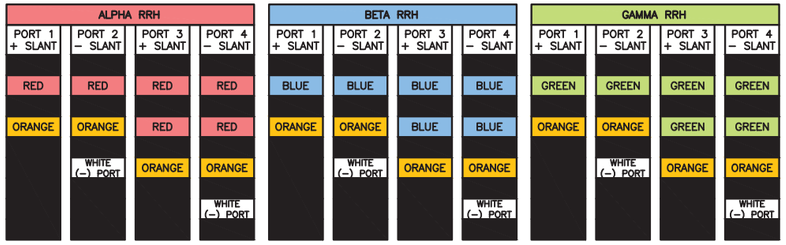
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

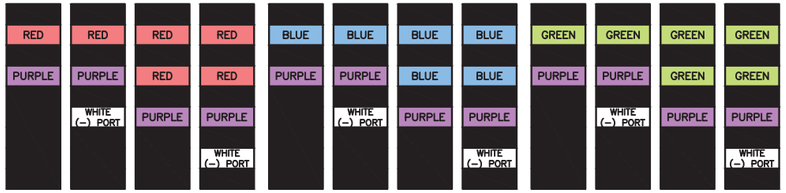
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

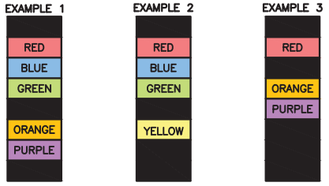


HYBRID/DISCREET CABLES

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

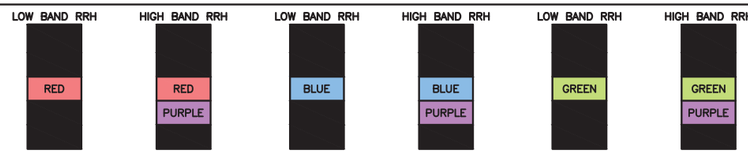


NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. FINAL RFDS IS IN NEXYSONE.

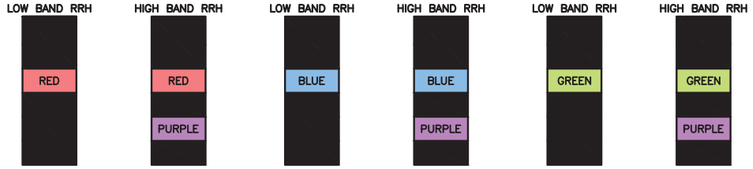
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

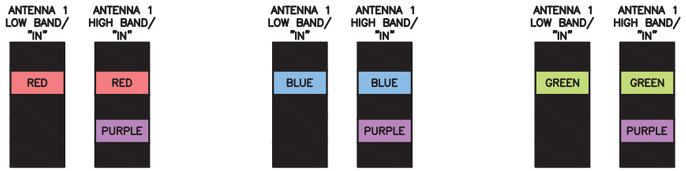


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



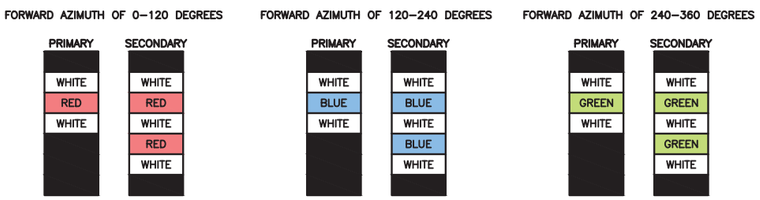
RET MOTORS AT ANTENNAS



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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	RMC	MDW

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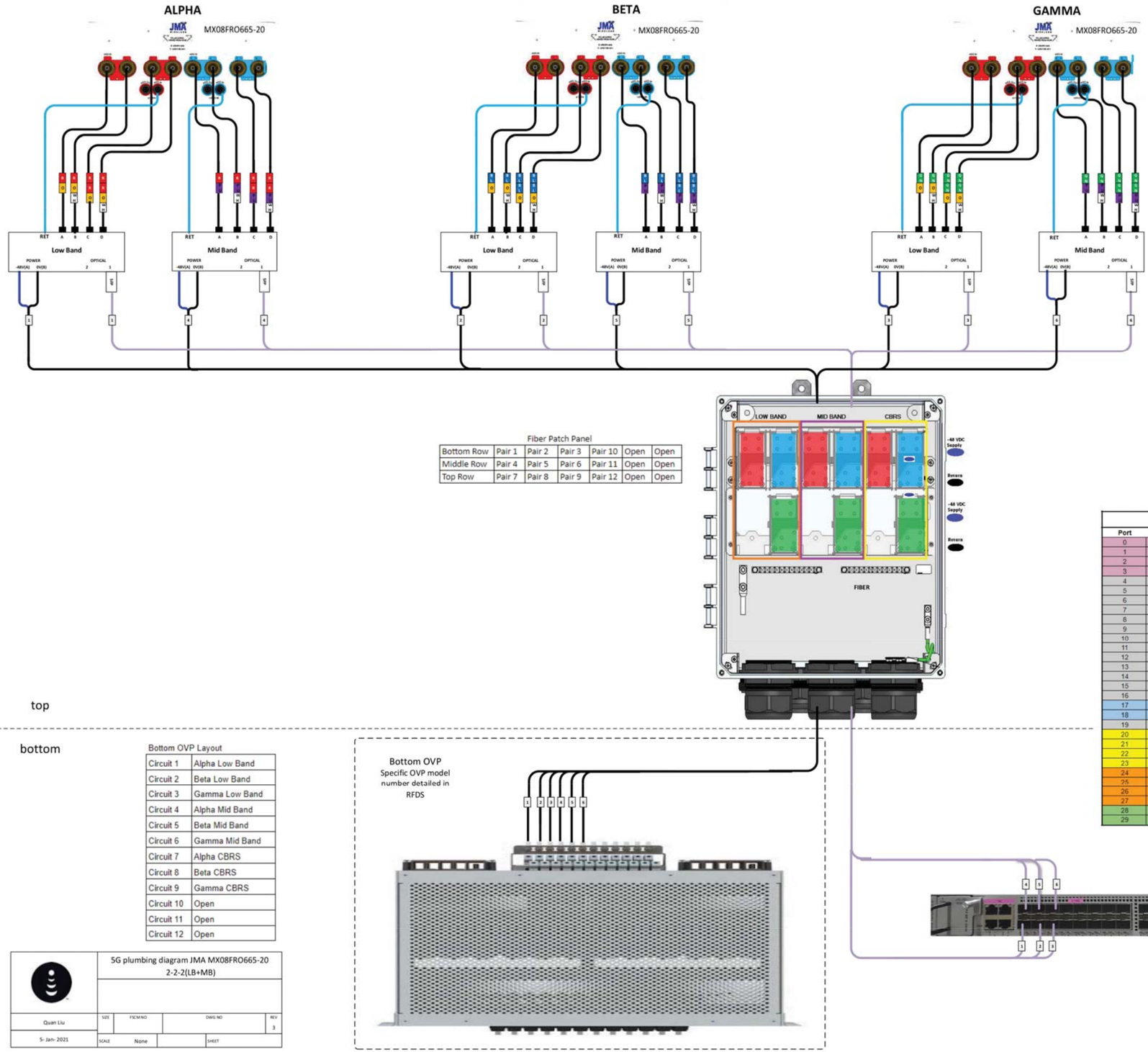
DISH WIRELESS L.L.C.
PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1



Fiber Patch Panel

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

Bottom OVP Layout

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

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

CSR NCS540

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

PLUMBING DIAGRAM | NO SCALE | 1

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PROJECT INFORMATION
BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	RMC	MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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0	7/7/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

127834.004.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

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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BLJ	RMC	MDW

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A&E PROJECT NUMBER

127834.004.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00086A
625 SPRING STREET
SOUTHINGTON, CT 06489

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **May 24, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00086A
	Site Name:	CT-CCI-T-876334
Crown Castle Designation:	**BU Number:**	876334
	Site Name:	SOUTHINGTON, SMORON
	JDE Job Number:	650076
	Work Order Number:	1962706
	Order Number:	556607 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1962706
Site Data:	**625 Spring Street, SOUTHINGTON, HARTFORD County, CT** **Latitude *41° 37' 56.9"*, Longitude *-72° 53' 39.3"*** **160.333 Foot - Monopole Tower**	

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

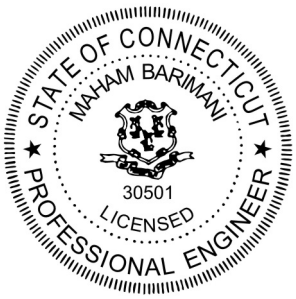
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity – 92.8%**

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: Hayes Lei

Respectfully submitted by:



Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160.333 ft Monopole tower designed by SUMMIT. 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)
114.0	114.0	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)
156.0	157.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	2 6 8	3/8 3/4 1-5/8
		3	cci antennas	DTMABP7819VG12A		
		2	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 12		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4478 B14		
		1	kathrein	80010798 w/ Mount Pipe		
		1	kathrein	80010965 w/ Mount Pipe		
		2	kathrein	80010966 w/ Mount Pipe		
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		1	raycap	DC6-48-60-0-8F		
		2	raycap	DC6-48-60-18-8F		
	156.0	1	tower mounts	Sector Mount [SM 502-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
146.0	147.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	4	1-5/8
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		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		
	146.0	1	tower mounts	Platform Mount [LP 1201-1]		
	145.0	1	tower mounts	Miscellaneous [NA 510-1]		
139.0	139.0	3	rfs celwave	APXV18-206517S-C	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
132.0	134.0	6	antel	BXA-80080-6CF-EDIN-X w/ Mount Pipe	1 6	1-1/4 1-5/8
	133.0	6	andrew	SBNHH-1D65B w/ Mount Pipe		
		1	rfs celwave	DB-C1-12C-24AB-0Z		
		3	samsung telecommunications	20W CBRS		
		3	samsung telecommunications	CBRS w/ Mount Pipe		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
	132.0	1	tower mounts	Platform Mount [LP 1201-1]		
101.0	102.0	1	symmetricom	58532A	1	1/2
	101.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	1614569	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1999756	CCISITES
4-GEOTECHNICAL REPORTS	1530919	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2588177	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3363885	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5288062	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5755362	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6249238	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6962729	CCISITES
4-POST-MODIFICATION INSPECTION	2588175	CCISITES

Document	Reference	Source
4-POST-MODIFICATION INSPECTION	3794196	CCISITES
4-POST-MODIFICATION INSPECTION	5570676	CCISITES
4-POST-MODIFICATION INSPECTION	5888770	CCISITES
4-POST-MODIFICATION INSPECTION	6544953	CCISITES
4-POST-MODIFICATION INSPECTION	7104038	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole. 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)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160.33 - 155.33	Pole	TP16x16x0.375	Pole	5.7%	Pass
155.33 - 150.33	Pole	TP16x16x0.375	Pole	22.8%	Pass
150.33 - 146.83	Pole	TP16x16x0.375	Pole	35.5%	Pass
146.83 - 146.33	Pole	TP22x22x0.375	Pole	19.7%	Pass
146.33 - 141.33	Pole	TP22.924x22x0.25	Pole	29.5%	Pass
141.33 - 136.33	Pole	TP23.848x22.924x0.25	Pole	40.2%	Pass
136.33 - 131.33	Pole	TP24.772x23.848x0.25	Pole	52.0%	Pass
131.33 - 126.33	Pole	TP25.696x24.772x0.25	Pole	64.8%	Pass
126.33 - 121.33	Pole	TP26.62x25.696x0.25	Pole	76.5%	Pass
121.33 - 120.08	Pole	TP26.851x26.62x0.25	Pole	79.3%	Pass
120.08 - 119.83	Pole + Reinf.	TP26.897x26.851x0.4875	Reinf. 18 Tension Rupture	55.1%	Pass
119.83 - 117.5	Pole + Reinf.	TP27.328x26.897x0.4875	Reinf. 18 Tension Rupture	58.8%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.375x27.328x0.5	Reinf. 19 Tension Rupture	54.7%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.698x27.375x0.5	Reinf. 19 Tension Rupture	57.2%	Pass

115.5 - 115.25	Pole + Reinf.	TP27.744x27.698x0.6625	Reinf. 11 Tension Rupture	50.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.668x27.744x0.65	Reinf. 11 Tension Rupture	57.7%	Pass
110.25 - 107.82	Pole + Reinf.	TP29.808x28.668x0.6375	Reinf. 11 Tension Rupture	61.1%	Pass
107.82 - 102.82	Pole + Reinf.	TP29.541x28.617x0.7	Reinf. 11 Tension Rupture	63.3%	Pass
102.82 - 100.5	Pole + Reinf.	TP29.969x29.541x0.6875	Reinf. 11 Tension Rupture	66.2%	Pass
100.5 - 100.25	Pole + Reinf.	TP30.015x29.969x0.6375	Reinf. 18 Tension Rupture	67.6%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.338x30.015x0.625	Reinf. 18 Tension Rupture	69.7%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.385x30.338x0.6625	Reinf. 10 Tension Rupture	66.7%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.308x30.385x0.65	Reinf. 10 Tension Rupture	72.1%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.816x31.308x0.6375	Reinf. 10 Tension Rupture	74.9%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.862x31.816x0.6875	Reinf. 10 Tension Rupture	73.9%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.785x31.862x0.675	Reinf. 10 Tension Rupture	78.7%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.108x32.785x0.6625	Reinf. 10 Tension Rupture	80.4%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.154x33.108x0.9125	Reinf. 22 Tension Rupture	60.9%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.616x33.154x0.8875	Reinf. 22 Tension Rupture	62.8%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.662x33.616x1.0625	Reinf. 22 Tension Rupture	51.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP33.708x33.662x0.975	Reinf. 8 Tension Rupture	55.6%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.216x33.708x0.9625	Reinf. 8 Tension Rupture	57.3%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.262x34.216x0.6875	Reinf. 8 Tension Rupture	80.2%	Pass
77.25 - 73.29	Pole + Reinf.	TP35.819x34.262x0.6875	Reinf. 8 Tension Rupture	83.4%	Pass
73.29 - 68.29	Pole + Reinf.	TP35.291x34.368x0.75	Reinf. 8 Tension Rupture	81.7%	Pass
68.29 - 64.25	Pole + Reinf.	TP36.037x35.291x0.7375	Reinf. 8 Tension Rupture	84.4%	Pass
64.25 - 64	Pole + Reinf.	TP36.084x36.037x0.875	Reinf. 21 Tension Rupture	74.4%	Pass
64 - 60.5	Pole + Reinf.	TP36.73x36.084x0.8625	Reinf. 21 Tension Rupture	76.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.776x36.73x0.925	Reinf. 21 Tension Rupture	72.2%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.807x36.776x0.925	Reinf. 21 Tension Rupture	72.3%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.853x36.807x0.975	Reinf. 21 Tension Rupture	69.9%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.991x36.853x0.975	Reinf. 21 Tension Rupture	70.3%	Pass
59.08 - 58.83	Pole + Reinf.	TP37.037x36.991x1.05	Reinf. 21 Tension Rupture	64.0%	Pass
58.83 - 55.42	Pole + Reinf.	TP37.668x37.037x1.025	Reinf. 21 Tension Rupture	65.7%	Pass
55.42 - 55.17	Pole + Reinf.	TP37.714x37.668x1.025	Reinf. 21 Tension Rupture	65.8%	Pass
55.17 - 54.75	Pole + Reinf.	TP37.791x37.714x1.025	Reinf. 21 Tension Rupture	66.0%	Pass
54.75 - 54.5	Pole + Reinf.	TP37.837x37.791x0.825	Reinf. 7 Tension Rupture	80.2%	Pass
54.5 - 49.5	Pole + Reinf.	TP38.76x37.837x0.8125	Reinf. 7 Tension Rupture	82.7%	Pass
49.5 - 44.5	Pole + Reinf.	TP39.683x38.76x0.8	Reinf. 7 Tension Rupture	85.2%	Pass
44.5 - 41.25	Pole + Reinf.	TP40.283x39.683x0.7875	Reinf. 7 Tension Rupture	86.7%	Pass
41.25 - 41	Pole + Reinf.	TP40.329x40.283x0.875	Reinf. 7 Tension Rupture	76.1%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.329x0.875	Reinf. 7 Tension Rupture	76.9%	Pass
39 - 33.29	Pole + Reinf.	TP40.996x39.949x1.175	Reinf. 7 Tension Rupture	60.1%	Pass

33.29 - 31.5	Pole + Reinf.	TP41.324x40.996x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.37x41.324x1.175	Reinf. 7 Tension Rupture	60.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.507x41.37x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.553x41.507x1.125	Reinf. 6 Tension Rupture	63.7%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.378x41.553x1.1	Reinf. 6 Tension Rupture	65.2%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.424x42.378x1.025	Reinf. 6 Tension Rupture	71.4%	Pass
25.5 - 24.67	Pole + Reinf.	TP42.577x42.424x1.025	Reinf. 6 Tension Rupture	71.7%	Pass
24.67 - 24.42	Pole + Reinf.	TP42.623x42.577x0.925	Reinf. 6 Tension Rupture	78.9%	Pass
24.42 - 24	Pole + Reinf.	TP42.699x42.623x0.9125	Reinf. 6 Tension Rupture	79.0%	Pass
24 - 23.75	Pole + Reinf.	TP42.745x42.699x1.025	Reinf. 6 Tension Rupture	74.8%	Pass
23.75 - 18.75	Pole + Reinf.	TP43.662x42.745x1	Reinf. 6 Tension Rupture	76.6%	Pass
18.75 - 14.08	Pole + Reinf.	TP44.518x43.662x0.9875	Reinf. 6 Tension Rupture	78.3%	Pass
14.08 - 13.82	Pole + Reinf.	TP44.566x44.518x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.82 - 13.67	Pole + Reinf.	TP44.594x44.566x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.67 - 10.5	Pole + Reinf.	TP45.175x44.594x0.95	Reinf. 1 Tension Rupture	77.6%	Pass
10.5 - 10.25	Pole + Reinf.	TP45.22x45.175x0.9	Reinf. 13 Tension Rupture	80.1%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.137x45.22x0.875	Reinf. 13 Tension Rupture	81.8%	Pass
5.25 - 2.9	Pole + Reinf.	TP46.568x46.137x0.75	Reinf. 23 Compression	92.7%	Pass
2.9 - 2.65	Pole + Reinf.	TP46.614x46.568x0.75	Reinf. 23 Compression	92.7%	Pass
2.65 - 2.5	Pole + Reinf.	TP46.642x46.614x0.75	Reinf. 23 Compression	92.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP46.687x46.642x0.875	Reinf. 23 Compression	79.3%	Pass
2.25 - 1.92	Pole + Reinf.	TP46.748x46.687x0.875	Reinf. 23 Compression	79.4%	Pass
1.92 - 1.67	Pole + Reinf.	TP46.794x46.748x0.775	Reinf. 23 Compression	85.2%	Pass
1.67 - 0	Pole + Reinf.	TP47.1x46.794x0.7625	Reinf. 23 Compression	85.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	92.8%	Pass
			Overall	92.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	146	56.5	Pass
1	Flange Plate	146	60.3	Pass
1	Anchor Rod Brackets	0	81.7	Pass
1	Anchor Rods	0	70.2	Pass
1	Base Plate	0	63.3	Pass
1	Base Foundation (Structure)	0	62.6	Pass
1	Base Foundation (Soil Interaction)	0	89.9	Pass

Structure Rating (max from all components) =	92.8%

Notes:

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

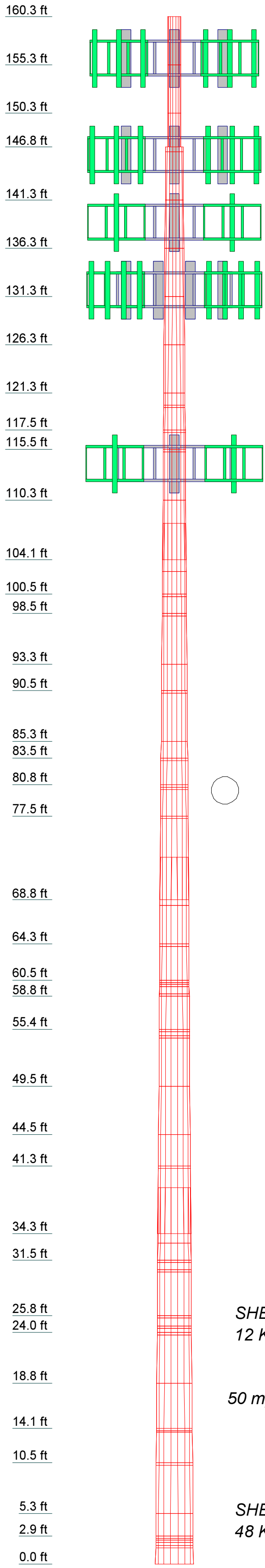
4.1) Recommendations

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	0.375		16.000	16.000	A53-B-35	0.3
2	5.000	0	0.375		16.000	16.000		0.3
3	[illegible]	0	[illegible]		[illegible]	[illegible]		[illegible]
4	[illegible]	0	[illegible]		[illegible]	[illegible]		[illegible]
5	5.000	12	0.250		22.000	22.924		0.3
6	5.000	12	0.250		22.924	23.848		0.3
7	5.000	12	0.250		23.848	24.772		0.3
8	5.000	12	0.250		24.772	25.696		0.3
9	5.000	12	0.250		25.696	26.620		0.4
10–15	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
16	5.000	12	0.650		[illegible]	[illegible]		0.9
17	[illegible]	12	0.637	3.737	28.668	29.808		1.2
18–22	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
23	5.000	12	0.650		[illegible]	[illegible]		1.1
24–25	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
26	5.000	12	[illegible]		[illegible]	[illegible]	A607-60	1.2
27–33	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
34	[illegible]	12	0.688	4.471	34.262	35.819		2.4
35–47	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
48	5.000	12	[illegible]		[illegible]	[illegible]		1.8
49	5.000	12	0.800		38.760	39.683		1.8
50–51	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
52	[illegible]	12	0.875	4.709	[illegible]	[illegible]		2.7
53–57	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
58	[illegible]	12	[illegible]		[illegible]	[illegible]		2.2
59–63	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
64	5.000	12	1.000		[illegible]	[illegible]	A607-65	2.1
65	[illegible]	12	[illegible]		[illegible]	[illegible]		2.0
66–69	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
70	5.000	12	0.875		[illegible]	[illegible]		2.1
71–77	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
								46.2



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi
A607-60	60 ksi	75 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: 92.8%

ALL REACTIONS ARE FACTORED

AXIAL 152 K
SHEAR 12 K
MOMENT 1408 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 2.000 in ICE

AXIAL 81 K
SHEAR 48 K
MOMENT 5071 kip-ft
TORQUE 4 kip-ft
REACTIONS - 125 mph WIND

CROWN CASTLE — The Pathway To Possible	*Crown Castle* 2000 Corporate Drive Canonsburg. PA 15317 Phone: (724) 416-2000 FAX:
Job: **BU# 876334**	
Project:	
Client: Crown Castle	Drawn by: HLei	App'd:
Code: TIA-222-H	Date: 05/24/21	Scale: NTS
Path: C:\Temporary Working Space - No One Drive\876334\WO 1962706 - SA\Prod\876334 - Reinf.eri	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: 296.000 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: 92.8%.
- 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	160.333-155.333	5.000	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L2	155.333-150.333	5.000	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L3	150.333-146.833	3.500	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L4	146.833-146.333	0.500	0.000	Round	22.000	22.000	0.375		A53-B-35 (35 ksi)
L5	146.333-141.333	5.000	0.000	12	22.000	22.924	0.250	1.000	A607-60 (60 ksi)
L6	141.333-136.333	5.000	0.000	12	22.924	23.848	0.250	1.000	A607-60 (60 ksi)
L7	136.333-131.333	5.000	0.000	12	23.848	24.772	0.250	1.000	A607-60 (60 ksi)
L8	131.333-126.333	5.000	0.000	12	24.772	25.696	0.250	1.000	A607-60 (60 ksi)
L9	126.333-121.333	5.000	0.000	12	25.696	26.620	0.250	1.000	A607-60 (60 ksi)
L10	121.333-120.083	1.250	0.000	12	26.620	26.851	0.250	1.000	A607-60 (60 ksi)
L11	120.083-119.833	0.250	0.000	12	26.851	26.897	0.487	1.950	A607-60 (60 ksi)
L12	119.833-117.500	2.333	0.000	12	26.897	27.328	0.487	1.950	A607-60 (60 ksi)
L13	117.500-117.250	0.250	0.000	12	27.328	27.375	0.500	2.000	A607-60 (60 ksi)
L14	117.250-115.500	1.750	0.000	12	27.375	27.698	0.500	2.000	A607-60 (60 ksi)
L15	115.500-115.250	0.250	0.000	12	27.698	27.744	0.662	2.650	A607-60 (60 ksi)
L16	115.250-110.250	5.000	0.000	12	27.744	28.668	0.650	2.600	A607-60 (60 ksi)
L17	110.250-104.083	6.167	3.737	12	28.668	29.808	0.637	2.550	A607-60 (60 ksi)
L18	104.083-102.820	5.000	0.000	12	28.617	29.541	0.700	2.800	A607-60 (60 ksi)
L19	102.820-100.500	2.320	0.000	12	29.541	29.969	0.688	2.750	A607-60 (60 ksi)
L20	100.500-100.250	0.250	0.000	12	29.969	30.015	0.637	2.550	A607-60 (60 ksi)
L21	100.250-98.500	1.750	0.000	12	30.015	30.338	0.625	2.500	A607-60 (60 ksi)
L22	98.500-98.250	0.250	0.000	12	30.338	30.385	0.662	2.650	A607-60 (60 ksi)
L23	98.250-93.250	5.000	0.000	12	30.385	31.308	0.650	2.600	A607-60 (60 ksi)
L24	93.250-90.500	2.750	0.000	12	31.308	31.816	0.637	2.550	A607-60 (60 ksi)
L25	90.500-90.250	0.250	0.000	12	31.816	31.862	0.688	2.750	A607-60 (60 ksi)
L26	90.250-85.250	5.000	0.000	12	31.862	32.785	0.675	2.700	A607-60 (60 ksi)
L27	85.250-83.500	1.750	0.000	12	32.785	33.108	0.662	2.650	A607-60 (60 ksi)
L28	83.500-83.250	0.250	0.000	12	33.108	33.154	0.912	3.650	A607-60 (60 ksi)
L29	83.250-80.750	2.500	0.000	12	33.154	33.616	0.887	3.550	A607-60 (60 ksi)
L30	80.750-80.500	0.250	0.000	12	33.616	33.662	1.063	4.250	A607-60 (60 ksi)
L31	80.500-80.250	0.250	0.000	12	33.662	33.708	0.975	3.900	A607-60 (60 ksi)
L32	80.250-77.500	2.750	0.000	12	33.708	34.216	0.963	3.850	A607-60 (60 ksi)
L33	77.500-77.250	0.250	0.000	12	34.216	34.262	0.688	2.750	A607-60 (60 ksi)
L34	77.250-68.820	8.430	4.471	12	34.262	35.819	0.688	2.750	A607-60 (60 ksi)
L35	68.820-68.291	5.000	0.000	12	34.368	35.291	0.750	3.000	A607-60

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	68.291-64.250	4.041	0.000	12	35.291	36.037	0.738	2.950	(60 ksi) A607-60
L37	64.250-64.000	0.250	0.000	12	36.037	36.084	0.875	3.500	(60 ksi) A607-60
L38	64.000-60.500	3.500	0.000	12	36.084	36.730	0.863	3.450	(60 ksi) A607-60
L39	60.500-60.250	0.250	0.000	12	36.730	36.776	0.925	3.700	(60 ksi) A607-60
L40	60.250-60.083	0.167	0.000	12	36.776	36.807	0.925	3.700	(60 ksi) A607-60
L41	60.083-59.833	0.250	0.000	12	36.807	36.853	0.975	3.900	(60 ksi) A607-60
L42	59.833-59.083	0.750	0.000	12	36.853	36.991	0.975	3.900	(60 ksi) A607-60
L43	59.083-58.833	0.250	0.000	12	36.991	37.037	1.050	4.200	(60 ksi) A607-60
L44	58.833-55.417	3.416	0.000	12	37.037	37.668	1.025	4.100	(60 ksi) A607-60
L45	55.417-55.167	0.250	0.000	12	37.668	37.714	1.025	4.100	(60 ksi) A607-60
L46	55.167-54.750	0.417	0.000	12	37.714	37.791	1.025	4.100	(60 ksi) A607-60
L47	54.750-54.500	0.250	0.000	12	37.791	37.837	0.825	3.300	(60 ksi) A607-60
L48	54.500-49.500	5.000	0.000	12	37.837	38.760	0.813	3.250	(60 ksi) A607-60
L49	49.500-44.500	5.000	0.000	12	38.760	39.683	0.800	3.200	(60 ksi) A607-60
L50	44.500-41.250	3.250	0.000	12	39.683	40.283	0.787	3.150	(60 ksi) A607-60
L51	41.250-41.000	0.250	0.000	12	40.283	40.329	0.875	3.500	(60 ksi) A607-60
L52	41.000-34.291	6.709	4.709	12	40.329	41.568	0.875	3.500	(60 ksi) A607-60
L53	34.291-33.291	5.709	0.000	12	39.949	40.996	1.175	4.700	(60 ksi) A607-65
L54	33.291-31.500	1.791	0.000	12	40.996	41.324	1.175	4.700	(65 ksi) A607-65
L55	31.500-31.250	0.250	0.000	12	41.324	41.370	1.175	4.700	(65 ksi) A607-65
L56	31.250-30.500	0.750	0.000	12	41.370	41.507	1.175	4.700	(65 ksi) A607-65
L57	30.500-30.250	0.250	0.000	12	41.507	41.553	1.125	4.500	(65 ksi) A607-65
L58	30.250-25.750	4.500	0.000	12	41.553	42.378	1.100	4.400	(65 ksi) A607-65
L59	25.750-25.500	0.250	0.000	12	42.378	42.424	1.025	4.100	(65 ksi) A607-65
L60	25.500-24.667	0.833	0.000	12	42.424	42.577	1.025	4.100	(65 ksi) A607-65
L61	24.667-24.417	0.250	0.000	12	42.577	42.623	0.925	3.700	(65 ksi) A607-65
L62	24.417-24.000	0.417	0.000	12	42.623	42.699	0.912	3.650	(65 ksi) A607-65
L63	24.000-23.750	0.250	0.000	12	42.699	42.745	1.025	4.100	(65 ksi) A607-65
L64	23.750-18.750	5.000	0.000	12	42.745	43.662	1.000	4.000	(65 ksi) A607-65
L65	18.750-14.083	4.667	0.000	12	43.662	44.518	0.988	3.950	(65 ksi) A607-65
L66	14.083-13.817	0.266	0.000	12	44.518	44.566	0.963	3.850	(65 ksi) A607-65
L67	13.817-13.667	0.150	0.000	12	44.566	44.594	0.963	3.850	(65 ksi) A607-65
L68	13.667-10.500	3.167	0.000	12	44.594	45.175	0.950	3.800	(65 ksi) A607-65
L69	10.500-10.250	0.250	0.000	12	45.175	45.220	0.900	3.600	(65 ksi) A607-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L70	10.250-5.250	5.000	0.000	12	45.220	46.137	0.875	3.500	A607-65 (65 ksi)
L71	5.250-2.900	2.350	0.000	12	46.137	46.568	0.750	3.000	A607-65 (65 ksi)
L72	2.900-2.650	0.250	0.000	12	46.568	46.614	0.750	3.000	A607-65 (65 ksi)
L73	2.650-2.500	0.150	0.000	12	46.614	46.642	0.750	3.000	A607-65 (65 ksi)
L74	2.500-2.250	0.250	0.000	12	46.642	46.687	0.875	3.500	A607-65 (65 ksi)
L75	2.250-1.917	0.333	0.000	12	46.687	46.748	0.875	3.500	A607-65 (65 ksi)
L76	1.917-1.667	0.250	0.000	12	46.748	46.794	0.775	3.100	A607-65 (65 ksi)
L77	1.667-0.000	1.667		12	46.794	47.100	0.762	3.050	A607-65 (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	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L2	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L3	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L4	22.000	25.476	1489.670	7.647	11.000	135.425	2979.340	12.731	0.000	0
	22.000	25.476	1489.670	7.647	11.000	135.425	2979.340	12.731	0.000	0
L5	22.688	17.509	1057.206	7.786	11.396	92.770	2142.186	8.617	5.226	20.904
	23.645	18.253	1197.754	8.117	11.875	100.867	2426.974	8.983	5.474	21.895
L6	23.645	18.253	1197.754	8.117	11.875	100.867	2426.974	8.983	5.474	21.895
	24.601	18.996	1350.237	8.448	12.353	109.302	2735.946	9.349	5.721	22.885
L7	24.601	18.996	1350.237	8.448	12.353	109.302	2735.946	9.349	5.721	22.885
	25.558	19.740	1515.142	8.779	12.832	118.076	3070.088	9.716	5.969	23.876
L8	25.558	19.740	1515.142	8.779	12.832	118.076	3070.088	9.716	5.969	23.876
	26.514	20.484	1692.954	9.110	13.311	127.189	3430.384	10.082	6.217	24.866
L9	26.514	20.484	1692.954	9.110	13.311	127.189	3430.384	10.082	6.217	24.866
	27.471	21.228	1884.161	9.441	13.789	136.640	3817.822	10.448	6.464	25.857
L10	27.471	21.228	1884.161	9.441	13.789	136.640	3817.822	10.448	6.464	25.857
	27.710	21.414	1934.113	9.523	13.909	139.056	3919.037	10.539	6.526	26.104
L11	27.626	41.384	3671.401	9.438	13.909	263.961	7439.253	20.368	5.890	12.081
	27.674	41.457	3690.736	9.455	13.933	264.895	7478.433	20.404	5.902	12.107
L12	27.674	41.457	3690.736	9.455	13.933	264.895	7478.433	20.404	5.902	12.107
	28.121	42.134	3874.461	9.609	14.156	273.695	7850.709	20.737	6.018	12.344
L13	28.116	43.194	3968.257	9.605	14.156	280.320	8040.764	21.259	5.984	11.968
	28.164	43.268	3988.793	9.621	14.180	281.296	8082.377	21.295	5.996	11.993
L14	28.164	43.268	3988.793	9.621	14.180	281.296	8082.377	21.295	5.996	11.993
	28.499	43.789	4134.536	9.737	14.348	288.169	8377.691	21.552	6.083	12.166
L15	28.441	57.674	5380.653	9.679	14.348	375.021	10902.662	28.385	5.648	8.525
	28.489	57.772	5408.285	9.695	14.372	376.319	10958.652	28.434	5.660	8.543
L16	28.494	56.708	5313.593	9.700	14.372	369.730	10766.780	27.910	5.693	8.759
	29.450	58.642	5875.989	10.031	14.850	395.685	11906.346	28.862	5.941	9.14
L17	29.455	57.540	5770.706	10.035	14.850	388.595	11693.014	28.320	5.975	9.372
	30.635	59.880	6503.597	10.443	15.441	421.203	13178.051	29.471	6.280	9.851
L18	30.094	62.926	6259.852	9.994	14.824	422.284	12684.157	30.970	5.793	8.276
	30.336	65.007	6901.696	10.325	15.302	451.030	13984.708	31.994	6.041	8.63
L19	30.340	63.874	6787.269	10.329	15.302	443.552	13752.847	31.437	6.074	8.835
	30.784	64.822	7094.107	10.483	15.524	456.977	14374.583	31.903	6.189	9.002
L20	30.801	60.210	6611.927	10.501	15.524	425.917	13397.557	29.634	6.323	9.919
	30.849	60.305	6643.195	10.517	15.548	427.273	13460.915	29.680	6.336	9.938
L21	30.854	59.148	6521.254	10.522	15.548	419.430	13213.828	29.111	6.369	10.191
	31.188	59.798	6738.733	10.637	15.715	428.801	13654.501	29.431	6.456	10.329
L22	31.175	63.306	7116.047	10.624	15.715	452.811	14419.040	31.157	6.355	9.593
	31.223	63.405	7149.308	10.640	15.739	454.236	14486.436	31.206	6.368	9.611

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
L23	31.227	62.234	7023.269	10.645	15.739	446.228	14231.047	30.630	6.401	9.848
	32.183	64.167	7698.030	10.976	16.217	474.675	15598.296	31.581	6.648	10.228
L24	32.187	62.959	7559.230	10.980	16.217	466.117	15317.049	30.986	6.682	10.482
	32.713	64.001	7940.953	11.162	16.481	481.839	16090.524	31.499	6.818	10.695
L25	32.695	68.910	8522.638	11.144	16.481	517.135	17269.176	33.915	6.684	9.722
	32.743	69.012	8560.613	11.160	16.504	518.686	17346.122	33.966	6.696	9.74
L26	32.748	67.785	8415.080	11.165	16.504	509.868	17051.233	33.361	6.730	9.97
	33.704	69.791	9184.809	11.495	16.983	540.834	18610.912	34.349	6.977	10.337
L27	33.708	68.526	9025.252	11.500	16.983	531.439	18287.607	33.726	7.011	10.582
	34.042	69.215	9300.380	11.616	17.150	542.294	18845.091	34.065	7.098	10.713
L28	33.954	94.599	12516.124	11.526	17.150	729.800	25361.060	46.559	6.428	7.044
	34.002	94.735	12570.040	11.543	17.174	731.924	25470.310	46.626	6.440	7.057
L29	34.011	92.211	12254.117	11.552	17.174	713.528	24830.162	45.383	6.507	7.332
	34.489	93.530	12787.636	11.717	17.413	734.368	25911.217	46.033	6.631	7.471
L30	34.427	111.374	15064.877	11.654	17.413	865.146	30525.526	54.815	6.162	5.799
	34.475	111.532	15129.059	11.671	17.437	867.640	30655.575	54.893	6.174	5.811
L31	34.506	102.621	13995.227	11.702	17.437	802.616	28358.124	50.507	6.408	6.573
	34.554	102.766	14054.607	11.719	17.461	804.917	28478.444	50.579	6.421	6.585
L32	34.558	101.488	13890.321	11.723	17.461	795.508	28145.555	49.949	6.454	6.706
	35.084	103.061	14546.605	11.905	17.724	820.730	29475.366	50.724	6.590	6.847
L33	35.181	74.224	10650.349	12.003	17.724	600.901	21580.495	36.531	7.327	10.658
	35.228	74.326	10694.402	12.020	17.748	602.573	21669.758	36.581	7.340	10.676
L34	35.228	74.326	10694.402	12.020	17.748	602.573	21669.758	36.581	7.340	10.676
	36.840	77.772	12251.933	12.577	18.554	660.331	24825.737	38.277	7.757	11.283
L35	36.171	81.188	11712.084	12.035	17.803	657.878	23731.858	39.958	7.201	9.601
	36.272	83.418	12703.513	12.366	18.281	694.904	25740.762	41.056	7.448	9.931
L36	36.276	82.057	12505.355	12.370	18.281	684.065	25339.239	40.386	7.482	10.145
	37.049	83.828	13332.906	12.637	18.667	714.235	27016.082	41.258	7.682	10.416
L37	37.000	99.070	15634.570	12.588	18.667	837.534	31679.878	48.759	7.313	8.358
	37.048	99.200	15696.213	12.605	18.691	839.761	31804.783	48.823	7.325	8.372
L38	37.052	97.818	15488.466	12.609	18.691	828.646	31383.831	48.143	7.359	8.532
	37.721	99.612	16356.590	12.840	19.026	859.698	33142.885	49.026	7.532	8.733
L39	37.699	106.644	17450.307	12.818	19.026	917.183	35359.054	52.487	7.365	7.962
	37.747	106.782	17517.873	12.835	19.050	919.579	35495.961	52.555	7.377	7.975
L40	37.747	106.782	17517.873	12.835	19.050	919.579	35495.961	52.555	7.377	7.975
	37.779	106.874	17563.105	12.846	19.066	921.181	35587.611	52.600	7.385	7.984
L41	37.761	112.494	18435.180	12.828	19.066	966.921	37354.672	55.366	7.251	7.437
	37.809	112.638	18506.505	12.844	19.090	969.447	37499.197	55.437	7.264	7.45
L42	37.809	112.638	18506.505	12.844	19.090	969.447	37499.197	55.437	7.264	7.45
	37.952	113.073	18721.585	12.894	19.161	977.043	37935.007	55.651	7.301	7.488
L43	37.926	121.517	20036.015	12.867	19.161	1045.640	40598.399	59.807	7.100	6.762
	37.974	121.673	20113.298	12.883	19.185	1048.366	40754.994	59.884	7.112	6.773
L44	37.982	118.859	19675.357	12.892	19.185	1025.539	39867.608	58.499	7.179	7.004
	38.635	120.941	20727.267	13.118	19.512	1062.279	41999.063	59.523	7.348	7.169
L45	38.635	120.941	20727.267	13.118	19.512	1062.279	41999.063	59.523	7.348	7.169
	38.683	121.093	20805.683	13.135	19.536	1064.993	42157.954	59.598	7.360	7.181
L46	38.683	121.093	20805.683	13.135	19.536	1064.993	42157.954	59.598	7.360	7.181
	38.763	121.347	20936.815	13.162	19.576	1069.524	42423.664	59.723	7.381	7.201
L47	38.833	98.201	17128.089	13.234	19.576	874.961	34706.152	48.331	7.917	9.596
	38.881	98.323	17192.321	13.250	19.600	877.171	34836.303	48.392	7.929	9.611
L48	38.885	96.866	16948.992	13.255	19.600	864.756	34343.253	47.675	7.963	9.8
	39.841	99.281	18248.467	13.585	20.078	908.885	36976.342	48.863	8.210	10.105
L49	39.845	97.786	17985.483	13.590	20.078	895.787	36443.464	48.127	8.244	10.305
	40.801	100.164	19329.622	13.920	20.556	940.340	39167.056	49.297	8.491	10.614
L50	40.805	98.630	19045.954	13.925	20.556	926.541	38592.266	48.543	8.525	10.825
	41.427	100.152	19940.967	14.140	20.867	955.633	40405.805	49.292	8.685	11.029
L51	41.396	111.033	22009.697	14.108	20.867	1054.773	44597.613	54.647	8.451	9.658
	41.443	111.163	22087.114	14.125	20.891	1057.272	44754.482	54.711	8.463	9.672
L52	41.443	111.163	22087.114	14.125	20.891	1057.272	44754.482	54.711	8.463	9.672
	42.726	114.653	24233.101	14.568	21.532	1125.434	49102.833	56.428	8.795	10.052
L53	41.837	146.700	28150.832	13.881	20.693	1360.376	57041.218	72.201	7.557	6.432
	42.027	150.661	30493.058	14.256	21.236	1435.935	61787.202	74.151	7.838	6.67
L54	42.027	150.661	30493.058	14.256	21.236	1435.935	61787.202	74.151	7.838	6.67
	42.367	151.904	31253.749	14.373	21.406	1460.060	63328.568	74.762	7.926	6.745
L55	42.367	151.904	31253.749	14.373	21.406	1460.060	63328.568	74.762	7.926	6.745
	42.415	152.077	31360.927	14.390	21.430	1463.443	63545.740	74.848	7.938	6.756
L56	42.415	152.077	31360.927	14.390	21.430	1463.443	63545.740	74.848	7.938	6.756
	42.557	152.597	31683.930	14.439	21.501	1473.617	64200.233	75.104	7.975	6.787
L57	42.575	146.285	30448.640	14.457	21.501	1416.164	61697.199	71.997	8.109	7.208
	42.622	146.451	30552.453	14.473	21.525	1419.425	61907.552	72.079	8.121	7.219

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
L58	42.631	143.285	29928.963	14.482	21.525	1390.458	60644.193	70.521	8.188	7.444
	43.485	146.208	31798.019	14.778	21.952	1448.527	64431.407	71.959	8.409	7.645
L59	43.512	136.487	29791.773	14.804	21.952	1357.135	60366.209	67.175	8.610	8.4
	43.559	136.638	29890.959	14.821	21.976	1360.182	60567.186	67.249	8.623	8.412
L60	43.559	136.638	29890.959	14.821	21.976	1360.182	60567.186	67.249	8.623	8.412
	43.717	137.142	30223.154	14.876	22.055	1370.363	61240.304	67.497	8.664	8.452
L61	43.753	124.060	27471.947	14.911	22.055	1245.619	55665.613	61.059	8.932	9.656
	43.800	124.197	27562.753	14.928	22.079	1248.392	55849.610	61.126	8.944	9.669
L62	43.804	122.555	27214.744	14.932	22.079	1232.630	55144.449	60.318	8.977	9.838
	43.884	122.780	27364.582	14.960	22.118	1237.198	55448.061	60.428	8.998	9.861
L63	43.844	137.546	30490.700	14.919	22.118	1378.535	61782.425	67.696	8.696	8.484
	43.891	137.697	30591.430	14.936	22.142	1381.606	61986.531	67.770	8.709	8.496
L64	43.900	134.419	29898.983	14.945	22.142	1350.333	60583.445	66.157	8.776	8.776
	44.849	137.371	31912.554	15.273	22.617	1411.008	64663.485	67.610	9.021	9.021
L65	44.854	135.694	31541.355	15.277	22.617	1394.595	63911.337	66.784	9.055	9.17
	45.740	138.415	33477.211	15.584	23.060	1451.735	67833.906	68.124	9.284	9.402
L66	45.749	134.988	32685.938	15.593	23.060	1417.421	66230.573	66.437	9.351	9.716
	45.799	135.139	32795.872	15.610	23.085	1420.632	66453.329	66.512	9.364	9.729
L67	45.799	135.139	32795.872	15.610	23.085	1420.632	66453.329	66.512	9.364	9.729
	45.827	135.225	32857.974	15.620	23.100	1422.444	66579.163	66.553	9.372	9.737
L68	45.832	133.507	32459.128	15.625	23.100	1405.178	65770.994	65.708	9.405	9.9
	46.433	135.283	33772.141	15.832	23.400	1443.225	68431.514	66.582	9.561	10.064
L69	46.451	128.308	32103.301	15.850	23.400	1371.909	65049.992	63.149	9.695	10.772
	46.498	128.441	32203.123	15.867	23.424	1374.779	65252.259	63.215	9.707	10.786
L70	46.507	124.943	31361.603	15.876	23.424	1338.854	63547.110	61.493	9.774	11.17
	47.456	127.527	33347.281	16.204	23.899	1395.334	67570.632	62.765	10.020	11.451
L71	47.500	109.610	28820.853	16.249	23.899	1205.937	58398.861	53.947	10.355	13.806
	47.946	110.651	29649.556	16.403	24.122	1229.132	60078.038	54.459	10.470	13.96
L72	47.946	110.651	29649.556	16.403	24.122	1229.132	60078.038	54.459	10.470	13.96
	47.994	110.762	29738.639	16.419	24.146	1231.613	60258.545	54.514	10.483	13.977
L73	47.994	110.762	29738.639	16.419	24.146	1231.613	60258.545	54.514	10.483	13.977
	48.022	110.828	29792.174	16.429	24.160	1233.102	60367.022	54.546	10.490	13.987
L74	47.978	128.947	34474.291	16.384	24.160	1426.896	69854.259	63.464	10.155	11.606
	48.026	129.077	34577.987	16.401	24.184	1429.783	70064.377	63.528	10.167	11.62
L75	48.026	129.077	34577.987	16.401	24.184	1429.783	70064.377	63.528	10.167	11.62
	48.089	129.249	34716.433	16.423	24.216	1433.632	70344.906	63.612	10.184	11.638
L76	48.124	114.727	30950.369	16.459	24.216	1278.111	62713.838	56.465	10.452	13.486
	48.172	114.841	31043.046	16.475	24.239	1280.682	62901.627	56.521	10.464	13.502
L77	48.176	113.020	30567.247	16.479	24.239	1261.053	61937.529	55.625	10.497	13.767
	48.493	113.770	31180.241	16.589	24.398	1277.994	63179.622	55.994	10.579	13.874

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 160.333-155.333				1	1	1			
L2 155.333-150.333				1	1	1			
L3 150.333-146.833				1	1	1			
L4 146.833-146.333				1	1	1			
L5 146.333-141.333				1	1	1			
L6 141.333-136.333				1	1	1			
L7 136.333-131.333				1	1	1			
L8 131.333-126.333				1	1	1			
L9 126.333-121.333				1	1	1			
L10 121.333-120.083				1	1	1			
L11 120.083-119.833				1	1	0.952241			
L12 119.833-				1	1	0.945183			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
117.500									
L13 117.500-117.250				1	1	1.02541			
L14 117.250-115.500				1	1	1.01916			
L15 115.500-115.250				1	1	0.929133			
L16 115.250-110.250				1	1	0.928031			
L17 110.250-104.083				1	1	0.937076			
L18 104.083-102.820				1	1	0.937686			
L19 102.820-100.500				1	1	0.947009			
L20 100.500-100.250				1	1	0.979272			
L21 100.250-98.500				1	1	0.993012			
L22 98.500-98.250				1	1	0.984646			
L23 98.250-93.250				1	1	0.987428			
L24 93.250-90.500				1	1	0.997971			
L25 90.500-90.250				1	1	1.06041			
L26 90.250-85.250				1	1	1.06188			
L27 85.250-83.500				1	1	1.07542			
L28 83.500-83.250				1	1	0.976487			
L29 83.250-80.750				1	1	0.994032			
L30 80.750-80.500				1	1	0.929408			
L31 80.500-80.250				1	1	0.988425			
L32 80.250-77.500				1	1	0.990553			
L33 77.500-77.250				1	1	1.13161			
L34 77.250-68.820				1	1	1.11718			
L35 68.820-68.291				1	1	1.10418			
L36 68.291-64.250				1	1	1.10951			
L37 64.250-64.000				1	1	1.0126			
L38 64.000-60.500				1	1	1.01625			
L39 60.500-60.250				1	1	1.00832			
L40 60.250-60.083				1	1	1.0078			
L41 60.083-59.833				1	1	0.993436			
L42 59.833-59.083				1	1	0.991096			
L43 59.083-58.833				1	1	0.989483			
L44 58.833-55.417				1	1	1.00178			
L45 55.417-55.167				1	1	1.00098			

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
L46 55.167-54.750				1	1	0.999648			
L47 54.750-54.500				1	1	1.05096			
L48 54.500-49.500				1	1	1.05205			
L49 49.500-44.500				1	1	1.05391			
L50 44.500-41.250				1	1	1.06127			
L51 41.250-41.000				1	1	1.05236			
L52 41.000-34.291				1	1	1.04658			
L53 34.291-33.291				1	1	0.943825			
L54 33.291-31.500				1	1	0.938715			
L55 31.500-31.250				1	1	0.948018			
L56 31.250-30.500				1	1	0.945874			
L57 30.500-30.250				1	1	0.963144			
L58 30.250-25.750				1	1	0.971561			
L59 25.750-25.500				1	1	1.00222			
L60 25.500-24.667				1	1	0.999882			
L61 24.667-24.417				1	1	0.933203			
L62 24.417-24.000				1	1	0.944725			
L63 24.000-23.750				1	1	0.889372			
L64 23.750-18.750				1	1	0.89954			
L65 18.750-14.083				1	1	0.900223			
L66 14.083-13.817				1	1	0.941819			
L67 13.817-13.667				1	1	0.941471			
L68 13.667-10.500				1	1	0.946248			
L69 10.500-10.250				1	1	0.961027			
L70 10.250-5.250				1	1	0.976598			
L71 5.250-2.900				1	1	0.973671			
L72 2.900-2.650				1	1	0.973198			
L73 2.650-2.500				1	1	0.972914			
L74 2.500-2.250				1	1	0.894954			
L75 2.250-1.917				1	1	0.894333			
L76 1.917-1.667				1	1	0.934985			
L77 1.667-0.000				1	1	0.947031			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8")	B	No	Surface Ar (CaAa)	156.000 - 0.000	8	8	-0.360 -0.170	1.980		0.820
2" Rigid Conduit	B	No	Surface Ar (CaAa)	156.000 - 0.000	3	3	-0.160 -0.100	2.000		2.800
*										
HB158-21U6M48-30F(1-5/8)	B	No	Surface Ar (CaAa)	146.000 - 0.000	4	4	-0.100 0.000	1.660		2.390
561(1-5/8")	A	No	Surface Ar (CaAa)	132.000 - 0.000	4	4	-0.080 0.000	1.625		1.350
*										
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	114.000 - 0.000	1	1	0.000 0.000	1.600		2.350
*										
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MP3-05	A	No	Surface Af (CaAa)	31.500 - 11.500	1	1	0.500 0.500	5.330	14.840	0.000
MP3-05	B	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.500 0.500	5.330	14.840	0.000
MP3-05	C	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.500 0.500	5.330	14.840	0.000
MP3-04	A	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	B	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	C	No	Surface Af (CaAa)	61.500 - 31.000	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	A	No	Surface Af (CaAa)	15.500 - 0.000	1	1	-0.250 -0.250	4.780	12.780	0.000
MP3-04	B	No	Surface Af (CaAa)	15.500 - 0.000	1	1	0.250 0.250	4.780	12.780	0.000
*										
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	30.500 - 0.000	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	60.500 - 30.500	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	100.500 - 60.500	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	100.500 - 60.500	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	100.500 - 60.500	1	1	-0.250 -0.250	6.000	14.000	0.000
*										
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.250 0.250	6.500	15.500	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 plf
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate *	C	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	117.000 - 97.000	1	1	0.250 0.250	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	117.000 - 97.000	1	1	0.250 0.250	4.500	11.000	0.000
CCI 4.5" x 1" Plate *	C	No	Surface Af (CaAa)	119.000 - 99.000	1	1	0.250 0.250	4.500	11.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	10.500 - 0.000	1	1	0.250 0.250	6.000	14.000	0.000
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	45.500 - 10.500	1	1	0.250 0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate *	C	No	Surface Af (CaAa)	85.000 - 60.000	1	1	0.250 0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	55.400 - 20.400	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	55.400 - 20.400	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	90.500 - 55.500	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	90.500 - 55.500	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	122.600 - 90.600	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	122.600 - 90.600	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6" x 1" Plate *	C	No	Surface Af (CaAa)	122.600 - 100.600	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 1.25" x 5.875" Plate	A	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	B	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	C	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate *	C	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	A	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	B	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate *** ** *	C	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
FB-L98B-002-75000(3/8")	B	No	No	Inside Pole	156.000 - 0.000	2	No Ice 1/2" Ice	0.000 0.000	0.059 0.059

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.000	0.059
							2" Ice	0.000	0.059
WR-VG86ST-BRD(3/4")	B	No	No	Inside Pole	156.000 - 0.000	6	No Ice	0.000	0.584
							1/2" Ice	0.000	0.584
							1" Ice	0.000	0.584
							2" Ice	0.000	0.584
*									
AVA7-50(1-5/8")	B	No	No	Inside Pole	139.000 - 0.000	6	No Ice	0.000	0.700
							1/2" Ice	0.000	0.700
							1" Ice	0.000	0.700
							2" Ice	0.000	0.700
LDF4-50A(1/2")	B	No	No	Inside Pole	101.000 - 0.000	1	No Ice	0.000	0.150
							1/2" Ice	0.000	0.150
							1" Ice	0.000	0.150
							2" Ice	0.000	0.150
*									
561(1-5/8")	A	No	No	Inside Pole	132.000 - 0.000	2	No Ice	0.000	1.350
							1/2" Ice	0.000	1.350
							1" Ice	0.000	1.350
							2" Ice	0.000	1.350
HB114-U6S12-xxx-LI(1-1/4")	A	No	No	Inside Pole	132.000 - 0.000	1	No Ice	0.000	1.700
							1/2" Ice	0.000	1.700
							1" Ice	0.000	1.700
							2" Ice	0.000	1.700
*									
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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	160.333-155.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	1.457	0.000	0.012
		C	0.000	0.000	0.000	0.000	0.000
L2	155.333-150.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	10.920	0.000	0.093
		C	0.000	0.000	0.000	0.000	0.000
L3	150.333-146.833	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	7.644	0.000	0.065
		C	0.000	0.000	0.000	0.000	0.000
L4	146.833-146.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	1.092	0.000	0.009
		C	0.000	0.000	0.000	0.000	0.000
L5	146.333-141.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	14.019	0.000	0.138
		C	0.000	0.000	0.000	0.000	0.000
L6	141.333-136.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	14.240	0.000	0.152
		C	0.000	0.000	0.000	0.000	0.000
L7	136.333-131.333	A	0.000	0.000	0.434	0.000	0.007
		B	0.000	0.000	14.240	0.000	0.162
		C	0.000	0.000	0.000	0.000	0.000
L8	131.333-126.333	A	0.000	0.000	3.250	0.000	0.049
		B	0.000	0.000	14.240	0.000	0.162
		C	0.000	0.000	0.000	0.000	0.000
L9	126.333-121.333	A	0.000	0.000	4.517	0.000	0.049
		B	0.000	0.000	15.507	0.000	0.162
		C	0.000	0.000	1.267	0.000	0.000
L10	121.333-120.083	A	0.000	0.000	2.063	0.000	0.012

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
		B	0.000	0.000	4.810	0.000	0.040
		C	0.000	0.000	1.250	0.000	0.000
L11	120.083-119.833	A	0.000	0.000	0.412	0.000	0.002
		B	0.000	0.000	0.962	0.000	0.008
		C	0.000	0.000	0.250	0.000	0.000
L12	119.833-117.500	A	0.000	0.000	3.849	0.000	0.023
		B	0.000	0.000	8.977	0.000	0.075
		C	0.000	0.000	3.458	0.000	0.000
L13	117.500-117.250	A	0.000	0.000	0.412	0.000	0.002
		B	0.000	0.000	0.962	0.000	0.008
		C	0.000	0.000	0.438	0.000	0.000
L14	117.250-115.500	A	0.000	0.000	4.013	0.000	0.017
		B	0.000	0.000	7.859	0.000	0.057
		C	0.000	0.000	3.063	0.000	0.000
L15	115.500-115.250	A	0.000	0.000	0.600	0.000	0.002
		B	0.000	0.000	1.150	0.000	0.008
		C	0.000	0.000	0.438	0.000	0.000
L16	115.250-110.250	A	0.000	0.000	12.000	0.000	0.049
		B	0.000	0.000	23.590	0.000	0.171
		C	0.000	0.000	8.750	0.000	0.000
L17	110.250-104.083	A	0.000	0.000	14.801	0.000	0.060
		B	0.000	0.000	29.343	0.000	0.214
		C	0.000	0.000	10.792	0.000	0.000
L18	104.083-102.820	A	0.000	0.000	3.031	0.000	0.012
		B	0.000	0.000	6.009	0.000	0.044
		C	0.000	0.000	2.210	0.000	0.000
L19	102.820-100.500	A	0.000	0.000	5.568	0.000	0.023
		B	0.000	0.000	11.039	0.000	0.081
		C	0.000	0.000	3.960	0.000	0.000
L20	100.500-100.250	A	0.000	0.000	0.850	0.000	0.002
		B	0.000	0.000	1.440	0.000	0.009
		C	0.000	0.000	0.438	0.000	0.000
L21	100.250-98.500	A	0.000	0.000	5.950	0.000	0.017
		B	0.000	0.000	10.076	0.000	0.061
		C	0.000	0.000	2.688	0.000	0.000
L22	98.500-98.250	A	0.000	0.000	0.850	0.000	0.002
		B	0.000	0.000	1.440	0.000	0.009
		C	0.000	0.000	0.250	0.000	0.000
L23	98.250-93.250	A	0.000	0.000	14.188	0.000	0.049
		B	0.000	0.000	25.977	0.000	0.174
		C	0.000	0.000	5.000	0.000	0.000
L24	93.250-90.500	A	0.000	0.000	7.188	0.000	0.027
		B	0.000	0.000	13.672	0.000	0.096
		C	0.000	0.000	2.750	0.000	0.000
L25	90.500-90.250	A	0.000	0.000	0.767	0.000	0.002
		B	0.000	0.000	1.356	0.000	0.009
		C	0.000	0.000	0.250	0.000	0.000
L26	90.250-85.250	A	0.000	0.000	15.598	0.000	0.049
		B	0.000	0.000	27.388	0.000	0.174
		C	0.000	0.000	5.264	0.000	0.000
L27	85.250-83.500	A	0.000	0.000	7.217	0.000	0.017
		B	0.000	0.000	11.344	0.000	0.061
		C	0.000	0.000	5.726	0.000	0.000
L28	83.500-83.250	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L29	83.250-80.750	A	0.000	0.000	10.310	0.000	0.025
		B	0.000	0.000	16.205	0.000	0.087
		C	0.000	0.000	8.685	0.000	0.000
L30	80.750-80.500	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L31	80.500-80.250	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L32	80.250-77.500	A	0.000	0.000	11.341	0.000	0.027
		B	0.000	0.000	17.826	0.000	0.096
		C	0.000	0.000	9.554	0.000	0.000
L33	77.500-77.250	A	0.000	0.000	1.031	0.000	0.002

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
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L34	77.250-68.820	A	0.000	0.000	30.875	0.000	0.083
		B	0.000	0.000	50.753	0.000	0.294
		C	0.000	0.000	25.396	0.000	0.000
L35	68.820-68.291	A	0.000	0.000	1.622	0.000	0.005
		B	0.000	0.000	2.870	0.000	0.018
		C	0.000	0.000	1.278	0.000	0.000
L36	68.291-64.250	A	0.000	0.000	15.372	0.000	0.040
		B	0.000	0.000	24.900	0.000	0.141
		C	0.000	0.000	12.745	0.000	0.000
L37	64.250-64.000	A	0.000	0.000	1.038	0.000	0.002
		B	0.000	0.000	1.627	0.000	0.009
		C	0.000	0.000	0.875	0.000	0.000
L38	64.000-60.500	A	0.000	0.000	14.525	0.000	0.034
		B	0.000	0.000	22.778	0.000	0.122
		C	0.000	0.000	13.047	0.000	0.000
L39	60.500-60.250	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	1.095	0.000	0.000
L40	60.250-60.083	A	0.000	0.000	0.840	0.000	0.002
		B	0.000	0.000	1.234	0.000	0.006
		C	0.000	0.000	0.731	0.000	0.000
L41	60.083-59.833	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.858	0.000	0.000
L42	59.833-59.083	A	0.000	0.000	3.773	0.000	0.007
		B	0.000	0.000	5.541	0.000	0.026
		C	0.000	0.000	2.223	0.000	0.000
L43	59.083-58.833	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L44	58.833-55.417	A	0.000	0.000	17.066	0.000	0.033
		B	0.000	0.000	25.122	0.000	0.119
		C	0.000	0.000	10.124	0.000	0.000
L45	55.417-55.167	A	0.000	0.000	1.234	0.000	0.002
		B	0.000	0.000	1.823	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L46	55.167-54.750	A	0.000	0.000	2.096	0.000	0.004
		B	0.000	0.000	3.078	0.000	0.015
		C	0.000	0.000	1.235	0.000	0.000
L47	54.750-54.500	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L48	54.500-49.500	A	0.000	0.000	22.442	0.000	0.049
		B	0.000	0.000	34.232	0.000	0.174
		C	0.000	0.000	12.108	0.000	0.000
L49	49.500-44.500	A	0.000	0.000	19.733	0.000	0.049
		B	0.000	0.000	31.523	0.000	0.174
		C	0.000	0.000	10.817	0.000	0.000
L50	44.500-41.250	A	0.000	0.000	12.827	0.000	0.032
		B	0.000	0.000	20.490	0.000	0.113
		C	0.000	0.000	10.714	0.000	0.000
L51	41.250-41.000	A	0.000	0.000	0.987	0.000	0.002
		B	0.000	0.000	1.576	0.000	0.009
		C	0.000	0.000	0.824	0.000	0.000
L52	41.000-34.291	A	0.000	0.000	30.496	0.000	0.066
		B	0.000	0.000	46.316	0.000	0.234
		C	0.000	0.000	26.135	0.000	0.000
L53	34.291-33.291	A	0.000	0.000	5.030	0.000	0.010
		B	0.000	0.000	7.388	0.000	0.035
		C	0.000	0.000	4.380	0.000	0.000
L54	33.291-31.500	A	0.000	0.000	9.009	0.000	0.018
		B	0.000	0.000	13.232	0.000	0.062
		C	0.000	0.000	7.845	0.000	0.000
L55	31.500-31.250	A	0.000	0.000	1.480	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	1.095	0.000	0.000
L56	31.250-30.500	A	0.000	0.000	4.439	0.000	0.007

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
		B	0.000	0.000	5.541	0.000	0.026
		C	0.000	0.000	2.887	0.000	0.000
L57	30.500-30.250	A	0.000	0.000	1.260	0.000	0.002
		B	0.000	0.000	1.849	0.000	0.009
		C	0.000	0.000	1.097	0.000	0.000
L58	30.250-25.750	A	0.000	0.000	23.061	0.000	0.044
		B	0.000	0.000	33.672	0.000	0.157
		C	0.000	0.000	20.136	0.000	0.000
L59	25.750-25.500	A	0.000	0.000	1.295	0.000	0.002
		B	0.000	0.000	1.884	0.000	0.009
		C	0.000	0.000	1.132	0.000	0.000
L60	25.500-24.667	A	0.000	0.000	4.372	0.000	0.008
		B	0.000	0.000	6.337	0.000	0.029
		C	0.000	0.000	4.004	0.000	0.000
L61	24.667-24.417	A	0.000	0.000	1.312	0.000	0.002
		B	0.000	0.000	1.901	0.000	0.009
		C	0.000	0.000	1.201	0.000	0.000
L62	24.417-24.000	A	0.000	0.000	2.186	0.000	0.004
		B	0.000	0.000	3.169	0.000	0.015
		C	0.000	0.000	2.002	0.000	0.000
L63	24.000-23.750	A	0.000	0.000	1.312	0.000	0.002
		B	0.000	0.000	1.901	0.000	0.009
		C	0.000	0.000	1.201	0.000	0.000
L64	23.750-18.750	A	0.000	0.000	19.292	0.000	0.049
		B	0.000	0.000	31.082	0.000	0.174
		C	0.000	0.000	19.421	0.000	0.000
L65	18.750-14.083	A	0.000	0.000	13.948	0.000	0.046
		B	0.000	0.000	24.952	0.000	0.163
		C	0.000	0.000	17.369	0.000	0.000
L66	14.083-13.817	A	0.000	0.000	0.943	0.000	0.003
		B	0.000	0.000	1.570	0.000	0.009
		C	0.000	0.000	0.990	0.000	0.000
L67	13.817-13.667	A	0.000	0.000	0.531	0.000	0.001
		B	0.000	0.000	0.885	0.000	0.005
		C	0.000	0.000	0.558	0.000	0.000
L68	13.667-10.500	A	0.000	0.000	10.333	0.000	0.031
		B	0.000	0.000	18.690	0.000	0.110
		C	0.000	0.000	11.787	0.000	0.000
L69	10.500-10.250	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L70	10.250-5.250	A	0.000	0.000	13.275	0.000	0.049
		B	0.000	0.000	29.507	0.000	0.174
		C	0.000	0.000	16.168	0.000	0.000
L71	5.250-2.900	A	0.000	0.000	6.239	0.000	0.023
		B	0.000	0.000	13.868	0.000	0.082
		C	0.000	0.000	7.599	0.000	0.000
L72	2.900-2.650	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L73	2.650-2.500	A	0.000	0.000	0.398	0.000	0.001
		B	0.000	0.000	0.885	0.000	0.005
		C	0.000	0.000	0.485	0.000	0.000
L74	2.500-2.250	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L75	2.250-1.917	A	0.000	0.000	0.884	0.000	0.003
		B	0.000	0.000	1.965	0.000	0.012
		C	0.000	0.000	1.077	0.000	0.000
L76	1.917-1.667	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L77	1.667-0.000	A	0.000	0.000	4.426	0.000	0.016
		B	0.000	0.000	9.838	0.000	0.058
		C	0.000	0.000	5.390	0.000	0.000

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	160.333-155.333	A	1.988	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	2.484	0.000	0.046
		C		0.000	0.000	0.000	0.000	0.000
L2	155.333-150.333	A	1.982	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	18.604	0.000	0.341
		C		0.000	0.000	0.000	0.000	0.000
L3	150.333-146.833	A	1.976	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	13.013	0.000	0.238
		C		0.000	0.000	0.000	0.000	0.000
L4	146.833-146.333	A	1.973	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.858	0.000	0.034
		C		0.000	0.000	0.000	0.000	0.000
L5	146.333-141.333	A	1.970	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	24.746	0.000	0.464
		C		0.000	0.000	0.000	0.000	0.000
L6	141.333-136.333	A	1.963	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	25.160	0.000	0.483
		C		0.000	0.000	0.000	0.000	0.000
L7	136.333-131.333	A	1.955	0.000	0.000	0.868	0.000	0.018
		B		0.000	0.000	25.133	0.000	0.491
		C		0.000	0.000	0.000	0.000	0.000
L8	131.333-126.333	A	1.948	0.000	0.000	6.498	0.000	0.132
		B		0.000	0.000	25.105	0.000	0.490
		C		0.000	0.000	0.000	0.000	0.000
L9	126.333-121.333	A	1.940	0.000	0.000	8.247	0.000	0.152
		B		0.000	0.000	26.835	0.000	0.509
		C		0.000	0.000	1.759	0.000	0.020
L10	121.333-120.083	A	1.935	0.000	0.000	3.354	0.000	0.053
		B		0.000	0.000	7.998	0.000	0.142
		C		0.000	0.000	1.734	0.000	0.020
L11	120.083-119.833	A	1.934	0.000	0.000	0.671	0.000	0.011
		B		0.000	0.000	1.599	0.000	0.028
		C		0.000	0.000	0.347	0.000	0.004
L12	119.833-117.500	A	1.932	0.000	0.000	6.257	0.000	0.098
		B		0.000	0.000	14.921	0.000	0.264
		C		0.000	0.000	4.939	0.000	0.058
L13	117.500-117.250	A	1.930	0.000	0.000	0.670	0.000	0.011
		B		0.000	0.000	1.598	0.000	0.028
		C		0.000	0.000	0.630	0.000	0.007
L14	117.250-115.500	A	1.928	0.000	0.000	6.394	0.000	0.094
		B		0.000	0.000	12.889	0.000	0.219
		C		0.000	0.000	4.412	0.000	0.052
L15	115.500-115.250	A	1.927	0.000	0.000	0.954	0.000	0.014
		B		0.000	0.000	1.881	0.000	0.032
		C		0.000	0.000	0.630	0.000	0.007
L16	115.250-110.250	A	1.922	0.000	0.000	19.060	0.000	0.278
		B		0.000	0.000	39.644	0.000	0.672
		C		0.000	0.000	12.594	0.000	0.148
L17	110.250-104.083	A	1.912	0.000	0.000	23.469	0.000	0.341
		B		0.000	0.000	49.656	0.000	0.842
		C		0.000	0.000	15.510	0.000	0.181
L18	104.083-102.820	A	1.906	0.000	0.000	4.806	0.000	0.070
		B		0.000	0.000	10.169	0.000	0.172
		C		0.000	0.000	3.176	0.000	0.037
L19	102.820-100.500	A	1.902	0.000	0.000	8.814	0.000	0.128
		B		0.000	0.000	18.649	0.000	0.315
		C		0.000	0.000	5.687	0.000	0.066
L20	100.500-100.250	A	1.900	0.000	0.000	1.294	0.000	0.018
		B		0.000	0.000	2.354	0.000	0.038
		C		0.000	0.000	0.628	0.000	0.007
L21	100.250-98.500	A	1.898	0.000	0.000	9.058	0.000	0.123
		B		0.000	0.000	16.471	0.000	0.265
		C		0.000	0.000	3.826	0.000	0.044
L22	98.500-98.250	A	1.896	0.000	0.000	1.294	0.000	0.018
		B		0.000	0.000	2.352	0.000	0.038
		C		0.000	0.000	0.345	0.000	0.004

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
L23	98.250-93.250	A	1.891	0.000	0.000	21.619	0.000	0.301
		B		0.000	0.000	42.775	0.000	0.704
		C		0.000	0.000	6.891	0.000	0.078
L24	93.250-90.500	A	1.883	0.000	0.000	10.963	0.000	0.154
		B		0.000	0.000	22.584	0.000	0.375
		C		0.000	0.000	3.786	0.000	0.043
L25	90.500-90.250	A	1.880	0.000	0.000	1.113	0.000	0.015
		B		0.000	0.000	2.169	0.000	0.035
		C		0.000	0.000	0.344	0.000	0.004
L26	90.250-85.250	A	1.875	0.000	0.000	22.552	0.000	0.306
		B		0.000	0.000	43.651	0.000	0.706
		C		0.000	0.000	7.188	0.000	0.081
L27	85.250-83.500	A	1.867	0.000	0.000	9.969	0.000	0.134
		B		0.000	0.000	17.344	0.000	0.273
		C		0.000	0.000	7.278	0.000	0.084
L28	83.500-83.250	A	1.865	0.000	0.000	1.424	0.000	0.019
		B		0.000	0.000	2.477	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L29	83.250-80.750	A	1.862	0.000	0.000	14.231	0.000	0.191
		B		0.000	0.000	24.758	0.000	0.389
		C		0.000	0.000	11.030	0.000	0.127
L30	80.750-80.500	A	1.859	0.000	0.000	1.422	0.000	0.019
		B		0.000	0.000	2.475	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L31	80.500-80.250	A	1.858	0.000	0.000	1.422	0.000	0.019
		B		0.000	0.000	2.474	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L32	80.250-77.500	A	1.855	0.000	0.000	15.639	0.000	0.209
		B		0.000	0.000	27.205	0.000	0.427
		C		0.000	0.000	12.123	0.000	0.139
L33	77.500-77.250	A	1.851	0.000	0.000	1.421	0.000	0.019
		B		0.000	0.000	2.472	0.000	0.039
		C		0.000	0.000	1.102	0.000	0.013
L34	77.250-68.820	A	1.840	0.000	0.000	43.247	0.000	0.575
		B		0.000	0.000	78.618	0.000	1.239
		C		0.000	0.000	32.504	0.000	0.363
L35	68.820-68.291	A	1.829	0.000	0.000	2.341	0.000	0.031
		B		0.000	0.000	4.561	0.000	0.073
		C		0.000	0.000	1.667	0.000	0.018
L36	68.291-64.250	A	1.823	0.000	0.000	21.446	0.000	0.280
		B		0.000	0.000	38.351	0.000	0.596
		C		0.000	0.000	16.316	0.000	0.179
L37	64.250-64.000	A	1.817	0.000	0.000	1.430	0.000	0.019
		B		0.000	0.000	2.475	0.000	0.038
		C		0.000	0.000	1.114	0.000	0.012
L38	64.000-60.500	A	1.811	0.000	0.000	20.013	0.000	0.259
		B		0.000	0.000	34.627	0.000	0.531
		C		0.000	0.000	16.740	0.000	0.185
L39	60.500-60.250	A	1.806	0.000	0.000	1.739	0.000	0.022
		B		0.000	0.000	2.782	0.000	0.042
		C		0.000	0.000	1.423	0.000	0.016
L40	60.250-60.083	A	1.805	0.000	0.000	1.161	0.000	0.015
		B		0.000	0.000	1.858	0.000	0.028
		C		0.000	0.000	0.950	0.000	0.011
L41	60.083-59.833	A	1.805	0.000	0.000	1.738	0.000	0.022
		B		0.000	0.000	2.781	0.000	0.042
		C		0.000	0.000	1.126	0.000	0.013
L42	59.833-59.083	A	1.803	0.000	0.000	5.214	0.000	0.066
		B		0.000	0.000	8.341	0.000	0.124
		C		0.000	0.000	2.934	0.000	0.034
L43	59.083-58.833	A	1.802	0.000	0.000	1.738	0.000	0.022
		B		0.000	0.000	2.780	0.000	0.041
		C		0.000	0.000	0.978	0.000	0.011
L44	58.833-55.417	A	1.796	0.000	0.000	23.580	0.000	0.299
		B		0.000	0.000	37.808	0.000	0.563
		C		0.000	0.000	13.351	0.000	0.153
L45	55.417-55.167	A	1.790	0.000	0.000	1.705	0.000	0.022
		B		0.000	0.000	2.746	0.000	0.041
		C		0.000	0.000	0.976	0.000	0.011

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
L46	55.167-54.750	A	1.789	0.000	0.000	2.891	0.000	0.036
		B		0.000	0.000	4.624	0.000	0.069
		C		0.000	0.000	1.627	0.000	0.019
L47	54.750-54.500	A	1.788	0.000	0.000	1.734	0.000	0.022
		B		0.000	0.000	2.774	0.000	0.041
		C		0.000	0.000	0.976	0.000	0.011
L48	54.500-49.500	A	1.779	0.000	0.000	31.377	0.000	0.397
		B		0.000	0.000	52.141	0.000	0.780
		C		0.000	0.000	16.228	0.000	0.183
L49	49.500-44.500	A	1.761	0.000	0.000	28.031	0.000	0.354
		B		0.000	0.000	48.732	0.000	0.735
		C		0.000	0.000	14.691	0.000	0.160
L50	44.500-41.250	A	1.745	0.000	0.000	18.176	0.000	0.228
		B		0.000	0.000	31.595	0.000	0.473
		C		0.000	0.000	14.117	0.000	0.149
L51	41.250-41.000	A	1.738	0.000	0.000	1.397	0.000	0.017
		B		0.000	0.000	2.428	0.000	0.036
		C		0.000	0.000	1.085	0.000	0.011
L52	41.000-34.291	A	1.722	0.000	0.000	42.222	0.000	0.519
		B		0.000	0.000	69.817	0.000	1.020
		C		0.000	0.000	33.882	0.000	0.357
L53	34.291-33.291	A	1.704	0.000	0.000	6.877	0.000	0.084
		B		0.000	0.000	10.990	0.000	0.159
		C		0.000	0.000	5.634	0.000	0.060
L54	33.291-31.500	A	1.697	0.000	0.000	12.271	0.000	0.148
		B		0.000	0.000	19.605	0.000	0.280
		C		0.000	0.000	10.056	0.000	0.105
L55	31.500-31.250	A	1.691	0.000	0.000	2.018	0.000	0.024
		B		0.000	0.000	2.734	0.000	0.039
		C		0.000	0.000	1.403	0.000	0.015
L56	31.250-30.500	A	1.689	0.000	0.000	6.052	0.000	0.072
		B		0.000	0.000	8.200	0.000	0.117
		C		0.000	0.000	3.639	0.000	0.037
L57	30.500-30.250	A	1.686	0.000	0.000	1.712	0.000	0.021
		B		0.000	0.000	2.734	0.000	0.039
		C		0.000	0.000	1.404	0.000	0.015
L58	30.250-25.750	A	1.672	0.000	0.000	31.700	0.000	0.404
		B		0.000	0.000	50.051	0.000	0.733
		C		0.000	0.000	26.162	0.000	0.298
L59	25.750-25.500	A	1.658	0.000	0.000	1.790	0.000	0.023
		B		0.000	0.000	2.807	0.000	0.042
		C		0.000	0.000	1.484	0.000	0.018
L60	25.500-24.667	A	1.654	0.000	0.000	6.131	0.000	0.078
		B		0.000	0.000	9.519	0.000	0.139
		C		0.000	0.000	5.559	0.000	0.070
L61	24.667-24.417	A	1.650	0.000	0.000	1.838	0.000	0.023
		B		0.000	0.000	2.854	0.000	0.041
		C		0.000	0.000	1.667	0.000	0.021
L62	24.417-24.000	A	1.648	0.000	0.000	3.063	0.000	0.039
		B		0.000	0.000	4.756	0.000	0.069
		C		0.000	0.000	2.777	0.000	0.035
L63	24.000-23.750	A	1.646	0.000	0.000	1.837	0.000	0.023
		B		0.000	0.000	2.852	0.000	0.041
		C		0.000	0.000	1.666	0.000	0.021
L64	23.750-18.750	A	1.627	0.000	0.000	28.265	0.000	0.375
		B		0.000	0.000	48.496	0.000	0.733
		C		0.000	0.000	27.712	0.000	0.351
L65	18.750-14.083	A	1.585	0.000	0.000	21.428	0.000	0.298
		B		0.000	0.000	40.176	0.000	0.626
		C		0.000	0.000	24.768	0.000	0.307
L66	14.083-13.817	A	1.560	0.000	0.000	1.419	0.000	0.019
		B		0.000	0.000	2.482	0.000	0.037
		C		0.000	0.000	1.405	0.000	0.017
L67	13.817-13.667	A	1.557	0.000	0.000	0.800	0.000	0.011
		B		0.000	0.000	1.399	0.000	0.021
		C		0.000	0.000	0.792	0.000	0.010
L68	13.667-10.500	A	1.537	0.000	0.000	15.622	0.000	0.208
		B		0.000	0.000	29.435	0.000	0.438
		C		0.000	0.000	16.656	0.000	0.201

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
L69	10.500-10.250	A	1.514	0.000	0.000	1.024	0.000	0.014
		B		0.000	0.000	2.314	0.000	0.034
		C		0.000	0.000	1.151	0.000	0.015
L70	10.250-5.250	A	1.471	0.000	0.000	20.301	0.000	0.273
		B		0.000	0.000	45.898	0.000	0.664
		C		0.000	0.000	22.828	0.000	0.284
L71	5.250-2.900	A	1.379	0.000	0.000	9.366	0.000	0.120
		B		0.000	0.000	21.203	0.000	0.295
		C		0.000	0.000	10.535	0.000	0.123
L72	2.900-2.650	A	1.327	0.000	0.000	0.986	0.000	0.012
		B		0.000	0.000	2.233	0.000	0.030
		C		0.000	0.000	1.109	0.000	0.012
L73	2.650-2.500	A	1.317	0.000	0.000	0.590	0.000	0.007
		B		0.000	0.000	1.337	0.000	0.018
		C		0.000	0.000	0.664	0.000	0.007
L74	2.500-2.250	A	1.307	0.000	0.000	0.982	0.000	0.012
		B		0.000	0.000	2.225	0.000	0.030
		C		0.000	0.000	1.104	0.000	0.012
L75	2.250-1.917	A	1.290	0.000	0.000	1.303	0.000	0.016
		B		0.000	0.000	2.953	0.000	0.040
		C		0.000	0.000	1.466	0.000	0.016
L76	1.917-1.667	A	1.270	0.000	0.000	0.974	0.000	0.012
		B		0.000	0.000	2.209	0.000	0.029
		C		0.000	0.000	1.096	0.000	0.012
L77	1.667-0.000	A	1.177	0.000	0.000	6.364	0.000	0.073
		B		0.000	0.000	14.457	0.000	0.184
		C		0.000	0.000	7.168	0.000	0.071

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.333-155.333	1.284	-2.006	0.910	-1.369
L2	155.333-150.333	3.521	-5.499	2.548	-3.833
L3	150.333-146.833	3.521	-5.499	2.548	-3.834
L4	146.833-146.333	4.267	-6.663	3.137	-4.720
L5	146.333-141.333	4.385	-5.758	3.774	-4.721
L6	141.333-136.333	4.529	-5.892	3.915	-4.852
L7	136.333-131.333	4.330	-6.005	3.717	-4.949
L8	131.333-126.333	2.739	-6.080	2.152	-4.886
L9	126.333-121.333	2.462	-5.465	2.033	-4.616
L10	121.333-120.083	1.850	-4.108	1.676	-3.805
L11	120.083-119.833	1.858	-4.126	1.683	-3.823
L12	119.833-117.500	1.093	-3.471	1.074	-3.311
L13	117.500-117.250	0.702	-3.144	0.758	-3.055
L14	117.250-115.500	1.403	-3.314	1.337	-3.209
L15	115.500-115.250	1.510	-3.354	1.430	-3.247
L16	115.250-110.250	1.652	-3.440	1.680	-3.376
L17	110.250-104.083	1.737	-3.546	1.804	-3.501
L18	104.083-102.820	1.745	-3.563	1.813	-3.520
L19	102.820-100.500	1.711	-3.642	1.793	-3.589
L20	100.500-100.250	1.504	-4.232	1.623	-4.066
L21	100.250-98.500	1.770	-4.480	1.855	-4.281
L22	98.500-98.250	2.464	-5.106	2.453	-4.812
L23	98.250-93.250	2.021	-5.185	2.085	-4.865
L24	93.250-90.500	1.937	-5.282	2.023	-4.952
L25	90.500-90.250	1.229	-5.314	1.604	-5.002
L26	90.250-85.250	1.294	-5.276	1.654	-4.998
L27	85.250-83.500	0.777	-2.811	1.147	-3.177
L28	83.500-83.250	0.581	-2.662	0.991	-3.058
L29	83.250-80.750	0.585	-2.678	0.996	-3.077
L30	80.750-80.500	0.588	-2.694	1.002	-3.097
L31	80.500-80.250	0.589	-2.697	1.003	-3.100
L32	80.250-77.500	0.592	-2.714	1.010	-3.120

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L33	77.500-77.250	0.595	-2.730	1.015	-3.140
L34	77.250-68.820	0.159	-3.232	0.733	-3.558
L35	68.820-68.291	-0.538	-3.962	0.294	-4.113
L36	68.291-64.250	0.314	-3.125	0.856	-3.474
L37	64.250-64.000	0.642	-2.820	1.087	-3.233
L38	64.000-60.500	0.301	-2.886	0.769	-3.294
L39	60.500-60.250	0.641	-2.511	1.019	-2.903
L40	60.250-60.083	0.641	-2.513	1.020	-2.905
L41	60.083-59.833	1.553	-3.239	1.767	-3.505
L42	59.833-59.083	2.044	-3.633	2.166	-3.827
L43	59.083-58.833	2.049	-3.641	2.170	-3.835
L44	58.833-55.417	2.105	-3.658	2.220	-3.857
L45	55.417-55.167	2.193	-3.668	2.295	-3.874
L46	55.167-54.750	2.081	-3.698	2.205	-3.897
L47	54.750-54.500	2.083	-3.701	2.208	-3.901
L48	54.500-49.500	1.720	-4.338	1.949	-4.411
L49	49.500-44.500	0.919	-4.830	1.373	-4.798
L50	44.500-41.250	-0.407	-3.704	0.320	-3.938
L51	41.250-41.000	-0.410	-3.728	0.320	-3.964
L52	41.000-34.291	0.251	-3.153	0.784	-3.516
L53	34.291-33.291	0.696	-2.735	1.105	-3.164
L54	33.291-31.500	0.699	-2.748	1.107	-3.178
L55	31.500-31.250	1.545	-3.559	1.866	-3.904
L56	31.250-30.500	2.338	-3.471	2.621	-3.831
L57	30.500-30.250	0.619	-2.730	1.057	-3.175
L58	30.250-25.750	0.606	-2.676	1.043	-3.137
L59	25.750-25.500	0.594	-2.625	1.037	-3.122
L60	25.500-24.667	0.587	-2.359	1.003	-2.620
L61	24.667-24.417	0.588	-2.364	1.004	-2.625
L62	24.417-24.000	0.588	-2.367	1.005	-2.628
L63	24.000-23.750	0.589	-2.370	1.006	-2.632
L64	23.750-18.750	0.209	-3.006	0.795	-3.119
L65	18.750-14.083	1.269	-2.333	1.652	-2.593
L66	14.083-13.817	1.160	-1.431	1.570	-1.848
L67	13.817-13.667	1.161	-1.432	1.570	-1.849
L68	13.667-10.500	0.820	-1.081	1.282	-1.555
L69	10.500-10.250	0.683	-0.717	1.170	-1.259
L70	10.250-5.250	0.688	-0.723	1.175	-1.272
L71	5.250-2.900	0.695	-0.731	1.177	-1.292
L72	2.900-2.650	0.698	-0.734	1.176	-1.300
L73	2.650-2.500	0.698	-0.735	1.176	-1.302
L74	2.500-2.250	0.699	-0.735	1.175	-1.303
L75	2.250-1.917	0.699	-0.736	1.174	-1.306
L76	1.917-1.667	0.700	-0.737	1.173	-1.308
L77	1.667-0.000	0.702	-0.739	1.166	-1.320

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	LDF7-50A(1-5/8")	155.33 - 156.00	1.0000	1.0000
L1	4	2" Rigid Conduit	155.33 - 156.00	1.0000	1.0000
L2	1	LDF7-50A(1-5/8")	150.33 - 155.33	1.0000	1.0000
L2	4	2" Rigid Conduit	150.33 - 155.33	1.0000	1.0000
L3	1	LDF7-50A(1-5/8")	146.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	4	2" Rigid Conduit	150.33 146.83 - 150.33	1.0000	1.0000
L4	1	LDF7-50A(1-5/8")	146.33 - 146.83	1.0000	1.0000
L4	4	2" Rigid Conduit	146.33 - 146.83	1.0000	1.0000
L5	1	LDF7-50A(1-5/8")	141.33 - 146.33	1.0000	1.0000
L5	4	2" Rigid Conduit	141.33 - 146.33	1.0000	1.0000
L5	7	HB158-21U6M48-30F(1-5/8)	141.33 - 146.00	1.0000	1.0000
L6	1	LDF7-50A(1-5/8")	136.33 - 141.33	1.0000	1.0000
L6	4	2" Rigid Conduit	136.33 - 141.33	1.0000	1.0000
L6	7	HB158-21U6M48-30F(1-5/8)	136.33 - 141.33	1.0000	1.0000
L7	1	LDF7-50A(1-5/8")	131.33 - 136.33	1.0000	1.0000
L7	4	2" Rigid Conduit	131.33 - 136.33	1.0000	1.0000
L7	7	HB158-21U6M48-30F(1-5/8)	131.33 - 136.33	1.0000	1.0000
L7	13	561(1-5/8")	131.33 - 132.00	1.0000	1.0000
L8	1	LDF7-50A(1-5/8")	126.33 - 131.33	1.0000	1.0000
L8	4	2" Rigid Conduit	126.33 - 131.33	1.0000	1.0000
L8	7	HB158-21U6M48-30F(1-5/8)	126.33 - 131.33	1.0000	1.0000
L8	13	561(1-5/8")	126.33 - 131.33	1.0000	1.0000
L9	1	LDF7-50A(1-5/8")	121.33 - 126.33	1.0000	1.0000
L9	4	2" Rigid Conduit	121.33 - 126.33	1.0000	1.0000
L9	7	HB158-21U6M48-30F(1-5/8)	121.33 - 126.33	1.0000	1.0000
L9	13	561(1-5/8")	121.33 - 126.33	1.0000	1.0000
L9	105	CCI 6" x 1" Plate	121.33 - 122.60	1.0000	1.0000
L9	106	CCI 6" x 1" Plate	121.33 - 122.60	1.0000	1.0000
L9	107	CCI 6" x 1" Plate	121.33 - 122.60	1.0000	1.0000
L10	1	LDF7-50A(1-5/8")	120.08 - 121.33	1.0000	1.0000
L10	4	2" Rigid Conduit	120.08 - 121.33	1.0000	1.0000
L10	7	HB158-21U6M48-30F(1-5/8)	120.08 - 121.33	1.0000	1.0000
L10	13	561(1-5/8")	120.08 - 121.33	1.0000	1.0000
L10	105	CCI 6" x 1" Plate	120.08 - 121.33	1.0000	1.0000
L10	106	CCI 6" x 1" Plate	120.08 - 121.33	1.0000	1.0000
L10	107	CCI 6" x 1" Plate	120.08 - 121.33	1.0000	1.0000
L11	1	LDF7-50A(1-5/8")	119.83 - 120.08	1.0000	1.0000
L11	4	2" Rigid Conduit	119.83 - 120.08	1.0000	1.0000
L11	7	HB158-21U6M48-30F(1-5/8)	119.83 - 120.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	13	561(1-5/8")	119.83 - 120.08	1.0000	1.0000
L11	105	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L11	106	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L11	107	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L12	1	LDF7-50A(1-5/8")	117.50 - 119.83	1.0000	1.0000
L12	4	2" Rigid Conduit	117.50 - 119.83	1.0000	1.0000
L12	7	HB158-21U6M48-30F(1-5/8)	117.50 - 119.83	1.0000	1.0000
L12	13	561(1-5/8")	117.50 - 119.83	1.0000	1.0000
L12	95	CCI 4.5" x 1" Plate	117.50 - 119.00	1.0000	1.0000
L12	105	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L12	106	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L12	107	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L13	1	LDF7-50A(1-5/8")	117.25 - 117.50	1.0000	1.0000
L13	4	2" Rigid Conduit	117.25 - 117.50	1.0000	1.0000
L13	7	HB158-21U6M48-30F(1-5/8)	117.25 - 117.50	1.0000	1.0000
L13	13	561(1-5/8")	117.25 - 117.50	1.0000	1.0000
L13	95	CCI 4.5" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	105	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	106	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	107	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L14	1	LDF7-50A(1-5/8")	115.50 - 117.25	1.0000	1.0000
L14	4	2" Rigid Conduit	115.50 - 117.25	1.0000	1.0000
L14	7	HB158-21U6M48-30F(1-5/8)	115.50 - 117.25	1.0000	1.0000
L14	13	561(1-5/8")	115.50 - 117.25	1.0000	1.0000
L14	93	CCI 4.5" x 1" Plate	115.50 - 117.00	1.0000	1.0000
L14	94	CCI 4.5" x 1" Plate	115.50 - 117.00	1.0000	1.0000
L14	95	CCI 4.5" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	105	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	106	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	107	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L15	1	LDF7-50A(1-5/8")	115.25 - 115.50	1.0000	1.0000
L15	4	2" Rigid Conduit	115.25 - 115.50	1.0000	1.0000
L15	7	HB158-21U6M48-30F(1-5/8)	115.25 - 115.50	1.0000	1.0000
L15	13	561(1-5/8")	115.25 - 115.50	1.0000	1.0000
L15	93	CCI 4.5" x 1" Plate	115.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	94	CCI 4.5" x 1" Plate	115.50 115.25 - 115.50	1.0000	1.0000
L15	95	CCI 4.5" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	105	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	106	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	107	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L16	1	LDF7-50A(1-5/8")	110.25 - 115.25	1.0000	1.0000
L16	4	2" Rigid Conduit	110.25 - 115.25	1.0000	1.0000
L16	7	HB158-21U6M48-30F(1-5/8)	110.25 - 115.25	1.0000	1.0000
L16	13	561(1-5/8")	110.25 - 115.25	1.0000	1.0000
L16	17	CU12PSM9P6XXX(1-1/2)	110.25 - 114.00	1.0000	1.0000
L16	93	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	94	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	95	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	105	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	106	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	107	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L17	1	LDF7-50A(1-5/8")	104.08 - 110.25	1.0000	1.0000
L17	4	2" Rigid Conduit	104.08 - 110.25	1.0000	1.0000
L17	7	HB158-21U6M48-30F(1-5/8)	104.08 - 110.25	1.0000	1.0000
L17	13	561(1-5/8")	104.08 - 110.25	1.0000	1.0000
L17	17	CU12PSM9P6XXX(1-1/2)	104.08 - 110.25	1.0000	1.0000
L17	93	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	94	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	95	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	105	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	106	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	107	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L18	1	LDF7-50A(1-5/8")	102.82 - 104.08	1.0000	1.0000
L18	4	2" Rigid Conduit	102.82 - 104.08	1.0000	1.0000
L18	7	HB158-21U6M48-30F(1-5/8)	102.82 - 104.08	1.0000	1.0000
L18	13	561(1-5/8")	102.82 - 104.08	1.0000	1.0000
L18	17	CU12PSM9P6XXX(1-1/2)	102.82 - 104.08	1.0000	1.0000
L18	93	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	94	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	95	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	105	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	106	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	107	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L19	1	LDF7-50A(1-5/8")	100.50 - 102.82	1.0000	1.0000
L19	4	2" Rigid Conduit	100.50 - 102.82	1.0000	1.0000
L19	7	HB158-21U6M48-30F(1-5/8)	100.50 - 102.82	1.0000	1.0000
L19	13	561(1-5/8")	100.50 - 102.82	1.0000	1.0000
L19	17	CU12PSM9P6XXX(1-1/2)	100.50 - 102.82	1.0000	1.0000
L19	93	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	94	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	95	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	105	CCI 6" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	106	CCI 6" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	107	CCI 6" x 1" Plate	100.60 - 102.82	1.0000	1.0000
L20	1	LDF7-50A(1-5/8")	100.25 - 100.50	1.0000	1.0000
L20	4	2" Rigid Conduit	100.25 - 100.50	1.0000	1.0000
L20	7	HB158-21U6M48-30F(1-5/8)	100.25 - 100.50	1.0000	1.0000
L20	13	561(1-5/8")	100.25 - 100.50	1.0000	1.0000
L20	17	CU12PSM9P6XXX(1-1/2)	100.25 - 100.50	1.0000	1.0000
L20	79	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	80	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	81	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	93	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	94	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	95	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	105	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	106	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L21	1	LDF7-50A(1-5/8")	98.50 - 100.25	1.0000	1.0000
L21	4	2" Rigid Conduit	98.50 - 100.25	1.0000	1.0000
L21	7	HB158-21U6M48-30F(1-5/8)	98.50 - 100.25	1.0000	1.0000
L21	13	561(1-5/8")	98.50 - 100.25	1.0000	1.0000
L21	17	CU12PSM9P6XXX(1-1/2)	98.50 - 100.25	1.0000	1.0000
L21	79	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	80	CCI 6" x 1" Plate	98.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			100.25		
L21	81	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	93	CCI 4.5" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	94	CCI 4.5" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	95	CCI 4.5" x 1" Plate	99.00 - 100.25	1.0000	1.0000
L21	105	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	106	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L22	1	LDF7-50A(1-5/8")	98.25 - 98.50	1.0000	1.0000
L22	4	2" Rigid Conduit	98.25 - 98.50	1.0000	1.0000
L22	7	HB158-21U6M48-30F(1-5/8)	98.25 - 98.50	1.0000	1.0000
L22	13	561(1-5/8")	98.25 - 98.50	1.0000	1.0000
L22	17	CU12PSM9P6XXX(1-1/2)	98.25 - 98.50	1.0000	1.0000
L22	79	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	80	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	81	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	93	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	94	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	105	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	106	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L23	1	LDF7-50A(1-5/8")	93.25 - 98.25	1.0000	1.0000
L23	4	2" Rigid Conduit	93.25 - 98.25	1.0000	1.0000
L23	7	HB158-21U6M48-30F(1-5/8)	93.25 - 98.25	1.0000	1.0000
L23	13	561(1-5/8")	93.25 - 98.25	1.0000	1.0000
L23	17	CU12PSM9P6XXX(1-1/2)	93.25 - 98.25	1.0000	1.0000
L23	79	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	80	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	81	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	93	CCI 4.5" x 1" Plate	97.00 - 98.25	1.0000	1.0000
L23	94	CCI 4.5" x 1" Plate	97.00 - 98.25	1.0000	1.0000
L23	105	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	106	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L24	1	LDF7-50A(1-5/8")	90.50 - 93.25	1.0000	1.0000
L24	4	2" Rigid Conduit	90.50 - 93.25	1.0000	1.0000
L24	7	HB158-21U6M48-30F(1-5/8)	90.50 - 93.25	1.0000	1.0000
L24	13	561(1-5/8")	90.50 - 93.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	17	CU12PSM9P6XXX(1-1/2)	90.50 - 93.25	1.0000	1.0000
L24	79	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	80	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	81	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	105	CCI 6" x 1" Plate	90.60 - 93.25	1.0000	1.0000
L24	106	CCI 6" x 1" Plate	90.60 - 93.25	1.0000	1.0000
L25	1	LDF7-50A(1-5/8")	90.25 - 90.50	1.0000	1.0000
L25	4	2" Rigid Conduit	90.25 - 90.50	1.0000	1.0000
L25	7	HB158-21U6M48-30F(1-5/8)	90.25 - 90.50	1.0000	1.0000
L25	13	561(1-5/8")	90.25 - 90.50	1.0000	1.0000
L25	17	CU12PSM9P6XXX(1-1/2)	90.25 - 90.50	1.0000	1.0000
L25	79	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	80	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	81	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	103	CCI 8.5" x 1.25" Plate	90.25 - 90.50	1.0000	1.0000
L25	104	CCI 8.5" x 1.25" Plate	90.25 - 90.50	1.0000	1.0000
L26	1	LDF7-50A(1-5/8")	85.25 - 90.25	1.0000	1.0000
L26	4	2" Rigid Conduit	85.25 - 90.25	1.0000	1.0000
L26	7	HB158-21U6M48-30F(1-5/8)	85.25 - 90.25	1.0000	1.0000
L26	13	561(1-5/8")	85.25 - 90.25	1.0000	1.0000
L26	17	CU12PSM9P6XXX(1-1/2)	85.25 - 90.25	1.0000	1.0000
L26	79	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	80	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	81	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	89	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	90	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	91	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	103	CCI 8.5" x 1.25" Plate	85.25 - 90.25	1.0000	1.0000
L26	104	CCI 8.5" x 1.25" Plate	85.25 - 90.25	1.0000	1.0000
L27	1	LDF7-50A(1-5/8")	83.50 - 85.25	1.0000	1.0000
L27	4	2" Rigid Conduit	83.50 - 85.25	1.0000	1.0000
L27	7	HB158-21U6M48-30F(1-5/8)	83.50 - 85.25	1.0000	1.0000
L27	13	561(1-5/8")	83.50 - 85.25	1.0000	1.0000
L27	17	CU12PSM9P6XXX(1-1/2)	83.50 - 85.25	1.0000	1.0000
L27	79	CCI 6" x 1" Plate	83.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	80	CCI 6" x 1" Plate	83.50 - 85.25	1.0000	1.0000
L27	81	CCI 6" x 1" Plate	83.50 - 85.25	1.0000	1.0000
L27	89	CCI 6.5" x 1.25" Plate	83.50 - 85.25	1.0000	1.0000
L27	90	CCI 6.5" x 1.25" Plate	83.50 - 85.25	1.0000	1.0000
L27	91	CCI 6.5" x 1.25" Plate	83.50 - 85.25	1.0000	1.0000
L27	99	CCI 8.5" x 1.25" Plate	83.50 - 85.00	1.0000	1.0000
L27	103	CCI 8.5" x 1.25" Plate	83.50 - 85.25	1.0000	1.0000
L27	104	CCI 8.5" x 1.25" Plate	83.50 - 85.25	1.0000	1.0000
L28	1	LDF7-50A(1-5/8")	83.25 - 83.50	1.0000	1.0000
L28	4	2" Rigid Conduit	83.25 - 83.50	1.0000	1.0000
L28	7	HB158-21U6M48-30F(1-5/8)	83.25 - 83.50	1.0000	1.0000
L28	13	561(1-5/8")	83.25 - 83.50	1.0000	1.0000
L28	17	CU12PSM9P6XXX(1-1/2)	83.25 - 83.50	1.0000	1.0000
L28	79	CCI 6" x 1" Plate	83.25 - 83.50	1.0000	1.0000
L28	80	CCI 6" x 1" Plate	83.25 - 83.50	1.0000	1.0000
L28	81	CCI 6" x 1" Plate	83.25 - 83.50	1.0000	1.0000
L28	89	CCI 6.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L28	90	CCI 6.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L28	91	CCI 6.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L28	99	CCI 8.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L28	103	CCI 8.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L28	104	CCI 8.5" x 1.25" Plate	83.25 - 83.50	1.0000	1.0000
L29	1	LDF7-50A(1-5/8")	80.75 - 83.25	1.0000	1.0000
L29	4	2" Rigid Conduit	80.75 - 83.25	1.0000	1.0000
L29	7	HB158-21U6M48-30F(1-5/8)	80.75 - 83.25	1.0000	1.0000
L29	13	561(1-5/8")	80.75 - 83.25	1.0000	1.0000
L29	17	CU12PSM9P6XXX(1-1/2)	80.75 - 83.25	1.0000	1.0000
L29	79	CCI 6" x 1" Plate	80.75 - 83.25	1.0000	1.0000
L29	80	CCI 6" x 1" Plate	80.75 - 83.25	1.0000	1.0000
L29	81	CCI 6" x 1" Plate	80.75 - 83.25	1.0000	1.0000
L29	89	CCI 6.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L29	90	CCI 6.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L29	91	CCI 6.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L29	99	CCI 8.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	103	CCI 8.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L29	104	CCI 8.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L30	1	LDF7-50A(1-5/8")	80.50 - 80.75	1.0000	1.0000
L30	4	2" Rigid Conduit	80.50 - 80.75	1.0000	1.0000
L30	7	HB158-21U6M48-30F(1-5/8)	80.50 - 80.75	1.0000	1.0000
L30	13	561(1-5/8")	80.50 - 80.75	1.0000	1.0000
L30	17	CU12PSM9P6XXX(1-1/2)	80.50 - 80.75	1.0000	1.0000
L30	79	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	80	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	81	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	89	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	90	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	91	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	99	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	103	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	104	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L31	1	LDF7-50A(1-5/8")	80.25 - 80.50	1.0000	1.0000
L31	4	2" Rigid Conduit	80.25 - 80.50	1.0000	1.0000
L31	7	HB158-21U6M48-30F(1-5/8)	80.25 - 80.50	1.0000	1.0000
L31	13	561(1-5/8")	80.25 - 80.50	1.0000	1.0000
L31	17	CU12PSM9P6XXX(1-1/2)	80.25 - 80.50	1.0000	1.0000
L31	79	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	80	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	81	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	89	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	90	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	91	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	99	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	103	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	104	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L32	1	LDF7-50A(1-5/8")	77.50 - 80.25	1.0000	1.0000
L32	4	2" Rigid Conduit	77.50 - 80.25	1.0000	1.0000
L32	7	HB158-21U6M48-30F(1-5/8)	77.50 - 80.25	1.0000	1.0000
L32	13	561(1-5/8")	77.50 - 80.25	1.0000	1.0000
L32	17	CU12PSM9P6XXX(1-1/2)	77.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	79	CCI 6" x 1" Plate	77.50 - 80.25	1.0000	1.0000
L32	80	CCI 6" x 1" Plate	77.50 - 80.25	1.0000	1.0000
L32	81	CCI 6" x 1" Plate	77.50 - 80.25	1.0000	1.0000
L32	89	CCI 6.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L32	90	CCI 6.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L32	91	CCI 6.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L32	99	CCI 8.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L32	103	CCI 8.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L32	104	CCI 8.5" x 1.25" Plate	77.50 - 80.25	1.0000	1.0000
L33	1	LDF7-50A(1-5/8")	77.25 - 77.50	1.0000	1.0000
L33	4	2" Rigid Conduit	77.25 - 77.50	1.0000	1.0000
L33	7	HB158-21U6M48-30F(1-5/8)	77.25 - 77.50	1.0000	1.0000
L33	13	561(1-5/8")	77.25 - 77.50	1.0000	1.0000
L33	17	CU12PSM9P6XXX(1-1/2)	77.25 - 77.50	1.0000	1.0000
L33	79	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	80	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	81	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	89	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	90	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	91	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	99	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	103	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	104	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L34	1	LDF7-50A(1-5/8")	68.82 - 77.25	1.0000	1.0000
L34	4	2" Rigid Conduit	68.82 - 77.25	1.0000	1.0000
L34	7	HB158-21U6M48-30F(1-5/8)	68.82 - 77.25	1.0000	1.0000
L34	13	561(1-5/8")	68.82 - 77.25	1.0000	1.0000
L34	17	CU12PSM9P6XXX(1-1/2)	68.82 - 77.25	1.0000	1.0000
L34	79	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	80	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	81	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	89	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000
L34	90	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000
L34	91	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	99	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L34	103	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L34	104	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L35	1	LDF7-50A(1-5/8")	68.29 - 68.82	1.0000	1.0000
L35	4	2" Rigid Conduit	68.29 - 68.82	1.0000	1.0000
L35	7	HB158-21U6M48-30F(1-5/8)	68.29 - 68.82	1.0000	1.0000
L35	13	561(1-5/8")	68.29 - 68.82	1.0000	1.0000
L35	17	CU12PSM9P6XXX(1-1/2)	68.29 - 68.82	1.0000	1.0000
L35	79	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	80	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	81	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	99	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L35	103	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L35	104	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L36	1	LDF7-50A(1-5/8")	64.25 - 68.29	1.0000	1.0000
L36	4	2" Rigid Conduit	64.25 - 68.29	1.0000	1.0000
L36	7	HB158-21U6M48-30F(1-5/8)	64.25 - 68.29	1.0000	1.0000
L36	13	561(1-5/8")	64.25 - 68.29	1.0000	1.0000
L36	17	CU12PSM9P6XXX(1-1/2)	64.25 - 68.29	1.0000	1.0000
L36	79	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	80	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	81	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	86	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	87	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	88	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	99	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L36	103	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L36	104	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L37	1	LDF7-50A(1-5/8")	64.00 - 64.25	1.0000	1.0000
L37	4	2" Rigid Conduit	64.00 - 64.25	1.0000	1.0000
L37	7	HB158-21U6M48-30F(1-5/8)	64.00 - 64.25	1.0000	1.0000
L37	13	561(1-5/8")	64.00 - 64.25	1.0000	1.0000
L37	17	CU12PSM9P6XXX(1-1/2)	64.00 - 64.25	1.0000	1.0000
L37	79	CCI 6" x 1" Plate	64.00 - 64.25	1.0000	1.0000
L37	80	CCI 6" x 1" Plate	64.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L37	81	CCI 6" x 1" Plate	64.25 64.00 - 64.25	1.0000	1.0000
L37	86	CCI 6.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L37	87	CCI 6.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L37	88	CCI 6.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L37	99	CCI 8.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L37	103	CCI 8.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L37	104	CCI 8.5" x 1.25" Plate	64.00 - 64.25	1.0000	1.0000
L38	1	LDF7-50A(1-5/8")	60.50 - 64.00	1.0000	1.0000
L38	4	2" Rigid Conduit	60.50 - 64.00	1.0000	1.0000
L38	7	HB158-21U6M48-30F(1-5/8)	60.50 - 64.00	1.0000	1.0000
L38	13	561(1-5/8")	60.50 - 64.00	1.0000	1.0000
L38	17	CU12PSM9P6XXX(1-1/2)	60.50 - 64.00	1.0000	1.0000
L38	69	MP3-04	60.50 - 61.50	1.0000	1.0000
L38	79	CCI 6" x 1" Plate	60.50 - 64.00	1.0000	1.0000
L38	80	CCI 6" x 1" Plate	60.50 - 64.00	1.0000	1.0000
L38	81	CCI 6" x 1" Plate	60.50 - 64.00	1.0000	1.0000
L38	86	CCI 6.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L38	87	CCI 6.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L38	88	CCI 6.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L38	99	CCI 8.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L38	103	CCI 8.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L38	104	CCI 8.5" x 1.25" Plate	60.50 - 64.00	1.0000	1.0000
L39	1	LDF7-50A(1-5/8")	60.25 - 60.50	1.0000	1.0000
L39	4	2" Rigid Conduit	60.25 - 60.50	1.0000	1.0000
L39	7	HB158-21U6M48-30F(1-5/8)	60.25 - 60.50	1.0000	1.0000
L39	13	561(1-5/8")	60.25 - 60.50	1.0000	1.0000
L39	17	CU12PSM9P6XXX(1-1/2)	60.25 - 60.50	1.0000	1.0000
L39	67	MP3-04	60.25 - 60.50	1.0000	1.0000
L39	68	MP3-04	60.25 - 60.50	1.0000	1.0000
L39	69	MP3-04	60.25 - 60.50	1.0000	1.0000
L39	76	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	77	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	78	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	86	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	87	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	88	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	99	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	103	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	104	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L40	1	LDF7-50A(1-5/8")	60.08 - 60.25	1.0000	1.0000
L40	4	2" Rigid Conduit	60.08 - 60.25	1.0000	1.0000
L40	7	HB158-21U6M48-30F(1-5/8)	60.08 - 60.25	1.0000	1.0000
L40	13	561(1-5/8")	60.08 - 60.25	1.0000	1.0000
L40	17	CU12PSM9P6XXX(1-1/2)	60.08 - 60.25	1.0000	1.0000
L40	67	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	68	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	69	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	76	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	77	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	78	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	86	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	87	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	88	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	99	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	103	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	104	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L41	1	LDF7-50A(1-5/8")	59.83 - 60.08	1.0000	1.0000
L41	4	2" Rigid Conduit	59.83 - 60.08	1.0000	1.0000
L41	7	HB158-21U6M48-30F(1-5/8)	59.83 - 60.08	1.0000	1.0000
L41	13	561(1-5/8")	59.83 - 60.08	1.0000	1.0000
L41	17	CU12PSM9P6XXX(1-1/2)	59.83 - 60.08	1.0000	1.0000
L41	67	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	68	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	69	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	76	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	77	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	78	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	86	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	87	CCI 6.5" x 1.25" Plate	59.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L41	88	CCI 6.5" x 1.25" Plate	60.08 59.83 - 60.08	1.0000	1.0000
L41	99	CCI 8.5" x 1.25" Plate	60.00 - 60.08	1.0000	1.0000
L41	103	CCI 8.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	104	CCI 8.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L42	1	LDF7-50A(1-5/8")	59.08 - 59.83	1.0000	1.0000
L42	4	2" Rigid Conduit	59.08 - 59.83	1.0000	1.0000
L42	7	HB158-21U6M48-30F(1-5/8)	59.08 - 59.83	1.0000	1.0000
L42	13	561(1-5/8")	59.08 - 59.83	1.0000	1.0000
L42	17	CU12PSM9P6XXX(1-1/2)	59.08 - 59.83	1.0000	1.0000
L42	67	MP3-04	59.08 - 59.83	1.0000	1.0000
L42	68	MP3-04	59.08 - 59.83	1.0000	1.0000
L42	69	MP3-04	59.08 - 59.83	1.0000	1.0000
L42	76	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	77	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	78	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	86	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	87	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	88	CCI 6.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	103	CCI 8.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L42	104	CCI 8.5" x 1.25" Plate	59.08 - 59.83	1.0000	1.0000
L43	1	LDF7-50A(1-5/8")	58.83 - 59.08	1.0000	1.0000
L43	4	2" Rigid Conduit	58.83 - 59.08	1.0000	1.0000
L43	7	HB158-21U6M48-30F(1-5/8)	58.83 - 59.08	1.0000	1.0000
L43	13	561(1-5/8")	58.83 - 59.08	1.0000	1.0000
L43	17	CU12PSM9P6XXX(1-1/2)	58.83 - 59.08	1.0000	1.0000
L43	67	MP3-04	58.83 - 59.08	1.0000	1.0000
L43	68	MP3-04	58.83 - 59.08	1.0000	1.0000
L43	69	MP3-04	58.83 - 59.08	1.0000	1.0000
L43	76	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	77	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	78	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	86	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	87	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	88	CCI 6.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L43	103	CCI 8.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	104	CCI 8.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L44	1	LDF7-50A(1-5/8")	55.42 - 58.83	1.0000	1.0000
L44	4	2" Rigid Conduit	55.42 - 58.83	1.0000	1.0000
L44	7	HB158-21U6M48-30F(1-5/8)	55.42 - 58.83	1.0000	1.0000
L44	13	561(1-5/8")	55.42 - 58.83	1.0000	1.0000
L44	17	CU12PSM9P6XXX(1-1/2)	55.42 - 58.83	1.0000	1.0000
L44	67	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	68	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	69	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	76	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	77	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	78	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	86	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	87	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	88	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	103	CCI 8.5" x 1.25" Plate	55.50 - 58.83	1.0000	1.0000
L44	104	CCI 8.5" x 1.25" Plate	55.50 - 58.83	1.0000	1.0000
L45	1	LDF7-50A(1-5/8")	55.17 - 55.42	1.0000	1.0000
L45	4	2" Rigid Conduit	55.17 - 55.42	1.0000	1.0000
L45	7	HB158-21U6M48-30F(1-5/8)	55.17 - 55.42	1.0000	1.0000
L45	13	561(1-5/8")	55.17 - 55.42	1.0000	1.0000
L45	17	CU12PSM9P6XXX(1-1/2)	55.17 - 55.42	1.0000	1.0000
L45	67	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	68	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	69	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	76	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	77	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	78	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	86	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	87	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	88	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	101	CCI 8.5" x 1.25" Plate	55.17 - 55.40	1.0000	1.0000
L45	102	CCI 8.5" x 1.25" Plate	55.17 - 55.40	1.0000	1.0000
L46	1	LDF7-50A(1-5/8")	54.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L46	4	2" Rigid Conduit	55.17 54.75 - 55.17	1.0000	1.0000
L46	7	HB158-21U6M48-30F(1-5/8)	54.75 - 55.17	1.0000	1.0000
L46	13	561(1-5/8")	54.75 - 55.17	1.0000	1.0000
L46	17	CU12PSM9P6XXX(1-1/2)	54.75 - 55.17	1.0000	1.0000
L46	67	MP3-04	54.75 - 55.17	1.0000	1.0000
L46	68	MP3-04	54.75 - 55.17	1.0000	1.0000
L46	69	MP3-04	54.75 - 55.17	1.0000	1.0000
L46	76	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	77	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	78	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	86	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	87	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	88	CCI 6.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	101	CCI 8.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L46	102	CCI 8.5" x 1.25" Plate	54.75 - 55.17	1.0000	1.0000
L47	1	LDF7-50A(1-5/8")	54.50 - 54.75	1.0000	1.0000
L47	4	2" Rigid Conduit	54.50 - 54.75	1.0000	1.0000
L47	7	HB158-21U6M48-30F(1-5/8)	54.50 - 54.75	1.0000	1.0000
L47	13	561(1-5/8")	54.50 - 54.75	1.0000	1.0000
L47	17	CU12PSM9P6XXX(1-1/2)	54.50 - 54.75	1.0000	1.0000
L47	67	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	68	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	69	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	76	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	77	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	78	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	86	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	87	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	88	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	101	CCI 8.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	102	CCI 8.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L48	1	LDF7-50A(1-5/8")	49.50 - 54.50	1.0000	1.0000
L48	4	2" Rigid Conduit	49.50 - 54.50	1.0000	1.0000
L48	7	HB158-21U6M48-30F(1-5/8)	49.50 - 54.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	13	561(1-5/8")	49.50 - 54.50	1.0000	1.0000
L48	17	CU12PSM9P6XXX(1-1/2)	49.50 - 54.50	1.0000	1.0000
L48	67	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	68	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	69	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	76	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	77	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	78	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	86	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	87	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	88	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	101	CCI 8.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	102	CCI 8.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L49	1	LDF7-50A(1-5/8")	44.50 - 49.50	1.0000	1.0000
L49	4	2" Rigid Conduit	44.50 - 49.50	1.0000	1.0000
L49	7	HB158-21U6M48-30F(1-5/8)	44.50 - 49.50	1.0000	1.0000
L49	13	561(1-5/8")	44.50 - 49.50	1.0000	1.0000
L49	17	CU12PSM9P6XXX(1-1/2)	44.50 - 49.50	1.0000	1.0000
L49	67	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	68	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	69	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	76	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	77	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	78	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	98	CCI 8.5" x 1.25" Plate	44.50 - 45.50	1.0000	1.0000
L49	101	CCI 8.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	102	CCI 8.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L50	1	LDF7-50A(1-5/8")	41.25 - 44.50	1.0000	1.0000
L50	4	2" Rigid Conduit	41.25 - 44.50	1.0000	1.0000
L50	7	HB158-21U6M48-30F(1-5/8)	41.25 - 44.50	1.0000	1.0000
L50	13	561(1-5/8")	41.25 - 44.50	1.0000	1.0000
L50	17	CU12PSM9P6XXX(1-1/2)	41.25 - 44.50	1.0000	1.0000
L50	67	MP3-04	41.25 - 44.50	1.0000	1.0000
L50	68	MP3-04	41.25 - 44.50	1.0000	1.0000
L50	69	MP3-04	41.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L50	76	CCI 6.5" x 1.25" Plate	44.50 41.25 - 44.50	1.0000	1.0000
L50	77	CCI 6.5" x 1.25" Plate	41.25 - 44.50	1.0000	1.0000
L50	78	CCI 6.5" x 1.25" Plate	41.25 - 44.50	1.0000	1.0000
L50	98	CCI 8.5" x 1.25" Plate	41.25 - 44.50	1.0000	1.0000
L50	101	CCI 8.5" x 1.25" Plate	41.25 - 44.50	1.0000	1.0000
L50	102	CCI 8.5" x 1.25" Plate	41.25 - 44.50	1.0000	1.0000
L51	1	LDF7-50A(1-5/8")	41.00 - 41.25	1.0000	1.0000
L51	4	2" Rigid Conduit	41.00 - 41.25	1.0000	1.0000
L51	7	HB158-21U6M48-30F(1-5/8)	41.00 - 41.25	1.0000	1.0000
L51	13	561(1-5/8")	41.00 - 41.25	1.0000	1.0000
L51	17	CU12PSM9P6XXX(1-1/2)	41.00 - 41.25	1.0000	1.0000
L51	67	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	68	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	69	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	76	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	77	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	78	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	98	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	101	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	102	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L52	1	LDF7-50A(1-5/8")	34.29 - 41.00	1.0000	1.0000
L52	4	2" Rigid Conduit	34.29 - 41.00	1.0000	1.0000
L52	7	HB158-21U6M48-30F(1-5/8)	34.29 - 41.00	1.0000	1.0000
L52	13	561(1-5/8")	34.29 - 41.00	1.0000	1.0000
L52	17	CU12PSM9P6XXX(1-1/2)	34.29 - 41.00	1.0000	1.0000
L52	67	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	68	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	69	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	76	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	77	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	78	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	83	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000
L52	84	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000
L52	85	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L52	98	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	101	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	102	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L53	1	LDF7-50A(1-5/8")	33.29 - 34.29	1.0000	1.0000
L53	4	2" Rigid Conduit	33.29 - 34.29	1.0000	1.0000
L53	7	HB158-21U6M48-30F(1-5/8)	33.29 - 34.29	1.0000	1.0000
L53	13	561(1-5/8")	33.29 - 34.29	1.0000	1.0000
L53	17	CU12PSM9P6XXX(1-1/2)	33.29 - 34.29	1.0000	1.0000
L53	67	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	68	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	69	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	76	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	77	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	78	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	83	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	84	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	85	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	98	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	101	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	102	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L54	1	LDF7-50A(1-5/8")	31.50 - 33.29	1.0000	1.0000
L54	4	2" Rigid Conduit	31.50 - 33.29	1.0000	1.0000
L54	7	HB158-21U6M48-30F(1-5/8)	31.50 - 33.29	1.0000	1.0000
L54	13	561(1-5/8")	31.50 - 33.29	1.0000	1.0000
L54	17	CU12PSM9P6XXX(1-1/2)	31.50 - 33.29	1.0000	1.0000
L54	67	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	68	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	69	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	76	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	77	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	78	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	83	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	84	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	85	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	98	CCI 8.5" x 1.25" Plate	31.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L54	101	CCI 8.5" x 1.25" Plate	33.29 31.50 -	1.0000	1.0000
L54	102	CCI 8.5" x 1.25" Plate	33.29 31.50 -	1.0000	1.0000
L55	1	LDF7-50A(1-5/8")	33.29 31.25 -	1.0000	1.0000
L55	4	2" Rigid Conduit	31.50 31.25 -	1.0000	1.0000
L55	7	HB158-21U6M48-30F(1-5/8)	31.50 31.25 -	1.0000	1.0000
L55	13	561(1-5/8")	31.50 31.25 -	1.0000	1.0000
L55	17	CU12PSM9P6XXX(1-1/2)	31.50 31.25 -	1.0000	1.0000
L55	64	MP3-05	31.50 31.25 -	1.0000	1.0000
L55	67	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	68	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	69	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	76	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	77	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	78	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	83	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	84	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	85	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	98	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	101	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	102	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L56	1	LDF7-50A(1-5/8")	31.50 30.50 -	1.0000	1.0000
L56	4	2" Rigid Conduit	31.25 30.50 -	1.0000	1.0000
L56	7	HB158-21U6M48-30F(1-5/8)	31.25 30.50 -	1.0000	1.0000
L56	13	561(1-5/8")	31.25 30.50 -	1.0000	1.0000
L56	17	CU12PSM9P6XXX(1-1/2)	31.25 30.50 -	1.0000	1.0000
L56	64	MP3-05	31.25 30.50 -	1.0000	1.0000
L56	67	MP3-04	31.25 30.50 -	1.0000	1.0000
L56	68	MP3-04	31.25 30.50 -	1.0000	1.0000
L56	69	MP3-04	31.25 31.00 -	1.0000	1.0000
L56	76	CCI 6.5" x 1.25" Plate	31.25 30.50 -	1.0000	1.0000
L56	77	CCI 6.5" x 1.25" Plate	31.25 30.50 -	1.0000	1.0000
L56	78	CCI 6.5" x 1.25" Plate	31.25 30.50 -	1.0000	1.0000
L56	83	CCI 6.5" x 1.25" Plate	31.25 30.50 -	1.0000	1.0000
L56	84	CCI 6.5" x 1.25" Plate	31.25 30.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L56	85	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	98	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	101	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	102	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L57	1	LDF7-50A(1-5/8")	30.25 - 30.50	1.0000	1.0000
L57	4	2" Rigid Conduit	30.25 - 30.50	1.0000	1.0000
L57	7	HB158-21U6M48-30F(1-5/8)	30.25 - 30.50	1.0000	1.0000
L57	13	561(1-5/8")	30.25 - 30.50	1.0000	1.0000
L57	17	CU12PSM9P6XXX(1-1/2)	30.25 - 30.50	1.0000	1.0000
L57	64	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	65	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	66	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	73	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	74	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	75	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	83	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	84	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	85	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	98	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	101	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	102	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L58	1	LDF7-50A(1-5/8")	25.75 - 30.25	1.0000	1.0000
L58	4	2" Rigid Conduit	25.75 - 30.25	1.0000	1.0000
L58	7	HB158-21U6M48-30F(1-5/8)	25.75 - 30.25	1.0000	1.0000
L58	13	561(1-5/8")	25.75 - 30.25	1.0000	1.0000
L58	17	CU12PSM9P6XXX(1-1/2)	25.75 - 30.25	1.0000	1.0000
L58	64	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	65	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	66	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	73	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	74	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	75	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	83	CCI 6.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	84	CCI 6.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	85	CCI 6.5" x 1.25" Plate	25.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L58	98	CCI 8.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	101	CCI 8.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	102	CCI 8.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	114	CCI 1.25" x 5.875" Plate	25.75 - 28.50	1.0000	1.0000
L58	115	CCI 1.25" x 5.875" Plate	25.75 - 28.50	1.0000	1.0000
L58	116	CCI 1.25" x 5.875" Plate	25.75 - 28.50	1.0000	1.0000
L59	1	LDF7-50A(1-5/8")	25.50 - 25.75	1.0000	1.0000
L59	4	2" Rigid Conduit	25.50 - 25.75	1.0000	1.0000
L59	7	HB158-21U6M48-30F(1-5/8)	25.50 - 25.75	1.0000	1.0000
L59	13	561(1-5/8")	25.50 - 25.75	1.0000	1.0000
L59	17	CU12PSM9P6XXX(1-1/2)	25.50 - 25.75	1.0000	1.0000
L59	64	MP3-05	25.50 - 25.75	1.0000	1.0000
L59	65	MP3-05	25.50 - 25.75	1.0000	1.0000
L59	66	MP3-05	25.50 - 25.75	1.0000	1.0000
L59	73	CCI 6" x 1" Plate	25.50 - 25.75	1.0000	1.0000
L59	74	CCI 6" x 1" Plate	25.50 - 25.75	1.0000	1.0000
L59	75	CCI 6" x 1" Plate	25.50 - 25.75	1.0000	1.0000
L59	83	CCI 6.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	84	CCI 6.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	85	CCI 6.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	98	CCI 8.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	101	CCI 8.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	102	CCI 8.5" x 1.25" Plate	25.50 - 25.75	1.0000	1.0000
L59	114	CCI 1.25" x 5.875" Plate	25.50 - 25.75	1.0000	1.0000
L59	115	CCI 1.25" x 5.875" Plate	25.50 - 25.75	1.0000	1.0000
L59	116	CCI 1.25" x 5.875" Plate	25.50 - 25.75	1.0000	1.0000
L60	1	LDF7-50A(1-5/8")	24.67 - 25.50	1.0000	1.0000
L60	4	2" Rigid Conduit	24.67 - 25.50	1.0000	1.0000
L60	7	HB158-21U6M48-30F(1-5/8)	24.67 - 25.50	1.0000	1.0000
L60	13	561(1-5/8")	24.67 - 25.50	1.0000	1.0000
L60	17	CU12PSM9P6XXX(1-1/2)	24.67 - 25.50	1.0000	1.0000
L60	64	MP3-05	24.67 - 25.50	1.0000	1.0000
L60	65	MP3-05	24.67 - 25.50	1.0000	1.0000
L60	66	MP3-05	24.67 - 25.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L60	73	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	74	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	75	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	83	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	84	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	85	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	98	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	101	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	102	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	109	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	110	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	111	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	112	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L61	1	LDF7-50A(1-5/8")	24.42 - 24.67	1.0000	1.0000
L61	4	2" Rigid Conduit	24.42 - 24.67	1.0000	1.0000
L61	7	HB158-21U6M48-30F(1-5/8)	24.42 - 24.67	1.0000	1.0000
L61	13	561(1-5/8")	24.42 - 24.67	1.0000	1.0000
L61	17	CU12PSM9P6XXX(1-1/2)	24.42 - 24.67	1.0000	1.0000
L61	64	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	65	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	66	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	73	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	74	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	75	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	83	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	84	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	85	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	98	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	101	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	102	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	109	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	110	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	111	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	112	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L62	1	LDF7-50A(1-5/8")	24.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L62	4	2" Rigid Conduit	24.42 24.00 - 24.42	1.0000	1.0000
L62	7	HB158-21U6M48-30F(1-5/8)	24.00 - 24.42	1.0000	1.0000
L62	13	561(1-5/8")	24.00 - 24.42	1.0000	1.0000
L62	17	CU12PSM9P6XXX(1-1/2)	24.00 - 24.42	1.0000	1.0000
L62	64	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	65	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	66	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	73	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	74	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	75	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	83	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	84	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	85	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	98	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	101	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	102	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	109	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	110	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	111	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	112	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L63	1	LDF7-50A(1-5/8")	23.75 - 24.00	1.0000	1.0000
L63	4	2" Rigid Conduit	23.75 - 24.00	1.0000	1.0000
L63	7	HB158-21U6M48-30F(1-5/8)	23.75 - 24.00	1.0000	1.0000
L63	13	561(1-5/8")	23.75 - 24.00	1.0000	1.0000
L63	17	CU12PSM9P6XXX(1-1/2)	23.75 - 24.00	1.0000	1.0000
L63	64	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	65	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	66	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	73	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	74	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	75	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	83	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	84	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	85	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L63	98	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	101	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	102	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	109	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	110	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	111	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	112	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L64	1	LDF7-50A(1-5/8")	18.75 - 23.75	1.0000	1.0000
L64	4	2" Rigid Conduit	18.75 - 23.75	1.0000	1.0000
L64	7	HB158-21U6M48-30F(1-5/8)	18.75 - 23.75	1.0000	1.0000
L64	13	561(1-5/8")	18.75 - 23.75	1.0000	1.0000
L64	17	CU12PSM9P6XXX(1-1/2)	18.75 - 23.75	1.0000	1.0000
L64	64	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	65	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	66	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	73	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	74	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	75	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	83	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	84	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	85	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	98	CCI 8.5" x 1.25" Plate	18.75 - 23.75	1.0000	1.0000
L64	101	CCI 8.5" x 1.25" Plate	20.40 - 23.75	1.0000	1.0000
L64	102	CCI 8.5" x 1.25" Plate	20.40 - 23.75	1.0000	1.0000
L64	109	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	110	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	111	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	112	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L65	1	LDF7-50A(1-5/8")	14.08 - 18.75	1.0000	1.0000
L65	4	2" Rigid Conduit	14.08 - 18.75	1.0000	1.0000
L65	7	HB158-21U6M48-30F(1-5/8)	14.08 - 18.75	1.0000	1.0000
L65	13	561(1-5/8")	14.08 - 18.75	1.0000	1.0000
L65	17	CU12PSM9P6XXX(1-1/2)	14.08 - 18.75	1.0000	1.0000
L65	64	MP3-05	14.08 - 18.75	1.0000	1.0000
L65	65	MP3-05	14.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L65	66	MP3-05	18.75 14.08 -	1.0000	1.0000
L65	70	MP3-04	18.75 14.08 -	1.0000	1.0000
L65	71	MP3-04	15.50 14.08 -	1.0000	1.0000
L65	73	CCI 6" x 1" Plate	15.50 14.08 -	1.0000	1.0000
L65	74	CCI 6" x 1" Plate	18.75 14.08 -	1.0000	1.0000
L65	75	CCI 6" x 1" Plate	18.75 14.08 -	1.0000	1.0000
L65	98	CCI 8.5" x 1.25" Plate	18.75 14.08 -	1.0000	1.0000
L65	109	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	110	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	111	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	112	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L66	1	LDF7-50A(1-5/8")	18.75 13.82 -	1.0000	1.0000
L66	4	2" Rigid Conduit	14.08 13.82 -	1.0000	1.0000
L66	7	HB158-21U6M48-30F(1-5/8)	14.08 13.82 -	1.0000	1.0000
L66	13	561(1-5/8")	14.08 13.82 -	1.0000	1.0000
L66	17	CU12PSM9P6XXX(1-1/2)	14.08 13.82 -	1.0000	1.0000
L66	64	MP3-05	14.08 13.82 -	1.0000	1.0000
L66	65	MP3-05	14.08 13.82 -	1.0000	1.0000
L66	66	MP3-05	14.08 13.82 -	1.0000	1.0000
L66	70	MP3-04	14.08 13.82 -	1.0000	1.0000
L66	71	MP3-04	14.08 13.82 -	1.0000	1.0000
L66	73	CCI 6" x 1" Plate	14.08 13.82 -	1.0000	1.0000
L66	74	CCI 6" x 1" Plate	14.08 13.82 -	1.0000	1.0000
L66	75	CCI 6" x 1" Plate	14.08 13.82 -	1.0000	1.0000
L66	98	CCI 8.5" x 1.25" Plate	14.08 13.82 -	1.0000	1.0000
L66	109	CCI 1.25" x 5.875" Plate	14.08 13.82 -	1.0000	1.0000
L66	110	CCI 1.25" x 5.875" Plate	14.08 13.82 -	1.0000	1.0000
L66	111	CCI 1.25" x 5.875" Plate	14.08 13.82 -	1.0000	1.0000
L66	112	CCI 1.25" x 5.875" Plate	14.08 13.82 -	1.0000	1.0000
L67	1	LDF7-50A(1-5/8")	14.08 13.67 -	1.0000	1.0000
L67	4	2" Rigid Conduit	13.82 13.67 -	1.0000	1.0000
L67	7	HB158-21U6M48-30F(1-5/8)	13.82 13.67 -	1.0000	1.0000
L67	13	561(1-5/8")	13.82 13.67 -	1.0000	1.0000
L67	17	CU12PSM9P6XXX(1-1/2)	13.82 13.67 -	1.0000	1.0000
			13.82		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L67	64	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	65	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	66	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	70	MP3-04	13.67 - 13.82	1.0000	1.0000
L67	71	MP3-04	13.67 - 13.82	1.0000	1.0000
L67	73	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	74	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	75	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	98	CCI 8.5" x 1.25" Plate	13.67 - 13.82	1.0000	1.0000
L67	109	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	110	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	111	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	112	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L68	1	LDF7-50A(1-5/8")	10.50 - 13.67	1.0000	1.0000
L68	4	2" Rigid Conduit	10.50 - 13.67	1.0000	1.0000
L68	7	HB158-21U6M48-30F(1-5/8)	10.50 - 13.67	1.0000	1.0000
L68	13	561(1-5/8")	10.50 - 13.67	1.0000	1.0000
L68	17	CU12PSM9P6XXX(1-1/2)	10.50 - 13.67	1.0000	1.0000
L68	64	MP3-05	11.50 - 13.67	1.0000	1.0000
L68	65	MP3-05	10.50 - 13.67	1.0000	1.0000
L68	66	MP3-05	10.50 - 13.67	1.0000	1.0000
L68	70	MP3-04	10.50 - 13.67	1.0000	1.0000
L68	71	MP3-04	10.50 - 13.67	1.0000	1.0000
L68	73	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	74	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	75	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	98	CCI 8.5" x 1.25" Plate	10.50 - 13.67	1.0000	1.0000
L68	109	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	110	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	111	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	112	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L69	1	LDF7-50A(1-5/8")	10.25 - 10.50	1.0000	1.0000
L69	4	2" Rigid Conduit	10.25 - 10.50	1.0000	1.0000
L69	7	HB158-21U6M48-30F(1-5/8)	10.25 - 10.50	1.0000	1.0000
L69	13	561(1-5/8")	10.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			10.50		
L69	17	CU12PSM9P6XXX(1-1/2)	10.25 - 10.50	1.0000	1.0000
L69	65	MP3-05	10.25 - 10.50	1.0000	1.0000
L69	66	MP3-05	10.25 - 10.50	1.0000	1.0000
L69	70	MP3-04	10.25 - 10.50	1.0000	1.0000
L69	71	MP3-04	10.25 - 10.50	1.0000	1.0000
L69	73	CCI 6" x 1" Plate	10.25 - 10.50	1.0000	1.0000
L69	74	CCI 6" x 1" Plate	10.25 - 10.50	1.0000	1.0000
L69	75	CCI 6" x 1" Plate	10.25 - 10.50	1.0000	1.0000
L69	97	CCI 6" x 1" Plate	10.25 - 10.50	1.0000	1.0000
L69	109	CCI 1.25" x 5.875" Plate	10.25 - 10.50	1.0000	1.0000
L69	110	CCI 1.25" x 5.875" Plate	10.25 - 10.50	1.0000	1.0000
L69	111	CCI 1.25" x 5.875" Plate	10.25 - 10.50	1.0000	1.0000
L69	112	CCI 1.25" x 5.875" Plate	10.25 - 10.50	1.0000	1.0000
L70	1	LDF7-50A(1-5/8")	5.25 - 10.25	1.0000	1.0000
L70	4	2" Rigid Conduit	5.25 - 10.25	1.0000	1.0000
L70	7	HB158-21U6M48-30F(1-5/8)	5.25 - 10.25	1.0000	1.0000
L70	13	561(1-5/8")	5.25 - 10.25	1.0000	1.0000
L70	17	CU12PSM9P6XXX(1-1/2)	5.25 - 10.25	1.0000	1.0000
L70	65	MP3-05	5.25 - 10.25	1.0000	1.0000
L70	66	MP3-05	5.25 - 10.25	1.0000	1.0000
L70	70	MP3-04	5.25 - 10.25	1.0000	1.0000
L70	71	MP3-04	5.25 - 10.25	1.0000	1.0000
L70	73	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	74	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	75	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	97	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	109	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	110	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	111	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	112	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L71	1	LDF7-50A(1-5/8")	2.90 - 5.25	1.0000	1.0000
L71	4	2" Rigid Conduit	2.90 - 5.25	1.0000	1.0000
L71	7	HB158-21U6M48-30F(1-5/8)	2.90 - 5.25	1.0000	1.0000
L71	13	561(1-5/8")	2.90 - 5.25	1.0000	1.0000
L71	17	CU12PSM9P6XXX(1-1/2)	2.90 - 5.25	1.0000	1.0000
L71	65	MP3-05	2.90 - 5.25	1.0000	1.0000
L71	66	MP3-05	2.90 - 5.25	1.0000	1.0000
L71	70	MP3-04	2.90 - 5.25	1.0000	1.0000
L71	71	MP3-04	2.90 - 5.25	1.0000	1.0000
L71	73	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	74	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	75	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	97	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	109	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	110	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	111	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	112	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L72	1	LDF7-50A(1-5/8")	2.65 - 2.90	1.0000	1.0000
L72	4	2" Rigid Conduit	2.65 - 2.90	1.0000	1.0000
L72	7	HB158-21U6M48-30F(1-5/8)	2.65 - 2.90	1.0000	1.0000
L72	13	561(1-5/8")	2.65 - 2.90	1.0000	1.0000
L72	17	CU12PSM9P6XXX(1-1/2)	2.65 - 2.90	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L72	65	MP3-05	2.65 - 2.90	1.0000	1.0000
L72	66	MP3-05	2.65 - 2.90	1.0000	1.0000
L72	70	MP3-04	2.65 - 2.90	1.0000	1.0000
L72	71	MP3-04	2.65 - 2.90	1.0000	1.0000
L72	73	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	74	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	75	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	97	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	109	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	110	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	111	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	112	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L73	1	LDF7-50A(1-5/8")	2.50 - 2.65	1.0000	1.0000
L73	4	2" Rigid Conduit	2.50 - 2.65	1.0000	1.0000
L73	7	HB158-21U6M48-30F(1-5/8)	2.50 - 2.65	1.0000	1.0000
L73	13	561(1-5/8")	2.50 - 2.65	1.0000	1.0000
L73	17	CU12PSM9P6XXX(1-1/2)	2.50 - 2.65	1.0000	1.0000
L73	65	MP3-05	2.50 - 2.65	1.0000	1.0000
L73	66	MP3-05	2.50 - 2.65	1.0000	1.0000
L73	70	MP3-04	2.50 - 2.65	1.0000	1.0000
L73	71	MP3-04	2.50 - 2.65	1.0000	1.0000
L73	73	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	74	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	75	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	97	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	109	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	110	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	111	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	112	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L74	1	LDF7-50A(1-5/8")	2.25 - 2.50	1.0000	1.0000
L74	4	2" Rigid Conduit	2.25 - 2.50	1.0000	1.0000
L74	7	HB158-21U6M48-30F(1-5/8)	2.25 - 2.50	1.0000	1.0000
L74	13	561(1-5/8")	2.25 - 2.50	1.0000	1.0000
L74	17	CU12PSM9P6XXX(1-1/2)	2.25 - 2.50	1.0000	1.0000
L74	65	MP3-05	2.25 - 2.50	1.0000	1.0000
L74	66	MP3-05	2.25 - 2.50	1.0000	1.0000
L74	70	MP3-04	2.25 - 2.50	1.0000	1.0000
L74	71	MP3-04	2.25 - 2.50	1.0000	1.0000
L74	73	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	74	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	75	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	97	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	109	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	110	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	111	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	112	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L75	1	LDF7-50A(1-5/8")	1.92 - 2.25	1.0000	1.0000
L75	4	2" Rigid Conduit	1.92 - 2.25	1.0000	1.0000
L75	7	HB158-21U6M48-30F(1-5/8)	1.92 - 2.25	1.0000	1.0000
L75	13	561(1-5/8")	1.92 - 2.25	1.0000	1.0000
L75	17	CU12PSM9P6XXX(1-1/2)	1.92 - 2.25	1.0000	1.0000
L75	65	MP3-05	1.92 - 2.25	1.0000	1.0000
L75	66	MP3-05	1.92 - 2.25	1.0000	1.0000
L75	70	MP3-04	1.92 - 2.25	1.0000	1.0000
L75	71	MP3-04	1.92 - 2.25	1.0000	1.0000
L75	73	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	74	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	75	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	97	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	109	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	110	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	111	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	112	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L76	1	LDF7-50A(1-5/8")	1.67 - 1.92	1.0000	1.0000
L76	4	2" Rigid Conduit	1.67 - 1.92	1.0000	1.0000
L76	7	HB158-21U6M48-30F(1-	1.67 - 1.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		5/8)			
L76	13	561(1-5/8")	1.67 - 1.92	1.0000	1.0000
L76	17	CU12PSM9P6XXX(1-1/2)	1.67 - 1.92	1.0000	1.0000
L76	65	MP3-05	1.67 - 1.92	1.0000	1.0000
L76	66	MP3-05	1.67 - 1.92	1.0000	1.0000
L76	70	MP3-04	1.67 - 1.92	1.0000	1.0000
L76	71	MP3-04	1.67 - 1.92	1.0000	1.0000
L76	73	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	74	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	75	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	97	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	109	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	110	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	111	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	112	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L77	1	LDF7-50A(1-5/8")	0.00 - 1.67	1.0000	1.0000
L77	4	2" Rigid Conduit	0.00 - 1.67	1.0000	1.0000
L77	7	HB158-21U6M48-30F(1-5/8)	0.00 - 1.67	1.0000	1.0000
L77	13	561(1-5/8")	0.00 - 1.67	1.0000	1.0000
L77	17	CU12PSM9P6XXX(1-1/2)	0.00 - 1.67	1.0000	1.0000
L77	65	MP3-05	0.00 - 1.67	1.0000	1.0000
L77	66	MP3-05	0.00 - 1.67	1.0000	1.0000
L77	70	MP3-04	0.00 - 1.67	1.0000	1.0000
L77	71	MP3-04	0.00 - 1.67	1.0000	1.0000
L77	73	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	74	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	75	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	97	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	109	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	110	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	111	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	112	CCI 1.25" x 5.875" Plate	0.00 - 1.67	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
L9	105	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L9	106	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L9	107	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L10	105	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L10	106	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L10	107	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L11	105	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L11	106	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L11	107	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L12	95	CCI 4.5" x 1" Plate	117.50 - 119.00	Auto	0.0000
L12	105	CCI 6" x 1" Plate	117.50 -	Auto	0.0069

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	106	CCI 6" x 1" Plate	119.83 117.50 -	Auto	0.0069
L12	107	CCI 6" x 1" Plate	119.83 117.50 -	Auto	0.0069
L13	95	CCI 4.5" x 1" Plate	119.83 117.25 -	Auto	0.0000
L13	105	CCI 6" x 1" Plate	117.50 117.25 -	Auto	0.0016
L13	106	CCI 6" x 1" Plate	117.50 117.25 -	Auto	0.0016
L13	107	CCI 6" x 1" Plate	117.50 117.25 -	Auto	0.0016
L14	93	CCI 4.5" x 1" Plate	117.50 115.50 -	Auto	0.0000
L14	94	CCI 4.5" x 1" Plate	117.00 115.50 -	Auto	0.0000
L14	95	CCI 4.5" x 1" Plate	117.00 115.50 -	Auto	0.0000
L14	105	CCI 6" x 1" Plate	117.25 115.50 -	Auto	0.0000
L14	106	CCI 6" x 1" Plate	117.25 115.50 -	Auto	0.0000
L14	107	CCI 6" x 1" Plate	117.25 115.50 -	Auto	0.0000
L15	93	CCI 4.5" x 1" Plate	117.25 115.25 -	Auto	0.0000
L15	94	CCI 4.5" x 1" Plate	115.50 115.25 -	Auto	0.0000
L15	95	CCI 4.5" x 1" Plate	115.50 115.25 -	Auto	0.0000
L15	105	CCI 6" x 1" Plate	115.50 115.25 -	Auto	0.0577
L15	106	CCI 6" x 1" Plate	115.50 115.25 -	Auto	0.0577
L15	107	CCI 6" x 1" Plate	115.50 115.25 -	Auto	0.0577
L16	93	CCI 4.5" x 1" Plate	115.50 110.25 -	Auto	0.0000
L16	94	CCI 4.5" x 1" Plate	115.25 110.25 -	Auto	0.0000
L16	95	CCI 4.5" x 1" Plate	115.25 110.25 -	Auto	0.0000
L16	105	CCI 6" x 1" Plate	115.25 110.25 -	Auto	0.0305
L16	106	CCI 6" x 1" Plate	115.25 110.25 -	Auto	0.0305
L16	107	CCI 6" x 1" Plate	115.25 110.25 -	Auto	0.0305
L17	93	CCI 4.5" x 1" Plate	115.25 104.08 -	Auto	0.0000
L17	94	CCI 4.5" x 1" Plate	110.25 104.08 -	Auto	0.0000
L17	95	CCI 4.5" x 1" Plate	110.25 104.08 -	Auto	0.0000
L17	105	CCI 6" x 1" Plate	110.25 104.08 -	Auto	0.0002
L17	106	CCI 6" x 1" Plate	110.25 104.08 -	Auto	0.0002
L17	107	CCI 6" x 1" Plate	110.25 104.08 -	Auto	0.0002
L18	93	CCI 4.5" x 1" Plate	110.25 102.82 -	Auto	0.0000
L18	94	CCI 4.5" x 1" Plate	104.08 102.82 -	Auto	0.0000
L18	95	CCI 4.5" x 1" Plate	104.08 102.82 -	Auto	0.0000
L18	105	CCI 6" x 1" Plate	104.08 102.82 -	Auto	0.0006

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	106	CCI 6" x 1" Plate	104.08 102.82 - 104.08	Auto	0.0006
L18	107	CCI 6" x 1" Plate	102.82 - 104.08	Auto	0.0006
L19	93	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	94	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	95	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	105	CCI 6" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	106	CCI 6" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	107	CCI 6" x 1" Plate	100.60 - 102.82	Auto	0.0000
L20	79	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	80	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	81	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	93	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	94	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	95	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	105	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	106	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L21	79	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	80	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	81	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	93	CCI 4.5" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	94	CCI 4.5" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	95	CCI 4.5" x 1" Plate	99.00 - 100.25	Auto	0.0000
L21	105	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	106	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L22	79	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	80	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	81	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	93	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	94	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	105	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	106	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L23	79	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	80	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	81	CCI 6" x 1" Plate	93.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L23	93	CCI 4.5" x 1" Plate	98.25 97.00 - 98.25	Auto	0.0000
L23	94	CCI 4.5" x 1" Plate	97.00 - 98.25	Auto	0.0000
L23	105	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	106	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L24	79	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	80	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	81	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	105	CCI 6" x 1" Plate	90.60 - 93.25	Auto	0.0000
L24	106	CCI 6" x 1" Plate	90.60 - 93.25	Auto	0.0000
L25	79	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	80	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	81	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	103	CCI 8.5" x 1.25" Plate	90.25 - 90.50	Auto	0.2129
L25	104	CCI 8.5" x 1.25" Plate	90.25 - 90.50	Auto	0.2129
L26	79	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	80	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	81	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	89	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	90	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	91	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	103	CCI 8.5" x 1.25" Plate	85.25 - 90.25	Auto	0.1937
L26	104	CCI 8.5" x 1.25" Plate	85.25 - 90.25	Auto	0.1937
L27	79	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	80	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	81	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	89	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	90	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	91	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	99	CCI 8.5" x 1.25" Plate	83.50 - 85.00	Auto	0.1694
L27	103	CCI 8.5" x 1.25" Plate	83.50 - 85.25	Auto	0.1701
L27	104	CCI 8.5" x 1.25" Plate	83.50 - 85.25	Auto	0.1701
L28	79	CCI 6" x 1" Plate	83.25 - 83.50	Auto	0.0000
L28	80	CCI 6" x 1" Plate	83.25 - 83.50	Auto	0.0000
L28	81	CCI 6" x 1" Plate	83.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	89	CCI 6.5" x 1.25" Plate	83.50 - 83.25	Auto	0.0102
L28	90	CCI 6.5" x 1.25" Plate	83.25 - 83.50	Auto	0.0102
L28	91	CCI 6.5" x 1.25" Plate	83.25 - 83.50	Auto	0.0102
L28	99	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L28	103	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L28	104	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L29	79	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	80	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	81	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	89	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	90	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	91	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	99	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L29	103	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L29	104	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L30	79	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	80	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	81	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	89	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	90	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	91	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	99	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L30	103	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L30	104	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L31	79	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	80	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	81	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	89	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	90	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	91	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	99	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L31	103	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L31	104	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L32	79	CCI 6" x 1" Plate	77.50 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	80	CCI 6" x 1" Plate	80.25 - 77.50	Auto	0.0000
L32	81	CCI 6" x 1" Plate	80.25 - 77.50	Auto	0.0000
L32	89	CCI 6.5" x 1.25" Plate	80.25 - 77.50	Auto	0.0012
L32	90	CCI 6.5" x 1.25" Plate	80.25 - 77.50	Auto	0.0012
L32	91	CCI 6.5" x 1.25" Plate	80.25 - 77.50	Auto	0.0012
L32	99	CCI 8.5" x 1.25" Plate	80.25 - 77.50	Auto	0.2327
L32	103	CCI 8.5" x 1.25" Plate	80.25 - 77.50	Auto	0.2327
L32	104	CCI 8.5" x 1.25" Plate	80.25 - 77.50	Auto	0.2327
L33	79	CCI 6" x 1" Plate	77.50 - 77.25	Auto	0.0000
L33	80	CCI 6" x 1" Plate	77.50 - 77.25	Auto	0.0000
L33	81	CCI 6" x 1" Plate	77.50 - 77.25	Auto	0.0000
L33	89	CCI 6.5" x 1.25" Plate	77.50 - 77.25	Auto	0.0000
L33	90	CCI 6.5" x 1.25" Plate	77.50 - 77.25	Auto	0.0000
L33	91	CCI 6.5" x 1.25" Plate	77.50 - 77.25	Auto	0.0000
L33	99	CCI 8.5" x 1.25" Plate	77.50 - 77.25	Auto	0.1372
L33	103	CCI 8.5" x 1.25" Plate	77.50 - 77.25	Auto	0.1372
L33	104	CCI 8.5" x 1.25" Plate	77.50 - 77.25	Auto	0.1372
L34	79	CCI 6" x 1" Plate	77.25 - 68.82	Auto	0.0000
L34	80	CCI 6" x 1" Plate	77.25 - 68.82	Auto	0.0000
L34	81	CCI 6" x 1" Plate	77.25 - 68.82	Auto	0.0000
L34	89	CCI 6.5" x 1.25" Plate	77.25 - 72.50	Auto	0.0000
L34	90	CCI 6.5" x 1.25" Plate	77.25 - 72.50	Auto	0.0000
L34	91	CCI 6.5" x 1.25" Plate	77.25 - 72.50	Auto	0.0000
L34	99	CCI 8.5" x 1.25" Plate	77.25 - 68.82	Auto	0.1120
L34	103	CCI 8.5" x 1.25" Plate	77.25 - 68.82	Auto	0.1120
L34	104	CCI 8.5" x 1.25" Plate	77.25 - 68.82	Auto	0.1120
L35	79	CCI 6" x 1" Plate	68.82 - 68.29	Auto	0.0000
L35	80	CCI 6" x 1" Plate	68.82 - 68.29	Auto	0.0000
L35	81	CCI 6" x 1" Plate	68.82 - 68.29	Auto	0.0000
L35	99	CCI 8.5" x 1.25" Plate	68.82 - 68.29	Auto	0.1253
L35	103	CCI 8.5" x 1.25" Plate	68.82 - 68.29	Auto	0.1253
L35	104	CCI 8.5" x 1.25" Plate	68.82 - 68.29	Auto	0.1253
L36	79	CCI 6" x 1" Plate	68.29 - 64.25	Auto	0.0000
L36	80	CCI 6" x 1" Plate	68.29 - 64.25	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L36	81	CCI 6" x 1" Plate	68.29 64.25 - 68.29	Auto	0.0000
L36	86	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	87	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	88	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	99	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L36	103	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L36	104	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L37	79	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	80	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	81	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	86	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	87	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	88	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	99	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L37	103	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L37	104	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L38	69	MP3-04	60.50 - 61.50	Auto	0.0000
L38	79	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	80	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	81	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	86	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	87	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	88	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	99	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L38	103	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L38	104	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L39	67	MP3-04	60.25 - 60.50	Auto	0.0000
L39	68	MP3-04	60.25 - 60.50	Auto	0.0000
L39	69	MP3-04	60.25 - 60.50	Auto	0.0000
L39	76	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	77	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	78	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	86	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	87	CCI 6.5" x 1.25" Plate	60.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L39	88	CCI 6.5" x 1.25" Plate	60.50 60.25 - 60.50	Auto	0.0000
L39	99	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L39	103	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L39	104	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L40	67	MP3-04	60.08 - 60.25	Auto	0.0000
L40	68	MP3-04	60.08 - 60.25	Auto	0.0000
L40	69	MP3-04	60.08 - 60.25	Auto	0.0000
L40	76	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	77	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	78	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	86	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	87	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	88	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	99	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L40	103	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L40	104	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L41	67	MP3-04	59.83 - 60.08	Auto	0.0000
L41	68	MP3-04	59.83 - 60.08	Auto	0.0000
L41	69	MP3-04	59.83 - 60.08	Auto	0.0000
L41	76	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	77	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	78	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	86	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	87	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	88	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	99	CCI 8.5" x 1.25" Plate	60.00 - 60.08	Auto	0.1467
L41	103	CCI 8.5" x 1.25" Plate	59.83 - 60.08	Auto	0.1462
L41	104	CCI 8.5" x 1.25" Plate	59.83 - 60.08	Auto	0.1462
L42	67	MP3-04	59.08 - 59.83	Auto	0.0000
L42	68	MP3-04	59.08 - 59.83	Auto	0.0000
L42	69	MP3-04	59.08 - 59.83	Auto	0.0000
L42	76	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	77	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	78	CCI 6.5" x 1.25" Plate	59.08 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L42	86	CCI 6.5" x 1.25" Plate	59.83 59.08 - 59.83	Auto	0.0000
L42	87	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	88	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	103	CCI 8.5" x 1.25" Plate	59.08 - 59.83	Auto	0.1433
L42	104	CCI 8.5" x 1.25" Plate	59.08 - 59.83	Auto	0.1433
L43	67	MP3-04	58.83 - 59.08	Auto	0.0000
L43	68	MP3-04	58.83 - 59.08	Auto	0.0000
L43	69	MP3-04	58.83 - 59.08	Auto	0.0000
L43	76	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	77	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	78	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	86	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	87	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	88	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	103	CCI 8.5" x 1.25" Plate	58.83 - 59.08	Auto	0.1640
L43	104	CCI 8.5" x 1.25" Plate	58.83 - 59.08	Auto	0.1640
L44	67	MP3-04	55.42 - 58.83	Auto	0.0000
L44	68	MP3-04	55.42 - 58.83	Auto	0.0000
L44	69	MP3-04	55.42 - 58.83	Auto	0.0000
L44	76	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	77	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	78	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	86	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	87	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	88	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	103	CCI 8.5" x 1.25" Plate	55.50 - 58.83	Auto	0.1457
L44	104	CCI 8.5" x 1.25" Plate	55.50 - 58.83	Auto	0.1457
L45	67	MP3-04	55.17 - 55.42	Auto	0.0000
L45	68	MP3-04	55.17 - 55.42	Auto	0.0000
L45	69	MP3-04	55.17 - 55.42	Auto	0.0000
L45	76	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	77	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	78	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	86	CCI 6.5" x 1.25" Plate	55.17 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L45	87	CCI 6.5" x 1.25" Plate	55.42 55.17 - 55.42	Auto	0.0000
L45	88	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	101	CCI 8.5" x 1.25" Plate	55.17 - 55.40	Auto	0.1347
L45	102	CCI 8.5" x 1.25" Plate	55.17 - 55.40	Auto	0.1347
L46	67	MP3-04	54.75 - 55.17	Auto	0.0000
L46	68	MP3-04	54.75 - 55.17	Auto	0.0000
L46	69	MP3-04	54.75 - 55.17	Auto	0.0000
L46	76	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	77	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	78	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	86	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	87	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	88	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	101	CCI 8.5" x 1.25" Plate	54.75 - 55.17	Auto	0.1329
L46	102	CCI 8.5" x 1.25" Plate	54.75 - 55.17	Auto	0.1329
L47	67	MP3-04	54.50 - 54.75	Auto	0.0000
L47	68	MP3-04	54.50 - 54.75	Auto	0.0000
L47	69	MP3-04	54.50 - 54.75	Auto	0.0000
L47	76	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	77	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	78	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	86	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	87	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	88	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	101	CCI 8.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0679
L47	102	CCI 8.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0679
L48	67	MP3-04	49.50 - 54.50	Auto	0.0000
L48	68	MP3-04	49.50 - 54.50	Auto	0.0000
L48	69	MP3-04	49.50 - 54.50	Auto	0.0000
L48	76	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	77	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	78	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	86	CCI 6.5" x 1.25" Plate	52.00 - 54.50	Auto	0.0000
L48	87	CCI 6.5" x 1.25" Plate	52.00 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L48	88	CCI 6.5" x 1.25" Plate	54.50 52.00 - 54.50	Auto	0.0000
L48	101	CCI 8.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0486
L48	102	CCI 8.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0486
L49	67	MP3-04	44.50 - 49.50	Auto	0.0000
L49	68	MP3-04	44.50 - 49.50	Auto	0.0000
L49	69	MP3-04	44.50 - 49.50	Auto	0.0000
L49	76	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	77	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	78	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	98	CCI 8.5" x 1.25" Plate	44.50 - 45.50	Auto	0.0040
L49	101	CCI 8.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0156
L49	102	CCI 8.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0156
L50	67	MP3-04	41.25 - 44.50	Auto	0.0000
L50	68	MP3-04	41.25 - 44.50	Auto	0.0000
L50	69	MP3-04	41.25 - 44.50	Auto	0.0000
L50	76	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	77	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	78	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	98	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	101	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	102	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L51	67	MP3-04	41.00 - 41.25	Auto	0.0000
L51	68	MP3-04	41.00 - 41.25	Auto	0.0000
L51	69	MP3-04	41.00 - 41.25	Auto	0.0000
L51	76	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	77	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	78	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	98	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L51	101	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L51	102	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L52	67	MP3-04	34.29 - 41.00	Auto	0.0000
L52	68	MP3-04	34.29 - 41.00	Auto	0.0000
L52	69	MP3-04	34.29 - 41.00	Auto	0.0000
L52	76	CCI 6.5" x 1.25" Plate	34.29 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L52	77	CCI 6.5" x 1.25" Plate	41.00 34.29 - 41.00	Auto	0.0000
L52	78	CCI 6.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0000
L52	83	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	84	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	85	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	98	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L52	101	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L52	102	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L53	67	MP3-04	33.29 - 34.29	Auto	0.0000
L53	68	MP3-04	33.29 - 34.29	Auto	0.0000
L53	69	MP3-04	33.29 - 34.29	Auto	0.0000
L53	76	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	77	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	78	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	83	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	84	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	85	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	98	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L53	101	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L53	102	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L54	67	MP3-04	31.50 - 33.29	Auto	0.0000
L54	68	MP3-04	31.50 - 33.29	Auto	0.0000
L54	69	MP3-04	31.50 - 33.29	Auto	0.0000
L54	76	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	77	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	78	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	83	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	84	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	85	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	98	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L54	101	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L54	102	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L55	64	MP3-05	31.25 - 31.50	Auto	0.0000
L55	67	MP3-04	31.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L55	68	MP3-04	31.50 31.25 - 31.50	Auto	0.0000
L55	69	MP3-04	31.25 - 31.50	Auto	0.0000
L55	76	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	77	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	78	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	83	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	84	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	85	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	98	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L55	101	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L55	102	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L56	64	MP3-05	30.50 - 31.25	Auto	0.0000
L56	67	MP3-04	30.50 - 31.25	Auto	0.0000
L56	68	MP3-04	30.50 - 31.25	Auto	0.0000
L56	69	MP3-04	31.00 - 31.25	Auto	0.0000
L56	76	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	77	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	78	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	83	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	84	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	85	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	98	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L56	101	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L56	102	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L57	64	MP3-05	30.25 - 30.50	Auto	0.0000
L57	65	MP3-05	30.25 - 30.50	Auto	0.0000
L57	66	MP3-05	30.25 - 30.50	Auto	0.0000
L57	73	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	74	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	75	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	83	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	84	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	85	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	98	CCI 8.5" x 1.25" Plate	30.25 -	Auto	0.0453

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L57	101	CCI 8.5" x 1.25" Plate	30.50 30.25 - 30.50	Auto	0.0453
L57	102	CCI 8.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0453
L58	64	MP3-05	25.75 - 30.25	Auto	0.0000
L58	65	MP3-05	25.75 - 30.25	Auto	0.0000
L58	66	MP3-05	25.75 - 30.25	Auto	0.0000
L58	73	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	74	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	75	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	83	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	84	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	85	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	98	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	101	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	102	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	114	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L58	115	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L58	116	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L59	64	MP3-05	25.50 - 25.75	Auto	0.0000
L59	65	MP3-05	25.50 - 25.75	Auto	0.0000
L59	66	MP3-05	25.50 - 25.75	Auto	0.0000
L59	73	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	74	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	75	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	83	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	84	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	85	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	98	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	101	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	102	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	114	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L59	115	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L59	116	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L60	64	MP3-05	24.67 - 25.50	Auto	0.0000
L60	65	MP3-05	24.67 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L60	66	MP3-05	25.50 24.67 -	Auto	0.0000
L60	73	CCI 6" x 1" Plate	25.50 24.67 -	Auto	0.0000
L60	74	CCI 6" x 1" Plate	25.50 24.67 -	Auto	0.0000
L60	75	CCI 6" x 1" Plate	25.50 24.67 -	Auto	0.0000
L60	83	CCI 6.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	84	CCI 6.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	85	CCI 6.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	98	CCI 8.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	101	CCI 8.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	102	CCI 8.5" x 1.25" Plate	25.50 24.67 -	Auto	0.0000
L60	109	CCI 1.25" x 5.875" Plate	25.50 24.67 -	Auto	0.0000
L60	110	CCI 1.25" x 5.875" Plate	25.50 24.67 -	Auto	0.0000
L60	111	CCI 1.25" x 5.875" Plate	25.50 24.67 -	Auto	0.0000
L60	112	CCI 1.25" x 5.875" Plate	25.50 24.67 -	Auto	0.0000
L61	64	MP3-05	25.50 24.42 -	Auto	0.0000
L61	65	MP3-05	24.67 24.42 -	Auto	0.0000
L61	66	MP3-05	24.67 24.42 -	Auto	0.0000
L61	73	CCI 6" x 1" Plate	24.67 24.42 -	Auto	0.0000
L61	74	CCI 6" x 1" Plate	24.67 24.42 -	Auto	0.0000
L61	75	CCI 6" x 1" Plate	24.67 24.42 -	Auto	0.0000
L61	83	CCI 6.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	84	CCI 6.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	85	CCI 6.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	98	CCI 8.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	101	CCI 8.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	102	CCI 8.5" x 1.25" Plate	24.67 24.42 -	Auto	0.0000
L61	109	CCI 1.25" x 5.875" Plate	24.67 24.42 -	Auto	0.0000
L61	110	CCI 1.25" x 5.875" Plate	24.67 24.42 -	Auto	0.0000
L61	111	CCI 1.25" x 5.875" Plate	24.67 24.42 -	Auto	0.0000
L61	112	CCI 1.25" x 5.875" Plate	24.67 24.42 -	Auto	0.0000
L62	64	MP3-05	24.67 24.00 -	Auto	0.0000
L62	65	MP3-05	24.42 24.00 -	Auto	0.0000
L62	66	MP3-05	24.42 24.00 -	Auto	0.0000
L62	73	CCI 6" x 1" Plate	24.42 24.00 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L62	74	CCI 6" x 1" Plate	24.42 24.00 -	Auto	0.0000
L62	75	CCI 6" x 1" Plate	24.42 24.00 -	Auto	0.0000
L62	83	CCI 6.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	84	CCI 6.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	85	CCI 6.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	98	CCI 8.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	101	CCI 8.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	102	CCI 8.5" x 1.25" Plate	24.42 24.00 -	Auto	0.0000
L62	109	CCI 1.25" x 5.875" Plate	24.42 24.00 -	Auto	0.0000
L62	110	CCI 1.25" x 5.875" Plate	24.42 24.00 -	Auto	0.0000
L62	111	CCI 1.25" x 5.875" Plate	24.42 24.00 -	Auto	0.0000
L62	112	CCI 1.25" x 5.875" Plate	24.42 24.00 -	Auto	0.0000
L63	64	MP3-05	24.42 23.75 -	Auto	0.0000
L63	65	MP3-05	24.00 23.75 -	Auto	0.0000
L63	66	MP3-05	24.00 23.75 -	Auto	0.0000
L63	73	CCI 6" x 1" Plate	24.00 23.75 -	Auto	0.0000
L63	74	CCI 6" x 1" Plate	24.00 23.75 -	Auto	0.0000
L63	75	CCI 6" x 1" Plate	24.00 23.75 -	Auto	0.0000
L63	83	CCI 6.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	84	CCI 6.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	85	CCI 6.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	98	CCI 8.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	101	CCI 8.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	102	CCI 8.5" x 1.25" Plate	24.00 23.75 -	Auto	0.0000
L63	109	CCI 1.25" x 5.875" Plate	24.00 23.75 -	Auto	0.0000
L63	110	CCI 1.25" x 5.875" Plate	24.00 23.75 -	Auto	0.0000
L63	111	CCI 1.25" x 5.875" Plate	24.00 23.75 -	Auto	0.0000
L63	112	CCI 1.25" x 5.875" Plate	24.00 23.75 -	Auto	0.0000
L64	64	MP3-05	24.00 18.75 -	Auto	0.0000
L64	65	MP3-05	23.75 18.75 -	Auto	0.0000
L64	66	MP3-05	23.75 18.75 -	Auto	0.0000
L64	73	CCI 6" x 1" Plate	23.75 18.75 -	Auto	0.0000
L64	74	CCI 6" x 1" Plate	23.75 18.75 -	Auto	0.0000
L64	75	CCI 6" x 1" Plate	23.75 18.75 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L64	83	CCI 6.5" x 1.25" Plate	23.75 23.00 - 23.75	Auto	0.0000
L64	84	CCI 6.5" x 1.25" Plate	23.00 - 23.75	Auto	0.0000
L64	85	CCI 6.5" x 1.25" Plate	23.00 - 23.75	Auto	0.0000
L64	98	CCI 8.5" x 1.25" Plate	18.75 - 23.75	Auto	0.0000
L64	101	CCI 8.5" x 1.25" Plate	20.40 - 23.75	Auto	0.0000
L64	102	CCI 8.5" x 1.25" Plate	20.40 - 23.75	Auto	0.0000
L64	109	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	110	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	111	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	112	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L65	64	MP3-05	14.08 - 18.75	Auto	0.0000
L65	65	MP3-05	14.08 - 18.75	Auto	0.0000
L65	66	MP3-05	14.08 - 18.75	Auto	0.0000
L65	70	MP3-04	14.08 - 15.50	Auto	0.0000
L65	71	MP3-04	14.08 - 15.50	Auto	0.0000
L65	73	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	74	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	75	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	98	CCI 8.5" x 1.25" Plate	14.08 - 18.75	Auto	0.0000
L65	109	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	110	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	111	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	112	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L66	64	MP3-05	13.82 - 14.08	Auto	0.0000
L66	65	MP3-05	13.82 - 14.08	Auto	0.0000
L66	66	MP3-05	13.82 - 14.08	Auto	0.0000
L66	70	MP3-04	13.82 - 14.08	Auto	0.0000
L66	71	MP3-04	13.82 - 14.08	Auto	0.0000
L66	73	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	74	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	75	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	98	CCI 8.5" x 1.25" Plate	13.82 - 14.08	Auto	0.0000
L66	109	CCI 1.25" x 5.875" Plate	13.82 - 14.08	Auto	0.0000
L66	110	CCI 1.25" x 5.875" Plate	13.82 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L66	111	CCI 1.25" x 5.875" Plate	14.08 13.82 - 14.08	Auto	0.0000
L66	112	CCI 1.25" x 5.875" Plate	14.08 13.82 - 14.08	Auto	0.0000
L67	64	MP3-05	13.67 - 13.82	Auto	0.0000
L67	65	MP3-05	13.67 - 13.82	Auto	0.0000
L67	66	MP3-05	13.67 - 13.82	Auto	0.0000
L67	70	MP3-04	13.67 - 13.82	Auto	0.0000
L67	71	MP3-04	13.67 - 13.82	Auto	0.0000
L67	73	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	74	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	75	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	98	CCI 8.5" x 1.25" Plate	13.67 - 13.82	Auto	0.0000
L67	109	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	110	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	111	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	112	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L68	64	MP3-05	11.50 - 13.67	Auto	0.0000
L68	65	MP3-05	10.50 - 13.67	Auto	0.0000
L68	66	MP3-05	10.50 - 13.67	Auto	0.0000
L68	70	MP3-04	10.50 - 13.67	Auto	0.0000
L68	71	MP3-04	10.50 - 13.67	Auto	0.0000
L68	73	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	74	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	75	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	98	CCI 8.5" x 1.25" Plate	10.50 - 13.67	Auto	0.0000
L68	109	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	110	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	111	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	112	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L69	65	MP3-05	10.25 - 10.50	Auto	0.0000
L69	66	MP3-05	10.25 - 10.50	Auto	0.0000
L69	70	MP3-04	10.25 - 10.50	Auto	0.0000
L69	71	MP3-04	10.25 - 10.50	Auto	0.0000
L69	73	CCI 6" x 1" Plate	10.25 - 10.50	Auto	0.0000
L69	74	CCI 6" x 1" Plate	10.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L69	75	CCI 6" x 1" Plate	10.50 10.25 - 10.50	Auto	0.0000
L69	97	CCI 6" x 1" Plate	10.25 - 10.50	Auto	0.0000
L69	109	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	110	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	111	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	112	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L70	65	MP3-05	5.25 - 10.25	Auto	0.0000
L70	66	MP3-05	5.25 - 10.25	Auto	0.0000
L70	70	MP3-04	5.25 - 10.25	Auto	0.0000
L70	71	MP3-04	5.25 - 10.25	Auto	0.0000
L70	73	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	74	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	75	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	97	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	109	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	110	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	111	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	112	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L71	65	MP3-05	2.90 - 5.25	Auto	0.0000
L71	66	MP3-05	2.90 - 5.25	Auto	0.0000
L71	70	MP3-04	2.90 - 5.25	Auto	0.0000
L71	71	MP3-04	2.90 - 5.25	Auto	0.0000
L71	73	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	74	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	75	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	97	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	109	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	110	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	111	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	112	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L72	65	MP3-05	2.65 - 2.90	Auto	0.0000
L72	66	MP3-05	2.65 - 2.90	Auto	0.0000
L72	70	MP3-04	2.65 - 2.90	Auto	0.0000
L72	71	MP3-04	2.65 - 2.90	Auto	0.0000
L72	73	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	74	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	75	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	97	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	109	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	110	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	111	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	112	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L73	65	MP3-05	2.50 - 2.65	Auto	0.0000
L73	66	MP3-05	2.50 - 2.65	Auto	0.0000
L73	70	MP3-04	2.50 - 2.65	Auto	0.0000
L73	71	MP3-04	2.50 - 2.65	Auto	0.0000
L73	73	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	74	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	75	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	97	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	109	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	110	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	111	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	112	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L74	65	MP3-05	2.25 - 2.50	Auto	0.0000
L74	66	MP3-05	2.25 - 2.50	Auto	0.0000
L74	70	MP3-04	2.25 - 2.50	Auto	0.0000
L74	71	MP3-04	2.25 - 2.50	Auto	0.0000
L74	73	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	74	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	75	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L74	97	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	109	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	110	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	111	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	112	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L75	65	MP3-05	1.92 - 2.25	Auto	0.0000
L75	66	MP3-05	1.92 - 2.25	Auto	0.0000
L75	70	MP3-04	1.92 - 2.25	Auto	0.0000
L75	71	MP3-04	1.92 - 2.25	Auto	0.0000
L75	73	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	74	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	75	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	97	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	109	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	110	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	111	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	112	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L76	65	MP3-05	1.67 - 1.92	Auto	0.0000
L76	66	MP3-05	1.67 - 1.92	Auto	0.0000
L76	70	MP3-04	1.67 - 1.92	Auto	0.0000
L76	71	MP3-04	1.67 - 1.92	Auto	0.0000
L76	73	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	74	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	75	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	97	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	109	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	110	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	111	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	112	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L77	65	MP3-05	0.00 - 1.67	Auto	0.0000
L77	66	MP3-05	0.00 - 1.67	Auto	0.0000
L77	70	MP3-04	0.00 - 1.67	Auto	0.0000
L77	71	MP3-04	0.00 - 1.67	Auto	0.0000
L77	73	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	74	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	75	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	97	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	109	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	110	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	111	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	112	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.560 6.070 6.590 7.650	4.470 4.970 5.470 6.520	0.085 0.167 0.262 0.495
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.560 6.070 6.590 7.650	4.470 4.970 5.470 6.520	0.085 0.167 0.262 0.495

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
80010798 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.790 8.400 9.020 10.300	4.900 5.470 6.060 7.260	0.114 0.188 0.275 0.484
80010966 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.610 15.470 16.350 18.140	6.840 7.630 8.420 10.060	0.159 0.267 0.389 0.677
80010966 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.610 15.470 16.350 18.140	6.840 7.630 8.420 10.060	0.159 0.267 0.389 0.677
80010965 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.260 13.030 13.800 15.410	5.790 6.470 7.170 8.600	0.136 0.226 0.328 0.570
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.630 5.060 5.510 6.430	3.270 3.690 4.120 5.000	0.074 0.133 0.203 0.376
DTMABP7819VG12A	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
DTMABP7819VG12A	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
DTMABP7819VG12A	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.976 1.100 1.232 1.517	0.339 0.419 0.510 0.714	0.019 0.026 0.036 0.060
RRUS 4478 B14	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 4478 B14	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 4478 B14	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 32 B66	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.743 2.965 3.194 3.675	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B66	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.743 2.965 3.194 3.675	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B66	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.743 2.965 3.194 3.675	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 11	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 11	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 11	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 12	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.145 3.365 3.592 4.069	1.285 1.438 1.600 1.954	0.058 0.081 0.108 0.171
RRUS 12	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.145 3.365 3.592 4.069	1.285 1.438 1.600 1.954	0.058 0.081 0.108 0.171
RRUS 12	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.145 3.365 3.592 4.069	1.285 1.438 1.600 1.954	0.058 0.081 0.108 0.171
RRUS 32 B2	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.055 0.077 0.103 0.165

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 32	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.055 0.077 0.103 0.165
RRUS 32	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.857 3.083 3.316 3.805	1.777 1.968 2.166 2.583	0.055 0.077 0.103 0.165
DC6-48-60-0-8F	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.917 1.458 1.643 2.042	0.917 1.458 1.643 2.042	0.033 0.051 0.071 0.119
(2) DC6-48-60-18-8F	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.020 0.042 0.067 0.126
4' x 2" Pipe Mount	A	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
4' x 2" Pipe Mount	B	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
4' x 2" Pipe Mount	C	From Leg	4.000 0.000 1.000	0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
Sector Mount [SM 502-3]	C	None		0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	29.820 42.210 54.430 78.490	29.820 42.210 54.430 78.490	1.673 2.266 3.052 5.180
Pipe Mount [PM 602-3]	C	None		0.000	156.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.670 7.700 8.740 10.900	6.670 7.700 8.740 10.900	0.279 0.344 0.423 0.628
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AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.128 0.174 0.227 0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.128 0.174 0.227 0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.128 0.174 0.227 0.354
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice	6.290 6.860 7.450	2.760 3.270 3.790	0.061 0.105 0.157

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice 2" Ice	8.680	4.900	0.290
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.290 6.860 7.450 8.680	2.760 3.270 3.790 4.900	0.061 0.105 0.157 0.290
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.290 6.860 7.450 8.680	2.760 3.270 3.790 4.900	0.061 0.105 0.157 0.290
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
RADIO 4415 B66A	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.050 0.064 0.081 0.124
RADIO 4415 B66A	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.050 0.064 0.081 0.124
RADIO 4415 B66A	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.050 0.064 0.081 0.124
RADIO 4424 B25_TMO	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.086 0.107 0.131 0.188
RADIO 4424 B25_TMO	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.086 0.107 0.131 0.188
RADIO 4424 B25_TMO	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.086 0.107 0.131 0.188
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice 2" Ice	2.721	2.280	0.170
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
5' x 2" Pipe Mount	A	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
5' x 2" Pipe Mount	B	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
5' x 2" Pipe Mount	C	From Leg	4.000 0.000 1.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
Platform Mount [LP 1201-1]	C	None		0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.380 22.110 25.870 33.470	18.380 22.110 25.870 33.470	2.100 2.652 3.263 4.662
Miscellaneous [NA 510-1]	C	None		0.000	145.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.360 8.520 10.620 14.640	6.360 8.520 10.620 14.640	0.256 0.344 0.459 0.769
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APXV18-206517S-C	A	From Leg	2.000 0.000 0.000	0.000	139.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.830 4.460 5.110 6.440	1.810 2.410 3.030 4.310	0.026 0.054 0.087 0.172
APXV18-206517S-C	B	From Leg	2.000 0.000 0.000	0.000	139.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.830 4.460 5.110 6.440	1.810 2.410 3.030 4.310	0.026 0.054 0.087 0.172
APXV18-206517S-C	C	From Leg	2.000 0.000 0.000	0.000	139.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.830 4.460 5.110 6.440	1.810 2.410 3.030 4.310	0.026 0.054 0.087 0.172
Pipe Mount [PM 601-3]	C	None		0.000	139.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.170 3.790 4.420 5.760	3.170 3.790 4.420 5.760	0.195 0.232 0.279 0.401
*									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.490 4.890 5.720	3.300 3.680 4.070 4.870	0.066 0.130 0.204 0.386
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.490 4.890 5.720	3.300 3.680 4.070 4.870	0.066 0.130 0.204 0.386
(2) SBNHH-1D65B w/	C	From Leg	4.000	0.000	132.000	No Ice	4.090	3.300	0.066

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.000 1.000			1/2" Ice 1" Ice 2" Ice	4.490 4.890 5.720	3.680 4.070 4.870	0.130 0.204 0.386
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.006 6.562 7.083 8.145	6.203 7.359 8.229 10.019	0.043 0.098 0.160 0.310
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.006 6.562 7.083 8.145	6.203 7.359 8.229 10.019	0.043 0.098 0.160 0.310
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.006 6.562 7.083 8.145	6.203 7.359 8.229 10.019	0.043 0.098 0.160 0.310
DB-C1-12C-24AB-0Z	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.056 4.316 4.582 5.138	3.098 3.335 3.580 4.092	0.032 0.068 0.109 0.203
RFV01U-D1A	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.084 0.103 0.124 0.175
(2) RFV01U-D1A	B	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.084 0.103 0.124 0.175
(2) RFV01U-D2A	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.070 0.087 0.106 0.153
RFV01U-D2A	B	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.070 0.087 0.106 0.153
CBRS w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.450 1.670 1.900 2.420	0.990 1.180 1.390 1.850	0.032 0.048 0.068 0.123
CBRS w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.450 1.670 1.900 2.420	0.990 1.180 1.390 1.850	0.032 0.048 0.068 0.123
CBRS w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.450 1.670 1.900 2.420	0.990 1.180 1.390 1.850	0.032 0.048 0.068 0.123
20W CBRS	A	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.857 0.975 1.101 1.374	0.420 0.510 0.608 0.833	0.019 0.026 0.034 0.058
20W CBRS	B	From Leg	4.000	0.000	132.000	No Ice	0.857	0.420	0.019

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000 1.000			1/2" Ice 1" Ice 2" Ice	0.975 1.101 1.374	0.510 0.608 0.833	0.026 0.034 0.058
20W CBRS	C	From Leg	4.000 0.000 1.000	0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.857 0.975 1.101 1.374	0.420 0.510 0.608 0.833	0.019 0.026 0.034 0.058
6' x 2" Horizontal Mount Pipe	A	From Leg	3.000 0.000 -1.000	0.000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.140 1.760 2.140 2.900	0.010 0.040 0.090 0.210	0.016 0.025 0.038 0.077
6' x 2" Horizontal Mount Pipe	B	From Leg	3.000 0.000 -1.000	0.000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.140 1.760 2.140 2.900	0.010 0.040 0.090 0.210	0.016 0.025 0.038 0.077
6' x 2" Horizontal Mount Pipe	C	From Leg	3.000 0.000 -1.000	0.000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.140 1.760 2.140 2.900	0.010 0.040 0.090 0.210	0.016 0.025 0.038 0.077
Platform Mount [LP 1201-1]	C	None		0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.380 22.110 25.870 33.470	18.380 22.110 25.870 33.470	2.100 2.652 3.263 4.662
Miscellaneous [NA 510-1]	C	None		0.000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.360 8.520 10.620 14.640	6.360 8.520 10.620 14.640	0.256 0.344 0.459 0.769
Side Arm Mount [SO 102-3]	C	None		0.000	132.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.180 4.750 5.900	3.600 4.180 4.750 5.900	0.075 0.105 0.135 0.195
* *									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.312 2.502 2.700 3.118	1.293 1.448 1.610 1.957	0.022 0.041 0.063 0.117
(2) 8' x 2'' Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2'' Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2'' Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Commscope MC-PK8-DSH	C	None		0.000	114.000	No Ice 1/2" Ice 1" Ice 2" Ice	34.240 62.950 91.660 149.080	34.240 62.950 91.660 149.080	1.749 2.099 2.450 3.151
* *									
58532A	A	From Leg	3.000 0.000 1.000	0.000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.189 0.248 0.315 0.470	0.189 0.248 0.315 0.470	0.000 0.003 0.006 0.017
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.850 1.140 1.430 2.010	1.670 2.340 3.010 4.350	0.065 0.079 0.093 0.121
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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	Aperture Area ft^2	Weight K
*										

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160.333 - 155.333	Pole	Max Tension	26	0.000	0.000	-0.000
			Max. Compression	26	-15.729	-2.917	-0.105
			Max. Mx	8	-4.553	-11.911	-0.181
			Max. My	14	-4.551	-0.370	-11.535
			Max. Vy	8	8.226	-11.911	-0.181
			Max. Vx	2	-8.252	-0.297	11.326
			Max. Torque	3			-1.828
L2	155.333 - 150.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-16.683	-3.245	0.073
			Max. Mx	8	-5.024	-53.758	-0.247
			Max. My	14	-5.022	-0.569	-53.410
			Max. Vy	8	8.489	-53.758	-0.247
			Max. Vx	2	-8.515	-0.270	53.276
			Max. Torque	3			-1.828
L3	150.333 - 146.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.349	-3.471	0.200
			Max. Mx	8	-5.364	-83.816	-0.294
			Max. My	14	-5.362	-0.706	-83.487
			Max. Vy	8	8.666	-83.816	-0.294
			Max. Vx	2	-8.691	-0.248	83.406
			Max. Torque	3			-1.827
L4	146.833 - 146.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.466	-3.511	0.223
			Max. Mx	8	-5.428	-88.164	-0.300
			Max. My	14	-5.426	-0.727	-87.835
			Max. Vy	8	8.699	-88.164	-0.300
			Max. Vx	2	-8.725	-0.247	87.764
			Max. Torque	3			-1.827
L5	146.333 - 141.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.728	-4.087	0.553
			Max. Mx	8	-10.412	-159.849	-0.326
			Max. My	2	-10.406	-0.291	159.531
			Max. Vy	8	14.337	-159.849	-0.326
			Max. Vx	2	-14.364	-0.291	159.531
			Max. Torque	3			-1.827
L6	141.333 - 136.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.892	-4.688	0.903
			Max. Mx	8	-11.250	-234.443	-0.347
			Max. My	2	-11.243	-0.341	234.205
			Max. Vy	8	15.419	-234.443	-0.347
			Max. Vx	2	-15.447	-0.341	234.205
			Max. Torque	15			1.827
L7	136.333 - 131.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.424	-7.659	3.548
			Max. Mx	8	-15.611	-322.082	0.309
			Max. My	2	-15.594	-1.511	321.672
			Max. Vy	8	20.684	-322.082	0.309
			Max. Vx	2	-20.807	-1.511	321.672
			Max. Torque	13			2.782
L8	131.333 - 126.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.869	-8.210	4.012
			Max. Mx	8	-16.668	-428.878	0.118
			Max. My	2	-16.652	-1.345	429.074
			Max. Vy	8	21.647	-428.878	0.118
			Max. Vx	2	-21.771	-1.345	429.074
			Max. Torque	13			2.782
L9	126.333 - 121.333	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	-49.359	-8.750	4.477
			Max. Mx	8	-17.442	-538.421	-0.072
			Max. My	2	-17.427	-1.177	539.223
			Max. Vy	8	22.146	-538.421	-0.072
			Max. Vx	2	-22.269	-1.177	539.223
			Max. Torque	13			2.780
L10	121.333 - 120.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.780	-8.882	4.593
			Max. Mx	8	-17.637	-566.194	-0.119
			Max. My	2	-17.622	-1.134	567.149
			Max. Vy	8	22.273	-566.194	-0.119
			Max. Vx	2	-22.396	-1.134	567.149
			Max. Torque	13			2.778
L11	120.083 - 119.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.883	-8.911	4.617
			Max. Mx	8	-17.710	-571.768	-0.129
			Max. My	2	-17.695	-1.125	572.753
			Max. Vy	8	22.288	-571.768	-0.129
			Max. Vx	2	-22.411	-1.125	572.753
			Max. Torque	13			2.778
L12	119.833 - 117.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.864	-9.145	4.809
			Max. Mx	8	-18.214	-624.132	-0.216
			Max. My	2	-18.200	-1.047	625.400
			Max. Vy	8	22.565	-624.132	-0.216
			Max. Vx	2	-22.689	-1.047	625.400
			Max. Torque	13			2.777
L13	117.5 - 117.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.975	-9.171	4.830
			Max. Mx	8	-18.283	-629.781	-0.226
			Max. My	2	-18.268	-1.039	631.079
			Max. Vy	8	22.588	-629.781	-0.226
			Max. Vx	2	-22.712	-1.039	631.079
			Max. Torque	13			2.777
L14	117.25 - 115.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.796	-9.354	4.989
			Max. Mx	8	-18.689	-669.530	-0.291
			Max. My	2	-18.674	-0.981	671.041
			Max. Vy	8	22.805	-669.530	-0.291
			Max. Vx	2	-22.929	-0.981	671.041
			Max. Torque	13			2.777
L15	115.5 - 115.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.924	-9.383	5.014
			Max. Mx	8	-18.771	-675.238	-0.300
			Max. My	2	-18.757	-0.972	676.779
			Max. Vy	8	22.825	-675.238	-0.300
			Max. Vx	2	-22.949	-0.972	676.779
			Max. Torque	13			2.777
L16	115.25 - 110.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-61.387	-9.976	6.131
			Max. Mx	8	-23.119	-804.606	-0.362
			Max. My	2	-23.101	-0.820	807.044
			Max. Vy	8	27.066	-804.606	-0.362
			Max. Vx	2	-27.232	-0.820	807.044
			Max. Torque	11			2.914
L17	110.25 - 104.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.667	-10.279	6.390
			Max. Mx	8	-23.809	-870.785	-0.445
			Max. My	2	-23.792	-0.750	873.618
			Max. Vy	8	27.363	-870.785	-0.445
			Max. Vx	2	-27.530	-0.750	873.618

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			2.953
L18	104.083 - 102.82	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.540	-10.904	6.926
			Max. Mx	8	-26.161	-1009.528	-0.617
			Max. My	2	-26.143	-0.606	1013.175
			Max. Vy	8	28.073	-1009.528	-0.617
			Max. Vx	2	-28.240	-0.606	1013.175
			Max. Torque	11			3.036
L19	102.82 - 100.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.969	-11.195	7.607
			Max. Mx	8	-26.963	-1075.076	-0.496
			Max. My	2	-26.949	-0.539	1079.298
			Max. Vy	8	28.442	-1075.076	-0.496
			Max. Vx	2	-28.572	-0.539	1079.298
			Max. Torque	11			3.278
L20	100.5 - 100.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.114	-11.228	7.641
			Max. Mx	8	-27.050	-1082.195	-0.505
			Max. My	2	-27.036	-0.532	1086.448
			Max. Vy	8	28.463	-1082.195	-0.505
			Max. Vx	2	-28.593	-0.532	1086.448
			Max. Torque	11			3.282
L21	100.25 - 98.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.117	-11.451	7.874
			Max. Mx	8	-27.574	-1132.234	-0.564
			Max. My	2	-27.560	-0.482	1136.708
			Max. Vy	8	28.688	-1132.234	-0.564
			Max. Vx	2	-28.818	-0.482	1136.708
			Max. Torque	11			3.282
L22	98.5 - 98.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.261	-11.487	7.912
			Max. Mx	8	-27.672	-1139.413	-0.573
			Max. My	2	-27.658	-0.474	1143.918
			Max. Vy	8	28.701	-1139.413	-0.573
			Max. Vx	2	-28.831	-0.474	1143.918
			Max. Torque	11			3.282
L23	98.25 - 93.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.050	-12.129	8.583
			Max. Mx	8	-29.281	-1284.547	-0.741
			Max. My	2	-29.268	-0.334	1289.681
			Max. Vy	8	29.308	-1284.547	-0.741
			Max. Vx	2	-29.438	-0.334	1289.681
			Max. Torque	11			3.282
L24	93.25 - 90.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.575	-12.479	8.941
			Max. Mx	8	-30.182	-1365.644	-0.833
			Max. My	2	-30.169	-0.257	1371.124
			Max. Vy	8	29.640	-1365.644	-0.833
			Max. Vx	2	-29.769	-0.257	1371.124
			Max. Torque	11			3.280
L25	90.5 - 90.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.726	-12.513	8.977
			Max. Mx	8	-30.288	-1373.061	-0.841
			Max. My	2	-30.275	-0.250	1378.572
			Max. Vy	8	29.656	-1373.061	-0.841
			Max. Vx	2	-29.785	-0.250	1378.572
			Max. Torque	11			3.279
L26	90.25 - 85.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-76.756	-13.138	9.666
			Max. Mx	8	-32.122	-1522.997	-1.005
			Max. My	2	-32.110	-0.114	1529.135
			Max. Vy	8	30.272	-1522.997	-1.005
			Max. Vx	2	-30.402	-0.114	1529.135

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			3.279
L27	85.25 - 83.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-77.935	-13.357	9.867
			Max. Mx	8	-32.766	-1576.191	-1.061
			Max. My	2	-32.754	-0.067	1582.549
			Max. Vy	8	30.494	-1576.191	-1.061
			Max. Vx	2	-30.624	-0.067	1582.549
			Max. Torque	11			3.278
L28	83.5 - 83.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.123	-13.391	9.898
			Max. Mx	8	-32.896	-1583.821	-1.069
			Max. My	2	-32.885	-0.060	1590.210
			Max. Vy	8	30.506	-1583.821	-1.069
			Max. Vx	2	-30.635	-0.060	1590.210
			Max. Torque	11			3.280
L29	83.25 - 80.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.000	-13.697	10.175
			Max. Mx	8	-33.994	-1660.566	-1.149
			Max. My	2	-33.983	0.006	1667.268
			Max. Vy	8	30.841	-1660.566	-1.149
			Max. Vx	2	-30.971	0.006	1667.268
			Max. Torque	11			3.306
L30	80.75 - 80.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.199	-13.732	10.206
			Max. Mx	8	-34.126	-1668.285	-1.157
			Max. My	2	-34.115	0.012	1675.018
			Max. Vy	8	30.864	-1668.285	-1.157
			Max. Vx	2	-30.993	0.012	1675.018
			Max. Torque	11			3.306
L31	80.5 - 80.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.396	-13.763	10.234
			Max. Mx	8	-34.245	-1676.013	-1.165
			Max. My	2	-34.234	0.019	1682.777
			Max. Vy	8	30.897	-1676.013	-1.165
			Max. Vx	2	-31.027	0.019	1682.777
			Max. Torque	11			3.306
L32	80.25 - 77.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.561	-14.102	10.542
			Max. Mx	8	-35.551	-1761.565	-1.252
			Max. My	2	-35.541	0.090	1768.674
			Max. Vy	8	31.274	-1761.565	-1.252
			Max. Vx	2	-31.403	0.090	1768.674
			Max. Torque	11			3.306
L33	77.5 - 77.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.741	-14.135	10.572
			Max. Mx	8	-35.665	-1769.392	-1.260
			Max. My	2	-35.654	0.097	1776.532
			Max. Vy	8	31.293	-1769.392	-1.260
			Max. Vx	2	-31.423	0.097	1776.532
			Max. Torque	11			3.305
L34	77.25 - 68.82	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.492	-14.611	11.023
			Max. Mx	8	-37.296	-1894.341	-1.381
			Max. My	2	-37.286	0.196	1901.975
			Max. Vy	8	31.784	-1894.341	-1.381
			Max. Vx	2	-31.913	0.196	1901.975
			Max. Torque	11			3.305
L35	68.82 - 68.291	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-91.041	-15.210	11.594
			Max. Mx	8	-41.036	-2055.236	-1.535
			Max. My	2	-41.027	0.322	2063.494
			Max. Vy	8	32.517	-2055.236	-1.535
			Max. Vx	2	-32.646	0.322	2063.494
			Max. Torque	11			3.303
L36	68.291 - 64.25	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	-93.998	-15.702	12.056
			Max. Mx	8	-42.849	-2187.690	-1.658
			Max. My	2	-42.840	0.422	2196.450
			Max. Vy	8	32.994	-2187.690	-1.658
			Max. Vx	2	-33.123	0.422	2196.450
			Max. Torque	11			3.303
L37	64.25 - 64	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.193	-15.736	12.086
			Max. Mx	8	-42.980	-2195.946	-1.666
			Max. My	2	-42.971	0.428	2204.738
			Max. Vy	8	33.011	-2195.946	-1.666
			Max. Vx	2	-33.140	0.428	2204.738
			Max. Torque	11			3.302
L38	64 - 60.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-96.936	-16.152	12.464
			Max. Mx	8	-44.652	-2312.331	-1.770
			Max. My	2	-44.645	0.513	2321.557
			Max. Vy	8	33.446	-2312.331	-1.770
			Max. Vx	2	-33.575	0.513	2321.557
			Max. Torque	11			3.302
L39	60.5 - 60.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.150	-16.186	12.494
			Max. Mx	8	-44.791	-2320.701	-1.778
			Max. My	2	-44.783	0.519	2329.958
			Max. Vy	8	33.463	-2320.701	-1.778
			Max. Vx	2	-33.591	0.519	2329.958
			Max. Torque	11			3.302
L40	60.25 - 60.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.292	-16.209	12.515
			Max. Mx	8	-44.877	-2326.297	-1.783
			Max. My	2	-44.869	0.523	2335.574
			Max. Vy	8	33.483	-2326.297	-1.783
			Max. Vx	2	-33.610	0.523	2335.574
			Max. Torque	11			3.302
L41	60.083 - 59.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.507	-16.242	12.547
			Max. Mx	8	-45.008	-2334.680	-1.790
			Max. My	2	-45.000	0.529	2343.988
			Max. Vy	8	33.515	-2334.680	-1.790
			Max. Vx	2	-33.642	0.529	2343.988
			Max. Torque	11			3.301
L42	59.833 - 59.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-98.146	-16.345	12.654
			Max. Mx	8	-45.397	-2359.876	-1.812
			Max. My	2	-45.389	0.547	2369.275
			Max. Vy	8	33.617	-2359.876	-1.812
			Max. Vx	2	-33.742	0.547	2369.275
			Max. Torque	11			3.301
L43	59.083 - 58.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-98.368	-16.383	12.692
			Max. Mx	8	-45.542	-2368.291	-1.820
			Max. My	2	-45.534	0.553	2377.719
			Max. Vy	8	33.642	-2368.291	-1.820
			Max. Vx	2	-33.767	0.553	2377.719
			Max. Torque	11			3.301
L44	58.833 - 55.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.390	-16.864	13.183
			Max. Mx	8	-47.443	-2484.081	-1.919
			Max. My	2	-47.436	0.633	2493.905
			Max. Vy	8	34.091	-2484.081	-1.919
			Max. Vx	2	-34.208	0.633	2493.905
			Max. Torque	11			3.301
L45	55.4167 - 55.1667	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	-101.611	-16.902	13.221
			Max. Mx	8	-47.593	-2492.612	-1.926
			Max. My	2	-47.586	0.638	2502.465
			Max. Vy	8	34.110	-2492.612	-1.926
			Max. Vx	2	-34.227	0.638	2502.465
			Max. Torque	11			3.301
L46	55.1667 - 54.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.982	-16.960	13.280
			Max. Mx	8	-47.826	-2506.850	-1.938
			Max. My	2	-47.819	0.648	2516.749
			Max. Vy	8	34.165	-2506.850	-1.938
			Max. Vx	2	-34.281	0.648	2516.749
			Max. Torque	11			3.301
L47	54.75 - 54.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.186	-16.996	13.317
			Max. Mx	8	-47.951	-2515.402	-1.946
			Max. My	2	-47.944	0.654	2525.329
			Max. Vy	8	34.193	-2515.402	-1.946
			Max. Vx	2	-34.308	0.654	2525.329
			Max. Torque	13			3.301
L48	54.5 - 49.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-106.143	-17.672	14.045
			Max. Mx	8	-50.419	-2687.954	-2.088
			Max. My	2	-50.414	0.767	2698.432
			Max. Vy	8	34.777	-2687.954	-2.088
			Max. Vx	2	-34.892	0.767	2698.432
			Max. Torque	13			3.386
L49	49.5 - 44.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-110.019	-18.304	14.745
			Max. Mx	8	-52.926	-2863.318	-2.226
			Max. My	2	-52.921	0.877	2874.345
			Max. Vy	8	35.331	-2863.318	-2.226
			Max. Vx	2	-35.446	0.877	2874.345
			Max. Torque	13			3.461
L50	44.5 - 41.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-112.594	-18.675	15.121
			Max. Mx	8	-54.573	-2978.775	-2.314
			Max. My	2	-54.568	0.946	2990.157
			Max. Vy	8	35.683	-2978.775	-2.314
			Max. Vx	2	-35.797	0.946	2990.157
			Max. Torque	13			3.483
L51	41.25 - 41	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-112.804	-18.705	15.151
			Max. Mx	8	-54.722	-2987.704	-2.321
			Max. My	2	-54.718	0.951	2999.112
			Max. Vy	8	35.694	-2987.704	-2.321
			Max. Vx	2	-35.808	0.951	2999.112
			Max. Torque	13			3.485
L52	41 - 34.291	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-114.526	-18.946	15.382
			Max. Mx	8	-55.816	-3059.379	-2.373
			Max. My	2	-55.812	0.992	3071.004
			Max. Vy	8	35.925	-3059.379	-2.373
			Max. Vx	2	-36.039	0.992	3071.004
			Max. Torque	13			3.500
L53	34.291 - 33.291	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-122.717	-19.642	16.042
			Max. Mx	8	-61.730	-3266.900	-2.523
			Max. My	2	-61.727	1.108	3279.145
			Max. Vy	8	36.704	-3266.900	-2.523
			Max. Vx	2	-36.818	1.108	3279.145
			Max. Torque	13			3.545
L54	33.291 - 31.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.467	-19.866	16.247
			Max. Mx	8	-62.887	-3332.858	-2.569
			Max. My	2	-62.884	1.144	3345.296

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	36.916	-3332.858	-2.569
			Max. Vx	2	-37.030	1.144	3345.296
			Max. Torque	13			3.559
L55	31.5 - 31.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.717	-19.897	16.286
			Max. Mx	8	-63.066	-3342.094	-2.576
			Max. My	2	-63.063	1.149	3354.558
			Max. Vy	8	36.923	-3342.094	-2.576
			Max. Vx	2	-37.032	1.149	3354.558
			Max. Torque	13			3.562
L56	31.25 - 30.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-125.460	-19.993	16.407
			Max. Mx	8	-63.555	-3369.848	-2.595
			Max. My	2	-63.553	1.164	3382.386
			Max. Vy	8	37.026	-3369.848	-2.595
			Max. Vx	2	-37.122	1.164	3382.386
			Max. Torque	13			3.562
L57	30.5 - 30.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-125.703	-20.026	16.437
			Max. Mx	8	-63.722	-3379.115	-2.602
			Max. My	2	-63.719	1.169	3391.675
			Max. Vy	8	37.045	-3379.115	-2.602
			Max. Vx	2	-37.141	1.169	3391.675
			Max. Torque	13			3.564
L58	30.25 - 25.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-130.172	-20.581	16.949
			Max. Mx	8	-66.618	-3547.384	-2.716
			Max. My	2	-66.618	1.256	3560.128
			Max. Vy	8	37.685	-3547.384	-2.716
			Max. Vx	2	-37.682	1.256	3560.128
			Max. Torque	13			3.614
L59	25.75 - 25.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-130.420	-20.614	16.978
			Max. Mx	8	-66.785	-3556.816	-2.722
			Max. My	2	-66.785	1.261	3569.556
			Max. Vy	8	37.715	-3556.816	-2.722
			Max. Vx	2	-37.698	1.261	3569.556
			Max. Torque	13			3.617
L60	25.5 - 24.6667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.256	-20.715	17.050
			Max. Mx	8	-67.304	-3588.346	-2.743
			Max. My	2	-67.305	1.277	3601.038
			Max. Vy	8	37.899	-3588.346	-2.743
			Max. Vx	2	-37.811	1.277	3601.038
			Max. Torque	13			3.627
L61	24.6667 - 24.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.485	-20.747	17.073
			Max. Mx	8	-67.447	-3597.834	-2.749
			Max. My	2	-67.448	1.282	3610.499
			Max. Vy	8	37.939	-3597.834	-2.749
			Max. Vx	2	-37.830	1.282	3610.499
			Max. Torque	13			3.629
L62	24.4167 - 24	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.866	-20.798	17.108
			Max. Mx	8	-67.673	-3613.675	-2.760
			Max. My	2	-67.675	1.290	3626.286
			Max. Vy	8	38.026	-3613.675	-2.760
			Max. Vx	2	-37.881	1.290	3626.286
			Max. Torque	13			3.634
L63	24 - 23.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-132.102	-20.829	17.131
			Max. Mx	8	-67.819	-3623.196	-2.766
			Max. My	2	-67.821	1.294	3635.766
			Max. Vy	8	38.073	-3623.196	-2.766
			Max. Vx	2	-37.907	1.294	3635.766
			Max. Torque	13			3.637

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L64	23.75 - 18.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-136.557	-21.372	17.481
			Max. Mx	8	-70.673	-3816.162	-2.889
			Max. My	2	-70.681	1.386	3826.734
			Max. Vy	8	39.057	-3816.162	-2.889
			Max. Vx	24	-38.712	2056.354	3583.844
			Max. Torque	13			3.695
L65	18.75 - 14.083	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.605	-21.908	17.716
			Max. Mx	8	-73.371	-4000.508	-3.000
			Max. My	2	-73.381	1.468	4007.191
			Max. Vy	8	39.905	-4000.508	-3.000
			Max. Vx	24	-39.427	2161.228	3766.250
			Max. Torque	13			3.767
L66	14.083 - 13.817	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.842	-21.939	17.731
			Max. Mx	8	-73.539	-4011.134	-3.006
			Max. My	2	-73.550	1.473	4017.538
			Max. Vy	8	39.932	-4011.134	-3.006
			Max. Vx	24	-39.448	2167.263	3776.746
			Max. Torque	13			3.770
L67	13.817 - 13.667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.976	-21.957	17.739
			Max. Mx	8	-73.630	-4017.131	-3.010
			Max. My	2	-73.640	1.476	4023.377
			Max. Vy	8	39.956	-4017.131	-3.010
			Max. Vx	24	-39.468	2170.669	3782.670
			Max. Torque	13			3.772
L68	13.667 - 10.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-143.779	-22.326	17.875
			Max. Mx	8	-75.506	-4144.666	-3.082
			Max. My	2	-75.515	1.529	4147.198
			Max. Vy	8	40.525	-4144.666	-3.082
			Max. Vx	24	-39.956	2243.026	3908.514
			Max. Torque	13			3.798
L69	10.5 - 10.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-143.992	-22.359	17.883
			Max. Mx	8	-75.661	-4154.807	-3.088
			Max. My	2	-75.670	1.533	4157.018
			Max. Vy	8	40.548	-4154.807	-3.088
			Max. Vx	24	-39.975	2248.774	3918.511
			Max. Torque	13			3.800
L70	10.25 - 5.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-148.209	-22.981	18.028
			Max. Mx	8	-78.563	-4359.779	-3.199
			Max. My	2	-78.570	1.614	4354.748
			Max. Vy	8	41.385	-4359.779	-3.199
			Max. Vx	24	-40.713	2364.827	4120.343
			Max. Torque	13			3.833
L71	5.25 - 2.9	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-149.991	-23.264	18.101
			Max. Mx	8	-79.785	-4457.507	-3.250
			Max. My	2	-79.790	1.650	4448.533
			Max. Vy	8	41.759	-4457.507	-3.250
			Max. Vx	24	-41.042	2420.079	4216.428
			Max. Torque	13			3.849
L72	2.9 - 2.65	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.178	-23.294	18.109
			Max. Mx	8	-79.931	-4467.954	-3.255
			Max. My	2	-79.934	1.654	4458.541
			Max. Vy	8	41.771	-4467.954	-3.255
			Max. Vx	24	-41.049	2425.982	4226.693
			Max. Torque	13			3.851
L73	2.65 - 2.5	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	-150.290	-23.312	18.114
			Max. Mx	8	-80.011	-4474.227	-3.259
			Max. My	2	-80.014	1.657	4464.548
			Max. Vy	8	41.791	-4474.227	-3.259
			Max. Vx	24	-41.067	2429.527	4232.857
			Max. Torque	13			3.852
L74	2.5 - 2.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.484	-23.341	18.121
			Max. Mx	8	-80.148	-4484.690	-3.264
			Max. My	2	-80.151	1.661	4474.564
			Max. Vy	8	41.834	-4484.690	-3.264
			Max. Vx	24	-41.105	2435.438	4243.137
			Max. Torque	13			3.854
L75	2.25 - 1.917	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.741	-23.380	18.132
			Max. Mx	8	-80.330	-4498.643	-3.271
			Max. My	2	-80.333	1.666	4487.916
			Max. Vy	8	41.891	-4498.643	-3.271
			Max. Vx	24	-41.155	2443.320	4256.844
			Max. Torque	13			3.856
L76	1.917 - 1.667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.925	-23.408	18.140
			Max. Mx	8	-80.461	-4509.129	-3.276
			Max. My	2	-80.464	1.669	4497.948
			Max. Vy	8	41.929	-4509.129	-3.276
			Max. Vx	24	-41.188	2449.243	4267.144
			Max. Torque	13			3.858
L77	1.667 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-152.118	-23.591	18.197
			Max. Mx	8	-81.310	-4579.306	-3.311
			Max. My	2	-81.312	1.694	4564.985
			Max. Vy	8	42.232	-4579.306	-3.311
			Max. Vx	24	-41.457	2488.867	4336.050
			Max. Torque	13			3.869

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	152.118	-9.871	-5.711
	Max. H_x	21	61.002	42.183	0.060
	Max. H_z	25	61.002	23.880	41.410
	Max. M_x	2	4564.985	0.060	40.253
	Max. M_z	8	4579.306	-42.183	-0.060
	Max. Torsion	13	3.869	-23.880	-41.410
	Min. Vert	19	61.002	34.785	-20.111
	Min. H_x	9	61.002	-42.183	-0.060
	Min. H_z	13	61.002	-23.880	-41.410
	Min. M_x	14	-4553.738	-0.060	-40.253
	Min. M_z	20	-4564.824	42.183	0.060
	Min. Torsion	25	-3.868	23.880	41.410

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	67.780	0.000	-0.000	-4.571	-5.884	-0.000
1.2 Dead+1.0 Wind 0 deg -	81.336	-0.060	-40.253	-4564.985	1.695	2.409

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
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	61.002	-0.060	-40.253	-4507.264	3.470	2.424
1.2 Dead+1.0 Wind 30 deg - No Ice	81.336	20.893	-36.356	-3976.019	-2285.157	1.145
0.9 Dead+1.0 Wind 30 deg - No Ice	61.002	20.893	-36.356	-3925.817	-2255.316	1.154
1.2 Dead+1.0 Wind 60 deg - No Ice	81.336	34.785	-20.111	-2278.588	-3937.071	-0.382
0.9 Dead+1.0 Wind 60 deg - No Ice	61.002	34.785	-20.111	-2249.095	-3886.723	-0.381
1.2 Dead+1.0 Wind 90 deg - No Ice	81.336	42.183	0.060	3.311	-4579.306	-2.127
0.9 Dead+1.0 Wind 90 deg - No Ice	61.002	42.183	0.060	4.657	-4521.325	-2.135
1.2 Dead+1.0 Wind 120 deg - No Ice	81.336	40.527	23.495	2539.076	-4389.843	-3.599
0.9 Dead+1.0 Wind 120 deg - No Ice	61.002	40.527	23.495	2509.688	-4334.845	-3.615
1.2 Dead+1.0 Wind 150 deg - No Ice	81.336	23.880	41.410	4324.811	-2503.334	-3.851
0.9 Dead+1.0 Wind 150 deg - No Ice	61.002	23.880	41.410	4274.438	-2471.563	-3.869
1.2 Dead+1.0 Wind 180 deg - No Ice	81.336	0.060	40.253	4553.738	-16.173	-2.407
0.9 Dead+1.0 Wind 180 deg - No Ice	61.002	0.060	40.253	4498.949	-14.156	-2.423
1.2 Dead+1.0 Wind 210 deg - No Ice	81.336	-20.893	36.356	3964.771	2270.677	-1.142
0.9 Dead+1.0 Wind 210 deg - No Ice	61.002	-20.893	36.356	3917.501	2244.628	-1.151
1.2 Dead+1.0 Wind 240 deg - No Ice	81.336	-34.785	20.111	2267.340	3922.589	0.383
0.9 Dead+1.0 Wind 240 deg - No Ice	61.002	-34.785	20.111	2240.779	3876.033	0.382
1.2 Dead+1.0 Wind 270 deg - No Ice	81.336	-42.183	-0.060	-14.557	4564.824	2.125
0.9 Dead+1.0 Wind 270 deg - No Ice	61.002	-42.183	-0.060	-12.970	4510.635	2.134
1.2 Dead+1.0 Wind 300 deg - No Ice	81.336	-40.527	-23.495	-2550.304	4375.383	3.595
0.9 Dead+1.0 Wind 300 deg - No Ice	61.002	-40.527	-23.495	-2517.988	4324.171	3.612
1.2 Dead+1.0 Wind 330 deg - No Ice	81.336	-23.880	-41.410	-4336.049	2488.867	3.849
0.9 Dead+1.0 Wind 330 deg - No Ice	61.002	-23.880	-41.410	-4282.745	2460.886	3.868
1.2 Dead+1.0 Ice+1.0 Temp	152.118	0.000	-0.000	-18.197	-23.591	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	152.118	-0.010	-10.497	-1352.688	-22.062	0.570
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	152.118	5.380	-9.340	-1176.536	-690.268	0.298
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	152.118	9.075	-5.239	-684.061	-1176.423	-0.054
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	152.118	10.833	0.010	-16.644	-1360.654	-0.467
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	152.118	9.871	5.711	681.609	-1232.246	-0.916
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	152.118	5.835	10.107	1180.821	-715.773	-1.022
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	152.118	0.010	10.497	1316.104	-25.363	-0.571
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	152.118	-5.380	9.340	1139.954	642.848	-0.299
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	152.118	-9.075	5.239	647.476	1129.007	0.054
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	152.118	-10.833	-0.010	-19.946	1313.238	0.467
1.2 Dead+1.0 Wind 300	152.118	-9.871	-5.711	-718.198	1184.828	0.915

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	152.118	-5.835	-10.107	-1217.409	668.349	1.021
Dead+Wind 0 deg - Service	67.780	-0.013	-8.738	-987.622	-4.085	0.544
Dead+Wind 30 deg - Service	67.780	4.535	-7.892	-860.669	-497.123	0.268
Dead+Wind 60 deg - Service	67.780	7.551	-4.366	-494.692	-853.239	-0.071
Dead+Wind 90 deg - Service	67.780	9.157	0.013	-2.742	-991.733	-0.460
Dead+Wind 120 deg - Service	67.780	8.797	5.100	544.097	-951.125	-0.792
Dead+Wind 150 deg - Service	67.780	5.184	8.989	929.195	-544.295	-0.855
Dead+Wind 180 deg - Service	67.780	0.013	8.738	978.291	-7.933	-0.544
Dead+Wind 210 deg - Service	67.780	-4.535	7.892	851.338	485.106	-0.267
Dead+Wind 240 deg - Service	67.780	-7.551	4.366	485.361	841.222	0.071
Dead+Wind 270 deg - Service	67.780	-9.157	-0.013	-6.590	979.715	0.460
Dead+Wind 300 deg - Service	67.780	-8.797	-5.100	-553.428	939.108	0.792
Dead+Wind 330 deg - Service	67.780	-5.184	-8.989	-938.525	532.278	0.854

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	-67.780	0.000	-0.000	67.780	0.000	0.000%
2	-0.060	-81.336	-40.253	0.060	81.336	40.253	0.000%
3	-0.060	-61.002	-40.253	0.060	61.002	40.253	0.000%
4	20.893	-81.336	-36.356	-20.893	81.336	36.356	0.000%
5	20.893	-61.002	-36.356	-20.893	61.002	36.356	0.000%
6	34.785	-81.336	-20.111	-34.785	81.336	20.111	0.000%
7	34.785	-61.002	-20.111	-34.785	61.002	20.111	0.000%
8	42.183	-81.336	0.060	-42.183	81.336	-0.060	0.000%
9	42.183	-61.002	0.060	-42.183	61.002	-0.060	0.000%
10	40.527	-81.336	23.495	-40.527	81.336	-23.495	0.000%
11	40.527	-61.002	23.495	-40.527	61.002	-23.495	0.000%
12	23.880	-81.336	41.410	-23.880	81.336	-41.410	0.000%
13	23.880	-61.002	41.410	-23.880	61.002	-41.410	0.000%
14	0.060	-81.336	40.253	-0.060	81.336	-40.253	0.000%
15	0.060	-61.002	40.253	-0.060	61.002	-40.253	0.000%
16	-20.893	-81.336	36.356	20.893	81.336	-36.356	0.000%
17	-20.893	-61.002	36.356	20.893	61.002	-36.356	0.000%
18	-34.785	-81.336	20.111	34.785	81.336	-20.111	0.000%
19	-34.785	-61.002	20.111	34.785	61.002	-20.111	0.000%
20	-42.183	-81.336	-0.060	42.183	81.336	0.060	0.000%
21	-42.183	-61.002	-0.060	42.183	61.002	0.060	0.000%
22	-40.527	-81.336	-23.495	40.527	81.336	23.495	0.000%
23	-40.527	-61.002	-23.495	40.527	61.002	23.495	0.000%
24	-23.880	-81.336	-41.410	23.880	81.336	41.410	0.000%
25	-23.880	-61.002	-41.410	23.880	61.002	41.410	0.000%
26	0.000	-152.118	0.000	-0.000	152.118	0.000	0.000%
27	-0.010	-152.118	-10.497	0.010	152.118	10.497	0.000%
28	5.380	-152.118	-9.340	-5.380	152.118	9.340	0.000%
29	9.075	-152.118	-5.239	-9.075	152.118	5.239	0.000%
30	10.833	-152.118	0.010	-10.833	152.118	-0.010	0.000%
31	9.871	-152.118	5.711	-9.871	152.118	-5.711	0.000%
32	5.835	-152.118	10.107	-5.835	152.118	-10.107	0.000%
33	0.010	-152.118	10.497	-0.010	152.118	-10.497	0.000%
34	-5.380	-152.118	9.340	5.380	152.118	-9.340	0.000%
35	-9.075	-152.118	5.239	9.075	152.118	-5.239	0.000%
36	-10.833	-152.118	-0.010	10.833	152.118	0.010	0.000%
37	-9.871	-152.118	-5.711	9.871	152.118	5.711	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-5.835	-152.118	-10.107	5.835	152.118	10.107	0.000%
39	-0.013	-67.780	-8.738	0.013	67.780	8.738	0.000%
40	4.535	-67.780	-7.892	-4.535	67.780	7.892	0.000%
41	7.551	-67.780	-4.366	-7.551	67.780	4.366	0.000%
42	9.157	-67.780	0.013	-9.157	67.780	-0.013	0.000%
43	8.797	-67.780	5.100	-8.797	67.780	-5.100	0.000%
44	5.184	-67.780	8.989	-5.184	67.780	-8.989	0.000%
45	0.013	-67.780	8.738	-0.013	67.780	-8.738	0.000%
46	-4.535	-67.780	7.892	4.535	67.780	-7.892	0.000%
47	-7.551	-67.780	4.366	7.551	67.780	-4.366	0.000%
48	-9.157	-67.780	-0.013	9.157	67.780	0.013	0.000%
49	-8.797	-67.780	-5.100	8.797	67.780	5.100	0.000%
50	-5.184	-67.780	-8.989	5.184	67.780	8.989	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00001138
2	Yes	6	0.00000001	0.00008630
3	Yes	5	0.00000001	0.00071752
4	Yes	7	0.00000001	0.00008383
5	Yes	6	0.00000001	0.00050686
6	Yes	7	0.00000001	0.00008274
7	Yes	6	0.00000001	0.00050073
8	Yes	6	0.00000001	0.00006553
9	Yes	5	0.00000001	0.00053724
10	Yes	7	0.00000001	0.00009248
11	Yes	6	0.00000001	0.00055062
12	Yes	7	0.00000001	0.00009521
13	Yes	6	0.00000001	0.00056939
14	Yes	6	0.00000001	0.00010117
15	Yes	5	0.00000001	0.00084273
16	Yes	7	0.00000001	0.00008034
17	Yes	6	0.00000001	0.00048621
18	Yes	7	0.00000001	0.00008120
19	Yes	6	0.00000001	0.00049235
20	Yes	6	0.00000001	0.00007995
21	Yes	5	0.00000001	0.00065956
22	Yes	7	0.00000001	0.00010000
23	Yes	6	0.00000001	0.00059742
24	Yes	7	0.00000001	0.00008746
25	Yes	6	0.00000001	0.00052132
26	Yes	5	0.00000001	0.00076001
27	Yes	7	0.00000001	0.00054409
28	Yes	7	0.00000001	0.00066182
29	Yes	7	0.00000001	0.00066040
30	Yes	7	0.00000001	0.00054696
31	Yes	7	0.00000001	0.00066897
32	Yes	7	0.00000001	0.00065652
33	Yes	7	0.00000001	0.00052516
34	Yes	7	0.00000001	0.00060747
35	Yes	7	0.00000001	0.00060696
36	Yes	7	0.00000001	0.00051931
37	Yes	7	0.00000001	0.00066505
38	Yes	7	0.00000001	0.00064248
39	Yes	5	0.00000001	0.00010264
40	Yes	5	0.00000001	0.00034364
41	Yes	5	0.00000001	0.00032953
42	Yes	5	0.00000001	0.00008983
43	Yes	5	0.00000001	0.00037243
44	Yes	5	0.00000001	0.00042547
45	Yes	5	0.00000001	0.00010331
46	Yes	5	0.00000001	0.00029710
47	Yes	5	0.00000001	0.00030571

48	Yes	5	0.00000001	0.00008980
49	Yes	5	0.00000001	0.00045222
50	Yes	5	0.00000001	0.00033908

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160.333 - 155.333	24.276	43	1.452	0.008
L2	155.333 - 150.333	22.755	43	1.451	0.008
L3	150.333 - 146.833	21.244	43	1.432	0.006
L4	146.833 - 146.333	20.203	43	1.405	0.006
L5	146.333 - 141.333	20.056	43	1.403	0.005
L6	141.333 - 136.333	18.605	43	1.367	0.005
L7	136.333 - 131.333	17.198	43	1.317	0.004
L8	131.333 - 126.333	15.850	43	1.255	0.004
L9	126.333 - 121.333	14.574	43	1.179	0.003
L10	121.333 - 120.083	13.385	43	1.091	0.002
L11	120.083 - 119.833	13.102	43	1.068	0.002
L12	119.833 - 117.5	13.046	43	1.066	0.002
L13	117.5 - 117.25	12.531	43	1.042	0.002
L14	117.25 - 115.5	12.477	43	1.039	0.002
L15	115.5 - 115.25	12.099	43	1.021	0.002
L16	115.25 - 110.25	12.046	43	1.019	0.002
L17	110.25 - 104.083	11.001	43	0.976	0.002
L18	107.82 - 102.82	10.510	43	0.954	0.002
L19	102.82 - 100.5	9.524	43	0.924	0.002
L20	100.5 - 100.25	9.081	43	0.901	0.002
L21	100.25 - 98.5	9.033	43	0.899	0.002
L22	98.5 - 98.25	8.707	43	0.880	0.002
L23	98.25 - 93.25	8.662	43	0.877	0.002
L24	93.25 - 90.5	7.771	43	0.823	0.001
L25	90.5 - 90.25	7.306	43	0.792	0.001
L26	90.25 - 85.25	7.265	43	0.789	0.001
L27	85.25 - 83.5	6.467	43	0.735	0.001
L28	83.5 - 83.25	6.201	43	0.716	0.001
L29	83.25 - 80.75	6.163	43	0.714	0.001
L30	80.75 - 80.5	5.795	43	0.692	0.001
L31	80.5 - 80.25	5.759	43	0.690	0.001
L32	80.25 - 77.5	5.723	43	0.688	0.001
L33	77.5 - 77.25	5.333	43	0.666	0.001
L34	77.25 - 68.82	5.298	43	0.663	0.001
L35	73.291 - 68.291	4.766	43	0.620	0.001
L36	68.291 - 64.25	4.131	43	0.590	0.001
L37	64.25 - 64	3.651	43	0.545	0.001
L38	64 - 60.5	3.623	43	0.543	0.001
L39	60.5 - 60.25	3.237	43	0.510	0.001
L40	60.25 - 60.083	3.210	43	0.508	0.001
L41	60.083 - 59.833	3.192	43	0.506	0.001
L42	59.833 - 59.083	3.166	43	0.504	0.001
L43	59.083 - 58.833	3.087	43	0.498	0.001
L44	58.833 - 55.4167	3.061	43	0.496	0.001
L45	55.4167 - 55.1667	2.716	43	0.468	0.001
L46	55.1667 - 54.75	2.692	43	0.466	0.001
L47	54.75 - 54.5	2.651	43	0.463	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L48	54.5 - 49.5	2.627	43	0.460	0.001
L49	49.5 - 44.5	2.171	43	0.411	0.000
L50	44.5 - 41.25	1.767	43	0.361	0.000
L51	41.25 - 41	1.533	43	0.328	0.000
L52	41 - 34.291	1.516	43	0.325	0.000
L53	39 - 33.291	1.383	43	0.307	0.000
L54	33.291 - 31.5	1.030	43	0.281	0.000
L55	31.5 - 31.25	0.927	43	0.268	0.000
L56	31.25 - 30.5	0.913	43	0.266	0.000
L57	30.5 - 30.25	0.872	43	0.261	0.000
L58	30.25 - 25.75	0.858	43	0.259	0.000
L59	25.75 - 25.5	0.630	43	0.225	0.000
L60	25.5 - 24.6667	0.618	43	0.223	0.000
L61	24.6667 - 24.4167	0.580	43	0.216	0.000
L62	24.4167 - 24	0.569	43	0.214	0.000
L63	24 - 23.75	0.550	43	0.210	0.000
L64	23.75 - 18.75	0.539	43	0.208	0.000
L65	18.75 - 14.083	0.343	43	0.167	0.000
L66	14.083 - 13.817	0.198	43	0.129	0.000
L67	13.817 - 13.667	0.190	43	0.127	0.000
L68	13.667 - 10.5	0.187	43	0.126	0.000
L69	10.5 - 10.25	0.112	43	0.099	0.000
L70	10.25 - 5.25	0.107	43	0.097	0.000
L71	5.25 - 2.9	0.028	43	0.052	0.000
L72	2.9 - 2.65	0.009	43	0.028	0.000
L73	2.65 - 2.5	0.007	43	0.026	0.000
L74	2.5 - 2.25	0.006	43	0.024	0.000
L75	2.25 - 1.917	0.005	43	0.022	0.000
L76	1.917 - 1.667	0.004	43	0.019	0.000
L77	1.667 - 0	0.003	43	0.017	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	SBNH-1D6565C w/ Mount Pipe	43	22.958	1.452	0.008	34373
146.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	43	19.958	1.402	0.005	8257
145.000	Miscellaneous [NA 510-1]	43	19.666	1.396	0.005	8154
139.000	APXV18-206517S-C	43	17.942	1.345	0.005	5797
132.000	(2) SBNHH-1D65B w/ Mount Pipe	43	16.026	1.264	0.004	4267
131.000	6' x 2'' Horizontal Mount Pipe	43	15.763	1.251	0.004	4104
114.000	MX08FRO665-21 w/ Mount Pipe	43	11.780	1.009	0.002	6344
101.000	58532A	43	9.175	0.907	0.002	5951

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160.333 - 155.333	112.099	10	6.704	0.036
L2	155.333 - 150.333	105.106	10	6.701	0.035
L3	150.333 - 146.833	98.151	10	6.617	0.029
L4	146.833 - 146.333	93.362	10	6.491	0.025

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	146.333 - 141.333	92.685	10	6.483	0.025
L6	141.333 - 136.333	85.999	10	6.320	0.022
L7	136.333 - 131.333	79.518	10	6.091	0.020
L8	131.333 - 126.333	73.304	10	5.805	0.017
L9	126.333 - 121.333	67.419	10	5.456	0.014
L10	121.333 - 120.083	61.926	10	5.052	0.011
L11	120.083 - 119.833	60.620	10	4.945	0.011
L12	119.833 - 117.5	60.362	10	4.933	0.011
L13	117.5 - 117.25	57.984	10	4.823	0.010
L14	117.25 - 115.5	57.732	10	4.811	0.010
L15	115.5 - 115.25	55.987	10	4.729	0.009
L16	115.25 - 110.25	55.740	10	4.719	0.009
L17	110.25 - 104.083	50.910	10	4.521	0.009
L18	107.82 - 102.82	48.639	10	4.417	0.008
L19	102.82 - 100.5	44.081	10	4.280	0.008
L20	100.5 - 100.25	42.031	10	4.174	0.007
L21	100.25 - 98.5	41.813	10	4.162	0.007
L22	98.5 - 98.25	40.305	10	4.075	0.007
L23	98.25 - 93.25	40.093	10	4.063	0.007
L24	93.25 - 90.5	35.974	10	3.812	0.006
L25	90.5 - 90.25	33.823	10	3.669	0.006
L26	90.25 - 85.25	33.631	10	3.656	0.006
L27	85.25 - 83.5	29.938	10	3.405	0.005
L28	83.5 - 83.25	28.707	10	3.315	0.005
L29	83.25 - 80.75	28.534	10	3.305	0.005
L30	80.75 - 80.5	26.831	10	3.206	0.005
L31	80.5 - 80.25	26.664	10	3.198	0.005
L32	80.25 - 77.5	26.497	10	3.188	0.005
L33	77.5 - 77.25	24.691	10	3.086	0.004
L34	77.25 - 68.82	24.530	10	3.074	0.004
L35	73.291 - 68.291	22.067	10	2.871	0.004
L36	68.291 - 64.25	19.129	10	2.732	0.004
L37	64.25 - 64	16.905	10	2.526	0.003
L38	64 - 60.5	16.773	10	2.515	0.003
L39	60.5 - 60.25	14.987	10	2.362	0.003
L40	60.25 - 60.083	14.863	10	2.351	0.003
L41	60.083 - 59.833	14.781	10	2.344	0.003
L42	59.833 - 59.083	14.659	10	2.335	0.003
L43	59.083 - 58.833	14.295	10	2.305	0.003
L44	58.833 - 55.4167	14.174	10	2.296	0.003
L45	55.4167 - 55.1667	12.577	10	2.169	0.003
L46	55.1667 - 54.75	12.464	10	2.159	0.003
L47	54.75 - 54.5	12.277	10	2.144	0.003
L48	54.5 - 49.5	12.165	10	2.133	0.003
L49	49.5 - 44.5	10.053	10	1.902	0.002
L50	44.5 - 41.25	8.183	10	1.670	0.002
L51	41.25 - 41	7.098	10	1.518	0.002
L52	41 - 34.291	7.019	10	1.507	0.002
L53	39 - 33.291	6.405	10	1.423	0.002
L54	33.291 - 31.5	4.769	10	1.301	0.001
L55	31.5 - 31.25	4.292	10	1.242	0.001
L56	31.25 - 30.5	4.228	10	1.234	0.001
L57	30.5 - 30.25	4.036	10	1.209	0.001
L58	30.25 - 25.75	3.973	10	1.200	0.001
L59	25.75 - 25.5	2.917	10	1.041	0.001
L60	25.5 - 24.6667	2.863	10	1.032	0.001
L61	24.6667 - 24.4167	2.685	10	1.001	0.001
L62	24.4167 - 24	2.633	10	0.991	0.001
L63	24 - 23.75	2.547	10	0.974	0.001
L64	23.75 - 18.75	2.497	10	0.964	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L65	18.75 - 14.083	1.586	10	0.775	0.001
L66	14.083 - 13.817	0.915	10	0.599	0.001
L67	13.817 - 13.667	0.882	10	0.588	0.001
L68	13.667 - 10.5	0.863	10	0.583	0.001
L69	10.5 - 10.25	0.518	10	0.460	0.000
L70	10.25 - 5.25	0.494	10	0.450	0.000
L71	5.25 - 2.9	0.132	10	0.242	0.000
L72	2.9 - 2.65	0.040	10	0.131	0.000
L73	2.65 - 2.5	0.034	10	0.119	0.000
L74	2.5 - 2.25	0.030	10	0.112	0.000
L75	2.25 - 1.917	0.024	10	0.102	0.000
L76	1.917 - 1.667	0.018	10	0.088	0.000
L77	1.667 - 0	0.013	10	0.077	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	SBNH-1D6565C w/ Mount Pipe	10	106.039	6.703	0.035	8175
146.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	10	92.235	6.477	0.025	1868
145.000	Miscellaneous [NA 510-1]	10	90.887	6.453	0.024	1840
139.000	APXV18-206517S-C	10	82.946	6.219	0.021	1296
132.000	(2) SBNHH-1D65B w/ Mount Pipe	10	74.115	5.847	0.017	951
131.000	6' x 2" Horizontal Mount Pipe	10	72.901	5.783	0.017	914
114.000	MX08FRO665-21 w/ Mount Pipe	10	54.513	4.673	0.009	1395
101.000	58532A	10	42.468	4.199	0.007	1302

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	160.333 - 155.333 (1)	TP16x16x0.375	5.000	0.000	0.0	18.408	-4.482	579.845	0.008
L2	155.333 - 150.333 (2)	TP16x16x0.375	5.000	0.000	0.0	18.408	-4.912	579.845	0.008
L3	150.333 - 146.833 (3)	TP16x16x0.375	3.500	0.000	0.0	18.408	-5.225	579.845	0.009
L4	146.833 - 146.333 (4)	TP22x22x0.375	0.500	0.000	0.0	25.476	-5.288	802.505	0.007
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	5.000	0.000	0.0	18.253	-10.215	985.640	0.010
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	5.000	0.000	0.0	18.996	-11.037	1025.810	0.011
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	5.000	0.000	0.0	19.740	-15.348	1065.970	0.014
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	5.000	0.000	0.0	20.484	-16.399	1106.140	0.015
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	5.000	0.000	0.0	21.228	-17.175	1146.310	0.015
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	1.250	0.000	0.0	21.414	-17.370	1156.350	0.015
L11	120.083 -	TP26.897x26.851x0.488	0.250	0.000	0.0	41.457	-17.444	2238.670	0.008

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	119.833 (11)								
L12	119.833 - 117.5 (12)	TP27.328x26.897x0.488	2.333	0.000	0.0	42.134	-17.937	2275.220	0.008
L13	117.5 - 117.25 (13)	TP27.375x27.328x0.5	0.250	0.000	0.0	43.268	-18.005	2336.480	0.008
L14	117.25 - 115.5 (14)	TP27.698x27.375x0.5	1.750	0.000	0.0	43.789	-18.402	2364.600	0.008
L15	115.5 - 115.25 (15)	TP27.744x27.698x0.663	0.250	0.000	0.0	57.772	-18.485	3119.700	0.006
L16	115.25 - 110.25 (16)	TP28.668x27.744x0.65	5.000	0.000	0.0	58.642	-22.785	3166.690	0.007
L17	110.25 - 104.083 (17)	TP29.808x28.668x0.638	6.167	0.000	0.0	58.462	-23.466	3156.950	0.007
L18	104.083 - 102.82 (18)	TP29.541x28.617x0.7	5.000	0.000	0.0	65.007	-25.795	3510.370	0.007
L19	102.82 - 100.5 (19)	TP29.969x29.541x0.688	2.320	0.000	0.0	64.822	-26.592	3500.390	0.008
L20	100.5 - 100.25 (20)	TP30.015x29.969x0.638	0.250	0.000	0.0	60.305	-26.679	3256.480	0.008
L21	100.25 - 98.5 (21)	TP30.338x30.015x0.625	1.750	0.000	0.0	59.798	-27.202	3229.100	0.008
L22	98.5 - 98.25 (22)	TP30.385x30.338x0.663	0.250	0.000	0.0	63.405	-27.303	3423.850	0.008
L23	98.25 - 93.25 (23)	TP31.308x30.385x0.65	5.000	0.000	0.0	64.167	-28.919	3465.010	0.008
L24	93.25 - 90.5 (24)	TP31.816x31.308x0.638	2.750	0.000	0.0	64.001	-29.825	3456.050	0.009
L25	90.5 - 90.25 (25)	TP31.862x31.816x0.688	0.250	0.000	0.0	69.012	-29.934	3726.650	0.008
L26	90.25 - 85.25 (26)	TP32.785x31.862x0.675	5.000	0.000	0.0	69.791	-31.777	3768.730	0.008
L27	85.25 - 83.5 (27)	TP33.108x32.785x0.663	1.750	0.000	0.0	69.215	-32.423	3737.600	0.009
L28	83.5 - 83.25 (28)	TP33.154x33.108x0.913	0.250	0.000	0.0	94.735	-32.557	5115.680	0.006
L29	83.25 - 80.75 (29)	TP33.616x33.154x0.888	2.500	0.000	0.0	93.530	-33.650	5050.620	0.007
L30	80.75 - 80.5 (30)	TP33.662x33.616x1.063	0.250	0.000	0.0	111.532	-33.784	6022.710	0.006
L31	80.5 - 80.25 (31)	TP33.708x33.662x0.975	0.250	0.000	0.0	102.766	-33.904	5549.390	0.006
L32	80.25 - 77.5 (32)	TP34.216x33.708x0.963	2.750	0.000	0.0	103.061	-35.211	5565.320	0.006
L33	77.5 - 77.25 (33)	TP34.262x34.216x0.688	0.250	0.000	0.0	74.326	-35.327	4013.620	0.009
L34	77.25 - 68.82 (34)	TP35.819x34.262x0.688	8.430	0.000	0.0	75.945	-36.968	4101.010	0.009
L35	68.82 - 68.291 (35)	TP35.291x34.368x0.75	5.000	0.000	0.0	83.418	-40.713	4504.550	0.009
L36	68.291 - 64.25 (36)	TP36.037x35.291x0.738	4.041	0.000	0.0	83.828	-42.539	4526.740	0.009
L37	64.25 - 64 (37)	TP36.084x36.037x0.875	0.250	0.000	0.0	99.200	-42.673	5356.810	0.008
L38	64 - 60.5 (38)	TP36.73x36.084x0.863	3.500	0.000	0.0	99.612	-44.355	5379.060	0.008
L39	60.5 - 60.25 (39)	TP36.776x36.73x0.925	0.250	0.000	0.0	106.782	-44.496	5766.210	0.008
L40	60.25 - 60.083 (40)	TP36.807x36.776x0.925	0.167	0.000	0.0	106.874	-44.583	5771.170	0.008
L41	60.083 - 59.833 (41)	TP36.853x36.807x0.975	0.250	0.000	0.0	112.638	-44.715	6082.470	0.007
L42	59.833 - 59.083 (42)	TP36.991x36.853x0.975	0.750	0.000	0.0	113.073	-45.105	6105.950	0.007
L43	59.083 - 58.833 (43)	TP37.037x36.991x1.05	0.250	0.000	0.0	121.673	-45.252	6570.370	0.007
L44	58.833 - 55.4167 (44)	TP37.668x37.037x1.025	3.416	0.000	0.0	120.941	-47.163	6530.790	0.007
L45	55.4167 - 55.1667 (45)	TP37.714x37.668x1.025	0.250	0.000	0.0	121.093	-47.316	6539.010	0.007
L46	55.1667 -	TP37.791x37.714x1.025	0.417	0.000	0.0	121.34	-47.550	6552.720	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	54.75 (46)					7			
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	0.250	0.000	0.0	98.323	-47.676	5309.450	0.009
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	5.000	0.000	0.0	99.281	-50.167	5361.180	0.009
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	5.000	0.000	0.0	100.164	-52.699	5408.830	0.010
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	3.250	0.000	0.0	100.152	-54.362	5408.180	0.010
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	0.250	0.000	0.0	111.163	-54.515	6002.800	0.009
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	6.709	0.000	0.0	112.203	-55.617	6058.980	0.009
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	5.709	0.000	0.0	150.661	-61.543	8813.670	0.007
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	1.791	0.000	0.0	151.904	-62.705	8886.360	0.007
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	0.250	0.000	0.0	152.077	-62.889	8896.500	0.007
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	0.750	0.000	0.0	152.597	-63.380	8926.940	0.007
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	0.250	0.000	0.0	146.451	-63.549	8567.380	0.007
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	4.500	0.000	0.0	146.208	-66.460	8553.150	0.008
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	0.250	0.000	0.0	136.638	-66.630	7993.320	0.008
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	0.833	0.000	0.0	137.142	-67.153	8022.820	0.008
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	0.250	0.000	0.0	124.197	-67.299	7265.520	0.009
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	0.417	0.000	0.0	122.780	-67.527	7182.620	0.009
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	0.250	0.000	0.0	137.697	-67.674	8055.270	0.008
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	5.000	0.000	0.0	137.371	-70.554	8036.220	0.009
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	4.667	0.000	0.0	138.415	-73.277	8097.280	0.009
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	0.266	0.000	0.0	135.139	-73.450	7905.660	0.009
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	0.150	0.000	0.0	135.225	-73.542	7910.640	0.009
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	3.167	0.000	0.0	135.283	-75.433	7914.070	0.010
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	0.250	0.000	0.0	128.441	-75.592	7513.790	0.010
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	5.000	0.000	0.0	127.527	-78.523	7460.310	0.011
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	2.350	0.000	0.0	110.651	-79.761	6473.090	0.012
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	0.250	0.000	0.0	110.762	-79.912	6479.560	0.012
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	0.150	0.000	0.0	110.828	-79.993	6483.450	0.012
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	0.250	0.000	0.0	129.077	-80.131	7550.980	0.011
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	0.333	0.000	0.0	129.249	-80.316	7561.040	0.011
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	0.250	0.000	0.0	114.841	-80.449	6718.210	0.012
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	1.667	0.000	0.0	113.770	-81.305	6655.550	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	160.333 - 155.333 (1)	TP16x16x0.375	11.956	240.372	0.050	0.000	240.372	0.000
L2	155.333 - 150.333 (2)	TP16x16x0.375	54.943	240.372	0.229	0.000	240.372	0.000
L3	150.333 - 146.833 (3)	TP16x16x0.375	86.816	240.372	0.361	0.000	240.372	0.000
L4	146.833 - 146.333 (4)	TP22x22x0.375	91.484	460.380	0.199	0.000	460.380	0.000
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	166.846	561.216	0.297	0.000	561.216	0.000
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	245.777	600.296	0.409	0.000	600.296	0.000
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	337.897	639.998	0.528	0.000	639.998	0.000
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	450.646	680.253	0.662	0.000	680.253	0.000
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	566.712	720.983	0.786	0.000	720.983	0.000
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	596.213	731.232	0.815	0.000	731.232	0.000
L11	120.083 - 119.833 (11)	TP26.897x26.851x0.488	602.138	1501.958	0.401	0.000	1501.958	0.000
L12	119.833 - 117.5 (12)	TP27.328x26.897x0.488	657.976	1551.850	0.424	0.000	1551.850	0.000
L13	117.5 - 117.25 (13)	TP27.375x27.328x0.5	664.019	1594.942	0.416	0.000	1594.942	0.000
L14	117.25 - 115.5 (14)	TP27.698x27.375x0.5	706.656	1633.917	0.432	0.000	1633.917	0.000
L15	115.5 - 115.25 (15)	TP27.744x27.698x0.663	712.795	2133.733	0.334	0.000	2133.733	0.000
L16	115.25 - 110.25 (16)	TP28.668x27.744x0.65	851.758	2243.533	0.380	0.000	2243.533	0.000
L17	110.25 - 104.083 (17)	TP29.808x28.668x0.638	923.300	2275.292	0.406	0.000	2275.292	0.000
L18	104.083 - 102.82 (18)	TP29.541x28.617x0.7	1074.442	2557.342	0.420	0.000	2557.342	0.000
L19	102.82 - 100.5 (19)	TP29.969x29.541x0.688	1146.258	2591.058	0.442	0.000	2591.058	0.000
L20	100.5 - 100.25 (20)	TP30.015x29.969x0.638	1154.083	2422.642	0.476	0.000	2422.642	0.000
L21	100.25 - 98.5 (21)	TP30.338x30.015x0.625	1209.142	2431.300	0.497	0.000	2431.300	0.000
L22	98.5 - 98.25 (22)	TP30.385x30.338x0.663	1217.050	2575.517	0.473	0.000	2575.517	0.000
L23	98.25 - 93.25 (23)	TP31.308x30.385x0.65	1377.025	2691.408	0.512	0.000	2691.408	0.000
L24	93.25 - 90.5 (24)	TP31.816x31.308x0.638	1466.558	2732.025	0.537	0.000	2732.025	0.000
L25	90.5 - 90.25 (25)	TP31.862x31.816x0.688	1474.758	2940.950	0.501	0.000	2940.950	0.000
L26	90.25 - 85.25 (26)	TP32.785x31.862x0.675	1640.558	3066.525	0.535	0.000	3066.525	0.000
L27	85.25 - 83.5 (27)	TP33.108x32.785x0.663	1699.475	3074.808	0.553	0.000	3074.808	0.000
L28	83.5 - 83.25 (28)	TP33.154x33.108x0.913	1707.933	4150.008	0.412	0.000	4150.008	0.000
L29	83.25 - 80.75 (29)	TP33.616x33.154x0.888	1793.208	4163.867	0.431	0.000	4163.867	0.000
L30	80.75 - 80.5 (30)	TP33.662x33.616x1.063	1801.800	4919.517	0.366	0.000	4919.517	0.000
L31	80.5 - 80.25 (31)	TP33.708x33.662x0.975	1810.408	4563.883	0.397	0.000	4563.883	0.000
L32	80.25 - 77.5 (32)	TP34.216x33.708x0.963	1905.783	4653.542	0.410	0.000	4653.542	0.000
L33	77.5 - 77.25 (33)	TP34.262x34.216x0.688	1914.517	3416.592	0.560	0.000	3416.592	0.000
L34	77.25 - 68.82 (34)	TP35.819x34.262x0.688	2054.092	3568.517	0.576	0.000	3568.517	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 $\frac{M_{uy}}{\phi M_{ny}}$
L35	68.82 - 68.291 (35)	TP35.291x34.368x0.75	2234.267	3940.108	0.567	0.000	3940.108	0.000
L36	68.291 - 64.25 (36)	TP36.037x35.291x0.738	2382.950	4049.717	0.588	0.000	4049.717	0.000
L37	64.25 - 64 (37)	TP36.084x36.037x0.875	2392.225	4761.442	0.502	0.000	4761.442	0.000
L38	64 - 60.5 (38)	TP36.73x36.084x0.863	2523.133	4874.483	0.518	0.000	4874.483	0.000
L39	60.5 - 60.25 (39)	TP36.776x36.73x0.925	2532.558	5214.017	0.486	0.000	5214.017	0.000
L40	60.25 - 60.083 (40)	TP36.807x36.776x0.925	2538.850	5223.100	0.486	0.000	5223.100	0.000
L41	60.083 - 59.833 (41)	TP36.853x36.807x0.975	2548.292	5496.767	0.464	0.000	5496.767	0.000
L42	59.833 - 59.083 (42)	TP36.991x36.853x0.975	2576.658	5539.833	0.465	0.000	5539.833	0.000
L43	59.083 - 58.833 (43)	TP37.037x36.991x1.05	2586.133	5944.233	0.435	0.000	5944.233	0.000
L44	58.833 - 55.4167 (44)	TP37.668x37.037x1.025	2716.500	6023.125	0.451	0.000	6023.125	0.000
L45	55.4167 - 55.1667 (45)	TP37.714x37.668x1.025	2726.100	6038.508	0.451	0.000	6038.508	0.000
L46	55.1667 - 54.75 (46)	TP37.791x37.714x1.025	2742.133	6064.200	0.452	0.000	6064.200	0.000
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	2751.758	4973.558	0.553	0.000	4973.558	0.000
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	2946.042	5153.383	0.572	0.000	5153.383	0.000
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	3143.533	5331.733	0.590	0.000	5331.733	0.000
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	3273.625	5418.442	0.604	0.000	5418.442	0.000
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	3283.692	5994.733	0.548	0.000	5994.733	0.000
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	3364.517	6108.683	0.551	0.000	6108.683	0.000
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	3598.717	8820.250	0.408	0.000	8820.250	0.000
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	3673.208	8968.417	0.410	0.000	8968.417	0.000
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	3683.642	8989.167	0.410	0.000	8989.167	0.000
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	3714.983	9051.667	0.410	0.000	9051.667	0.000
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	3725.450	8718.833	0.427	0.000	8718.833	0.000
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	3915.733	8897.583	0.440	0.000	8897.583	0.000
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	3926.417	8354.917	0.470	0.000	8354.917	0.000
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	3962.092	8417.417	0.471	0.000	8417.417	0.000
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	3972.825	7668.250	0.518	0.000	7668.250	0.000
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	3990.733	7599.491	0.525	0.000	7599.491	0.000
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	4001.500	8486.500	0.472	0.000	8486.500	0.000
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	4219.075	8667.083	0.487	0.000	8667.083	0.000
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	4426.042	8917.250	0.496	0.000	8917.250	0.000
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	4437.942	8726.250	0.509	0.000	8726.250	0.000
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	4444.658	8737.333	0.509	0.000	8737.333	0.000
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	4587.317	8865.000	0.517	0.000	8865.000	0.000
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	4598.642	8444.583	0.545	0.000	8444.583	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 $\frac{M_{uy}}{\phi M_{ny}}$
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	4827.233	8570.833	0.563	0.000	8570.833	0.000
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	4935.967	7549.941	0.654	0.000	7549.941	0.000
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	4947.575	7565.183	0.654	0.000	7565.183	0.000
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	4954.550	7574.333	0.654	0.000	7574.333	0.000
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	4966.175	8782.417	0.565	0.000	8782.417	0.000
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	4981.683	8806.083	0.566	0.000	8806.083	0.000
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	4993.333	7866.591	0.635	0.000	7866.591	0.000
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	5071.258	7850.075	0.646	0.000	7850.075	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	160.333 - 155.333 (1)	TP16x16x0.375	8.288	173.953	0.048	1.247	238.964	0.005
L2	155.333 - 150.333 (2)	TP16x16x0.375	8.893	173.953	0.051	1.338	238.964	0.006
L3	150.333 - 146.833 (3)	TP16x16x0.375	9.309	173.953	0.054	1.401	238.964	0.006
L4	146.833 - 146.333 (4)	TP22x22x0.375	9.348	240.752	0.039	1.401	457.725	0.003
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	15.152	295.692	0.051	1.400	589.750	0.002
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	16.362	307.742	0.053	1.400	638.797	0.002
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	21.830	319.792	0.068	2.522	689.803	0.004
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	22.907	331.843	0.069	2.520	742.768	0.003
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	23.524	343.893	0.068	2.518	797.692	0.003
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	23.688	346.905	0.068	2.517	811.728	0.003
L11	120.083 - 119.833 (11)	TP26.897x26.851x0.488	23.711	671.601	0.035	2.517	1560.183	0.002
L12	119.833 - 117.5 (12)	TP27.328x26.897x0.488	24.149	682.565	0.035	2.552	1611.542	0.002
L13	117.5 - 117.25 (13)	TP27.375x27.328x0.5	24.191	700.945	0.035	2.555	1657.017	0.002
L14	117.25 - 115.5 (14)	TP27.698x27.375x0.5	24.534	709.380	0.035	2.581	1697.142	0.002
L15	115.5 - 115.25 (15)	TP27.744x27.698x0.663	24.572	935.910	0.026	2.585	2229.517	0.001
L16	115.25 - 110.25 (16)	TP28.668x27.744x0.65	29.203	950.006	0.031	2.899	2341.358	0.001
L17	110.25 - 104.083 (17)	TP29.808x28.668x0.638	29.675	947.086	0.031	2.939	2372.617	0.001
L18	104.083 - 102.82 (18)	TP29.541x28.617x0.7	30.755	1053.110	0.029	3.022	2671.650	0.001
L19	102.82 - 100.5 (19)	TP29.969x29.541x0.688	31.283	1050.120	0.030	3.262	2704.783	0.001
L20	100.5 - 100.25 (20)	TP30.015x29.969x0.638	31.322	976.943	0.032	3.266	2524.575	0.001
L21	100.25 - 98.5 (21)	TP30.338x30.015x0.625	31.604	968.731	0.033	3.266	2531.950	0.001
L22	98.5 - 98.25 (22)	TP30.385x30.338x0.663	31.624	1027.150	0.031	3.266	2685.433	0.001
L23	98.25 - 93.25 (23)	TP31.308x30.385x0.65	32.361	1039.500	0.031	3.264	2803.283	0.001
L24	93.25 - 90.5 (24)	TP31.816x31.308x0.638	32.760	1036.820	0.032	3.264	2843.492	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L25	90.5 - 90.25 (25)	TP31.862x31.816x0.688	32.782	1118.000	0.029	3.263	3065.750	0.001
L26	90.25 - 85.25 (26)	TP32.785x31.862x0.675	33.531	1130.620	0.030	3.262	3193.433	0.001
L27	85.25 - 83.5 (27)	TP33.108x32.785x0.663	33.813	1121.280	0.030	3.261	3200.158	0.001
L28	83.5 - 83.25 (28)	TP33.154x33.108x0.913	33.843	1534.700	0.022	3.264	4352.558	0.001
L29	83.25 - 80.75 (29)	TP33.616x33.154x0.888	34.367	1515.190	0.023	3.290	4362.067	0.001
L30	80.75 - 80.5 (30)	TP33.662x33.616x1.063	34.398	1806.810	0.019	3.290	5181.158	0.001
L31	80.5 - 80.25 (31)	TP33.708x33.662x0.975	34.441	1664.820	0.021	3.290	4793.542	0.001
L32	80.25 - 77.5 (32)	TP34.216x33.708x0.963	34.914	1669.600	0.021	3.289	4883.725	0.001
L33	77.5 - 77.25 (33)	TP34.262x34.216x0.688	34.941	1204.090	0.029	3.289	3556.083	0.001
L34	77.25 - 68.82 (34)	TP35.819x34.262x0.688	35.568	1230.300	0.029	3.288	3712.625	0.001
L35	68.82 - 68.291 (35)	TP35.291x34.368x0.75	36.485	1351.360	0.027	3.287	4105.942	0.001
L36	68.291 - 64.25 (36)	TP36.037x35.291x0.738	37.099	1358.020	0.027	3.286	4216.775	0.001
L37	64.25 - 64 (37)	TP36.084x36.037x0.875	37.123	1607.040	0.023	3.286	4977.092	0.001
L38	64 - 60.5 (38)	TP36.73x36.084x0.863	37.673	1613.720	0.023	3.285	5091.250	0.001
L39	60.5 - 60.25 (39)	TP36.776x36.73x0.925	37.697	1729.860	0.022	3.285	5455.208	0.001
L40	60.25 - 60.083 (40)	TP36.807x36.776x0.925	37.721	1731.350	0.022	3.285	5464.592	0.001
L41	60.083 - 59.833 (41)	TP36.853x36.807x0.975	37.759	1824.740	0.021	3.285	5758.741	0.001
L42	59.833 - 59.083 (42)	TP36.991x36.853x0.975	37.874	1831.780	0.021	3.285	5803.267	0.001
L43	59.083 - 58.833 (43)	TP37.037x36.991x1.05	37.903	1971.110	0.019	3.285	6239.667	0.001
L44	58.833 - 55.4167 (44)	TP37.668x37.037x1.025	38.406	1959.240	0.020	3.284	6315.083	0.001
L45	55.4167 - 55.1667 (45)	TP37.714x37.668x1.025	38.428	1961.700	0.020	3.284	6331.000	0.001
L46	55.1667 - 54.75 (46)	TP37.791x37.714x1.025	38.490	1965.820	0.020	3.284	6357.575	0.001
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	38.521	1592.840	0.024	3.284	5185.817	0.001
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	39.184	1608.350	0.024	3.283	5368.692	0.001
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	39.820	1622.650	0.025	3.282	5549.942	0.001
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	40.253	1622.460	0.025	3.282	5636.683	0.001
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	40.268	1800.840	0.022	3.282	6249.875	0.001
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	40.546	1817.690	0.022	3.282	6367.400	0.001
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	41.473	2644.100	0.016	3.281	9261.583	0.000
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	41.727	2665.910	0.016	3.281	9415.000	0.000
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	41.733	2668.950	0.016	3.281	9436.500	0.000
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	41.841	2678.080	0.016	3.281	9501.167	0.000
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	41.864	2570.210	0.016	3.281	9140.167	0.000
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	42.700	2565.950	0.017	3.335	9316.833	0.000
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	42.728	2397.990	0.018	3.339	8732.500	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 $\frac{T_u}{\phi T_n}$
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	42.900	2406.850	0.018	3.351	8797.083	0.000
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	42.934	2179.660	0.020	3.354	7994.675	0.000
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	43.014	2154.780	0.020	3.361	7920.300	0.000
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	43.056	2416.580	0.018	3.364	8868.417	0.000
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	43.969	2410.870	0.018	3.446	9047.167	0.000
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	44.737	2429.180	0.018	3.514	9301.417	0.000
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	44.758	2371.700	0.019	3.517	9096.750	0.000
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	44.779	2373.190	0.019	3.518	9108.167	0.000
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	45.304	2374.220	0.019	3.542	9236.000	0.000
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	45.322	2254.140	0.020	3.543	8787.917	0.000
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	46.109	2238.090	0.021	3.570	8910.750	0.000
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	46.458	1941.930	0.024	3.583	7826.558	0.000
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	46.463	1943.870	0.024	3.584	7842.225	0.000
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	46.482	1945.030	0.024	3.585	7851.633	0.000
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	46.522	2265.290	0.021	3.586	9128.667	0.000
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	46.575	2268.310	0.021	3.588	9153.000	0.000
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	46.610	2015.460	0.023	3.589	8158.591	0.000
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	46.899	1996.670	0.023	3.599	8138.375	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	160.333 - 155.333 (1)	0.008	0.050	0.000	0.048	0.005	0.060	1.050	4.8.2
L2	155.333 - 150.333 (2)	0.008	0.229	0.000	0.051	0.006	0.240	1.050	4.8.2
L3	150.333 - 146.833 (3)	0.009	0.361	0.000	0.054	0.006	0.374	1.050	4.8.2
L4	146.833 - 146.333 (4)	0.007	0.199	0.000	0.039	0.003	0.207	1.050	4.8.2
L5	146.333 - 141.333 (5)	0.010	0.297	0.000	0.051	0.002	0.311	1.050	4.8.2
L6	141.333 - 136.333 (6)	0.011	0.409	0.000	0.053	0.002	0.423	1.050	4.8.2
L7	136.333 - 131.333 (7)	0.014	0.528	0.000	0.068	0.004	0.548	1.050	4.8.2
L8	131.333 - 126.333 (8)	0.015	0.662	0.000	0.069	0.003	0.683	1.050	4.8.2
L9	126.333 - 121.333 (9)	0.015	0.786	0.000	0.068	0.003	0.806	1.050	4.8.2
L10	121.333 - 120.083 (10)	0.015	0.815	0.000	0.068	0.003	0.835	1.050	4.8.2
L11	120.083 - 119.833 (11)	0.008	0.401	0.000	0.035	0.002	0.410	1.050	4.8.2
L12	119.833 - 117.5 (12)	0.008	0.424	0.000	0.035	0.002	0.433	1.050	4.8.2
L13	117.5 - 117.25 (13)	0.008	0.416	0.000	0.035	0.002	0.425	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
L14	117.25 - 115.5 (14)	0.008	0.432	0.000	0.035	0.002	0.442	1.050	4.8.2
L15	115.5 - 115.25 (15)	0.006	0.334	0.000	0.026	0.001	0.341	1.050	4.8.2
L16	115.25 - 110.25 (16)	0.007	0.380	0.000	0.031	0.001	0.388	1.050	4.8.2
L17	110.25 - 104.083 (17)	0.007	0.406	0.000	0.031	0.001	0.414	1.050	4.8.2
L18	104.083 - 102.82 (18)	0.007	0.420	0.000	0.029	0.001	0.428	1.050	4.8.2
L19	102.82 - 100.5 (19)	0.008	0.442	0.000	0.030	0.001	0.451	1.050	4.8.2
L20	100.5 - 100.25 (20)	0.008	0.476	0.000	0.032	0.001	0.486	1.050	4.8.2
L21	100.25 - 98.5 (21)	0.008	0.497	0.000	0.033	0.001	0.507	1.050	4.8.2
L22	98.5 - 98.25 (22)	0.008	0.473	0.000	0.031	0.001	0.482	1.050	4.8.2
L23	98.25 - 93.25 (23)	0.008	0.512	0.000	0.031	0.001	0.521	1.050	4.8.2
L24	93.25 - 90.5 (24)	0.009	0.537	0.000	0.032	0.001	0.547	1.050	4.8.2
L25	90.5 - 90.25 (25)	0.008	0.501	0.000	0.029	0.001	0.510	1.050	4.8.2
L26	90.25 - 85.25 (26)	0.008	0.535	0.000	0.030	0.001	0.544	1.050	4.8.2
L27	85.25 - 83.5 (27)	0.009	0.553	0.000	0.030	0.001	0.562	1.050	4.8.2
L28	83.5 - 83.25 (28)	0.006	0.412	0.000	0.022	0.001	0.418	1.050	4.8.2
L29	83.25 - 80.75 (29)	0.007	0.431	0.000	0.023	0.001	0.438	1.050	4.8.2
L30	80.75 - 80.5 (30)	0.006	0.366	0.000	0.019	0.001	0.372	1.050	4.8.2
L31	80.5 - 80.25 (31)	0.006	0.397	0.000	0.021	0.001	0.403	1.050	4.8.2
L32	80.25 - 77.5 (32)	0.006	0.410	0.000	0.021	0.001	0.416	1.050	4.8.2
L33	77.5 - 77.25 (33)	0.009	0.560	0.000	0.029	0.001	0.570	1.050	4.8.2
L34	77.25 - 68.82 (34)	0.009	0.576	0.000	0.029	0.001	0.586	1.050	4.8.2
L35	68.82 - 68.291 (35)	0.009	0.567	0.000	0.027	0.001	0.577	1.050	4.8.2
L36	68.291 - 64.25 (36)	0.009	0.588	0.000	0.027	0.001	0.599	1.050	4.8.2
L37	64.25 - 64 (37)	0.008	0.502	0.000	0.023	0.001	0.511	1.050	4.8.2
L38	64 - 60.5 (38)	0.008	0.518	0.000	0.023	0.001	0.526	1.050	4.8.2
L39	60.5 - 60.25 (39)	0.008	0.486	0.000	0.022	0.001	0.494	1.050	4.8.2
L40	60.25 - 60.083 (40)	0.008	0.486	0.000	0.022	0.001	0.494	1.050	4.8.2
L41	60.083 - 59.833 (41)	0.007	0.464	0.000	0.021	0.001	0.471	1.050	4.8.2
L42	59.833 - 59.083 (42)	0.007	0.465	0.000	0.021	0.001	0.473	1.050	4.8.2
L43	59.083 - 58.833 (43)	0.007	0.435	0.000	0.019	0.001	0.442	1.050	4.8.2
L44	58.833 - 55.4167 (44)	0.007	0.451	0.000	0.020	0.001	0.459	1.050	4.8.2
L45	55.4167 - 55.1667 (45)	0.007	0.451	0.000	0.020	0.001	0.459	1.050	4.8.2
L46	55.1667 - 54.75 (46)	0.007	0.452	0.000	0.020	0.001	0.460	1.050	4.8.2
L47	54.75 - 54.5 (47)	0.009	0.553	0.000	0.024	0.001	0.563	1.050	4.8.2
L48	54.5 - 49.5 (48)	0.009	0.572	0.000	0.024	0.001	0.582	1.050	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L49	49.5 - 44.5 (49)	0.010	0.590	0.000	0.025	0.001	0.600	1.050	4.8.2
L50	44.5 - 41.25 (50)	0.010	0.604	0.000	0.025	0.001	0.615	1.050	4.8.2
L51	41.25 - 41 (51)	0.009	0.548	0.000	0.022	0.001	0.557	1.050	4.8.2
L52	41 - 34.291 (52)	0.009	0.551	0.000	0.022	0.001	0.560	1.050	4.8.2
L53	34.291 - 33.291 (53)	0.007	0.408	0.000	0.016	0.000	0.415	1.050	4.8.2
L54	33.291 - 31.5 (54)	0.007	0.410	0.000	0.016	0.000	0.417	1.050	4.8.2
L55	31.5 - 31.25 (55)	0.007	0.410	0.000	0.016	0.000	0.417	1.050	4.8.2
L56	31.25 - 30.5 (56)	0.007	0.410	0.000	0.016	0.000	0.418	1.050	4.8.2
L57	30.5 - 30.25 (57)	0.007	0.427	0.000	0.016	0.000	0.435	1.050	4.8.2
L58	30.25 - 25.75 (58)	0.008	0.440	0.000	0.017	0.000	0.448	1.050	4.8.2
L59	25.75 - 25.5 (59)	0.008	0.470	0.000	0.018	0.000	0.479	1.050	4.8.2
L60	25.5 - 24.6667 (60)	0.008	0.471	0.000	0.018	0.000	0.479	1.050	4.8.2
L61	24.6667 - 24.4167 (61)	0.009	0.518	0.000	0.020	0.000	0.528	1.050	4.8.2
L62	24.4167 - 24 (62)	0.009	0.525	0.000	0.020	0.000	0.535	1.050	4.8.2
L63	24 - 23.75 (63)	0.008	0.472	0.000	0.018	0.000	0.480	1.050	4.8.2
L64	23.75 - 18.75 (64)	0.009	0.487	0.000	0.018	0.000	0.496	1.050	4.8.2
L65	18.75 - 14.083 (65)	0.009	0.496	0.000	0.018	0.000	0.506	1.050	4.8.2
L66	14.083 - 13.817 (66)	0.009	0.509	0.000	0.019	0.000	0.518	1.050	4.8.2
L67	13.817 - 13.667 (67)	0.009	0.509	0.000	0.019	0.000	0.518	1.050	4.8.2
L68	13.667 - 10.5 (68)	0.010	0.517	0.000	0.019	0.000	0.527	1.050	4.8.2
L69	10.5 - 10.25 (69)	0.010	0.545	0.000	0.020	0.000	0.555	1.050	4.8.2
L70	10.25 - 5.25 (70)	0.011	0.563	0.000	0.021	0.000	0.574	1.050	4.8.2
L71	5.25 - 2.9 (71)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L72	2.9 - 2.65 (72)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L73	2.65 - 2.5 (73)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L74	2.5 - 2.25 (74)	0.011	0.565	0.000	0.021	0.000	0.577	1.050	4.8.2
L75	2.25 - 1.917 (75)	0.011	0.566	0.000	0.021	0.000	0.577	1.050	4.8.2
L76	1.917 - 1.667 (76)	0.012	0.635	0.000	0.023	0.000	0.647	1.050	4.8.2
L77	1.667 - 0 (77)	0.012	0.646	0.000	0.023	0.000	0.659	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	160.333 - 155.333	Pole	TP16x16x0.375	1	-4.482	608.837	5.7	Pass
L2	155.333 - 150.333	Pole	TP16x16x0.375	2	-4.912	608.837	22.9	Pass

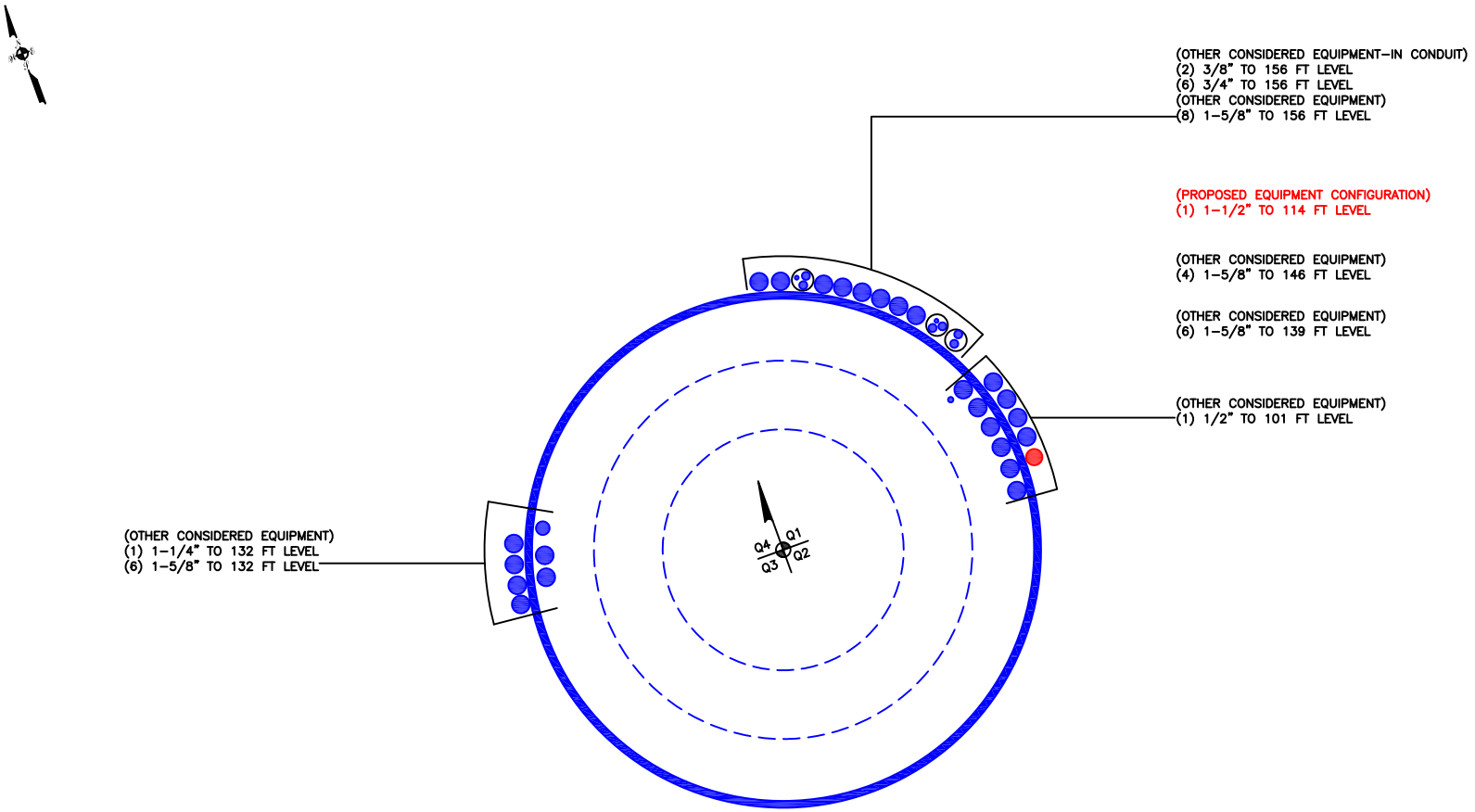
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L3	150.333 - 146.833	Pole	TP16x16x0.375	3	-5.225	608.837	35.6	Pass
L4	146.833 - 146.333	Pole	TP22x22x0.375	4	-5.288	842.630	19.7	Pass
L5	146.333 - 141.333	Pole	TP22.924x22x0.25	5	-10.215	1034.922	29.6	Pass
L6	141.333 - 136.333	Pole	TP23.848x22.924x0.25	6	-11.037	1077.100	40.3	Pass
L7	136.333 - 131.333	Pole	TP24.772x23.848x0.25	7	-15.348	1119.268	52.1	Pass
L8	131.333 - 126.333	Pole	TP25.696x24.772x0.25	8	-16.399	1161.447	65.0	Pass
L9	126.333 - 121.333	Pole	TP26.62x25.696x0.25	9	-17.175	1203.625	76.8	Pass
L10	121.333 - 120.083	Pole	TP26.851x26.62x0.25	10	-17.370	1214.167	79.6	Pass
L11	120.083 - 119.833	Pole	TP26.897x26.851x0.488	11	-17.444	2350.603	39.1	Pass
L12	119.833 - 117.5	Pole	TP27.328x26.897x0.488	12	-17.937	2388.981	41.3	Pass
L13	117.5 - 117.25	Pole	TP27.375x27.328x0.5	13	-18.005	2453.304	40.5	Pass
L14	117.25 - 115.5	Pole	TP27.698x27.375x0.5	14	-18.402	2482.830	42.1	Pass
L15	115.5 - 115.25	Pole	TP27.744x27.698x0.663	15	-18.485	3275.685	32.5	Pass
L16	115.25 - 110.25	Pole	TP28.668x27.744x0.65	16	-22.785	3325.024	36.9	Pass
L17	110.25 - 104.083	Pole	TP29.808x28.668x0.638	17	-23.466	3314.797	39.5	Pass
L18	104.083 - 102.82	Pole	TP29.541x28.617x0.7	18	-25.795	3685.888	40.8	Pass
L19	102.82 - 100.5	Pole	TP29.969x29.541x0.688	19	-26.592	3675.409	42.9	Pass
L20	100.5 - 100.25	Pole	TP30.015x29.969x0.638	20	-26.679	3419.304	46.3	Pass
L21	100.25 - 98.5	Pole	TP30.338x30.015x0.625	21	-27.202	3390.555	48.3	Pass
L22	98.5 - 98.25	Pole	TP30.385x30.338x0.663	22	-27.303	3595.042	45.9	Pass
L23	98.25 - 93.25	Pole	TP31.308x30.385x0.65	23	-28.919	3638.260	49.6	Pass
L24	93.25 - 90.5	Pole	TP31.816x31.308x0.638	24	-29.825	3628.852	52.0	Pass
L25	90.5 - 90.25	Pole	TP31.862x31.816x0.688	25	-29.934	3912.982	48.6	Pass
L26	90.25 - 85.25	Pole	TP32.785x31.862x0.675	26	-31.777	3957.166	51.8	Pass
L27	85.25 - 83.5	Pole	TP33.108x32.785x0.663	27	-32.423	3924.480	53.6	Pass
L28	83.5 - 83.25	Pole	TP33.154x33.108x0.913	28	-32.557	5371.464	39.9	Pass
L29	83.25 - 80.75	Pole	TP33.616x33.154x0.888	29	-33.650	5303.151	41.7	Pass
L30	80.75 - 80.5	Pole	TP33.662x33.616x1.063	30	-33.784	6323.845	35.5	Pass
L31	80.5 - 80.25	Pole	TP33.708x33.662x0.975	31	-33.904	5826.859	38.4	Pass
L32	80.25 - 77.5	Pole	TP34.216x33.708x0.963	32	-35.211	5843.586	39.7	Pass
L33	77.5 - 77.25	Pole	TP34.262x34.216x0.688	33	-35.327	4214.301	54.3	Pass
L34	77.25 - 68.82	Pole	TP35.819x34.262x0.688	34	-36.968	4306.060	55.8	Pass
L35	68.82 - 68.291	Pole	TP35.291x34.368x0.75	35	-40.713	4729.777	54.9	Pass
L36	68.291 - 64.25	Pole	TP36.037x35.291x0.738	36	-42.539	4753.077	57.0	Pass
L37	64.25 - 64	Pole	TP36.084x36.037x0.875	37	-42.673	5624.650	48.7	Pass
L38	64 - 60.5	Pole	TP36.73x36.084x0.863	38	-44.355	5648.013	50.1	Pass
L39	60.5 - 60.25	Pole	TP36.776x36.73x0.925	39	-44.496	6054.520	47.0	Pass
L40	60.25 - 60.083	Pole	TP36.807x36.776x0.925	40	-44.583	6059.728	47.1	Pass
L41	60.083 - 59.833	Pole	TP36.853x36.807x0.975	41	-44.715	6386.593	44.9	Pass
L42	59.833 - 59.083	Pole	TP36.991x36.853x0.975	42	-45.105	6411.247	45.0	Pass
L43	59.083 - 58.833	Pole	TP37.037x36.991x1.05	43	-45.252	6898.888	42.1	Pass
L44	58.833 - 55.4167	Pole	TP37.668x37.037x1.025	44	-47.163	6857.329	43.7	Pass
L45	55.4167 - 55.1667	Pole	TP37.714x37.668x1.025	45	-47.316	6865.960	43.7	Pass
L46	55.1667 - 54.75	Pole	TP37.791x37.714x1.025	46	-47.550	6880.356	43.8	Pass
L47	54.75 - 54.5	Pole	TP37.837x37.791x0.825	47	-47.676	5574.922	53.6	Pass
L48	54.5 - 49.5	Pole	TP38.76x37.837x0.813	48	-50.167	5629.239	55.4	Pass
L49	49.5 - 44.5	Pole	TP39.683x38.76x0.8	49	-52.699	5679.271	57.1	Pass
L50	44.5 - 41.25	Pole	TP40.283x39.683x0.788	50	-54.362	5678.589	58.6	Pass
L51	41.25 - 41	Pole	TP40.329x40.283x0.875	51	-54.515	6302.940	53.1	Pass
L52	41 - 34.291	Pole	TP41.568x40.329x0.875	52	-55.617	6361.929	53.4	Pass
L53	34.291 - 33.291	Pole	TP40.996x39.949x1.175	53	-61.543	9254.353	39.5	Pass
L54	33.291 - 31.5	Pole	TP41.324x40.996x1.175	54	-62.705	9330.678	39.7	Pass
L55	31.5 - 31.25	Pole	TP41.37x41.324x1.175	55	-62.889	9341.325	39.7	Pass
L56	31.25 - 30.5	Pole	TP41.507x41.37x1.175	56	-63.380	9373.287	39.8	Pass
L57	30.5 - 30.25	Pole	TP41.553x41.507x1.125	57	-63.549	8995.749	41.4	Pass
L58	30.25 - 25.75	Pole	TP42.378x41.553x1.1	58	-66.460	8980.807	42.7	Pass
L59	25.75 - 25.5	Pole	TP42.424x42.378x1.025	59	-66.630	8392.986	45.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L60	25.5 - 24.6667	Pole	TP42.577x42.424x1.025	60	-67.153	8423.961	45.7	Pass
L61	24.6667 - 24.4167	Pole	TP42.623x42.577x0.925	61	-67.299	7628.796	50.3	Pass
L62	24.4167 - 24	Pole	TP42.699x42.623x0.913	62	-67.527	7541.751	50.9	Pass
L63	24 - 23.75	Pole	TP42.745x42.699x1.025	63	-67.674	8458.033	45.7	Pass
L64	23.75 - 18.75	Pole	TP43.662x42.745x1	64	-70.554	8438.031	47.2	Pass
L65	18.75 - 14.083	Pole	TP44.518x43.662x0.988	65	-73.277	8502.144	48.2	Pass
L66	14.083 - 13.817	Pole	TP44.566x44.518x0.963	66	-73.450	8300.943	49.4	Pass
L67	13.817 - 13.667	Pole	TP44.594x44.566x0.963	67	-73.542	8306.172	49.4	Pass
L68	13.667 - 10.5	Pole	TP45.175x44.594x0.95	68	-75.433	8309.773	50.2	Pass
L69	10.5 - 10.25	Pole	TP45.22x45.175x0.9	69	-75.592	7889.479	52.9	Pass
L70	10.25 - 5.25	Pole	TP46.137x45.22x0.875	70	-78.523	7833.325	54.7	Pass
L71	5.25 - 2.9	Pole	TP46.568x46.137x0.75	71	-79.761	6796.744	63.5	Pass
L72	2.9 - 2.65	Pole	TP46.614x46.568x0.75	72	-79.912	6803.538	63.5	Pass
L73	2.65 - 2.5	Pole	TP46.642x46.614x0.75	73	-79.993	6807.622	63.5	Pass
L74	2.5 - 2.25	Pole	TP46.687x46.642x0.875	74	-80.131	7928.529	54.9	Pass
L75	2.25 - 1.917	Pole	TP46.748x46.687x0.875	75	-80.316	7939.092	54.9	Pass
L76	1.917 - 1.667	Pole	TP46.794x46.748x0.775	76	-80.449	7054.120	61.6	Pass
L77	1.667 - 0	Pole	TP47.1x46.794x0.763	77	-81.305	6988.327	62.7	Pass
							Summary	
						Pole (L10)	79.6	Pass
						RATING =	**79.6**	**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-IN CONDUIT)
(2) 3/8" TO 156 FT LEVEL
(6) 3/4" TO 156 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 156 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 114 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1-5/8" TO 146 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 139 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 101 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 132 FT LEVEL
(6) 1-5/8" TO 132 FT LEVEL
Q4
Q1
Q3
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876334

Work Order: 1962706

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	160.333	13.5	0	0	16	16	0.375		A53-B-35
2	146.833	0.5	0	0	22.00	22	0.375		A53-B-35
3	146.333	42.25	3.737	12	22.00	29.808	0.25	Auto	A607-60
4	107.82	39	4.471	12	28.62	35.819	0.3125	Auto	A607-60
5	73.291	39	4.709	12	34.37	41.568	0.375	Auto	A607-60
6	39	39	0	12	39.95	47.1	0.375	Auto	A607-65

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	1.917	14.083	channel	MP3-04 (1.1875in)	2						E1		E1				
2	2.917	30.5	channel	MP3-05 (1.1875in)	2			E1								E1	
3	30.5	59.083	channel	MP3-04 (1.1875in)	2			E1								E1	
4	13.917	31.5	channel	MP3-05 (1.1875in)	1							E1					
5	31.5	60.083	channel	MP3-04 (1.1875in)	1							E1					
6	2.5	30.5	plate	MS-600 (1.1875")	3		E2			E2				E2			
7	30.5	60.5	plate	MS-650 (1.1875")	3		E2			E2				E2			
8	60.5	80.5	plate	MS-600 (1.1875")	3		E2			E2				E2			
9	80.5	98.5	plate	MS-600 (1.1875")	2					E2				E2			
10	80.5	100.5	plate	MS-650 (1.1875")	1		E2										
11	100.5	117.5	plate	CCI-SFP-045100	1				E3								
12	98.5	115.5	plate	CCI-SFP-045100	2								E3				E3
13	3	10.5	plate	CCI-AFP-060100	1												E4
14	10.5	41.25	plate	CCI-AFP-085125	1												E4
15	64.25	80.75	plate	CCI-AFP-085125	1												E4
16	24.6667	55.41667	plate	CCI-AFP-085125	2						E5				E5		
17	55.41667	90.5	plate	CCI-AFP-085125	2						E5				E5		
18	90.5	120.083	plate	CCI-AFP-060100	2						E5				E5		
19	100.5	120.083	plate	CCI-AFP-060100	1		E5										
20	25.75	35.25	plate	MS-650 (1.1875")	3	E2			E2				E2				
21	54.75	64.25	plate	MS-600 (1.1875")	3	E2			E2				E2				
22	77.5	83.5	plate	MS-600 (1.1875")	3	E2			E2				E2				
23	0	24	plate	TS-5.875x1.25	4		-5.5	-5.5			-5.5				-5.5		
24	0	2.5	plate	ARB-5.875x1.25	4	E4			E4			E4			E4		
25	24	25.75	plate	TS-5.875x1.25	3		-5.5				-5.5				-5.5		
26																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
2	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
3	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
4	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
5	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
7	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
8	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
9	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
10	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
11	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
13	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
14	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
15	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
16	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
17	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
18	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
19	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
20	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
21	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
22	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
23	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	A572-65
24	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	A572-65
25	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	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)
TS-5.875x1.25	Top	-	-	-	-	70	None	-	-	-	-	342	0.250	-
	Bottom	-	-	-	-	70	CJP Groove	10.25	0.625	45	0.5	-	-	-
ARB-5.875x1.25	Top	-	-	-	-	70	None	-	-	-	-	342	0.250	-
	Bottom	-	-	-	-	70	CJP Groove	10.25	0.625	45	0.5	-	-	-

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	160.333 - 155.333	5		0	16.000	16.000	0.375	A53-B-35	1.000
2	155.333 - 150.333	5		0	16.000	16.000	0.375	A53-B-35	1.000
3	150.333 - 146.833	3.5	0	0	16.000	16.000	0.375	A53-B-35	1.000
4	146.833 - 146.333	0.5	0	0	22.000	22.000	0.375	A53-B-35	1.000
5	146.333 - 141.333	5		12	22.000	22.924	0.25	A607-60	1.000
6	141.333 - 136.333	5		12	22.924	23.848	0.25	A607-60	1.000
7	136.333 - 131.333	5		12	23.848	24.772	0.25	A607-60	1.000
8	131.333 - 126.333	5		12	24.772	25.696	0.25	A607-60	1.000
9	126.333 - 121.333	5		12	25.696	26.620	0.25	A607-60	1.000
10	121.333 - 120.083	1.25		12	26.620	26.851	0.25	A607-60	1.000
11	120.083 - 119.833	0.25		12	26.851	26.897	0.4875	A607-60	0.952
12	119.833 - 117.5	2.333		12	26.897	27.328	0.4875	A607-60	0.945
13	117.5 - 117.25	0.25		12	27.328	27.375	0.5	A607-60	1.025
14	117.25 - 115.5	1.75		12	27.375	27.698	0.5	A607-60	1.019
15	115.5 - 115.25	0.25		12	27.698	27.744	0.6625	A607-60	0.929
16	115.25 - 110.25	5		12	27.744	28.668	0.65	A607-60	0.928
17	110.25 - 107.82	6.167	3.737	12	28.668	29.808	0.6375	A607-60	0.937
18	107.82 - 102.82	5		12	28.617	29.541	0.7	A607-60	0.938
19	102.82 - 100.5	2.32		12	29.541	29.969	0.6875	A607-60	0.947
20	100.5 - 100.25	0.25		12	29.969	30.015	0.6375	A607-60	0.979
21	100.25 - 98.5	1.75		12	30.015	30.338	0.625	A607-60	0.993
22	98.5 - 98.25	0.25		12	30.338	30.385	0.6625	A607-60	0.985
23	98.25 - 93.25	5		12	30.385	31.308	0.65	A607-60	0.987
24	93.25 - 90.5	2.75		12	31.308	31.816	0.6375	A607-60	0.998
25	90.5 - 90.25	0.25		12	31.816	31.862	0.6875	A607-60	1.060
26	90.25 - 85.25	5		12	31.862	32.785	0.675	A607-60	1.062
27	85.25 - 83.5	1.75		12	32.785	33.108	0.6625	A607-60	1.075
28	83.5 - 83.25	0.25		12	33.108	33.154	0.9125	A607-60	0.976
29	83.25 - 80.75	2.5		12	33.154	33.616	0.8875	A607-60	0.994
30	80.75 - 80.5	0.25		12	33.616	33.662	1.0625	A607-60	0.929
31	80.5 - 80.25	0.25		12	33.662	33.708	0.975	A607-60	0.988
32	80.25 - 77.5	2.75		12	33.708	34.216	0.9625	A607-60	0.991
33	77.5 - 77.25	0.25		12	34.216	34.262	0.6875	A607-60	1.132
34	77.25 - 73.291	8.43	4.471	12	34.262	35.819	0.6875	A607-60	1.117
35	73.291 - 68.291	5		12	34.368	35.291	0.75	A607-60	1.104
36	68.291 - 64.25	4.041		12	35.291	36.037	0.7375	A607-60	1.110
37	64.25 - 64	0.25		12	36.037	36.084	0.875	A607-60	1.013
38	64 - 60.5	3.5		12	36.084	36.730	0.8625	A607-60	1.016
39	60.5 - 60.25	0.25		12	36.730	36.776	0.925	A607-60	1.008
40	60.25 - 60.083	0.167		12	36.776	36.807	0.925	A607-60	1.008
41	60.083 - 59.833	0.25		12	36.807	36.853	0.975	A607-60	0.993
42	59.833 - 59.083	0.75		12	36.853	36.991	0.975	A607-60	0.991
43	59.083 - 58.833	0.25		12	36.991	37.037	1.05	A607-60	0.989
44	58.833 - 55.41667	3.41633		12	37.037	37.668	1.025	A607-60	1.002
45	55.41667 - 55.16667	0.25		12	37.668	37.714	1.025	A607-60	1.001
46	55.16667 - 54.75	0.41667		12	37.714	37.791	1.025	A607-60	1.000
47	54.75 - 54.5	0.25		12	37.791	37.837	0.825	A607-60	1.051
48	54.5 - 49.5	5		12	37.837	38.760	0.8125	A607-60	1.052
49	49.5 - 44.5	5		12	38.760	39.683	0.8	A607-60	1.054
50	44.5 - 41.25	3.25		12	39.683	40.283	0.7875	A607-60	1.061
51	41.25 - 41	0.25		12	40.283	40.329	0.875	A607-60	1.052
52	41 - 39	6.709	4.709	12	40.329	41.568	0.875	A607-60	1.047
53	39 - 33.291	5.709		12	39.949	40.996	1.175	A607-65	0.944
54	33.291 - 31.5	1.791		12	40.996	41.324	1.175	A607-65	0.939
55	31.5 - 31.25	0.25		12	41.324	41.370	1.175	A607-65	0.948
56	31.25 - 30.5	0.75		12	41.370	41.507	1.175	A607-65	0.946
57	30.5 - 30.25	0.25		12	41.507	41.553	1.125	A607-65	0.963
58	30.25 - 25.75	4.5		12	41.553	42.378	1.1	A607-65	0.972
59	25.75 - 25.5	0.25		12	42.378	42.424	1.025	A607-65	1.002
60	25.5 - 24.6667	0.8333		12	42.424	42.577	1.025	A607-65	1.000
61	24.6667 - 24.4167	0.25		12	42.577	42.623	0.925	A607-65	0.933
62	24.4167 - 24	0.4167		12	42.623	42.699	0.9125	A607-65	0.945
63	24 - 23.75	0.25		12	42.699	42.745	1.025	A607-65	0.889
64	23.75 - 18.75	5		12	42.745	43.662	1	A607-65	0.900
65	18.75 - 14.083	4.667		12	43.662	44.518	0.9875	A607-65	0.900
66	14.083 - 13.817	0.266		12	44.518	44.566	0.9625	A607-65	0.942
67	13.817 - 13.667	0.15		12	44.566	44.594	0.9625	A607-65	0.941
68	13.667 - 10.5	3.167		12	44.594	45.175	0.95	A607-65	0.946
69	10.5 - 10.25	0.25		12	45.175	45.220	0.9	A607-65	0.961
70	10.25 - 5.25	5		12	45.220	46.137	0.875	A607-65	0.977
71	5.25 - 2.9	2.35		12	46.137	46.568	0.75	A607-65	0.974
72	2.9 - 2.65	0.25		12	46.568	46.614	0.75	A607-65	0.973
73	2.65 - 2.5	0.15		12	46.614	46.642	0.75	A607-65	0.973
74	2.5 - 2.25	0.25		12	46.642	46.687	0.875	A607-65	0.895
75	2.25 - 1.917	0.333		12	46.687	46.748	0.875	A607-65	0.894
76	1.917 - 1.667	0.25		12	46.748	46.794	0.775	A607-65	0.935
77	1.667 - 0	1.667		12	46.794	47.100	0.7625	A607-65	0.947

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160.333 - 155.333	4.48	11.96	8.29
2	155.333 - 150.333	4.91	54.94	8.89
3	150.333 - 146.833	5.22	86.82	9.31
4	146.833 - 146.333	5.29	91.48	9.35
5	146.333 - 141.333	10.22	166.85	15.15
6	141.333 - 136.333	11.04	245.78	16.36
7	136.333 - 131.333	15.35	337.90	21.83
8	131.333 - 126.333	16.40	450.65	22.91
9	126.333 - 121.333	17.17	566.71	23.52
10	121.333 - 120.083	17.37	596.21	23.69
11	120.083 - 119.833	17.44	602.14	23.71
12	119.833 - 117.5	17.94	657.98	24.15
13	117.5 - 117.25	18.01	664.02	24.19
14	117.25 - 115.5	18.40	706.66	24.53
15	115.5 - 115.25	18.48	712.80	24.57
16	115.25 - 110.25	22.78	851.76	29.20
17	110.25 - 107.82	23.47	923.30	29.67
18	107.82 - 102.82	25.79	1074.44	30.76
19	102.82 - 100.5	26.59	1146.26	31.28
20	100.5 - 100.25	26.68	1154.08	31.32
21	100.25 - 98.5	27.20	1209.14	31.60
22	98.5 - 98.25	27.30	1217.05	31.62
23	98.25 - 93.25	28.92	1377.03	32.36
24	93.25 - 90.5	29.82	1466.56	32.76
25	90.5 - 90.25	29.93	1474.75	32.78
26	90.25 - 85.25	31.78	1640.56	33.53
27	85.25 - 83.5	32.42	1699.47	33.81
28	83.5 - 83.25	32.56	1707.93	33.84
29	83.25 - 80.75	33.65	1793.20	34.37
30	80.75 - 80.5	33.78	1801.80	34.40
31	80.5 - 80.25	33.90	1810.41	34.44
32	80.25 - 77.5	35.21	1905.78	34.91
33	77.5 - 77.25	35.33	1914.52	34.94
34	77.25 - 73.291	36.97	2054.09	35.57
35	73.291 - 68.291	40.71	2234.27	36.49
36	68.291 - 64.25	42.54	2382.95	37.10
37	64.25 - 64	42.67	2392.23	37.12
38	64 - 60.5	44.35	2523.13	37.67
39	60.5 - 60.25	44.50	2532.55	37.70
40	60.25 - 60.083	44.58	2538.85	37.72
41	60.083 - 59.833	44.71	2548.29	37.76
42	59.833 - 59.083	45.11	2576.66	37.87
43	59.083 - 58.833	45.25	2586.13	37.90
44	58.833 - 55.41667	47.16	2716.50	38.41
45	55.41667 - 55.16667	47.32	2726.10	38.43
46	55.16667 - 54.75	47.55	2742.13	38.49
47	54.75 - 54.5	47.68	2751.76	38.52
48	54.5 - 49.5	50.17	2946.04	39.18
49	49.5 - 44.5	52.70	3143.53	39.82
50	44.5 - 41.25	54.36	3273.63	40.25
51	41.25 - 41	54.52	3283.69	40.27
52	41 - 39	55.62	3364.52	40.55
53	39 - 33.291	61.54	3598.71	41.47
54	33.291 - 31.5	62.70	3673.21	41.73
55	31.5 - 31.25	62.89	3683.64	41.73
56	31.25 - 30.5	63.38	3714.98	41.84
57	30.5 - 30.25	63.55	3725.45	41.86
58	30.25 - 25.75	66.46	3915.73	42.70
59	25.75 - 25.5	66.63	3926.41	42.73
60	25.5 - 24.6667	67.15	3962.10	42.90
61	24.6667 - 24.4167	67.30	3972.83	42.93
62	24.4167 - 24	67.53	3990.74	43.01
63	24 - 23.75	67.67	4001.50	43.06
64	23.75 - 18.75	70.55	4219.08	43.97
65	18.75 - 14.083	73.28	4426.04	44.74
66	14.083 - 13.817	73.45	4437.94	44.76
67	13.817 - 13.667	73.54	4444.66	44.78
68	13.667 - 10.5	75.43	4587.32	45.30
69	10.5 - 10.25	75.59	4598.64	45.32
70	10.25 - 5.25	78.52	4827.23	46.11
71	5.25 - 2.9	79.76	4935.96	46.46
72	2.9 - 2.65	79.91	4947.58	46.46
73	2.65 - 2.5	79.99	4954.55	46.48
74	2.5 - 2.25	80.13	4966.18	46.52
75	2.25 - 1.917	80.32	4981.68	46.58
76	1.917 - 1.667	80.45	4993.33	46.61
77	1.667 - 0	81.30	5071.26	46.90

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160.33 - 155.33	Pole	TP16x16x0.375	Pole	5.7%	Pass
155.33 - 150.33	Pole	TP16x16x0.375	Pole	22.8%	Pass
150.33 - 146.83	Pole	TP16x16x0.375	Pole	35.5%	Pass
146.83 - 146.33	Pole	TP22x22x0.375	Pole	19.7%	Pass
146.33 - 141.33	Pole	TP22.924x22x0.25	Pole	29.5%	Pass
141.33 - 136.33	Pole	TP23.848x22.924x0.25	Pole	40.2%	Pass
136.33 - 131.33	Pole	TP24.772x23.848x0.25	Pole	52.0%	Pass
131.33 - 126.33	Pole	TP25.696x24.772x0.25	Pole	64.8%	Pass
126.33 - 121.33	Pole	TP26.62x25.696x0.25	Pole	76.5%	Pass
121.33 - 120.08	Pole	TP26.851x26.62x0.25	Pole	79.3%	Pass
120.08 - 119.83	Pole + Reinf.	TP26.897x26.851x0.4875	Reinf. 18 Tension Rupture	55.1%	Pass
119.83 - 117.5	Pole + Reinf.	TP27.328x26.897x0.4875	Reinf. 18 Tension Rupture	58.8%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.375x27.328x0.5	Reinf. 19 Tension Rupture	54.7%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.698x27.375x0.5	Reinf. 19 Tension Rupture	57.2%	Pass
115.5 - 115.25	Pole + Reinf.	TP27.744x27.698x0.6625	Reinf. 11 Tension Rupture	50.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.668x27.744x0.65	Reinf. 11 Tension Rupture	57.7%	Pass
110.25 - 107.82	Pole + Reinf.	TP29.808x28.668x0.6375	Reinf. 11 Tension Rupture	61.1%	Pass
107.82 - 102.82	Pole + Reinf.	TP29.541x28.617x0.7	Reinf. 11 Tension Rupture	63.3%	Pass
102.82 - 100.5	Pole + Reinf.	TP29.969x29.541x0.6875	Reinf. 11 Tension Rupture	66.2%	Pass
100.5 - 100.25	Pole + Reinf.	TP30.015x29.969x0.6375	Reinf. 18 Tension Rupture	67.6%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.338x30.015x0.625	Reinf. 18 Tension Rupture	69.7%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.385x30.338x0.6625	Reinf. 10 Tension Rupture	66.7%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.308x30.385x0.65	Reinf. 10 Tension Rupture	72.1%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.816x31.308x0.6375	Reinf. 10 Tension Rupture	74.9%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.862x31.816x0.6875	Reinf. 10 Tension Rupture	73.9%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.785x31.862x0.675	Reinf. 10 Tension Rupture	78.7%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.108x32.785x0.6625	Reinf. 10 Tension Rupture	80.4%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.154x33.108x0.9125	Reinf. 22 Tension Rupture	60.9%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.616x33.154x0.8875	Reinf. 22 Tension Rupture	62.8%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.662x33.616x1.0625	Reinf. 22 Tension Rupture	51.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP33.708x33.662x0.975	Reinf. 8 Tension Rupture	55.6%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.216x33.708x0.9625	Reinf. 8 Tension Rupture	57.3%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.262x34.216x0.6875	Reinf. 8 Tension Rupture	80.2%	Pass
77.25 - 73.29	Pole + Reinf.	TP35.819x34.262x0.6875	Reinf. 8 Tension Rupture	83.4%	Pass
73.29 - 68.29	Pole + Reinf.	TP35.291x34.368x0.75	Reinf. 8 Tension Rupture	81.7%	Pass
68.29 - 64.25	Pole + Reinf.	TP36.037x35.291x0.7375	Reinf. 8 Tension Rupture	84.4%	Pass
64.25 - 64	Pole + Reinf.	TP36.084x36.037x0.875	Reinf. 21 Tension Rupture	74.4%	Pass
64 - 60.5	Pole + Reinf.	TP36.73x36.084x0.8625	Reinf. 21 Tension Rupture	76.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.776x36.73x0.925	Reinf. 21 Tension Rupture	72.2%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.807x36.776x0.925	Reinf. 21 Tension Rupture	72.3%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.853x36.807x0.975	Reinf. 21 Tension Rupture	69.9%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.991x36.853x0.975	Reinf. 21 Tension Rupture	70.3%	Pass
59.08 - 58.83	Pole + Reinf.	TP37.037x36.991x1.05	Reinf. 21 Tension Rupture	64.0%	Pass
58.83 - 55.42	Pole + Reinf.	TP37.668x37.037x1.025	Reinf. 21 Tension Rupture	65.7%	Pass
55.42 - 55.17	Pole + Reinf.	TP37.714x37.668x1.025	Reinf. 21 Tension Rupture	65.8%	Pass
55.17 - 54.75	Pole + Reinf.	TP37.791x37.714x1.025	Reinf. 21 Tension Rupture	66.0%	Pass
54.75 - 54.5	Pole + Reinf.	TP37.837x37.791x0.825	Reinf. 7 Tension Rupture	80.2%	Pass
54.5 - 49.5	Pole + Reinf.	TP38.76x37.837x0.8125	Reinf. 7 Tension Rupture	82.7%	Pass
49.5 - 44.5	Pole + Reinf.	TP39.683x38.76x0.8	Reinf. 7 Tension Rupture	85.2%	Pass
44.5 - 41.25	Pole + Reinf.	TP40.283x39.683x0.7875	Reinf. 7 Tension Rupture	86.7%	Pass
41.25 - 41	Pole + Reinf.	TP40.329x40.283x0.875	Reinf. 7 Tension Rupture	76.1%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.329x0.875	Reinf. 7 Tension Rupture	76.9%	Pass
39 - 33.29	Pole + Reinf.	TP40.996x39.949x1.175	Reinf. 7 Tension Rupture	60.1%	Pass
33.29 - 31.5	Pole + Reinf.	TP41.324x40.996x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.37x41.324x1.175	Reinf. 7 Tension Rupture	60.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.507x41.37x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.553x41.507x1.125	Reinf. 6 Tension Rupture	63.7%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.378x41.553x1.1	Reinf. 6 Tension Rupture	65.2%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.424x42.378x1.025	Reinf. 6 Tension Rupture	71.4%	Pass
25.5 - 24.67	Pole + Reinf.	TP42.577x42.424x1.025	Reinf. 6 Tension Rupture	71.7%	Pass
24.67 - 24.42	Pole + Reinf.	TP42.623x42.577x0.925	Reinf. 6 Tension Rupture	78.9%	Pass
24.42 - 24	Pole + Reinf.	TP42.699x42.623x0.9125	Reinf. 6 Tension Rupture	79.0%	Pass
24 - 23.75	Pole + Reinf.	TP42.745x42.699x1.025	Reinf. 6 Tension Rupture	74.8%	Pass
23.75 - 18.75	Pole + Reinf.	TP43.662x42.745x1	Reinf. 6 Tension Rupture	76.6%	Pass
18.75 - 14.08	Pole + Reinf.	TP44.518x43.662x0.9875	Reinf. 6 Tension Rupture	78.3%	Pass
14.08 - 13.82	Pole + Reinf.	TP44.566x44.518x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.82 - 13.67	Pole + Reinf.	TP44.594x44.566x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.67 - 10.5	Pole + Reinf.	TP45.175x44.594x0.95	Reinf. 1 Tension Rupture	77.6%	Pass
10.5 - 10.25	Pole + Reinf.	TP45.22x45.175x0.9	Reinf. 13 Tension Rupture	80.1%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.137x45.22x0.875	Reinf. 13 Tension Rupture	81.8%	Pass
5.25 - 2.9	Pole + Reinf.	TP46.568x46.137x0.75	Reinf. 23 Compression	92.7%	Pass
2.9 - 2.65	Pole + Reinf.	TP46.614x46.568x0.75	Reinf. 23 Compression	92.7%	Pass
2.65 - 2.5	Pole + Reinf.	TP46.642x46.614x0.75	Reinf. 23 Compression	92.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP46.687x46.642x0.875	Reinf. 23 Compression	79.3%	Pass
2.25 - 1.92	Pole + Reinf.	TP46.748x46.687x0.875	Reinf. 23 Compression	79.4%	Pass
1.92 - 1.67	Pole + Reinf.	TP46.794x46.748x0.775	Reinf. 23 Compression	85.2%	Pass
1.67 - 0	Pole + Reinf.	TP47.1x46.794x0.7625	Reinf. 23 Compression	85.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	92.8%	Pass
			Overall	92.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*																							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	R24	R25
160.33 - 155.33	562	n/a	562	18.41	n/a	18.41	5.7%																									
155.33 - 150.33	562	n/a	562	18.41	n/a	18.41	22.8%																									
150.33 - 146.83	562	n/a	562	18.41	n/a	18.41	35.5%																									
146.83 - 146.33	1490	n/a	1490	25.48	n/a	25.48	19.7%																									
146.33 - 141.33	1199	n/a	1199	18.23	n/a	18.23	29.5%																									
141.33 - 136.33	1352	n/a	1352	18.97	n/a	18.97	40.2%																									
136.33 - 131.33	1517	n/a	1517	19.71	n/a	19.71	52.0%																									
131.33 - 126.33	1695	n/a	1695	20.45	n/a	20.45	64.8%																									
126.33 - 121.33	1887	n/a	1887	21.20	n/a	21.20	76.5%																									
121.33 - 120.08	1937	n/a	1937	21.38	n/a	21.38	79.3%																									
120.08 - 119.83	1947	1779	3726	21.42	18.00	39.42	40.3%																		55.1%	55.1%						
119.83 - 117.5	2043	1833	3876	21.77	18.00	39.77	43.2%																		58.8%	58.8%						
117.5 - 117.25	2059	1936	3995	21.80	22.50	44.30	45.1%											48.2%							54.7%	54.7%						
117.25 - 115.5	2133	1980	4113	22.06	22.50	44.56	47.4%											50.5%							57.2%	57.2%						
115.5 - 115.25	2138	3293	5431	22.10	31.50	53.60	34.1%											50.4%	50.4%						46.1%	46.1%						
115.25 - 110.25	2361	3506	5867	22.84	31.50	54.34	39.6%											57.7%	57.7%						52.7%	52.7%						
110.25 - 107.82	2475	3611	6086	23.20	31.50	54.70	42.3%											61.1%	61.1%						55.8%	55.8%						
107.82 - 102.82	3211	3712	6924	29.37	31.50	60.87	40.5%											63.3%	63.3%						57.9%	57.9%						
102.82 - 100.5	3355	3816	7171	29.80	31.50	61.30	42.5%											66.2%	66.2%						60.4%	60.4%						
100.5 - 100.25	3399	3242	6642	29.85	29.13	58.97	50.8%										59.4%		65.3%						67.7%							
100.25 - 98.5	3511	3310	6821	30.17	29.13	59.30	52.5%										61.2%		67.3%						69.7%							
98.5 - 98.25	3521	3649	7170	30.22	32.13	62.34	49.9%									59.0%	66.7%								62.8%							
98.25 - 93.25	3854	3863	7718	31.14	32.13	63.27	54.5%									63.9%	72.1%								68.0%							
93.25 - 90.5	4046	3984	8030	31.65	32.13	63.78	57.0%									66.5%	74.9%								70.7%							
90.5 - 90.25	4144	4476	8620	31.70	41.38	73.08	56.2%									55.8%	73.9%							54.4%								
90.25 - 85.25	4516	4725	9241	32.63	41.38	74.00	60.6%									59.7%	78.7%							58.1%								
85.25 - 83.5	4651	4814	9465	32.95	41.38	74.33	62.1%									61.0%	80.4%							59.3%								
83.5 - 83.25	4619	7929	12548	33.00	59.38	92.37	45.5%									50.8%	56.4%							49.1%				60.9%				
83.25 - 80.75	4816	8141	12957	33.46	59.38	92.84	47.2%									52.4%	58.1%							50.6%				62.8%				
80.75 - 80.5	4781	10391	15173	33.51	70.00	103.51	38.8%									51.0%	51.1%					42.2%		45.3%				51.6%				
80.5 - 80.25	4797	9281	14078	33.56	67.88	101.43	41.8%								55.6%							43.5%		45.7%				53.4%				
80.25 - 77.5	5019	9548	14568	34.07	67.88	101.94	43.4%								57.3%							44.9%		47.2%				55.1%				
77.5 - 77.25	5071	5733	10804	34.11	49.88	83.99	60.8%								80.2%							54.4%		55.8%								
77.25 - 73.29	5405	5966	11371	34.85	49.88	84.72	63.8%								83.4%							56.7%		58.1%								
73.29 - 68.29	6612	6069	12681	42.10	49.88	91.98	58.6%								81.7%							56.7%		58.2%								
68.29 - 64.25	7044	6314	13358	43.00	49.88	92.88	61.0%								84.4%							58.7%		60.3%								
64.25 - 64	7153	8681	15835	43.06	57.25	100.31	52.7%								71.2%									57.5%				74.4%				
64 - 60.5	7547	8983	16530	43.84	57.25	101.09	54.5%								73.1%									59.1%				76.5%				
60.5 - 60.25	7570	9940	17510	43.89	63.63	107.52	52.5%							66.8%										56.4%				72.2%				
60.25 - 60.08	7590	9956	17545	43.93	63.63	107.55	52.6%							66.9%										56.5%				72.3%				
60.08 - 59.83	7732	11052	18784	43.98	67.76	111.74	51.0%					52.3%		65.2%										56.1%				69.9%				
59.83 - 59.08	7819	11133	18952	44.15	67.76	111.91	51.3%					52.6%		65.6%										56.5%				70.3%				
59.08 - 58.83	7709	12407	20116	44.21	76.02	120.22	46.8%			56.7%		52.2%		59.6%										51.1%				64.0%				
58.83 - 55.42	8112	12816	20928	44.97	76.02	120.98	48.3%			58.2%		53.6%		61.2%										52.4%				65.7%				
55.42 - 55.17	8142	12846	20988	45.02	76.02	121.04	48.4%			58.3%		53.7%		61.3%									52.5%					65.8%				
55.17 - 54.75	8192	12896	21089	45.12	76.02	121.13	48.6%			58.4%		53.9%		61.5%									52.7%					66.0%				
54.75 - 54.5	8279	9040	17319	45.17	58.02	103.19	61.0%			69.6%		65.3%		80.2%									61.1%									
54.5 - 49.5	8902	9468	18371	46.28	58.02	104.30	63.6%			71.9%		67.5%		82.7%									63.2%									
49.5 - 44.5	9556	9908	19464	47.40	58.02	105.41	66.1%			74.1%		69.6%		85.2%									65.2%									
44.5 - 41.25	9997	10199	20196	48.12	58.02	106.14	67.7%			75.4%		71.0%		86.7%									66.5%									
41.25 - 41	9877	12299	22176	48.18	68.64	116.82	58.2%			72.7%		65.8%		76.1%							58.9%		60.0%									
41 - 39	10153	12515	22668	48.62	68.64	117.26	59.1%			73.5%		66.6%		76.9%							59.6%		60.7%									
39 - 33.29	10346	20123	30469	48.98	93.02	141.99	42.6%			58.6%		56.2%		60.1%							53.3%		54.3%				59.2%					
33.29 - 31.5	10599	20434	31033	49.38	93.02	142.39	43.2%			59.2%		56.8%		60.7%							53.9%		54.8%				59.8%					
31.5 - 31.25	10641	20876	31516	49.43	94.54	143.97	43.9%			59.2%	53.6%			60.4%							53.5%		54.8%				59.9%					
31.25 - 30.5	10748	21009	31757	49.60	94.54	144.13	44.2%			59.5%	53.9%			60.7%							53.7%		55.1%				60.2%					
30.5 - 30.25	10780	19841	30621	49.65	91.20	140.85	45.7%		60.2%		56.2%		63.7%								53.8%		56.1%				62.1%					
30.25 - 25.75	11441	20606	32046	50.65	91.20	141.85	47.3%		61.6%		57.6%		65.2%								55.2%		57.4%				63.6%					
25.75 - 25.5	11507	18536	30043	50.70	86.04	136.75	51.8%		66.3%		59.5%		71.4%								54.4%		56.1%								65.6%	
25.5 - 24.67	11633	18660	30293	50.89	86.04	136.93	52.1%		66.5%		59.7%		71.7%								54.7%		56.3%								65.8%	
24.67 - 24.42	11653	15698	27352	50.94	64.79	115.73	57.3%		70.6%		73.3%		78.9%								62.7%										70.7%	
24.42 - 24	11717	15750	27467	51.03	64.79	115.83	57.5%		70.8%		73.4%		79.0%								62.8%										70.8%	
24 - 23.75	11895	18814	30709	51.09	71.20	122.29	54.4%		63.4%		73.9%		74.8%								63.3%								70.8%			
23.75 - 18.75	12681	19564	32245	52.19	71.20	123.39	56.3%		65.0%		75.6%		76.6%								64.9%								72.3%			
18.75 - 14.08	13444	20278	33723	53.23	71.20	124.43	58.1%		66.5%		77.2%		78.3%								66.4%								73.6%			
14.08 - 13.82	13496	19570	33066	53.28	73.81	127.09	59.5%	76.5%	65.3%				75.8%								66.2%								72.1%			
13.82 - 13.67	13521	19592	33114	53.32	73.81	127.13	59.6%	76.5%	65.3%				75.9%								66.2%								72.1%			
13.67 - 10.5	14059	20076	34135	54.02	73.81	127.83	60.8%	77.6%	66.3%				76.9%								67.2%								73.0%			
10.5 - 10.25	13921	18152	32073	54.07	69.19	123.26	59.6%	78.3%	72.6%				77.1%							80.1%									75.7%			
10.25 - 5.25	14793	18835	33628	55.18	69.19	124.36	61.5%	80.0%	74.1%				78.7%							81.8%									77.1%			
5.25 - 2.9	15560	14259	29819	55.70	51.89	107.58	80.2%	88.6%					89.9%																92.7%			
2.9 - 2.65	15606	14284	29890	55.75	51.89	107.64	80.3%	88.7%					90.0%																92.7%			
2.65 - 2.5	15633	14299	29933	55.79	51.89	107.67	80.4%	88.7%					90.0%																92.8%			
2.5 - 2.25	15485	19178	34664	55.84	59.51	115.35	68.2%	76.6%																					79.3%	77.4%		
2.25 - 1.92	15546	19222	34768	55.92	59.51	115.43	68.4%	76.7%																					79.4%	77.5%		
1.92 - 1.67	15437	15466	30903	55.97	51.25	107.22	72.8%																						85.2%	83.7%		
1.67 - 0	15744	15645	31389	56.34	51.25	107.59	73.5%																						85.7%	84.2%		

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

Monopole Flange Plate Connection

Elevation = 146.833 ft.

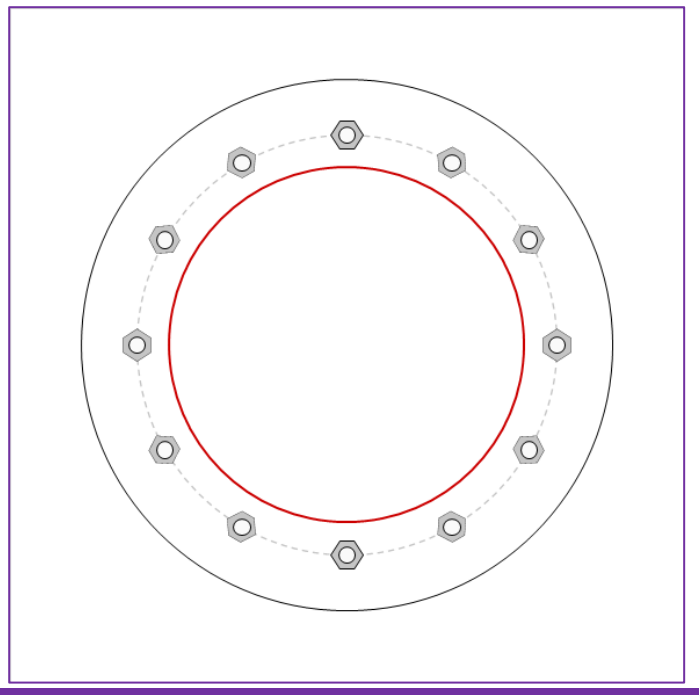
BU #	876334
Site Name	OUTHINGTON, SMORO
Order #	556607, Rev 0

TIA-222 Revision	H

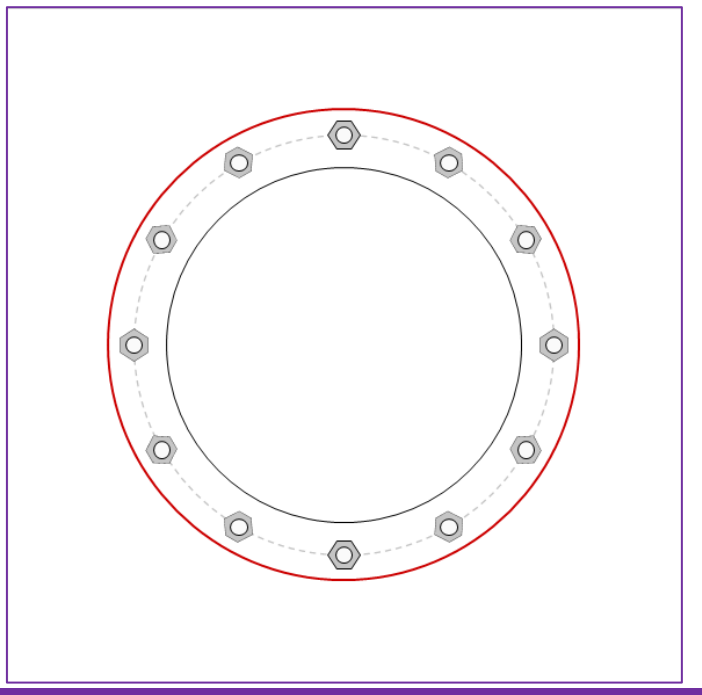
Applied Loads	
Moment (kip-ft)	86.82
Axial Force (kips)	5.22
Shear Force (kips)	9.31

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(12) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19" BC

Top Plate Data

24" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

16" ID x 0.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	17.83	
Allowable (kips)	30.04	
Stress Rating:	**56.5%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	7.38	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**15.6%**	**Pass**
Tension Side Stress Rating:	**7.7%**	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	28.50	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**60.3%**	**Pass**
Tension Side Stress Rating:	**N/A**	

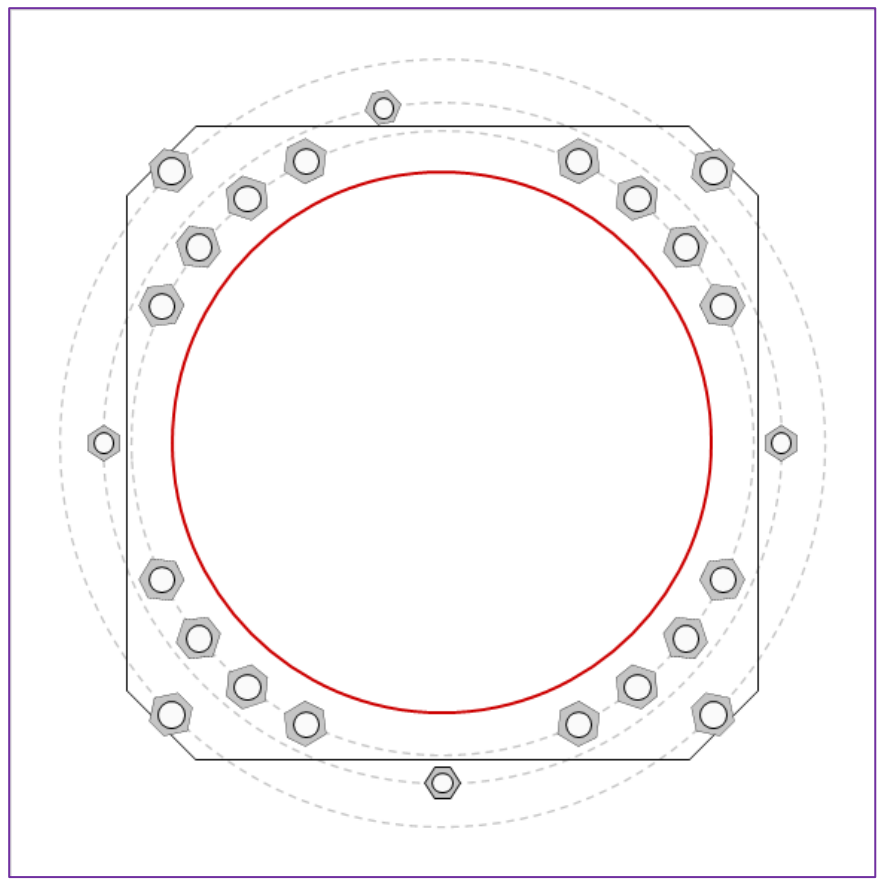
Monopole Base Plate Connection

Site Info	
BU #	876334
Site Name	OUTHINGTON, SMORO
Order #	556607, Rev 0

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

Applied Loads	
Moment (kip-ft)	5071.26
Axial Force (kips)	81.30
Shear Force (kips)	46.90

**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 54.375" BC
Anchor Spacing: 6 in
GROUP 2: (4) 1-3/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 59.1" BC
pos. (deg): 0, 100, 180, 270

GROUP 3: (4) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 66.8125" BC

Base Plate Data

55" W x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

47.1" x 0.7625" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:			
	Pu_t = 177.66	ϕPn_t = 243.75	**Stress Rating**
	Vu = 2.93	ϕVn = 149.1	**69.4%**
	Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:			
	Pu_t = 114.96	ϕPn_t = 178.13	**Stress Rating**
	Vu = 0	ϕVn = 112.75	**61.5%**
	Mu = n/a	ϕMn = n/a	**Pass**
GROUP 3:			
	Pu_t = 224.48	ϕPn_t = 304.69	**Stress Rating**
	Vu = 0	ϕVn = 186.38	**70.2%**
	Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	29.9	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**63.3%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

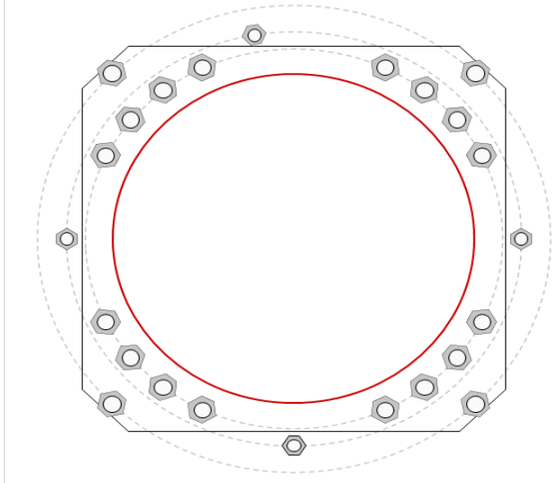
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	25.994419	2.25	A615-75	54.375	0.5	0	N-Included		No
2	1	38.664806	2.25	A615-75	54.375	0.5	0	N-Included		No
3	1	51.335194	2.25	A615-75	54.375	0.5	0	N-Included		No
4	1	64.005581	2.25	A615-75	54.375	0.5	0	N-Included		No
5	1	115.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
6	1	128.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
7	1	141.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
8	1	154.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
9	1	205.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
10	1	218.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
11	1	231.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
12	1	244.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
13	1	295.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
14	1	308.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
15	1	321.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
16	1	334.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
17	2	0	1.75	F1554-105	59.1	0.5	0	N-Included		No
18	2	100	1.75	F1554-105	59.1	0.5	0	N-Included		No
19	2	180	1.75	F1554-105	59.1	0.5	0	N-Included		No
20	2	270	1.75	F1554-105	59.1	0.5	0	N-Included		No
21	3	45	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
22	3	135	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
23	3	225	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
24	3	315	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No

Plot Graphic



BU: 876334
WO: 1962706
1st Gen AR

Done By: HL
Checked By:
Date: 5/24/2021

Additional Anchor Rod Calculations

Tower Reactions From tnx:

$Moment := 5071 \cdot kip \cdot ft$

$Axial := 81 \cdot kip$

$Shear := 48 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 16$ $D_{existing} := 2.25 \cdot in$

$BC_{existing} := 54.375 \cdot in$ $A_{existing} := 3.25 in^2$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 1.922 \times 10^{4} \cdot in^4$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 4$ $D_{new} := 1.75 \cdot in$ $Fu_{rod} := 125 ksi$

$BC_{new} := 59.1 \cdot in$ $A_{new} := 1.9 \cdot in^2$ $Fy_{rod} := 105 ksi$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 3.318 \times 10^{3} \cdot in^4$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity): (TIA-222-H, Section 4.9.9)

$\phi P_{nc} := 1.0 \cdot Fy_{rod} \cdot A_{new} = 199.5 \cdot kip$

$\phi P_{nt} := 0.75 \cdot Fu_{rod} \cdot A_{new} = 178.125 \cdot kip$

$\phi P_{n} := \max(\phi P_{nt}, \phi P_{nc}) = 199.5 \cdot kip$

Tube Design (Pipe)

Member Size: HSS4x4x1/2

Member Properties (AISC 15th Ed., Table 1-13):

Outside Diameter: $D_{pipe} := 4 \cdot in$

Thickness: $t_{pipe} := 0.5 \cdot in$

Yield Strength: $F_{ypipe} := 46 \cdot ksi$ $F_{upipe} := 58 \cdot ksi$

Length: $L_{pipe} := 12 \cdot in$

Inside Diameter: $ID_{pipe} := D_{pipe} - 2 \cdot t_{pipe} = 3 \cdot in$

Area: $A_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{2} - ID_{pipe}^{2} \right)}{4} = 5.498 \cdot in^{2}$

Moment of Inertia: $I_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{4} - ID_{pipe}^{4} \right)}{64} = 8.59 \cdot in^{4}$

Radius of Gyration: $r_{pipe} := \sqrt{\frac{I_{pipe}}{A_{pipe}}} = 1.25 \cdot in$

Bearing Check (AISC 15th Ed., Equation J7-1):

$\phi_b := 0.75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pipe}$

$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{ypipe}} = 3.213 \cdot in^{2}$

$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{pipe} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 15th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$L_c := K \cdot L_{pipe} = 12 \cdot in$

$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{pipe}}\right)^2} = 3.106 \times 10^3 \cdot ksi$

$\frac{L_c}{r_{pipe}} = 9.6 \quad < \quad 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{ypipe}}} = 118.261$

$\therefore \quad F_{cr} := 0.658^{\frac{F_{ypipe}}{F_e}} \cdot F_{ypipe} = 45.716 \cdot ksi$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{ypipe} \cdot A_{pipe} & \text{if } \frac{L_c}{r_{pipe}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{pipe} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 227.608 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 4 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 42in$

$L_{plate2} := 12in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check
(AISC 15th Ed., Eqs. J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 15 \cdot in^2$

$A_{nv} := A_g = 15 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 585 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

Shear Rupture

$\phi_v := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 540 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld):
(AISC 15th Ed., Part 8)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 50ksi$ $Fu_{base} := 65ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 42 \cdot in$

$Notch_{horiz} := 0.75 \cdot in$

$Notch_{vert} := 0.75 \cdot in$

Gap between Base Plate and HSS: $Gap := 0in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 6$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{3}{8}$

Weld Material Grade: $F_{EXX} := 80ksi$

Case 1: Vertical Fillet Weld Controls

$\phi_{wg} := .75$

Fillet weld (gusset plate to pole) *2 weld groups, so muliply by 2*

effective throat $et_{vf} := 2 \frac{D_{vpole}}{16} \cdot in \cdot \frac{\sqrt{2}}{2} = 0.53 \cdot in$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 41.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 21.876 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 3.25 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 4.063 \cdot in^2$

Group Centroid

Vertical Weld

$x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 21.375 \cdot in$

$A_v := A_v = 21.876 \cdot in^2$

$xA_v := x_v \cdot A_v = 0 \cdot in^3$

$yA_v := y_v \cdot A_v = 467.602 \cdot in^3$

Horizontal Weld

$x_h := \frac{L_h}{2} + Notch_{horiz} = 2.375 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 4.063 \cdot in^2$

$xA_h := x_h \cdot A_h = 9.648 \cdot in^3$

$yA_h := y_h \cdot A_h = 0$

Sum $A_{sum} := A_v + A_h = 25.939 \cdot in^2$

$xA_{sum} := xA_v + xA_h = 9.648 \cdot in^3$

$yA_{sum} := yA_v + yA_h = 467.602 \cdot in^3$

$x_{prime} := \frac{xA_{sum}}{A_{sum}} = 0.372 \cdot in$

$y_{prime} := \frac{yA_{sum}}{A_{sum}} = 18.027 \cdot in$

$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{prime})^2 + A_h \cdot y_{prime}^2 = 4.667 \times 10^3 \cdot in^4$

$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{prime})^2 + A_v \cdot x_{prime}^2 = 22.902 \cdot in^4$

$I_p := I_v + I_h = 4.69 \times 10^3 \cdot in^4$

Total Area of Weld $Aw_{total} := A_{sum} = 25.939 \cdot in^2$

Total Ip $Ip_{total} := I_p = 4.69 \times 10^3 \cdot in^4$

eccentricity $e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 5.628 \cdot in$

Design Moment $M_d := \phi P_n \cdot e = 1.123 \times 10^3 \cdot kip \cdot in$

Check extreme fiber 1 $c_{x1} := -1 \cdot x_{prime} = -0.372 \cdot in$

$c_{y1} := H - y_{prime} = 23.973 \cdot in$

$rpx_1 := 0ksi$

$rpy_1 := \frac{\phi P_n}{Aw_{total}} = 7.691 \cdot ksi$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{Ip_{total}} = 5.739 \cdot ksi$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{Ip_{total}} = -0.089 \cdot ksi$$

$$ra_1 := \sqrt{\left(rpx_1 + rmx_1\right)^2 + \left(rpy_1 + rmy_1\right)^2} = 9.525 \cdot ksi$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{EXX} = 36 \cdot ksi$$

$$Cap_1 := \frac{ra_1}{R_{nweld}} = 26.458 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{plate} - Gap - x_{prime} = 3.628 \cdot in$$

$$c_{y2} := -1 \cdot y_{prime} = -18.027 \cdot in$$

$$rpx_2 := 0ksi$$

$$rpy_2 := \frac{\phi P_n}{Aw_{total}} = 7.691 \cdot ksi$$

$$rmx_2 := M_d \cdot \frac{c_{y2}}{Ip_{total}} = -4.315 \cdot ksi$$

$$rmy_2 := M_d \cdot \frac{c_{x2}}{Ip_{total}} = 0.869 \cdot ksi$$

$$ra_2 := \sqrt{\left(rpx_2 + rmx_2\right)^2 + \left(rpy_2 + rmy_2\right)^2} = 9.586 \cdot ksi$$

$$Fu := \min\left(Fu_{plate}, Fu_{base}\right) = 65 \cdot ksi$$

$$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot Fu = 29.25 \cdot ksi$$

$$Cap_2 := \frac{ra_2}{R_{nplate}} = 32.773 \cdot \%$$

Case 2: Vertical Fillet Base Material Controls

$\phi_{wg} := .75$

Fillet weld (gusset plate to pole)

2 weld groups, so muliply by 2

effective throat $et_{wf} := 2 \frac{D_{vpole}}{16} \cdot in = 0.75 \cdot in$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 41.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 30.937 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 3.25 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 4.063 \cdot in^2$

Group Centroid

Vertical Weld

$x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 21.375 \cdot in$

$A_v := A_v = 30.937 \cdot in^2$

$xA_v := x_v \cdot A_v = 0 \cdot in^3$

$yA_v := y_v \cdot A_v = 661.289 \cdot in^3$

Horizontal Weld

$x_h := \frac{L_h}{2} + Notch_{horiz} = 2.375 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 4.063 \cdot in^2$

$xA_h := x_h \cdot A_h = 9.648 \cdot in^3$

$yA_h := y_h \cdot A_h = 0$

Sum

$A_{sum} := A_v + A_h = 35 \cdot in^2$

$xA_{sum} := xA_v + xA_h = 9.648 \cdot in^3$

$yA_{sum} := yA_v + yA_h = 661.289 \cdot in^3$

$x_{prime} := \frac{xA_{sum}}{A_{sum}} = 0.276 \cdot in$

$y_{prime} := \frac{yA_{sum}}{A_{sum}} = 18.894 \cdot in$

$$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + \left(L_v \cdot et_{vf}\right) \cdot \left(y_v - y_{prime}\right)^2 + A_h \cdot y_{prime}^2 = 6.028 \times 10^3 \cdot in^4$$

$$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot \left(x_h - x_{prime}\right)^2 + A_v \cdot x_{prime}^2 = 23.831 \cdot in^4$$

$$I_p := I_v + I_h = 6.051 \times 10^3 \cdot in^4$$

Total Area of Weld

$$Aw_{total} := A_{sum} = 35 \cdot in^2$$

Total Ip

$$Ip_{total} := I_p = 6.051 \times 10^3 \cdot in^4$$

eccentricity

$$e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 5.724 \cdot in$$

Design Moment

$$M_d := \phi P_n \cdot e = 1.142 \times 10^3 \cdot kip \cdot in$$

Check extreme fiber 1

$$c_{x1} := -1 \cdot x_{prime} = -0.276 \cdot in$$

$$c_{y1} := H - y_{prime} = 23.106 \cdot in$$

$$rpx_1 := 0ksi$$

$$rpy_1 := \frac{\phi P_n}{Aw_{total}} = 5.7 \cdot ksi$$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{Ip_{total}} = 4.361 \cdot ksi$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{Ip_{total}} = -0.052 \cdot ksi$$

$$ra_1 := \sqrt{\left(rpx_1 + rmx_1\right)^2 + \left(rpy_1 + rmy_1\right)^2} = 7.135 \cdot ksi$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 Fu_{pole} = 36 \cdot ksi$$

$$Cap_3 := \frac{ra_1}{R_{nweld}} = 19.821 \cdot \%$$

Check extreme fiber 2

$c_{x2} := w_{plate} - Gap - x_{prime} = 3.724 \cdot in$

$c_{y2} := -1 \cdot y_{prime} = -18.894 \cdot in$

$rpx_2 := 0ksi$

$rpy_2 := \frac{\phi P_n}{Aw_{total}} = 5.7 \cdot ksi$

$rmx_2 := M_d \cdot \frac{c_{y2}}{Ip_{total}} = -3.566 \cdot ksi$

$rmy_2 := M_d \cdot \frac{c_{x2}}{Ip_{total}} = 0.703 \cdot ksi$

$ra_2 := \sqrt{(rpx_2 + rmx_2)^2 + (rpy_2 + rmy_2)^2} = 7.329 \cdot ksi$

$Fu := \min(Fu_{plate}, Fu_{base}) = 65 \cdot ksi$

$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot Fu = 29.25 \cdot ksi$

$Cap_4 := \frac{ra_2}{R_{nplate}} = 25.056 \cdot \%$

$Check := \begin{cases} \text{"OK"} & \text{if Capacity} < 100\% \\ \text{"INSUFFICIENT"} & \text{otherwise} \end{cases}$

Check = "OK"

Gusset Plate to HSS Weld Design
(AISC 15th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 14$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{7}{8}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 2.625 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.219$$

$C_1 = 1.03$

$Coeff_1 := 3.31$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 7$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{7}{16}$$

$$Check_{weld} := \begin{cases} "OK" & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \\ "N/G" & \text{otherwise} \end{cases}$$

$Check_{weld} = "OK"$

$$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 429.572 \cdot kip$$

$$Check_{weld1} := \begin{cases} "OK" & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ "N/G" & \text{otherwise} \end{cases}$$

$Check_{weld1} = "OK"$

Gusset Plate to Pole Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

$\phi_{sy} := 1.0$

$\phi_{sr} := 0.75$

$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 6.625 \cdot in$

$M_1 := \phi P_n \cdot ecc_1 = 1.322 \times 10^3 \cdot kip \cdot in$

$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 367.5 \cdot in^3$

$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 4.496 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 29.25 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot Fu_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 27 \cdot kip$

$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

Gusset Plate to HSS Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 2.625 \cdot in$

$M_2 := \phi P_n \cdot ecc_2 = 523.687 \cdot kip \cdot in$

$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 30 \cdot in^3$

$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 21.82 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 27.6 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 26.1 \cdot kip$

$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 26.1 \cdot kip$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = "OK"$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 7 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 3000psi$	
Transverse Reinforcement Index:	$k_{tr} := 0$	Can be taken as 0 for design per ACI 318-14
Epoxy Factor:	$\psi_e := 1$	
Rebar Size Factor:	$\psi_s := 1$	
Casting Position Factor:	$\psi_t := 1$	
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	
Tie Size:	$Tie := 5$	$d_b := vlookup(d_s, Rebar, 2)\, in = 0.036\ m$
Number of Vertical Rebar:	$n := 32$	

Design Load:

$$\phi P_{nt} := \phi P_{nt} = 178.125 \cdot kip$$

Development Length (ACI 318-14 Chapter 25):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 3.6\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 7.12\cdot in$$

$$G := \sqrt{A^2 + B^2} = 7.978\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 1.388\,m$$

Epoxy Development Length:

Bond Strength:

Epoxy := AF35LVE

$$\phi_{bond} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if Epoxy} = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3\cdot psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 29.03\cdot in$$

Required Embedment Length:

$$L_{min\_CED} := \begin{cases} (5ft) & \text{if } D_{new} \neq 2.25in \\ (6.5ft) & \text{if Epoxy} = 0 \wedge D_{new} = 2.25in \\ (6ft) & \text{if Epoxy} = 1 \wedge D_{new} = 2.25in \end{cases}$$

$$L_{min} := \max\left(L_{be} + 12in, l'_d + 0.25\cdot L_{be}, L_{min\_CED}\right) = 5.159\cdot ft$$

$$L_{min} := \text{ceil}\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 5.5\cdot ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \leq L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$\phi_p := 0.75$

Is this a CA DSA site?

- ○ Yes
- ◉ No

$$\text{Pullout} := \begin{cases} \dfrac{\phi_p \cdot Fu_{rod} \cdot A_{new}}{1.6} & \text{if } CA = 0 \\ \left(0.8 \cdot Fy_{rod} \cdot A_{new}\right) & \text{otherwise} \end{cases} = 111 \cdot kip$$

BU: 876334
WO: 1962706
2nd Gen - ARB-1

Done By: HL
Checked By:
Date: 5/24/2021

Additional Anchor Rod Calculations

Tower Reactions From tnx:

$Moment := 5071 \cdot kip \cdot ft$

$Axial := 81 \cdot kip$

$Shear := 48 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 16$ $D_{existing} := 2.25 \cdot in$

$BC_{existing} := 54.375 \cdot in$ $A_{existing} := 3.25 in^2$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 1.922 \times 10^{4} \cdot in^{4}$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 2$ $D_{new} := 2.25 \cdot in$ $Fu_{rod} := 125 ksi$

$BC_{new} := 66.8125 \cdot in$ $A_{new} := 3.25 \cdot in^2$ $Fy_{rod} := 105 ksi$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 3.627 \times 10^{3} \cdot in^{4}$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the demanding load of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity): (TIA-222-H, Section 4.9.9)

$\phi P_{nc} := 1.0 \cdot Fy_{rod} \cdot A_{new} = 341.25 \cdot kip$

$\phi P_{nt} := 0.75 \cdot Fu_{rod} \cdot A_{new} = 304.688 \cdot kip$

Demanding Load from CCIplate: $\phi P_n := 224.48kip$

Tube Design (Pipe)

Member Size: HSS5x5x1/2

Member Properties (AISC 15th Ed., Table 1-13):

Outside Diameter: $D_{pipe} := 5 \cdot in$

Thickness: $t_{pipe} := 0.5 \cdot in$

Yield Strength: $F_{ypipe} := 50 \cdot ksi$ $F_{upipe} := 62 \cdot ksi$

Length: $L_{pipe} := 33 \cdot in$

Inside Diameter: $ID_{pipe} := D_{pipe} - 2 \cdot t_{pipe} = 4 \cdot in$

Area: $A_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{2} - ID_{pipe}^{2} \right)}{4} = 7.069 \cdot in^2$

Moment of Inertia: $I_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{4} - ID_{pipe}^{4} \right)}{64} = 18.113 \cdot in^4$

Radius of Gyration: $r_{pipe} := \sqrt{\frac{I_{pipe}}{A_{pipe}}} = 1.601 \cdot in$

Bearing Check (AISC 15th Ed., Equation J7-1):

$\phi_b := 0.75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pipe}$

$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{ypipe}} = 3.326 \cdot in^2$

$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{pipe} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 15th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$L_c := K \cdot L_{pipe} = 33 \cdot in$

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{pipe}}\right)^2} = 673.494 \cdot ksi$$

$$\frac{L_c}{r_{pipe}} = 20.615 < 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{ypipe}}} = 113.432$$

$$\therefore \quad F_{cr} := 0.658^{\frac{F_{ypipe}}{F_e}} \cdot F_{ypipe} = 48.47 \cdot ksi$$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{ypipe} \cdot A_{pipe} & \text{if } \frac{L_c}{r_{pipe}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{pipe} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 318.086 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$$\frac{\phi P_n}{\phi P_{n\_comp}} = 70.572 \cdot \%$$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 5.875 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 306in$

$L_{plate2} := 30in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check
(AISC 15th Ed., Eqs. J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 37.5 \cdot in^2$

$A_{nv} := A_g = 37.5 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 1.462 \times 10^3 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 15.349 \cdot \%$

Shear Rupture

$\phi_v := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 1.35 \times 10^3 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 16.628 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld):
(AISC 15th Ed., Part 8)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 50ksi$ $Fu_{base} := 65ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 306 \cdot in$

$Notch_{horiz} := 0.75 \cdot in$

$Notch_{vert} := 0.75 \cdot in$

Gap between Base Plate and HSS: $Gap := 0in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 4$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{1}{4}$

Weld Material Grade: $F_{EXX} := 80ksi$

Case 1: Vertical Fillet Weld Controls

$\phi_{wg} := .75$

Fillet weld (gusset plate to pole) *2 weld groups, so muliply by 2*

effective throat $et_{vf} := 2 \frac{D_{vpole}}{16} \cdot in \cdot \frac{\sqrt{2}}{2} = 0.354 \cdot in$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 305.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 107.922 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 5.125 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 6.406 \cdot in^2$

Group Centroid

Vertical Weld $x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 153.375 \cdot in$

$A_v := A_v = 107.922 \cdot in^2$

$xA_v := x_v \cdot A_v = 0 \cdot in^3$

$yA_v := y_v \cdot A_v = 1.655 \times 10^4 \cdot in^3$

Horizontal Weld $x_h := \frac{L_h}{2} + Notch_{horiz} = 3.312 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 6.406 \cdot in^2$

$xA_h := x_h \cdot A_h = 21.221 \cdot in^3$

$yA_h := y_h \cdot A_h = 0$

Sum $A_{sum} := A_v + A_h = 114.328 \cdot in^2$

$xA_{sum} := xA_v + xA_h = 21.221 \cdot in^3$

$yA_{sum} := yA_v + yA_h = 1.655 \times 10^4 \cdot in^3$

$x_{prime} := \frac{xA_{sum}}{A_{sum}} = 0.186 \cdot in$

$y_{prime} := \frac{yA_{sum}}{A_{sum}} = 144.781 \cdot in$

$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{prime})^2 + A_h \cdot y_{prime}^2 = 9.802 \times 10^5 \cdot in^4$

$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{prime})^2 + A_v \cdot x_{prime}^2 = 80.377 \cdot in^4$

$I_p := I_v + I_h = 9.803 \times 10^5 \cdot in^4$

Total Area of Weld $Aw_{total} := A_{sum} = 114.328 \cdot in^2$

Total Ip $Ip_{total} := I_p = 9.803 \times 10^5 \cdot in^4$

eccentricity $e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 8.189 \cdot in$

Design Moment $M_d := \phi P_n \cdot e = 1.838 \times 10^3 \cdot kip \cdot in$

Check extreme fiber 1 $c_{x1} := -1 \cdot x_{prime} = -0.186 \cdot in$

$c_{y1} := H - y_{prime} = 161.219 \cdot in$

$rpx_1 := 0ksi$

$rpy_1 := \frac{\phi P_n}{Aw_{total}} = 1.963 \cdot ksi$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{Ip_{total}} = 0.302 \cdot ksi$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{Ip_{total}} = -0 \cdot ksi$$

$$ra_1 := \sqrt{\left(rpx_1 + rmx_1\right)^2 + \left(rpy_1 + rmy_1\right)^2} = 1.986 \cdot ksi$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{EXX} = 36 \cdot ksi$$

$$Cap_1 := \frac{ra_1}{R_{nweld}} = 5.517 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{plate} - Gap - x_{prime} = 5.689 \cdot in$$

$$c_{y2} := -1 \cdot y_{prime} = -144.781 \cdot in$$

$$rpx_2 := 0ksi$$

$$rpy_2 := \frac{\phi P_n}{Aw_{total}} = 1.963 \cdot ksi$$

$$rmx_2 := M_d \cdot \frac{c_{y2}}{Ip_{total}} = -0.271 \cdot ksi$$

$$rmy_2 := M_d \cdot \frac{c_{x2}}{Ip_{total}} = 0.011 \cdot ksi$$

$$ra_2 := \sqrt{\left(rpx_2 + rmx_2\right)^2 + \left(rpy_2 + rmy_2\right)^2} = 1.993 \cdot ksi$$

$$Fu := \min\left(Fu_{plate}, Fu_{base}\right) = 65 \cdot ksi$$

$$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot Fu = 29.25 \cdot ksi$$

$$Cap_2 := \frac{ra_2}{R_{nplate}} = 6.813 \cdot \%$$

Case 2: Vertical Fillet Base Material Controls

$\phi_{wg} := .75$

Fillet weld (gusset plate to pole)

2 weld groups, so muliply by 2

effective throat $et_{wf} := 2 \frac{D_{vpole}}{16} \cdot in = 0.5 \cdot in$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 305.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 152.625 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 5.125 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 6.406 \cdot in^2$

Group Centroid

Vertical Weld

$x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 153.375 \cdot in$

$A_v := A_v = 152.625 \cdot in^2$

$xA_v := x_v \cdot A_v = 0 \cdot in^3$

$yA_v := y_v \cdot A_v = 2.341 \times 10^4 \cdot in^3$

Horizontal Weld

$x_h := \frac{L_h}{2} + Notch_{horiz} = 3.312 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 6.406 \cdot in^2$

$xA_h := x_h \cdot A_h = 21.221 \cdot in^3$

$yA_h := y_h \cdot A_h = 0$

Sum

$A_{sum} := A_v + A_h = 159.031 \cdot in^2$

$xA_{sum} := xA_v + xA_h = 21.221 \cdot in^3$

$yA_{sum} := yA_v + yA_h = 2.341 \times 10^4 \cdot in^3$

$x_{prime} := \frac{xA_{sum}}{A_{sum}} = 0.133 \cdot in$

$y_{prime} := \frac{yA_{sum}}{A_{sum}} = 147.197 \cdot in$

$$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + \left(L_v \cdot et_{vf}\right) \cdot \left(y_v - y_{prime}\right)^2 + A_h \cdot y_{prime}^2 = 1.33 \times 10^6 \cdot in^4$$

$$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot \left(x_h - x_{prime}\right)^2 + A_v \cdot x_{prime}^2 = 81.484 \cdot in^4$$

$$I_p := I_v + I_h = 1.33 \times 10^6 \cdot in^4$$

Total Area of Weld

$$Aw_{total} := A_{sum} = 159.031 \cdot in^2$$

Total Ip

$$Ip_{total} := I_p = 1.33 \times 10^6 \cdot in^4$$

eccentricity

$$e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 8.242 \cdot in$$

Design Moment

$$M_d := \phi P_n \cdot e = 1.85 \times 10^3 \cdot kip \cdot in$$

Check extreme fiber 1

$$c_{x1} := -1 \cdot x_{prime} = -0.133 \cdot in$$

$$c_{y1} := H - y_{prime} = 158.803 \cdot in$$

$$rpx_1 := 0ksi$$

$$rpy_1 := \frac{\phi P_n}{Aw_{total}} = 1.412 \cdot ksi$$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{Ip_{total}} = 0.221 \cdot ksi$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{Ip_{total}} = -0 \cdot ksi$$

$$ra_1 := \sqrt{\left(rpx_1 + rmx_1\right)^2 + \left(rpy_1 + rmy_1\right)^2} = 1.429 \cdot ksi$$

$$R_{nweld} := \phi_{wg} \cdot 0.6Fu_{pole} = 36 \cdot ksi$$

$$Cap_3 := \frac{ra_1}{R_{nweld}} = 3.968 \cdot \%$$

Check extreme fiber 2

$c_{x2} := w_{plate} - Gap - x_{prime} = 5.742 \cdot in$

$c_{y2} := -1 \cdot y_{prime} = -147.197 \cdot in$

$rpx_2 := 0ksi$

$rpy_2 := \frac{\phi P_n}{Aw_{total}} = 1.412 \cdot ksi$

$rmx_2 := M_d \cdot \frac{c_{y2}}{Ip_{total}} = -0.205 \cdot ksi$

$rmy_2 := M_d \cdot \frac{c_{x2}}{Ip_{total}} = 0.008 \cdot ksi$

$ra_2 := \sqrt{(rpx_2 + rmx_2)^2 + (rpy_2 + rmy_2)^2} = 1.434 \cdot ksi$

$Fu := \min(Fu_{plate}, Fu_{base}) = 65 \cdot ksi$

$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot Fu = 29.25 \cdot ksi$

$Cap_4 := \frac{ra_2}{R_{nplate}} = 4.903 \cdot \%$

$Capacity := \max(Cap_1, Cap_2, Cap_3, Cap_4) = 6.8 \cdot \%$

$Check := \begin{cases} \text{"OK"} & \text{if } Capacity < 100\% \\ \text{"INSUFFICIENT"} & \text{otherwise} \end{cases}$

$Check = \text{"OK"}$

Gusset Plate to HSS Weld Design
(AISC 15th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 6$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{3}{8}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.113$$

$C_1 = 1.03$

$Coeff_1 := 3.67$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 3$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{3}{16}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 510.313 \cdot kip$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 43.99 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

$\phi_{sy} := 1.0$

$\phi_{sr} := 0.75$

$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.25 \cdot in$

$M_1 := \phi P_n \cdot ecc_1 = 2.076 \times 10^3 \cdot kip \cdot in$

$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 1.951 \times 10^4 \cdot in^3$

$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 0.133 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 29.25 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot Fu_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 27 \cdot kip$

$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

$\frac{f_v}{\phi F_v} = 0.49 \cdot \%$

Gusset Plate to HSS Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$

$M_2 := \phi P_n \cdot ecc_2 = 757.62 \cdot kip \cdot in$

$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 187.5 \cdot in^3$

$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 5.051 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 30 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 27.9 \cdot kip$

$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27.9 \cdot kip$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

$\frac{f_v}{\phi F_v} = 18.103 \cdot \%$

Embedment Depth Calculations

Projected Embedment Depth: $L_{em} := 6 \cdot ft$

Yield Strength of Rebar: $f_y := 60ksi$

Concrete Strength: $f'_c := 3000psi$

Transverse Reinforcement Index: $k_{tr} := 0$ Can be taken as 0 for design per ACI 318-14

Epoxy Factor: $\psi_e := 1$

Rebar Size Factor: $\psi_s := 1$

Casting Position Factor: $\psi_t := 1$

Concrete Weight Factor: $\lambda := 1 \cdot \sqrt{psi}$

Pier Diameter: $D_{pier} := 7ft$

Cover: $c_c := 4in$

Rebar Size: $d_s := 11$

Tie Size: $Tie := 5$

$d_b := vlookup(d_s, Rebar, 2)\, in = 0.036\, m$

Number of Vertical Rebar: $n := 32$

Design Load: $\phi P_m := \phi P_{nt} = 304.688 \cdot kip$

Development Length (ACI 318-14 Chapter 25):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 3.6\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 3.264\cdot in$$

$$G := \sqrt{A^2 + B^2} = 4.859\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 1.335\ m$$

Epoxy Development Length:

Bond Strength:

Epoxy := AF35LVE

$$\phi_{bond} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if Epoxy} = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3\cdot psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 38.622\cdot in$$

Required Embedment Length:

$$L_{min\_CED} := \begin{cases} (5ft) & \text{if } D_{new} \neq 2.25in \\ (6.5ft) & \text{if Epoxy} = 0 \wedge D_{new} = 2.25in \\ (6ft) & \text{if Epoxy} = 1 \wedge D_{new} = 2.25in \end{cases}$$

$$L_{min} := \max\left(L_{be} + 12in, l'_d + 0.25\cdot L_{be}, L_{min\_CED}\right) = 6\cdot ft$$

$$L_{min} := \text{ceil}\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 6\cdot ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \leq L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

Is this a CA DSA site?

- ○ Yes
- ◉ No

$$Pullout := \begin{cases} \dfrac{\phi_p \cdot Fu_{rod} \cdot A_{new}}{1.6} & \text{if } CA = 0 \\ \left(0.8 \cdot Fy_{rod} \cdot A_{new}\right) & \text{otherwise} \end{cases} = 190 \cdot kip$$

BU: 876334
WO: 1962706
2nd gen - ARB - 2

Done By: HL
Checked By:
Date: 5/24/2021

Additional Anchor Rod Calculations

Tower Reactions From tnx:

$Moment := 5071 \cdot kip \cdot ft$

$Axial := 81 \cdot kip$

$Shear := 48 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 16$ $D_{existing} := 2.25 \cdot in$

$BC_{existing} := 54.375 \cdot in$ $A_{existing} := 3.25 in^2$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 1.922 \times 10^{4} \cdot in^{4}$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 2$ $D_{new} := 2.25 \cdot in$ $Fu_{rod} := 125 ksi$

$BC_{new} := 66.8125 \cdot in$ $A_{new} := 3.25 \cdot in^2$ $Fy_{rod} := 105 ksi$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 3.627 \times 10^{3} \cdot in^{4}$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the demanding load of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity): (TIA-222-H, Section 4.9.9)

$\phi P_{nc} := 1.0 \cdot Fy_{rod} \cdot A_{new} = 341.25 \cdot kip$

$\phi P_{nt} := 0.75 \cdot Fu_{rod} \cdot A_{new} = 304.688 \cdot kip$

Demanding Load from CCIplate: $\phi P_n := 224.48kip$

Tube Design (Pipe)

Member Size: HSS5x5x1/2

Member Properties (AISC 15th Ed., Table 1-13):

Outside Diameter: $D_{pipe} := 5 \cdot in$

Thickness: $t_{pipe} := 0.5 \cdot in$

Yield Strength: $F_{ypipe} := 50 \cdot ksi$ $F_{upipe} := 62 \cdot ksi$

Length: $L_{pipe} := 33.5 \cdot in$

Inside Diameter: $ID_{pipe} := D_{pipe} - 2 \cdot t_{pipe} = 4 \cdot in$

Area: $A_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{2} - ID_{pipe}^{2} \right)}{4} = 7.069 \cdot in^2$

Moment of Inertia: $I_{pipe} := \frac{\pi \cdot \left(D_{pipe}^{4} - ID_{pipe}^{4} \right)}{64} = 18.113 \cdot in^4$

Radius of Gyration: $r_{pipe} := \sqrt{\frac{I_{pipe}}{A_{pipe}}} = 1.601 \cdot in$

Bearing Check (AISC 15th Ed., Equation J7-1):

$\phi_b := 0.75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pipe}$

$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{ypipe}} = 3.326 \cdot in^2$

$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{pipe} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 15th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$L_c := K \cdot L_{pipe} = 33.5 \cdot in$

$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{pipe}}\right)^2} = 653.54 \cdot ksi$

$\frac{L_c}{r_{pipe}} = 20.927 < 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{ypipe}}} = 113.432$

$\therefore \quad F_{cr} := 0.658^{\frac{F_{ypipe}}{F_e}} \cdot F_{ypipe} = 48.424 \cdot ksi$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{ypipe} \cdot A_{pipe} & \text{if } \frac{L_c}{r_{pipe}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{pipe} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 318.086 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$\frac{\phi P_n}{\phi P_{n\_comp}} = 70.572 \cdot \%$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 6.5 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 30in$

$L_{plate2} := 24.5in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check
(AISC 15th Ed., Eqs. J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 30.625 \cdot in^2$

$A_{nv} := A_g = 30.625 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 1.194 \times 10^3 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 18.795 \cdot \%$

Shear Rupture

$\phi_v := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 1.102 \times 10^3 \cdot kip$

$$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 20.361 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld):
(AISC 15th Ed., Part 8)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 50ksi$ $Fu_{base} := 65ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 30 \cdot in$

$Notch_{horiz} := 0 \cdot in$

$Notch_{vert} := 0 \cdot in$

Gap between Base Plate and HSS: $Gap := 0in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 4$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{1}{4}$

Weld Material Grade: $F_{EXX} := 80ksi$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.875 \cdot in$$

Load not in plane with weld group:

$$k := 0$$

$$a := \frac{ecc_1}{L_{plate1}} = 0.329$$

$$C_1 = 1.03$$

$$Coeff_1 := 2.9653$$

$$\phi_w := 0.75$$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate1} \cdot kip}\right) = 4$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{4}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_{vpole} \geq D_{min1} \wedge D_{vpole} \geq Min_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$Check_{weld} = \text{"OK"}$$

$$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_{vpole} \cdot L_{plate1} = 274.883 \cdot kip$$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$Check_{weld1} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 81.66 \cdot \%$$

Gusset Plate to HSS Weld Design (AISC 15th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 6$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{3}{8}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.138$$

$C_1 = 1.03$

$Coeff_1 := 3.67$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 4$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{4}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 416.756 \cdot kip$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 53.86 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

$\phi_{sy} := 1.0$

$\phi_{sr} := 0.75$

$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.875 \cdot in$

$M_1 := \phi P_n \cdot ecc_1 = 2.217 \times 10^3 \cdot kip \cdot in$

$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 187.5 \cdot in^3$

$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 14.778 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 29.25 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot Fu_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 27 \cdot kip$

$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

$\frac{f_v}{\phi F_v} = 54.73 \cdot \%$

Gusset Plate to HSS Punching Shear Check (max per unit length): (AISC 15th Ed., Section J4.2)

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$

$M_2 := \phi P_n \cdot ecc_2 = 757.62 \cdot kip \cdot in$

$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 125.052 \cdot in^3$

$f_w := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 7.573 \cdot kip$

AISC 15th Ed., Equation J4-3:

$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 30 \cdot kip$

AISC 15th Ed., Equation J4-4:

$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 27.9 \cdot kip$

$\phi F_w := \min(\phi F_{sy}, \phi F_{sr}) = 27.9 \cdot kip$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

$\frac{f_v}{\phi F_v} = 27.144 \cdot \%$

Embedment Depth Calculations

Projected Embedment Depth: $L_{em} := 6 \cdot ft$

Yield Strength of Rebar: $f_y := 60ksi$

Concrete Strength: $f'_c := 3000psi$

Transverse Reinforcement Index: $k_{tr} := 0$ Can be taken as 0 for design per ACI 318-14

Epoxy Factor: $\psi_e := 1$

Rebar Size Factor: $\psi_s := 1$

Casting Position Factor: $\psi_t := 1$

Concrete Weight Factor: $\lambda := 1 \cdot \sqrt{psi}$

Pier Diameter: $D_{pier} := 7ft$

Cover: $c_c := 4in$

Rebar Size: $d_s := 11$

Tie Size: $Tie := 5$

Number of Vertical Rebar: $n := 32$

$d_b := vlookup(d_s, Rebar, 2)\, in = 0.036\, m$

Design Load: $\phi P_n := \phi P_{nt} = 304.688 \cdot kip$

Development Length (ACI 318-14 Chapter 25):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 3.6\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 3.264\cdot in$$

$$G := \sqrt{A^2 + B^2} = 4.859\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 1.335\ m$$

Epoxy Development Length:

Bond Strength:

Epoxy := AF35LVE

$$\phi_{bond} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if } Epoxy = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3\cdot psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 38.622\cdot in$$

Required Embedment Length:

$$L_{min\_CED} := \begin{cases} (5ft) & \text{if } D_{new} \neq 2.25in \\ (6.5ft) & \text{if } Epoxy = 0 \wedge D_{new} = 2.25in \\ (6ft) & \text{if } Epoxy = 1 \wedge D_{new} = 2.25in \end{cases}$$

$$L_{min} := \max\left(L_{be} + 12in, l'_d + 0.25\cdot L_{be}, L_{min\_CED}\right) = 6\cdot ft$$

$$L_{min} := \text{ceil}\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 6\cdot ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \leq L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$\phi_p := 0.75$

Is this a CA DSA site?

- ○ Yes
- ◉ No

$$Pullout := \begin{cases} \dfrac{\phi_p \cdot Fu_{rod} \cdot A_{new}}{1.6} & \text{if } CA = 0 \\ \left(0.8 \cdot Fy_{rod} \cdot A_{new}\right) & \text{otherwise} \end{cases} = 190 \cdot kip$$

Drilled Pier Foundation

BU # :	876334
Site Name:	SOUTHINGTON, SMC
Order Number:	556607, Rev 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5071.26	
Axial Force (kips)	81.34	
Shear Force (kips)	46.84	

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

Pier Design Data		
Depth	20.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 3' below grade		
Pier Diameter	26.04675	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	100.5	in
Tie Size	5	
Tie Spacing	6	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Pier Section 2		
From 3' below grade to 20.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.01	-
Soil Safety Factor	1.41	-
Max Moment (kip-ft)	5322.22	-
Rating*	*89.9%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	277.73	-
End Bearing (kips)	1663.01	-
Weight of Concrete (kips)	504.78	-
Total Capacity (kips)	1940.74	-
Axial (kips)	586.12	-
Rating*	*28.8%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.82	-
Critical Moment (kip-ft)	5321.57	-
Critical Moment Capacity	8102.22	-
Rating*	*62.6%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	16.50	-
Critical Shear (kip)	785.44	-
Critical Shear Capacity	2493.80	-
Rating*	*30.0%*	-

Shear-Friciton Methodology is Applied

Soil Interaction Rating*	**89.9%**
Structural Foundation Rating*	**62.6%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15	☑
N	☐
Shear Design Option	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	9

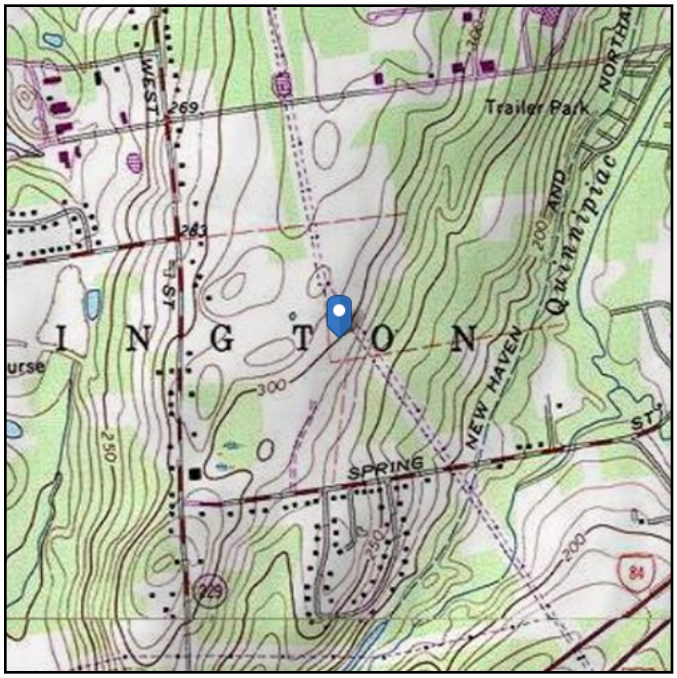
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	1	1	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	1	2	1	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	2	3.3	1.3	130	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
4	3.3	5	1.7	130	150	0	36	0.000	0.000	0.00	0.00			Cohesionless
5	5	6	1	130	150	0	36	0.000	0.000	0.65	0.65			Cohesionless
6	6	8	2	120	150	0	30	0.000	0.000	0.90	0.90			Cohesionless
7	8	12.4	4.4	130	150	0	36	0.00	0.00	1.38	1.38			Cohesionless
8	12.4	14.5	2.1	145	150	0	40	0.00	0.00	3.97	3.97			Cohesionless
9	14.5	20.5	6	145	150	0	40	0.00	0.00	0.00	0.00	54.9		Cohesionless

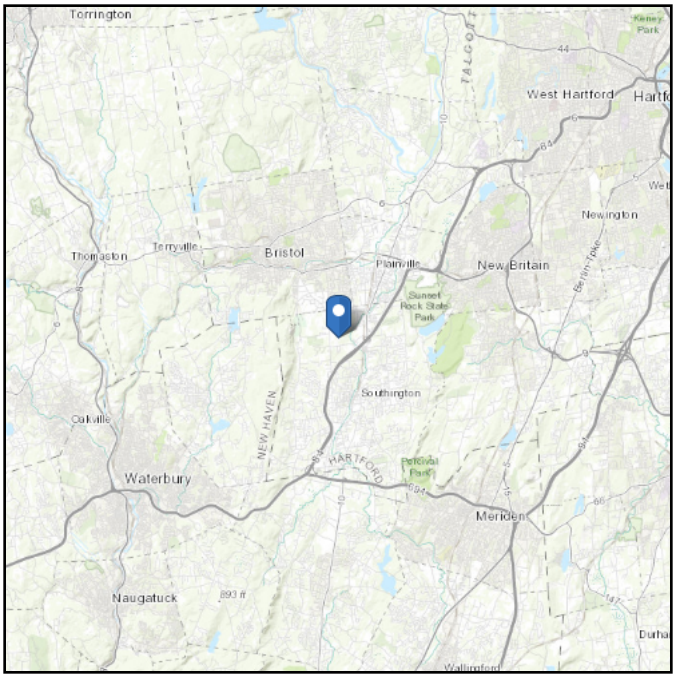
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 296.07 ft (NAVD 88)
Latitude: 41.632472
Longitude: -72.89425





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 Feb 02 2021

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

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

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

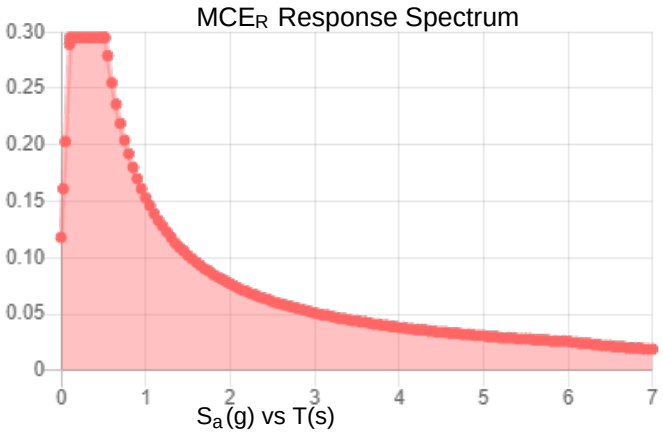
Seismic

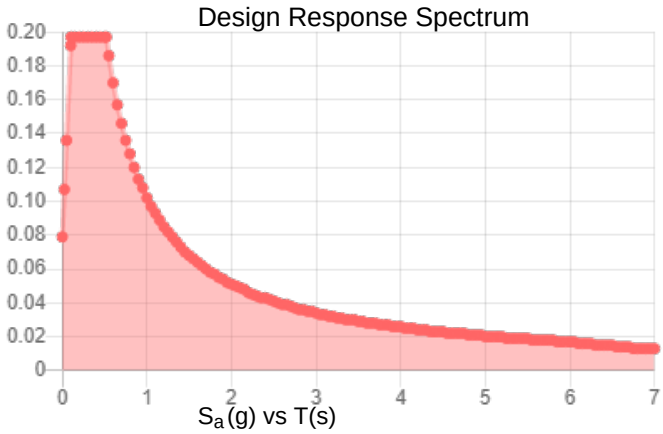
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.185	S_{DS} :	0.197
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.094
S_{MS} :	0.295	PGA_M :	0.151
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Feb 02 2021

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

Ice

Results:

Ice Thickness:	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 Feb 02 2021

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

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

Exhibit E

Mount Analysis

Date: **August 2, 2021**

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

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**DISH Network Equipment Change-Out**	
	Carrier Site Number:	BOBDL00086A
	Carrier Site Name:	CT-CCI-T-876334
Crown Castle Designation:	**Crown Castle BU Number:**	876334
	Crown Castle Site Name:	Southington, Smoron
	Crown Castle JDE Job Number:	650076
	Crown Castle Order Number:	556607 Rev. *0*
Engineering Firm Designation:	**Trylon Report Designation:**	189204
Site Data:	**625 Spring Street, Southington, Hartford County, CT, 06489**	
	Latitude 41°37'56.90" Longitude -72°53'39.30"	
Structure Information:	**Tower Height & Type:**	**160.3 ft Monopole**
	Mount Elevation:	**114.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Darcy Tarr,

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

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

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

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

Mount analysis prepared by: Trevor Leahy, E.I.T.

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 CTSBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.00 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.185
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
114.0	114.0	3	JMA Wireless	MX08FRO665-21	8.0 ft Platform [Commscope MC-PK8-DSH]
		3	Fujitsu	TA08025-B604	
		3	Fujitsu	TA08025-B605	
		1	Raycap	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	DISH Network Application	556607 Rev. 0	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	Trylon
Tower Analysis	Crown Castle	9786415	CCI Sites

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP4	114.0	45.6	Pass
	Horizontal(s)	H1		11.6	Pass
	Standoff(s)	M2		58.6	Pass
	Bracing(s)	M11		48.3	Pass
	Handrail(s)	M19		17.2	Pass
	Plate(s)	M10		30.7	Pass
	Mount Connection(s)	-		30.0	Pass

Structure Rating (max from all components) =	58.6%

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

4.1) Recommendations

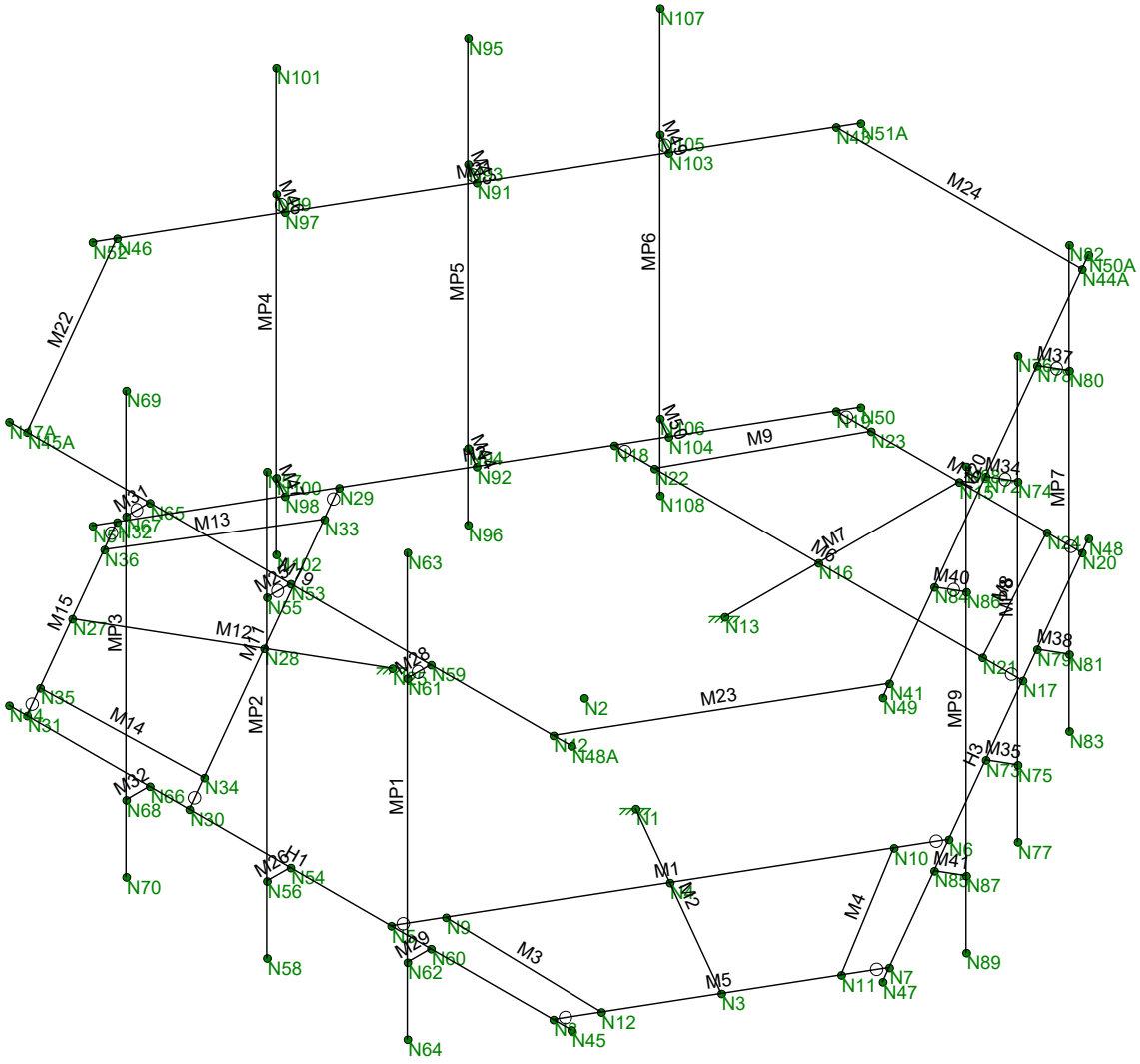
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	Southington, SMORON (BU 876334 Order 556607)	SK - 1
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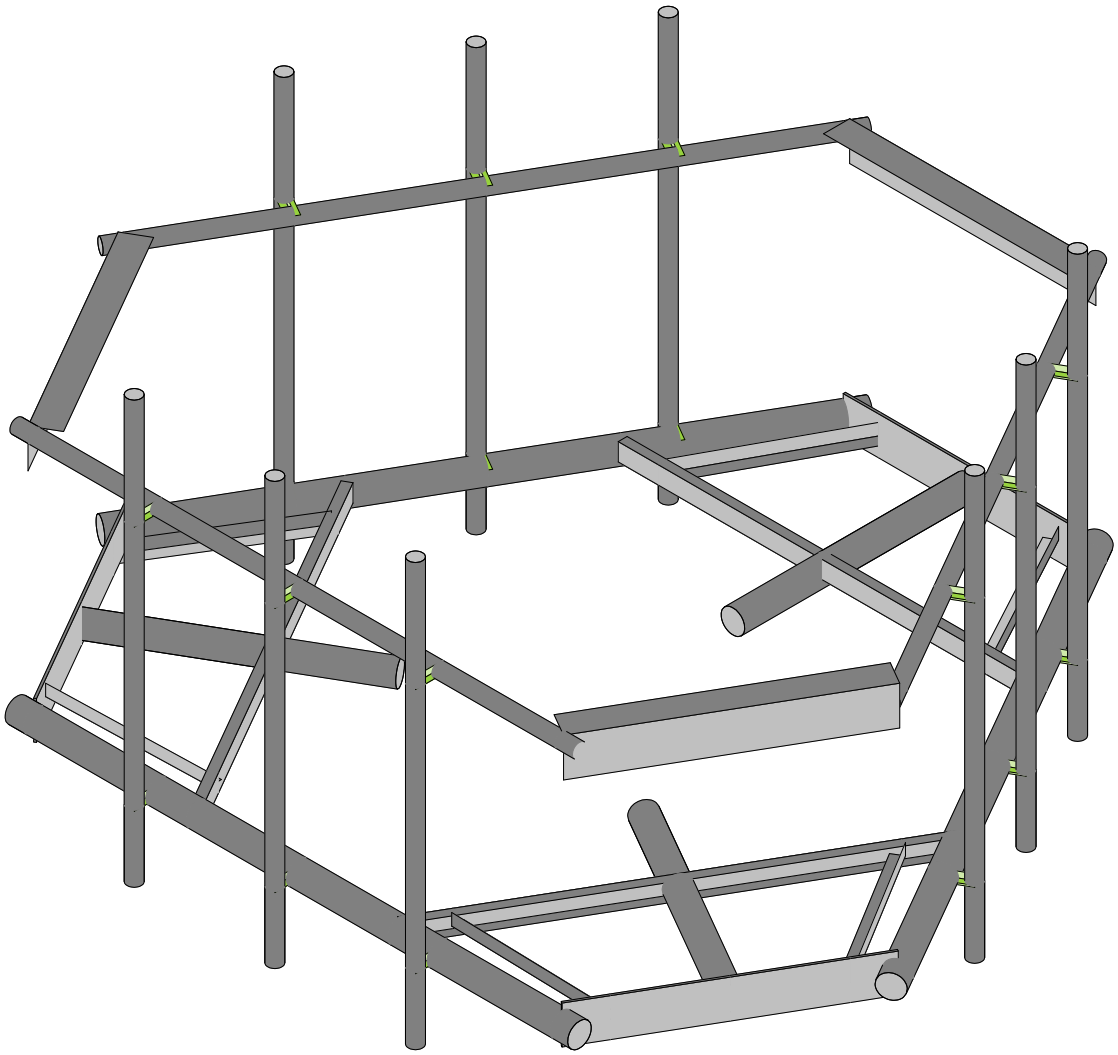
189204		MC-PK8-C_loaded.r3d



Trylon	Southington, SMORON (BU 876334 Order 556607)	SK - 2
TL		Aug 2, 2021 at 2:02 PM
189204		MC-PK8-C_loaded.r3d

APPENDIX B

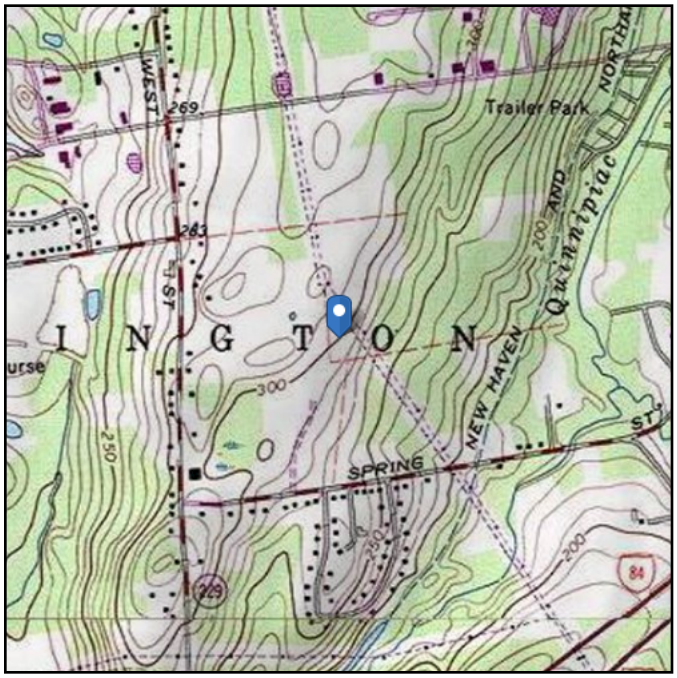
SOFTWARE INPUT CALCULATIONS

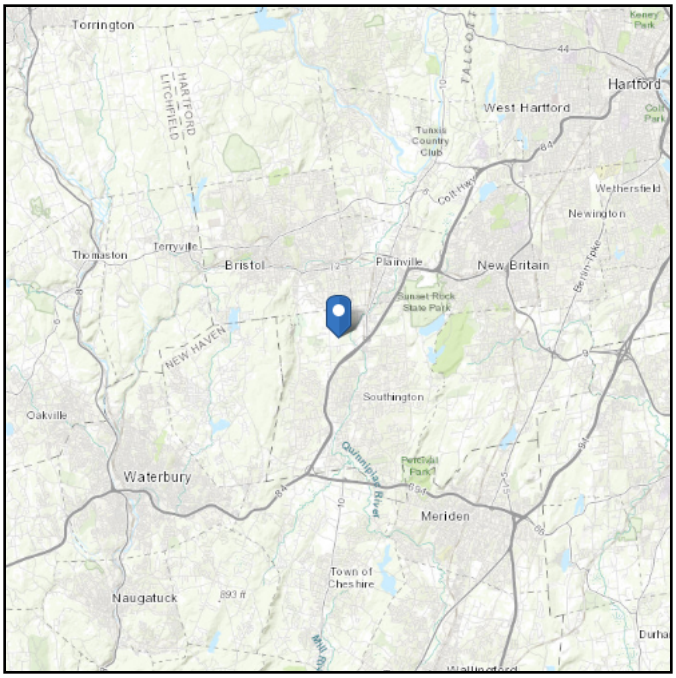
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 296.07 ft (NAVD 88)
Latitude: 41.632472
Longitude: -72.89425





Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph

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

Date Accessed: Mon Aug 02 2021

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

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

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189204
Carrier Site ID:	BOBDL00086A
Carrier Site Name:	CT-CCI-T-876334

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	114.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	160.3	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	296.07	ft.

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

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.30	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	48.91	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	48.91	psf
Mount Ice Thickness (t_{iz}):	2.26	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	88.04	psf
Round Member Pressure:	52.82	psf
Ice Wind Pressure:	7.35	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.19	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
MX08FRO665-21	3	114	No Ice	12.49	5.87	82.50
MP2/MP5/MP8, 0/140/240	--	--	w/ Ice	14.11	7.35	388.75
TA08025-B604	3	114	No Ice	1.96	0.98	63.90
MP2/MP5/MP8, 0/140/240	--	--	w/ Ice	2.54	1.43	98.68
TA08025-B605	3	114	No Ice	1.96	1.13	75.00
MP2/MP5/MP8, 0/140/240	--	--	w/ Ice	2.54	1.60	104.83
RDIDC-9181-PF-48	1	114	No Ice	2.01	1.17	21.85
MP2, 0	--	--	w/ Ice	2.59	1.65	103.40
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

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

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	114	1.00	1.30	0.95	2.26	48.91	7.83
TA08025-B604	3	114	1.00	1.30	0.95	2.26	48.91	7.83
TA08025-B605	3	114	1.00	1.30	0.95	2.26	48.91	7.83
RDIDC-9181-PF-48	1	114	1.00	1.30	0.95	2.26	48.91	7.83

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	3	No Ice	549.77	331.13	476.89	258.25	476.89	331.13
MP2/MP5/MP8, 0/140/240	--	w/ Ice	99.37	63.66	87.46	51.75	87.46	63.66
TA08025-B604	3	No Ice	86.43	54.00	75.62	43.19	75.62	54.00
MP2/MP5/MP8, 0/140/240	--	w/ Ice	17.86	12.02	15.91	10.07	15.91	12.02
TA08025-B605	3	No Ice	86.43	58.90	77.26	49.72	77.26	58.90
MP2/MP5/MP8, 0/140/240	--	w/ Ice	17.86	12.90	16.21	11.24	16.21	12.90
RDIDC-9181-PF-48	1	No Ice	88.56	60.71	79.28	51.42	79.28	60.71
MP2, 0	--	w/ Ice	18.26	13.30	16.60	11.64	16.60	13.30
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*Elevation [ft]*	*Weight [lbs]*	*F_p* [lbs]
MX08FRO665-21	3	114	82.5	9.77
TA08025-B604	3	114	63.9	7.57
TA08025-B605	3	114	75	8.88
RDIDC-9181-PF-48	1	114	21.85	2.59

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6 5/8x4 7/16x...	Beam	Single Angle	A36 Gr.36	Typical	2.039	3.593	9.575	.023
7	Horizontals	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
8	Mount Pipes	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			15		3	
2	Structure Wind Z	WLZ						51		
3	Structure Wind X	WLX						51		
4	Wind Load 0 AZI	WLZ					30			
5	Wind Load 30 AZI	None					30			
6	Wind Load 45 AZI	None					30			
7	Wind Load 60 AZI	None					30			
8	Wind Load 90 AZI	WLX					30			
9	Wind Load 120 AZI	None					30			
10	Wind Load 135 AZI	None					30			
11	Wind Load 150 AZI	None					30			
12	Ice Weight	OL1					15	51	3	
13	Ice Structure Wind Z	OL2						51		
14	Ice Structure Wind X	OL3						51		
15	Ice Wind Load 0 AZI	OL2					30			
16	Ice Wind Load 30 AZI	None					30			
17	Ice Wind Load 45 AZI	None					30			
18	Ice Wind Load 60 AZI	None					30			
19	Ice Wind Load 90 AZI	OL3					30			
20	Ice Wind Load 120 AZI	None					30			
21	Ice Wind Load 135 AZI	None					30			
22	Ice Wind Load 150 AZI	None					30			
23	Seismic Load Z	ELZ			-.118		15			
24	Seismic Load X	ELX	-.118				15			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	BLC 1 Transient Area Loads	None						9		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
44	BLC 12 Transient Area Loads	None						9		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.7...	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.8...	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.8...	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.7...	3	-.7...	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.8...	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.8...	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.7...	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.7...	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.8...	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.8...	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.7...	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y		DL	1.2	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 120 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 135 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 150 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 180 AZI	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 210 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 225 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 240 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 270 AZI	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 300 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 315 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										
49	1.2DL + 1DLi + 1WLi 330 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	1.2...	23	1	24															
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	1.2...	23	.866	24	.5														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	1.2...	23	-.7...	24	.707																
57	(1.2+0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	1.2...	23	-.8...	24	.5																
58	(1.2+0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	1.2...	23	-.8...	24	-.5																
60	(1.2+0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	1.2...	23	-.7...	24	-.7...																
61	(1.2+0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	1.2...	23	-.5	24	-.8...																
62	(1.2+0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	1.2...	23	.5	24	-.8...																
64	(1.2+0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	1.2...	23	.707	24	-.7...																
65	(1.2+0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.861	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	.861	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	.861	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	.861	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	.861	23		24	1																
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	.861	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	.861	23	-.7...	24	.707																
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	.861	23	-.8...	24	.5																
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	.861	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	.861	23	-.8...	24	-.5																
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	.861	23	-.7...	24	-.7...																
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	.861	23	-.5	24	-.8...																
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	.861	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	.861	23	.5	24	-.8...																
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	.861	23	.707	24	-.7...																
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	.861	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																		
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																		
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																		
91	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058												
92	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058												
93	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058												
94	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058												
95	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058												
96	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.05	9	.058												
97	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.041	10	.058												
98	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058												
99	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3		4	-.0...												
100	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.0...	5	-.0...												
101	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.0...	6	-.0...												
102	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.05	7	-.0...												
103	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	34	1.5	2		3	-.0...	8	-.0...												
104	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.0...												
105	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.0...	10	-.0...												
106	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.0...	11	-.0...												
107	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058												
108	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
109	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058										
110	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058										
111	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058										
112	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.05	9	.058										
113	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.041	10	.058										
114	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058										
115	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3		4	-.0...										
116	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.0...	5	-.0...										
117	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.0...	6	-.0...										
118	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.05	7	-.0...										
119	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	35	1.5	2		3	-.0...	8	-.0...										
120	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.0...										
121	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.0...	10	-.0...										
122	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.0...	11	-.0...										
123	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058										
124	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058										
125	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058										
126	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058										
127	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058										
128	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.05	9	.058										
129	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.041	10	.058										
130	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058										
131	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3		4	-.0...										
132	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.0...	5	-.0...										
133	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.0...	6	-.0...										
134	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.05	7	-.0...										
135	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	36	1.5	2		3	-.0...	8	-.0...										
136	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.0...										
137	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.0...	10	-.0...										
138	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.0...	11	-.0...										
139	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058										
140	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058										
141	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058										
142	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058										
143	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058										
144	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.05	9	.058										
145	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.041	10	.058										
146	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058										
147	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3		4	-.0...										
148	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.0...	5	-.0...										
149	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	6	-.0...										
150	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.05	7	-.0...										
151	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	37	1.5	2		3	-.0...	8	-.0...										
152	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.0...										
153	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.0...	10	-.0...										
154	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.0...	11	-.0...										
155	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058										
156	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058										
157	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058										
158	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058										
159	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058										
160	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.05	9	.058										
161	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.041	10	.058										
162	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058										
163	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3		4	-.0...										
164	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.0...	5	-.0...										
165	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	6	-.0...										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
166	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.05	7	-.0...												
167	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	38	1.5	2		3	-.0...	8	-.0...												
168	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.0...												
169	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.0...	10	-.0...												
170	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.0...	11	-.0...												
171	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058												
172	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058												
173	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058												
174	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058												
175	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058												
176	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.05	9	.058												
177	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.041	10	.058												
178	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058												
179	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3		4	-.0...												
180	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.0...	5	-.0...												
181	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	6	-.0...												
182	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.05	7	-.0...												
183	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	39	1.5	2		3	-.0...	8	-.0...												
184	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.0...												
185	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.0...	10	-.0...												
186	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.0...	11	-.0...												
187	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058												
188	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058												
189	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058												
190	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058												
191	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058												
192	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.05	9	.058												
193	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.041	10	.058												
194	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	.029	11	.058												
195	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3		4	-.0...												
196	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	-.0...	5	-.0...												
197	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	6	-.0...												
198	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.05	7	-.0...												
199	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	40	1.5	2		3	-.0...	8	-.0...												
200	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	40	1.5	2	.029	3	-.05	9	-.0...												
201	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	40	1.5	2	.041	3	-.0...	10	-.0...												
202	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	40	1.5	2	.05	3	-.0...	11	-.0...												
203	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058												
204	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058												
205	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058												
206	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058												
207	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058												
208	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.05	9	.058												
209	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.041	10	.058												
210	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	.029	11	.058												
211	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3		4	-.0...												
212	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	-.0...	5	-.0...												
213	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	6	-.0...												
214	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.05	7	-.0...												
215	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	41	1.5	2		3	-.0...	8	-.0...												
216	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	41	1.5	2	.029	3	-.05	9	-.0...												
217	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	41	1.5	2	.041	3	-.0...	10	-.0...												
218	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	41	1.5	2	.05	3	-.0...	11	-.0...												
219	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058												
220	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058												
221	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058												
222	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
223	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058										
224	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.05	9	.058										
225	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.041	10	.058										
226	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	.029	11	.058										
227	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3		4	-.0...										
228	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	-.0...	5	-.0...										
229	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	6	-.0...										
230	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.05	7	-.0...										
231	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	42	1.5	2		3	-.0...	8	-.0...										
232	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	42	1.5	2	.029	3	-.05	9	-.0...										
233	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	42	1.5	2	.041	3	-.0...	10	-.0...										
234	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	42	1.5	2	.05	3	-.0...	11	-.0...										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1198.749	20	2385.472	39	2024.231	3	682.66	18	2287.864	3	647.075	31
2		min	-1205.88	12	-165.713	31	-2019.773	27	-2604.781	42	-2287.323	27	-4176.006	39
3	N1	max	1197.783	8	2387.204	45	1963.09	17	684.003	19	2219.997	25	4181.243	45
4		min	-1190.675	32	-176.151	21	-1958.654	25	-2605.823	43	-2220.586	17	-678.296	21
5	N13	max	1886.564	22	2299.916	34	491.276	18	4708.438	34	1792.32	30	848.098	14
6		min	-1886.524	30	-249.125	26	-500.645	10	-964.388	26	-1792.334	22	-848.794	6
7	Totals:	max	3530.364	22	6588.339	42	4002.918	18						
8		min	-3530.364	30	1345.122	81	-4002.919	10						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	phi*Pnc ..	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M2	PIPE_3.5	.615	40	45	.229	40		9	75262.68	78750	7953.75	7953.75	2.14	H1-1b
2	M12	PIPE_3.5	.614	40	39	.235	40		11	75262.68	78750	7953.75	7953.75	2.141	H1-1b
3	M7	PIPE_3.5	.593	40	34	.203	40		6	75262.68	78750	7953.75	7953.75	2.14	H1-1b
4	M11	C3X5	.507	34.8...	41	.173	63.1...	y	35	11202.9..	47628	981.263	4104	1.344	H1-1b
5	M1	C3X5	.507	34.8...	43	.173	6.536	y	49	11202.9..	47628	981.263	4104	1.344	H1-1b
6	M6	C3X5	.483	34.8...	34	.166	63.1...	y	45	37027.8..	47628	981.263	4020.228	1	H1-1b
7	MP4	PIPE_2.0	.479	60	10	.053	60		5	20866.7..	32130	1871.625	1871.625	1.559	H1-1b
8	MP9	PIPE_2.0	.447	60	10	.054	60		15	20866.7..	32130	1871.625	1871.625	1.553	H1-1b
9	MP3	PIPE_2.0	.446	60	4	.056	60		9	20866.7..	32130	1871.625	1871.625	1.857	H1-1b
10	MP1	PIPE_2.0	.442	60	16	.060	60		11	20866.7..	32130	1871.625	1871.625	1.857	H1-1b
11	MP6	PIPE_2.0	.417	60	2	.064	60		3	20866.7..	32130	1871.625	1871.625	1.595	H1-1b
12	MP7	PIPE_2.0	.416	60	5	.063	60		15	20866.7..	32130	1871.625	1871.625	1.93	H1-1b
13	MP5	PIPE_2.0	.415	60	10	.059	60		10	20866.7..	32130	1871.625	1871.625	1.43	H1-1b
14	MP8	PIPE_2.0	.390	60	10	.055	60		10	20866.7..	32130	1871.625	1871.625	1.504	H1-1b
15	MP2	PIPE_2.0	.379	60	14	.061	60		15	20866.7..	32130	1871.625	1871.625	1.543	H1-1b
16	M10	6.5"x0.37" Plate	.322	21	2	.108	21	y	37	3513.807	75757.5	583.963	6139.415	1.137	H1-1b
17	M5	6.5"x0.37" Plate	.313	21	12	.112	21	y	42	3513.807	75757.5	583.963	6326.414	1.172	H1-1b
18	M15	6.5"x0.37" Plate	.309	21	8	.112	21	y	42	3513.807	75757.5	583.963	6330.816	1.173	H1-1b
19	M4	L2x2x3	.183	0	13	.036	0	y	41	18051.7..	23392.8	557.717	1239.29	2.206	H2-1
20	M9	L2x2x3	.181	0	2	.035	0	y	46	18051.7..	23392.8	557.717	1239.29	2.256	H2-1
21	M19	PIPE_2.0	.181	24	10	.172	24		2	14916.0..	32130	1871.625	1871.625	1.471	H1-1b
22	M21	PIPE_2.0	.177	72	4	.172	24		12	14916.0..	32130	1871.625	1871.625	1.521	H1-1b
23	M13	L2x2x3	.176	0	7	.036	0	z	43	18051.7..	23392.8	557.717	1239.29	2.202	H2-1
24	M20	PIPE_2.0	.175	24	16	.169	72		8	14916.0..	32130	1871.625	1871.625	1.526	H1-1b
25	M22	L6 5/8x4 7/16x3/...	.174	42	27	.050	0	y	3	15453.0..	66065.6..	1040.591	3031.076	2.203	H2-1
26	M8	L2x2x3	.173	0	2	.035	0	z	38	18051.7..	23392.8	557.717	1239.29	2.253	H2-1
27	M3	L2x2x3	.167	0	12	.036	0	z	49	18051.7..	23392.8	557.717	1239.29	2.165	H2-1
28	M14	L2x2x3	.165	0	8	.036	0	y	35	18051.7..	23392.8	557.717	1239.29	2.165	H2-1

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	phi*Pnc ..	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
29	M23	L6 5/8x4 7/16x3/...	.155	0	25	.049	42	y	17	15453.0...	66065.6...	1040.591	3031.076	2.228	H2-1
30	M24	L6 5/8x4 7/16x3/...	.131	37.1...	19	.044	42	y	6	15453.0...	66065.6...	1040.591	3031.076	1.407	H2-1
31	H1	PIPE_3.5	.121	48	92	.122	24		10	60666.0...	78750	7953.75	7953.75	1.445	H1-1b
32	H2	PIPE_3.5	.121	65	10	.121	72		4	60666.0...	78750	7953.75	7953.75	1.101	H1-1b
33	H3	PIPE_3.5	.118	48	146	.119	24		16	60666.0...	78750	7953.75	7953.75	1.446	H1-1b

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

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

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

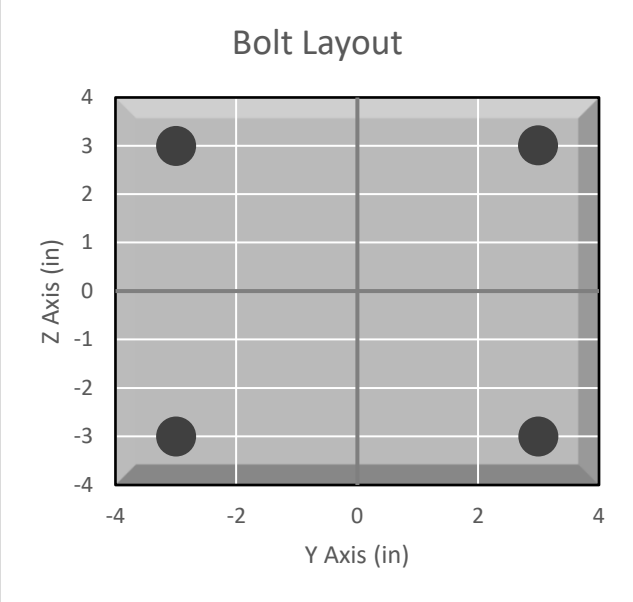
Analysis date: 8/2/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189204
Carrier Site ID:	BOBDL00086A
Carrier Site Name:	CT-CCI-T-876334

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

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.75	in
Grade:	A529	--
Yield Strength (Fy):	50	ksi
Ultimate Strength (Fu):	65	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Mount Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	16304.9	lbs
Shear Capacity (ϕV_n):	10768.5	lbs
Tension Force (T_u):	5142.9	lbs
Shear Force (V_u):	773.3	lbs
Tension Usage:	30.0%	--
Shear Usage:	6.8%	--
Interaction:	30.0%	Pass
Controlling Member:	M12	--
Controlling LC:	42	--

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

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

APPENDIX E

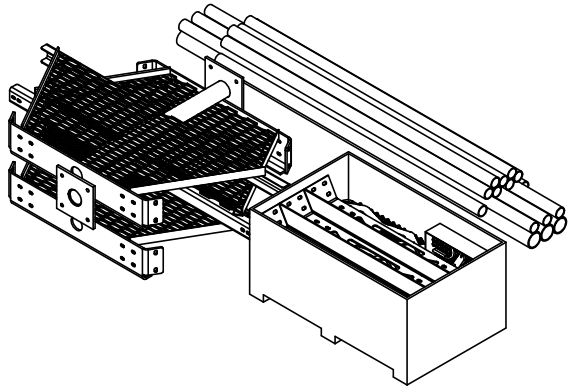
SUPPLEMENTAL DRAWINGS

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

C

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

FOR BOM ENTRY ONLY



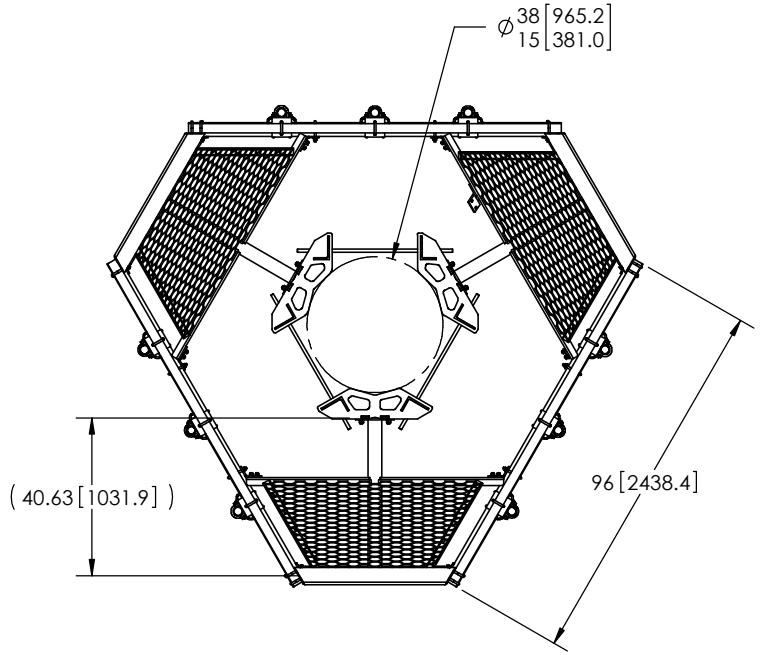
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

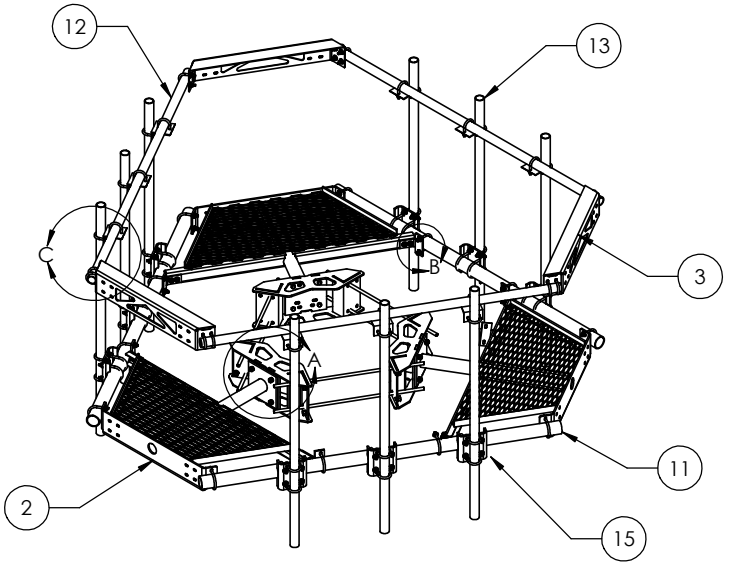
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03

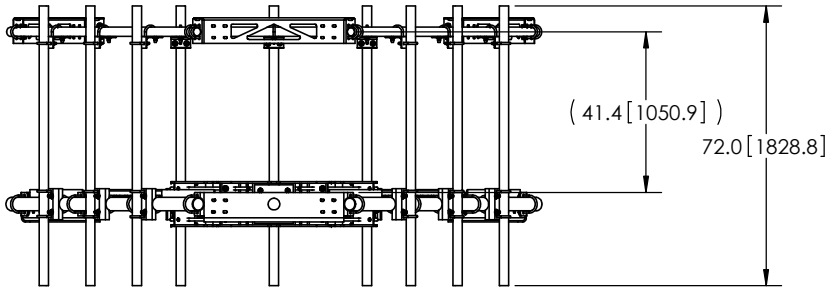
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

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





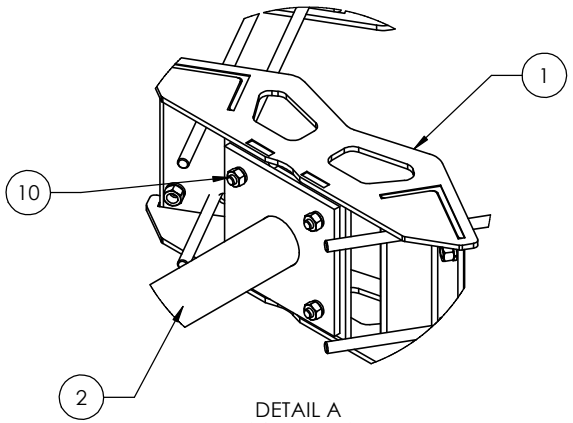


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C 1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18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

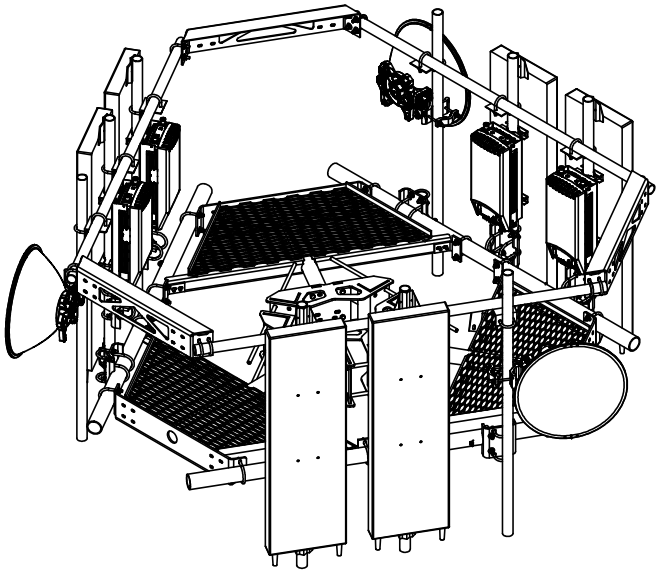
NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"–38" OD.

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

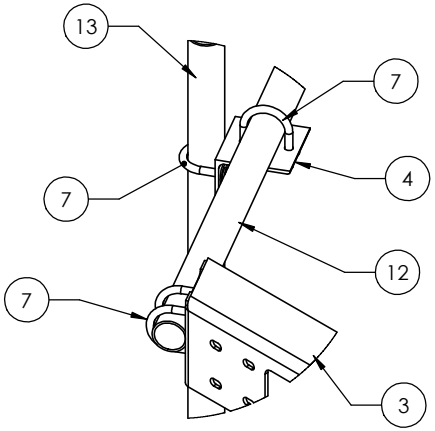
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	ANDREW® WESTCHESTER, IL. 60154 U.S.A.	
	WEIGHT: 1361.27 LBS		



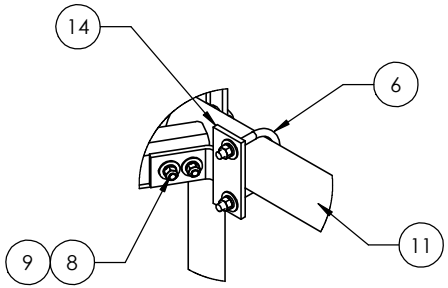
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL C
SCALE 1 : 8



DETAIL B
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

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

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: 876334

BOBDL00086A
625 Spring Street
Southington, Connecticut 06489

June 24, 2021

EBI Project Number: 6221003208

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**34.29%**

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

June 24, 2021

Dish Wireless

Emissions Analysis for Site: 876334 - BOBDL00086A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **625 Spring Street** in **Southington, 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 625 Spring Street in Southington, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 5G channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 5G channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

4) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

5) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antenna mounting height centerline of the proposed antennas is 114 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):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	36,123.20	ERP (W):	36,123.20	ERP (W):	36,123.20
Antenna A1 MPE %:	**14.22%**	Antenna B1 MPE %:	**14.22%**	Antenna C1 MPE %:	**14.22%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	14.22%
Sprint	0.94%
T-Mobile	6.49%
Metro PCS	0.69%
Verizon	6.22%
Nextel	0.48%
AT&T	5.25%
Site Total MPE % :	34.29%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	14.22%
Dish Wireless Sector B Total:	14.22%
Dish Wireless Sector C Total:	14.22%
Site Total MPE % :	34.29%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz 5G	4	1667.71	114.0	20.56	600 MHz 5G	400	5.14%
Dish Wireless 1900 MHz 5G	4	7363.09	114.0	90.78	1900 MHz 5G	1000	9.08%
						Total:	**14.22%**

• 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:	14.22%
Sector B:	14.22%
Sector C:	14.22%
Dish Wireless Maximum MPE % (Sector A):	14.22%
Site Total:	34.29%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **34.29%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

3 Corporate Dr, Suite 101
Clifton Park, NY 12065

Phone: (201) 236-9224
Fax: (724) 416-6112
www.crowncastle.com

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
10 SPARKS ST., PLAINVILLE, CT 06062

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

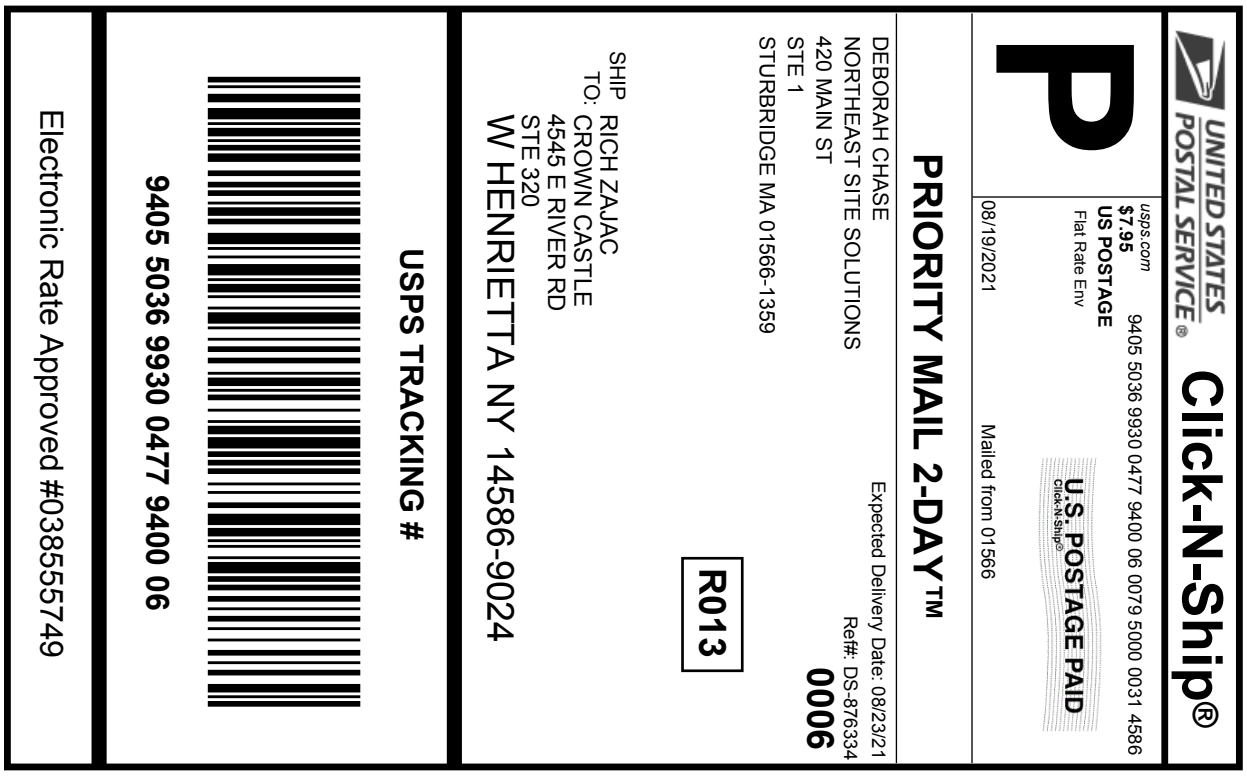
Crown Site ID/Name: 876333/CREATIVE DIMENSIONS
Customer Site ID: BOBDL00085A/CT-CCI-T-876333
Site Address: 10 Sparks St., PLAINVILLE, CT 06062

Crown Castle

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

Exhibit H

Recipient Mailings



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Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 9400 06

Trans. #:	541135269
Print Date:	08/18/2021
Ship Date:	08/19/2021
Expected Delivery Date:	08/23/2021

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

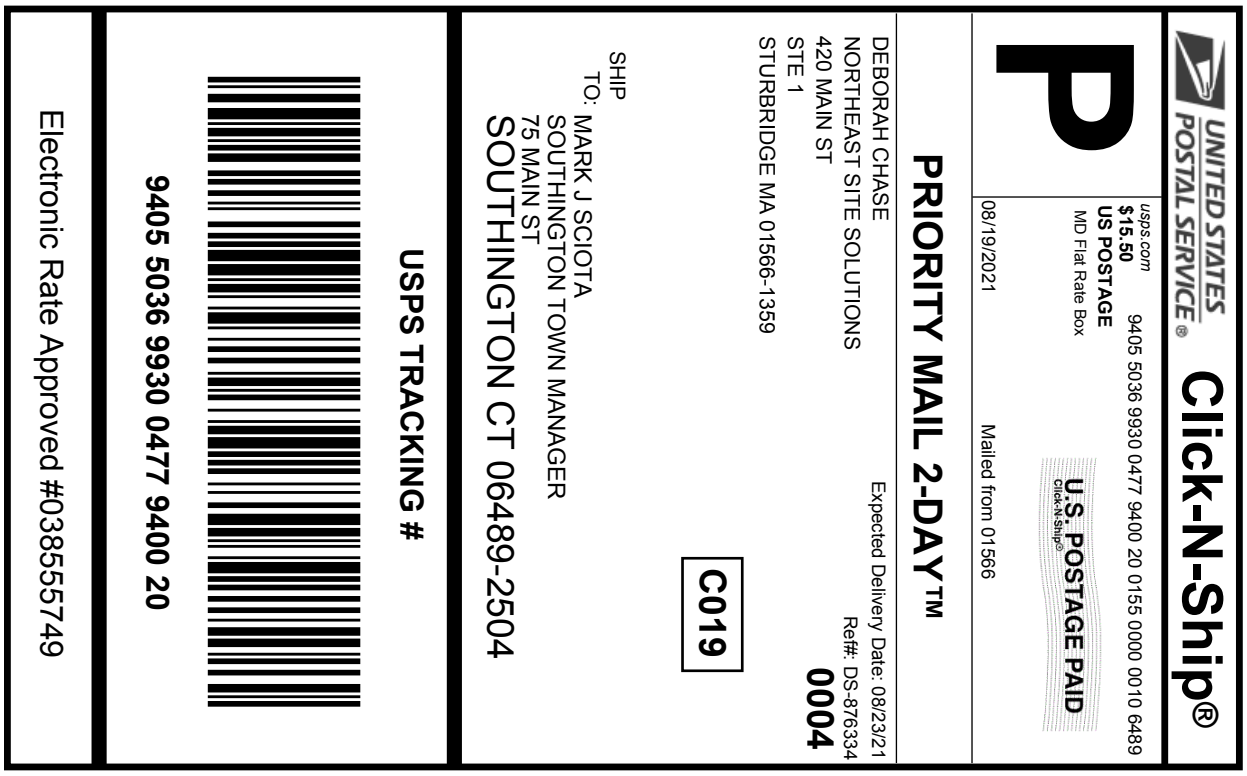
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876334

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

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

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



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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 9400 20

Trans. #:	541135269
Print Date:	08/18/2021
Ship Date:	08/19/2021
Expected Delivery Date:	08/23/2021

Priority Mail® Postage:	**$15.50**
Total:	**$15.50**

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

Ref#: DS-876334

To: MARK J SCIOTA
SOUTHINGTON TOWN MANAGER
75 MAIN ST
SOUTHINGTON CT 06489-2504

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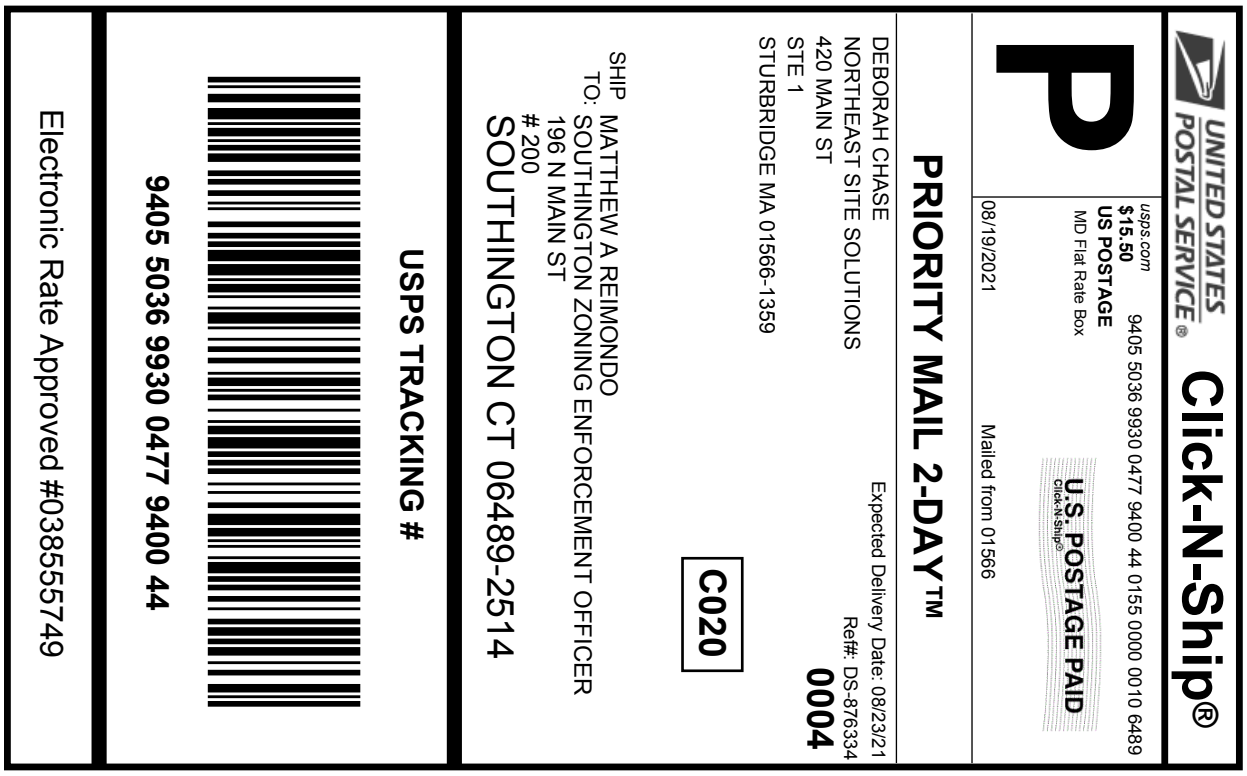
Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



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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.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0477 9400 44

Trans. #:	541135269
Print Date:	08/18/2021
Ship Date:	08/19/2021
Expected Delivery Date:	08/23/2021

Priority Mail® Postage:	**$15.50**
Total:	**$15.50**

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

Ref#: DS-876334

To: MATTHEW A REIMONDO
SOUTHINGTON ZONING ENFORCEMENT OFFICER
196 N MAIN ST
200
SOUTHINGTON CT 06489-2514

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

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FISKDALE, MA 01518-9998
(800)275-8777

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Product	Qty	Unit Price	Price
Prepaid Mail Southington, CT 06489 Weight: 3 lb 7.00 oz Acceptance Date: Thu 08/19/2021 Tracking #: 9405 5036 9930 0477 9400 44	1		$0.00
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Thu 08/19/2021 Tracking #: 9405 5036 9930 0477 9400 06	1		$0.00
Prepaid Mail Southington, CT 06489 Weight: 3 lb 6.50 oz Acceptance Date: Thu 08/19/2021 Tracking #: 9405 5036 9930 0477 9400 20	1		$0.00
Grand Total:			$0.00