NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

November 3, 2021

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

RE: Tower Share Application
300 Governors Highway, South Windsor CT 06074
Latitude: 41.833444
Longitude: -72.60305556
Site# 828054_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 300 Governors Highway in South Windsor, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antenna and six (6) RRUs, at the 138-foot level of the existing 169-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 B+T, dated October 18, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated July 9, 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 South Windsor Planning and Zoning Commission on September 21, 1999. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to The Honorable Andrew Paterna, Mayor for the Town of South Windsor, Michele M. Lipe, Director of Planning, as well as the tower owner (Crown Castle) and property owner (Electron Technologies)

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 169-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 138-feet.

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 30.19% 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 tower in South Windsor. 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 138-foot level of the existing 170-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 South Windsor.

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:
The Honorable Andrew Paterna, Mayor
Town of South Windsor
1540 Sullivan Ave South Windsor, CT 06074
860-644-2511

Michele M. Lipe, Director of Planning
Town of South Windsor
1540 Sullivan Ave South Windsor, CT 06074
860-644-2511 ext. 252

Electron Technologies
300 Governors Highway South Windsor, CT 06074

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Town of South Windsor
1540 SULLIVAN AVENUE • SOUTH WINDSOR, CT 06074-2786
AREA CODE 860/644-2511
FAX 860/644-3781

CERTIFIED MAIL

September 21, 1999

Mr. Thomas M. Gilligan
Omnipoint Communications, Inc.
100 Filley Street
Bloomfield, CT 06002

Dear Mr. Gilligan:

Re: Appl 99-51P, Omnipoint Communications Services

We are pleased to advise you that the Planning & Zoning Commission voted on September 14, 1999 to approve with modifications the above referenced application for a request for a Special Exception to Section XVI for the construction of a 175 ft. multi-carrier telecommunications monopole on property located at 300 Governor's Highway, I zone as shown on plans prepared by Arcnet, Job No. A 99506823A, dated 5/9/99, as revised. This approval is subject to the following modifications:

1. Prior to commencement of any site work, a meeting must be held with Town Staff.

2. No building permit will be issued until the final mylars have been filed in the Town Clerk's office.

3. An as-built plan is required prior to issuance of a Certificate of Occupancy per Section 8.1.10 of the Zoning Regulations.

4. All plans used in the field by the developer must bear the stamp and authorized signature of the Town of South Windsor.

5. Special Exception approval is granted for five years and must be renewed prior to September 14, 2004. The attached Special Exception form must be completed and filed in the Town Clerk's office. The special exception will take effect upon filing.

Black and white transparent mylars of Sheet S-1 with the above modifications, together with three blueprint copies of the entire set of plans must be submitted to this Commission within 30 days to be stamped and signed.

After the mylars have been signed by the Commission, they will be returned to you for filing in the Office of the Town Clerk. After filing these plans, a copy of the receipt must be submitted to the Planning Department.

Sincerely,

Sue W. Larsen /dlw

Sue W. Larsen, Chairperson
Planning and Zoning Commission

SL/dlw

Attachment

cc: Town Engineer
Chief Building Official
Assessor
Superintendent of Pollution Control
Fire Marshal

Exhibit B

Property Card

300 GOVERNORS HIGHWAY

Location	300 GOVERNORS HIGHWAY	**Mblu**	71/ 22/ / /
Acct#	36900300	**Owner**	ELECTRON TECHNOLOGIES CORPORATIO
Assessment	$776,200	**Appraisal**	$1,108,900
PID	2698	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$628,200	$480,700	$1,108,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$439,700	$336,500	$776,200

Owner of Record

Owner	ELECTRON TECHNOLOGIES CORPORATIO	**Sale Price**	$800,000
Co-Owner	P.O.BOX 316	**Certificate**	
Address	300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074	**Book & Page**	540/ 418
		Sale Date	10/04/1988
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ELECTRON TECHNOLOGIES CORPORATIO	$800,000		540/ 418	00	10/04/1988

Building Information

Building 1 : Section 1

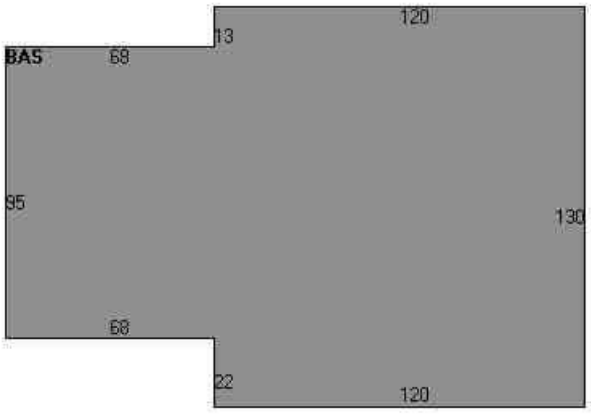
Year Built:	1965
Living Area:	22,060
Replacement Cost:	$960,272
Building Percent Good:	63
Replacement Cost Less Depreciation:	$605,000

Building Attributes	
Field	**Description**
STYLE	Light Industrial
MODEL	Comm/Ind
Grade	C
Stories:	1.00
Occupancy	1
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Hot Air
% Central Air	100
Foundation	Poured Conc
Bldg Use	Industrial
Total Rooms	0
Total Bedrms	0
Total Fixtures	12
% Wet Sprinkler	
% Dry Sprinkler	
1st Floor Use	
Heat/AC	HEAT/AC SPLIT
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	25
Class	C
Wall Height	16

Building Photo

(http://images.vgsi.com/photos/SouthWindsorCTPhotos//\00\00\19/99.JPG)

Building Layout



(http://images.vgsi.com/photos/SouthWindsorCTPhotos//Sketches/2698_2(

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	22,060	22,060
		22,060	22,060

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Land Line Valuation

Use Code	301	**Size (Acres)**	6.03
Description	Industrial	**Frontage**	0
Zone	I	**Depth**	0
Neighborhood	C400	**Assessed Value**	$336,500
Alt Land Appr	No	**Appraised Value**	$480,700
Category			

Outbuildings

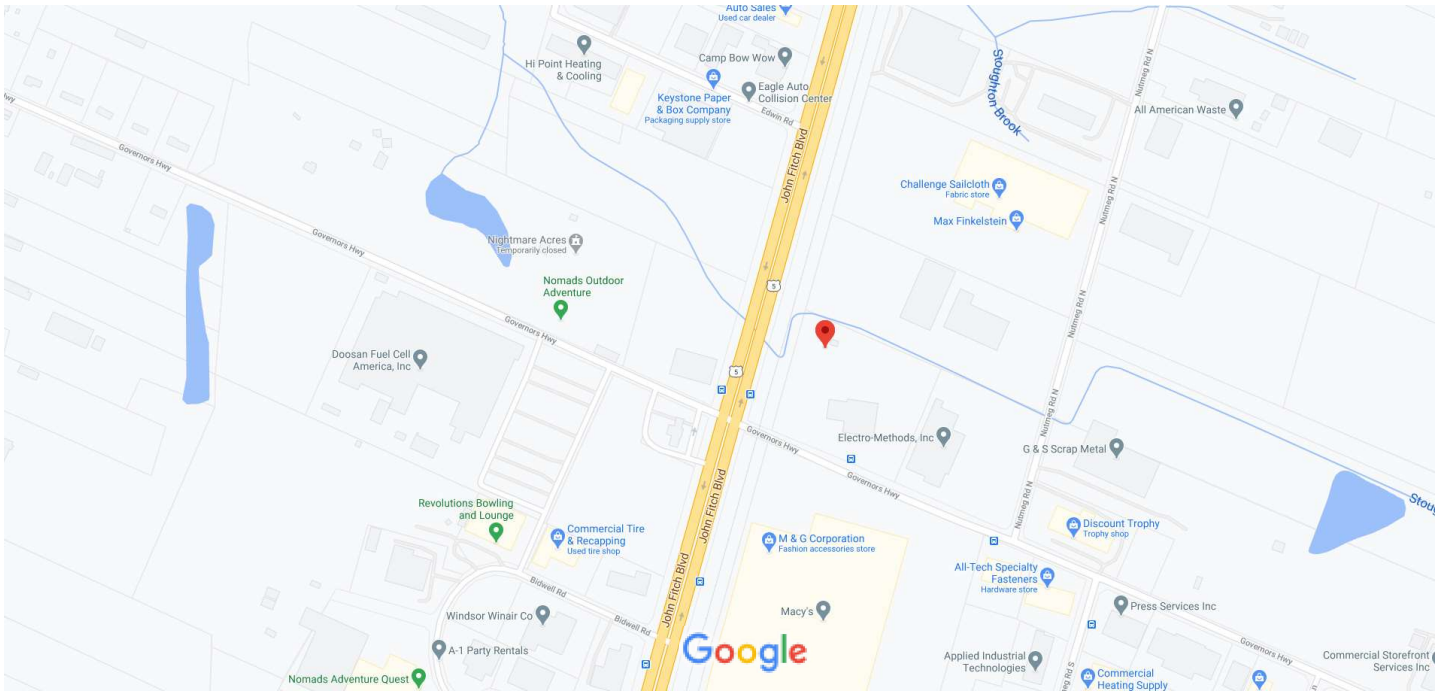
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving	AS	Asphalt	36700 S.F.	$19,300	1
FN1	Fence			1080 L.F.	$3,200	1
LT1	Lights			1 UNITS	$700	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$628,200	$480,700	$1,108,900
2018	$628,200	$480,700	$1,108,900
2017	$628,200	$480,700	$1,108,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$439,700	$336,500	$776,200
2018	$439,700	$336,500	$776,200
2017	$439,700	$336,500	$776,200

Google Maps 41°50'00.4"N 72°36'11.0"W



Map data ©2021 Google 200 ft

41°50'00.4"N 72°36'11.0"W

41.833444, -72.603056

Directions Save Nearby Send to your phone Share

South Windsor School District, South Windsor, CT

R9MW+9Q South Windsor, Connecticut

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00059A

DISH Wireless L.L.C. SITE ADDRESS:

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

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:
- REMOVE EXISTING LEVEL AT 143'-0" LEVEL
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED TOWER PLATFORM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

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

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:	ELECTRON TECHNOLOGIES CORPORATIO
ADDRESS:	300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	828054
TOWER APP NUMBER:	556632
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 50' 0.40" N 41.833444 N
LONGITUDE (NAD 83):	72° 36' 11.00" W 72.60305556 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	I
PARCEL NUMBER:	71-22
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	T.B.D.
TELEPHONE COMPANY:	T.B.D.

PROJECT DIRECTORY

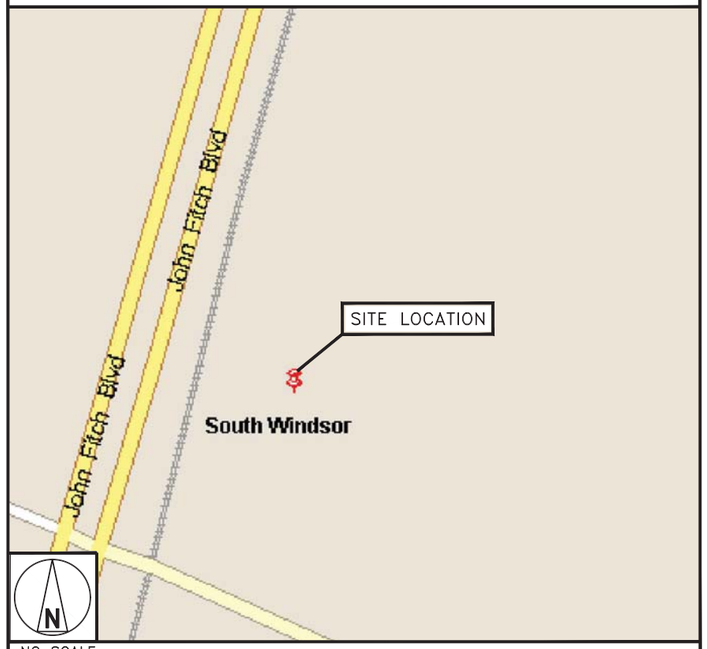
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	NICHOLAS CURRY (704) 403-8582
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT, TAKE CT-20 E TO US-5 N IN SOUTH WINDSOR, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, USE THE LEFT 2 LANES TO MERGE WITH I-91 N TOWARD SPRINGFIELD, TAKE EXIT 44 FOR US-5 S TOWARD E.WINDSOR, TURN RIGHT ONTO US-5 S, MAKE A U-TURN AT GOVERNORS HWY, DESTINATION WILL BE ON THE RIGHT.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER

10/18/21

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	10/18/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

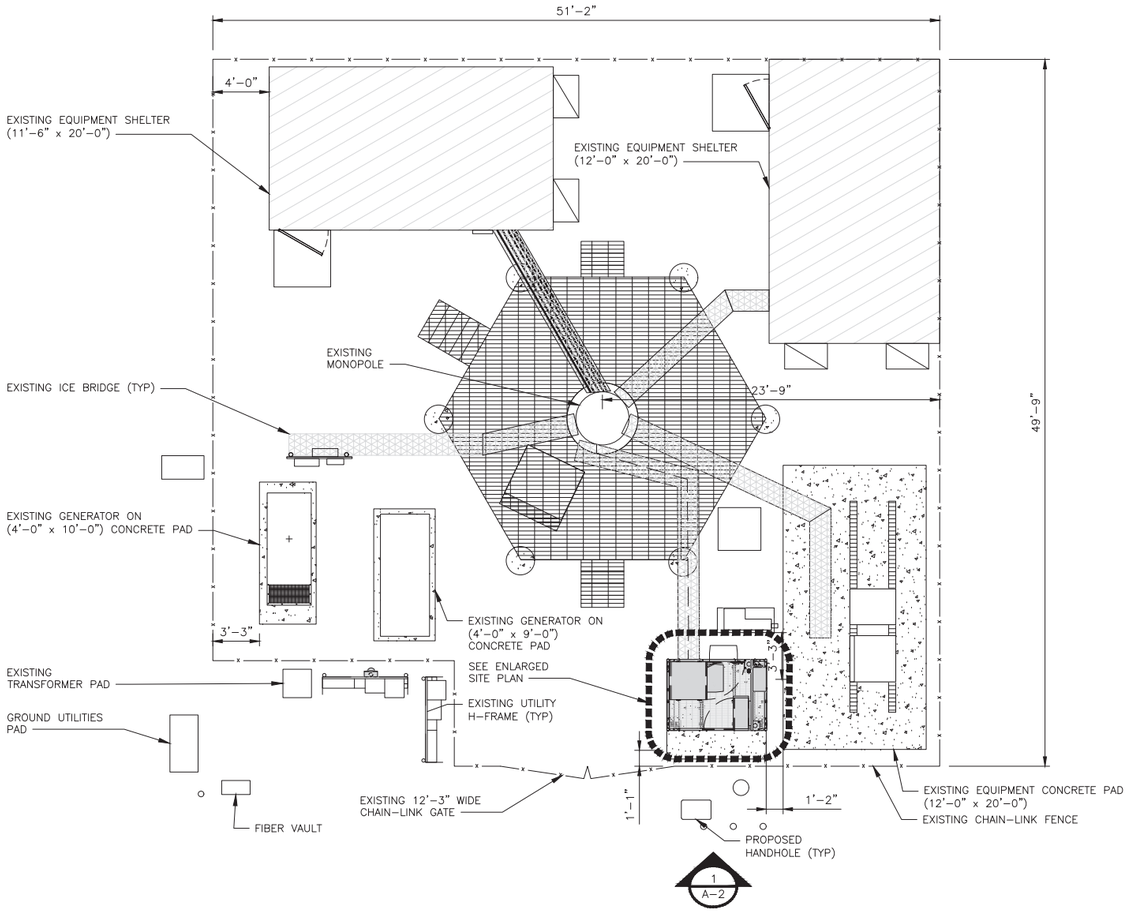
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



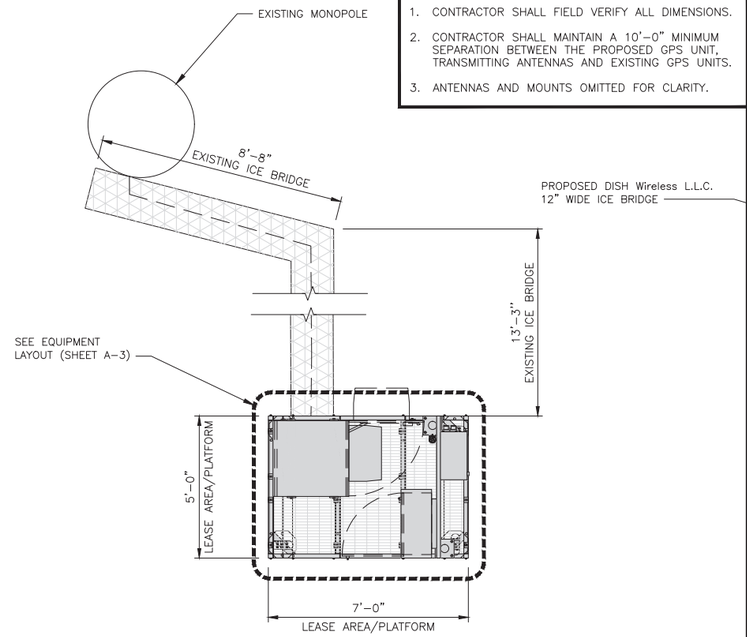
OVERALL SITE PLAN

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

1

NOTES

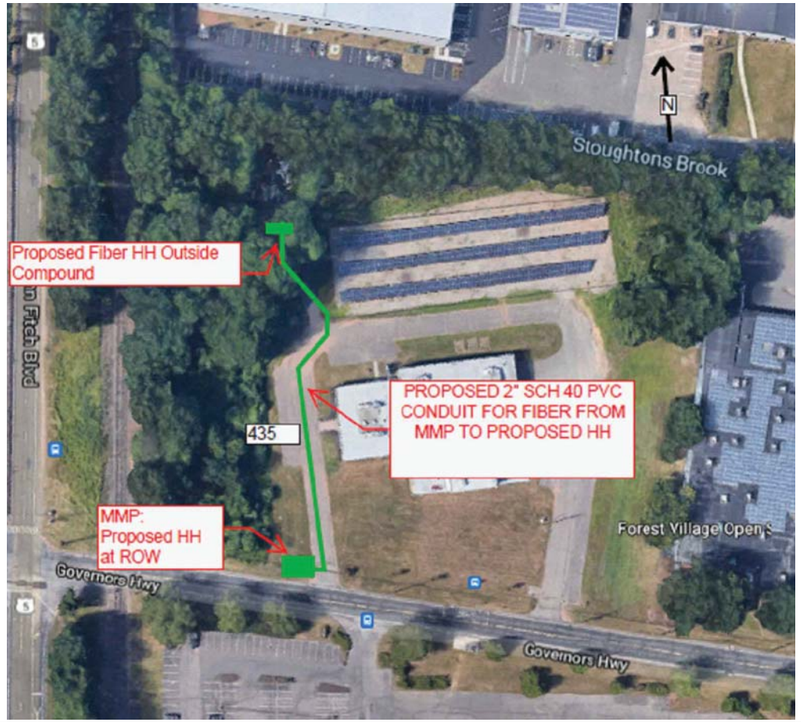
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



UTILITY PLAN

NO SCALE

3

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/18/21

B&T ENGINEERING, INC.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

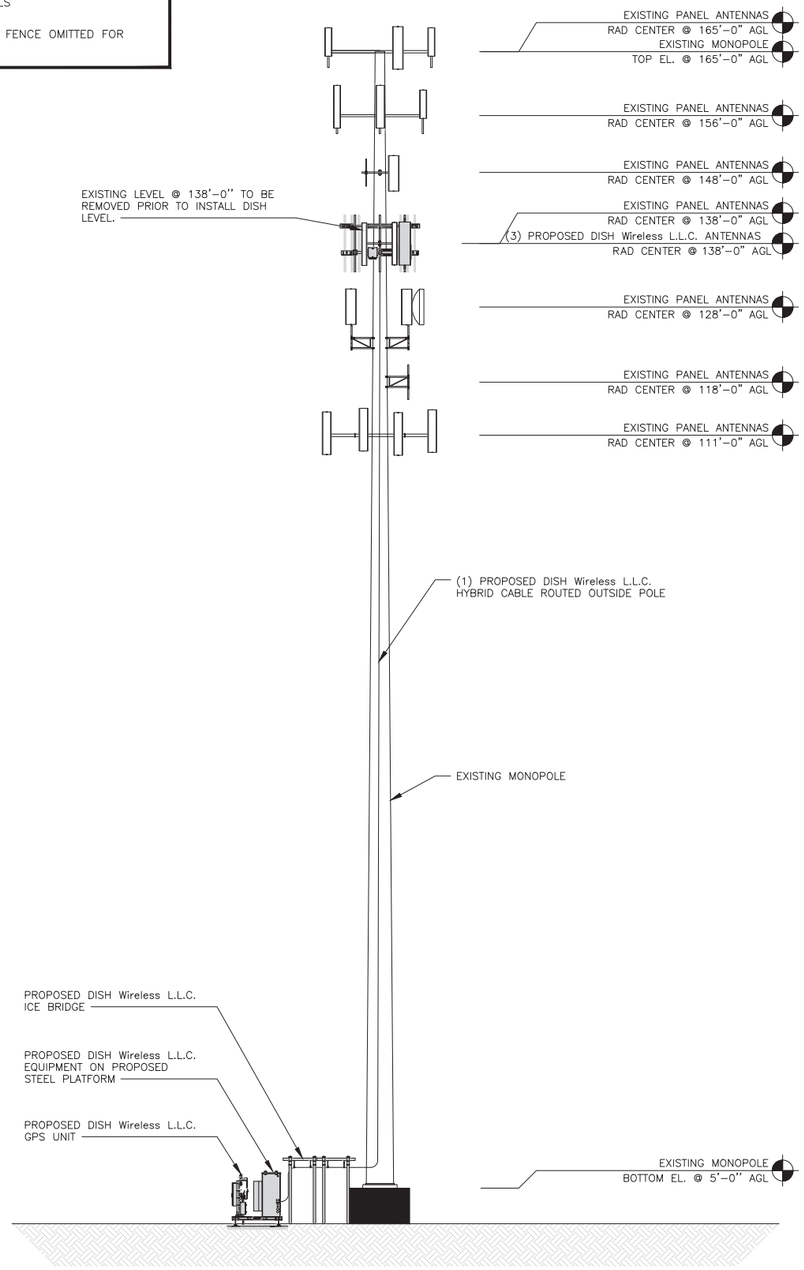
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

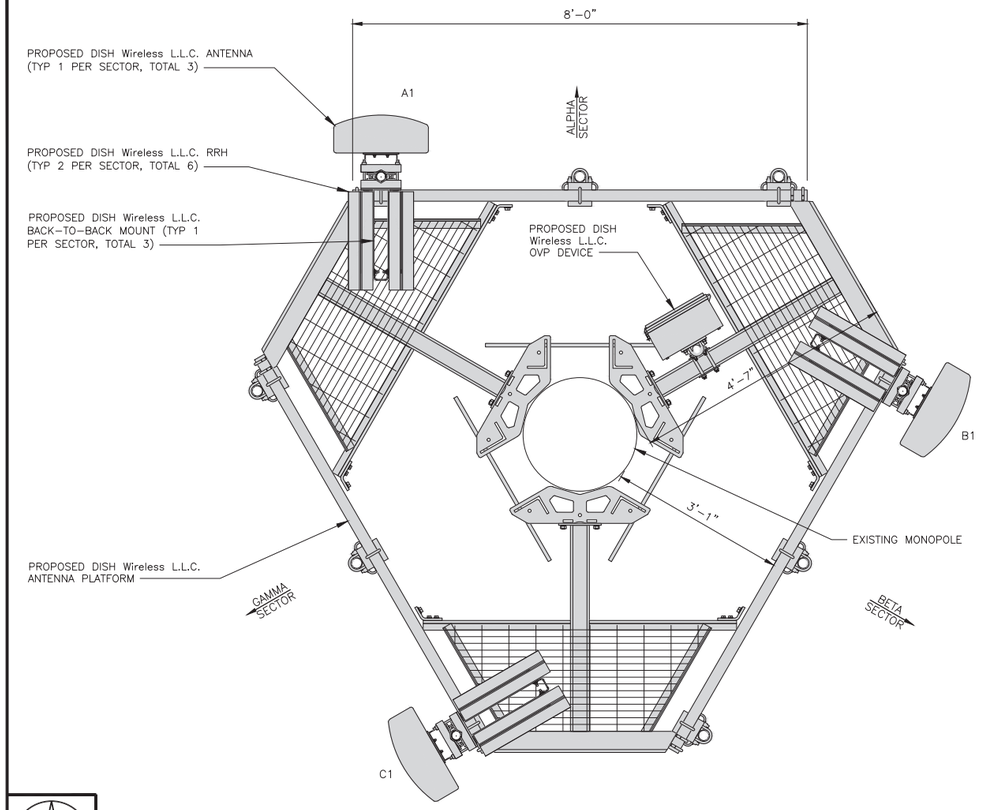
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72" x 20"	0°	138'-0"	(1) HIGH-CAPACITY HYBRID CABLE (181' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72" x 20"	120°	138'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72" x 20"	240°	138'-0"	

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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B&T ENGINEERING, INC.
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DISH Wireless L.L.C.
PROJECT INFORMATION

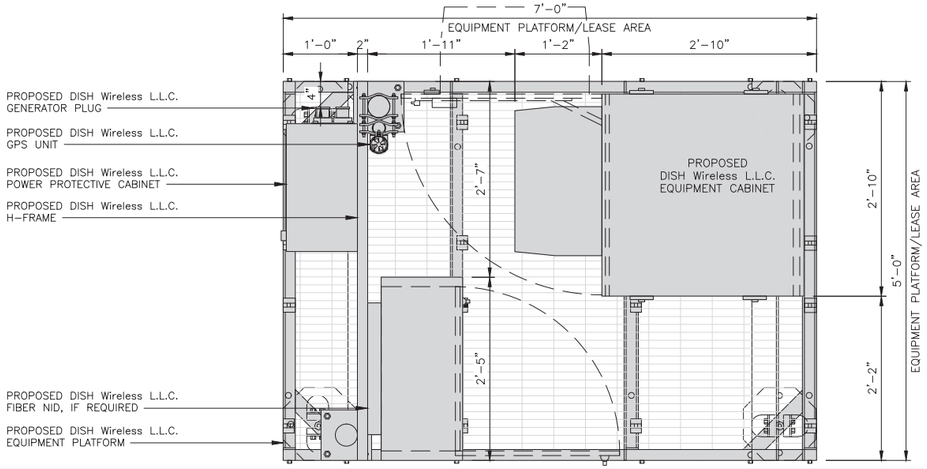
BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



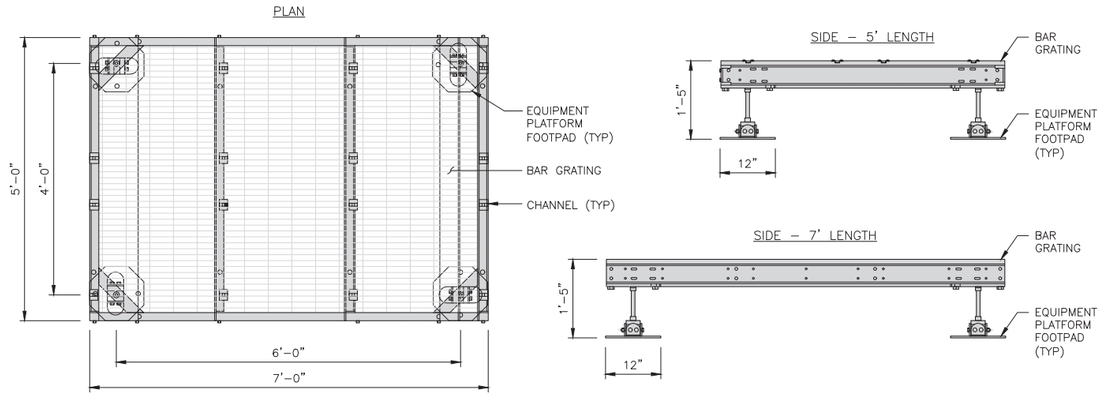
PLATFORM EQUIPMENT PLAN

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"

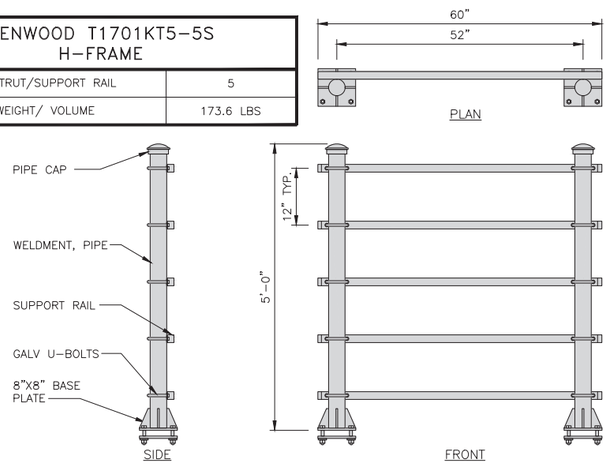


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

NO SCALE

3

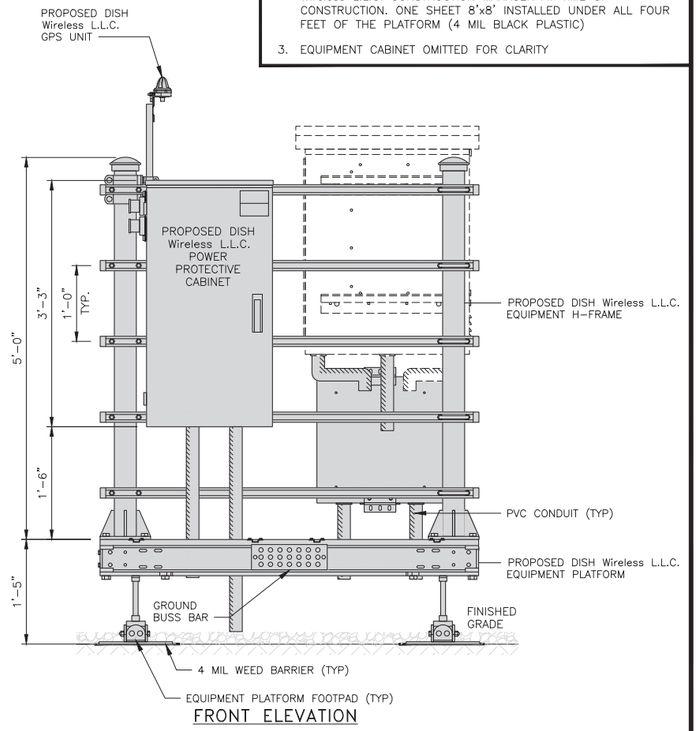
NOT USED

NO SCALE

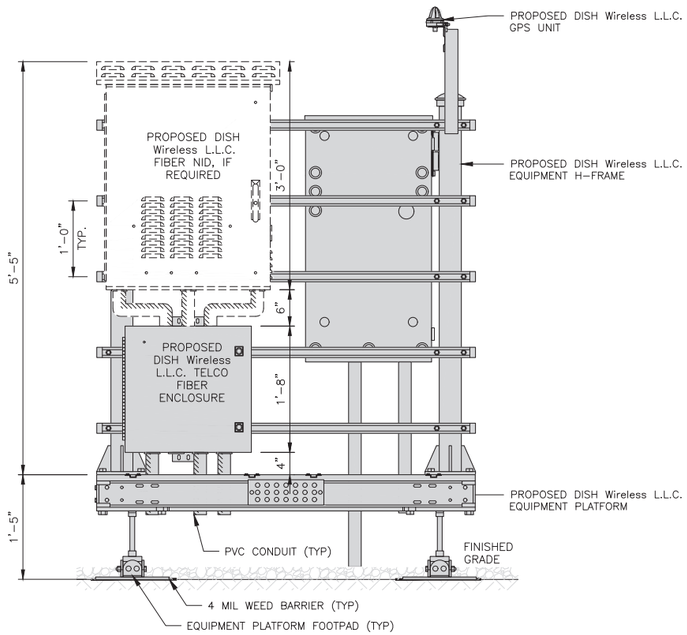
4

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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10/18/21

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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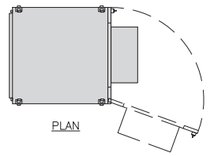
A&E PROJECT NUMBER
146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

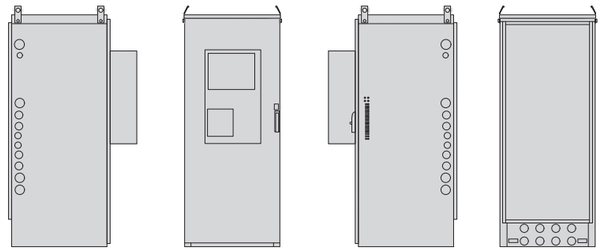
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

ENERSYS HVAC CABINET 2000005995	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	371 lbs
HVAC	600W
POWER SYSTEM	-48V ALPHA/600A



PLAN

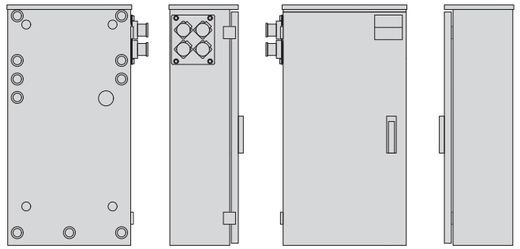


SIDE FRONT SIDE BACK

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



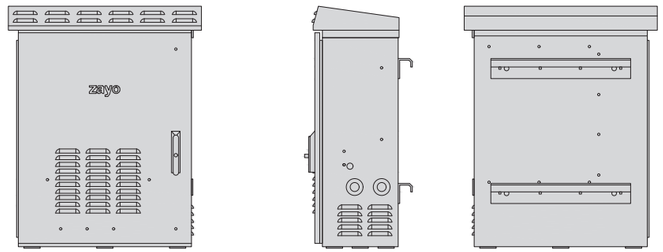
BACK SIDE FRONT SIDE

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

NOT USED | NO SCALE | 3

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

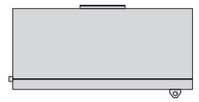
PLAN



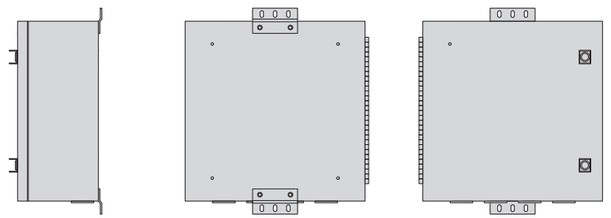
FRONT SIDE BACK

NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

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



FRONT



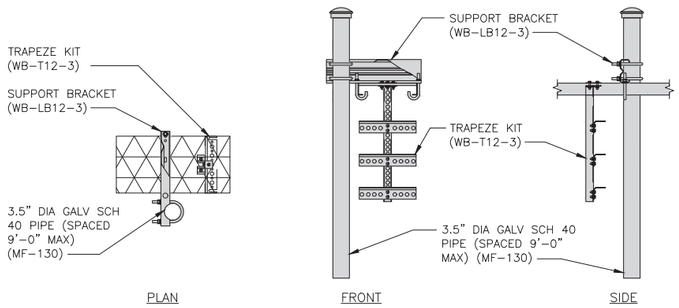
SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 4

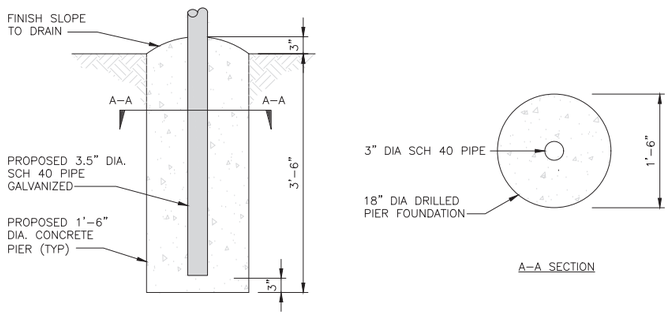
COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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

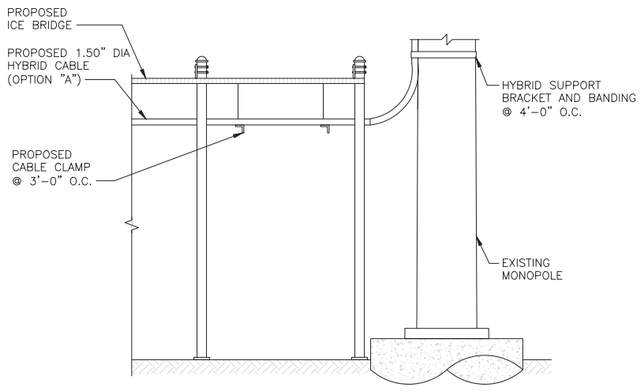
ICE BRIDGE DETAIL | NO SCALE | 7



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

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

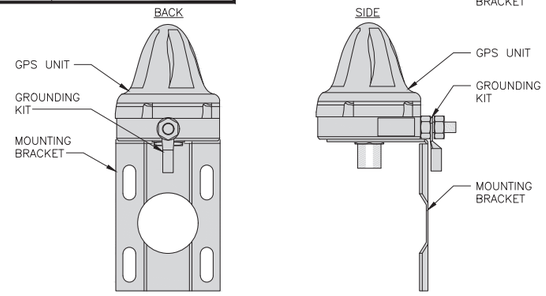
SHEET TITLE

EQUIPMENT DETAILS

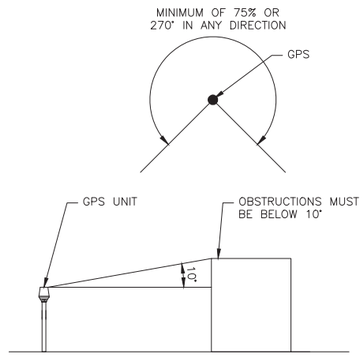
SHEET NUMBER

A-4

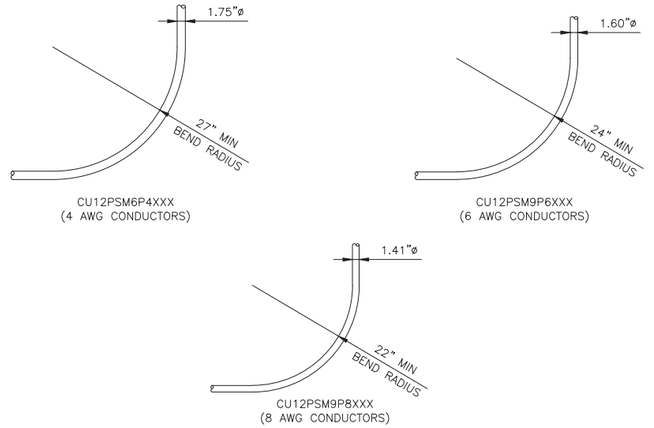
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



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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300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

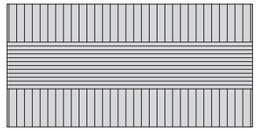
SHEET TITLE

EQUIPMENT DETAILS

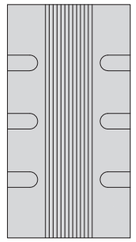
SHEET NUMBER

A-5

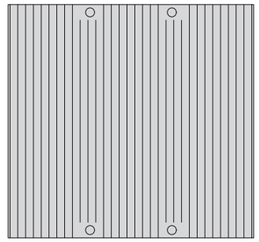
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



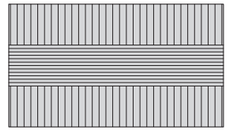
SIDE



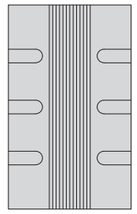
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

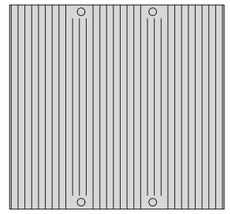
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

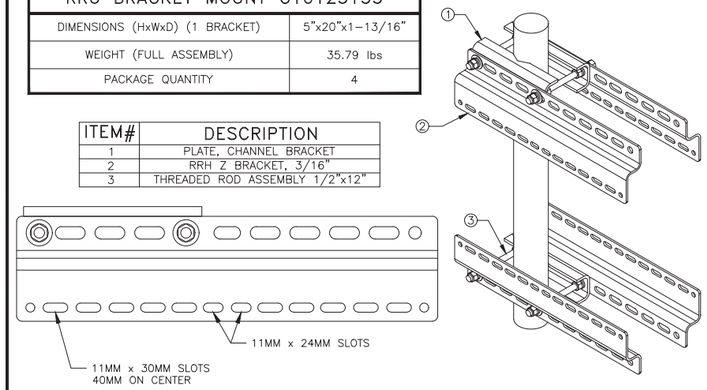


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

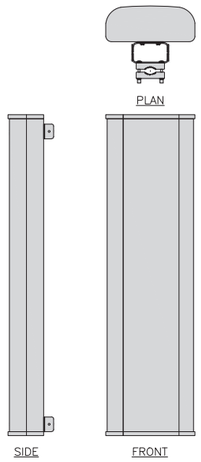
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



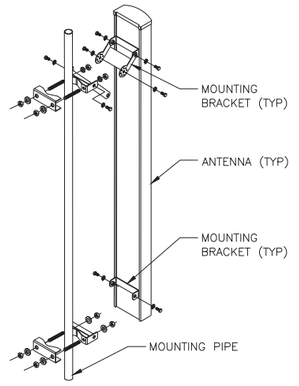
PLAN

SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

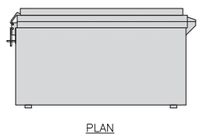
NOT USED | NO SCALE | 5

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

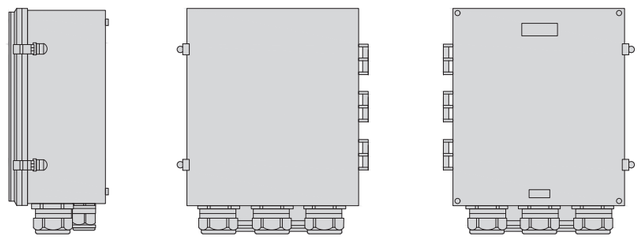


ANTENNA MOUNTING DETAIL | NO SCALE | 6

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



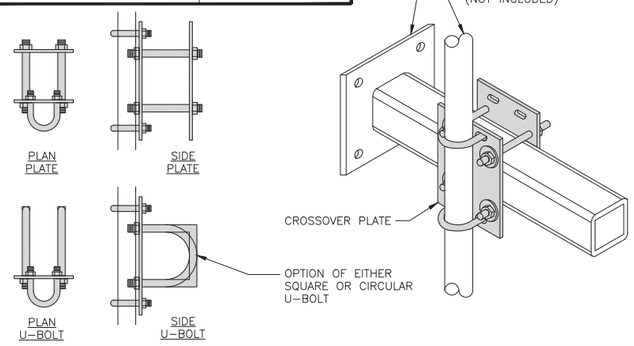
PLAN



SIDE BACK FRONT

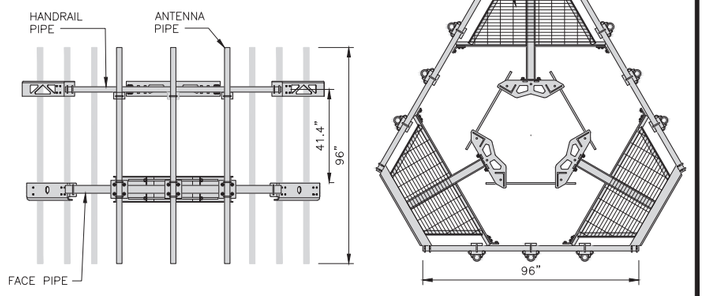
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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



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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BOBDL00059A
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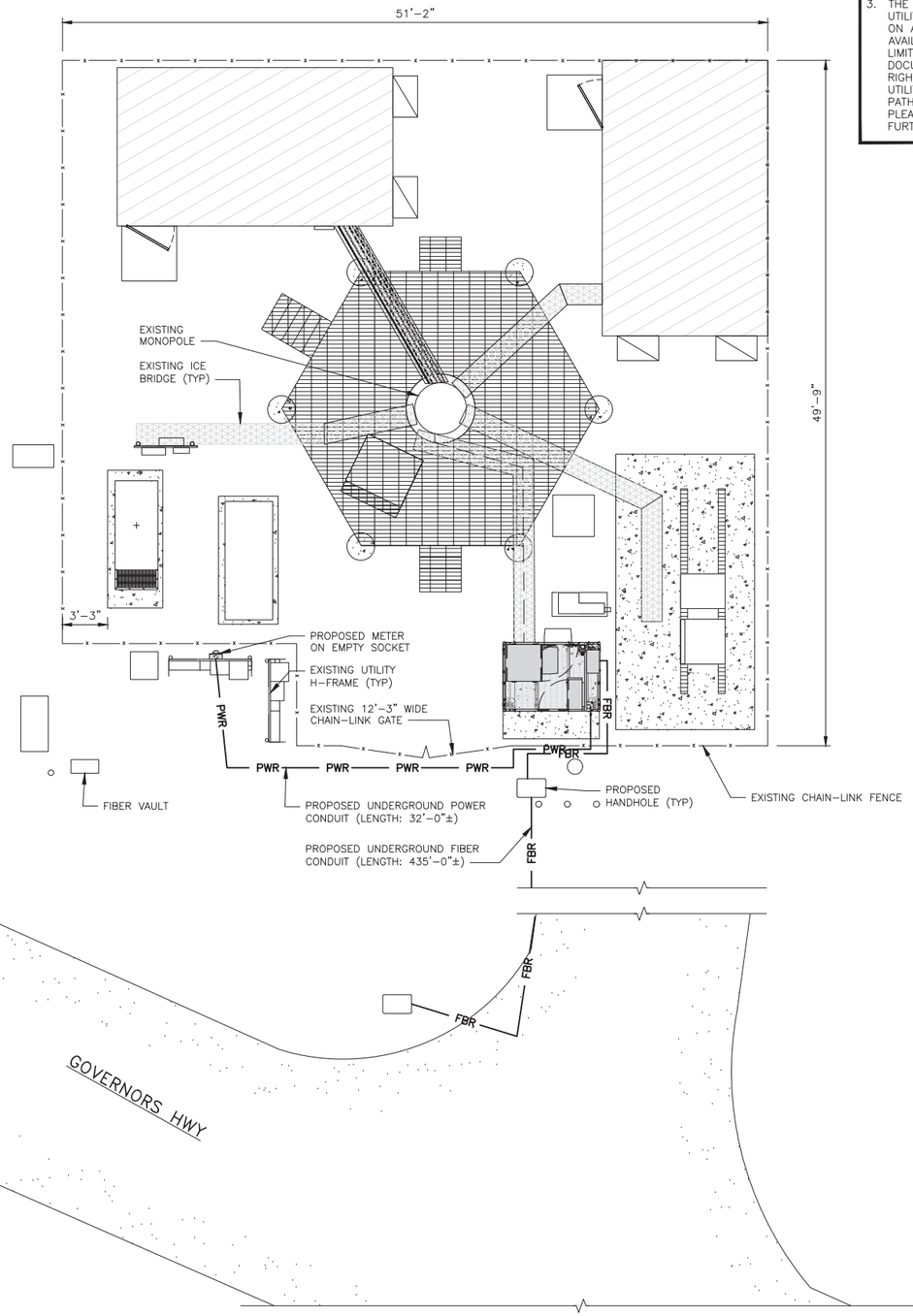
SOUTH WINDSOR, CT 06074

SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

A-6



UTILITY ROUTE PLAN

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

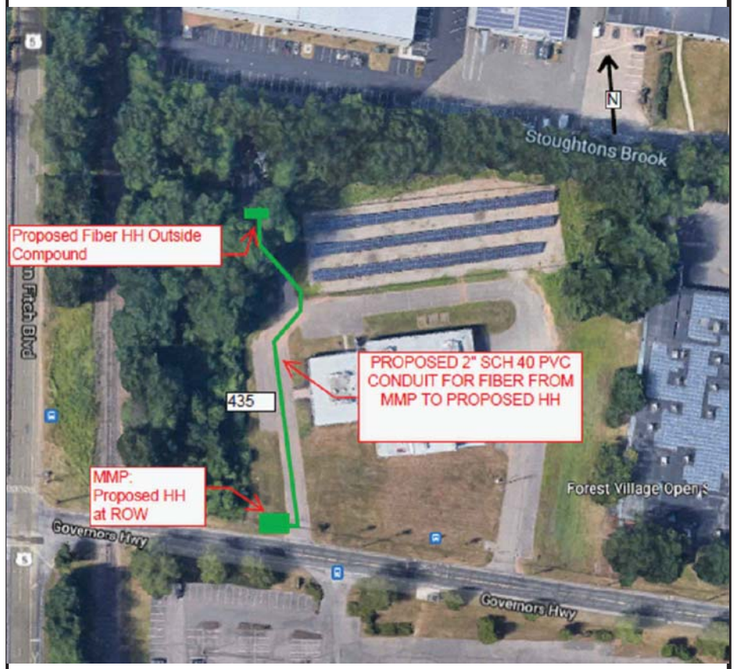
1

NOTES

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

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

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



ELECTRICAL NOTES

NO SCALE

2

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A	6/16/21	ISSUED FOR REVIEW
0	10/18/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

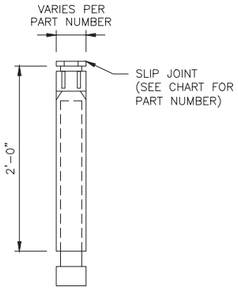
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

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

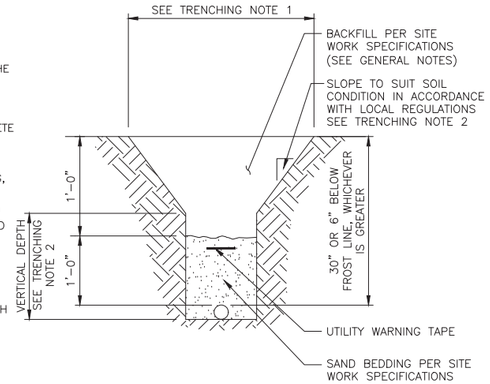


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

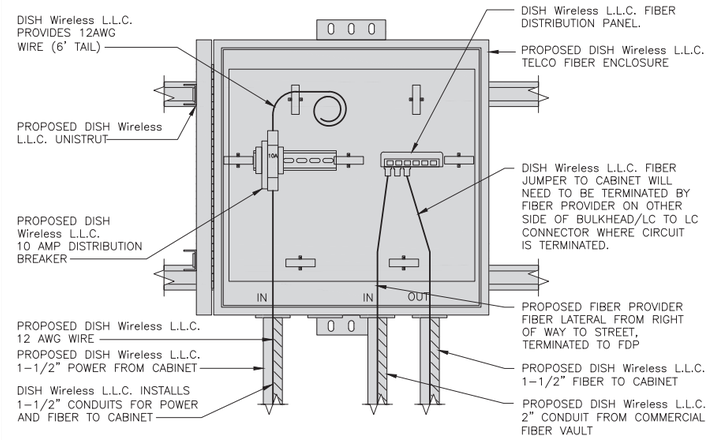
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

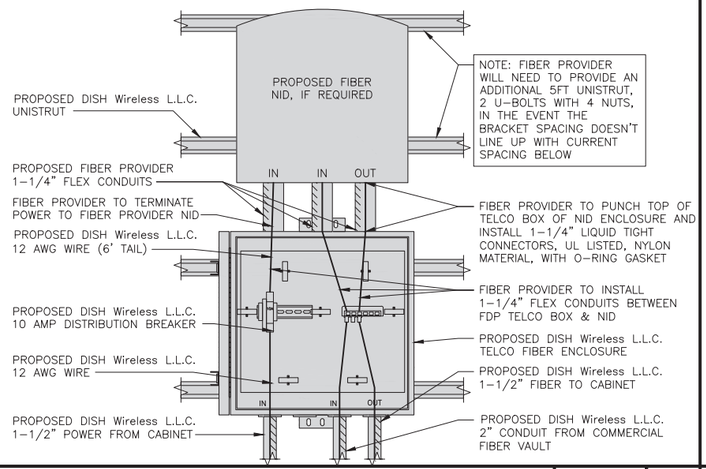
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

RFDS REV #: 1

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DISH Wireless L.L.C.
PROJECT INFORMATION

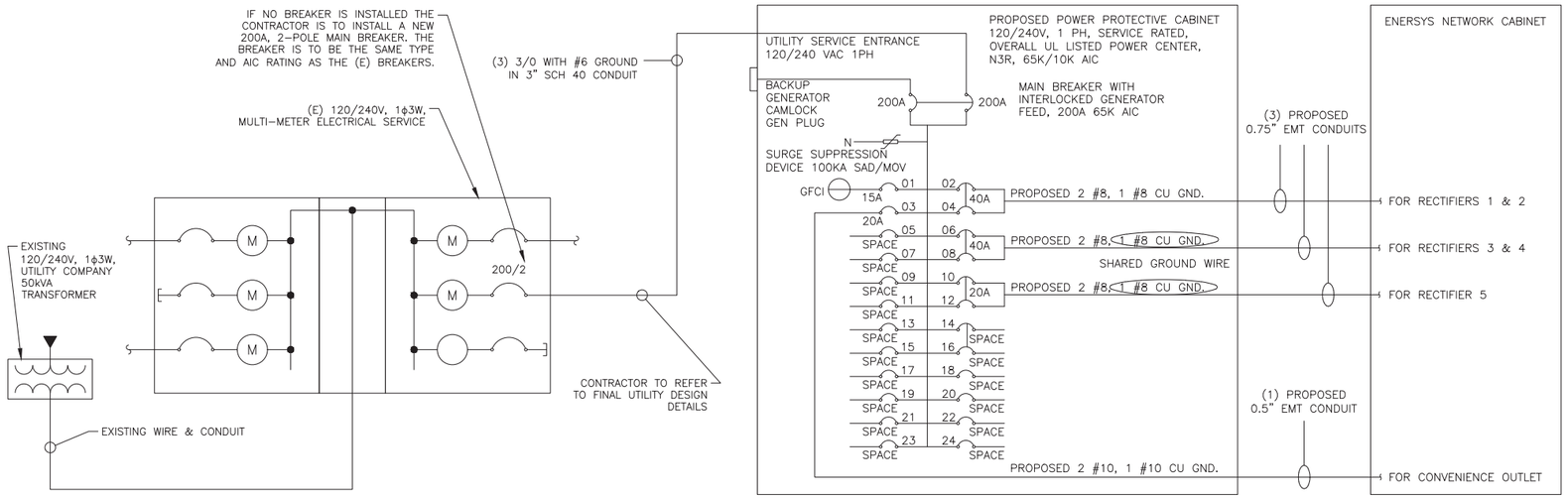
BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

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

NOTES

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	20A	3	B	4			3840	RECTIFIERS 1 & 2
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
-SPACE-				7	B	8			3840	RECTIFIER 3 & 4
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
-SPACE-				11	B	12			1920	RECTIFIER 5
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	

200A MCB, 1ϕ, 24 SPACE, 120/240V	L1	L2	
MB RATING: 65,000 AIC	9680	9680	VOLTAGE AMPS
	81	81	AMPS
	81		MAX AMPS
	102		MAX 125%

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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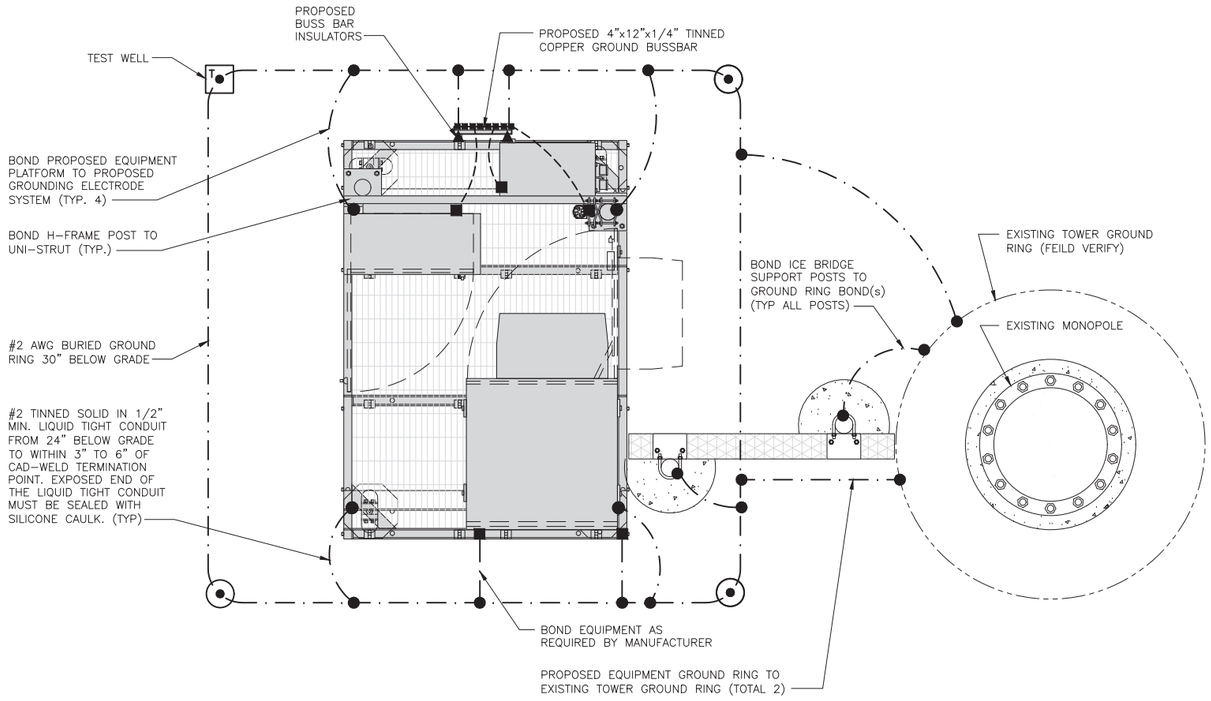
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

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

SHEET NUMBER
E-3

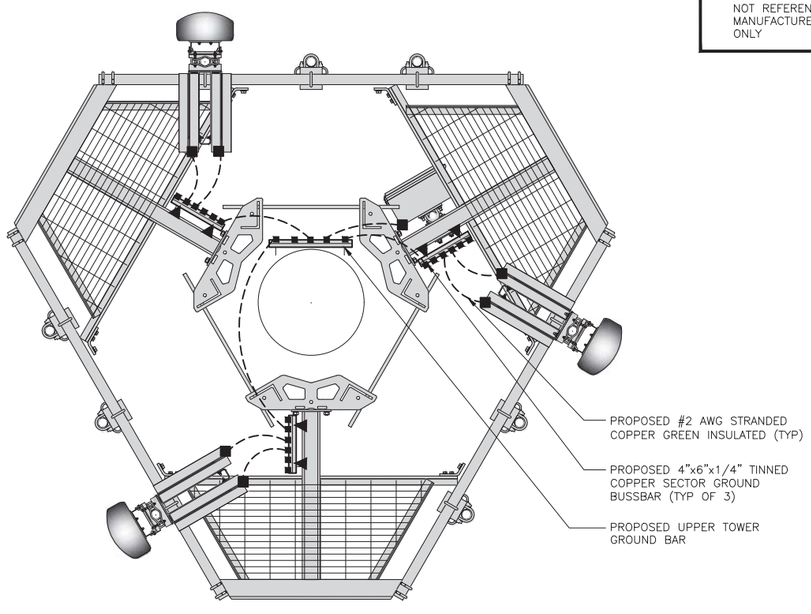


TYPICAL EQUIPMENT GROUNDING PLAN

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

RFDS REV #: 1

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BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

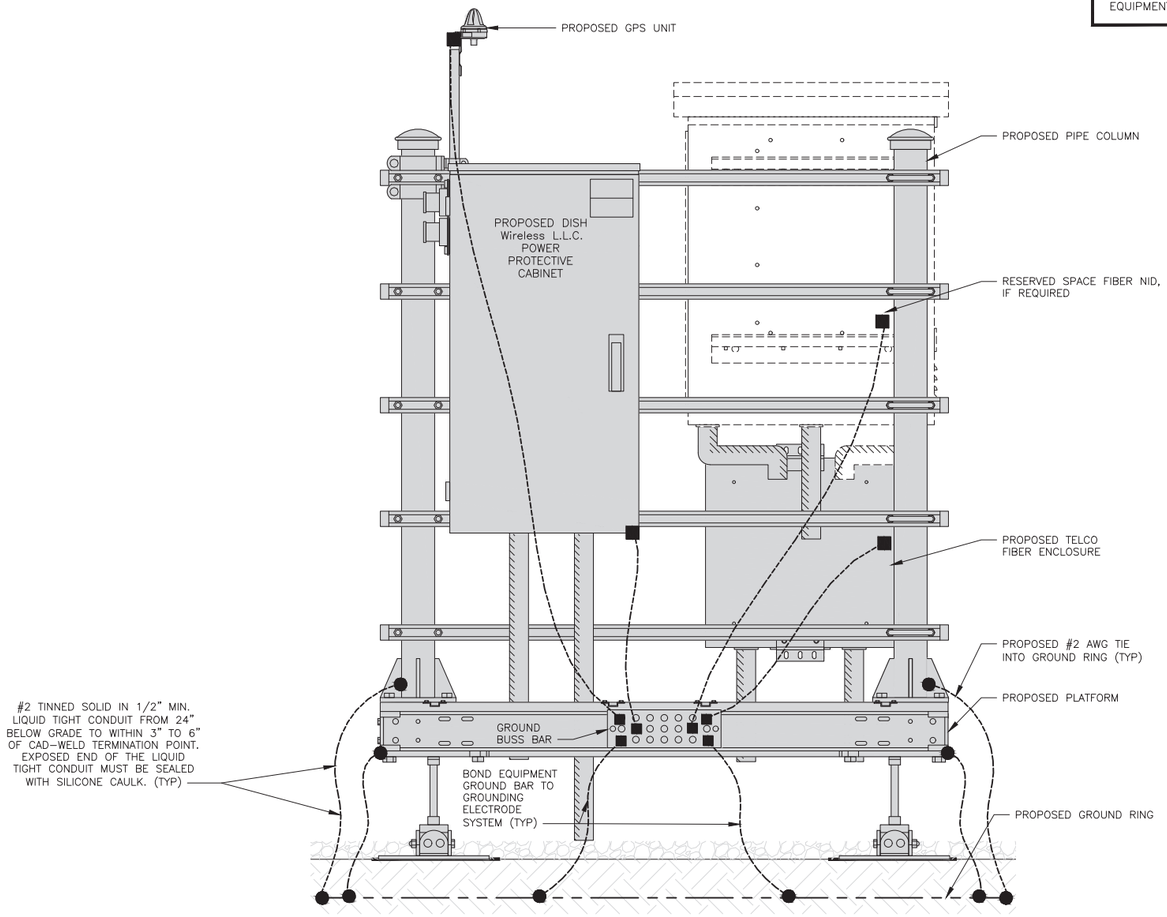
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

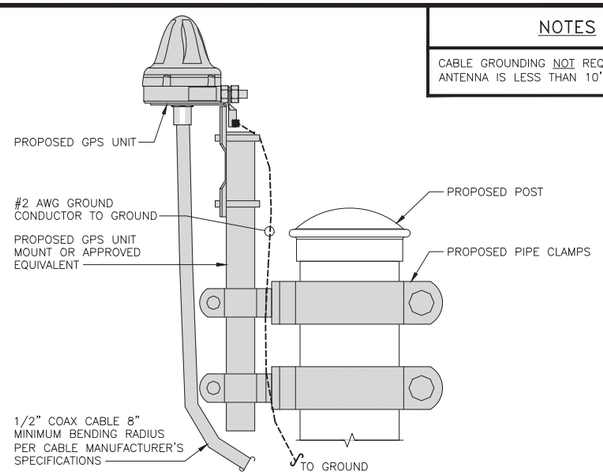
EQUIPMENT CABINET OMITTED FOR CLARITY



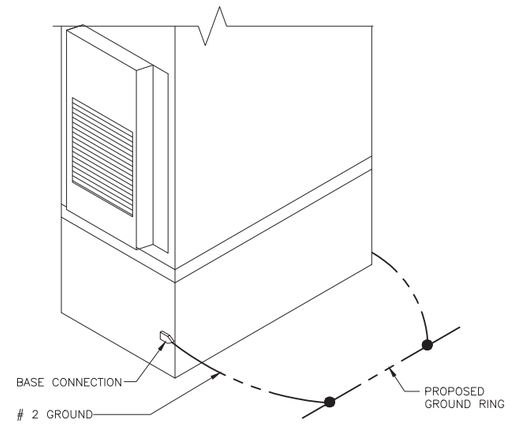
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

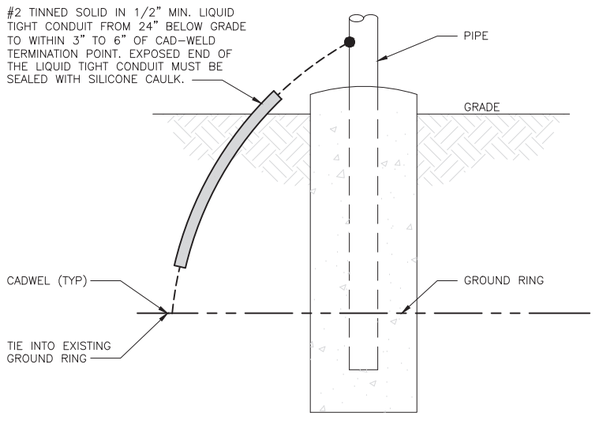
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



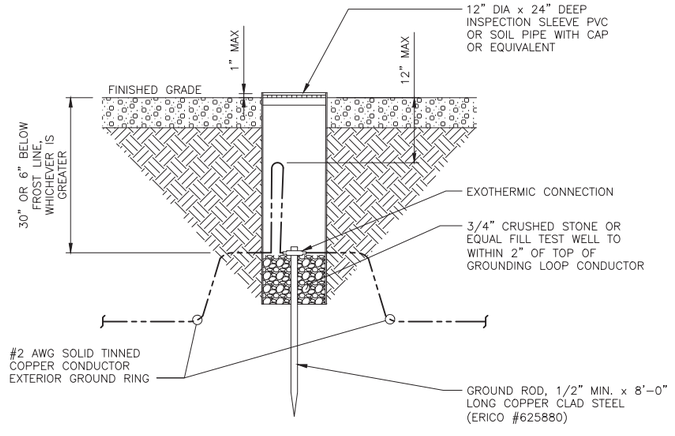
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



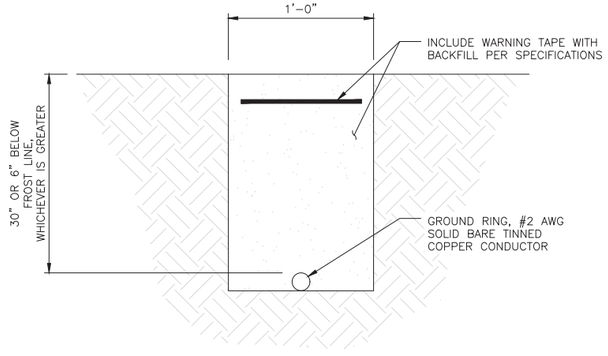
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER — 10/18/21

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Expires 2/10/22

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SHEET TITLE

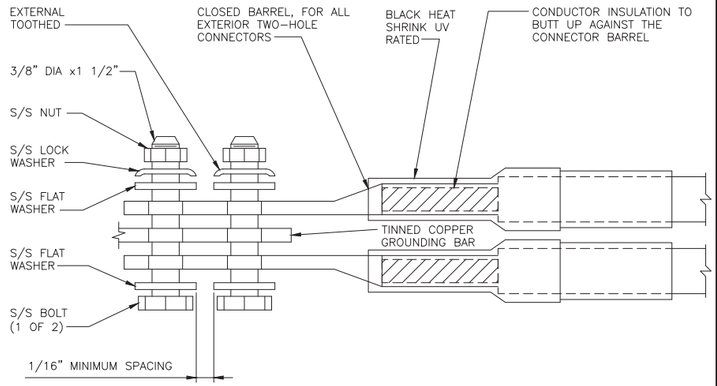
GROUNDING DETAILS

SHEET NUMBER

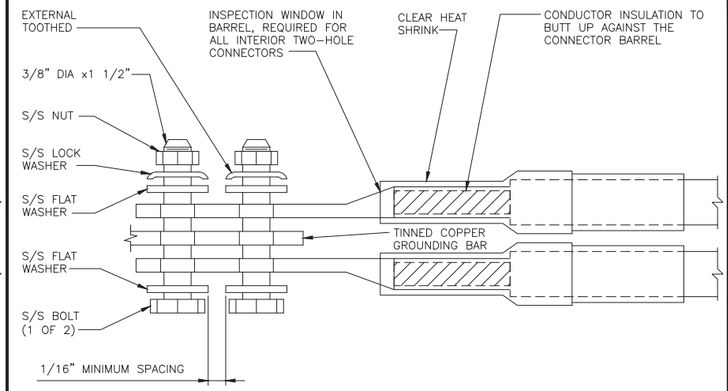
G-2

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

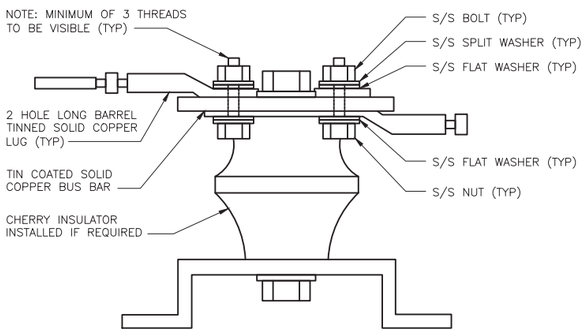
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

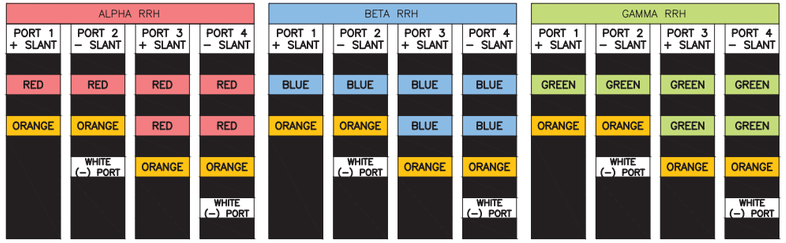
G-3

RF JUMPER COLOR CODING

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

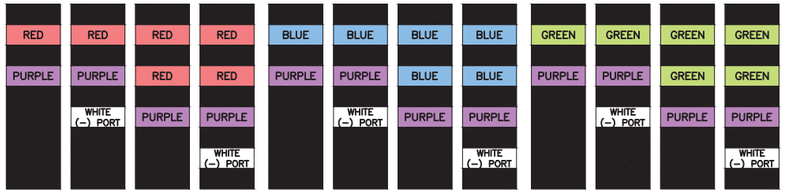
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

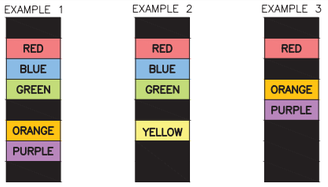


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

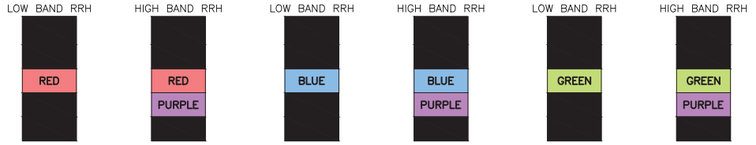
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



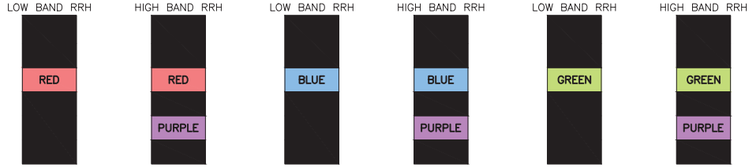
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

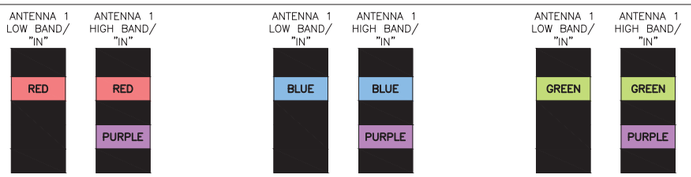


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



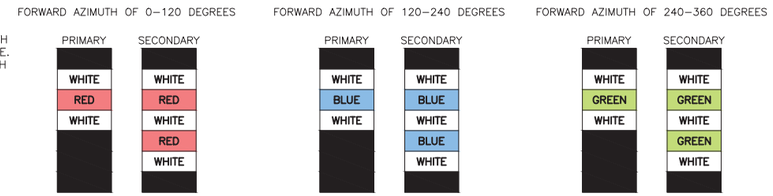
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

dish wireless.

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STATE OF CONNECTICUT · No. 23924 · LICENSED PROFESSIONAL ENGINEER
10/18/21

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	10/18/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

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

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

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

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

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

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

dish wireless

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless

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

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

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BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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10/18/21

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/16/21	ISSUED FOR REVIEW
0	10/18/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

146595.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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10/18/21

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

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

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00059A
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

PAUL J. FORD & COMPANY

Date: **July 09, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00059A
	Site Name:	CT-CCI-T-828054
Crown Castle Designation:	**BU Number:**	828054
	Site Name:	South Windsor/Rt 5
	JDE Job Number:	650048
	Work Order Number:	1963266
	Order Number:	556632 Rev. 1
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37521-0866.001.7805
Site Data:	**300 Governors Highway, South Windsor, Hartford County, CT** **Latitude *41° 50' 0.4"*, Longitude *-72° 36' 11"*** **169 Foot - Monopole Tower**	

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

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

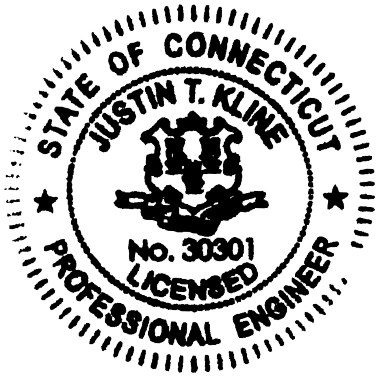
LC7: Proposed Equipment Configuration **Sufficient Capacity (97.4%)**

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

Respectfully submitted by:

Nathan C. Miller

Nathan C. Miller, E.I.
Structural Designer
nmiller@pauljford.com



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1) INTRODUCTION

This tower is a 169 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in January of 2000.

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)
138.0	138.0	1	commscope	MC-PK8-DSH	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
165.0	166.0	3	commscope	SDX1926Q-43	2 7	1-3/8 1-5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B12/B71		
		3	ericsson	RRUS 4415 B25_CCIV2		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	165.0	1	site pro 1	HRK12 Handrail Kit		
		1	tower mounts	Platform Mount [LP 601-1]		

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	158.0	3	cci antennas	DMP65R-BU8D w/ Mount Pipe	2 4 12	17/64 7/8 1-5/8
		3	cci antennas	OPA65R-BU8D w/ Mount Pipe		
		3	ericsson	RADIO 4415 B30		
		3	ericsson	RADIO 4449 B5/B12		
		3	ericsson	RRUS 8843 B2/B66A		
		2	raycap	DC6-48-60-18-8F		
	156.0	1	site pro 1	HRK14		
		1	tower mounts	Platform Mount [LP 601-1]		
148.0	148.0	3	alcatel lucent	800MHZ RRH	3	1-1/4
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
		3	alcatel lucent	RRH2X50-800		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		1	tower mounts	T-Arm Mount [TA 702-3]		
124.0	128.0	2	andrew	VHLP800-11	3 1 6 2	1/4 5/16 1/2 2" Conduit
		3	argus technologies	LLPX310R w/ Mount Pipe		
		2	dragonwave	HORIZON DUO		
		3	samsung telecommunications	WIMAX DAP HEAD		
	124.0	1	tower mounts	Side Arm Mount [SO 701-3]		
118.0	119.0	1	sigfox	CAVITY FILTER	1	1/2
		1	sigfox	CXL 900-3LW		
		1	sigfox	LNA		
	118.0	1	tower mounts	Side Arm Mount [SO 304-1]		
111.0	111.0	3	alcatel lucent	B4 RRH2X60-4R	2 18	1-1/4 1-5/8
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe		
		6	andrew	LNX-6514DS-A1M w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
		1	tower mounts	Platform Mount [LP 303-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	3436696	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	3436661	CCISITES
4-TOWER MANUFACTURER DRAWINGS	3436681	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	3487016	CCISITES
4-POST-MODIFICATION INSPECTION	3773025	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3793344	CCISITES
4-POST-MODIFICATION INSPECTION	3773024	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5431037	CCISITES
4-POST-MODIFICATION INSPECTION	6000997	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6563357	CCISITES
4-POST-MODIFICATION INSPECTION	6861018	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) The structure was modified in conformance with the referenced modification drawings as shown in the referenced post modification inspection.
4) It is assumed that all base pole reactions are taken by the micropiles.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	3.9%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	12.5%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	25.7%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	38.9%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	51.9%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	63.0%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
139 - 136.66	Pole	TP22.31x21.228x0.25	Pole	68.5%	Pass
136.66 - 131.66	Pole	TP22.115x21.174x0.3125	Pole	66.8%	Pass
131.66 - 126.66	Pole	TP23.055x22.115x0.3125	Pole	74.4%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	81.7%	Pass
121.66 - 116.66	Pole	TP24.937x23.996x0.3125	Pole	87.8%	Pass
116.66 - 111.66	Pole	TP25.877x24.937x0.3125	Pole	93.0%	Pass
111.66 - 111	Pole	TP26.001x25.877x0.3125	Pole	93.6%	Pass
111 - 110.75	Pole + Reinf.	TP26.048x26.001x0.575	Reinf. 6 Tension Rupture	83.9%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.048x0.5625	Reinf. 6 Tension Rupture	90.9%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.788x26.989x0.55	Reinf. 6 Tension Rupture	96.3%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.835x27.788x0.9875	Reinf. 12 Tension Rupture	65.6%	Pass
101.25 - 101	Pole + Reinf.	TP27.882x27.835x0.9875	Reinf. 12 Tension Rupture	65.9%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.882x0.725	Reinf. 12 Tension Rupture	87.7%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.87x27.93x0.7125	Reinf. 12 Tension Rupture	93.5%	Pass
95.75 - 92.16	Pole + Reinf.	TP30.36x28.87x0.7	Reinf. 12 Tension Rupture	97.4%	Pass
92.16 - 86.83	Pole + Reinf.	TP29.924x28.92x0.9375	Reinf. 12 Tension Rupture	80.2%	Pass
86.83 - 81.83	Pole + Reinf.	TP30.865x29.924x0.925	Reinf. 12 Tension Rupture	84.2%	Pass
81.83 - 81.5	Pole + Reinf.	TP30.927x30.865x0.925	Reinf. 12 Tension Rupture	84.4%	Pass
81.5 - 81.25	Pole + Reinf.	TP30.974x30.927x0.95	Reinf. 11 Tension Rupture	71.7%	Pass
81.25 - 76.25	Pole + Reinf.	TP31.915x30.974x0.925	Reinf. 11 Tension Rupture	74.9%	Pass
76.25 - 71.25	Pole + Reinf.	TP32.856x31.915x0.9	Reinf. 11 Tension Rupture	78.0%	Pass
71.25 - 66.25	Pole + Reinf.	TP33.797x32.856x0.875	Reinf. 11 Tension Rupture	80.9%	Pass
66.25 - 61.25	Pole + Reinf.	TP34.738x33.797x0.8625	Reinf. 11 Tension Rupture	83.7%	Pass
61.25 - 56.25	Pole + Reinf.	TP35.679x34.738x0.85	Reinf. 11 Tension Rupture	86.4%	Pass
56.25 - 51.25	Pole + Reinf.	TP36.619x35.679x0.825	Reinf. 11 Tension Rupture	89.0%	Pass
51.25 - 48.66	Pole + Reinf.	TP38.11x36.619x0.825	Reinf. 11 Tension Rupture	90.2%	Pass
48.66 - 42.33	Pole + Reinf.	TP37.546x36.357x1.0375	Reinf. 11 Tension Rupture	76.7%	Pass
42.33 - 37.4	Pole + Reinf.	TP38.473x37.546x1.025	Reinf. 11 Tension Rupture	78.5%	Pass
37.4 - 37.15	Pole + Reinf.	TP38.52x38.473x1.025	Reinf. 7 Tension Rupture	78.6%	Pass
37.15 - 32.15	Pole + Reinf.	TP39.459x38.52x1	Reinf. 7 Tension Rupture	80.4%	Pass
32.15 - 27.15	Pole + Reinf.	TP40.399x39.459x0.975	Reinf. 7 Tension Rupture	82.5%	Pass
27.15 - 22.15	Pole + Reinf.	TP41.338x40.399x0.9625	Reinf. 7 Tension Rupture	84.4%	Pass
22.15 - 19.5	Pole + Reinf.	TP41.836x41.338x0.95	Reinf. 7 Tension Rupture	85.5%	Pass
19.5 - 19.25	Pole + Reinf.	TP41.883x41.836x1.025	Reinf. 7 Tension Rupture	80.0%	Pass
19.25 - 14.25	Pole + Reinf.	TP42.822x41.883x1	Reinf. 7 Tension Rupture	81.8%	Pass
14.25 - 9.25	Pole + Reinf.	TP43.762x42.822x1	Reinf. 7 Tension Rupture	83.5%	Pass
9.25 - 9	Pole + Reinf.	TP43.809x43.762x1	Reinf. 7 Tension Rupture	83.6%	Pass
9 - 8.75	Pole + Reinf.	TP43.856x43.809x1.025	Reinf. 7 Tension Rupture	80.6%	Pass
8.75 - 7	Pole + Reinf.	TP44.185x43.856x1.025	Reinf. 7 Tension Rupture	81.2%	Pass
7 - 6.75	Pole + Reinf.	TP44.232x44.185x0.975	Reinf. 7 Tension Rupture	84.4%	Pass
6.75 - 5	Pole + Reinf.	TP44.561x44.232x0.975	Reinf. 7 Tension Rupture	84.9%	Pass
5 - 4.75	Pole + Reinf.	TP44.607x44.561x1.45	Reinf. 3 Connection	67.1%	Pass
4.75 - 3	Pole + Reinf.	TP44.936x44.607x1.425	Reinf. 3 Connection	67.6%	Pass
3 - 2.75	Pole + Reinf.	TP44.983x44.936x1.45	Reinf. 7 Tension Rupture	59.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
2.75 - 2.25	Pole + Reinf.	TP45.077x44.983x1.45	Reinf. 7 Tension Rupture	59.8%	Pass
2.25 - 2	Pole + Reinf.	TP45.124x45.077x1.2	Reinf. 8 Tension Rupture	71.9%	Pass
2 - 0	Pole + Reinf.	TP45.5x45.124x1.175	Reinf. 8 Tension Rupture	72.5%	Pass
				Summary	
			Pole	93.6%	Pass
			Reinforcement	97.4%	Pass
			Overall	97.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.7	Pass
1	Base Plate	0	64.9	Pass
1	Base Foundation (Structure)	0	91.9	Pass

Structure Rating (max from all components) =	97.4%

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

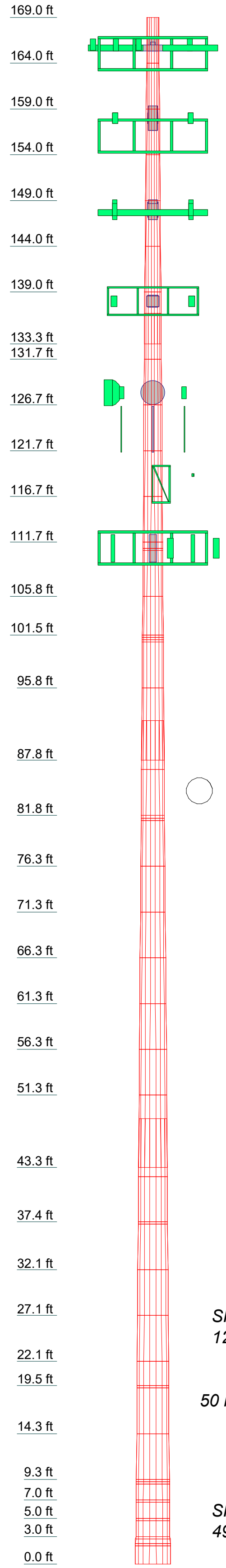
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.2500		15.5000	16.4546	A572-65	0.2
2	5.00	18	0.2500		16.4546	17.4092		0.2
3	5.00	18	0.2500		17.4092	18.3638		0.2
4	5.00	18	0.2500		18.3638	19.3183		0.3
5	5.00	18	0.2500		19.3183	20.2729		0.3
6	5.00	18	0.2500		20.2729	21.2275		0.3
7	[illegible]	18	[illegible]	3.33	[illegible]	[illegible]		0.3
8	[illegible]	18	[illegible]		[illegible]	[illegible]		0.4
9	5.00	18	0.3125		[illegible]	23.0554		0.4
10	5.00	18	0.3125		23.0554	23.9960		0.4
11	5.00	18	0.3125		23.9960	24.9366		0.4
12	5.00	18	[illegible]		[illegible]	[illegible]		0.4
13–14	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
15	5.00	18	[illegible]		[illegible]	[illegible]		0.7
16	[illegible]	18	[illegible]		[illegible]	[illegible]		0.6
17–19	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
20	5.00	18	[illegible]		[illegible]	[illegible]		1.0
21	[illegible]	18	0.7000	4.33	28.8701	30.3600		1.6
22	[illegible]	18	[illegible]		[illegible]	[illegible]		1.4
23	5.00	18	[illegible]		[illegible]	[illegible]		1.3
24–25	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
26	5.00	18	[illegible]		[illegible]	[illegible]		1.4
27	5.00	18	0.9000		31.9146	32.8556		1.4
28	5.00	18	0.8750		32.8556	33.7966		1.4
29	5.00	18	0.8625		33.7966	34.7376		1.4
30	5.00	18	0.8500		34.7376	35.6785		1.5
31	5.00	18	0.8250		35.6785	36.6195		1.5
32	[illegible]	18	0.8250	5.33	36.6195	38.1100		2.4
33	[illegible]	18	[illegible]		[illegible]	[illegible]		2.4
34	[illegible]	18	[illegible]		[illegible]	[illegible]		1.9
35	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
36	5.00	18	[illegible]		[illegible]	[illegible]		1.9
37	5.00	18	0.9750		39.4591	40.3981		2.0
38	5.00	18	0.9625		40.3981	41.3381		2.0
39–40	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
41	5.00	18	[illegible]		[illegible]	[illegible]		2.2
42	5.00	18	[illegible]		[illegible]	[illegible]		2.2
43–53	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
Total	[illegible]							42.31



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TIA-222-H Annex S
8. TOWER RATING: 97.4%

ALL REACTIONS ARE FACTORED

AXIAL 138 K

SHEAR 12 K — *MOMENT 1473 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 2.0000 in ICE

AXIAL 73 K

SHEAR 49 K — *MOMENT 5213 kip-ft*

TORQUE 3 kip-ft
REACTIONS - 125 mph WIND

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

Job:	***165-Ft Monopole | South Windsor/Rt 5***
Project:	***PJF 37521-0866 | BU 828054***
Client: Crown Castle	Drawn by: Nathan Miller | App'd:
Code: TIA-222-H	Date: 07/09/21 | Scale: NTS
Path:	Dwg No. E-1

Tower Input Data

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

1) Tower base elevation above sea level: 70.11 ft.
2) Basic wind speed of 125 mph.
3) Risk Category II.
4) Exposure Category C.
5) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
6) Topographic Category: 1.
7) Crest Height: 0.00 ft.
8) Nominal ice thickness of 2.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Temperature drop of 50 °F.
13) Deflections calculated using a wind speed of 60 mph.
14) TIA-222-H Annex S.
15) TOWER RATING: 97.4%.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) Maximum demand-capacity ratio is: 1.05.
22) 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	169.00-164.00	5.00	0.00	18	15.5000	16.4546	0.2500	1.0000	A572-65 (65 ksi)
L2	164.00-159.00	5.00	0.00	18	16.4546	17.4092	0.2500	1.0000	A572-65 (65 ksi)
L3	159.00-154.00	5.00	0.00	18	17.4092	18.3638	0.2500	1.0000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L4	154.00-149.00	5.00	0.00	18	18.3638	19.3183	0.2500	1.0000	A572-65 (65 ksi)
L5	149.00-144.00	5.00	0.00	18	19.3183	20.2729	0.2500	1.0000	A572-65 (65 ksi)
L6	144.00-139.00	5.00	0.00	18	20.2729	21.2275	0.2500	1.0000	A572-65 (65 ksi)
L7	139.00-133.33	5.67	3.33	18	21.2275	22.3100	0.2500	1.0000	A572-65 (65 ksi)
L8	133.33-131.66	5.00	0.00	18	21.1742	22.1148	0.3125	1.2500	A572-65 (65 ksi)
L9	131.66-126.66	5.00	0.00	18	22.1148	23.0554	0.3125	1.2500	A572-65 (65 ksi)
L10	126.66-121.66	5.00	0.00	18	23.0554	23.9960	0.3125	1.2500	A572-65 (65 ksi)
L11	121.66-116.66	5.00	0.00	18	23.9960	24.9366	0.3125	1.2500	A572-65 (65 ksi)
L12	116.66-111.66	5.00	0.00	18	24.9366	25.8772	0.3125	1.2500	A572-65 (65 ksi)
L13	111.66-111.00	0.66	0.00	18	25.8772	26.0013	0.3125	1.2500	A572-65 (65 ksi)
L14	111.00-110.75	0.25	0.00	18	26.0013	26.0484	0.5750	2.3000	A572-65 (65 ksi)
L15	110.75-105.75	5.00	0.00	18	26.0484	26.9889	0.5625	2.2500	A572-65 (65 ksi)
L16	105.75-101.50	4.25	0.00	18	26.9889	27.7884	0.5500	2.2000	A572-65 (65 ksi)
L17	101.50-101.25	0.25	0.00	18	27.7884	27.8355	0.9875	3.9500	A572-65 (65 ksi)
L18	101.25-101.00	0.25	0.00	18	27.8355	27.8825	0.9875	3.9500	A572-65 (65 ksi)
L19	101.00-100.75	0.25	0.00	18	27.8825	27.9295	0.7250	2.9000	A572-65 (65 ksi)
L20	100.75-95.75	5.00	0.00	18	27.9295	28.8701	0.7125	2.8500	A572-65 (65 ksi)
L21	95.75-87.83	7.92	4.33	18	28.8701	30.3600	0.7000	2.8000	A572-65 (65 ksi)
L22	87.83-86.83	5.33	0.00	18	28.9205	29.9235	0.9375	3.7500	A572-65 (65 ksi)
L23	86.83-81.83	5.00	0.00	18	29.9235	30.8645	0.9250	3.7000	A572-65 (65 ksi)
L24	81.83-81.50	0.33	0.00	18	30.8645	30.9266	0.9250	3.7000	A572-65 (65 ksi)
L25	81.50-81.25	0.25	0.00	18	30.9266	30.9737	0.9500	3.8000	A572-65 (65 ksi)
L26	81.25-76.25	5.00	0.00	18	30.9737	31.9146	0.9250	3.7000	A572-65 (65 ksi)
L27	76.25-71.25	5.00	0.00	18	31.9146	32.8556	0.9000	3.6000	A572-65 (65 ksi)
L28	71.25-66.25	5.00	0.00	18	32.8556	33.7966	0.8750	3.5000	A572-65 (65 ksi)
L29	66.25-61.25	5.00	0.00	18	33.7966	34.7376	0.8625	3.4500	A572-65 (65 ksi)
L30	61.25-56.25	5.00	0.00	18	34.7376	35.6785	0.8500	3.4000	A572-65 (65 ksi)
L31	56.25-51.25	5.00	0.00	18	35.6785	36.6195	0.8250	3.3000	A572-65 (65 ksi)
L32	51.25-43.33	7.92	5.33	18	36.6195	38.1100	0.8250	3.3000	A572-65 (65 ksi)
L33	43.33-42.33	6.33	0.00	18	36.3569	37.5463	1.0375	4.1500	A572-65 (65 ksi)
L34	42.33-37.40	4.93	0.00	18	37.5463	38.4726	1.0250	4.1000	A572-65 (65 ksi)
L35	37.40-37.15	0.25	0.00	18	38.4726	38.5196	1.0250	4.1000	A572-65 (65 ksi)
L36	37.15-32.15	5.00	0.00	18	38.5196	39.4591	1.0000	4.0000	A572-65 (65 ksi)
L37	32.15-27.15	5.00	0.00	18	39.4591	40.3986	0.9750	3.9000	A572-65 (65 ksi)
L38	27.15-22.15	5.00	0.00	18	40.3986	41.3381	0.9625	3.8500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
									(65 ksi)
L39	22.15-19.50	2.65	0.00	18	41.3381	41.8360	0.9500	3.8000	A572-65 (65 ksi)
L40	19.50-19.25	0.25	0.00	18	41.8360	41.8830	1.0250	4.1000	A572-65 (65 ksi)
L41	19.25-14.25	5.00	0.00	18	41.8830	42.8225	1.0000	4.0000	A572-65 (65 ksi)
L42	14.25-9.25	5.00	0.00	18	42.8225	43.7620	1.0000	4.0000	A572-65 (65 ksi)
L43	9.25-9.00	0.25	0.00	18	43.7620	43.8089	1.0000	4.0000	A572-65 (65 ksi)
L44	9.00-8.75	0.25	0.00	18	43.8089	43.8559	1.0250	4.1000	A572-65 (65 ksi)
L45	8.75-7.00	1.75	0.00	18	43.8559	44.1847	1.0250	4.1000	A572-65 (65 ksi)
L46	7.00-6.75	0.25	0.00	18	44.1847	44.2317	0.9750	3.9000	A572-65 (65 ksi)
L47	6.75-5.00	1.75	0.00	18	44.2317	44.5605	0.9750	3.9000	A572-65 (65 ksi)
L48	5.00-4.75	0.25	0.00	18	44.5605	44.6075	1.4500	5.8000	A572-65 (65 ksi)
L49	4.75-3.00	1.75	0.00	18	44.6075	44.9363	1.4250	5.7000	A572-65 (65 ksi)
L50	3.00-2.75	0.25	0.00	18	44.9363	44.9833	1.4500	5.8000	A572-65 (65 ksi)
L51	2.75-2.25	0.50	0.00	18	44.9833	45.0772	1.4500	5.8000	A572-65 (65 ksi)
L52	2.25-2.00	0.25	0.00	18	45.0772	45.1242	1.2000	4.8000	A572-65 (65 ksi)
L53	2.00-0.00	2.00		18	45.1242	45.5000	1.1750	4.7000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.7005	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.2880	9.152
	16.6699	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
L2	16.6699	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
	17.6392	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
L3	17.6392	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
	18.6085	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
L4	18.6085	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
	19.5778	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
L5	19.5778	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
	20.5471	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
L6	20.5471	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
	21.5164	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
L7	21.5164	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
	22.6156	17.5046	1076.2196	7.8313	11.3335	94.9593	2153.8554	8.7540	3.4866	13.946
L8	22.0888	20.6922	1137.7489	7.4059	10.7565	105.7730	2276.9948	10.3481	3.1767	10.165
	22.4078	21.6252	1298.6833	7.7398	11.2343	115.5995	2599.0753	10.8146	3.3422	10.695
L9	22.4078	21.6252	1298.6833	7.7398	11.2343	115.5995	2599.0753	10.8146	3.3422	10.695
	23.3629	22.5581	1474.1202	8.0737	11.7122	125.8625	2950.1801	11.2812	3.5078	11.225
L10	23.3629	22.5581	1474.1202	8.0737	11.7122	125.8625	2950.1801	11.2812	3.5078	11.225
	24.3180	23.4911	1664.6853	8.4076	12.1900	136.5619	3331.5611	11.7478	3.6733	11.755
L11	24.3180	23.4911	1664.6853	8.4076	12.1900	136.5619	3331.5611	11.7478	3.6733	11.755
	25.2731	24.4240	1871.0044	8.7416	12.6678	147.6978	3744.4707	12.2143	3.8388	12.284
L12	25.2731	24.4240	1871.0044	8.7416	12.6678	147.6978	3744.4707	12.2143	3.8388	12.284
	26.2282	25.3570	2093.7030	9.0755	13.1456	159.2702	4190.1609	12.6809	4.0044	12.814
L13	26.2282	25.3570	2093.7030	9.0755	13.1456	159.2702	4190.1609	12.6809	4.0044	12.814
	26.3542	25.4801	2124.3561	9.1195	13.2087	160.8304	4251.5075	12.7425	4.0262	12.884
L14	26.3137	46.4043	3790.2094	9.0263	13.2087	286.9485	7585.4060	23.2066	3.5642	6.199
	26.3615	46.4902	3811.2801	9.0430	13.2326	288.0227	7627.5752	23.2495	3.5725	6.213
L15	26.3634	45.5018	3733.9176	9.0475	13.2326	282.1764	7472.7483	22.7552	3.5945	6.39
	27.3185	47.1811	4162.7764	9.3814	13.7104	303.6222	8331.0303	23.5950	3.7601	6.685
L16	27.3204	46.1545	4076.0488	9.3858	13.7104	297.2965	8157.4610	23.0816	3.7821	6.876

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
	28.1323	47.5501	4457.1146	9.6696	14.1165	315.7373	8920.0940	23.7796	3.9228	7.132
L17	28.0648	84.0029	7623.0998	9.5143	14.1165	540.0124	15256.2303	42.0094	3.1528	3.193
	28.1125	84.1503	7663.3002	9.5310	14.1404	541.9429	15336.6840	42.0831	3.1610	3.201
L18	28.1125	84.1503	7663.3002	9.5310	14.1404	541.9429	15336.6840	42.0831	3.1610	3.201
	28.1603	84.2977	7703.6417	9.5477	14.1643	543.8770	15417.4200	42.1568	3.1693	3.209
L19	28.2008	62.4935	5823.0658	9.6409	14.1643	411.1083	11653.7937	31.2527	3.6313	5.009
	28.2485	62.6017	5853.3698	9.6576	14.1882	412.5520	11714.4417	31.3068	3.6396	5.02
L20	28.2505	61.5506	5760.3828	9.6620	14.1882	405.9981	11528.3452	30.7812	3.6616	5.139
	29.2056	63.6777	6378.4734	9.9960	14.6660	434.9152	12765.3397	31.8449	3.8271	5.371
L21	29.2075	62.5884	6274.9198	10.0004	14.6660	427.8544	12558.0963	31.3001	3.8491	5.499
	30.7204	65.8986	7324.1268	10.5293	15.4229	474.8871	14657.8908	32.9556	4.1114	5.873
L22	30.0494	83.2668	8237.5161	9.9339	14.6916	560.6960	16485.8714	41.6413	3.4400	3.669
	30.2405	86.2516	9155.4966	10.2900	15.2012	602.2896	18323.0403	43.1340	3.6165	3.858
L23	30.2425	85.1382	9045.1151	10.2945	15.2012	595.0282	18102.1321	42.5772	3.6385	3.934
	31.1979	87.9009	9954.5115	10.6285	15.6792	634.8877	19922.1214	43.9588	3.8042	4.113
L24	31.1979	87.9009	9954.5115	10.6285	15.6792	634.8877	19922.1214	43.9588	3.8042	4.113
	31.2610	88.0832	10016.5865	10.6506	15.7107	637.5639	20046.3531	44.0500	3.8151	4.124
L25	31.2571	90.3885	10261.6096	10.6417	15.7107	653.1598	20536.7217	45.2028	3.7711	3.97
	31.3049	90.5303	10310.0020	10.6584	15.7346	655.2432	20633.5701	45.2738	3.7794	3.978
L26	31.3088	88.2214	10063.7839	10.6673	15.7346	639.5951	20140.8101	44.1191	3.8234	4.133
	32.2643	90.9840	11039.1420	11.0013	16.2126	680.8976	22092.8096	45.5006	3.9890	4.312
L27	32.2681	88.5964	10766.8023	11.0102	16.2126	664.0996	21547.7718	44.3066	4.0330	4.481
	33.2236	91.2844	11776.8183	11.3442	16.6906	705.5939	23569.1328	45.6509	4.1986	4.665
L28	33.2275	88.8181	11476.5780	11.3531	16.6906	687.6053	22968.2571	44.4175	4.2426	4.849
	34.1830	91.4315	12519.7125	11.6872	17.1687	729.2189	25055.8988	45.7244	4.4082	5.038
L29	34.1849	90.1595	12354.9219	11.6916	17.1687	719.6206	24726.1008	45.0883	4.4302	5.136
	35.1404	92.7355	13444.4596	12.0256	17.6467	761.8692	26906.6097	46.3766	4.5958	5.328
L30	35.1423	91.4252	13264.2852	12.0301	17.6467	751.6591	26546.0239	45.7213	4.6178	5.433
	36.0978	93.9639	14400.2007	12.3641	18.1247	794.5074	28819.3496	46.9909	4.7834	5.628
L31	36.1017	91.2657	14006.7845	12.3730	18.1247	772.8013	28031.9994	45.6415	4.8274	5.851
	37.0571	93.7297	15172.1508	12.7070	18.6027	815.5884	30364.2654	46.8737	4.9930	6.052
L32	37.0571	93.7297	15172.1508	12.7070	18.6027	815.5884	30364.2654	46.8737	4.9930	6.052
	38.5706	97.6326	17147.4981	13.2362	19.3599	885.7234	34317.5593	48.8256	5.2554	6.37
L33	37.7747	116.3077	18330.4548	12.5384	18.4693	992.4815	36685.0294	58.1649	4.5728	4.408
	37.9655	120.2244	20245.3636	12.9606	19.0735	1061.4379	40517.3666	60.1236	4.7822	4.609
L34	37.9674	118.8166	20021.995	12.9651	19.0735	1049.7270	40070.335	59.4196	4.8042	4.687

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
	38.9080	121.8303	21584.4891	13.2939	19.5441	1104.3990	43197.3796	60.9267	4.9672	4.846
L35	38.9080	121.8303	21584.4890	13.2939	19.5441	1104.3990	43197.3794	60.9267	4.9672	4.846
	38.9557	121.9831	21665.8171	13.3106	19.5680	1107.2084	43360.1427	61.0031	4.9755	4.854
L36	38.9596	119.0873	21179.6916	13.3195	19.5680	1082.3655	42387.2519	59.5550	5.0195	5.019
	39.9136	122.0692	22810.8723	13.6530	20.0452	1137.9704	45651.7597	61.0462	5.1848	5.185
L37	39.9174	119.0948	22284.0006	13.6619	20.0452	1111.6862	44597.3230	59.5587	5.2288	5.363
	40.8714	122.0022	23956.1779	13.9954	20.5225	1167.3137	47943.8780	61.0127	5.3942	5.532
L38	40.8733	120.4763	23671.5497	13.9998	20.5225	1153.4447	47374.2471	60.2496	5.4162	5.627
	41.8273	123.3464	25403.9551	14.3333	20.9997	1209.7269	50841.3373	61.6849	5.5815	5.799
L39	41.8292	121.7822	25097.3290	14.3378	20.9997	1195.1255	50227.6818	60.9027	5.6035	5.898
	42.3348	123.2836	26037.0640	14.5145	21.2527	1225.1185	52108.3882	61.6535	5.6911	5.991
L40	42.3233	132.7725	27938.3084	14.4879	21.2527	1314.5775	55913.3788	66.3989	5.5591	5.424
	42.3710	132.9253	28034.8916	14.5046	21.2766	1317.6425	56106.6722	66.4753	5.5674	5.432
L41	42.3748	129.7626	27401.3509	14.5135	21.2766	1287.8661	54838.7572	64.8936	5.6114	5.611
	43.3288	132.7445	29334.1327	14.8470	21.7538	1348.4594	58706.8639	66.3849	5.7768	5.777
L42	43.3288	132.7445	29334.1327	14.8470	21.7538	1348.4594	58706.8639	66.3849	5.7768	5.777
	44.2828	135.7264	31355.7294	15.1805	22.2311	1410.4462	62752.7174	67.8761	5.9421	5.942
L43	44.2828	135.7264	31355.7294	15.1805	22.2311	1410.4462	62752.7174	67.8761	5.9421	5.942
	44.3305	135.8755	31459.1757	15.1972	22.2549	1413.5821	62959.7462	67.9507	5.9504	5.95
L44	44.3266	139.1911	32189.1946	15.1883	22.2549	1446.3846	64420.7446	69.6088	5.9064	5.762
	44.3743	139.3439	32295.3383	15.2050	22.2788	1449.5997	64633.1717	69.6852	5.9146	5.77
L45	44.3743	139.3439	32295.3383	15.2050	22.2788	1449.5997	64633.1717	69.6852	5.9146	5.77
	44.7082	140.4137	33044.8735	15.3217	22.4458	1472.2050	66133.2283	70.2202	5.9725	5.827
L46	44.7159	133.7190	31542.2990	15.3395	22.4458	1405.2627	63126.1022	66.8722	6.0605	6.216
	44.7636	133.8643	31645.2814	15.3561	22.4697	1408.3535	63332.2024	66.9449	6.0688	6.224
L47	44.7636	133.8643	31645.2814	15.3561	22.4697	1408.3535	63332.2024	66.9449	6.0688	6.224
	45.0975	134.8819	32372.4452	15.4729	22.6367	1430.0842	64787.4869	67.4538	6.1267	6.284
L48	45.0242	198.4075	46586.7032	15.3042	22.6367	2058.0128	93234.7063	99.2226	5.2907	3.649
	45.0719	198.6237	46739.1543	15.3209	22.6606	2062.5732	93539.8092	99.3307	5.2989	3.654
L49	45.0758	195.3122	46013.1770	15.3298	22.6606	2030.5362	92086.8992	97.6747	5.3429	3.749
	45.4097	196.7995	47072.3254	15.4465	22.8276	2062.0755	94206.5899	98.4184	5.4008	3.79
L50	45.4058	200.1370	47815.6416	15.4376	22.8276	2094.6376	95694.2002	100.0875	5.3568	3.694
	45.4535	200.3532	47970.7640	15.4543	22.8515	2099.2385	96004.6491	100.1957	5.3651	3.7
L51	45.4535	200.3532	47970.7640	15.4543	22.8515	2099.2385	96004.6491	100.1957	5.3651	3.7
	45.5489	200.7856	48282.007	15.4877	22.8992	2108.4552	96627.546	100.4119	5.3816	3.711

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
			9				6			
L52	45.5875	167.1196	40648.381	15.5764	22.8992	1775.0979	81350.248	83.5757	5.8216	4.851
			3				8			
	45.6352	167.2985	40779.075	15.5931	22.9231	1778.9514	81611.809	83.6652	5.8299	4.858
			7				5			
L53	45.6391	163.9064	39997.729	15.6020	22.9231	1744.8659	80048.089	81.9688	5.8739	4.999
			5				1			
	46.0206	165.3079	41032.546	15.7354	23.1140	1775.2248	82119.085	82.6696	5.9400	5.055
			7				0			

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 169.00-164.00				1	1	1			
L2 164.00-159.00				1	1	1			
L3 159.00-154.00				1	1	1			
L4 154.00-149.00				1	1	1			
L5 149.00-144.00				1	1	1			
L6 144.00-139.00				1	1	1			
L7 139.00-133.33				1	1	1			
L8 133.33-131.66				1	1	1			
L9 131.66-126.66				1	1	1			
L10 126.66-121.66				1	1	1			
L11 121.66-116.66				1	1	1			
L12 116.66-111.66				1	1	1			
L13 111.66-111.00				1	1	1			
L14 111.00-110.75				1	1	0.936271			
L15 110.75-105.75				1	1	0.942334			
L16 105.75-101.50				1	1	0.951697			
L17 101.50-101.25				1	1	0.894841			
L18 101.25-101.00				1	1	0.893829			
L19 101.00-100.75				1	1	0.916808			
L20 100.75-95.75				1	1	0.915966			
L21 95.75-87.83				1	1	0.920543			
L22 87.83-86.83				1	1	0.912119			
L23 86.83-81.83				1	1	0.907746			
L24 81.83-81.50				1	1	0.906706			
L25 81.50-81.25				1	1	0.899386			
L26 81.25-76.25				1	1	0.907211			
L27 76.25-71.25				1	1	0.916495			

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
L28 71.25-66.25				1	1	0.92727			
L29 66.25-61.25				1	1	0.926308			
L30 61.25-56.25				1	1	0.926118			
L31 56.25-51.25				1	1	0.940381			
L32 51.25-43.33				1	1	0.933854			
L33 43.33-42.33				1	1	0.941952			
L34 42.33-37.40				1	1	0.938586			
L35 37.40-37.15				1	1	0.937868			
L36 37.15-32.15				1	1	0.946368			
L37 32.15-27.15				1	1	0.956053			
L38 27.15-22.15				1	1	0.9547			
L39 22.15-19.50				1	1	0.959994			
L40 19.50-19.25				1	1	0.954729			
L41 19.25-14.25				1	1	0.964453			
L42 14.25-9.25				1	1	0.951503			
L43 9.25-9.00				1	1	0.95087			
L44 9.00-8.75				1	1	0.963488			
L45 8.75-7.00				1	1	0.958934			
L46 7.00-6.75				1	1	0.968915			
L47 6.75-5.00				1	1	0.964507			
L48 5.00-4.75				1	1	0.856655			
L49 4.75-3.00				1	1	0.866584			
L50 3.00-2.75				1	1	0.876449			
L51 2.75-2.25				1	1	0.875119			
L52 2.25-2.00				1	1	0.856349			
L53 2.00-0.00				1	1	0.869367			

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
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	22.25 - 0.00	1	1	0.333 0.333	6.5000	15.5000	0.00
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	22.25 - 0.00	1	1	-0.333 -0.333	6.5000	15.5000	0.00
CCI-065125 Reinforcement	C	No	Surface Af (CaAa)	22.25 - 0.00	1	1	-0.167 -0.167	6.5000	15.5000	0.00
CCI-065125 Reinforcement	B	No	Surface Af (CaAa)	22.25 - 0.00	1	1	0.167 0.167	6.5000	15.5000	0.00
CCI-060100 Reinforcement	A	No	Surface Af (CaAa)	45.10 - 22.25	1	1	0.333 0.333	6.0000	14.0000	0.00
CCI-060100 Reinforcement	A	No	Surface Af (CaAa)	47.33 - 45.10	1	1	0.333 0.333	6.0000	14.0000	0.00
CCI-060100 Reinforcement	A	No	Surface Af (CaAa)	45.10 - 22.25	1	1	-0.333 -0.333	6.0000	14.0000	0.00
CCI-060100 Reinforcement	A	No	Surface Af (CaAa)	47.33 - 45.10	1	1	-0.333 -0.333	6.0000	14.0000	0.00
CCI-060100 Reinforcement	C	No	Surface Af (CaAa)	45.10 - 22.25	1	1	-0.167 -0.167	6.0000	14.0000	0.00

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-060100 Reinforcement	C	No	Surface Af (CaAa)	47.33 - 45.10	1	1	-0.167 -0.167	6.0000	14.0000	0.00
CCI-060100 Reinforcement	B	No	Surface Af (CaAa)	45.10 - 22.25	1	1	0.167 0.167	6.0000	14.0000	0.00
CCI-060100 Reinforcement	B	No	Surface Af (CaAa)	47.33 - 45.10	1	1	0.167 0.167	6.0000	14.0000	0.00
CCI-045100 Reinforcement	A	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.167 0.167	4.5000	11.0000	0.00
CCI-045100 Reinforcement	C	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.167 0.167	4.5000	11.0000	0.00
CCI-045100 Reinforcement	B	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.167 0.167	4.5000	11.0000	0.00
**********										
CCI-065125 Reinforcement	B	No	Surface Af (CaAa)	26.01 - 0.00	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	B	No	Surface Af (CaAa)	81.80 - 26.01	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	26.01 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	81.80 - 26.01	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	26.01 - 0.00	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	A	No	Surface Af (CaAa)	81.80 - 26.01	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	C	No	Surface Af (CaAa)	26.01 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-065125 Reinforcement	C	No	Surface Af (CaAa)	81.80 - 26.01	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-065125 Reinforcement	C	No	Surface Af (CaAa)	26.01 - 0.00	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	C	No	Surface Af (CaAa)	81.80 - 26.01	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-065125 Reinforcement	B	No	Surface Af (CaAa)	26.01 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-065125 Reinforcement	B	No	Surface Af (CaAa)	81.80 - 26.01	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-040125 Reinforcement	B	No	Surface Af (CaAa)	104.00 - 81.80	1	1	-0.500 -0.500	4.0000	10.5000	0.00
CCI-040125 Reinforcement	A	No	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
CCI-040125 Reinforcement	A	No	Surface Af (CaAa)	104.00 - 81.80	1	1	-0.500 -0.500	4.0000	10.5000	0.00
CCI-040125 Reinforcement	C	No	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
CCI-040125 Reinforcement	C	No	Surface Af (CaAa)	104.00 - 81.80	1	1	-0.500 -0.500	4.0000	10.5000	0.00
CCI-040125 Reinforcement	B	No	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
**********										
CCI-060100 Reinforcement	A	No	Surface Af (CaAa)	108.25 - 98.25	1	1	0.167 0.167	6.0000	14.0000	0.00
CCI-060100 Reinforcement	C	No	Surface Af (CaAa)	108.25 - 98.25	1	1	0.167 0.167	6.0000	14.0000	0.00
CCI-060100 Reinforcement	B	No	Surface Af (CaAa)	108.25 - 98.25	1	1	0.167 0.167	6.0000	14.0000	0.00
**********										
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	165.00 - 138.00	10	6	0.278 0.500	1.9800		0.82
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	138.00 - 0.00	9	6	0.278 0.500	1.9800		0.82
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	124.00 - 0.00	2	1	-0.487 -0.487	0.6250		0.15
2" (Nominal) Conduit	C	No	Surface Ar (CaAa)	124.00 - 0.00	2	2	-0.500 -0.395	2.3750		0.72

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
***										
EC4-50(1/2)	B	No	Surface Ar (CaAa)	118.00 - 0.00	1	1	0.411 0.411	0.6300		0.16
***										
LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	111.00 - 0.00	20	9	-0.177 0.137	1.9800		0.82

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
***									
A-DQZNB2YN1750N(17/64)	C	No	No	Inside Pole	156.00 - 0.00	1	No Ice	0.00	0.03
							1/2" Ice	0.00	0.03
							1" Ice	0.00	0.03
							2" Ice	0.00	0.03
A-DQZNB2YN1750N(17/64)	C	No	No	Inside Pole	156.00 - 0.00	1	No Ice	0.00	0.03
							1/2" Ice	0.00	0.03
							1" Ice	0.00	0.03
							2" Ice	0.00	0.03
WR-VG86ST-BRDA(7/8)	C	No	No	Inside Pole	156.00 - 0.00	4	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
							2" Ice	0.00	0.68
LDF7-50A(1-5/8)	C	No	No	Inside Pole	156.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
***									
HB114-1-08U4-M5F(1-1/4)	C	No	No	Inside Pole	148.00 - 0.00	3	No Ice	0.00	1.08
							1/2" Ice	0.00	1.08
							1" Ice	0.00	1.08
							2" Ice	0.00	1.08
***									
***									
LDF1-50A(1/4)	C	No	No	Inside Pole	124.00 - 0.00	3	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
9207(5/16)	C	No	No	Inside Pole	124.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
LDF4-50A(1/2)	C	No	No	Inside Pole	124.00 - 0.00	4	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	169.00-164.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.188	0.000	0.01
L2	164.00-159.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.04
L3	159.00-154.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.07
L4	154.00-149.00	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.10
L5	149.00-144.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.12
L6	144.00-139.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.12
L7	139.00-133.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.736	0.000	0.13
L8	133.33-131.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.984	0.000	0.04
L9	131.66-126.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.12
L10	126.66-121.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.198	0.000	0.12
L11	121.66-116.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.084	0.000	0.00
		C	0.000	0.000	8.627	0.000	0.13
L12	116.66-111.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.315	0.000	0.00
		C	0.000	0.000	8.627	0.000	0.13
L13	111.66-111.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.042	0.000	0.00
		C	0.000	0.000	1.139	0.000	0.02
L14	111.00-110.75	A	0.000	0.000	0.446	0.000	0.00
		B	0.000	0.000	0.016	0.000	0.00
		C	0.000	0.000	0.431	0.000	0.01
L15	110.75-105.75	A	0.000	0.000	11.190	0.000	0.08
		B	0.000	0.000	2.595	0.000	0.00
		C	0.000	0.000	10.908	0.000	0.13
L16	105.75-101.50	A	0.000	0.000	14.783	0.000	0.07
		B	0.000	0.000	7.478	0.000	0.00
		C	0.000	0.000	14.543	0.000	0.11
L17	101.50-101.25	A	0.000	0.000	1.007	0.000	0.00
		B	0.000	0.000	0.577	0.000	0.00
		C	0.000	0.000	0.993	0.000	0.01
L18	101.25-101.00	A	0.000	0.000	1.007	0.000	0.00
		B	0.000	0.000	0.577	0.000	0.00
		C	0.000	0.000	0.993	0.000	0.01
L19	101.00-100.75	A	0.000	0.000	1.007	0.000	0.00
		B	0.000	0.000	0.577	0.000	0.00
		C	0.000	0.000	0.993	0.000	0.01
L20	100.75-95.75	A	0.000	0.000	17.857	0.000	0.08
		B	0.000	0.000	9.262	0.000	0.00
		C	0.000	0.000	17.574	0.000	0.13
L21	95.75-87.83	A	0.000	0.000	26.301	0.000	0.13
		B	0.000	0.000	12.686	0.000	0.00
		C	0.000	0.000	25.853	0.000	0.20
L22	87.83-86.83	A	0.000	0.000	3.865	0.000	0.02
		B	0.000	0.000	2.146	0.000	0.00
		C	0.000	0.000	3.809	0.000	0.03
L23	86.83-81.83	A	0.000	0.000	19.327	0.000	0.08
		B	0.000	0.000	10.732	0.000	0.00
		C	0.000	0.000	19.044	0.000	0.13
L24	81.83-81.50	A	0.000	0.000	1.526	0.000	0.01
		B	0.000	0.000	0.958	0.000	0.00
		C	0.000	0.000	1.507	0.000	0.01
L25	81.50-81.25	A	0.000	0.000	1.175	0.000	0.00
		B	0.000	0.000	0.745	0.000	0.00
		C	0.000	0.000	1.161	0.000	0.01
L26	81.25-76.25	A	0.000	0.000	20.681	0.000	0.08
		B	0.000	0.000	12.086	0.000	0.00
		C	0.000	0.000	20.398	0.000	0.13
L27	76.25-71.25	A	0.000	0.000	19.743	0.000	0.08

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	11.148	0.000	0.00
		C	0.000	0.000	19.461	0.000	0.13
L28	71.25-66.25	A	0.000	0.000	19.743	0.000	0.08
		B	0.000	0.000	11.148	0.000	0.00
		C	0.000	0.000	19.461	0.000	0.13
L29	66.25-61.25	A	0.000	0.000	19.743	0.000	0.08
		B	0.000	0.000	11.148	0.000	0.00
		C	0.000	0.000	19.461	0.000	0.13
L30	61.25-56.25	A	0.000	0.000	19.743	0.000	0.08
		B	0.000	0.000	11.148	0.000	0.00
		C	0.000	0.000	19.461	0.000	0.13
L31	56.25-51.25	A	0.000	0.000	19.743	0.000	0.08
		B	0.000	0.000	11.148	0.000	0.00
		C	0.000	0.000	19.461	0.000	0.13
L32	51.25-43.33	A	0.000	0.000	37.680	0.000	0.13
		B	0.000	0.000	20.862	0.000	0.00
		C	0.000	0.000	34.029	0.000	0.20
L33	43.33-42.33	A	0.000	0.000	5.949	0.000	0.02
		B	0.000	0.000	3.230	0.000	0.00
		C	0.000	0.000	4.892	0.000	0.03
L34	42.33-37.40	A	0.000	0.000	29.327	0.000	0.08
		B	0.000	0.000	15.922	0.000	0.00
		C	0.000	0.000	24.118	0.000	0.13
L35	37.40-37.15	A	0.000	0.000	1.487	0.000	0.00
		B	0.000	0.000	0.807	0.000	0.00
		C	0.000	0.000	1.223	0.000	0.01
L36	37.15-32.15	A	0.000	0.000	29.743	0.000	0.08
		B	0.000	0.000	16.148	0.000	0.00
		C	0.000	0.000	24.461	0.000	0.13
L37	32.15-27.15	A	0.000	0.000	29.743	0.000	0.08
		B	0.000	0.000	16.148	0.000	0.00
		C	0.000	0.000	24.461	0.000	0.13
L38	27.15-22.15	A	0.000	0.000	29.760	0.000	0.08
		B	0.000	0.000	16.157	0.000	0.00
		C	0.000	0.000	24.469	0.000	0.13
L39	22.15-19.50	A	0.000	0.000	16.206	0.000	0.04
		B	0.000	0.000	8.779	0.000	0.00
		C	0.000	0.000	13.185	0.000	0.07
L40	19.50-19.25	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L41	19.25-14.25	A	0.000	0.000	30.577	0.000	0.08
		B	0.000	0.000	16.565	0.000	0.00
		C	0.000	0.000	24.878	0.000	0.13
L42	14.25-9.25	A	0.000	0.000	30.577	0.000	0.08
		B	0.000	0.000	16.565	0.000	0.00
		C	0.000	0.000	24.878	0.000	0.13
L43	9.25-9.00	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L44	9.00-8.75	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L45	8.75-7.00	A	0.000	0.000	10.702	0.000	0.03
		B	0.000	0.000	5.798	0.000	0.00
		C	0.000	0.000	8.707	0.000	0.05
L46	7.00-6.75	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L47	6.75-5.00	A	0.000	0.000	10.702	0.000	0.03
		B	0.000	0.000	5.798	0.000	0.00
		C	0.000	0.000	8.707	0.000	0.05
L48	5.00-4.75	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L49	4.75-3.00	A	0.000	0.000	10.702	0.000	0.03
		B	0.000	0.000	5.798	0.000	0.00
		C	0.000	0.000	8.707	0.000	0.05
L50	3.00-2.75	A	0.000	0.000	1.529	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L51	2.75-2.25	A	0.000	0.000	3.058	0.000	0.01
		B	0.000	0.000	1.657	0.000	0.00
		C	0.000	0.000	2.488	0.000	0.01
L52	2.25-2.00	A	0.000	0.000	1.529	0.000	0.00
		B	0.000	0.000	0.828	0.000	0.00
		C	0.000	0.000	1.244	0.000	0.01
L53	2.00-0.00	A	0.000	0.000	12.231	0.000	0.03
		B	0.000	0.000	6.626	0.000	0.00
		C	0.000	0.000	9.951	0.000	0.05

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	169.00-164.00	A	1.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.985	0.000	0.04
L2	164.00-159.00	A	1.993	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.916	0.000	0.19
L3	159.00-154.00	A	1.986	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.908	0.000	0.22
L4	154.00-149.00	A	1.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.900	0.000	0.25
L5	149.00-144.00	A	1.973	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.892	0.000	0.27
L6	144.00-139.00	A	1.966	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.883	0.000	0.27
L7	139.00-133.33	A	1.959	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.197	0.000	0.30
L8	133.33-131.66	A	1.954	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.298	0.000	0.09
L9	131.66-126.66	A	1.949	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.861	0.000	0.26
L10	126.66-121.66	A	1.941	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.430	0.000	0.33
L11	121.66-116.66	A	1.933	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.602	0.000	0.01
		C		0.000	0.000	17.471	0.000	0.41
L12	116.66-111.66	A	1.925	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.240	0.000	0.03
		C		0.000	0.000	17.442	0.000	0.40
L13	111.66-111.00	A	1.920	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.295	0.000	0.00
		C		0.000	0.000	2.300	0.000	0.05
L14	111.00-110.75	A	1.919	0.000	0.000	0.677	0.000	0.02
		B		0.000	0.000	0.112	0.000	0.00
		C		0.000	0.000	0.871	0.000	0.02
L15	110.75-105.75	A	1.914	0.000	0.000	16.316	0.000	0.34
		B		0.000	0.000	5.015	0.000	0.07
		C		0.000	0.000	20.192	0.000	0.44
L16	105.75-101.50	A	1.906	0.000	0.000	21.463	0.000	0.39
		B		0.000	0.000	11.858	0.000	0.16
		C		0.000	0.000	24.741	0.000	0.47
L17	101.50-101.25	A	1.902	0.000	0.000	1.477	0.000	0.03
		B		0.000	0.000	0.913	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	1.670	0.000	0.03
L18	101.25-101.00	A	1.901	0.000	0.000	1.477	0.000	0.03
		B		0.000	0.000	0.912	0.000	0.01
		C		0.000	0.000	1.670	0.000	0.03
L19	101.00-100.75	A	1.901	0.000	0.000	1.477	0.000	0.03
		B		0.000	0.000	0.912	0.000	0.01
		C		0.000	0.000	1.670	0.000	0.03
L20	100.75-95.75	A	1.896	0.000	0.000	26.746	0.000	0.47
		B		0.000	0.000	15.450	0.000	0.20
		C		0.000	0.000	30.581	0.000	0.57
L21	95.75-87.83	A	1.883	0.000	0.000	39.974	0.000	0.71
		B		0.000	0.000	22.086	0.000	0.28
		C		0.000	0.000	46.002	0.000	0.86
L22	87.83-86.83	A	1.874	0.000	0.000	5.743	0.000	0.10
		B		0.000	0.000	3.485	0.000	0.05
		C		0.000	0.000	6.504	0.000	0.12
L23	86.83-81.83	A	1.867	0.000	0.000	28.654	0.000	0.49
		B		0.000	0.000	17.365	0.000	0.22
		C		0.000	0.000	32.424	0.000	0.59
L24	81.83-81.50	A	1.861	0.000	0.000	2.140	0.000	0.03
		B		0.000	0.000	1.395	0.000	0.02
		C		0.000	0.000	2.388	0.000	0.04
L25	81.50-81.25	A	1.861	0.000	0.000	1.640	0.000	0.03
		B		0.000	0.000	1.075	0.000	0.01
		C		0.000	0.000	1.828	0.000	0.03
L26	81.25-76.25	A	1.854	0.000	0.000	29.192	0.000	0.47
		B		0.000	0.000	17.905	0.000	0.21
		C		0.000	0.000	32.933	0.000	0.57
L27	76.25-71.25	A	1.842	0.000	0.000	27.958	0.000	0.46
		B		0.000	0.000	16.675	0.000	0.19
		C		0.000	0.000	31.672	0.000	0.55
L28	71.25-66.25	A	1.829	0.000	0.000	27.917	0.000	0.45
		B		0.000	0.000	16.637	0.000	0.19
		C		0.000	0.000	31.601	0.000	0.55
L29	66.25-61.25	A	1.816	0.000	0.000	27.872	0.000	0.45
		B		0.000	0.000	16.595	0.000	0.19
		C		0.000	0.000	31.526	0.000	0.54
L30	61.25-56.25	A	1.801	0.000	0.000	27.824	0.000	0.45
		B		0.000	0.000	16.551	0.000	0.18
		C		0.000	0.000	31.445	0.000	0.54
L31	56.25-51.25	A	1.785	0.000	0.000	27.772	0.000	0.44
		B		0.000	0.000	16.503	0.000	0.18
		C		0.000	0.000	31.357	0.000	0.53
L32	51.25-43.33	A	1.762	0.000	0.000	52.369	0.000	0.81
		B		0.000	0.000	30.281	0.000	0.34
		C		0.000	0.000	53.719	0.000	0.89
L33	43.33-42.33	A	1.745	0.000	0.000	8.244	0.000	0.12
		B		0.000	0.000	4.639	0.000	0.05
		C		0.000	0.000	7.599	0.000	0.12
L34	42.33-37.40	A	1.732	0.000	0.000	40.491	0.000	0.56
		B		0.000	0.000	22.755	0.000	0.24
		C		0.000	0.000	37.271	0.000	0.58
L35	37.40-37.15	A	1.721	0.000	0.000	2.050	0.000	0.03
		B		0.000	0.000	1.152	0.000	0.01
		C		0.000	0.000	1.886	0.000	0.03
L36	37.15-32.15	A	1.708	0.000	0.000	40.939	0.000	0.56
		B		0.000	0.000	22.981	0.000	0.24
		C		0.000	0.000	37.643	0.000	0.58
L37	32.15-27.15	A	1.682	0.000	0.000	40.801	0.000	0.55
		B		0.000	0.000	22.876	0.000	0.23
		C		0.000	0.000	37.472	0.000	0.57
L38	27.15-22.15	A	1.651	0.000	0.000	40.656	0.000	0.54
		B		0.000	0.000	22.761	0.000	0.23
		C		0.000	0.000	37.280	0.000	0.56
L39	22.15-19.50	A	1.623	0.000	0.000	21.904	0.000	0.29
		B		0.000	0.000	12.221	0.000	0.12
		C		0.000	0.000	19.880	0.000	0.30
L40	19.50-19.25	A	1.612	0.000	0.000	2.063	0.000	0.03
		B		0.000	0.000	1.151	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	1.872	0.000	0.03
L41	19.25-14.25	A	1.588	0.000	0.000	41.144	0.000	0.53
		B		0.000	0.000	22.919	0.000	0.22
		C		0.000	0.000	37.281	0.000	0.55
L42	14.25-9.25	A	1.533	0.000	0.000	40.853	0.000	0.52
		B		0.000	0.000	22.697	0.000	0.21
		C		0.000	0.000	36.921	0.000	0.53
L43	9.25-9.00	A	1.495	0.000	0.000	2.033	0.000	0.03
		B		0.000	0.000	1.127	0.000	0.01
		C		0.000	0.000	1.834	0.000	0.03
L44	9.00-8.75	A	1.491	0.000	0.000	2.032	0.000	0.03
		B		0.000	0.000	1.126	0.000	0.01
		C		0.000	0.000	1.832	0.000	0.03
L45	8.75-7.00	A	1.473	0.000	0.000	14.188	0.000	0.17
		B		0.000	0.000	7.860	0.000	0.07
		C		0.000	0.000	12.786	0.000	0.18
L46	7.00-6.75	A	1.453	0.000	0.000	2.022	0.000	0.02
		B		0.000	0.000	1.119	0.000	0.01
		C		0.000	0.000	1.820	0.000	0.03
L47	6.75-5.00	A	1.431	0.000	0.000	14.110	0.000	0.17
		B		0.000	0.000	7.800	0.000	0.07
		C		0.000	0.000	12.689	0.000	0.17
L48	5.00-4.75	A	1.404	0.000	0.000	2.009	0.000	0.02
		B		0.000	0.000	1.109	0.000	0.01
		C		0.000	0.000	1.804	0.000	0.02
L49	4.75-3.00	A	1.372	0.000	0.000	14.003	0.000	0.16
		B		0.000	0.000	7.719	0.000	0.06
		C		0.000	0.000	12.556	0.000	0.17
L50	3.00-2.75	A	1.332	0.000	0.000	1.990	0.000	0.02
		B		0.000	0.000	1.095	0.000	0.01
		C		0.000	0.000	1.781	0.000	0.02
L51	2.75-2.25	A	1.313	0.000	0.000	3.970	0.000	0.04
		B		0.000	0.000	2.182	0.000	0.02
		C		0.000	0.000	3.549	0.000	0.05
L52	2.25-2.00	A	1.292	0.000	0.000	1.979	0.000	0.02
		B		0.000	0.000	1.087	0.000	0.01
		C		0.000	0.000	1.768	0.000	0.02
L53	2.00-0.00	A	1.198	0.000	0.000	15.638	0.000	0.17
		B		0.000	0.000	8.543	0.000	0.06
		C		0.000	0.000	13.898	0.000	0.17

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	169.00-164.00	-1.4369	1.3550	-1.1440	1.0788
L2	164.00-159.00	-3.9016	3.6793	-3.1122	2.9348
L3	159.00-154.00	-4.0084	3.7800	-3.1908	3.0090
L4	154.00-149.00	-4.1115	3.8772	-3.2664	3.0802
L5	149.00-144.00	-4.2111	3.9711	-3.3390	3.1487
L6	144.00-139.00	-4.3074	4.0619	-3.4088	3.2145
L7	139.00-133.33	-4.3942	4.1438	-3.4804	3.2820
L8	133.33-131.66	-4.4071	4.1560	-3.4947	3.2955
L9	131.66-126.66	-4.4460	4.1927	-3.5364	3.3348
L10	126.66-121.66	-3.1917	4.5377	-1.8498	3.6399
L11	121.66-116.66	-1.9254	4.8756	-0.2925	3.9141
L12	116.66-111.66	-1.7553	4.9421	0.1920	4.0101
L13	111.66-111.00	-1.7672	4.9845	0.1957	4.0588
L14	111.00-110.75	-5.0377	0.6068	-3.0876	1.2097
L15	110.75-105.75	-4.1633	0.5044	-2.7387	1.0759
L16	105.75-101.50	-2.8501	0.3487	-2.0065	0.7916
L17	101.50-101.25	-2.5158	0.3092	-1.7861	0.7059
L18	101.25-101.00	-2.5184	0.3097	-1.7882	0.7069
L19	101.00-100.75	-2.5202	0.3101	-1.7900	0.7077
L20	100.75-95.75	-2.8421	0.3515	-1.9634	0.7778
L21	95.75-87.83	-3.1076	0.3889	-2.1147	0.8412

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L22	87.83-86.83	-2.7240	0.3416	-1.9169	0.7637
L23	86.83-81.83	-2.7545	0.3472	-1.9469	0.7738
L24	81.83-81.50	-2.3650	0.2994	-1.7802	0.7083
L25	81.50-81.25	-2.3299	0.2951	-1.7639	0.7019
L26	81.25-76.25	-2.6453	0.3365	-1.9635	0.7820
L27	76.25-71.25	-2.8065	0.3597	-2.0747	0.8271
L28	71.25-66.25	-2.8546	0.3685	-2.1191	0.8452
L29	66.25-61.25	-3.0693	0.3990	-2.1637	0.8628
L30	61.25-56.25	-3.1310	0.4097	-2.2087	0.8800
L31	56.25-51.25	-3.1922	0.4202	-2.2541	0.8965
L32	51.25-43.33	-2.1849	0.6801	-1.6215	1.1107
L33	43.33-42.33	-1.2063	0.9891	-0.7942	1.3421
L34	42.33-37.40	-1.2154	1.0010	-0.8105	1.3543
L35	37.40-37.15	-1.2234	1.0114	-0.8197	1.3673
L36	37.15-32.15	-1.2314	1.0218	-0.8293	1.3802
L37	32.15-27.15	-1.2466	1.0415	-0.8490	1.4041
L38	27.15-22.15	-1.3221	1.1150	-0.8691	1.4272
L39	22.15-19.50	-1.1465	1.1164	-0.8068	1.4665
L40	19.50-19.25	-1.1503	1.1223	-0.8138	1.4726
L41	19.25-14.25	-1.1570	1.1327	-0.8276	1.4831
L42	14.25-9.25	-1.2309	1.2128	-0.8590	1.5005
L43	9.25-9.00	-1.2396	1.2254	-0.8797	1.5076
L44	9.00-8.75	-1.2405	1.2267	-0.8819	1.5081
L45	8.75-7.00	-1.2438	1.2315	-0.8913	1.5101
L46	7.00-6.75	-1.2471	1.2363	-0.9017	1.5116
L47	6.75-5.00	-1.2505	1.2411	-0.9134	1.5125
L48	5.00-4.75	-1.2540	1.2461	-0.9272	1.5130
L49	4.75-3.00	-1.2573	1.2509	-0.9434	1.5118
L50	3.00-2.75	-1.2607	1.2557	-0.9636	1.5088
L51	2.75-2.25	-1.2619	1.2575	-0.9728	1.5070
L52	2.25-2.00	-1.2630	1.2591	-0.9832	1.5043
L53	2.00-0.00	-1.2667	1.2645	-1.0297	1.4900

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	45	LDF7-50A(1-5/8)	164.00 - 165.00	1.0000	1.0000
L2	45	LDF7-50A(1-5/8)	159.00 - 164.00	1.0000	1.0000
L3	45	LDF7-50A(1-5/8)	154.00 - 159.00	1.0000	1.0000
L4	45	LDF7-50A(1-5/8)	149.00 - 154.00	1.0000	1.0000
L5	45	LDF7-50A(1-5/8)	144.00 - 149.00	1.0000	1.0000
L6	45	LDF7-50A(1-5/8)	139.00 - 144.00	1.0000	1.0000
L7	45	LDF7-50A(1-5/8)	138.00 - 139.00	1.0000	1.0000
L7	46	LDF7-50A(1-5/8)	133.33 - 138.00	1.0000	1.0000
L8	46	LDF7-50A(1-5/8)	131.66 - 133.33	1.0000	1.0000
L9	46	LDF7-50A(1-5/8)	126.66 - 131.66	1.0000	1.0000
L10	46	LDF7-50A(1-5/8)	121.66 - 126.66	1.0000	1.0000
L10	63	LDF4-50A(1/2)	121.66 - 124.00	1.0000	1.0000
L10	64	2" (Nominal) Conduit	121.66 - 124.00	1.0000	1.0000
L11	46	LDF7-50A(1-5/8)	116.66 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	63	LDF4-50A(1/2)	121.66 116.66 - 121.66	1.0000	1.0000
L11	64	2" (Nominal) Conduit	116.66 - 121.66	1.0000	1.0000
L11	66	EC4-50(1/2)	116.66 - 118.00	1.0000	1.0000
L12	46	LDF7-50A(1-5/8)	111.66 - 116.66	1.0000	1.0000
L12	63	LDF4-50A(1/2)	111.66 - 116.66	1.0000	1.0000
L12	64	2" (Nominal) Conduit	111.66 - 116.66	1.0000	1.0000
L12	66	EC4-50(1/2)	111.66 - 116.66	1.0000	1.0000
L13	46	LDF7-50A(1-5/8)	111.00 - 111.66	1.0000	1.0000
L13	63	LDF4-50A(1/2)	111.00 - 111.66	1.0000	1.0000
L13	64	2" (Nominal) Conduit	111.00 - 111.66	1.0000	1.0000
L13	66	EC4-50(1/2)	111.00 - 111.66	1.0000	1.0000
L14	46	LDF7-50A(1-5/8)	110.75 - 111.00	1.0000	1.0000
L14	63	LDF4-50A(1/2)	110.75 - 111.00	1.0000	1.0000
L14	64	2" (Nominal) Conduit	110.75 - 111.00	1.0000	1.0000
L14	66	EC4-50(1/2)	110.75 - 111.00	1.0000	1.0000
L14	71	LDF7-50A(1-5/8)	110.75 - 111.00	1.0000	1.0000
L15	36	CCI-060100 Reinforcement	105.75 - 108.25	1.0000	1.0000
L15	37	CCI-060100 Reinforcement	105.75 - 108.25	1.0000	1.0000
L15	38	CCI-060100 Reinforcement	105.75 - 108.25	1.0000	1.0000
L15	46	LDF7-50A(1-5/8)	105.75 - 110.75	1.0000	1.0000
L15	63	LDF4-50A(1/2)	105.75 - 110.75	1.0000	1.0000
L15	64	2" (Nominal) Conduit	105.75 - 110.75	1.0000	1.0000
L15	66	EC4-50(1/2)	105.75 - 110.75	1.0000	1.0000
L15	71	LDF7-50A(1-5/8)	105.75 - 110.75	1.0000	1.0000
L16	29	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	30	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	31	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	32	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	33	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	34	CCI-040125 Reinforcement	101.50 - 104.00	1.0000	1.0000
L16	36	CCI-060100 Reinforcement	101.50 - 105.75	1.0000	1.0000
L16	37	CCI-060100 Reinforcement	101.50 - 105.75	1.0000	1.0000
L16	38	CCI-060100 Reinforcement	101.50 - 105.75	1.0000	1.0000
L16	46	LDF7-50A(1-5/8)	101.50 - 105.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	63	LDF4-50A(1/2)	101.50 - 105.75	1.0000	1.0000
L16	64	2" (Nominal) Conduit	101.50 - 105.75	1.0000	1.0000
L16	66	EC4-50(1/2)	101.50 - 105.75	1.0000	1.0000
L16	71	LDF7-50A(1-5/8)	101.50 - 105.75	1.0000	1.0000
L17	29	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	30	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	31	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	32	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	33	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	34	CCI-040125 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	36	CCI-060100 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	37	CCI-060100 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	38	CCI-060100 Reinforcement	101.25 - 101.50	1.0000	1.0000
L17	46	LDF7-50A(1-5/8)	101.25 - 101.50	1.0000	1.0000
L17	63	LDF4-50A(1/2)	101.25 - 101.50	1.0000	1.0000
L17	64	2" (Nominal) Conduit	101.25 - 101.50	1.0000	1.0000
L17	66	EC4-50(1/2)	101.25 - 101.50	1.0000	1.0000
L17	71	LDF7-50A(1-5/8)	101.25 - 101.50	1.0000	1.0000
L18	29	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	30	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	31	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	32	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	33	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	34	CCI-040125 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	36	CCI-060100 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	37	CCI-060100 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	38	CCI-060100 Reinforcement	101.00 - 101.25	1.0000	1.0000
L18	46	LDF7-50A(1-5/8)	101.00 - 101.25	1.0000	1.0000
L18	63	LDF4-50A(1/2)	101.00 - 101.25	1.0000	1.0000
L18	64	2" (Nominal) Conduit	101.00 - 101.25	1.0000	1.0000
L18	66	EC4-50(1/2)	101.00 - 101.25	1.0000	1.0000
L18	71	LDF7-50A(1-5/8)	101.00 - 101.25	1.0000	1.0000
L19	29	CCI-040125 Reinforcement	100.75 - 101.00	1.0000	1.0000
L19	30	CCI-040125 Reinforcement	100.75 - 101.00	1.0000	1.0000
L19	31	CCI-040125	100.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement	101.00		
L19	32	CCI-040125	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	33	CCI-040125	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	34	CCI-040125	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	36	CCI-060100	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	37	CCI-060100	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	38	CCI-060100	100.75 - 101.00	1.0000	1.0000
		Reinforcement	101.00		
L19	46	LDF7-50A(1-5/8)	100.75 - 101.00	1.0000	1.0000
L19	63	LDF4-50A(1/2)	100.75 - 101.00	1.0000	1.0000
L19	64	2" (Nominal) Conduit	100.75 - 101.00	1.0000	1.0000
L19	66	EC4-50(1/2)	100.75 - 101.00	1.0000	1.0000
L19	71	LDF7-50A(1-5/8)	100.75 - 101.00	1.0000	1.0000
L20	29	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	30	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	31	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	32	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	33	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	34	CCI-040125	95.75 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	36	CCI-060100	98.25 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	37	CCI-060100	98.25 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	38	CCI-060100	98.25 - 100.75	1.0000	1.0000
		Reinforcement	100.75		
L20	46	LDF7-50A(1-5/8)	95.75 - 100.75	1.0000	1.0000
L20	63	LDF4-50A(1/2)	95.75 - 100.75	1.0000	1.0000
L20	64	2" (Nominal) Conduit	95.75 - 100.75	1.0000	1.0000
L20	66	EC4-50(1/2)	95.75 - 100.75	1.0000	1.0000
L20	71	LDF7-50A(1-5/8)	95.75 - 100.75	1.0000	1.0000
L21	13	CCI-045100	87.83 - 90.00	1.0000	1.0000
		Reinforcement	90.00		
L21	14	CCI-045100	87.83 - 90.00	1.0000	1.0000
		Reinforcement	90.00		
L21	15	CCI-045100	87.83 - 90.00	1.0000	1.0000
		Reinforcement	90.00		
L21	29	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		
L21	30	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		
L21	31	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		
L21	32	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		
L21	33	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		
L21	34	CCI-040125	87.83 - 95.75	1.0000	1.0000
		Reinforcement	95.75		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L21	46	LDF7-50A(1-5/8)	87.83 - 95.75	1.0000	1.0000
L21	63	LDF4-50A(1/2)	87.83 - 95.75	1.0000	1.0000
L21	64	2" (Nominal) Conduit	87.83 - 95.75	1.0000	1.0000
L21	66	EC4-50(1/2)	87.83 - 95.75	1.0000	1.0000
L21	71	LDF7-50A(1-5/8)	87.83 - 95.75	1.0000	1.0000
L22	13	CCI-045100 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	14	CCI-045100 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	15	CCI-045100 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	29	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	30	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	31	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	32	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	33	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	34	CCI-040125 Reinforcement	86.83 - 87.83	1.0000	1.0000
L22	46	LDF7-50A(1-5/8)	86.83 - 87.83	1.0000	1.0000
L22	63	LDF4-50A(1/2)	86.83 - 87.83	1.0000	1.0000
L22	64	2" (Nominal) Conduit	86.83 - 87.83	1.0000	1.0000
L22	66	EC4-50(1/2)	86.83 - 87.83	1.0000	1.0000
L22	71	LDF7-50A(1-5/8)	86.83 - 87.83	1.0000	1.0000
L23	13	CCI-045100 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	14	CCI-045100 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	15	CCI-045100 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	29	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	30	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	31	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	32	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	33	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	34	CCI-040125 Reinforcement	81.83 - 86.83	1.0000	1.0000
L23	46	LDF7-50A(1-5/8)	81.83 - 86.83	1.0000	1.0000
L23	63	LDF4-50A(1/2)	81.83 - 86.83	1.0000	1.0000
L23	64	2" (Nominal) Conduit	81.83 - 86.83	1.0000	1.0000
L23	66	EC4-50(1/2)	81.83 - 86.83	1.0000	1.0000
L23	71	LDF7-50A(1-5/8)	81.83 - 86.83	1.0000	1.0000
L24	13	CCI-045100 Reinforcement	81.50 - 81.83	1.0000	1.0000
L24	14	CCI-045100	81.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement	81.83		
L24	15	CCI-045100	81.50 -	1.0000	1.0000
		Reinforcement	81.83		
L24	18	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	20	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	22	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	24	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	26	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	28	CCI-065125	81.50 -	1.0000	1.0000
		Reinforcement	81.80		
L24	29	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	30	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	31	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	32	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	33	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	34	CCI-040125	81.80 -	1.0000	1.0000
		Reinforcement	81.83		
L24	46	LDF7-50A(1-5/8)	81.50 -	1.0000	1.0000
			81.83		
L24	63	LDF4-50A(1/2)	81.50 -	1.0000	1.0000
			81.83		
L24	64	2" (Nominal) Conduit	81.50 -	1.0000	1.0000
			81.83		
L24	66	EC4-50(1/2)	81.50 -	1.0000	1.0000
			81.83		
L24	71	LDF7-50A(1-5/8)	81.50 -	1.0000	1.0000
			81.83		
L25	13	CCI-045100	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	14	CCI-045100	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	15	CCI-045100	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	18	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	20	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	22	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	24	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	26	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	28	CCI-065125	81.25 -	1.0000	1.0000
		Reinforcement	81.50		
L25	46	LDF7-50A(1-5/8)	81.25 -	1.0000	1.0000
			81.50		
L25	63	LDF4-50A(1/2)	81.25 -	1.0000	1.0000
			81.50		
L25	64	2" (Nominal) Conduit	81.25 -	1.0000	1.0000
			81.50		
L25	66	EC4-50(1/2)	81.25 -	1.0000	1.0000
			81.50		
L25	71	LDF7-50A(1-5/8)	81.25 -	1.0000	1.0000
			81.50		
L26	13	CCI-045100	80.00 -	1.0000	1.0000
		Reinforcement	81.25		
L26	14	CCI-045100	80.00 -	1.0000	1.0000
		Reinforcement	81.25		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	15	CCI-045100 Reinforcement	80.00 - 81.25	1.0000	1.0000
L26	18	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	20	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	22	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	24	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	26	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	28	CCI-065125 Reinforcement	76.25 - 81.25	1.0000	1.0000
L26	46	LDF7-50A(1-5/8)	76.25 - 81.25	1.0000	1.0000
L26	63	LDF4-50A(1/2)	76.25 - 81.25	1.0000	1.0000
L26	64	2" (Nominal) Conduit	76.25 - 81.25	1.0000	1.0000
L26	66	EC4-50(1/2)	76.25 - 81.25	1.0000	1.0000
L26	71	LDF7-50A(1-5/8)	76.25 - 81.25	1.0000	1.0000
L27	18	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	20	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	22	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	24	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	26	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	28	CCI-065125 Reinforcement	71.25 - 76.25	1.0000	1.0000
L27	46	LDF7-50A(1-5/8)	71.25 - 76.25	1.0000	1.0000
L27	63	LDF4-50A(1/2)	71.25 - 76.25	1.0000	1.0000
L27	64	2" (Nominal) Conduit	71.25 - 76.25	1.0000	1.0000
L27	66	EC4-50(1/2)	71.25 - 76.25	1.0000	1.0000
L27	71	LDF7-50A(1-5/8)	71.25 - 76.25	1.0000	1.0000
L28	18	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	20	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	22	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	24	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	26	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	28	CCI-065125 Reinforcement	66.25 - 71.25	1.0000	1.0000
L28	46	LDF7-50A(1-5/8)	66.25 - 71.25	1.0000	1.0000
L28	63	LDF4-50A(1/2)	66.25 - 71.25	1.0000	1.0000
L28	64	2" (Nominal) Conduit	66.25 - 71.25	1.0000	1.0000
L28	66	EC4-50(1/2)	66.25 - 71.25	1.0000	1.0000
L28	71	LDF7-50A(1-5/8)	66.25 - 71.25	1.0000	1.0000
L29	18	CCI-065125	61.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement	66.25		
L29	20	CCI-065125	61.25 - 66.25	1.0000	1.0000
		Reinforcement			
L29	22	CCI-065125	61.25 - 66.25	1.0000	1.0000
		Reinforcement			
L29	24	CCI-065125	61.25 - 66.25	1.0000	1.0000
		Reinforcement			
L29	26	CCI-065125	61.25 - 66.25	1.0000	1.0000
		Reinforcement			
L29	28	CCI-065125	61.25 - 66.25	1.0000	1.0000
		Reinforcement			
L29	46	LDF7-50A(1-5/8)	61.25 - 66.25	1.0000	1.0000
L29	63	LDF4-50A(1/2)	61.25 - 66.25	1.0000	1.0000
L29	64	2" (Nominal) Conduit	61.25 - 66.25	1.0000	1.0000
L29	66	EC4-50(1/2)	61.25 - 66.25	1.0000	1.0000
L29	71	LDF7-50A(1-5/8)	61.25 - 66.25	1.0000	1.0000
L30	18	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	20	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	22	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	24	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	26	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	28	CCI-065125	56.25 - 61.25	1.0000	1.0000
		Reinforcement			
L30	46	LDF7-50A(1-5/8)	56.25 - 61.25	1.0000	1.0000
L30	63	LDF4-50A(1/2)	56.25 - 61.25	1.0000	1.0000
L30	64	2" (Nominal) Conduit	56.25 - 61.25	1.0000	1.0000
L30	66	EC4-50(1/2)	56.25 - 61.25	1.0000	1.0000
L30	71	LDF7-50A(1-5/8)	56.25 - 61.25	1.0000	1.0000
L31	18	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	20	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	22	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	24	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	26	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	28	CCI-065125	51.25 - 56.25	1.0000	1.0000
		Reinforcement			
L31	46	LDF7-50A(1-5/8)	51.25 - 56.25	1.0000	1.0000
L31	63	LDF4-50A(1/2)	51.25 - 56.25	1.0000	1.0000
L31	64	2" (Nominal) Conduit	51.25 - 56.25	1.0000	1.0000
L31	66	EC4-50(1/2)	51.25 - 56.25	1.0000	1.0000
L31	71	LDF7-50A(1-5/8)	51.25 - 56.25	1.0000	1.0000
L32	5	CCI-060100	43.33 - 45.10	1.0000	1.0000
		Reinforcement			
L32	6	CCI-060100	45.10 - 47.33	1.0000	1.0000
		Reinforcement			

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	7	CCI-060100 Reinforcement	43.33 - 45.10	1.0000	1.0000
L32	8	CCI-060100 Reinforcement	45.10 - 47.33	1.0000	1.0000
L32	9	CCI-060100 Reinforcement	43.33 - 45.10	1.0000	1.0000
L32	10	CCI-060100 Reinforcement	45.10 - 47.33	1.0000	1.0000
L32	11	CCI-060100 Reinforcement	43.33 - 45.10	1.0000	1.0000
L32	12	CCI-060100 Reinforcement	45.10 - 47.33	1.0000	1.0000
L32	18	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	20	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	22	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	24	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	26	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	28	CCI-065125 Reinforcement	43.33 - 51.25	1.0000	1.0000
L32	46	LDF7-50A(1-5/8)	43.33 - 51.25	1.0000	1.0000
L32	63	LDF4-50A(1/2)	43.33 - 51.25	1.0000	1.0000
L32	64	2" (Nominal) Conduit	43.33 - 51.25	1.0000	1.0000
L32	66	EC4-50(1/2)	43.33 - 51.25	1.0000	1.0000
L32	71	LDF7-50A(1-5/8)	43.33 - 51.25	1.0000	1.0000
L33	5	CCI-060100 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	7	CCI-060100 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	9	CCI-060100 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	11	CCI-060100 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	18	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	20	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	22	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	24	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	26	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	28	CCI-065125 Reinforcement	42.33 - 43.33	1.0000	1.0000
L33	46	LDF7-50A(1-5/8)	42.33 - 43.33	1.0000	1.0000
L33	63	LDF4-50A(1/2)	42.33 - 43.33	1.0000	1.0000
L33	64	2" (Nominal) Conduit	42.33 - 43.33	1.0000	1.0000
L33	66	EC4-50(1/2)	42.33 - 43.33	1.0000	1.0000
L33	71	LDF7-50A(1-5/8)	42.33 - 43.33	1.0000	1.0000
L34	5	CCI-060100 Reinforcement	37.40 - 42.33	1.0000	1.0000
L34	7	CCI-060100 Reinforcement	37.40 - 42.33	1.0000	1.0000
L34	9	CCI-060100	37.40 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement	42.33		
L34	11	CCI-060100	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	18	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	20	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	22	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	24	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	26	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	28	CCI-065125	37.40 -	1.0000	1.0000
		Reinforcement	42.33		
L34	46	LDF7-50A(1-5/8)	37.40 -	1.0000	1.0000
			42.33		
L34	63	LDF4-50A(1/2)	37.40 -	1.0000	1.0000
			42.33		
L34	64	2" (Nominal) Conduit	37.40 -	1.0000	1.0000
			42.33		
L34	66	EC4-50(1/2)	37.40 -	1.0000	1.0000
			42.33		
L34	71	LDF7-50A(1-5/8)	37.40 -	1.0000	1.0000
			42.33		
L35	5	CCI-060100	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	7	CCI-060100	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	9	CCI-060100	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	11	CCI-060100	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	18	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	20	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	22	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	24	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	26	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	28	CCI-065125	37.15 -	1.0000	1.0000
		Reinforcement	37.40		
L35	46	LDF7-50A(1-5/8)	37.15 -	1.0000	1.0000
			37.40		
L35	63	LDF4-50A(1/2)	37.15 -	1.0000	1.0000
			37.40		
L35	64	2" (Nominal) Conduit	37.15 -	1.0000	1.0000
			37.40		
L35	66	EC4-50(1/2)	37.15 -	1.0000	1.0000
			37.40		
L35	71	LDF7-50A(1-5/8)	37.15 -	1.0000	1.0000
			37.40		
L36	5	CCI-060100	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	7	CCI-060100	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	9	CCI-060100	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	11	CCI-060100	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	18	CCI-065125	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	20	CCI-065125	32.15 -	1.0000	1.0000
		Reinforcement	37.15		
L36	22	CCI-065125	32.15 -	1.0000	1.0000
		Reinforcement	37.15		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	24	CCI-065125 Reinforcement	32.15 - 37.15	1.0000	1.0000
L36	26	CCI-065125 Reinforcement	32.15 - 37.15	1.0000	1.0000
L36	28	CCI-065125 Reinforcement	32.15 - 37.15	1.0000	1.0000
L36	46	LDF7-50A(1-5/8)	32.15 - 37.15	1.0000	1.0000
L36	63	LDF4-50A(1/2)	32.15 - 37.15	1.0000	1.0000
L36	64	2" (Nominal) Conduit	32.15 - 37.15	1.0000	1.0000
L36	66	EC4-50(1/2)	32.15 - 37.15	1.0000	1.0000
L36	71	LDF7-50A(1-5/8)	32.15 - 37.15	1.0000	1.0000
L37	5	CCI-060100 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	7	CCI-060100 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	9	CCI-060100 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	11	CCI-060100 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	18	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	20	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	22	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	24	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	26	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	28	CCI-065125 Reinforcement	27.15 - 32.15	1.0000	1.0000
L37	46	LDF7-50A(1-5/8)	27.15 - 32.15	1.0000	1.0000
L37	63	LDF4-50A(1/2)	27.15 - 32.15	1.0000	1.0000
L37	64	2" (Nominal) Conduit	27.15 - 32.15	1.0000	1.0000
L37	66	EC4-50(1/2)	27.15 - 32.15	1.0000	1.0000
L37	71	LDF7-50A(1-5/8)	27.15 - 32.15	1.0000	1.0000
L38	1	CCI-065125 Reinforcement	22.15 - 22.25	1.0000	1.0000
L38	2	CCI-065125 Reinforcement	22.15 - 22.25	1.0000	1.0000
L38	3	CCI-065125 Reinforcement	22.15 - 22.25	1.0000	1.0000
L38	4	CCI-065125 Reinforcement	22.15 - 22.25	1.0000	1.0000
L38	5	CCI-060100 Reinforcement	22.25 - 27.15	1.0000	1.0000
L38	7	CCI-060100 Reinforcement	22.25 - 27.15	1.0000	1.0000
L38	9	CCI-060100 Reinforcement	22.25 - 27.15	1.0000	1.0000
L38	11	CCI-060100 Reinforcement	22.25 - 27.15	1.0000	1.0000
L38	17	CCI-065125 Reinforcement	22.15 - 26.01	1.0000	1.0000
L38	18	CCI-065125 Reinforcement	26.01 - 27.15	1.0000	1.0000
L38	19	CCI-065125 Reinforcement	22.15 - 26.01	1.0000	1.0000
L38	20	CCI-065125	26.01 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement	27.15		
L38	21	CCI-065125	22.15 -	1.0000	1.0000
		Reinforcement	26.01		
L38	22	CCI-065125	26.01 -	1.0000	1.0000
		Reinforcement	27.15		
L38	23	CCI-065125	22.15 -	1.0000	1.0000
		Reinforcement	26.01		
L38	24	CCI-065125	26.01 -	1.0000	1.0000
		Reinforcement	27.15		
L38	25	CCI-065125	22.15 -	1.0000	1.0000
		Reinforcement	26.01		
L38	26	CCI-065125	26.01 -	1.0000	1.0000
		Reinforcement	27.15		
L38	27	CCI-065125	22.15 -	1.0000	1.0000
		Reinforcement	26.01		
L38	28	CCI-065125	26.01 -	1.0000	1.0000
		Reinforcement	27.15		
L38	46	LDF7-50A(1-5/8)	22.15 -	1.0000	1.0000
			27.15		
L38	63	LDF4-50A(1/2)	22.15 -	1.0000	1.0000
			27.15		
L38	64	2" (Nominal) Conduit	22.15 -	1.0000	1.0000
			27.15		
L38	66	EC4-50(1/2)	22.15 -	1.0000	1.0000
			27.15		
L38	71	LDF7-50A(1-5/8)	22.15 -	1.0000	1.0000
			27.15		
L39	1	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	2	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	3	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	4	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	17	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	19	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	21	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	23	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	25	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	27	CCI-065125	19.50 -	1.0000	1.0000
		Reinforcement	22.15		
L39	46	LDF7-50A(1-5/8)	19.50 -	1.0000	1.0000
			22.15		
L39	63	LDF4-50A(1/2)	19.50 -	1.0000	1.0000
			22.15		
L39	64	2" (Nominal) Conduit	19.50 -	1.0000	1.0000
			22.15		
L39	66	EC4-50(1/2)	19.50 -	1.0000	1.0000
			22.15		
L39	71	LDF7-50A(1-5/8)	19.50 -	1.0000	1.0000
			22.15		
L40	1	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		
L40	2	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		
L40	3	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		
L40	4	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		
L40	17	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		
L40	19	CCI-065125	19.25 -	1.0000	1.0000
		Reinforcement	19.50		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L40	21	CCI-065125 Reinforcement	19.25 - 19.50	1.0000	1.0000
L40	23	CCI-065125 Reinforcement	19.25 - 19.50	1.0000	1.0000
L40	25	CCI-065125 Reinforcement	19.25 - 19.50	1.0000	1.0000
L40	27	CCI-065125 Reinforcement	19.25 - 19.50	1.0000	1.0000
L40	46	LDF7-50A(1-5/8)	19.25 - 19.50	1.0000	1.0000
L40	63	LDF4-50A(1/2)	19.25 - 19.50	1.0000	1.0000
L40	64	2" (Nominal) Conduit	19.25 - 19.50	1.0000	1.0000
L40	66	EC4-50(1/2)	19.25 - 19.50	1.0000	1.0000
L40	71	LDF7-50A(1-5/8)	19.25 - 19.50	1.0000	1.0000
L41	1	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	2	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	3	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	4	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	17	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	19	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	21	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	23	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	25	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	27	CCI-065125 Reinforcement	14.25 - 19.25	1.0000	1.0000
L41	46	LDF7-50A(1-5/8)	14.25 - 19.25	1.0000	1.0000
L41	63	LDF4-50A(1/2)	14.25 - 19.25	1.0000	1.0000
L41	64	2" (Nominal) Conduit	14.25 - 19.25	1.0000	1.0000
L41	66	EC4-50(1/2)	14.25 - 19.25	1.0000	1.0000
L41	71	LDF7-50A(1-5/8)	14.25 - 19.25	1.0000	1.0000
L42	1	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	2	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	3	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	4	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	17	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	19	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	21	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	23	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	25	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	27	CCI-065125 Reinforcement	9.25 - 14.25	1.0000	1.0000
L42	46	LDF7-50A(1-5/8)	9.25 - 14.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L42	63	LDF4-50A(1/2)	9.25 - 14.25	1.0000	1.0000
L42	64	2" (Nominal) Conduit	9.25 - 14.25	1.0000	1.0000
L42	66	EC4-50(1/2)	9.25 - 14.25	1.0000	1.0000
L42	71	LDF7-50A(1-5/8)	9.25 - 14.25	1.0000	1.0000
L43	1	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	2	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	3	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	4	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	17	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	19	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	21	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	23	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	25	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	27	CCI-065125 Reinforcement	9.00 - 9.25	1.0000	1.0000
L43	46	LDF7-50A(1-5/8)	9.00 - 9.25	1.0000	1.0000
L43	63	LDF4-50A(1/2)	9.00 - 9.25	1.0000	1.0000
L43	64	2" (Nominal) Conduit	9.00 - 9.25	1.0000	1.0000
L43	66	EC4-50(1/2)	9.00 - 9.25	1.0000	1.0000
L43	71	LDF7-50A(1-5/8)	9.00 - 9.25	1.0000	1.0000
L44	1	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	2	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	3	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	4	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	17	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	19	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	21	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	23	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	25	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	27	CCI-065125 Reinforcement	8.75 - 9.00	1.0000	1.0000
L44	46	LDF7-50A(1-5/8)	8.75 - 9.00	1.0000	1.0000
L44	63	LDF4-50A(1/2)	8.75 - 9.00	1.0000	1.0000
L44	64	2" (Nominal) Conduit	8.75 - 9.00	1.0000	1.0000
L44	66	EC4-50(1/2)	8.75 - 9.00	1.0000	1.0000
L44	71	LDF7-50A(1-5/8)	8.75 - 9.00	1.0000	1.0000
L45	1	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	2	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	3	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	4	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	17	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	19	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	21	CCI-065125 Reinforcement	7.00 - 8.75	1.0000	1.0000
L45	23	CCI-065125	7.00 - 8.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement			
L45	25	CCI-065125	7.00 - 8.75	1.0000	1.0000
		Reinforcement			
L45	27	CCI-065125	7.00 - 8.75	1.0000	1.0000
		Reinforcement			
L45	46	LDF7-50A(1-5/8)	7.00 - 8.75	1.0000	1.0000
L45	63	LDF4-50A(1/2)	7.00 - 8.75	1.0000	1.0000
L45	64	2" (Nominal) Conduit	7.00 - 8.75	1.0000	1.0000
L45	66	EC4-50(1/2)	7.00 - 8.75	1.0000	1.0000
L45	71	LDF7-50A(1-5/8)	7.00 - 8.75	1.0000	1.0000
L46	1	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	2	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	3	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	4	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	17	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	19	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	21	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	23	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	25	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	27	CCI-065125	6.75 - 7.00	1.0000	1.0000
		Reinforcement			
L46	46	LDF7-50A(1-5/8)	6.75 - 7.00	1.0000	1.0000
L46	63	LDF4-50A(1/2)	6.75 - 7.00	1.0000	1.0000
L46	64	2" (Nominal) Conduit	6.75 - 7.00	1.0000	1.0000
L46	66	EC4-50(1/2)	6.75 - 7.00	1.0000	1.0000
L46	71	LDF7-50A(1-5/8)	6.75 - 7.00	1.0000	1.0000
L47	1	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	2	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	3	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	4	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	17	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	19	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	21	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	23	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	25	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	27	CCI-065125	5.00 - 6.75	1.0000	1.0000
		Reinforcement			
L47	46	LDF7-50A(1-5/8)	5.00 - 6.75	1.0000	1.0000
L47	63	LDF4-50A(1/2)	5.00 - 6.75	1.0000	1.0000
L47	64	2" (Nominal) Conduit	5.00 - 6.75	1.0000	1.0000
L47	66	EC4-50(1/2)	5.00 - 6.75	1.0000	1.0000
L47	71	LDF7-50A(1-5/8)	5.00 - 6.75	1.0000	1.0000
L48	1	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	2	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	3	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	4	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	17	CCI-065125	4.75 - 5.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Reinforcement			
L48	19	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	21	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	23	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	25	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	27	CCI-065125	4.75 - 5.00	1.0000	1.0000
		Reinforcement			
L48	46	LDF7-50A(1-5/8)	4.75 - 5.00	1.0000	1.0000
L48	63	LDF4-50A(1/2)	4.75 - 5.00	1.0000	1.0000
L48	64	2" (Nominal) Conduit	4.75 - 5.00	1.0000	1.0000
L48	66	EC4-50(1/2)	4.75 - 5.00	1.0000	1.0000
L48	71	LDF7-50A(1-5/8)	4.75 - 5.00	1.0000	1.0000
L49	1	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	2	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	3	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	4	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	17	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	19	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	21	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	23	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	25	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	27	CCI-065125	3.00 - 4.75	1.0000	1.0000
		Reinforcement			
L49	46	LDF7-50A(1-5/8)	3.00 - 4.75	1.0000	1.0000
L49	63	LDF4-50A(1/2)	3.00 - 4.75	1.0000	1.0000
L49	64	2" (Nominal) Conduit	3.00 - 4.75	1.0000	1.0000
L49	66	EC4-50(1/2)	3.00 - 4.75	1.0000	1.0000
L49	71	LDF7-50A(1-5/8)	3.00 - 4.75	1.0000	1.0000
L50	1	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	2	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	3	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	4	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	17	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	19	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	21	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	23	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	25	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	27	CCI-065125	2.75 - 3.00	1.0000	1.0000
		Reinforcement			
L50	46	LDF7-50A(1-5/8)	2.75 - 3.00	1.0000	1.0000
L50	63	LDF4-50A(1/2)	2.75 - 3.00	1.0000	1.0000
L50	64	2" (Nominal) Conduit	2.75 - 3.00	1.0000	1.0000
L50	66	EC4-50(1/2)	2.75 - 3.00	1.0000	1.0000
L50	71	LDF7-50A(1-5/8)	2.75 - 3.00	1.0000	1.0000
L51	1	CCI-065125	2.25 - 2.75	1.0000	1.0000
		Reinforcement			
L51	2	CCI-065125	2.25 - 2.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L51	3	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	4	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	17	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	19	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	21	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	23	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	25	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	27	Reinforcement CCI-065125	2.25 - 2.75	1.0000	1.0000
L51	46	Reinforcement LDF7-50A(1-5/8)	2.25 - 2.75	1.0000	1.0000
L51	63	LDF4-50A(1/2)	2.25 - 2.75	1.0000	1.0000
L51	64	2" (Nominal) Conduit	2.25 - 2.75	1.0000	1.0000
L51	66	EC4-50(1/2)	2.25 - 2.75	1.0000	1.0000
L51	71	LDF7-50A(1-5/8)	2.25 - 2.75	1.0000	1.0000
L52	1	CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	2	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	3	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	4	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	17	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	19	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	21	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	23	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	25	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	27	Reinforcement CCI-065125	2.00 - 2.25	1.0000	1.0000
L52	46	Reinforcement LDF7-50A(1-5/8)	2.00 - 2.25	1.0000	1.0000
L52	63	LDF4-50A(1/2)	2.00 - 2.25	1.0000	1.0000
L52	64	2" (Nominal) Conduit	2.00 - 2.25	1.0000	1.0000
L52	66	EC4-50(1/2)	2.00 - 2.25	1.0000	1.0000
L52	71	LDF7-50A(1-5/8)	2.00 - 2.25	1.0000	1.0000
L53	1	CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	2	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	3	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	4	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	17	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	19	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	21	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	23	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	25	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	27	Reinforcement CCI-065125	0.00 - 2.00	1.0000	1.0000
L53	46	Reinforcement LDF7-50A(1-5/8)	0.00 - 2.00	1.0000	1.0000
L53	63	LDF4-50A(1/2)	0.00 - 2.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L53	64	2" (Nominal) Conduit	0.00 - 2.00	1.0000	1.0000
L53	66	EC4-50(1/2)	0.00 - 2.00	1.0000	1.0000
L53	71	LDF7-50A(1-5/8)	0.00 - 2.00	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L15	36	CCI-060100 Reinforcement	105.75 - 108.25	Auto	0.3802
L15	37	CCI-060100 Reinforcement	105.75 - 108.25	Auto	0.3802
L15	38	CCI-060100 Reinforcement	105.75 - 108.25	Auto	0.3802
L16	29	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	30	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	31	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	32	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	33	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	34	CCI-040125 Reinforcement	101.50 - 104.00	Auto	0.0297
L16	36	CCI-060100 Reinforcement	101.50 - 105.75	Auto	0.3579
L16	37	CCI-060100 Reinforcement	101.50 - 105.75	Auto	0.3579
L16	38	CCI-060100 Reinforcement	101.50 - 105.75	Auto	0.3579
L17	29	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	30	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	31	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	32	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	33	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	34	CCI-040125 Reinforcement	101.25 - 101.50	Auto	0.2108
L17	36	CCI-060100 Reinforcement	101.25 - 101.50	Auto	0.4738
L17	37	CCI-060100 Reinforcement	101.25 - 101.50	Auto	0.4738
L17	38	CCI-060100 Reinforcement	101.25 - 101.50	Auto	0.4738
L18	29	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	30	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	31	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	32	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	33	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	34	CCI-040125 Reinforcement	101.00 - 101.25	Auto	0.2087
L18	36	CCI-060100 Reinforcement	101.00 - 101.25	Auto	0.4725

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	37	CCI-060100 Reinforcement	101.00 - 101.25	Auto	0.4725
L18	38	CCI-060100 Reinforcement	101.00 - 101.25	Auto	0.4725
L19	29	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	30	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	31	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	32	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	33	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	34	CCI-040125 Reinforcement	100.75 - 101.00	Auto	0.0911
L19	36	CCI-060100 Reinforcement	100.75 - 101.00	Auto	0.3941
L19	37	CCI-060100 Reinforcement	100.75 - 101.00	Auto	0.3941
L19	38	CCI-060100 Reinforcement	100.75 - 101.00	Auto	0.3941
L20	29	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	30	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	31	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	32	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	33	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	34	CCI-040125 Reinforcement	95.75 - 100.75	Auto	0.0639
L20	36	CCI-060100 Reinforcement	98.25 - 100.75	Auto	0.3828
L20	37	CCI-060100 Reinforcement	98.25 - 100.75	Auto	0.3828
L20	38	CCI-060100 Reinforcement	98.25 - 100.75	Auto	0.3828
L21	13	CCI-045100 Reinforcement	87.83 - 90.00	Auto	0.0943
L21	14	CCI-045100 Reinforcement	87.83 - 90.00	Auto	0.0943
L21	15	CCI-045100 Reinforcement	87.83 - 90.00	Auto	0.0943
L21	29	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L21	30	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L21	31	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L21	32	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L21	33	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L21	34	CCI-040125 Reinforcement	87.83 - 95.75	Auto	0.0108
L22	13	CCI-045100 Reinforcement	86.83 - 87.83	Auto	0.2000
L22	14	CCI-045100 Reinforcement	86.83 - 87.83	Auto	0.2000
L22	15	CCI-045100 Reinforcement	86.83 - 87.83	Auto	0.2000
L22	29	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000
L22	30	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	31	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000
L22	32	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000
L22	33	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000
L22	34	CCI-040125 Reinforcement	86.83 - 87.83	Auto	0.1000
L23	13	CCI-045100 Reinforcement	81.83 - 86.83	Auto	0.1730
L23	14	CCI-045100 Reinforcement	81.83 - 86.83	Auto	0.1730
L23	15	CCI-045100 Reinforcement	81.83 - 86.83	Auto	0.1730
L23	29	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L23	30	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L23	31	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L23	32	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L23	33	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L23	34	CCI-040125 Reinforcement	81.83 - 86.83	Auto	0.0697
L24	13	CCI-045100 Reinforcement	81.50 - 81.83	Auto	0.1534
L24	14	CCI-045100 Reinforcement	81.50 - 81.83	Auto	0.1534
L24	15	CCI-045100 Reinforcement	81.50 - 81.83	Auto	0.1534
L24	18	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	20	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	22	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	24	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	26	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	28	CCI-065125 Reinforcement	81.50 - 81.80	Auto	0.4138
L24	29	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L24	30	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L24	31	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L24	32	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L24	33	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L24	34	CCI-040125 Reinforcement	81.80 - 81.83	Auto	0.0488
L25	13	CCI-045100 Reinforcement	81.25 - 81.50	Auto	0.1611
L25	14	CCI-045100 Reinforcement	81.25 - 81.50	Auto	0.1611
L25	15	CCI-045100 Reinforcement	81.25 - 81.50	Auto	0.1611
L25	18	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192
L25	20	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192
L25	22	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L25	24	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192
L25	26	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192
L25	28	CCI-065125 Reinforcement	81.25 - 81.50	Auto	0.4192
L26	13	CCI-045100 Reinforcement	80.00 - 81.25	Auto	0.1458
L26	14	CCI-045100 Reinforcement	80.00 - 81.25	Auto	0.1458
L26	15	CCI-045100 Reinforcement	80.00 - 81.25	Auto	0.1458
L26	18	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L26	20	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L26	22	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L26	24	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L26	26	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L26	28	CCI-065125 Reinforcement	76.25 - 81.25	Auto	0.3991
L27	18	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L27	20	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L27	22	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L27	24	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L27	26	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L27	28	CCI-065125 Reinforcement	71.25 - 76.25	Auto	0.3668
L28	18	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L28	20	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L28	22	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L28	24	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L28	26	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L28	28	CCI-065125 Reinforcement	66.25 - 71.25	Auto	0.3346
L29	18	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L29	20	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L29	22	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L29	24	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L29	26	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L29	28	CCI-065125 Reinforcement	61.25 - 66.25	Auto	0.3057
L30	18	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768
L30	20	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768
L30	22	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768
L30	24	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L30	26	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768
L30	28	CCI-065125 Reinforcement	56.25 - 61.25	Auto	0.2768
L31	18	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L31	20	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L31	22	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L31	24	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L31	26	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L31	28	CCI-065125 Reinforcement	51.25 - 56.25	Auto	0.2446
L32	5	CCI-060100 Reinforcement	43.33 - 45.10	Auto	0.1290
L32	6	CCI-060100 Reinforcement	45.10 - 47.33	Auto	0.1400
L32	7	CCI-060100 Reinforcement	43.33 - 45.10	Auto	0.1290
L32	8	CCI-060100 Reinforcement	45.10 - 47.33	Auto	0.1400
L32	9	CCI-060100 Reinforcement	43.33 - 45.10	Auto	0.1290
L32	10	CCI-060100 Reinforcement	45.10 - 47.33	Auto	0.1400
L32	11	CCI-060100 Reinforcement	43.33 - 45.10	Auto	0.1290
L32	12	CCI-060100 Reinforcement	45.10 - 47.33	Auto	0.1400
L32	18	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L32	20	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L32	22	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L32	24	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L32	26	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L32	28	CCI-065125 Reinforcement	43.33 - 51.25	Auto	0.2117
L33	5	CCI-060100 Reinforcement	42.33 - 43.33	Auto	0.2057
L33	7	CCI-060100 Reinforcement	42.33 - 43.33	Auto	0.2057
L33	9	CCI-060100 Reinforcement	42.33 - 43.33	Auto	0.2057
L33	11	CCI-060100 Reinforcement	42.33 - 43.33	Auto	0.2057
L33	18	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L33	20	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L33	22	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L33	24	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L33	26	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L33	28	CCI-065125 Reinforcement	42.33 - 43.33	Auto	0.2668
L34	5	CCI-060100 Reinforcement	37.40 - 42.33	Auto	0.1857
L34	7	CCI-060100 Reinforcement	37.40 - 42.33	Auto	0.1857

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L34	9	CCI-060100 Reinforcement	37.40 - 42.33	Auto	0.1857
L34	11	CCI-060100 Reinforcement	37.40 - 42.33	Auto	0.1857
L34	18	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L34	20	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L34	22	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L34	24	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L34	26	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L34	28	CCI-065125 Reinforcement	37.40 - 42.33	Auto	0.2484
L35	5	CCI-060100 Reinforcement	37.15 - 37.40	Auto	0.1714
L35	7	CCI-060100 Reinforcement	37.15 - 37.40	Auto	0.1714
L35	9	CCI-060100 Reinforcement	37.15 - 37.40	Auto	0.1714
L35	11	CCI-060100 Reinforcement	37.15 - 37.40	Auto	0.1714
L35	18	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L35	20	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L35	22	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L35	24	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L35	26	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L35	28	CCI-065125 Reinforcement	37.15 - 37.40	Auto	0.2352
L36	5	CCI-060100 Reinforcement	32.15 - 37.15	Auto	0.1496
L36	7	CCI-060100 Reinforcement	32.15 - 37.15	Auto	0.1496
L36	9	CCI-060100 Reinforcement	32.15 - 37.15	Auto	0.1496
L36	11	CCI-060100 Reinforcement	32.15 - 37.15	Auto	0.1496
L36	18	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L36	20	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L36	22	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L36	24	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L36	26	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L36	28	CCI-065125 Reinforcement	32.15 - 37.15	Auto	0.2151
L37	5	CCI-060100 Reinforcement	27.15 - 32.15	Auto	0.1148
L37	7	CCI-060100 Reinforcement	27.15 - 32.15	Auto	0.1148
L37	9	CCI-060100 Reinforcement	27.15 - 32.15	Auto	0.1148
L37	11	CCI-060100 Reinforcement	27.15 - 32.15	Auto	0.1148
L37	18	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828
L37	20	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L37	22	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828
L37	24	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828
L37	26	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828
L37	28	CCI-065125 Reinforcement	27.15 - 32.15	Auto	0.1828
L38	1	CCI-065125 Reinforcement	22.15 - 22.25	Auto	0.1416
L38	2	CCI-065125 Reinforcement	22.15 - 22.25	Auto	0.1416
L38	3	CCI-065125 Reinforcement	22.15 - 22.25	Auto	0.1416
L38	4	CCI-065125 Reinforcement	22.15 - 22.25	Auto	0.1416
L38	5	CCI-060100 Reinforcement	22.25 - 27.15	Auto	0.0838
L38	7	CCI-060100 Reinforcement	22.25 - 27.15	Auto	0.0838
L38	9	CCI-060100 Reinforcement	22.25 - 27.15	Auto	0.0838
L38	11	CCI-060100 Reinforcement	22.25 - 27.15	Auto	0.0838
L38	17	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	18	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L38	19	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	20	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L38	21	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	22	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L38	23	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	24	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L38	25	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	26	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L38	27	CCI-065125 Reinforcement	22.15 - 26.01	Auto	0.1511
L38	28	CCI-065125 Reinforcement	26.01 - 27.15	Auto	0.1638
L39	1	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	2	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	3	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	4	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	17	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	19	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	21	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	23	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	25	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312
L39	27	CCI-065125 Reinforcement	19.50 - 22.15	Auto	0.1312

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L40	1	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	2	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	3	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	4	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	17	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	19	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	21	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	23	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	25	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L40	27	CCI-065125 Reinforcement	19.25 - 19.50	Auto	0.1441
L41	1	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	2	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	3	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	4	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	17	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	19	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	21	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	23	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	25	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L41	27	CCI-065125 Reinforcement	14.25 - 19.25	Auto	0.1240
L42	1	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	2	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	3	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	4	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	17	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	19	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	21	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	23	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	25	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L42	27	CCI-065125 Reinforcement	9.25 - 14.25	Auto	0.0985
L43	1	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	2	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	3	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	4	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L43	17	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	19	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	21	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	23	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	25	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L43	27	CCI-065125 Reinforcement	9.00 - 9.25	Auto	0.0852
L44	1	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	2	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	3	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	4	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	17	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	19	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	21	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	23	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	25	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L44	27	CCI-065125 Reinforcement	8.75 - 9.00	Auto	0.0907
L45	1	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	2	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	3	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	4	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	17	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	19	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	21	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	23	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	25	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L45	27	CCI-065125 Reinforcement	7.00 - 8.75	Auto	0.0856
L46	1	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	2	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	3	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	4	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	17	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	19	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	21	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	23	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L46	25	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L46	27	CCI-065125 Reinforcement	6.75 - 7.00	Auto	0.0670
L47	1	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	2	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	3	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	4	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	17	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	19	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	21	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	23	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	25	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L47	27	CCI-065125 Reinforcement	5.00 - 6.75	Auto	0.0619
L48	1	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	2	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	3	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	4	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	17	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	19	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	21	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	23	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	25	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L48	27	CCI-065125 Reinforcement	4.75 - 5.00	Auto	0.1854
L49	1	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	2	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	3	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	4	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	17	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	19	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	21	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	23	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	25	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L49	27	CCI-065125 Reinforcement	3.00 - 4.75	Auto	0.1736
L50	1	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	2	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L50	3	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	4	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	17	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	19	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	21	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	23	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	25	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L50	27	CCI-065125 Reinforcement	2.75 - 3.00	Auto	0.1752
L51	1	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	2	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	3	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	4	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	17	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	19	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	21	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	23	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	25	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L51	27	CCI-065125 Reinforcement	2.25 - 2.75	Auto	0.1733
L52	1	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	2	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	3	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	4	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	17	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	19	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	21	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	23	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	25	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L52	27	CCI-065125 Reinforcement	2.00 - 2.25	Auto	0.1037
L53	1	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	2	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	3	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	4	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	17	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	19	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L53	21	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	23	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	25	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912
L53	27	CCI-065125 Reinforcement	0.00 - 2.00	Auto	0.0912

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment ° ft	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.76 4.12 4.48 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.76 4.12 4.48 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.76 4.12 4.48 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
KRY 112 144/1	A	From Leg	4.00 0.00	0.0000	165.00	No Ice 1/2"	0.35 0.43	0.17 0.23	0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.00					Ice	0.51	0.30	0.02
								1" Ice	0.70	0.46	0.03
								2" Ice			
KRY 112 144/1	B	From Leg	4.00			0.0000	165.00	No Ice	0.35	0.17	0.01
			0.00					1/2"	0.43	0.23	0.01
			1.00					Ice	0.51	0.30	0.02
								1" Ice	0.70	0.46	0.03
								2" Ice			
KRY 112 144/1	C	From Leg	4.00			0.0000	165.00	No Ice	0.35	0.17	0.01
			0.00					1/2"	0.43	0.23	0.01
			1.00					Ice	0.51	0.30	0.02
								1" Ice	0.70	0.46	0.03
								2" Ice			
SDX1926Q-43	A	From Leg	4.00			0.0000	165.00	No Ice	0.24	0.10	0.01
			0.00					1/2"	0.31	0.14	0.01
			1.00					Ice	0.38	0.19	0.01
								1" Ice	0.55	0.32	0.02
								2" Ice			
SDX1926Q-43	B	From Leg	4.00			0.0000	165.00	No Ice	0.24	0.10	0.01
			0.00					1/2"	0.31	0.14	0.01
			1.00					Ice	0.38	0.19	0.01
								1" Ice	0.55	0.32	0.02
								2" Ice			
SDX1926Q-43	C	From Leg	4.00			0.0000	165.00	No Ice	0.24	0.10	0.01
			0.00					1/2"	0.31	0.14	0.01
			1.00					Ice	0.38	0.19	0.01
								1" Ice	0.55	0.32	0.02
								2" Ice			
RRUS 4415 B25_CCIV2	A	From Leg	4.00			0.0000	165.00	No Ice	1.84	0.82	0.05
			0.00					1/2"	2.01	0.94	0.06
			1.00					Ice	2.19	1.07	0.08
								1" Ice	2.57	1.37	0.12
								2" Ice			
RRUS 4415 B25_CCIV2	B	From Leg	4.00			0.0000	165.00	No Ice	1.84	0.82	0.05
			0.00					1/2"	2.01	0.94	0.06
			1.00					Ice	2.19	1.07	0.08
								1" Ice	2.57	1.37	0.12
								2" Ice			
RRUS 4415 B25_CCIV2	C	From Leg	4.00			0.0000	165.00	No Ice	1.84	0.82	0.05
			0.00					1/2"	2.01	0.94	0.06
			1.00					Ice	2.19	1.07	0.08
								1" Ice	2.57	1.37	0.12
								2" Ice			
(3) RADIO 4449 B12/B71	C	From Leg	4.00			0.0000	165.00	No Ice	1.65	1.16	0.07
			0.00					1/2"	1.81	1.30	0.09
			1.00					Ice	1.98	1.45	0.11
								1" Ice	2.34	1.76	0.16
								2" Ice			
8-ft Ladder	C	None				0.0000	165.00	No Ice	7.07	7.07	0.04
								1/2"	9.73	9.73	0.07
								Ice	11.19	11.19	0.08
								1" Ice	13.98	13.98	0.11
								2" Ice			
Platform Mount [LP 601-1]	C	None				0.0000	165.00	No Ice	28.50	28.50	1.12
								1/2"	31.69	31.69	1.68
								Ice	34.87	34.87	2.28
								1" Ice	41.23	41.23	3.65
								2" Ice			
HRK12 Handrail Kit	C	None				0.0000	165.00	No Ice	5.38	5.38	0.41
								1/2"	7.22	7.22	0.50
								Ice	8.88	8.88	0.63
								1" Ice	12.20	12.20	0.88
								2" Ice			
***											
DMP65R-BU8D w/ Mount	A	From Leg	4.00			0.0000	156.00	No Ice	15.89	7.89	0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.00				1/2" Ice	16.81	8.74	0.25
			2.00				1" Ice	17.76	9.60	0.38
							2" Ice	19.70	11.37	0.68
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	156.00	No Ice	15.89	7.89	0.14
			0.00				1/2" Ice	16.81	8.74	0.25
			2.00				1" Ice	17.76	9.60	0.38
							2" Ice	19.70	11.37	0.68
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	156.00	No Ice	15.89	7.89	0.14
			0.00				1/2" Ice	16.81	8.74	0.25
			2.00				1" Ice	17.76	9.60	0.38
							2" Ice	19.70	11.37	0.68
OPA65R-BU8D w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	156.00	No Ice	17.46	8.58	0.11
			0.00				1/2" Ice	18.46	9.49	0.22
			2.00				1" Ice	19.48	10.42	0.35
							2" Ice	21.58	12.33	0.66
OPA65R-BU8D w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	156.00	No Ice	17.46	8.58	0.11
			0.00				1/2" Ice	18.46	9.49	0.22
			2.00				1" Ice	19.48	10.42	0.35
							2" Ice	21.58	12.33	0.66
OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	156.00	No Ice	17.46	8.58	0.11
			0.00				1/2" Ice	18.46	9.49	0.22
			2.00				1" Ice	19.48	10.42	0.35
							2" Ice	21.58	12.33	0.66
RRUS 8843 B2/B66A	A	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	1.35	0.07
			0.00				1/2" Ice	1.80	1.50	0.09
			2.00				1" Ice	1.97	1.65	0.11
							2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	B	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	1.35	0.07
			0.00				1/2" Ice	1.80	1.50	0.09
			2.00				1" Ice	1.97	1.65	0.11
							2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	C	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	1.35	0.07
			0.00				1/2" Ice	1.80	1.50	0.09
			2.00				1" Ice	1.97	1.65	0.11
							2" Ice	2.32	1.99	0.16
RADIO 4415 B30	A	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
			2.00				1" Ice	1.97	0.87	0.07
							2" Ice	2.33	1.13	0.11
RADIO 4415 B30	B	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
			2.00				1" Ice	1.97	0.87	0.07
							2" Ice	2.33	1.13	0.11
RADIO 4415 B30	C	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	0.64	0.04
			0.00				1/2" Ice	1.80	0.75	0.05
			2.00				1" Ice	1.97	0.87	0.07
							2" Ice	2.33	1.13	0.11
RADIO 4449 B5/B12	A	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	1.30	0.07
			0.00				1/2" Ice	1.80	1.45	0.09
			2.00				1" Ice	1.97	1.60	0.11
							2" Ice	2.33	1.92	0.16
RADIO 4449 B5/B12	B	From Leg	4.00	0.00	0.0000	156.00	No Ice	1.64	1.30	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 2.00			1/2" Ice 1" Ice 2" Ice	1.80 1.97 2.33	1.45 1.60 1.92	0.09 0.11 0.16
RADIO 4449 B5/B12	C	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.30 1.45 1.60 1.92	0.07 0.09 0.11 0.16
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
Platform Mount [LP 601-1]	C	None		0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	28.50 31.69 34.87 41.23	28.50 31.69 34.87 41.23	1.12 1.68 2.28 3.65
HRK14	C	None		0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.01 8.27 10.20 14.06	6.01 8.27 10.20 14.06	0.44 0.54 0.68 0.96
***									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
800MHZ RRH	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00 0.00 0.00		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00 0.00 0.00		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
RRH2X50-800	A	From Leg	4.00 0.00 0.00		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
RRH2X50-800	B	From Leg	4.00 0.00 0.00		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
RRH2X50-800	C	From Leg	4.00 0.00 0.00		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
T-Arm Mount [TA 702-3]	C	None			0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.75 5.82 6.98 9.72	4.75 5.82 6.98 9.72	0.34 0.43 0.55 0.87
***										
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
TA08025-B604	A	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	C	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00		0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.19 2.37 2.76	1.17 1.31 1.46 1.78	0.02 0.04 0.06 0.11
MC-PK8-DSH	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.93 21.04 23.83 29.41	17.34 20.45 23.10 28.40	1.47 1.71 2.00 2.58
***									
LLPX310R w/ Mount Pipe	A	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
LLPX310R w/ Mount Pipe	B	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
LLPX310R w/ Mount Pipe	C	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
HORIZON DUO	A	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.65 0.86	0.29 0.37 0.44 0.62	0.01 0.01 0.02 0.04
HORIZON DUO	C	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.65 0.86	0.29 0.37 0.44 0.62	0.01 0.01 0.02 0.04
WIMAX DAP HEAD	A	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
WIMAX DAP HEAD	B	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
WIMAX DAP HEAD	C	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
2.375" OD x 5' Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	2.46	2.46	0.08
						2" Ice			
2.375" OD x 5' Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice	1.19	1.19	0.02
						1/2" Ice	1.50	1.50	0.03
						1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
2.375" OD x 5' Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice	1.19	1.19	0.02
						1/2" Ice	1.50	1.50	0.03
						1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
Side Arm Mount [SO 701-3]	C	None		0.0000	124.00	No Ice	3.02	3.02	0.20
						1/2" Ice	4.18	4.18	0.24
						1" Ice	5.33	5.33	0.28
						2" Ice	7.63	7.63	0.36
***									
CXL 900-3LW	B	From Leg	4.00 0.00 1.00	0.0000	118.00	No Ice	0.14	0.14	0.00
						1/2" Ice	0.33	0.33	0.00
						1" Ice	0.48	0.48	0.01
						2" Ice	0.81	0.81	0.02
CAVITY FILTER	B	From Leg	4.00 0.00 1.00	0.0000	118.00	No Ice	0.19	0.08	0.00
						1/2" Ice	0.25	0.12	0.00
						1" Ice	0.32	0.17	0.01
						2" Ice	0.47	0.29	0.02
LNA	B	From Leg	4.00 0.00 1.00	0.0000	118.00	No Ice	0.14	0.05	0.00
						1/2" Ice	0.19	0.09	0.00
						1" Ice	0.25	0.13	0.00
						2" Ice	0.39	0.24	0.01
Side Arm Mount [SO 304-1]	B	From Leg	0.00 0.00 0.00	0.0000	118.00	No Ice	0.31	0.88	0.02
						1/2" Ice	0.50	1.26	0.03
						1" Ice	0.73	1.67	0.05
						2" Ice	1.29	2.58	0.09
***									
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice	7.97	5.99	0.08
						1/2" Ice	8.73	6.72	0.14
						1" Ice	9.51	7.47	0.21
						2" Ice	11.11	9.02	0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice	7.97	5.99	0.08
						1/2" Ice	8.73	6.72	0.14
						1" Ice	9.51	7.47	0.21
						2" Ice	11.11	9.02	0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice	7.97	5.99	0.08
						1/2" Ice	8.73	6.72	0.14
						1" Ice	9.51	7.47	0.21
						2" Ice	11.11	9.02	0.40
(2) LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice	4.09	3.30	0.06
						1/2" Ice	4.49	3.68	0.13
						1" Ice	4.89	4.06	0.20
						2" Ice	5.71	4.87	0.38
(2) LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice	4.09	3.30	0.06
						1/2" Ice	4.49	3.68	0.13
						1" Ice	4.89	4.06	0.20
						2" Ice	5.71	4.87	0.38
(2) LNX-6514DS-A1M w/	C	From Leg	4.00	0.0000	111.00	No Ice	4.09	3.30	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	4.49	3.68	0.13
			0.00			1" Ice	4.89	4.06	0.20
						2" Ice	5.71	4.87	0.38
B4 RRH2X60-4R	A	From Leg	4.00	0.0000	111.00	No Ice	3.36	2.00	0.06
			0.00			1/2" Ice	3.61	2.24	0.08
			0.00			1" Ice	3.88	2.48	0.11
						2" Ice	4.42	2.97	0.18
B4 RRH2X60-4R	B	From Leg	4.00	0.0000	111.00	No Ice	3.36	2.00	0.06
			0.00			1/2" Ice	3.61	2.24	0.08
			0.00			1" Ice	3.88	2.48	0.11
						2" Ice	4.42	2.97	0.18
B4 RRH2X60-4R	C	From Leg	4.00	0.0000	111.00	No Ice	3.36	2.00	0.06
			0.00			1/2" Ice	3.61	2.24	0.08
			0.00			1" Ice	3.88	2.48	0.11
						2" Ice	4.42	2.97	0.18
(2) RRFDC-3315-PF-48	B	From Leg	4.00	0.0000	111.00	No Ice	3.36	2.19	0.03
			0.00			1/2" Ice	3.60	2.39	0.06
			0.00			1" Ice	3.84	2.61	0.09
						2" Ice	4.34	3.05	0.17
Platform Mount [LP 303-1]	C	None		0.0000	111.00	No Ice	14.69	14.69	1.25
						1/2" Ice	18.01	18.01	1.57
						1" Ice	21.34	21.34	1.94
						2" Ice	28.08	28.08	2.85

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP800-11	A	Paraboloid w/Shroud (HP)	From Leg	3.00	60.0000		124.00	2.80	No Ice	6.16	0.02
				0.00					1/2" Ice	6.53	0.06
				4.00					1" Ice	6.90	0.09
									2" Ice	7.64	0.17
VHLP800-11	C	Paraboloid w/Shroud (HP)	From Leg	3.00	10.0000		124.00	2.80	No Ice	6.16	0.02
				0.00					1/2" Ice	6.53	0.06
				4.00					1" Ice	6.90	0.09
									2" Ice	7.64	0.17

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 169.00-164.00	166.48	1.409	51	6.744	A	0.000	6.744	6.744	100.00	0.000	0.000
					B	0.000	6.744		100.00	0.000	0.000
					C	0.000	6.744		100.00	1.188	0.000
L2 164.00-159.00	161.48	1.4	50	7.148	A	0.000	7.148	7.148	100.00	0.000	0.000
					B	0.000	7.148		100.00	0.000	0.000
					C	0.000	7.148		100.00	5.940	0.000
L3 159.00-154.00	156.48	1.391	50	7.552	A	0.000	7.552	7.552	100.00	0.000	0.000
					B	0.000	7.552		100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	7.552		100.00	5.940	0.000
L4 154.00-149.00	151.48	1.381	50	7.955	A	0.000	7.955	7.955	100.00	0.000	0.000
					B	0.000	7.955		100.00	0.000	0.000
					C	0.000	7.955		100.00	5.940	0.000
L5 149.00-144.00	146.48	1.372	49	8.359	A	0.000	8.359	8.359	100.00	0.000	0.000
					B	0.000	8.359		100.00	0.000	0.000
					C	0.000	8.359		100.00	5.940	0.000
L6 144.00-139.00	141.48	1.362	49	8.763	A	0.000	8.763	8.763	100.00	0.000	0.000
					B	0.000	8.763		100.00	0.000	0.000
					C	0.000	8.763		100.00	5.940	0.000
L7 139.00-133.33	136.14	1.351	49	10.426	A	0.000	10.426	10.426	100.00	0.000	0.000
					B	0.000	10.426		100.00	0.000	0.000
					C	0.000	10.426		100.00	6.736	0.000
L8 133.33-131.66	132.49	1.343	48	3.096	A	0.000	3.096	3.096	100.00	0.000	0.000
					B	0.000	3.096		100.00	0.000	0.000
					C	0.000	3.096		100.00	1.984	0.000
L9 131.66-126.66	129.14	1.336	48	9.536	A	0.000	9.536	9.536	100.00	0.000	0.000
					B	0.000	9.536		100.00	0.000	0.000
					C	0.000	9.536		100.00	5.940	0.000
L10 126.66-121.66	124.14	1.325	48	9.934	A	0.000	9.934	9.934	100.00	0.000	0.000
					B	0.000	9.934		100.00	0.000	0.000
					C	0.000	9.934		100.00	7.198	0.000
L11 121.66-116.66	119.14	1.313	47	10.331	A	0.000	10.331	10.331	100.00	0.000	0.000
					B	0.000	10.331		100.00	0.084	0.000
					C	0.000	10.331		100.00	8.627	0.000
L12 116.66-111.66	114.14	1.301	47	10.729	A	0.000	10.729	10.729	100.00	0.000	0.000
					B	0.000	10.729		100.00	0.315	0.000
					C	0.000	10.729		100.00	8.627	0.000
L13 111.66-111.00	111.33	1.295	47	1.446	A	0.000	1.446	1.446	100.00	0.000	0.000
					B	0.000	1.446		100.00	0.042	0.000
					C	0.000	1.446		100.00	1.139	0.000
L14 111.00-110.75	110.87	1.293	47	0.549	A	0.000	0.549	0.549	100.00	0.446	0.000
					B	0.000	0.549		100.00	0.016	0.000
					C	0.000	0.549		100.00	0.431	0.000
L15 110.75-105.75	108.24	1.287	46	11.184	A	0.000	11.184	11.184	100.00	11.190	0.000
					B	0.000	11.184		100.00	2.595	0.000
					C	0.000	11.184		100.00	10.908	0.000
L16 105.75-101.50	103.61	1.275	46	9.820	A	0.000	9.820	9.820	100.00	14.783	0.000
					B	0.000	9.820		100.00	7.478	0.000
					C	0.000	9.820		100.00	14.543	0.000
L17 101.50-101.25	101.37	1.269	46	0.585	A	0.000	0.585	0.585	100.00	1.007	0.000
					B	0.000	0.585		100.00	0.577	0.000
					C	0.000	0.585		100.00	0.993	0.000
L18 101.25-101.00	101.12	1.269	46	0.586	A	0.000	0.586	0.586	100.00	1.007	0.000
					B	0.000	0.586		100.00	0.577	0.000
					C	0.000	0.586		100.00	0.993	0.000
L19 101.00-100.75	100.87	1.268	46	0.588	A	0.000	0.588	0.588	100.00	1.007	0.000
					B	0.000	0.588		100.00	0.577	0.000
					C	0.000	0.588		100.00	0.993	0.000
L20 100.75-95.75	98.24	1.261	45	11.970	A	0.000	11.970	11.970	100.00	17.857	0.000
					B	0.000	11.970		100.00	9.262	0.000
					C	0.000	11.970		100.00	17.574	0.000
L21 95.75-87.83	91.76	1.243	45	19.776	A	0.000	19.776	19.776	100.00	26.301	0.000
					B	0.000	19.776		100.00	12.686	0.000
					C	0.000	19.776		100.00	25.853	0.000
L22 87.83-86.83	87.33	1.23	44	2.512	A	0.000	2.512	2.512	100.00	3.865	0.000
					B	0.000	2.512		100.00	2.146	0.000
					C	0.000	2.512		100.00	3.809	0.000
L23 86.83-81.83	84.32	1.221	44	12.800	A	0.000	12.800	12.800	100.00	19.327	0.000
					B	0.000	12.800		100.00	10.732	0.000
					C	0.000	12.800		100.00	19.044	0.000
L24 81.83-81.50	81.66	1.213	44	0.859	A	0.000	0.859	0.859	100.00	1.526	0.000
					B	0.000	0.859		100.00	0.958	0.000
					C	0.000	0.859		100.00	1.507	0.000
L25 81.50-81.25	81.37	1.212	44	0.652	A	0.000	0.652	0.652	100.00	1.175	0.000
					B	0.000	0.652		100.00	0.745	0.000
					C	0.000	0.652		100.00	1.161	0.000
L26 81.25-	78.74	1.204	43	13.244	A	0.000	13.244	13.244	100.00	20.681	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
76.25					B	0.000	13.244		100.00	12.086	0.000
					C	0.000	13.244		100.00	20.398	0.000
L27 76.25-71.25	73.74	1.187	43	13.644	A	0.000	13.644	13.644	100.00	19.743	0.000
					B	0.000	13.644		100.00	11.148	0.000
					C	0.000	13.644		100.00	19.461	0.000
L28 71.25-66.25	68.74	1.17	42	14.044	A	0.000	14.044	14.044	100.00	19.743	0.000
					B	0.000	14.044		100.00	11.148	0.000
					C	0.000	14.044		100.00	19.461	0.000
L29 66.25-61.25	63.74	1.151	41	14.443	A	0.000	14.443	14.443	100.00	19.743	0.000
					B	0.000	14.443		100.00	11.148	0.000
					C	0.000	14.443		100.00	19.461	0.000
L30 61.25-56.25	58.74	1.132	41	14.842	A	0.000	14.842	14.842	100.00	19.743	0.000
					B	0.000	14.842		100.00	11.148	0.000
					C	0.000	14.842		100.00	19.461	0.000
L31 56.25-51.25	53.74	1.111	40	15.241	A	0.000	15.241	15.241	100.00	19.743	0.000
					B	0.000	15.241		100.00	11.148	0.000
					C	0.000	15.241		100.00	19.461	0.000
L32 51.25-43.33	47.26	1.081	39	24.957	A	0.000	24.957	24.957	100.00	37.680	0.000
					B	0.000	24.957		100.00	20.862	0.000
					C	0.000	24.957		100.00	34.029	0.000
L33 43.33-42.33	42.83	1.059	38	3.156	A	0.000	3.156	3.156	100.00	5.949	0.000
					B	0.000	3.156		100.00	3.230	0.000
					C	0.000	3.156		100.00	4.892	0.000
L34 42.33-37.40	39.85	1.043	38	15.791	A	0.000	15.791	15.791	100.00	29.327	0.000
					B	0.000	15.791		100.00	15.922	0.000
					C	0.000	15.791		100.00	24.118	0.000
L35 37.40-37.15	37.27	1.028	37	0.811	A	0.000	0.811	0.811	100.00	1.487	0.000
					B	0.000	0.811		100.00	0.807	0.000
					C	0.000	0.811		100.00	1.223	0.000
L36 37.15-32.15	34.64	1.012	36	16.432	A	0.000	16.432	16.432	100.00	29.743	0.000
					B	0.000	16.432		100.00	16.148	0.000
					C	0.000	16.432		100.00	24.461	0.000
L37 32.15-27.15	29.64	0.98	35	16.831	A	0.000	16.831	16.831	100.00	29.743	0.000
					B	0.000	16.831		100.00	16.148	0.000
					C	0.000	16.831		100.00	24.461	0.000
L38 27.15-22.15	24.64	0.942	34	17.229	A	0.000	17.229	17.229	100.00	29.760	0.000
					B	0.000	17.229		100.00	16.157	0.000
					C	0.000	17.229		100.00	24.469	0.000
L39 22.15-19.50	20.82	0.91	33	9.293	A	0.000	9.293	9.293	100.00	16.206	0.000
					B	0.000	9.293		100.00	8.779	0.000
					C	0.000	9.293		100.00	13.185	0.000
L40 19.50-19.25	19.37	0.896	32	0.882	A	0.000	0.882	0.882	100.00	1.529	0.000
					B	0.000	0.882		100.00	0.828	0.000
					C	0.000	0.882		100.00	1.244	0.000
L41 19.25-14.25	16.74	0.869	31	17.855	A	0.000	17.855	17.855	100.00	30.577	0.000
					B	0.000	17.855		100.00	16.565	0.000
					C	0.000	17.855		100.00	24.878	0.000
L42 14.25-9.25	11.74	0.85	31	18.252	A	0.000	18.252	18.252	100.00	30.577	0.000
					B	0.000	18.252		100.00	16.565	0.000
					C	0.000	18.252		100.00	24.878	0.000
L43 9.25-9.00	9.12	0.85	31	0.923	A	0.000	0.923	0.923	100.00	1.529	0.000
					B	0.000	0.923		100.00	0.828	0.000
					C	0.000	0.923		100.00	1.244	0.000
L44 9.00-8.75	8.87	0.85	31	0.924	A	0.000	0.924	0.924	100.00	1.529	0.000
					B	0.000	0.924		100.00	0.828	0.000
					C	0.000	0.924		100.00	1.244	0.000
L45 8.75-7.00	7.87	0.85	31	6.496	A	0.000	6.496	6.496	100.00	10.702	0.000
					B	0.000	6.496		100.00	5.798	0.000
					C	0.000	6.496		100.00	8.707	0.000
L46 7.00-6.75	6.87	0.85	31	0.932	A	0.000	0.932	0.932	100.00	1.529	0.000
					B	0.000	0.932		100.00	0.828	0.000
					C	0.000	0.932		100.00	1.244	0.000
L47 6.75-5.00	5.87	0.85	31	6.552	A	0.000	6.552	6.552	100.00	10.702	0.000
					B	0.000	6.552		100.00	5.798	0.000
					C	0.000	6.552		100.00	8.707	0.000
L48 5.00-4.75	4.87	0.85	31	0.939	A	0.000	0.939	0.939	100.00	1.529	0.000
					B	0.000	0.939		100.00	0.828	0.000
					C	0.000	0.939		100.00	1.244	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L49 4.75-3.00	3.87	0.85	31	6.598	A	0.000	6.598	6.598	100.00	10.702	0.000
					B	0.000	6.598		100.00	5.798	0.000
					C	0.000	6.598		100.00	8.707	0.000
L50 3.00-2.75	2.87	0.85	31	0.946	A	0.000	0.946	0.946	100.00	1.529	0.000
					B	0.000	0.946		100.00	0.828	0.000
					C	0.000	0.946		100.00	1.244	0.000
L51 2.75-2.25	2.50	0.85	31	1.896	A	0.000	1.896	1.896	100.00	3.058	0.000
					B	0.000	1.896		100.00	1.657	0.000
					C	0.000	1.896		100.00	2.488	0.000
L52 2.25-2.00	2.12	0.85	31	0.950	A	0.000	0.950	0.950	100.00	1.529	0.000
					B	0.000	0.950		100.00	0.828	0.000
					C	0.000	0.950		100.00	1.244	0.000
L53 2.00-0.00	1.00	0.85	31	7.638	A	0.000	7.638	7.638	100.00	12.231	0.000
					B	0.000	7.638		100.00	6.626	0.000
					C	0.000	7.638		100.00	9.951	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 169.00-164.00	166.48	1.409	8	1.9986	8.409	A	0.000	8.409	8.409	100.00	0.000	0.000
						B	0.000	8.409		100.00	0.000	0.000
						C	0.000	8.409		100.00	1.985	0.000
L2 164.00-159.00	161.48	1.4	8	1.9925	8.808	A	0.000	8.808	8.808	100.00	0.000	0.000
						B	0.000	8.808		100.00	0.000	0.000
						C	0.000	8.808		100.00	9.916	0.000
L3 159.00-154.00	156.48	1.391	8	1.9863	9.207	A	0.000	9.207	9.207	100.00	0.000	0.000
						B	0.000	9.207		100.00	0.000	0.000
						C	0.000	9.207		100.00	9.908	0.000
L4 154.00-149.00	151.48	1.381	8	1.9799	9.605	A	0.000	9.605	9.605	100.00	0.000	0.000
						B	0.000	9.605		100.00	0.000	0.000
						C	0.000	9.605		100.00	9.900	0.000
L5 149.00-144.00	146.48	1.372	8	1.9732	10.004	A	0.000	10.004	10.004	100.00	0.000	0.000
						B	0.000	10.004		100.00	0.000	0.000
						C	0.000	10.004		100.00	9.892	0.000
L6 144.00-139.00	141.48	1.362	8	1.9664	10.402	A	0.000	10.402	10.402	100.00	0.000	0.000
						B	0.000	10.402		100.00	0.000	0.000
						C	0.000	10.402		100.00	9.883	0.000
L7 139.00-133.33	136.14	1.351	8	1.9588	12.277	A	0.000	12.277	12.277	100.00	0.000	0.000
						B	0.000	12.277		100.00	0.000	0.000
						C	0.000	12.277		100.00	11.197	0.000
L8 133.33-131.66	132.49	1.343	8	1.9535	3.641	A	0.000	3.641	3.641	100.00	0.000	0.000
						B	0.000	3.641		100.00	0.000	0.000
						C	0.000	3.641		100.00	3.298	0.000
L9 131.66-126.66	129.14	1.336	8	1.9485	11.159	A	0.000	11.159	11.159	100.00	0.000	0.000
						B	0.000	11.159		100.00	0.000	0.000
						C	0.000	11.159		100.00	9.861	0.000
L10 126.66-121.66	124.14	1.325	8	1.9408	11.551	A	0.000	11.551	11.551	100.00	0.000	0.000
						B	0.000	11.551		100.00	0.000	0.000
						C	0.000	11.551		100.00	13.430	0.000
L11 121.66-116.66	119.14	1.313	8	1.9329	11.942	A	0.000	11.942	11.942	100.00	0.000	0.000
						B	0.000	11.942		100.00	0.602	0.000
						C	0.000	11.942		100.00	17.471	0.000
L12 116.66-111.66	114.14	1.301	7	1.9246	12.333	A	0.000	12.333	12.333	100.00	0.000	0.000
						B	0.000	12.333		100.00	2.240	0.000
						C	0.000	12.333		100.00	17.442	0.000
L13 111.66-111.00	111.33	1.295	7	1.9198	1.657	A	0.000	1.657	1.657	100.00	0.000	0.000
						B	0.000	1.657		100.00	0.295	0.000
						C	0.000	1.657		100.00	2.300	0.000
L14 111.00-110.75	110.87	1.293	7	1.9190	0.629	A	0.000	0.629	0.629	100.00	0.677	0.000
						B	0.000	0.629		100.00	0.112	0.000
						C	0.000	0.629		100.00	0.871	0.000
L15 110.75-	108.24	1.287	7	1.9144	12.779	A	0.000	12.779	12.779	100.00	16.316	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
105.75						B	0.000	12.779		100.00	5.015	0.000
						C	0.000	12.779		100.00	20.192	0.000
L16 105.75-101.50	103.61	1.275	7	1.9061	11.170	A	0.000	11.170	11.170	100.00	21.463	0.000
						B	0.000	11.170		100.00	11.858	0.000
						C	0.000	11.170		100.00	24.741	0.000
L17 101.50-101.25	101.37	1.269	7	1.9019	0.664	A	0.000	0.664	0.664	100.00	1.477	0.000
						B	0.000	0.664		100.00	0.913	0.000
						C	0.000	0.664		100.00	1.670	0.000
L18 101.25-101.00	101.12	1.269	7	1.9014	0.665	A	0.000	0.665	0.665	100.00	1.477	0.000
						B	0.000	0.665		100.00	0.912	0.000
						C	0.000	0.665		100.00	1.670	0.000
L19 101.00-100.75	100.87	1.268	7	1.9010	0.667	A	0.000	0.667	0.667	100.00	1.477	0.000
						B	0.000	0.667		100.00	0.912	0.000
						C	0.000	0.667		100.00	1.670	0.000
L20 100.75-95.75	98.24	1.261	7	1.8959	13.550	A	0.000	13.550	13.550	100.00	26.746	0.000
						B	0.000	13.550		100.00	15.450	0.000
						C	0.000	13.550		100.00	30.581	0.000
L21 95.75-87.83	91.76	1.243	7	1.8830	22.262	A	0.000	22.262	22.262	100.00	39.974	0.000
						B	0.000	22.262		100.00	22.086	0.000
						C	0.000	22.262		100.00	46.002	0.000
L22 87.83-86.83	87.33	1.23	7	1.8738	2.826	A	0.000	2.826	2.826	100.00	5.743	0.000
						B	0.000	2.826		100.00	3.485	0.000
						C	0.000	2.826		100.00	6.504	0.000
L23 86.83-81.83	84.32	1.221	7	1.8672	14.356	A	0.000	14.356	14.356	100.00	28.654	0.000
						B	0.000	14.356		100.00	17.365	0.000
						C	0.000	14.356		100.00	32.424	0.000
L24 81.83-81.50	81.66	1.213	7	1.8612	0.961	A	0.000	0.961	0.961	100.00	2.140	0.000
						B	0.000	0.961		100.00	1.395	0.000
						C	0.000	0.961		100.00	2.388	0.000
L25 81.50-81.25	81.37	1.212	7	1.8606	0.729	A	0.000	0.729	0.729	100.00	1.640	0.000
						B	0.000	0.729		100.00	1.075	0.000
						C	0.000	0.729		100.00	1.828	0.000
L26 81.25-76.25	78.74	1.204	7	1.8545	14.790	A	0.000	14.790	14.790	100.00	29.192	0.000
						B	0.000	14.790		100.00	17.905	0.000
						C	0.000	14.790		100.00	32.933	0.000
L27 76.25-71.25	73.74	1.187	7	1.8423	15.179	A	0.000	15.179	15.179	100.00	27.958	0.000
						B	0.000	15.179		100.00	16.675	0.000
						C	0.000	15.179		100.00	31.672	0.000
L28 71.25-66.25	68.74	1.17	7	1.8294	15.568	A	0.000	15.568	15.568	100.00	27.917	0.000
						B	0.000	15.568		100.00	16.637	0.000
						C	0.000	15.568		100.00	31.601	0.000
L29 66.25-61.25	63.74	1.151	7	1.8157	15.956	A	0.000	15.956	15.956	100.00	27.872	0.000
						B	0.000	15.956		100.00	16.595	0.000
						C	0.000	15.956		100.00	31.526	0.000
L30 61.25-56.25	58.74	1.132	7	1.8009	16.342	A	0.000	16.342	16.342	100.00	27.824	0.000
						B	0.000	16.342		100.00	16.551	0.000
						C	0.000	16.342		100.00	31.445	0.000
L31 56.25-51.25	53.74	1.111	6	1.7850	16.729	A	0.000	16.729	16.729	100.00	27.772	0.000
						B	0.000	16.729		100.00	16.503	0.000
						C	0.000	16.729		100.00	31.357	0.000
L32 51.25-43.33	47.26	1.081	6	1.7622	27.283	A	0.000	27.283	27.283	100.00	52.369	0.000
						B	0.000	27.283		100.00	30.281	0.000
						C	0.000	27.283		100.00	53.719	0.000
L33 43.33-42.33	42.83	1.059	6	1.7449	3.450	A	0.000	3.450	3.450	100.00	8.244	0.000
						B	0.000	3.450		100.00	4.639	0.000
						C	0.000	3.450		100.00	7.599	0.000
L34 42.33-37.40	39.85	1.043	6	1.7324	17.215	A	0.000	17.215	17.215	100.00	40.491	0.000
						B	0.000	17.215		100.00	22.755	0.000
						C	0.000	17.215		100.00	37.271	0.000
L35 37.40-37.15	37.27	1.028	6	1.7208	0.883	A	0.000	0.883	0.883	100.00	2.050	0.000
						B	0.000	0.883		100.00	1.152	0.000
						C	0.000	0.883		100.00	1.886	0.000
L36 37.15-32.15	34.64	1.012	6	1.7083	17.855	A	0.000	17.855	17.855	100.00	40.939	0.000
						B	0.000	17.855		100.00	22.981	0.000
						C	0.000	17.855		100.00	37.643	0.000
L37 32.15-27.15	29.64	0.98	6	1.6818	18.233	A	0.000	18.233	18.233	100.00	40.801	0.000
						B	0.000	18.233		100.00	22.876	0.000
						C	0.000	18.233		100.00	37.472	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L38 27.15-22.15	24.64	0.942	5	1.6511	18.605	A	0.000	18.605	18.605	100.00	40.656	0.000
						B	0.000	18.605		100.00	22.761	0.000
						C	0.000	18.605		100.00	37.280	0.000
L39 22.15-19.50	20.82	0.91	5	1.6235	10.010	A	0.000	10.010	10.010	100.00	21.904	0.000
						B	0.000	10.010		100.00	12.221	0.000
						C	0.000	10.010		100.00	19.880	0.000
L40 19.50-19.25	19.37	0.896	5	1.6118	0.949	A	0.000	0.949	0.949	100.00	2.063	0.000
						B	0.000	0.949		100.00	1.151	0.000
						C	0.000	0.949		100.00	1.872	0.000
L41 19.25-14.25	16.74	0.869	5	1.5885	19.179	A	0.000	19.179	19.179	100.00	41.144	0.000
						B	0.000	19.179		100.00	22.919	0.000
						C	0.000	19.179		100.00	37.281	0.000
L42 14.25-9.25	11.74	0.85	5	1.5331	19.530	A	0.000	19.530	19.530	100.00	40.853	0.000
						B	0.000	19.530		100.00	22.697	0.000
						C	0.000	19.530		100.00	36.921	0.000
L43 9.25-9.00	9.12	0.85	5	1.4949	0.985	A	0.000	0.985	0.985	100.00	2.033	0.000
						B	0.000	0.985		100.00	1.127	0.000
						C	0.000	0.985		100.00	1.834	0.000
L44 9.00-8.75	8.87	0.85	5	1.4908	0.986	A	0.000	0.986	0.986	100.00	2.032	0.000
						B	0.000	0.986		100.00	1.126	0.000
						C	0.000	0.986		100.00	1.832	0.000
L45 8.75-7.00	7.87	0.85	5	1.4730	6.925	A	0.000	6.925	6.925	100.00	14.188	0.000
						B	0.000	6.925		100.00	7.860	0.000
						C	0.000	6.925		100.00	12.786	0.000
L46 7.00-6.75	6.87	0.85	5	1.4532	0.993	A	0.000	0.993	0.993	100.00	2.022	0.000
						B	0.000	0.993		100.00	1.119	0.000
						C	0.000	0.993		100.00	1.820	0.000
L47 6.75-5.00	5.87	0.85	5	1.4305	6.970	A	0.000	6.970	6.970	100.00	14.110	0.000
						B	0.000	6.970		100.00	7.800	0.000
						C	0.000	6.970		100.00	12.689	0.000
L48 5.00-4.75	4.87	0.85	5	1.4041	0.997	A	0.000	0.997	0.997	100.00	2.009	0.000
						B	0.000	0.997		100.00	1.109	0.000
						C	0.000	0.997		100.00	1.804	0.000
L49 4.75-3.00	3.87	0.85	5	1.3722	6.998	A	0.000	6.998	6.998	100.00	14.003	0.000
						B	0.000	6.998		100.00	7.719	0.000
						C	0.000	6.998		100.00	12.556	0.000
L50 3.00-2.75	2.87	0.85	5	1.3319	1.002	A	0.000	1.002	1.002	100.00	1.990	0.000
						B	0.000	1.002		100.00	1.095	0.000
						C	0.000	1.002		100.00	1.781	0.000
L51 2.75-2.25	2.50	0.85	5	1.3134	2.005	A	0.000	2.005	2.005	100.00	3.970	0.000
						B	0.000	2.005		100.00	2.182	0.000
						C	0.000	2.005		100.00	3.549	0.000
L52 2.25-2.00	2.12	0.85	5	1.2922	1.004	A	0.000	1.004	1.004	100.00	1.979	0.000
						B	0.000	1.004		100.00	1.087	0.000
						C	0.000	1.004		100.00	1.768	0.000
L53 2.00-0.00	1.00	0.85	5	1.1982	8.038	A	0.000	8.038	8.038	100.00	15.638	0.000
						B	0.000	8.038		100.00	8.543	0.000
						C	0.000	8.038		100.00	13.898	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 169.00-164.00	166.48	1.409	11	6.744	A	0.000	6.744	6.744	100.00	0.000	0.000
					B	0.000	6.744		100.00	0.000	0.000
					C	0.000	6.744		100.00	1.188	0.000
L2 164.00-159.00	161.48	1.4	11	7.148	A	0.000	7.148	7.148	100.00	0.000	0.000
					B	0.000	7.148		100.00	0.000	0.000
					C	0.000	7.148		100.00	5.940	0.000
L3 159.00-154.00	156.48	1.391	11	7.552	A	0.000	7.552	7.552	100.00	0.000	0.000
					B	0.000	7.552		100.00	0.000	0.000
					C	0.000	7.552		100.00	5.940	0.000
L4 154.00-	151.48	1.381	11	7.955	A	0.000	7.955	7.955	100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
149.00					B	0.000	7.955		100.00	0.000	0.000
					C	0.000	7.955		100.00	5.940	0.000
L5 149.00-144.00	146.48	1.372	11	8.359	A	0.000	8.359	8.359	100.00	0.000	0.000
					B	0.000	8.359		100.00	0.000	0.000
					C	0.000	8.359		100.00	5.940	0.000
L6 144.00-139.00	141.48	1.362	11	8.763	A	0.000	8.763	8.763	100.00	0.000	0.000
					B	0.000	8.763		100.00	0.000	0.000
					C	0.000	8.763		100.00	5.940	0.000
L7 139.00-133.33	136.14	1.351	11	10.426	A	0.000	10.426	10.426	100.00	0.000	0.000
					B	0.000	10.426		100.00	0.000	0.000
					C	0.000	10.426		100.00	6.736	0.000
L8 133.33-131.66	132.49	1.343	10	3.096	A	0.000	3.096	3.096	100.00	0.000	0.000
					B	0.000	3.096		100.00	0.000	0.000
					C	0.000	3.096		100.00	1.984	0.000
L9 131.66-126.66	129.14	1.336	10	9.536	A	0.000	9.536	9.536	100.00	0.000	0.000
					B	0.000	9.536		100.00	0.000	0.000
					C	0.000	9.536		100.00	5.940	0.000
L10 126.66-121.66	124.14	1.325	10	9.934	A	0.000	9.934	9.934	100.00	0.000	0.000
					B	0.000	9.934		100.00	0.000	0.000
					C	0.000	9.934		100.00	7.198	0.000
L11 121.66-116.66	119.14	1.313	10	10.331	A	0.000	10.331	10.331	100.00	0.000	0.000
					B	0.000	10.331		100.00	0.084	0.000
					C	0.000	10.331		100.00	8.627	0.000
L12 116.66-111.66	114.14	1.301	10	10.729	A	0.000	10.729	10.729	100.00	0.000	0.000
					B	0.000	10.729		100.00	0.315	0.000
					C	0.000	10.729		100.00	8.627	0.000
L13 111.66-111.00	111.33	1.295	10	1.446	A	0.000	1.446	1.446	100.00	0.000	0.000
					B	0.000	1.446		100.00	0.042	0.000
					C	0.000	1.446		100.00	1.139	0.000
L14 111.00-110.75	110.87	1.293	10	0.549	A	0.000	0.549	0.549	100.00	0.446	0.000
					B	0.000	0.549		100.00	0.016	0.000
					C	0.000	0.549		100.00	0.431	0.000
L15 110.75-105.75	108.24	1.287	10	11.184	A	0.000	11.184	11.184	100.00	11.190	0.000
					B	0.000	11.184		100.00	2.595	0.000
					C	0.000	11.184		100.00	10.908	0.000
L16 105.75-101.50	103.61	1.275	10	9.820	A	0.000	9.820	9.820	100.00	14.783	0.000
					B	0.000	9.820		100.00	7.478	0.000
					C	0.000	9.820		100.00	14.543	0.000
L17 101.50-101.25	101.37	1.269	10	0.585	A	0.000	0.585	0.585	100.00	1.007	0.000
					B	0.000	0.585		100.00	0.577	0.000
					C	0.000	0.585		100.00	0.993	0.000
L18 101.25-101.00	101.12	1.269	10	0.586	A	0.000	0.586	0.586	100.00	1.007	0.000
					B	0.000	0.586		100.00	0.577	0.000
					C	0.000	0.586		100.00	0.993	0.000
L19 101.00-100.75	100.87	1.268	10	0.588	A	0.000	0.588	0.588	100.00	1.007	0.000
					B	0.000	0.588		100.00	0.577	0.000
					C	0.000	0.588		100.00	0.993	0.000
L20 100.75-95.75	98.24	1.261	10	11.970	A	0.000	11.970	11.970	100.00	17.857	0.000
					B	0.000	11.970		100.00	9.262	0.000
					C	0.000	11.970		100.00	17.574	0.000
L21 95.75-87.83	91.76	1.243	10	19.776	A	0.000	19.776	19.776	100.00	26.301	0.000
					B	0.000	19.776		100.00	12.686	0.000
					C	0.000	19.776		100.00	25.853	0.000
L22 87.83-86.83	87.33	1.23	10	2.512	A	0.000	2.512	2.512	100.00	3.865	0.000
					B	0.000	2.512		100.00	2.146	0.000
					C	0.000	2.512		100.00	3.809	0.000
L23 86.83-81.83	84.32	1.221	10	12.800	A	0.000	12.800	12.800	100.00	19.327	0.000
					B	0.000	12.800		100.00	10.732	0.000
					C	0.000	12.800		100.00	19.044	0.000
L24 81.83-81.50	81.66	1.213	9	0.859	A	0.000	0.859	0.859	100.00	1.526	0.000
					B	0.000	0.859		100.00	0.958	0.000
					C	0.000	0.859		100.00	1.507	0.000
L25 81.50-81.25	81.37	1.212	9	0.652	A	0.000	0.652	0.652	100.00	1.175	0.000
					B	0.000	0.652		100.00	0.745	0.000
					C	0.000	0.652		100.00	1.161	0.000
L26 81.25-76.25	78.74	1.204	9	13.244	A	0.000	13.244	13.244	100.00	20.681	0.000
					B	0.000	13.244		100.00	12.086	0.000
					C	0.000	13.244		100.00	20.398	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L27 76.25-71.25	73.74	1.187	9	13.644	A	0.000	13.644	13.644	100.00	19.743	0.000
					B	0.000	13.644		100.00	11.148	0.000
					C	0.000	13.644		100.00	19.461	0.000
L28 71.25-66.25	68.74	1.17	9	14.044	A	0.000	14.044	14.044	100.00	19.743	0.000
					B	0.000	14.044		100.00	11.148	0.000
					C	0.000	14.044		100.00	19.461	0.000
L29 66.25-61.25	63.74	1.151	9	14.443	A	0.000	14.443	14.443	100.00	19.743	0.000
					B	0.000	14.443		100.00	11.148	0.000
					C	0.000	14.443		100.00	19.461	0.000
L30 61.25-56.25	58.74	1.132	9	14.842	A	0.000	14.842	14.842	100.00	19.743	0.000
					B	0.000	14.842		100.00	11.148	0.000
					C	0.000	14.842		100.00	19.461	0.000
L31 56.25-51.25	53.74	1.111	9	15.241	A	0.000	15.241	15.241	100.00	19.743	0.000
					B	0.000	15.241		100.00	11.148	0.000
					C	0.000	15.241		100.00	19.461	0.000
L32 51.25-43.33	47.26	1.081	8	24.957	A	0.000	24.957	24.957	100.00	37.680	0.000
					B	0.000	24.957		100.00	20.862	0.000
					C	0.000	24.957		100.00	34.029	0.000
L33 43.33-42.33	42.83	1.059	8	3.156	A	0.000	3.156	3.156	100.00	5.949	0.000
					B	0.000	3.156		100.00	3.230	0.000
					C	0.000	3.156		100.00	4.892	0.000
L34 42.33-37.40	39.85	1.043	8	15.791	A	0.000	15.791	15.791	100.00	29.327	0.000
					B	0.000	15.791		100.00	15.922	0.000
					C	0.000	15.791		100.00	24.118	0.000
L35 37.40-37.15	37.27	1.028	8	0.811	A	0.000	0.811	0.811	100.00	1.487	0.000
					B	0.000	0.811		100.00	0.807	0.000
					C	0.000	0.811		100.00	1.223	0.000
L36 37.15-32.15	34.64	1.012	8	16.432	A	0.000	16.432	16.432	100.00	29.743	0.000
					B	0.000	16.432		100.00	16.148	0.000
					C	0.000	16.432		100.00	24.461	0.000
L37 32.15-27.15	29.64	0.98	8	16.831	A	0.000	16.831	16.831	100.00	29.743	0.000
					B	0.000	16.831		100.00	16.148	0.000
					C	0.000	16.831		100.00	24.461	0.000
L38 27.15-22.15	24.64	0.942	7	17.229	A	0.000	17.229	17.229	100.00	29.760	0.000
					B	0.000	17.229		100.00	16.157	0.000
					C	0.000	17.229		100.00	24.469	0.000
L39 22.15-19.50	20.82	0.91	7	9.293	A	0.000	9.293	9.293	100.00	16.206	0.000
					B	0.000	9.293		100.00	8.779	0.000
					C	0.000	9.293		100.00	13.185	0.000
L40 19.50-19.25	19.37	0.896	7	0.882	A	0.000	0.882	0.882	100.00	1.529	0.000
					B	0.000	0.882		100.00	0.828	0.000
					C	0.000	0.882		100.00	1.244	0.000
L41 19.25-14.25	16.74	0.869	7	17.855	A	0.000	17.855	17.855	100.00	30.577	0.000
					B	0.000	17.855		100.00	16.565	0.000
					C	0.000	17.855		100.00	24.878	0.000
L42 14.25-9.25	11.74	0.85	7	18.252	A	0.000	18.252	18.252	100.00	30.577	0.000
					B	0.000	18.252		100.00	16.565	0.000
					C	0.000	18.252		100.00	24.878	0.000
L43 9.25-9.00	9.12	0.85	7	0.923	A	0.000	0.923	0.923	100.00	1.529	0.000
					B	0.000	0.923		100.00	0.828	0.000
					C	0.000	0.923		100.00	1.244	0.000
L44 9.00-8.75	8.87	0.85	7	0.924	A	0.000	0.924	0.924	100.00	1.529	0.000
					B	0.000	0.924		100.00	0.828	0.000
					C	0.000	0.924		100.00	1.244	0.000
L45 8.75-7.00	7.87	0.85	7	6.496	A	0.000	6.496	6.496	100.00	10.702	0.000
					B	0.000	6.496		100.00	5.798	0.000
					C	0.000	6.496		100.00	8.707	0.000
L46 7.00-6.75	6.87	0.85	7	0.932	A	0.000	0.932	0.932	100.00	1.529	0.000
					B	0.000	0.932		100.00	0.828	0.000
					C	0.000	0.932		100.00	1.244	0.000
L47 6.75-5.00	5.87	0.85	7	6.552	A	0.000	6.552	6.552	100.00	10.702	0.000
					B	0.000	6.552		100.00	5.798	0.000
					C	0.000	6.552		100.00	8.707	0.000
L48 5.00-4.75	4.87	0.85	7	0.939	A	0.000	0.939	0.939	100.00	1.529	0.000
					B	0.000	0.939		100.00	0.828	0.000
					C	0.000	0.939		100.00	1.244	0.000
L49 4.75-3.00	3.87	0.85	7	6.598	A	0.000	6.598	6.598	100.00	10.702	0.000
					B	0.000	6.598		100.00	5.798	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	6.598		100.00	8.707	0.000
L50 3.00-2.75	2.87	0.85	7	0.946	A	0.000	0.946	0.946	100.00	1.529	0.000
					B	0.000	0.946		100.00	0.828	0.000
					C	0.000	0.946		100.00	1.244	0.000
L51 2.75-2.25	2.50	0.85	7	1.896	A	0.000	1.896	1.896	100.00	3.058	0.000
					B	0.000	1.896		100.00	1.657	0.000
					C	0.000	1.896		100.00	2.488	0.000
L52 2.25-2.00	2.12	0.85	7	0.950	A	0.000	0.950	0.950	100.00	1.529	0.000
					B	0.000	0.950		100.00	0.828	0.000
					C	0.000	0.950		100.00	1.244	0.000
L53 2.00-0.00	1.00	0.85	7	7.638	A	0.000	7.638	7.638	100.00	12.231	0.000
					B	0.000	7.638		100.00	6.626	0.000
					C	0.000	7.638		100.00	9.951	0.000

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

Comb. No.	Description
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	169 - 164	Pole	Max Tension	21	0.00	-0.00	0.00
			Max. Compression	26	-11.72	2.07	-1.23
			Max. Mx	20	-3.45	11.16	-0.59
			Max. My	14	-3.43	0.96	-10.68
			Max. Vy	20	-6.44	11.16	-0.59
			Max. Vx	14	6.42	0.96	-10.68
			Max. Torque	12			-1.01
L2	164 - 159	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.42	2.12	-1.43
			Max. Mx	20	-3.73	44.20	-0.81
			Max. My	14	-3.70	1.17	-43.72
			Max. Vy	20	-6.78	44.20	-0.81
			Max. Vx	14	6.78	1.17	-43.72
			Max. Torque	12			-1.13
L3	159 - 154	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.88	2.18	-0.28
			Max. Mx	20	-6.56	99.52	-0.78
			Max. My	14	-6.50	1.39	-98.82
			Max. Vy	20	-13.46	99.52	-0.78
			Max. Vx	14	13.49	1.39	-98.82
			Max. Torque	12			-1.20
L4	154 - 149	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.71	2.26	-0.51
			Max. Mx	20	-7.00	167.65	-1.02
			Max. My	14	-6.93	1.64	-167.20
			Max. Vy	20	-13.80	167.65	-1.02
			Max. Vx	14	13.85	1.64	-167.20
			Max. Torque	12			-1.09
L5	149 - 144	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.63	2.34	-0.75
			Max. Mx	20	-8.59	245.37	-1.26
			Max. My	14	-8.52	1.88	-245.25
			Max. Vy	20	-16.11	245.37	-1.26
			Max. Vx	14	16.18	1.88	-245.25
			Max. Torque	12			-1.09
L6	144 - 139	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.53	2.42	-1.00
			Max. Mx	20	-9.15	326.75	-1.51
			Max. My	14	-9.07	2.13	-327.01
			Max. Vy	20	-16.45	326.75	-1.51
			Max. Vx	14	16.52	2.13	-327.01
			Max. Torque	12			-1.09
L7	139 - 133.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.54	2.45	-0.57
			Max. Mx	20	-11.78	368.81	-1.54
			Max. My	14	-11.68	2.25	-369.20
			Max. Vy	20	-19.14	368.81	-1.54
			Max. Vx	14	19.26	2.25	-369.20
			Max. Torque	12			-1.09
L8	133.33 - 131.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.97	2.53	-0.83
			Max. Mx	20	-12.63	465.50	-1.79
			Max. My	14	-12.54	2.52	-466.55
			Max. Vy	20	-19.54	465.50	-1.79
			Max. Vx	14	19.66	2.52	-466.55
			Max. Torque	12			-0.96
L9	131.66 - 126.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.35	3.18	-0.76

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-13.33	564.94	-2.39
			Max. My	14	-13.25	3.10	-566.23
			Max. Vy	8	20.56	-562.67	1.23
			Max. Vx	14	20.46	3.10	-566.23
			Max. Torque	14			-2.32
L10	126.66 - 121.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.20	3.37	-1.03
			Max. Mx	20	-14.63	672.97	-3.63
			Max. My	14	-14.55	4.97	-673.87
			Max. Vy	8	21.85	-670.68	2.38
			Max. Vx	14	21.77	4.97	-673.87
			Max. Torque	14			-2.35
L11	121.66 - 116.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.58	3.14	-1.62
			Max. Mx	20	-15.48	782.92	-4.92
			Max. My	14	-15.39	6.78	-783.58
			Max. Vy	8	22.20	-780.75	3.49
			Max. Vx	14	22.13	6.78	-783.58
			Max. Torque	14			-2.35
L12	116.66 - 111.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.88	3.17	-2.04
			Max. Mx	20	-16.34	894.57	-6.23
			Max. My	14	-16.25	8.65	-894.99
			Max. Vy	8	22.50	-892.44	4.65
			Max. Vx	14	22.44	8.65	-894.99
			Max. Torque	14			-2.25
L13	111.66 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.05	3.17	-2.10
			Max. Mx	20	-16.46	909.42	-6.40
			Max. My	14	-16.37	8.89	-909.80
			Max. Vy	8	22.54	-907.30	4.80
			Max. Vx	14	22.47	8.89	-909.80
			Max. Torque	14			-2.24
L14	111 - 110.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.74	1.71	-2.97
			Max. Mx	20	-18.97	915.79	-6.59
			Max. My	14	-18.87	8.74	-916.65
			Max. Vy	20	-26.76	915.79	-6.59
			Max. Vx	14	26.66	8.74	-916.65
			Max. Torque	14			-2.24
L15	110.75 - 105.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.86	2.11	-3.19
			Max. Mx	20	-20.23	1050.53	-7.63
			Max. My	14	-20.08	10.52	-1052.16
			Max. Vy	8	27.14	-1048.84	5.73
			Max. Vx	14	27.56	10.52	-1052.16
			Max. Torque	14			-1.56
L16	105.75 - 101.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.98	2.45	-3.38
			Max. Mx	20	-21.34	1166.59	-8.51
			Max. My	14	-21.15	12.04	-1170.88
			Max. Vy	8	27.47	-1164.73	6.60
			Max. Vx	14	28.33	12.04	-1170.88
			Max. Torque	14			-1.62
L17	101.5 - 101.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.15	2.48	-3.40
			Max. Mx	20	-21.45	1173.46	-8.57
			Max. My	14	-21.26	12.13	-1177.96
			Max. Vy	20	-27.50	1173.46	-8.57
			Max. Vx	14	28.37	12.13	-1177.96
			Max. Torque	14			-1.62
L18	101.25 - 101	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.31	2.50	-3.41

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-21.54	1180.34	-8.62
			Max. My	14	-21.35	12.22	-1185.06
			Max. Vy	20	-27.52	1180.34	-8.62
			Max. Vx	14	28.42	12.22	-1185.06
			Max. Torque	14			-1.62
L19	101 - 100.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.46	2.52	-3.42
			Max. Mx	20	-21.61	1187.22	-8.67
			Max. My	14	-21.42	12.31	-1192.17
			Max. Vy	20	-27.55	1187.22	-8.67
			Max. Vx	14	28.47	12.31	-1192.17
			Max. Torque	14			-1.63
L20	100.75 - 95.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.26	2.93	-3.64
			Max. Mx	20	-23.13	1326.03	-9.71
			Max. My	14	-22.91	14.10	-1336.84
			Max. Vy	8	27.97	-1323.92	7.77
			Max. Vx	14	29.42	14.10	-1336.84
			Max. Torque	14			-1.70
L21	95.75 - 87.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.25	3.23	-3.80
			Max. Mx	20	-24.25	1427.02	-10.45
			Max. My	14	-24.00	15.38	-1443.58
			Max. Vy	8	28.28	-1424.76	8.50
			Max. Vx	14	30.08	15.38	-1443.58
			Max. Torque	14			-1.75
L22	87.83 - 86.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.02	3.69	-4.05
			Max. Mx	20	-27.31	1579.44	-11.56
			Max. My	14	-27.03	17.30	-1606.99
			Max. Vy	8	28.88	-1576.96	9.59
			Max. Vx	14	31.24	17.30	-1606.99
			Max. Torque	14			-1.83
L23	86.83 - 81.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.33	4.12	-4.29
			Max. Mx	20	-29.26	1725.00	-12.60
			Max. My	14	-28.96	19.10	-1765.55
			Max. Vy	8	29.33	-1722.30	10.61
			Max. Vx	14	32.21	19.10	-1765.55
			Max. Torque	14			-1.90
L24	81.83 - 81.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.56	4.16	-4.30
			Max. Mx	20	-29.40	1734.69	-12.67
			Max. My	14	-29.10	19.22	-1776.18
			Max. Vy	20	-29.36	1734.69	-12.67
			Max. Vx	14	32.27	19.22	-1776.18
			Max. Torque	14			-1.90
L25	81.5 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.73	4.18	-4.32
			Max. Mx	20	-29.50	1742.04	-12.72
			Max. My	14	-29.20	19.31	-1784.26
			Max. Vy	20	-29.40	1742.04	-12.72
			Max. Vx	2	-32.32	-14.55	1781.19
			Max. Torque	14			-1.91
L26	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.07	4.61	-4.55
			Max. Mx	20	-31.50	1890.07	-13.76
			Max. My	14	-31.18	21.11	-1948.19
			Max. Vy	8	29.82	-1887.11	11.75
			Max. Vx	14	33.28	21.11	-1948.19
			Max. Torque	14			-1.96
L27	76.25 - 71.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.38	5.06	-4.79

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-33.54	2040.28	-14.80
			Max. My	14	-33.21	22.92	-2116.84
			Max. Vy	8	30.25	-2037.09	12.77
			Max. Vx	14	34.21	22.92	-2116.84
			Max. Torque	16			-2.03
L28	71.25 - 66.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.71	5.51	-5.02
			Max. Mx	20	-35.61	2192.61	-15.84
			Max. My	14	-35.27	24.72	-2290.15
			Max. Vy	8	30.67	-2189.18	13.78
			Max. Vx	14	35.14	24.72	-2290.15
			Max. Torque	16			-2.12
L29	66.25 - 61.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.07	5.97	-5.26
			Max. Mx	20	-37.71	2347.01	-16.88
			Max. My	14	-37.39	26.53	-2467.15
			Max. Vy	6	31.10	-2147.81	1236.85
			Max. Vx	14	35.69	26.53	-2467.15
			Max. Torque	16			-2.21
L30	61.25 - 56.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.44	6.43	-5.50
			Max. Mx	20	-39.83	2503.43	-17.91
			Max. My	14	-39.53	28.34	-2646.85
			Max. Vy	6	31.56	-2304.23	1326.92
			Max. Vx	14	36.22	28.34	-2646.85
			Max. Torque	16			-2.30
L31	56.25 - 51.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.84	6.90	-5.74
			Max. Mx	20	-41.98	2661.79	-18.94
			Max. My	14	-41.70	30.14	-2829.14
			Max. Vy	6	31.99	-2462.87	1418.27
			Max. Vx	14	36.73	30.14	-2829.14
			Max. Torque	16			-2.39
L32	51.25 - 43.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.68	7.15	-5.86
			Max. Mx	20	-43.10	2744.57	-19.48
			Max. My	14	-42.83	31.07	-2924.82
			Max. Vy	6	32.22	-2545.90	1466.08
			Max. Vx	14	37.19	31.07	-2924.82
			Max. Torque	16			-2.42
L33	43.33 - 42.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.21	7.73	-6.11
			Max. Mx	20	-48.34	2949.62	-20.78
			Max. My	14	-48.07	33.35	-3164.34
			Max. Vy	6	33.01	-2751.95	1584.74
			Max. Vx	14	38.50	33.35	-3164.34
			Max. Torque	16			-2.49
L34	42.33 - 37.4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.33	8.20	-6.29
			Max. Mx	20	-50.96	3111.75	-21.79
			Max. My	14	-50.71	35.13	-3356.22
			Max. Vy	6	33.77	-2916.30	1679.40
			Max. Vx	14	39.38	35.13	-3356.22
			Max. Torque	16			-2.51
L35	37.4 - 37.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.54	8.24	-6.31
			Max. Mx	20	-51.11	3120.02	-21.84
			Max. My	14	-50.86	35.22	-3366.06
			Max. Vy	6	33.79	-2924.73	1684.25
			Max. Vx	2	-39.42	-26.33	3361.74
			Max. Torque	16			-2.51
L36	37.15 - 32.15	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-109.72	8.71	-6.49
			Max. Mx	20	-53.79	3286.34	-22.86
			Max. My	14	-53.56	37.01	-3565.22
			Max. Vy	6	34.54	-3095.34	1782.52
			Max. Vx	14	40.28	37.01	-3565.22
			Max. Torque	16			-2.52
L37	32.15 - 27.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.91	9.20	-6.68
			Max. Mx	20	-56.51	3454.35	-23.88
			Max. My	14	-56.31	38.80	-3768.58
			Max. Vy	6	35.25	-3269.56	1882.88
			Max. Vx	14	41.10	38.80	-3768.58
			Max. Torque	16			-2.54
L38	27.15 - 22.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-118.09	9.70	-6.86
			Max. Mx	20	-59.26	3623.94	-24.89
			Max. My	14	-59.09	40.59	-3975.06
			Max. Vy	6	35.62	-3446.48	1984.79
			Max. Vx	14	41.53	40.59	-3975.06
			Max. Torque	16			-2.56
L39	22.15 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-120.32	9.96	-6.96
			Max. Mx	20	-60.72	3714.43	-25.43
			Max. My	14	-60.57	41.53	-4085.60
			Max. Vy	6	35.97	-3541.19	2039.35
			Max. Vx	14	41.94	41.53	-4085.60
			Max. Torque	16			-2.56
L40	19.5 - 19.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-120.54	9.99	-6.97
			Max. Mx	20	-60.88	3722.99	-25.48
			Max. My	14	-60.74	41.62	-4096.09
			Max. Vy	6	35.98	-3550.17	2044.52
			Max. Vx	14	41.96	41.62	-4096.09
			Max. Torque	16			-2.57
L41	19.25 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-124.90	10.49	-7.15
			Max. Mx	20	-63.82	3894.83	-26.48
			Max. My	14	-63.71	43.39	-4307.65
			Max. Vy	6	36.33	-3730.73	2148.54
			Max. Vx	14	42.70	43.39	-4307.65
			Max. Torque	16			-2.58
L42	14.25 - 9.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-129.23	10.99	-7.33
			Max. Mx	20	-66.79	4067.99	-27.48
			Max. My	14	-66.72	45.16	-4521.96
			Max. Vy	6	36.65	-3912.90	2253.50
			Max. Vx	14	43.07	45.16	-4521.96
			Max. Torque	16			-2.59
L43	9.25 - 9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-129.44	11.02	-7.34
			Max. Mx	20	-66.95	4076.68	-27.53
			Max. My	14	-66.88	45.24	-4532.72
			Max. Vy	6	36.65	-3922.05	2258.77
			Max. Vx	14	43.07	45.24	-4532.72
			Max. Torque	16			-2.59
L44	9 - 8.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-129.67	11.05	-7.34
			Max. Mx	20	-67.11	4085.38	-27.58
			Max. My	14	-67.04	45.33	-4543.49
			Max. Vy	6	36.66	-3931.20	2264.04
			Max. Vx	14	43.09	45.33	-4543.49
			Max. Torque	16			-2.59
L45	8.75 - 7	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-131.21	11.22	-7.40
			Max. Mx	20	-68.17	4146.33	-27.93
			Max. My	14	-68.12	45.95	-4618.99

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	6	36.80	-3995.39	2301.02
			Max. Vx	14	43.25	45.95	-4618.99
			Max. Torque	16			-2.60
L46	7 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-131.42	11.24	-7.41
			Max. Mx	20	-68.34	4155.05	-27.98
			Max. My	14	-68.29	46.04	-4629.80
			Max. Vy	6	36.79	-4004.57	2306.31
			Max. Vx	14	43.23	46.04	-4629.80
			Max. Torque	16			-2.60
L47	6.75 - 5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-132.91	11.42	-7.47
			Max. Mx	20	-69.38	4216.18	-28.32
			Max. My	14	-69.34	46.65	-4705.55
			Max. Vy	6	36.93	-4068.97	2343.42
			Max. Vx	14	43.39	46.65	-4705.55
			Max. Torque	16			-2.60
L48	5 - 4.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-133.17	11.44	-7.48
			Max. Mx	20	-69.59	4224.93	-28.37
			Max. My	14	-69.55	46.74	-4716.39
			Max. Vy	6	36.91	-4078.19	2348.73
			Max. Vx	14	43.37	46.74	-4716.39
			Max. Torque	16			-2.60
L49	4.75 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-134.93	11.61	-7.53
			Max. Mx	20	-70.90	4286.26	-28.72
			Max. My	14	-70.88	47.35	-4792.42
			Max. Vy	6	37.06	-4142.82	2385.97
			Max. Vx	14	43.55	47.35	-4792.42
			Max. Torque	16			-2.61
L50	3 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-135.18	11.63	-7.54
			Max. Mx	20	-71.11	4295.04	-28.77
			Max. My	14	-71.09	47.44	-4803.30
			Max. Vy	6	37.05	-4152.07	2391.30
			Max. Vx	14	43.54	47.44	-4803.30
			Max. Torque	16			-2.61
L51	2.75 - 2.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-135.69	11.68	-7.55
			Max. Mx	20	-71.50	4312.60	-28.87
			Max. My	14	-71.48	47.62	-4825.08
			Max. Vy	6	37.09	-4170.59	2401.97
			Max. Vx	14	43.59	47.62	-4825.08
			Max. Torque	16			-2.61
L52	2.25 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-135.91	11.71	-7.56
			Max. Mx	20	-71.67	4321.39	-28.92
			Max. My	14	-71.65	47.70	-4835.98
			Max. Vy	6	37.11	-4179.85	2407.31
			Max. Vx	14	43.61	47.70	-4835.98
			Max. Torque	16			-2.61
L53	2 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-137.63	11.89	-7.61
			Max. Mx	20	-72.97	4391.83	-29.31
			Max. My	14	-72.96	48.40	-4923.33
			Max. Vy	6	37.25	-4254.12	2450.10
			Max. Vx	14	43.77	48.40	-4923.33
			Max. Torque	16			-2.61

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	137.63	-0.00	0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	18	72.98	37.22	-21.44
	Max. H_z	3	54.73	-0.28	43.73
	Max. M_x	2	4917.98	-0.28	43.73
	Max. M_z	8	4384.71	-35.25	0.19
	Max. Torsion	4	2.19	-24.85	42.46
	Min. Vert	21	54.73	35.24	-0.20
	Min. H_x	6	72.98	-37.23	21.43
	Min. H_z	14	72.98	0.31	-43.75
	Min. M_x	14	-4923.33	0.31	-43.75
	Min. M_z	20	-4391.83	35.24	-0.20
	Min. Torsion	16	-2.61	24.85	-42.48

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	60.81	0.00	-0.00	0.74	3.30	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	72.98	0.28	-43.73	-4917.98	-35.81	-1.72
0.9 Dead+1.0 Wind 0 deg - No Ice	54.73	0.28	-43.73	-4853.39	-36.38	-1.69
1.2 Dead+1.0 Wind 30 deg - No Ice	72.98	24.85	-42.46	-4489.01	-2635.01	-2.19
0.9 Dead+1.0 Wind 30 deg - No Ice	54.73	24.85	-42.46	-4431.38	-2602.07	-2.16
1.2 Dead+1.0 Wind 60 deg - No Ice	72.98	37.23	-21.43	-2450.10	-4254.12	-0.97
0.9 Dead+1.0 Wind 60 deg - No Ice	54.73	37.23	-21.43	-2417.75	-4198.59	-0.97
1.2 Dead+1.0 Wind 90 deg - No Ice	72.98	35.25	-0.19	-26.95	-4384.71	-0.55
0.9 Dead+1.0 Wind 90 deg - No Ice	54.73	35.25	-0.19	-26.84	-4324.62	-0.57
1.2 Dead+1.0 Wind 120 deg - No Ice	72.98	32.42	18.31	2290.18	-4057.59	-0.03
0.9 Dead+1.0 Wind 120 deg - No Ice	54.73	32.42	18.31	2257.93	-4002.05	-0.07
1.2 Dead+1.0 Wind 150 deg - No Ice	72.98	21.52	37.06	4373.91	-2535.70	1.30
0.9 Dead+1.0 Wind 150 deg - No Ice	54.73	21.52	37.06	4314.89	-2502.71	1.26
1.2 Dead+1.0 Wind 180 deg - No Ice	72.98	-0.31	43.75	4923.33	48.40	2.28
0.9 Dead+1.0 Wind 180 deg - No Ice	54.73	-0.31	43.75	4857.90	46.71	2.25
1.2 Dead+1.0 Wind 210 deg - No Ice	72.98	-24.85	42.48	4493.37	2643.38	2.61
0.9 Dead+1.0 Wind 210 deg - No Ice	54.73	-24.85	42.48	4435.17	2608.24	2.59
1.2 Dead+1.0 Wind 240 deg - No Ice	72.98	-37.22	21.44	2453.54	4260.96	1.34
0.9 Dead+1.0 Wind 240 deg - No Ice	54.73	-37.22	21.44	2420.63	4203.24	1.34
1.2 Dead+1.0 Wind 270 deg - No Ice	72.98	-35.24	0.20	29.31	4391.83	0.78
0.9 Dead+1.0 Wind 270 deg - No Ice	54.73	-35.24	0.20	28.64	4329.35	0.80
1.2 Dead+1.0 Wind 300 deg - No Ice	72.98	-32.41	-18.28	-2284.09	4064.26	0.09
0.9 Dead+1.0 Wind 300 deg - No Ice	54.73	-32.41	-18.28	-2252.44	4006.53	0.12
1.2 Dead+1.0 Wind 330 deg - No Ice	72.98	-21.48	-37.09	-4376.44	2539.08	-1.61
0.9 Dead+1.0 Wind 330 deg - No Ice	54.73	-21.48	-37.09	-4317.90	2503.94	-1.57

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
1.2 Dead+1.0 Ice+1.0 Temp	137.63	0.00	-0.00	7.61	11.89	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	137.63	0.06	-10.91	-1388.31	3.38	-0.35
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	137.63	6.05	-10.36	-1251.90	-725.15	-0.38
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	137.63	9.26	-5.34	-685.71	-1191.31	-0.19
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	137.63	9.83	-0.04	1.59	-1307.06	-0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	137.63	8.60	4.88	664.82	-1146.46	-0.07
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	137.63	5.29	9.13	1209.37	-684.48	0.24
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	137.63	-0.06	10.92	1404.54	21.89	0.47
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	137.63	-6.05	10.37	1268.05	749.52	0.47
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	137.63	-9.26	5.34	701.67	1215.35	0.27
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	137.63	-9.82	0.04	14.14	1331.25	0.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	137.63	-8.60	-4.88	-648.29	1170.46	0.08
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	137.63	-5.29	-9.14	-1194.69	707.79	-0.31
Dead+Wind 0 deg - Service	60.81	0.06	-9.49	-1059.97	-5.11	-0.38
Dead+Wind 30 deg - Service	60.81	5.39	-9.22	-967.68	-565.76	-0.48
Dead+Wind 60 deg - Service	60.81	8.08	-4.65	-527.76	-914.80	-0.23
Dead+Wind 90 deg - Service	60.81	7.65	-0.04	-5.19	-942.45	-0.14
Dead+Wind 120 deg - Service	60.81	7.04	3.97	494.43	-872.30	-0.02
Dead+Wind 150 deg - Service	60.81	4.67	8.04	944.05	-544.33	0.28
Dead+Wind 180 deg - Service	60.81	-0.07	9.49	1062.22	13.04	0.50
Dead+Wind 210 deg - Service	60.81	-5.39	9.22	969.88	572.81	0.58
Dead+Wind 240 deg - Service	60.81	-8.08	4.65	529.72	921.50	0.31
Dead+Wind 270 deg - Service	60.81	-7.65	0.04	6.92	949.29	0.19
Dead+Wind 300 deg - Service	60.81	-7.03	-3.97	-491.89	878.95	0.03
Dead+Wind 330 deg - Service	60.81	-4.66	-8.05	-943.37	550.28	-0.35

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-60.81	0.00	-0.00	60.81	0.00	0.001%
2	0.28	-72.98	-43.73	-0.28	72.98	43.73	0.006%
3	0.28	-54.73	-43.73	-0.28	54.73	43.73	0.005%
4	24.85	-72.98	-42.46	-24.85	72.98	42.46	0.000%
5	24.85	-54.73	-42.46	-24.85	54.73	42.46	0.000%
6	37.23	-72.98	-21.43	-37.23	72.98	21.43	0.000%
7	37.23	-54.73	-21.43	-37.23	54.73	21.43	0.000%
8	35.25	-72.98	-0.19	-35.25	72.98	0.19	0.002%
9	35.25	-54.73	-0.19	-35.25	54.73	0.19	0.001%
10	32.42	-72.98	18.31	-32.42	72.98	-18.31	0.000%
11	32.42	-54.73	18.31	-32.42	54.73	-18.31	0.000%
12	21.52	-72.98	37.06	-21.52	72.98	-37.06	0.000%
13	21.52	-54.73	37.06	-21.52	54.73	-37.06	0.000%
14	-0.31	-72.98	43.75	0.31	72.98	-43.75	0.001%
15	-0.31	-54.73	43.75	0.31	54.73	-43.75	0.001%
16	-24.85	-72.98	42.48	24.85	72.98	-42.48	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
17	-24.85	-54.73	42.48	24.85	54.73	-42.48	0.000%
18	-37.22	-72.98	21.44	37.22	72.98	-21.44	0.000%
19	-37.22	-54.73	21.44	37.22	54.73	-21.44	0.000%
20	-35.24	-72.98	0.20	35.24	72.98	-0.20	0.006%
21	-35.24	-54.73	0.20	35.24	54.73	-0.20	0.008%
22	-32.41	-72.98	-18.28	32.41	72.98	18.28	0.000%
23	-32.41	-54.73	-18.28	32.41	54.73	18.28	0.000%
24	-21.48	-72.98	-37.09	21.48	72.98	37.09	0.000%
25	-21.48	-54.73	-37.09	21.48	54.73	37.09	0.000%
26	0.00	-137.63	0.00	-0.00	137.63	0.00	0.000%
27	0.06	-137.63	-10.92	-0.06	137.63	10.91	0.000%
28	6.05	-137.63	-10.36	-6.05	137.63	10.36	0.000%
29	9.26	-137.63	-5.34	-9.26	137.63	5.34	0.000%
30	9.83	-137.63	-0.04	-9.83	137.63	0.04	0.000%
31	8.60	-137.63	4.89	-8.60	137.63	-4.88	0.000%
32	5.29	-137.63	9.13	-5.29	137.63	-9.13	0.000%
33	-0.06	-137.63	10.92	0.06	137.63	-10.92	0.000%
34	-6.05	-137.63	10.37	6.05	137.63	-10.37	0.000%
35	-9.26	-137.63	5.34	9.26	137.63	-5.34	0.000%
36	-9.82	-137.63	0.04	9.82	137.63	-0.04	0.000%
37	-8.60	-137.63	-4.88	8.60	137.63	4.88	0.000%
38	-5.29	-137.63	-9.14	5.29	137.63	9.14	0.000%
39	0.06	-60.81	-9.49	-0.06	60.81	9.49	0.003%
40	5.39	-60.81	-9.22	-5.39	60.81	9.22	0.001%
41	8.08	-60.81	-4.65	-8.08	60.81	4.65	0.001%
42	7.65	-60.81	-0.04	-7.65	60.81	0.04	0.002%
43	7.04	-60.81	3.97	-7.04	60.81	-3.97	0.001%
44	4.67	-60.81	8.04	-4.67	60.81	-8.04	0.000%
45	-0.07	-60.81	9.50	0.07	60.81	-9.49	0.003%
46	-5.39	-60.81	9.22	5.39	60.81	-9.22	0.000%
47	-8.08	-60.81	4.65	8.08	60.81	-4.65	0.001%
48	-7.65	-60.81	0.04	7.65	60.81	-0.04	0.002%
49	-7.03	-60.81	-3.97	7.03	60.81	3.97	0.001%
50	-4.66	-60.81	-8.05	4.66	60.81	8.05	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000722
2	Yes	19	0.00006723	0.00012927
3	Yes	19	0.00004373	0.00008849
4	Yes	28	0.00000001	0.00000000
5	Yes	27	0.00000001	0.00000000
6	Yes	28	0.00000001	0.00000000
7	Yes	27	0.00000001	0.00000000
8	Yes	21	0.00002173	0.00013775
9	Yes	21	0.00001371	0.00010613
10	Yes	28	0.00000001	0.00000000
11	Yes	27	0.00000001	0.00000000
12	Yes	28	0.00000001	0.00000000
13	Yes	27	0.00000001	0.00000000
14	Yes	23	0.00000001	0.00011197
15	Yes	22	0.00000001	0.00014340
16	Yes	28	0.00000001	0.00000000
17	Yes	27	0.00000001	0.00000000
18	Yes	28	0.00000001	0.00000000
19	Yes	27	0.00000001	0.00000000
20	Yes	19	0.00006799	0.00009983
21	Yes	18	0.00007858	0.00010765
22	Yes	28	0.00000001	0.00000000
23	Yes	27	0.00000001	0.00000000
24	Yes	28	0.00000001	0.00000000
25	Yes	27	0.00000001	0.00000000
26	Yes	15	0.00000001	0.00013145
27	Yes	25	0.00000001	0.00013252
28	Yes	26	0.00000001	0.00012541

29	Yes	26	0.00000001	0.00012160
30	Yes	25	0.00000001	0.00012902
31	Yes	26	0.00000001	0.00011973
32	Yes	26	0.00000001	0.00012392
33	Yes	25	0.00000001	0.00013468
34	Yes	26	0.00000001	0.00013200
35	Yes	26	0.00000001	0.00012583
36	Yes	25	0.00000001	0.00013167
37	Yes	26	0.00000001	0.00012007
38	Yes	26	0.00000001	0.00012583
39	Yes	18	0.00010055	0.00005263
40	Yes	20	0.00000001	0.00014798
41	Yes	20	0.00000001	0.00014935
42	Yes	18	0.00010132	0.00004149
43	Yes	20	0.00000001	0.00014477
44	Yes	21	0.00000001	0.00009124
45	Yes	18	0.00010059	0.00008069
46	Yes	21	0.00000001	0.00009817
47	Yes	20	0.00000001	0.00014127
48	Yes	18	0.00010138	0.00003999
49	Yes	20	0.00000001	0.00014662
50	Yes	21	0.00000001	0.00009944

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164	35.081	50	2.1915	0.0064
L2	164 - 159	32.787	50	2.1904	0.0062
L3	159 - 154	30.502	50	2.1731	0.0056
L4	154 - 149	28.244	50	2.1355	0.0050
L5	149 - 144	26.041	50	2.0700	0.0046
L6	144 - 139	23.918	50	1.9820	0.0042
L7	139 - 133.33	21.898	50	1.8752	0.0038
L8	136.66 - 131.66	20.992	50	1.8201	0.0036
L9	131.66 - 126.66	19.121	50	1.7426	0.0034
L10	126.66 - 121.66	17.359	50	1.6217	0.0031
L11	121.66 - 116.66	15.727	50	1.4935	0.0025
L12	116.66 - 111.66	14.233	50	1.3595	0.0019
L13	111.66 - 111	12.882	50	1.2219	0.0015
L14	111 - 110.75	12.714	50	1.2037	0.0014
L15	110.75 - 105.75	12.651	50	1.1998	0.0014
L16	105.75 - 101.5	11.437	50	1.1190	0.0013
L17	101.5 - 101.25	10.473	50	1.0472	0.0012
L18	101.25 - 101	10.418	50	1.0448	0.0012
L19	101 - 100.75	10.363	50	1.0423	0.0012
L20	100.75 - 95.75	10.309	50	1.0390	0.0011
L21	95.75 - 87.83	9.265	46	0.9716	0.0010
L22	92.16 - 86.83	8.561	46	0.9221	0.0010
L23	86.83 - 81.83	7.559	46	0.8839	0.0009
L24	81.83 - 81.5	6.670	46	0.8267	0.0008
L25	81.5 - 81.25	6.613	46	0.8230	0.0008
L26	81.25 - 76.25	6.570	46	0.8202	0.0008
L27	76.25 - 71.25	5.746	46	0.7633	0.0008
L28	71.25 - 66.25	4.979	46	0.7054	0.0007
L29	66.25 - 61.25	4.272	46	0.6465	0.0006
L30	61.25 - 56.25	3.626	46	0.5885	0.0005
L31	56.25 - 51.25	3.040	46	0.5304	0.0005
L32	51.25 - 43.33	2.515	46	0.4712	0.0004
L33	48.66 - 42.33	2.268	46	0.4408	0.0004
L34	42.33 - 37.4	1.707	46	0.4022	0.0003
L35	37.4 - 37.15	1.317	46	0.3530	0.0003
L36	37.15 - 32.15	1.298	46	0.3505	0.0003
L37	32.15 - 27.15	0.958	46	0.3002	0.0002
L38	27.15 - 22.15	0.670	46	0.2494	0.0002
L39	22.15 - 19.5	0.436	46	0.1987	0.0001
L40	19.5 - 19.25	0.333	46	0.1718	0.0001
L41	19.25 - 14.25	0.324	46	0.1695	0.0001
L42	14.25 - 9.25	0.171	46	0.1217	0.0001
L43	9.25 - 9	0.069	46	0.0746	0.0001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L44	9 - 8.75	0.065	46	0.0723	0.0001
L45	8.75 - 7	0.061	46	0.0700	0.0000
L46	7 - 6.75	0.038	46	0.0543	0.0000
L47	6.75 - 5	0.036	46	0.0519	0.0000
L48	5 - 4.75	0.019	46	0.0356	0.0000
L49	4.75 - 3	0.018	46	0.0339	0.0000
L50	3 - 2.75	0.007	46	0.0225	0.0000
L51	2.75 - 2.25	0.006	46	0.0208	0.0000
L52	2.25 - 2	0.004	46	0.0176	0.0000
L53	2 - 0	0.003	46	0.0157	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	50	33.246	2.1916	0.0063	28054
156.00	DMP65R-BU8D w/ Mount Pipe	50	29.142	2.1536	0.0052	6715
148.00	NNVV-65B-R4 w/ Mount Pipe	50	25.609	2.0538	0.0045	3497
138.00	MX08FRO665-21 w/ Mount Pipe	50	21.508	1.8506	0.0037	2940
128.00	VHLP800-11	50	17.819	1.6573	0.0032	2360
124.00	LLPX310R w/ Mount Pipe	50	16.474	1.5535	0.0028	2219
118.00	CXL 900-3LW	50	14.620	1.3953	0.0021	2123
111.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	50	12.714	1.2037	0.0014	2620

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164	161.975	24	10.1611	0.0306
L2	164 - 159	151.431	24	10.1560	0.0299
L3	159 - 154	140.926	24	10.0758	0.0270
L4	154 - 149	130.546	24	9.9019	0.0244
L5	149 - 144	120.411	24	9.5995	0.0221
L6	144 - 139	110.640	24	9.1929	0.0200
L7	139 - 133.33	101.331	24	8.6989	0.0180
L8	136.66 - 131.66	97.157	24	8.4438	0.0172
L9	131.66 - 126.66	88.523	24	8.0854	0.0161
L10	126.66 - 121.66	80.390	24	7.5253	0.0142
L11	121.66 - 116.66	72.852	24	6.9309	0.0112
L12	116.66 - 111.66	65.945	24	6.3098	0.0087
L13	111.66 - 111	59.690	24	5.6713	0.0066
L14	111 - 110.75	58.914	24	5.5868	0.0064
L15	110.75 - 105.75	58.623	24	5.5687	0.0063
L16	105.75 - 101.5	53.002	24	5.1931	0.0057
L17	101.5 - 101.25	48.537	24	4.8600	0.0051
L18	101.25 - 101	48.283	24	4.8485	0.0051
L19	101 - 100.75	48.030	24	4.8369	0.0051
L20	100.75 - 95.75	47.778	24	4.8217	0.0051
L21	95.75 - 87.83	42.902	24	4.5089	0.0046
L22	92.16 - 86.83	39.631	16	4.2789	0.0043
L23	86.83 - 81.83	34.996	16	4.1013	0.0040
L24	81.83 - 81.5	30.881	16	3.8360	0.0037
L25	81.5 - 81.25	30.619	16	3.8186	0.0037
L26	81.25 - 76.25	30.421	16	3.8057	0.0037
L27	76.25 - 71.25	26.604	16	3.5417	0.0033
L28	71.25 - 66.25	23.056	16	3.2729	0.0030
L29	66.25 - 61.25	19.783	16	2.9994	0.0027
L30	61.25 - 56.25	16.789	16	2.7269	0.0024
L31	56.25 - 51.25	14.077	16	2.4575	0.0021
L32	51.25 - 43.33	11.648	16	2.1831	0.0018
L33	48.66 - 42.33	10.503	16	2.0421	0.0017

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L34	42.33 - 37.4	7.902	16	1.8629	0.0015
L35	37.4 - 37.15	6.097	16	1.6349	0.0013
L36	37.15 - 32.15	6.012	16	1.6234	0.0013
L37	32.15 - 27.15	4.435	16	1.3902	0.0011
L38	27.15 - 22.15	3.102	16	1.1548	0.0009
L39	22.15 - 19.5	2.016	16	0.9201	0.0007
L40	19.5 - 19.25	1.540	16	0.7955	0.0006
L41	19.25 - 14.25	1.499	16	0.7846	0.0006
L42	14.25 - 9.25	0.793	16	0.5634	0.0004
L43	9.25 - 9	0.318	16	0.3455	0.0002
L44	9 - 8.75	0.300	16	0.3347	0.0002
L45	8.75 - 7	0.283	16	0.3242	0.0002
L46	7 - 6.75	0.177	16	0.2514	0.0002
L47	6.75 - 5	0.164	16	0.2404	0.0002
L48	5 - 4.75	0.090	16	0.1647	0.0001
L49	4.75 - 3	0.082	16	0.1571	0.0001
L50	3 - 2.75	0.034	16	0.1040	0.0001
L51	2.75 - 2.25	0.029	16	0.0964	0.0001
L52	2.25 - 2	0.019	16	0.0814	0.0001
L53	2 - 0	0.015	16	0.0725	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	24	153.539	10.1615	0.0303	7648
156.00	DMP65R-BU8D w/ Mount Pipe	24	134.676	9.9854	0.0253	1588
148.00	NNVV-65B-R4 w/ Mount Pipe	24	118.425	9.5251	0.0216	809
138.00	MX08FRO665-21 w/ Mount Pipe	24	99.535	8.5851	0.0176	670
128.00	VHLP800-11	24	82.513	7.6899	0.0148	530
124.00	LLPX310R w/ Mount Pipe	24	76.303	7.2090	0.0127	496
118.00	CXL 900-3LW	24	67.733	6.4754	0.0093	471
111.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	24	58.914	5.5868	0.0064	577

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	169 - 164 (1)	TP16.4546x15.5x0.25	5.00	0.00	0.0	12.8583	-3.42
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	5.00	0.00	0.0	13.6158	-3.69
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	5.00	0.00	0.0	14.3733	-6.33
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	5.00	0.00	0.0	15.1307	-6.71
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	5.00	0.00	0.0	15.8882	-8.28
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	5.00	0.00	0.0	16.6456	-8.84
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	5.67	0.00	0.0	17.0001	-11.44
L8	133.33 - 131.66 (8)	TP22.1148x21.1742x0.3125	5.00	0.00	0.0	21.6252	-12.30
L9	131.66 - 126.66 (9)	TP23.0554x22.1148x0.3125	5.00	0.00	0.0	22.5581	-12.96
L10	126.66 - 121.66 (10)	TP23.996x23.0554x0.3125	5.00	0.00	0.0	23.4911	-14.33
L11	121.66 -	TP24.9366x23.996x0.312	5.00	0.00	0.0	24.424	-15.20

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
	116.66 (11)	5				0	
L12	116.66 - 111.66 (12)	TP25.8772x24.9366x0.31 25	5.00	0.00	0.0	25.357 0	-16.08
L13	111.66 - 111 (13)	TP26.0013x25.8772x0.31 25	0.66	0.00	0.0	25.480 1	-16.20
L14	111 - 110.75 (14)	TP26.0484x26.0013x0.57 5	0.25	0.00	0.0	46.490 2	-18.69
L15	110.75 - 105.75 (15)	TP26.9889x26.0484x0.56 25	5.00	0.00	0.0	47.181 1	-19.96
L16	105.75 - 101.5 (16)	TP27.7884x26.9889x0.55	4.25	0.00	0.0	47.550 1	-21.08
L17	101.5 - 101.25 (17)	TP27.8355x27.7884x0.98 75	0.25	0.00	0.0	84.150 3	-21.19
L18	101.25 - 101 (18)	TP27.8825x27.8355x0.98 75	0.25	0.00	0.0	84.297 7	-21.28
L19	101 - 100.75 (19)	TP27.9295x27.8825x0.72 5	0.25	0.00	0.0	62.601 7	-21.24
L20	100.75 - 95.75 (20)	TP28.8701x27.9295x0.71 25	5.00	0.00	0.0	63.677 7	-22.73
L21	95.75 - 87.83 (21)	TP30.36x28.8701x0.7	7.92	0.00	0.0	64.088 8	-23.83
L22	87.83 - 86.83 (22)	TP29.9235x28.9205x0.93 75	5.33	0.00	0.0	86.251 6	-26.86
L23	86.83 - 81.83 (23)	TP30.8645x29.9235x0.92 5	5.00	0.00	0.0	87.900 9	-28.80
L24	81.83 - 81.5 (24)	TP30.9266x30.8645x0.92 5	0.33	0.00	0.0	88.083 2	-28.94
L25	81.5 - 81.25 (25)	TP30.9737x30.9266x0.95	0.25	0.00	0.0	90.530 3	-29.04
L26	81.25 - 76.25 (26)	TP31.9146x30.9737x0.92 5	5.00	0.00	0.0	90.984 0	-31.04
L27	76.25 - 71.25 (27)	TP32.8556x31.9146x0.9	5.00	0.00	0.0	91.284 4	-33.07
L28	71.25 - 66.25 (28)	TP33.7966x32.8556x0.87 5	5.00	0.00	0.0	91.431 4	-35.15
L29	66.25 - 61.25 (29)	TP34.7376x33.7966x0.86 25	5.00	0.00	0.0	92.735 5	-37.25
L30	61.25 - 56.25 (30)	TP35.6785x34.7376x0.85	5.00	0.00	0.0	93.963 9	-39.39
L31	56.25 - 51.25 (31)	TP36.6195x35.6785x0.82 5	5.00	0.00	0.0	93.729 7	-41.58
L32	51.25 - 43.33 (32)	TP38.11x36.6195x0.825	7.92	0.00	0.0	95.006 0	-42.73
L33	43.33 - 42.33 (33)	TP37.5463x36.3569x1.03 75	6.33	0.00	0.0	120.22 40	-47.99
L34	42.33 - 37.4 (34)	TP38.4726x37.5463x1.02 5	4.93	0.00	0.0	121.83 00	-50.65
L35	37.4 - 37.15 (35)	TP38.5196x38.4726x1.02 5	0.25	0.00	0.0	121.98 30	-50.80
L36	37.15 - 32.15 (36)	TP39.4591x38.5196x1	5.00	0.00	0.0	122.06 90	-53.52
L37	32.15 - 27.15 (37)	TP40.3986x39.4591x0.97 5	5.00	0.00	0.0	122.00 20	-56.19
L38	27.15 - 22.15 (38)	TP41.3381x40.3986x0.96 25	5.00	0.00	0.0	123.34 60	-58.99
L39	22.15 - 19.5 (39)	TP41.836x41.3381x0.95	2.65	0.00	0.0	123.28 40	-60.48
L40	19.5 - 19.25 (40)	TP41.883x41.836x1.025	0.25	0.00	0.0	132.92 50	-60.65
L41	19.25 - 14.25 (41)	TP42.8225x41.883x1	5.00	0.00	0.0	132.74 50	-63.64
L42	14.25 - 9.25 (42)	TP43.762x42.8225x1	5.00	0.00	0.0	135.72 60	-66.68
L43	9.25 - 9 (43)	TP43.8089x43.762x1	0.25	0.00	0.0	135.87 60	-66.84
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.02 5	0.25	0.00	0.0	139.34 40	-67.00
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.02 5	1.75	0.00	0.0	140.41 40	-68.08
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.97	0.25	0.00	0.0	133.86	-68.26

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
		5				40	
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.97	1.75	0.00	0.0	134.88	-69.31
		5				20	
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	0.25	0.00	0.0	198.62	-69.53
						40	
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.42	1.75	0.00	0.0	196.79	-70.86
		5				90	
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	0.25	0.00	0.0	200.35	-71.08
						30	
L51	2.75 - 2.25	TP45.0772x44.9833x1.45	0.50	0.00	0.0	200.78	-71.47
	(51)					60	
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	0.25	0.00	0.0	167.29	-71.64
						90	
L53	2 - 0 (53)	TP45.5x45.1242x1.175	2.00	0.00	0.0	165.30	-72.96
						80	

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	169 - 164 (1)	TP16.4546x15.5x0.25	11.38	0.00
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	44.63	0.00
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	102.40	0.00
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	174.70	0.00
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	257.71	0.00
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	344.88	0.00
L7	139 - 133.33	TP22.31x21.2275x0.25	389.89	0.00
	(7)			
L8	133.33 -	TP22.1148x21.1742x0.31	493.17	0.00
	131.66 (8)	25		
L9	131.66 -	TP23.0554x22.1148x0.31	599.28	0.00
	126.66 (9)	25		
L10	126.66 -	TP23.996x23.0554x0.312	713.89	0.00
	121.66 (10)	5		
L11	121.66 -	TP24.9366x23.996x0.312	830.66	0.00
	116.66 (11)	5		
L12	116.66 -	TP25.8772x24.9366x0.31	949.44	0.00
	111.66 (12)	25		
L13	111.66 - 111	TP26.0013x25.8772x0.31	965.26	0.00
	(13)	25		
L14	111 - 110.75	TP26.0484x26.0013x0.57	971.96	0.00
	(14)	5		
L15	110.75 -	TP26.9889x26.0484x0.56	1114.42	0.00
	105.75 (15)	25		
L16	105.75 -	TP27.7884x26.9889x0.55	1237.36	0.00
	101.5 (16)			
L17	101.5 -	TP27.8355x27.7884x0.98	1244.65	0.00
	101.25 (17)	75		
L18	101.25 - 101	TP27.8825x27.8355x0.98	1251.94	0.00
	(18)	75		
L19	101 - 100.75	TP27.9295x27.8825x0.72	1259.29	0.00
	(19)	5		
L20	100.75 -	TP28.8701x27.9295x0.71	1409.37	0.00
	95.75 (20)	25		
L21	95.75 - 87.83	TP30.36x28.8701x0.7	1520.09	0.00
	(21)			
L22	87.83 - 86.83	TP29.9235x28.9205x0.93	1689.43	0.00
	(22)	75		
L23	86.83 - 81.83	TP30.8645x29.9235x0.92	1853.53	0.00
	(23)	5		
L24	81.83 - 81.5	TP30.9266x30.8645x0.92	1864.53	0.00
	(24)	5		
L25	81.5 - 81.25	TP30.9737x30.9266x0.95	1872.88	0.00
	(25)			
L26	81.25 - 76.25	TP31.9146x30.9737x0.92	2042.31	0.00
	(26)	5		
L27	76.25 - 71.25	TP32.8556x31.9146x0.9	2216.48	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
	(27)			
L28	71.25 - 66.25	TP33.7966x32.8556x0.87	2395.34	0.00
	(28)	5		
L29	66.25 - 61.25	TP34.7376x33.7966x0.86	2578.83	0.00
	(29)	25		
L30	61.25 - 56.25	TP35.6785x34.7376x0.85	2766.88	0.00
	(30)			
L31	56.25 - 51.25	TP36.6195x35.6785x0.82	2958.49	0.00
	(31)	5		
L32	51.25 - 43.33	TP38.11x36.6195x0.825	3058.73	0.00
	(32)			
L33	43.33 - 42.33	TP37.5463x36.3569x1.03	3307.23	0.00
	(33)	75		
L34	42.33 - 37.4	TP38.4726x37.5463x1.02	3503.91	0.00
	(34)	5		
L35	37.4 - 37.15	TP38.5196x38.4726x1.02	3513.94	0.00
	(35)	5		
L36	37.15 - 32.15	TP39.4591x38.5196x1	3715.85	0.00
	(36)			
L37	32.15 - 27.15	TP40.3986x39.4591x0.97	3935.51	0.00
	(37)	5		
L38	27.15 - 22.15	TP41.3381x40.3986x0.96	4161.82	0.00
	(38)	25		
L39	22.15 - 19.5	TP41.836x41.3381x0.95	4283.50	0.00
	(39)			
L40	19.5 - 19.25	TP41.883x41.836x1.025	4295.04	0.00
	(40)			
L41	19.25 - 14.25	TP42.8225x41.883x1	4527.94	0.00
	(41)			
L42	14.25 - 9.25	TP43.762x42.8225x1	4764.76	0.00
	(42)			
L43	9.25 - 9 (43)	TP43.8089x43.762x1	4776.70	0.00
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.02	4788.65	0.00
		5		
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.02	4872.59	0.00
		5		
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.97	4884.63	0.00
		5		
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.97	4969.10	0.00
		5		
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	4981.21	0.00
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.42	5066.26	0.00
		5		
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	5078.45	0.00
L51	2.75 - 2.25	TP45.0772x44.9833x1.45	5102.87	0.00
	(51)			
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	5115.09	0.00
L53	2 - 0 (53)	TP45.5x45.1242x1.175	5213.24	0.00

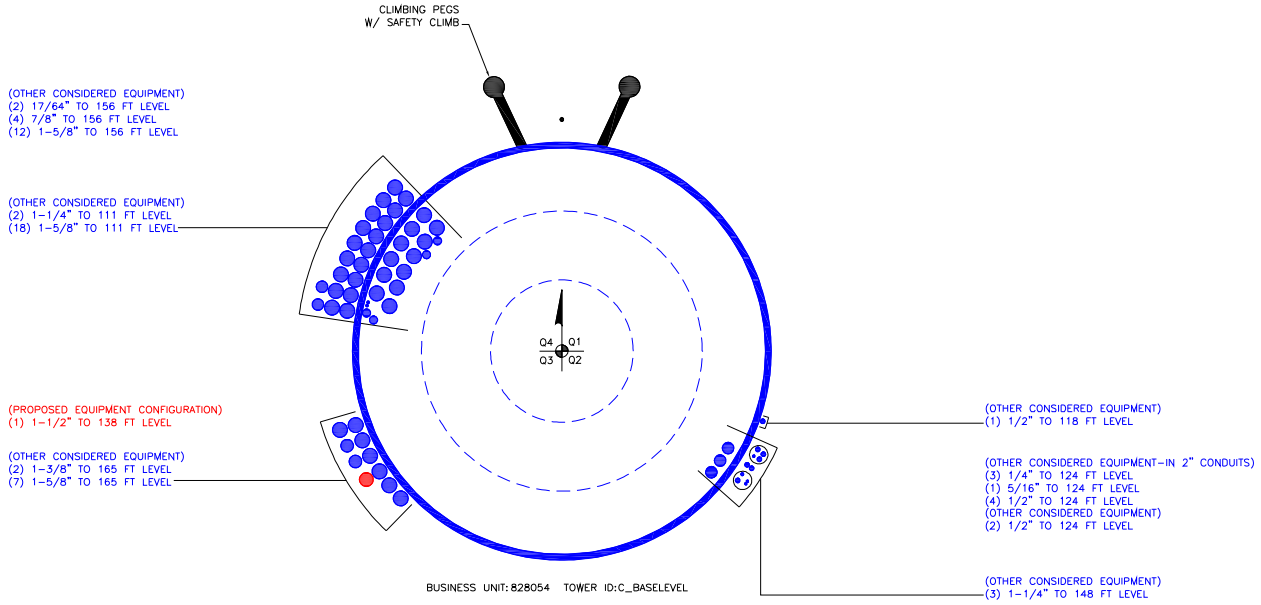
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	169 - 164 (1)	TP16.4546x15.5x0.25	6.48	0.00
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	6.81	0.00
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	14.13	0.61
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	14.81	0.73
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	17.23	0.73
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	17.66	0.72
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	20.42	0.51
L8	133.33 - 131.66 (8)	TP22.1148x21.1742x0.3125	20.91	0.51
L9	131.66 - 126.66 (9)	TP23.0554x22.1148x0.3125	21.77	1.52
L10	126.66 - 121.66	TP23.996x23.0554x0.3125	23.19	0.09
	(10)			
L11	121.66 - 116.66	TP24.9366x23.996x0.3125	23.60	0.09
	(11)			

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L12	116.66 - 111.66 (12)	TP25.8772x24.9366x0.3125	23.96	0.09
L13	111.66 - 111 (13)	TP26.0013x25.8772x0.3125	24.00	0.09
L14	111 - 110.75 (14)	TP26.0484x26.0013x0.575	28.27	0.09
L15	110.75 - 105.75 (15)	TP26.9889x26.0484x0.5625	28.72	0.09
L16	105.75 - 101.5 (16)	TP27.7884x26.9889x0.55	29.12	0.09
L17	101.5 - 101.25 (17)	TP27.8355x27.7884x0.9875	29.17	0.09
L18	101.25 - 101 (18)	TP27.8825x27.8355x0.9875	29.20	0.09
L19	101 - 100.75 (19)	TP27.9295x27.8825x0.725	29.58	0.74
L20	100.75 - 95.75 (20)	TP28.8701x27.9295x0.7125	30.51	1.12
L21	95.75 - 87.83 (21)	TP30.36x28.8701x0.7	31.18	1.17
L22	87.83 - 86.83 (22)	TP29.9235x28.9205x0.9375	32.34	1.25
L23	86.83 - 81.83 (23)	TP30.8645x29.9235x0.925	33.30	1.31
L24	81.83 - 81.5 (24)	TP30.9266x30.8645x0.925	33.37	1.31
L25	81.5 - 81.25 (25)	TP30.9737x30.9266x0.95	33.43	1.31
L26	81.25 - 76.25 (26)	TP31.9146x30.9737x0.925	34.37	1.37
L27	76.25 - 71.25 (27)	TP32.8556x31.9146x0.9	35.31	1.43
L28	71.25 - 66.25 (28)	TP33.7966x32.8556x0.875	36.24	1.49
L29	66.25 - 61.25 (29)	TP34.7376x33.7966x0.8625	37.16	1.55
L30	61.25 - 56.25 (30)	TP35.6785x34.7376x0.85	38.07	1.61
L31	56.25 - 51.25 (31)	TP36.6195x35.6785x0.825	38.58	1.61
L32	51.25 - 43.33 (32)	TP38.11x36.6195x0.825	38.84	1.61
L33	43.33 - 42.33 (33)	TP37.5463x36.3569x1.0375	39.66	1.61
L34	42.33 - 37.4 (34)	TP38.4726x37.5463x1.025	40.14	1.61
L35	37.4 - 37.15 (35)	TP38.5196x38.4726x1.025	40.15	1.61
L36	37.15 - 32.15 (36)	TP39.4591x38.5196x1	40.61	1.61
L37	32.15 - 27.15 (37)	TP40.3986x39.4591x0.975	44.83	2.54
L38	27.15 - 22.15 (38)	TP41.3381x40.3986x0.9625	45.70	2.56
L39	22.15 - 19.5 (39)	TP41.836x41.3381x0.95	46.15	2.56
L40	19.5 - 19.25 (40)	TP41.883x41.836x1.025	46.17	2.57
L41	19.25 - 14.25 (41)	TP42.8225x41.883x1	46.98	2.58
L42	14.25 - 9.25 (42)	TP43.762x42.8225x1	47.76	2.59
L43	9.25 - 9 (43)	TP43.8089x43.762x1	47.78	2.59
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.025	47.82	2.59
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.025	48.13	2.60
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.975	48.13	2.60
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.975	48.44	2.60
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	48.44	2.60
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.425	48.76	2.61
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	48.77	2.61
L51	2.75 - 2.25 (51)	TP45.0772x44.9833x1.45	48.86	2.61
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	48.90	2.61
L53	2 - 0 (53)	TP45.5x45.1242x1.175	49.24	2.61

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(2) 17/64" TO 156 FT LEVEL
(4) 7/8" TO 156 FT LEVEL
(12) 1-5/8" TO 156 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-1/4" TO 111 FT LEVEL
(18) 1-5/8" TO 111 FT LEVEL
Q4
Q1
Q3
Q2
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 138 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-3/8" TO 165 FT LEVEL
(7) 1-5/8" TO 165 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 118 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN 2" CONDUITS)
(3) 1/4" TO 124 FT LEVEL
(1) 5/16" TO 124 FT LEVEL
(4) 1/2" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-1/4" TO 148 FT LEVEL
BUSINESS UNIT: 828054 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 828054

Work Order: 1963266

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	169	35.67	3.33	18	15.5	22.31	0.25	Auto	A572-65
2	136.66	48.83	4.33	18	21.17	30.36	0.3125	Auto	A572-65
3	92.16	48.83	5.33	18	28.92	38.11	0.375	Auto	A572-65
4	48.66	48.66	0	18	36.36	45.5	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2.25	19.5	plate	CI-065125; (1) (1.1875)	4		o				o					o				o			
2	19.5	44.58	plate	CI-060100; (1) (1.1875)	4		o				o					o				o			
3	3	5	plate	FP 1.25 x 8_1	4		o				o					o				o			
4	81.5	88.5	plate	CI-045100; (1) (1.1875)	3			o						o						o			
5	0	3	plate	FP 1.25 x 6_1	6	o			o			o			o			o			o		
6	101	111	plate	CI-060100; (1) (1.1875)	3			o						o						o			
7	0	37.4	plate	P 6 x 1.25; (1) (1.1875)	4	o						o			o						o		
8	0	7	plate	P 6 x 1.25; (1) (1.1875)	2				o									o					
9	9	37.4	plate	P 6 x 1.25; (1) (1.1875)	2				o									o					
10	7	9	plate	FP 4 x 1.25_1	4			o		o							o		o				
11	37.4	81.5	plate	P 6 x 1.25; (1) (1.1875)	6	o			o			o			o			o			o		
12	81.5	101.5	plate	P 4 x 1.25; (1) (1.1875)	6	o			o			o			o			o			o		
13																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.25	8.125	0.625	None	n/a	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
2	6	1	6	0.5	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	16.000	4.750	1.1875	A572-65
3	1.25	8	10	4	Capacity Input	n/a	Capacity Input	n/a	0.000	10.000	0.0000	A572-65
4	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
5	1.25	6	7.5	3	None	n/a	None	n/a	0.000	7.500	0.0000	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	16.000	4.750	1.1875	A572-65
7	6	1.25	7.5	0.625	PC 8.8 - M20 (100)	36	PC 8.8 - M20 (100)	36.000	12.000	5.938	1.1875	A572-65
8	6	1.25	7.5	0.625	PC 8.8 - M20 (100)	36	PC 8.8 - M20 (100)	36.000	12.000	5.938	1.1875	A572-65
9	6	1.25	7.5	0.625	PC 8.8 - M20 (100)	36	PC 8.8 - M20 (100)	36.000	12.000	5.938	1.1875	A572-65
10	4	1.25	5	0.625	None	n/a	None	n/a	12.000	5.000	0.0000	A572-65
11	6	1.25	7.5	0.625	PC 8.8 - M20 (100)	36	PC 8.8 - M20 (100)	36.000	12.000	5.938	1.1875	A572-65
12	4	1.25	5	0.625	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	18.000	3.438	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
CCI-065125; (1) (1.1875)_1	Top	11	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-				-	-		-	-	-
CCI-060100; (1) (1.1875)_1	Top	11	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	11	N	3	3	-	-	-	-	-	-	-	-	-
FP 1.25 x 8_1	Top					-	-	-	-	-	-	-	-	475.31
	Bottom	-	-	-	-				-	-		-	-	475.31
CCI-045100; (1) (1.1875)_1	Top	6	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	6	N	3	3	-	-	-	-	-	-	-	-	-
FP 1.25 x 6_1	Top					-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-				-	-		-	-	-
FP 6 x 1.25; (1) (1.1875)_1	Top	12	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	12	N	3	3	-	-	-	-	-	-	-	-	-
FP 4 x 1.25_1	Top					-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-				-	-		-	-	-
FP 4 x 1.25; (1) (1.1875)_1	Top	10	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	10	N	3	3	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	169 - 164	5		18	15.500	16.455	0.25	A572-65	1.000
2	164 - 159	5		18	16.455	17.409	0.25	A572-65	1.000
3	159 - 154	5		18	17.409	18.364	0.25	A572-65	1.000
4	154 - 149	5		18	18.364	19.318	0.25	A572-65	1.000
5	149 - 144	5		18	19.318	20.273	0.25	A572-65	1.000
6	144 - 139	5		18	20.273	21.228	0.25	A572-65	1.000
7	139 - 136.66	5.67	3.33	18	21.228	22.310	0.25	A572-65	1.000
8	136.66 - 131.66	5		18	21.174	22.115	0.3125	A572-65	1.000
9	131.66 - 126.66	5		18	22.115	23.055	0.3125	A572-65	1.000
10	126.66 - 121.66	5		18	23.055	23.996	0.3125	A572-65	1.000
11	121.66 - 116.66	5		18	23.996	24.937	0.3125	A572-65	1.000
12	116.66 - 111.66	5		18	24.937	25.877	0.3125	A572-65	1.000
13	111.66 - 111	0.66		18	25.877	26.001	0.3125	A572-65	1.000
14	111 - 110.75	0.25		18	26.001	26.048	0.575	A572-65	0.936
15	110.75 - 105.75	5		18	26.048	26.989	0.5625	A572-65	0.942
16	105.75 - 101.5	4.25		18	26.989	27.788	0.55	A572-65	0.952
17	101.5 - 101.25	0.25		18	27.788	27.835	0.9875	A572-65	0.895
18	101.25 - 101	0.25		18	27.835	27.882	0.9875	A572-65	0.894
19	101 - 100.75	0.25		18	27.882	27.930	0.725	A572-65	0.917
20	100.75 - 95.75	5		18	27.930	28.870	0.7125	A572-65	0.916
21	95.75 - 92.16	7.92	4.33	18	28.870	30.360	0.7	A572-65	0.921
22	92.16 - 86.83	5.33		18	28.920	29.924	0.9375	A572-65	0.912
23	86.83 - 81.83	5		18	29.924	30.865	0.925	A572-65	0.908
24	81.83 - 81.5	0.33		18	30.865	30.927	0.925	A572-65	0.907
25	81.5 - 81.25	0.25		18	30.927	30.974	0.95	A572-65	0.899
26	81.25 - 76.25	5		18	30.974	31.915	0.925	A572-65	0.907
27	76.25 - 71.25	5		18	31.915	32.856	0.9	A572-65	0.916
28	71.25 - 66.25	5		18	32.856	33.797	0.875	A572-65	0.927
29	66.25 - 61.25	5		18	33.797	34.738	0.8625	A572-65	0.926
30	61.25 - 56.25	5		18	34.738	35.679	0.85	A572-65	0.926
31	56.25 - 51.25	5		18	35.679	36.619	0.825	A572-65	0.940
32	51.25 - 48.66	7.92	5.33	18	36.619	38.110	0.825	A572-65	0.934
33	48.66 - 42.33	6.33		18	36.357	37.546	1.0375	A572-65	0.942
34	42.33 - 37.4	4.93		18	37.546	38.473	1.025	A572-65	0.939
35	37.4 - 37.15	0.25		18	38.473	38.520	1.025	A572-65	0.938
36	37.15 - 32.15	5		18	38.520	39.459	1	A572-65	0.946
37	32.15 - 27.15	5		18	39.459	40.399	0.975	A572-65	0.956
38	27.15 - 22.15	5		18	40.399	41.338	0.9625	A572-65	0.955
39	22.15 - 19.5	2.65		18	41.338	41.836	0.95	A572-65	0.960
40	19.5 - 19.25	0.25		18	41.836	41.883	1.025	A572-65	0.955
41	19.25 - 14.25	5		18	41.883	42.822	1	A572-65	0.964
42	14.25 - 9.25	5		18	42.822	43.762	1	A572-65	0.952
43	9.25 - 9	0.25		18	43.762	43.809	1	A572-65	0.951
44	9 - 8.75	0.25		18	43.809	43.856	1.025	A572-65	0.963
45	8.75 - 7	1.75		18	43.856	44.185	1.025	A572-65	0.959
46	7 - 6.75	0.25		18	44.185	44.232	0.975	A572-65	0.969
47	6.75 - 5	1.75		18	44.232	44.561	0.975	A572-65	0.965
48	5 - 4.75	0.25		18	44.561	44.607	1.45	A572-65	0.857
49	4.75 - 3	1.75		18	44.607	44.936	1.425	A572-65	0.867
50	3 - 2.75	0.25		18	44.936	44.983	1.45	A572-65	0.876
51	2.75 - 2.25	0.5		18	44.983	45.077	1.45	A572-65	0.875
52	2.25 - 2	0.25		18	45.077	45.124	1.2	A572-65	0.856
53	2 - 0	2		18	45.124	45.500	1.175	A572-65	0.869

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	169 - 164	3.42	11.38	6.48
2	164 - 159	3.69	44.63	6.81
3	159 - 154	6.33	102.40	14.13
4	154 - 149	6.71	174.70	14.81
5	149 - 144	8.28	257.72	17.23
6	144 - 139	8.84	344.88	17.66
7	139 - 136.66	11.44	389.89	20.42
8	136.66 - 131.66	12.30	493.17	20.91
9	131.66 - 126.66	13.02	599.37	21.82
10	126.66 - 121.66	14.33	713.89	23.19
11	121.66 - 116.66	15.20	830.66	23.60
12	116.66 - 111.66	16.08	949.44	23.96
13	111.66 - 111	16.20	965.26	24.00
14	111 - 110.75	18.69	971.96	28.27
15	110.75 - 105.75	19.96	1114.42	28.72
16	105.75 - 101.5	21.08	1237.36	29.12
17	101.5 - 101.25	21.19	1244.65	29.17
18	101.25 - 101	21.28	1251.94	29.20
19	101 - 100.75	21.24	1259.29	29.58
20	100.75 - 95.75	22.73	1409.37	30.51
21	95.75 - 92.16	23.83	1520.09	31.18
22	92.16 - 86.83	26.86	1689.43	32.34
23	86.83 - 81.83	28.80	1853.53	33.30
24	81.83 - 81.5	28.94	1864.53	33.37
25	81.5 - 81.25	29.04	1872.87	33.43
26	81.25 - 76.25	31.04	2042.30	34.37
27	76.25 - 71.25	33.07	2216.48	35.31
28	71.25 - 66.25	35.15	2395.34	36.24
29	66.25 - 61.25	37.25	2578.83	37.16
30	61.25 - 56.25	39.39	2766.89	38.07
31	56.25 - 51.25	41.58	2958.49	38.58
32	51.25 - 48.66	42.73	3058.73	38.84
33	48.66 - 42.33	47.99	3307.23	39.66
34	42.33 - 37.4	50.65	3503.91	40.14
35	37.4 - 37.15	50.80	3513.94	40.15
36	37.15 - 32.15	53.52	3715.85	40.61
37	32.15 - 27.15	56.19	3935.51	44.83
38	27.15 - 22.15	58.99	4161.82	45.70
39	22.15 - 19.5	60.48	4283.50	46.15
40	19.5 - 19.25	60.65	4295.04	46.17
41	19.25 - 14.25	63.64	4527.94	46.98
42	14.25 - 9.25	66.68	4764.76	47.76
43	9.25 - 9	66.84	4776.70	47.78
44	9 - 8.75	67.00	4788.65	47.82
45	8.75 - 7	68.08	4872.59	48.13
46	7 - 6.75	68.26	4884.62	48.13
47	6.75 - 5	69.31	4969.10	48.44
48	5 - 4.75	69.53	4981.21	48.44
49	4.75 - 3	70.86	5066.26	48.76
50	3 - 2.75	71.08	5078.45	48.77
51	2.75 - 2.25	71.47	5102.86	48.86
52	2.25 - 2	71.64	5115.09	48.90
53	2 - 0	72.96	5213.24	49.24

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	3.9%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	12.5%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	25.7%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	38.9%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	51.9%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	63.0%	Pass
139 - 136.66	Pole	TP22.31x21.228x0.25	Pole	68.5%	Pass
136.66 - 131.66	Pole	TP22.115x21.174x0.3125	Pole	66.8%	Pass
131.66 - 126.66	Pole	TP23.055x22.115x0.3125	Pole	74.4%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	81.7%	Pass
121.66 - 116.66	Pole	TP24.937x23.996x0.3125	Pole	87.8%	Pass
116.66 - 111.66	Pole	TP25.877x24.937x0.3125	Pole	93.0%	Pass
111.66 - 111	Pole	TP26.001x25.877x0.3125	Pole	93.6%	Pass
111 - 110.75	Pole + Reinf.	TP26.048x26.001x0.575	Reinf. 6 Tension Rupture	83.9%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.048x0.5625	Reinf. 6 Tension Rupture	90.9%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.788x26.989x0.55	Reinf. 6 Tension Rupture	96.3%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.835x27.788x0.9875	Reinf. 12 Tension Rupture	65.6%	Pass
101.25 - 101	Pole + Reinf.	TP27.882x27.835x0.9875	Reinf. 12 Tension Rupture	65.9%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.882x0.725	Reinf. 12 Tension Rupture	87.7%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.87x27.93x0.7125	Reinf. 12 Tension Rupture	93.5%	Pass
95.75 - 92.16	Pole + Reinf.	TP30.36x28.87x0.7	Reinf. 12 Tension Rupture	97.4%	Pass
92.16 - 86.83	Pole + Reinf.	TP29.924x28.92x0.9375	Reinf. 12 Tension Rupture	80.2%	Pass
86.83 - 81.83	Pole + Reinf.	TP30.865x29.924x0.925	Reinf. 12 Tension Rupture	84.2%	Pass
81.83 - 81.5	Pole + Reinf.	TP30.927x30.865x0.925	Reinf. 12 Tension Rupture	84.4%	Pass
81.5 - 81.25	Pole + Reinf.	TP30.974x30.927x0.95	Reinf. 11 Tension Rupture	71.7%	Pass
81.25 - 76.25	Pole + Reinf.	TP31.915x30.974x0.925	Reinf. 11 Tension Rupture	74.9%	Pass
76.25 - 71.25	Pole + Reinf.	TP32.856x31.915x0.9	Reinf. 11 Tension Rupture	78.0%	Pass
71.25 - 66.25	Pole + Reinf.	TP33.797x32.856x0.875	Reinf. 11 Tension Rupture	80.9%	Pass
66.25 - 61.25	Pole + Reinf.	TP34.738x33.797x0.8625	Reinf. 11 Tension Rupture	83.7%	Pass
61.25 - 56.25	Pole + Reinf.	TP35.679x34.738x0.85	Reinf. 11 Tension Rupture	86.4%	Pass
56.25 - 51.25	Pole + Reinf.	TP36.619x35.679x0.825	Reinf. 11 Tension Rupture	89.0%	Pass
51.25 - 48.66	Pole + Reinf.	TP38.11x36.619x0.825	Reinf. 11 Tension Rupture	90.2%	Pass
48.66 - 42.33	Pole + Reinf.	TP37.546x36.357x1.0375	Reinf. 11 Tension Rupture	76.7%	Pass
42.33 - 37.4	Pole + Reinf.	TP38.473x37.546x1.025	Reinf. 11 Tension Rupture	78.5%	Pass
37.4 - 37.15	Pole + Reinf.	TP38.52x38.473x1.025	Reinf. 7 Tension Rupture	78.6%	Pass
37.15 - 32.15	Pole + Reinf.	TP39.459x38.52x1	Reinf. 7 Tension Rupture	80.4%	Pass
32.15 - 27.15	Pole + Reinf.	TP40.399x39.459x0.975	Reinf. 7 Tension Rupture	82.5%	Pass
27.15 - 22.15	Pole + Reinf.	TP41.338x40.399x0.9625	Reinf. 7 Tension Rupture	84.4%	Pass
22.15 - 19.5	Pole + Reinf.	TP41.836x41.338x0.95	Reinf. 7 Tension Rupture	85.5%	Pass
19.5 - 19.25	Pole + Reinf.	TP41.883x41.836x1.025	Reinf. 7 Tension Rupture	80.0%	Pass
19.25 - 14.25	Pole + Reinf.	TP42.822x41.883x1	Reinf. 7 Tension Rupture	81.8%	Pass
14.25 - 9.25	Pole + Reinf.	TP43.762x42.822x1	Reinf. 7 Tension Rupture	83.5%	Pass
9.25 - 9	Pole + Reinf.	TP43.809x43.762x1	Reinf. 7 Tension Rupture	83.6%	Pass
9 - 8.75	Pole + Reinf.	TP43.856x43.809x1.025	Reinf. 7 Tension Rupture	80.6%	Pass
8.75 - 7	Pole + Reinf.	TP44.185x43.856x1.025	Reinf. 7 Tension Rupture	81.2%	Pass
7 - 6.75	Pole + Reinf.	TP44.232x44.185x0.975	Reinf. 7 Tension Rupture	84.4%	Pass
6.75 - 5	Pole + Reinf.	TP44.561x44.232x0.975	Reinf. 7 Tension Rupture	84.9%	Pass
5 - 4.75	Pole + Reinf.	TP44.607x44.561x1.45	Reinf. 3 Connection	67.1%	Pass
4.75 - 3	Pole + Reinf.	TP44.936x44.607x1.425	Reinf. 3 Connection	67.6%	Pass
3 - 2.75	Pole + Reinf.	TP44.983x44.936x1.45	Reinf. 7 Tension Rupture	59.7%	Pass
2.75 - 2.25	Pole + Reinf.	TP45.077x44.983x1.45	Reinf. 7 Tension Rupture	59.8%	Pass
2.25 - 2	Pole + Reinf.	TP45.124x45.077x1.2	Reinf. 8 Tension Rupture	71.9%	Pass
2 - 0	Pole + Reinf.	TP45.5x45.124x1.175	Reinf. 8 Tension Rupture	72.5%	Pass
				Summary	
			Pole	93.6%	Pass
			Reinforcement	97.4%	Pass
			Overall	97.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
169 - 164	426	n/a	426	12.86	n/a	12.86	3.9%												
164 - 159	506	n/a	506	13.62	n/a	13.62	12.5%												
159 - 154	596	n/a	596	14.37	n/a	14.37	25.7%												
154 - 149	695	n/a	695	15.13	n/a	15.13	38.9%												
149 - 144	804	n/a	804	15.89	n/a	15.89	51.9%												
144 - 139	925	n/a	925	16.65	n/a	16.65	63.0%												
139 - 136.66	985	n/a	985	17.00	n/a	17.00	68.5%												
136.66 - 131.66	1298	n/a	1298	21.62	n/a	21.62	66.8%												
131.66 - 126.66	1474	n/a	1474	22.56	n/a	22.56	74.4%												
126.66 - 121.66	1664	n/a	1664	23.49	n/a	23.49	81.7%												
121.66 - 116.66	1870	n/a	1870	24.42	n/a	24.42	87.8%												
116.66 - 111.66	2093	n/a	2093	25.36	n/a	25.36	93.0%												
111.66 - 111	2124	n/a	2124	25.48	n/a	25.48	93.6%												
111 - 110.75	2135	1674	3809	25.53	18.00	43.53	52.0%						83.9%						
110.75 - 105.75	2378	1790	4168	26.46	18.00	44.46	56.4%						90.9%						
105.75 - 101.5	2598	1892	4491	27.25	18.00	45.25	59.8%						96.3%						
101.5 - 101.25	2612	5093	7705	27.30	48.00	75.30	35.1%						56.6%						65.6%
101.25 - 101	2625	5109	7734	27.35	48.00	75.35	35.2%						56.8%						65.9%
101 - 100.75	2639	3215	5853	27.39	30.00	57.39	46.9%												87.7%
100.75 - 95.75	2918	3424	6342	28.32	30.00	58.32	50.1%												93.5%
95.75 - 92.16	3129	3578	6708	28.99	30.00	58.99	52.3%												97.4%
92.16 - 86.83	3878	5292	9170	35.17	43.50	78.67	43.0%				75.8%								80.2%
86.83 - 81.83	4261	5615	9876	36.29	43.50	79.79	45.2%				79.5%								84.2%
81.83 - 81.5	4287	5636	9923	36.36	43.50	79.86	45.4%				79.8%								84.4%
81.5 - 81.25	4307	5911	10218	36.42	45.00	81.42	44.3%											71.7%	
81.25 - 76.25	4716	6257	10974	37.54	45.00	82.54	46.3%											74.9%	
76.25 - 71.25	5151	6613	11765	38.66	45.00	83.66	48.3%											78.0%	
71.25 - 66.25	5612	6979	12591	39.78	45.00	84.78	50.2%											80.9%	
66.25 - 61.25	6099	7355	13455	40.90	45.00	85.90	52.0%											83.7%	
61.25 - 56.25	6614	7741	14356	42.02	45.00	87.02	53.7%											86.4%	
56.25 - 51.25	7157	8137	15295	43.14	45.00	88.14	55.6%											89.0%	
51.25 - 48.66	7450	8346	15796	43.72	45.00	88.72	56.5%											90.2%	
48.66 - 42.33	7721	12538	20258	44.24	69.00	113.24	48.9%		74.4%									76.7%	
42.33 - 37.4	8312	13139	21452	45.34	69.00	114.34	50.5%		76.2%									78.5%	
37.4 - 37.15	8343	13170	21513	45.40	69.00	114.40	50.6%		76.3%					78.6%		74.4%			
37.15 - 32.15	8975	13796	22771	46.52	69.00	115.52	52.1%		78.1%					80.4%		76.1%			
32.15 - 27.15	9638	14436	24074	47.64	69.00	116.64	53.8%		80.1%					82.5%		78.1%			
27.15 - 22.15	10332	15091	25423	48.75	69.00	117.75	55.5%		82.0%					84.4%		80.0%			
22.15 - 19.5	10714	15444	26158	49.35	69.00	118.35	56.4%		83.1%					85.5%		81.0%			
19.5 - 19.25	10750	17315	28066	49.40	77.50	126.90	52.8%	76.1%						80.0%		74.6%			
19.25 - 14.25	11497	18072	29569	50.52	77.50	128.02	54.4%	77.9%						81.8%		76.4%			
14.25 - 9.25	12277	18845	31122	51.64	77.50	129.14	55.9%	79.6%						83.5%		78.0%			
9.25 - 9	12317	18884	31201	51.70	77.50	129.20	56.0%	79.6%						83.6%		78.1%			
9 - 8.75	12357	20125	32482	51.75	82.50	134.25	54.0%	76.7%						80.6%			66.2%		
8.75 - 7	12640	20418	33058	52.14	82.50	134.64	54.5%	77.3%						81.2%			66.7%		
7 - 6.75	12680	19237	31918	52.20	77.50	129.70	56.7%	80.4%						84.4%	78.9%				
6.75 - 5	12968	19515	32482	52.59	77.50	130.09	57.2%	80.9%						84.9%	79.4%				
5 - 4.75	13009	33772	46781	52.65	117.50	170.15	40.1%	57.4%		67.1%				61.6%	54.3%				
4.75 - 3	13301	34230	47531	53.04	117.50	170.54	40.5%	57.9%		67.6%				62.1%	54.7%				
3 - 2.75	13343	34565	47909	53.09	122.50	175.59	40.4%	57.4%				53.5%		59.7%	57.0%				
2.75 - 2.25	13428	34700	48127	53.20	122.50	175.70	40.6%	57.5%				53.7%		59.8%	57.2%				
2.25 - 2	13470	26940	40410	53.26	90.00	143.26	48.0%					64.5%		71.9%	71.9%				
2 - 0	13812	27354	41166	53.71	90.00	143.71	48.6%					65.0%		72.5%	72.5%				

Note: Section capacity checked assuming all reinforcements are effective and using 5 degree increments.
Rating per TIA-222-H Section 15.5.

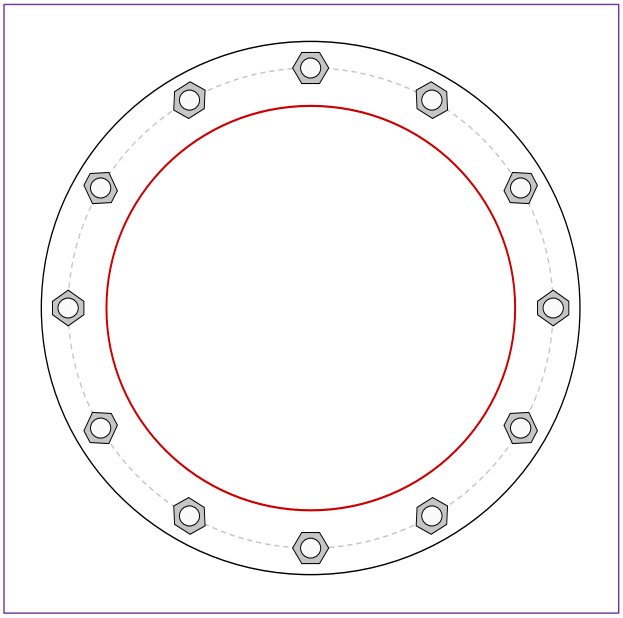
Monopole Base Plate Connection

Site Info	
BU #	828054
Site Name	South Windsor/Rt 5
Order #	556632 Rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	3456.50
Axial Force (kips)	48.40
Shear Force (kips)	49.20

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A354-BC N; Fy=109 ksi, Fu=125 ksi) on 54" BC

Base Plate Data

60" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

45.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

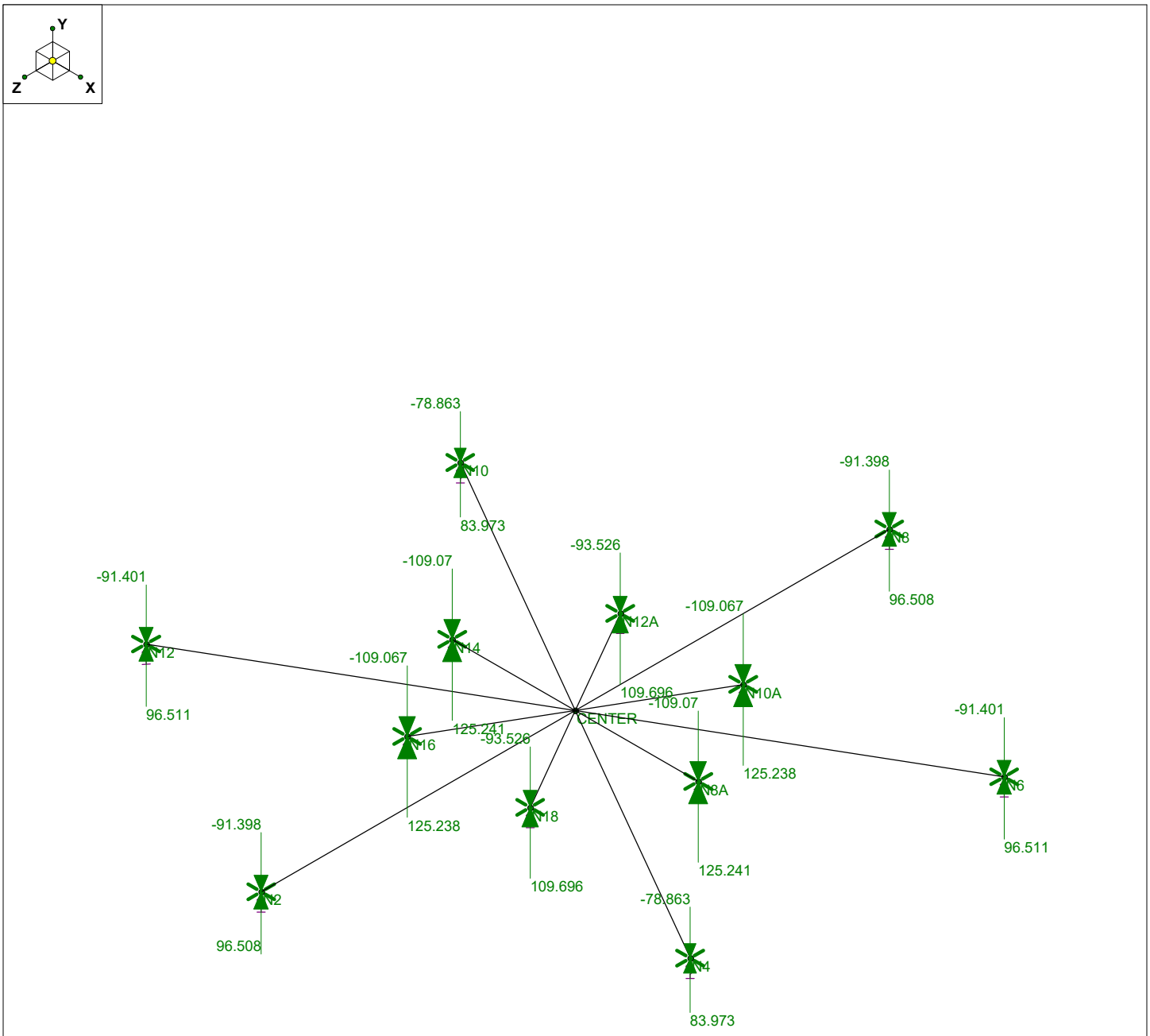
Analysis Results

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

Pu_t = 251.82	ϕPn_t = 304.69	**Stress Rating**
Vu = 4.1	ϕVn = 186.38	**78.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	36.81	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**64.9%**	**Pass**



Y-direction Reaction Units are k and k-ft (Enveloped)

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 1
NCM		July 9, 2021 at 3:39 PM
37521-0866.001.7805		37521-0866.001.7805_Composite ...

(Global) Model Settings

Display Sections for Member Calcs	2
Max Internal Sections for Member Calcs	100
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 (ft/sec^2)	32.2
Wall Mesh Size (in)	12
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	None
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]
1	gen_Conc3NW	3155	1372	.15	.6	.145
2	gen_Conc4NW	3644	1584	.15	.6	.145
3	gen_Conc3LW	2085	906	.15	.6	.11
4	gen_Conc4LW	2408	1047	.15	.6	.11
5	gen_Alum	10600	4077	.3	1.29	.173
6	gen_Steel	29000	11154	.3	.65	.49
7	RIGID	1e+6		.3	0	0

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1A	W10X33	Beam	None	A36 Gr.36	Typical	9.71	36.6	171	.583

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Di...
1	CENTER	0	0	0	0	
2	N2	0	0	12.49995	0	
3	N4	10.824885	0	6.249975	0	
4	N6	10.824885	0	-6.249975	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Di...
5	N8	-0.	0	-12.49995	0	
6	N10	-10.824885	0	-6.249975	0	
7	N12	-10.824885	0	6.249975	0	
8	N8A	4.895638	0	0	0	
9	N10A	2.447819	0	-4.239899	0	
10	N12A	-2.447819	0	-4.239899	0	
11	N14	-4.895638	0	0.	0	
12	N16	-2.447819	0	4.239899	0	
13	N18	2.447819	0	4.239899	0	

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	N14	Reaction	S973.92	Reaction			
2	N16	Reaction	S973.92	Reaction			
3	N18	Reaction	S973.92	Reaction			
4	N8A	Reaction	S973.92	Reaction			
5	N10A	Reaction	S973.92	Reaction			
6	N12A	Reaction	S973.92	Reaction			
7	N10	Reaction	S307.85	Reaction			
8	N8	Reaction	S307.85	Reaction			
9	N6	Reaction	S307.85	Reaction			
10	N4	Reaction	S307.85	Reaction			
11	N2	Reaction	S307.85	Reaction			
12	N12	Reaction	S307.85	Reaction			
13	CENTER						

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	CENTER	N2			RIGID	None	None	RIGID	Typical
2	M2	CENTER	N4			RIGID	None	None	RIGID	Typical
3	M3	CENTER	N6			RIGID	None	None	RIGID	Typical
4	M4	CENTER	N8			RIGID	None	None	RIGID	Typical
5	M5	CENTER	N10			RIGID	None	None	RIGID	Typical
6	M6	CENTER	N12			RIGID	None	None	RIGID	Typical
7	M7	CENTER	N8A			RIGID	None	None	RIGID	Typical
8	M8	CENTER	N10A			RIGID	None	None	RIGID	Typical
9	M9	CENTER	N12A			RIGID	None	None	RIGID	Typical
10	M10	CENTER	N14			RIGID	None	None	RIGID	Typical
11	M11	CENTER	N16			RIGID	None	None	RIGID	Typical
12	M12	CENTER	N18			RIGID	None	None	RIGID	Typical

Load Combinations

	Description	Solve	P...	S...	BLC	Factor	BLC	Fac.....	...	...	...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.2 Dead + Wind 0	Yes	Y		1	1.2	2	1															
2	0.9 Dead + Wind 0	Yes	Y		1	.9	2	1															
3	1.2 Dead + Wind ...	Yes	Y		1	1.2	3	1															
4	0.9 Dead + Wind ...	Yes	Y		1	.9	3	1															
5	1.2 Dead + Wind ...	Yes	Y		1	1.2	4	1															
6	0.9 Dead + Wind ...	Yes	Y		1	.9	4	1															
7	1.2 Dead + Wind ...	Yes	Y		1	1.2	5	1															
8	0.9 Dead + Wind ...	Yes	Y		1	.9	5	1															
9	1.2 Dead + Wind ...	Yes	Y		1	1.2	6	1															

Load Combinations (Continued)

	Description	Solve	P...	S...	BLC	Factor	BLC	Fac.....	...	...	...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
10	0.9 Dead + Wind ...	Yes	Y		1	.9	6	1															
11	1.2 Dead + Wind ...	Yes	Y		1	1.2	2	-1															
12	0.9 Dead + Wind ...	Yes	Y		1	.9	2	-1															
13	1.2 Dead + Wind ...	Yes	Y		1	1.2	3	-1															
14	0.9 Dead + Wind ...	Yes	Y		1	.9	3	-1															
15	1.2 Dead + Wind ...	Yes	Y		1	1.2	4	-1															
16	0.9 Dead + Wind ...	Yes	Y		1	.9	4	-1															
17	1.2 Dead + Wind ...	Yes	Y		1	1.2	5	-1															
18	0.9 Dead + Wind ...	Yes	Y		1	.9	5	-1															
19	1.2 Dead + Wind ...	Yes	Y		1	1.2	6	-1															
20	0.9 Dead + Wind ...	Yes	Y		1	.9	6	-1															

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	None		-1		1				
2	WInd 0	None				1				
3	Wind 30	None				2				
4	Wind 45	None				2				
5	Wind 60	None				2				
6	Wind 90	None				1				

PAUL J. FORD & COMPANY

Date:	7/9/2021
Job #:	37521-0866.001.7805

Applied Reactions for RISA 3D		
TNX Moment =	5213.24	k-ft
TNX Axial =	72.96	kips
TNX Shear =	49.24	kips
Total Unfactored Axial =	**60.80**	**kips**
Side Bending Moment =	**5213.24**	**k-ft**
Corner Bending Moment (Mx) =	**3686.3**	**k-ft**
Corner Bending Moment (Mz)=	**3686.3**	**k-ft**

Micropile Spring Constant		
Number of Piles =	6	
B.C. =	117.5	in
Ag =	4.03	in^2
E =	29000	ksi
Lu =	10	ft
k = An*E / Lu =	973.92	k/in

Helical Anchor Spring Constant		
Number of Piles =	6	
B.C. =	300	in
Ag =	8.28	in^2
E =	29000	ksi
Lu =	65	ft
k = An*E / Lu =	307.85	k/in

Micropile Capacity		
Max Tension from RISA =	125.241	kips
Anchor Type =	Micropile	
Ultimate Load, Pu' =	418	kips
An =		in^2
Capacity (Kips)= 0.8*Pu =	334.4	
Ratio = 125.241 / 334.4 =	**37.5%**	

Helical Anchor Capacity		
Max Tension from RISA =	96.511	kips
Anchors per	2	
Helical Anchor Type =	RD4500.337	
Design Torque =	21000	ft-lbs
Ultimate Capacity =	140	kips
Installed Torque =	15000	ft-lbs
Installed Capacity =	100	kips
Total Capacity =	105	kips
Ratio = 96.511 / 105 =	**91.9%**	

			Load Distribution
Micropile Effective Moment =	44147	k-in	33.7%
Anchor Effective Moment =	86860	k-in	66.3%
Total Effective Moment =	131007	k-in	

Reaction for Helical Load transfer at Base plate:

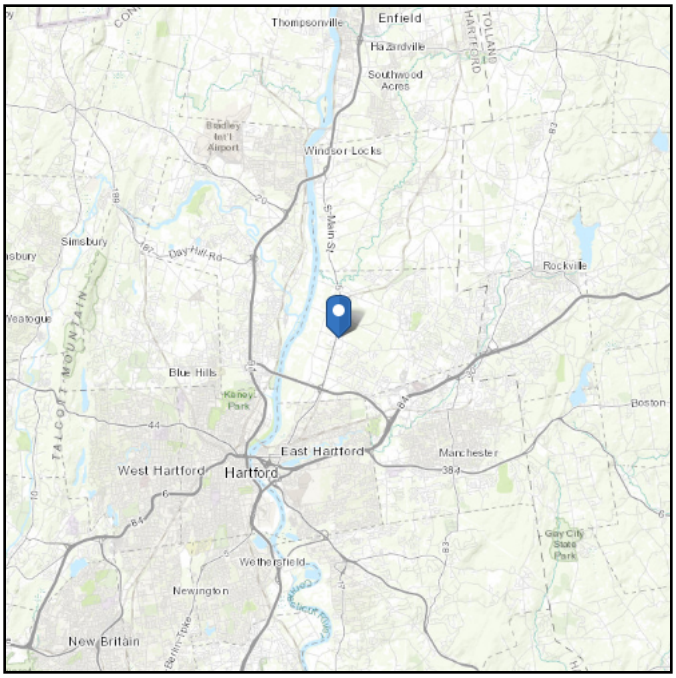
Moment =	**3456.5**	**k-ft**
Axial =	**48.4**	**kips**
Shear =	**49.2**	**kips**

ASCE 7 Hazards Report

Address:
300 Governors Hwy
South Windsor, Connecticut
06074

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

Elevation: 70.11 ft (NAVD 88)
Latitude: 41.832274
Longitude: -72.603035



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 Vmph
100-year MRI	100 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:	Wed Jan 16 2019

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.

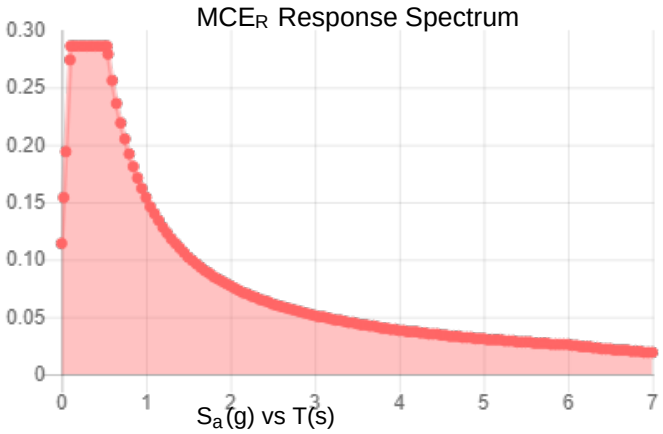
Seismic

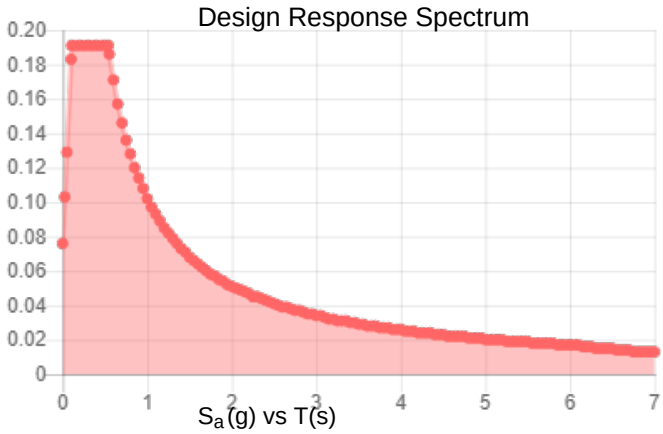
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.286	PGA_M :	0.143
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jan 16 2019

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:	Wed Jan 16 2019

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: **July 30, 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:	BOBDL00059A
	Carrier Site Name:	CT-CCI-T-828054
Crown Castle Designation:	**Crown Castle BU Number:**	828054
	Crown Castle Site Name:	South Windsor / Rt 5
	Crown Castle JDE Job Number:	650048
	Crown Castle Order Number:	556632 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	189193
Site Data:	**300 Governors Highway, South Windsor, Hartford County, CT, 06074**	
	Latitude 41°50'0.40" Longitude -72°36'11.00"	
Structure Information:	**Tower Height & Type:**	**169.0 ft Monopole**
	Mount Elevation:	**138.0 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: Steve Mustaro, P.E.

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.178
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
138.0	138.0	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	556632 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	Trylon

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	138.0	41.0	Pass
	Horizontal(s)	H3		13.7	Pass
	Standoff(s)	M2		62.8	Pass
	Bracing(s)	M1		48.5	Pass
	Handrail(s)	M22		18.7	Pass
	Mount Connection(s)	-		22.4	Pass

Structure Rating (max from all components) =	**62.8%**

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

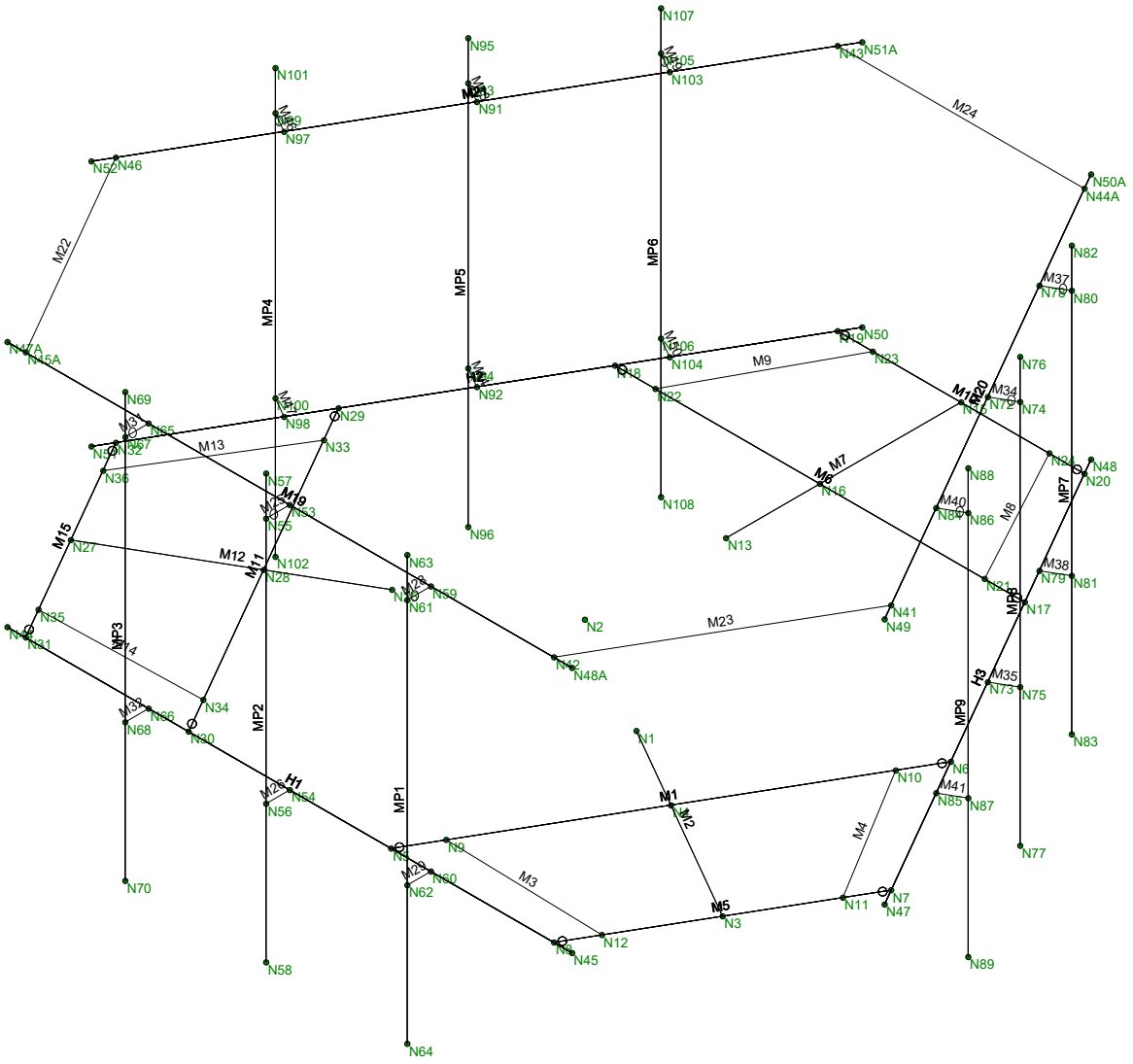
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

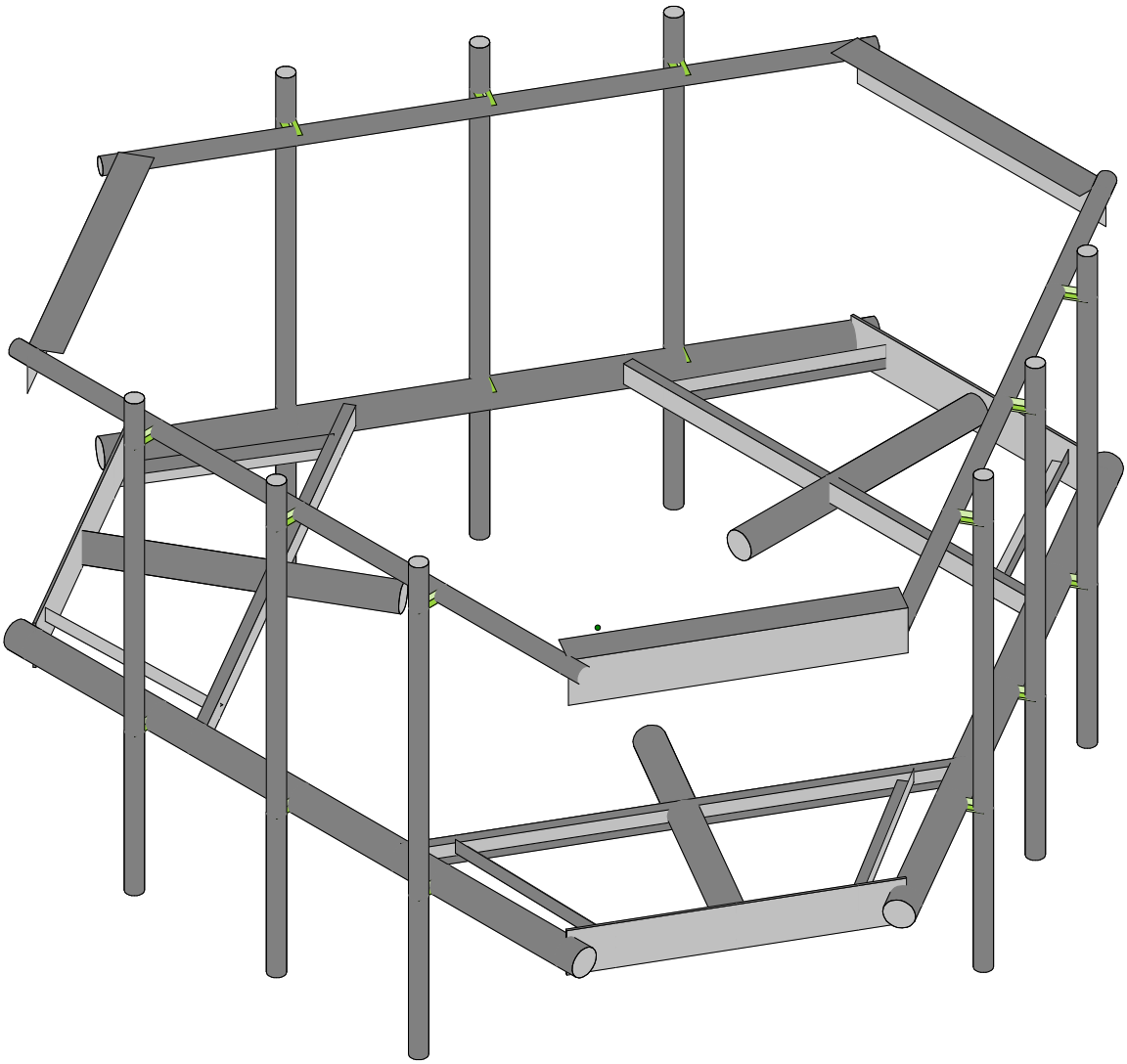
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	828054	Wireframe
SMM		July 30, 2021 at 4:29 PM
189193		828054_loaded.r3d



Trylon	828054	Render
SMM		July 30, 2021 at 4:29 PM
189193		828054_loaded.r3d

APPENDIX B

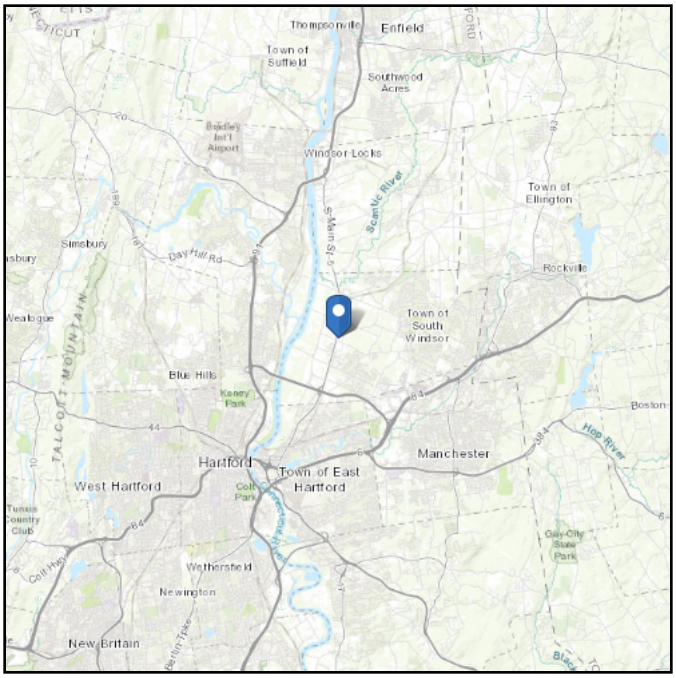
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 70.37 ft (NAVD 88)
Latitude: 41.833444
Longitude: -72.603056



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: Fri Jul 30 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.

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

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CONNECTICUT DESIGN CRITERIA - STATE

Revison: R-400 7/30/2021

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

				Wind Design Parameters								
Municipality	**Ground Snow Load**	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions**[1]		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
South Windsor	30	0.178	0.064	115	125	135	89	97	105			Yes

1. Wind-Borne Debris Regions:

Type A: Full Municipality.

Type B: Areas south of Interstate 95.

Exception: Areas that are more than one mile from the coastal mean high-water line as certified by a registered design professional may be classified as being outside a wind-borne debris region.

Type C: Areas south of Metro North/Amtrak Railroad to the west of the Quinnipiac River and areas south of Interstate 95 to the east of the Quinnipiac River.

Exception: Areas that are more than one mile from the coastal mean high-water line as certified by a registered design professional may be classified as being outside a wind-borne debris region.

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189193
Carrier Site ID:	BU# 828054
Carrier Site Name:	South Windsor / Rt 5

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	138.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	169.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	70.37	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):	1.35	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	51.34	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}):	51.34	psf
Mount Ice Thickness (t_{iz}):	2.31	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	92.41	psf
Round Member Pressure:	55.44	psf
Ice Wind Pressure:	7.56	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	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):	0.09	--
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	138	No Ice	12.49	5.87	82.50
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	14.14	7.38	397.68
TA08025-B604	3	138	No Ice	1.96	0.98	63.90
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.55	1.44	101.21
TA08025-B605	3	138	No Ice	1.96	1.13	75.00
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.55	1.61	107.50
RDIDC-9181-PF-48	1	138	No Ice	2.01	1.17	21.85
MP1, 0	--	--	w/ Ice	2.60	1.66	106.03
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	138	1.00	1.35	0.95	2.31	51.34	8.21
TA08025-B604	3	138	1.00	1.35	0.95	2.31	51.34	8.21
TA08025-B605	3	138	1.00	1.35	0.95	2.31	51.34	8.21
RDIDC-9181-PF-48	1	138	1.00	1.35	0.95	2.31	51.34	8.21

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	577.03	347.55	500.53	271.06	500.53	347.55
MP1/MP4/MP7, 0/120/240	--	w/ Ice	104.53	67.03	92.03	54.53	92.03	67.03
TA08025-B604	3	No Ice	90.72	56.68	79.37	45.33	79.37	56.68
MP1/MP4/MP7, 0/120/240	--	w/ Ice	18.84	12.69	16.79	10.64	16.79	12.69
TA08025-B605	3	No Ice	90.72	61.82	81.09	52.19	81.09	61.82
MP1/MP4/MP7, 0/120/240	--	w/ Ice	18.84	13.62	17.10	11.88	17.10	13.62
RDIDC-9181-PF-48	1	No Ice	92.95	63.72	83.21	53.97	83.21	63.72
MP1, 0	--	w/ Ice	19.26	14.04	17.52	12.30	17.52	14.04
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		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	138	82.5	9.40
TA08025-B604	3	138	63.9	7.28
TA08025-B605	3	138	75	8.54
RDIDC-9181-PF-48	1	138	21.85	2.49

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 S100-16: 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?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k...	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 R...	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 An...	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 7/16x3/16	Beam	Single An...	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

Hot Rolled Steel Section Sets (Continued)

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

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X0...	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(P...
1	Self Weight	DL		-1			13		3	
2	Structure Wind Z	WLZ						33		
3	Structure Wind X	WLX						33		
4	Wind Load 0 AZI	WLZ					13			
5	Wind Load 30 AZI	None					26			
6	Wind Load 45 AZI	None					26			
7	Wind Load 60 AZI	None					26			
8	Wind Load 90 AZI	WLX					13			
9	Wind Load 120 AZI	None					26			
10	Wind Load 135 AZI	None					26			
11	Wind Load 150 AZI	None					26			
12	Ice Weight	OL1					13	33	3	
13	Ice Structure Wind Z	OL2						33		
14	Ice Structure Wind X	OL3						33		
15	Ice Wind Load 0 AZI	OL2					13			
16	Ice Wind Load 30 AZI	None					26			
17	Ice Wind Load 45 AZI	None					26			
18	Ice Wind Load 60 AZI	None					26			
19	Ice Wind Load 90 AZI	OL3					13			
20	Ice Wind Load 120 AZI	None					26			
21	Ice Wind Load 135 AZI	None					26			
22	Ice Wind Load 150 AZI	None					26			
23	Seismic Load Z	ELZ			-.114		13			
24	Seismic Load X	ELX	-.114				13			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
34	Maintenance Load 1 (...	None					1			
35	Maintenance Load 2 (...	None					1			
36	Maintenance Load 3 (...	None					1			
37	Maintenance Load 4 (...	None					1			
38	Maintenance Load 5 (...	None					1			
39	Maintenance Load 6 (...	None					1			
40	Maintenance Load 7 (...	None					1			
41	Maintenance Load 8 (...	None					1			
42	Maintenance Load 9 (...	None					1			
43	BLC 1 Transient Area...	None						9		
44	BLC 12 Transient Are...	None						9		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
37	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WL..	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	1	24																	
67	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23		24	1																
71	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23		24	-1																
79	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.862	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																		

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
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 + 1...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058										
92	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058										
93	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058										
94	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058										
95	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058										
96	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	.05	9	.058										
97	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	.041	10	.058										
98	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058										
99	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.058	3		4	-.058										
100	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.029	5	-.058										
101	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	-.041	6	-.058										
102	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	-.05	7	-.058										
103	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	-.058	8	-.058										
104	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.058										
105	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.041	10	-.058										
106	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.029	11	-.058										
107	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058										
108	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058										
109	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058										
110	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058										
111	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058										
112	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	.05	9	.058										
113	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	.041	10	.058										
114	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058										
115	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.058	3		4	-.058										
116	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.029	5	-.058										
117	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	-.041	6	-.058										
118	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	-.05	7	-.058										
119	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	-.058	8	-.058										
120	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.058										
121	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.041	10	-.058										
122	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.029	11	-.058										
123	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058										
124	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058										
125	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058										
126	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058										
127	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058										
128	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	.05	9	.058										
129	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	.041	10	.058										
130	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058										
131	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.058	3		4	-.058										
132	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.029	5	-.058										
133	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	-.041	6	-.058										
134	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	-.05	7	-.058										
135	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	-.058	8	-.058										
136	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.058										
137	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.041	10	-.058										
138	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.029	11	-.058										
139	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058										
140	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
141	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058												
142	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058												
143	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058												
144	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	.05	9	.058												
145	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	.041	10	.058												
146	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058												
147	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.058	3		4	-.058												
148	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058												
149	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058												
150	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058												
151	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	-.058	8	-.058												
152	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.058												
153	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.041	10	-.058												
154	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.029	11	-.058												
155	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058												
156	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058												
157	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058												
158	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058												
159	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058												
160	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	.05	9	.058												
161	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	.041	10	.058												
162	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058												
163	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.058	3		4	-.058												
164	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058												
165	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058												
166	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058												
167	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	-.058	8	-.058												
168	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.058												
169	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.041	10	-.058												
170	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.029	11	-.058												
171	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058												
172	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058												
173	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058												
174	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058												
175	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058												
176	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	.05	9	.058												
177	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	.041	10	.058												
178	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058												
179	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.058	3		4	-.058												
180	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058												
181	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058												
182	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058												
183	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	-.058	8	-.058												
184	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.058												
185	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.041	10	-.058												
186	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.029	11	-.058												
187	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058												
188	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058												
189	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058												
190	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058												
191	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058												
192	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.029	3	.05	9	.058												

Load Combinations (Continued)

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

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1338.29	20	2429.199	39	2000.662	3	371.956	33	2378.389	19	329.935	31
2		min	-1343.318	12	-35.971	31	-1993.872	27	-2445.083	41	-2381.123	11	-4449.079	38
3	N1	max	1163.725	8	2497.952	45	2107.417	17	414.935	19	2420.989	25	4358.727	45
4		min	-1154.948	32	-26.833	21	-2105.325	25	-2978.238	43	-2425.169	17	-284.035	21
5	N13	max	2087.373	22	2368.654	34	508.285	18	4932.862	34	2052.223	30	756.462	167

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
6		min	-2090.613	14	-71.72	26	-517.521	10	-457.754	26	-2054.809	6	-621.396	223
7	Totals:	max	3836.779	22	6939.641	42	4070.1	18						
8		min	-3836.779	30	1347.461	66	-4070.102	10						

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc.....	L..		phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn.....		Eqn
1	M2	PIPE_3.5	.659	40	45	.206	40		9	75262....	78750	7953.75	7953.75	2...	H1-1b
2	M12	PIPE_3.5	.636	40	39	.197	40		3	75262....	78750	7953.75	7953.75	2...	H1-1b
3	M7	PIPE_3.5	.621	40	34	.183	40		14	75262....	78750	7953.75	7953.75	2...	H1-1b
4	M1	C3X5	.509	34.856	44	.177	63....	y	40	11202....	47628	981.263	4104	1...	H1-1b
5	M11	C3X5	.495	34.856	40	.175	63....	y	35	11202....	47628	981.263	4104	1...	H1-1b
6	M6	C3X5	.484	34.856	34	.169	63....	y	45	37027....	47628	981.263	4020.2...	1	H1-1b
7	MP1	PIPE_2.0	.430	48	17	.060	48		17	20866....	32130	1871.6...	1871.6...	1...	H1-1b
8	MP4	PIPE_2.0	.408	48	11	.062	48		11	20866....	32130	1871.6...	1871.6...	1...	H1-1b
9	MP3	PIPE_2.0	.389	48	5	.040	48		10	20866....	32130	1871.6...	1871.6...	2...	H1-1b
10	MP9	PIPE_2.0	.388	48	10	.036	48		3	20866....	32130	1871.6...	1871.6...	1...	H1-1b
11	MP7	PIPE_2.0	.386	48	10	.047	48		6	20866....	32130	1871.6...	1871.6...	1...	H1-1b
12	MP8	PIPE_2.0	.376	48	10	.044	48		10	20866....	32130	1871.6...	1871.6...	1...	H1-1b
13	MP2	PIPE_2.0	.376	48	5	.057	48		9	20866....	32130	1871.6...	1871.6...	2...	H1-1b
14	MP5	PIPE_2.0	.347	48	16	.056	48		3	20866....	32130	1871.6...	1871.6...	2...	H1-1b
15	MP6	PIPE_2.0	.345	48	15	.037	48		9	20866....	32130	1871.6...	1871.6...	2...	H1-1b
16	M10	6.5"x0.37...	.295	21	2	.120	21	y	48	3513.8...	75757.5	583.963	6331.2...	1...	H1-1b
17	M15	6.5"x0.37...	.291	21	7	.122	21	y	37	3513.8...	75757.5	583.963	6290.4...	1...	H1-1b
18	M5	6.5"x0.37...	.287	21	12	.128	21	y	42	3513.8...	75757.5	583.963	6601.9...	1...	H1-1b
19	M13	L2x2x3	.254	0	14	.035	0	z	43	18051....	23392.8	557.717	1239.29	2...	H2-1
20	M3	L2x2x3	.247	0	3	.035	0	z	49	18051....	23392.8	557.717	1239.29	2...	H2-1
21	M8	L2x2x3	.225	0	9	.034	0	z	38	18051....	23392.8	557.717	1239.29	2...	H2-1
22	M22	L6 5/8x4 ...	.196	0	21	.036	42	y	11	15453....	66065....	1040.5...	3031.0...	1...	H2-1
23	M19	PIPE_2.0	.187	72	10	.161	72		2	14916....	32130	1871.6...	1871.6...	1...	H1-1b
24	M23	L6 5/8x4 ...	.186	0	26	.036	42	y	17	15453....	66065....	1040.5...	3031.0...	1...	H2-1
25	M4	L2x2x3	.177	0	13	.038	0	y	41	18051....	23392.8	557.717	1239.29	2...	H2-1
26	M21	PIPE_2.0	.173	72	5	.154	72		13	14916....	32130	1871.6...	1871.6...	1...	H1-1b
27	M24	L6 5/8x4 ...	.165	0	32	.033	42	y	6	15453....	66065....	1040.5...	3031.0...	1...	H2-1
28	M20	PIPE_2.0	.165	24	16	.153	72		8	14916....	32130	1871.6...	1871.6...	1...	H1-1b
29	M9	L2x2x3	.159	0	2	.036	0	y	46	18051....	23392.8	557.717	1239.29	2...	H2-1
30	M14	L2x2x3	.148	0	7	.038	0	y	35	18051....	23392.8	557.717	1239.29	2...	H2-1
31	H3	PIPE_3.5	.144	31	10	.109	24		16	60666....	78750	7953.75	7953.75	1...	H1-1b
32	H1	PIPE_3.5	.142	31	4	.113	24		11	60666....	78750	7953.75	7953.75	1...	H1-1b
33	H2	PIPE_3.5	.137	31	15	.100	24		5	60666....	78750	7953.75	7953.75	1...	H1-1b

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

Mem...	Shape	Code Check	Loc[in]	LC	She...	Lo...	...	...	phi*...	phi*T...	phi*...	phi*...	phi...	phi...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

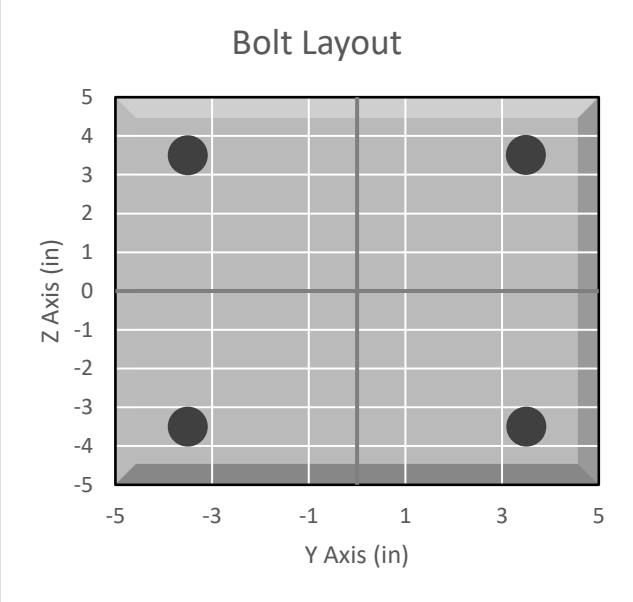
Analysis date: 7/30/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189193
Carrier Site ID:	BU# 828054
Carrier Site Name:	South Windsor / Rt 5

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

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Collar Connection

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	4787.8	lbs
Shear Force (V_u):	879.8	lbs
Tension Usage:	22.4%	--
Shear Usage:	6.1%	--
Interaction:	22.4%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

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

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

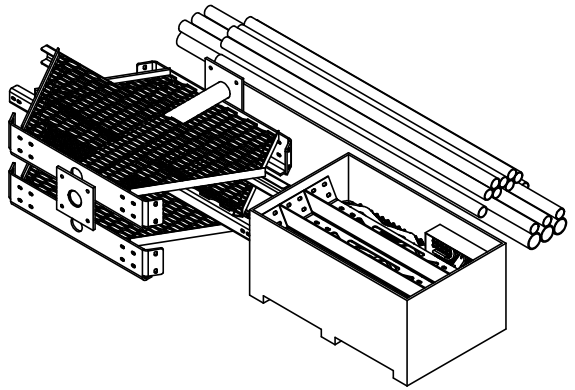
APPENDIX E

SUPPLEMENTAL DRAWINGS

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

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

FOR BOM ENTRY ONLY



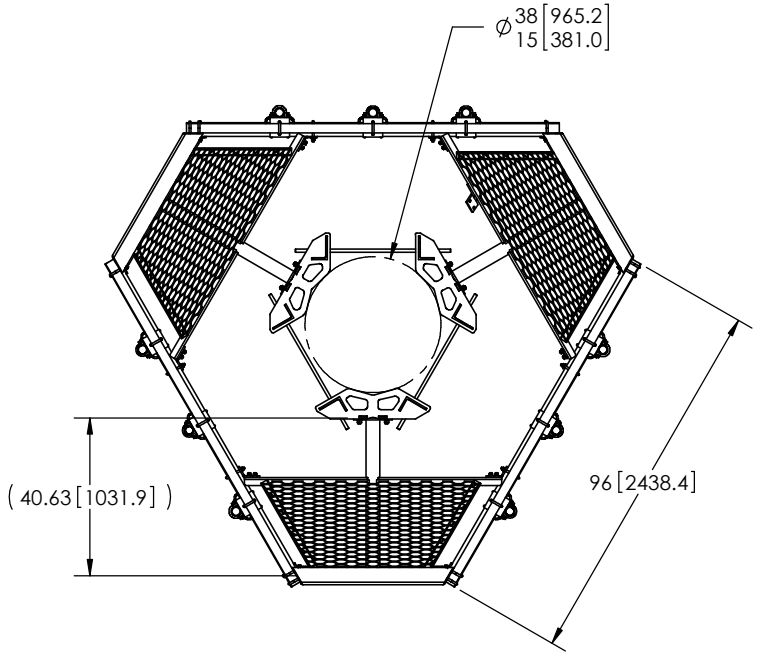
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

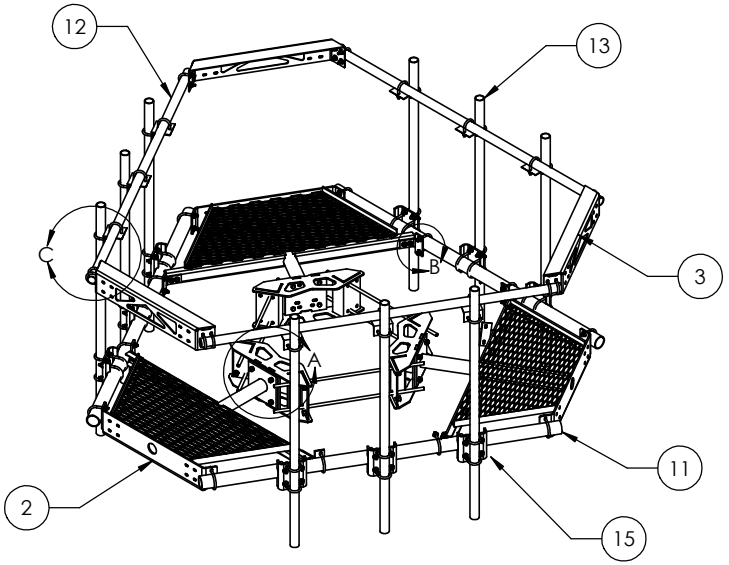
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03

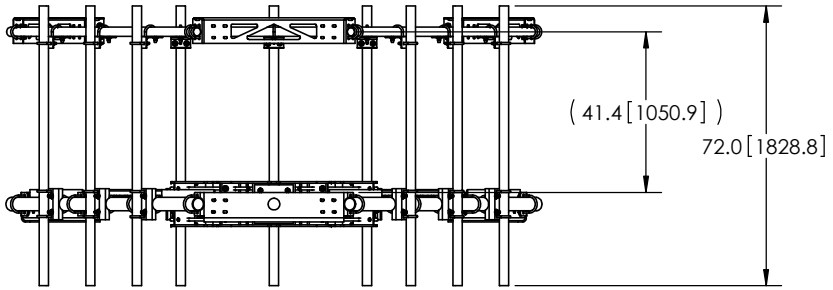
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

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





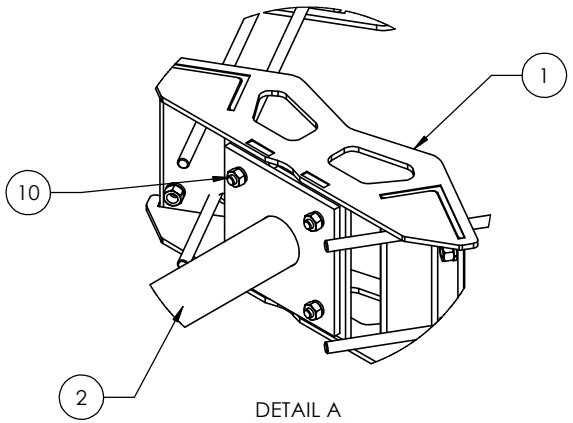


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C 1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18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

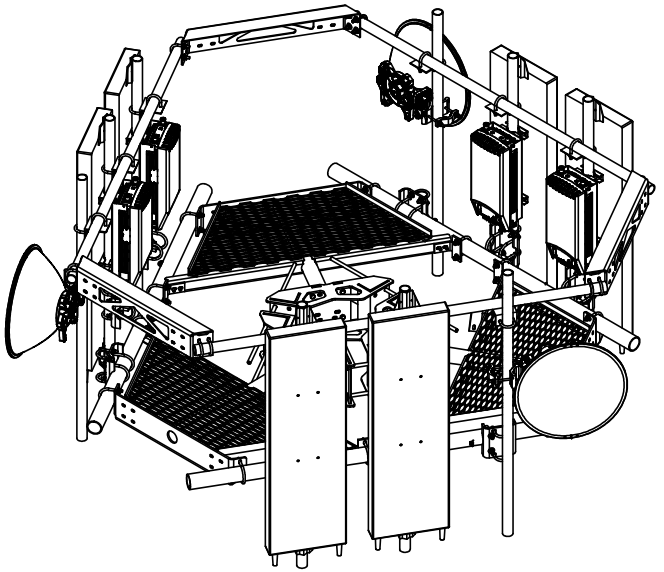
NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"–38" OD.

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

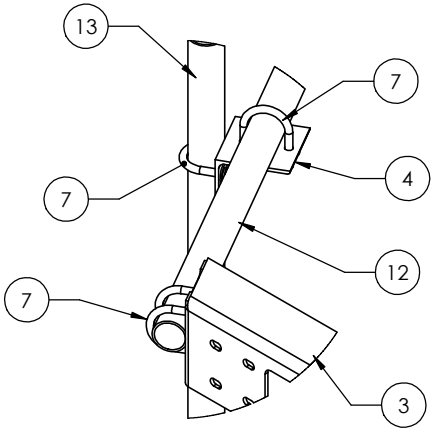
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	ANDREW® WESTCHESTER, IL. 60154 U.S.A.	
	WEIGHT: 1361.27 LBS		



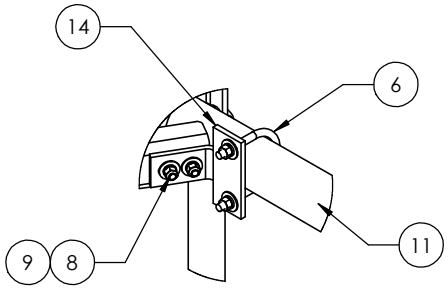
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL C
SCALE 1 : 8



DETAIL B
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

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

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

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00059A

828054
300 Governors Highway
South Windsor, Connecticut 06074

August 30, 2021

EBI Project Number: 6221004792

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**30.19%**

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

August 30, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00059A - 828054

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **300 Governors Highway** in **South Windsor, 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 300 Governors Highway in South Windsor, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) The antenna mounting height centerline of the proposed antennas is 138 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):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**0.91%**	Antenna B1 MPE %:	**0.91%**	Antenna C1 MPE %:	**0.91%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.91%
Sigfox	0.03%
T-Mobile	16.66%
Verizon	4.98%
Clearwire	0.12%
Sprint	2.73%
AT&T	4.76%
Site Total MPE % :	30.19%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.91%
Dish Wireless Sector B Total:	0.91%
Dish Wireless Sector C Total:	0.91%
Site Total MPE % :	30.19%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	138.0	1.85	600 MHz n71	400	0.46%
Dish Wireless 1900 MHz n70	4	542.70	138.0	4.48	1900 MHz n70	1000	0.45%
						Total:	**0.91%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.91%
Sector B:	0.91%
Sector C:	0.91%
Dish Wireless Maximum MPE % (Sector A):	0.91%
Site Total:	30.19%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **30.19%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

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

Phone: (585) 445-5896
Fax: (724) 416-4461
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Tower Share Application
Crown Castle telecommunications site at:
300 GOVERNORS HIGHWAY, SOUTH WINDSOR, CT 06074

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

Crown Site ID/Name: 828054/South Windsor/Rt 5
Customer Site ID: BOBDL00059A/CT-CCI-T-828054
Site Address: 300 Governors Highway, South Windsor, CT 06074

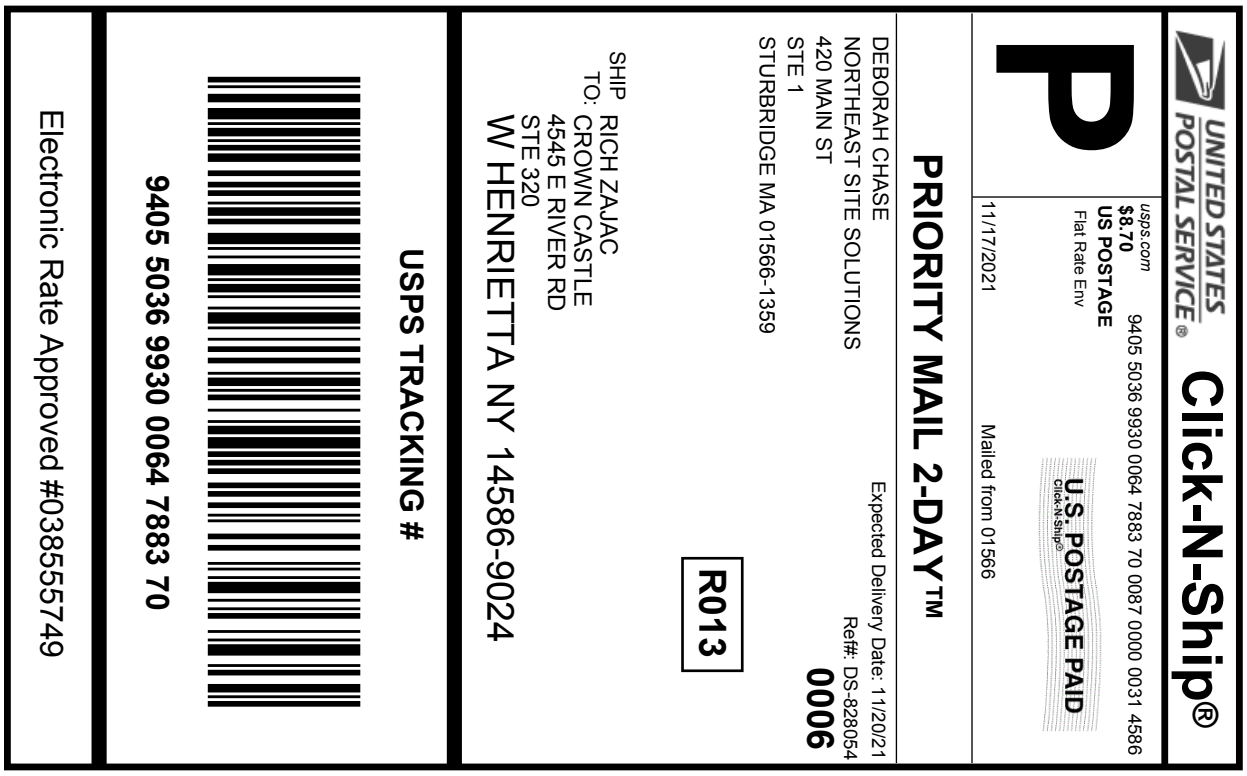
Crown Castle

By: _____ Date: 8/26/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



Cut on dotted line.

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 0064 7883 70

Trans. #:	548569642
Print Date:	11/17/2021
Ship Date:	11/17/2021
Expected Delivery Date:	11/20/2021

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

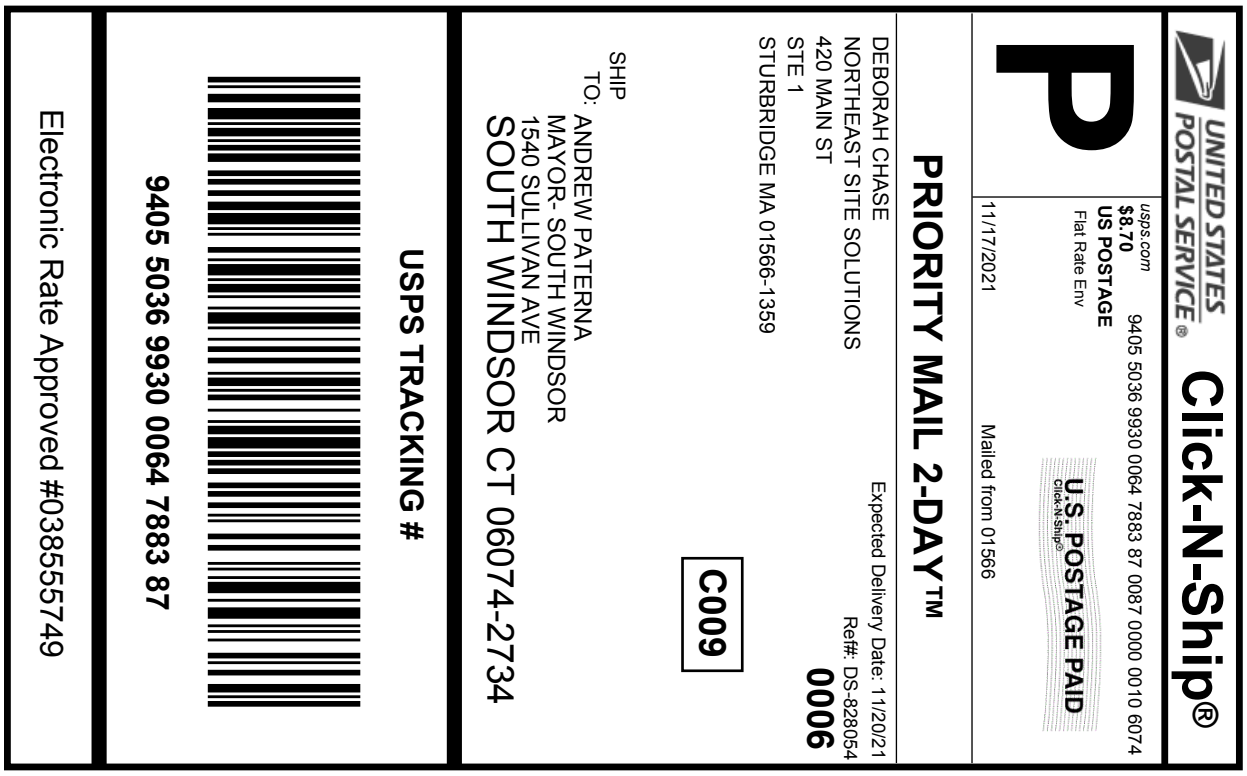
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-828054

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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USPS TRACKING # :
9405 5036 9930 0064 7883 87

Trans. #:	548569642
Print Date:	11/17/2021
Ship Date:	11/17/2021
Expected Delivery Date:	11/20/2021

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

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

Ref#: DS-828054

To: ANDREW PATERNA
MAYOR- SOUTH WINDSOR
1540 SULLIVAN AVE
SOUTH WINDSOR CT 06074-2734

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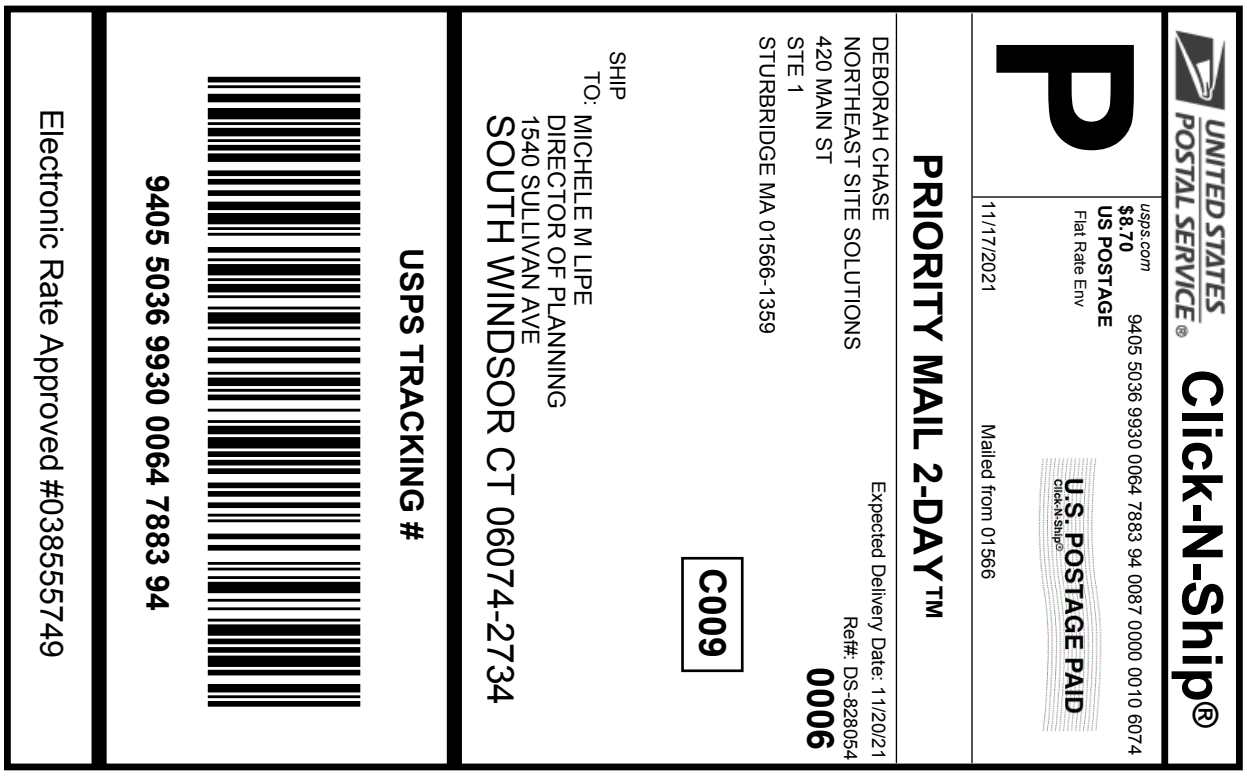

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USPS TRACKING # :
9405 5036 9930 0064 7883 94

Trans. #:	548569642
Print Date:	11/17/2021
Ship Date:	11/17/2021
Expected Delivery Date:	11/20/2021

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

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

Ref#: DS-828054

To: MICHELE M LIPE
DIRECTOR OF PLANNING
1540 SULLIVAN AVE
SOUTH WINDSOR CT 06074-2734

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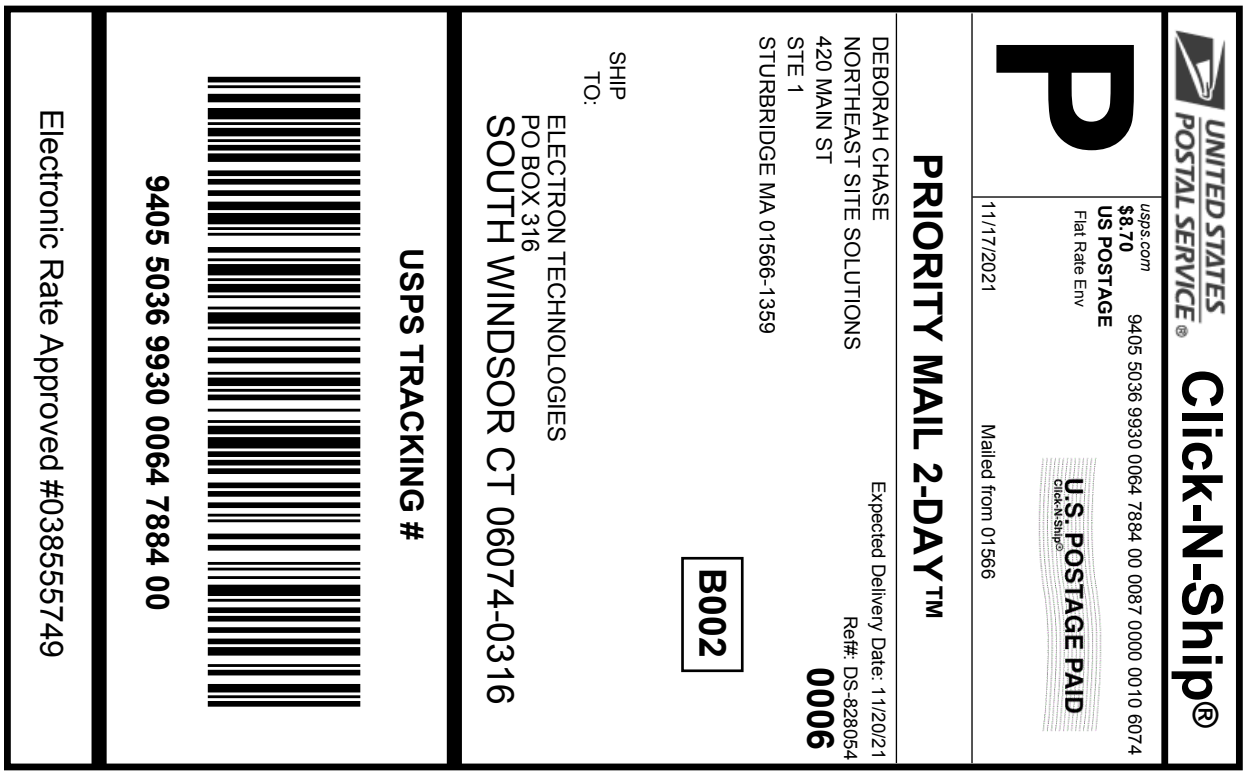

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0064 7884 00

Trans. #:	548569642
Print Date:	11/17/2021
Ship Date:	11/17/2021
Expected Delivery Date:	11/20/2021

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

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

Ref#: DS-828054

To: ELECTRON TECHNOLOGIES
PO BOX 316
SOUTH WINDSOR CT 06074-0316

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828054

UNITED STATES POSTAL SERVICE.

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

11/17/2021 02:55 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 7883 70	1		$0.00
Prepaid Mail South Windsor, CT 06074 Weight: 0 lb 8.90 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 7883 87	1		$0.00
Prepaid Mail South Windsor, CT 06074 Weight: 0 lb 8.80 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 7884 00	1		$0.00
Prepaid Mail South Windsor, CT 06074 Weight: 0 lb 8.80 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 7883 94	1		$0.00
Grand Total:			$0.00