



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

October 26, 2021

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

RE: Tower Share Application  
214 Russian Village Road, Southbury, CT 06488  
Latitude: 41.452222  
Longitude: 73.250361  
Site# 876314\_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 214 Russian Village Road in Southbury, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 110-foot level of the existing 132-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated August 24, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 9, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Southbury Planning and Zoning on February 14, 1997. 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 Jeff Manville, First Selectman, for the Town of Southbury Kathy Castagnetta, AICP, Land Use Administrator, as well as the tower owner (Crown Castle) and property owner (Mieke and Thomas Crider)

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 132-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 110-feet.
2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.



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 16.79% as evidenced by Exhibit F.

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Southbury. 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 110-foot level of the existing 132-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 Southbury.

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](mailto:denise@northeastsitesolutions.com)





**NSS**

**NORTHEAST**  
SITE SOLUTIONS

*Turnkey Wireless Development*

Attachments cc:

The Honorable Jeff Manville, First Selectman  
Southbury Town Hall  
501 Main Street South Southbury, CT 06488

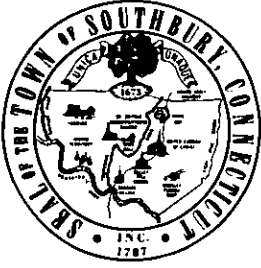
Kathy Castagnetta, AICP, Land Use Administrator  
Southbury Town Hall  
501 Main Street South Southbury, CT 06488

Mieke and Thomas Crider, Property Owner  
Aka Maas Mieke  
100 Russian Village Road, Southbury CT 06488

Crown Castle, Tower Owner

# Exhibit A

## **Original Facility Approval**



# TOWN OF SOUTHBURY

## ZONING BOARD OF APPEALS

501 Main Street South

Southbury, Connecticut 06488

(203) 264-0606 - ext. 257

FAX: (203) 264-9762

February 14, 1997

Thomas and Meike Crider  
100 Russian Village Road  
Southbury, CT 06488

Dear Crider Family:

On **TUESDAY, March 4, 1997**, at 7:30 p.m. in Room 205A of the Southbury Town Hall, the Southbury Zoning Board of Appeals will conduct the continuation of your public hearing to consider your appeal. **It is important that you, or someone representing you, be present to state your case.**

An On-Site Inspection of the property under appeal will be conducted by the Board members during the week before the public hearing. There may be more than one group of members inspecting the property. If at all possible, please stake out where the proposed construction will be located on the property.

The Public Notice will appear in Voices on Wednesday, February 19, and Wednesday, February 26, 1997.

The Zoning Board of Appeals has 65 days after the close of the hearing in which to make a decision. You will be notified within 15 days after such decision has been rendered.

Sincerely,

Barbara Browne  
Clerk

cc: Christopher Cody  
Sprint PCS

# HURWITZ & SAGARIN PC

LEWIS A. HURWITZ  
JACOB DANIEL SAGARIN  
CHRISTINE M. GONILLO  
ELIAS A. ALEXIADES  
DAVID A. SLOSSBERG  
ANDREW C. KRUGER  
JULIE M. CASHIN  
JOHN W. KNUFF

## MEMORANDUM

TO: Julie Reach, Sprint PCS  
FROM: Lisa Dalfonso  
DATE: February 6, 1997  
RE: Site 017 - Southbury

\*\*\*\*\*  
\*\*

Attached please find a copy of the referral from the Southbury Planning Commission to the Zoning Board of Appeals on site 017. According to the letter, the Planning Commission voted to recommend approval of the Special Exception application for the PCS facility. As you know, Chris Cody of our office was present at the ZBA hearing on February 4, 1997 and a memo to Larry from Chris will follow, advising of the outcome and additional considerations for the continuation hearing. Overall, the hearing went well most of the unaddressed issues involved structural considerations. Therefore, can we please have a structural engineer available for the next hearing. I will let you know the date as soon as possible.



# TOWN OF SOUTHBURY

## PLANNING COMMISSION

501 Main Street South  
Southbury, Connecticut 06488-2295

(203) 262-0634

FAX: (203) 264-3719

January 30, 1997

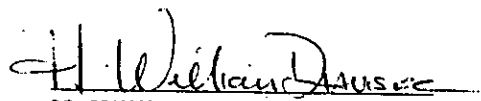
TO: Zoning Board of Appeals  
FROM: Planning Commission  
RE: Referral - Proposed Sprint Tower on Land of Crider

The Planning Commission was presented with the proposal to erect a PCS Sprint Tower off Russian Village Road by the applicants and the land owner at their meeting on January 21, 1997. The Special Exception Application was reviewed for consistency with the Comprehensive Plan of Development and compliance with Section 7 of the Zoning Regulations. The Commission recognizes that an application also exists for the height of the tower at 128 feet but is not responding to that variance application.

During the discussion the applicant satisfied questions with regard to strength of the tower in high winds, adequate fall area, setbacks to nearest existing and potential home sites (600 feet), lighting on the tower (none is proposed), other areas of town investigated for the placement of the tower, the maximum number of additional units that could be placed on the tower (3), the maintenance of the structure and need for inspections and the utility lines needed to address this site.

The Commission recognizes the changes in the state and federal laws regarding telecommunications and the necessity of the towers. They felt that this site, in particular, is technically a good site due to the density of population and that the horizon line as outlined in the Plan was not affected. Further, the possibility of the need for additional antennae, by others, could be addressed by acknowledging that three units are possible on this type of tower.

Therefore, the Commission voted to recommend approval of the Special Exception Application of Sprint PCS for the installation of a utility tower on Russian Village Road.

  
H. William Davis, Chairman

# Exhibit B

## Property Card

## 214 RUSSIAN VILLAGE ROAD

**Location** 214 RUSSIAN VILLAGE ROAD      **Mblu** 19/ 92/ 45/ /

**Acct#** 00070700      **Owner** CRIDER MIEKE & THOMAS S

**Assessment** \$133,170      **Appraisal** \$567,373

**PID** 859      **Building Count** 1

### Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$0	\$567,373	\$567,373

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$0	\$133,170	\$133,170

### Owner of Record

**Owner** CRIDER MIEKE & THOMAS S      **Sale Price** \$0

**Co-Owner** AKA MAAS MIEKE      **Certificate**

**Address** 100 RUSSIAN VILLAGE ROAD      **Book & Page** 311/1220

SOUTHBURY, CT 06488      **Sale Date** 09/11/1996

**Instrument** 25

### Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
CRIDER MIEKE & THOMAS S	\$0		311/1220	25	09/11/1996
AKA MAAS MIEKE			0/ 0	25	

### Building Information

#### Building 1 : Section 1

**Year Built:**

**Living Area:** 0

**Replacement Cost:** \$0

**Building Percent**

**Good:**

**Replacement Cost**

**Less Depreciation:** \$0

#### Building Photo

Building Attributes	
Field	Description
Style	Vacant Land



Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Pln FPL:	
Det FPL:	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
Fin Bsmt Qual	
Bsmt Access	



(<http://images.vgsi.com/photos/SouthburyCTPhotos//default.jpg>);

**Building Layout**

Building Layout

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



**Extra Features**

Extra Features	Legend
No Data for Extra Features	

**Land**

**Land Use**

**Land Line Valuation**

<b>Use Code</b>	100W	<b>Size (Acres)</b>	87.68
<b>Description</b>	Res Vacant	<b>Frontage</b>	0
<b>Zone</b>	R-60	<b>Depth</b>	0
<b>Neighborhood</b>	14W	<b>Assessed Value</b>	\$133,170
<b>Alt Land Appr Category</b>	No	<b>Appraised Value</b>	\$567,373

**Outbuildings**

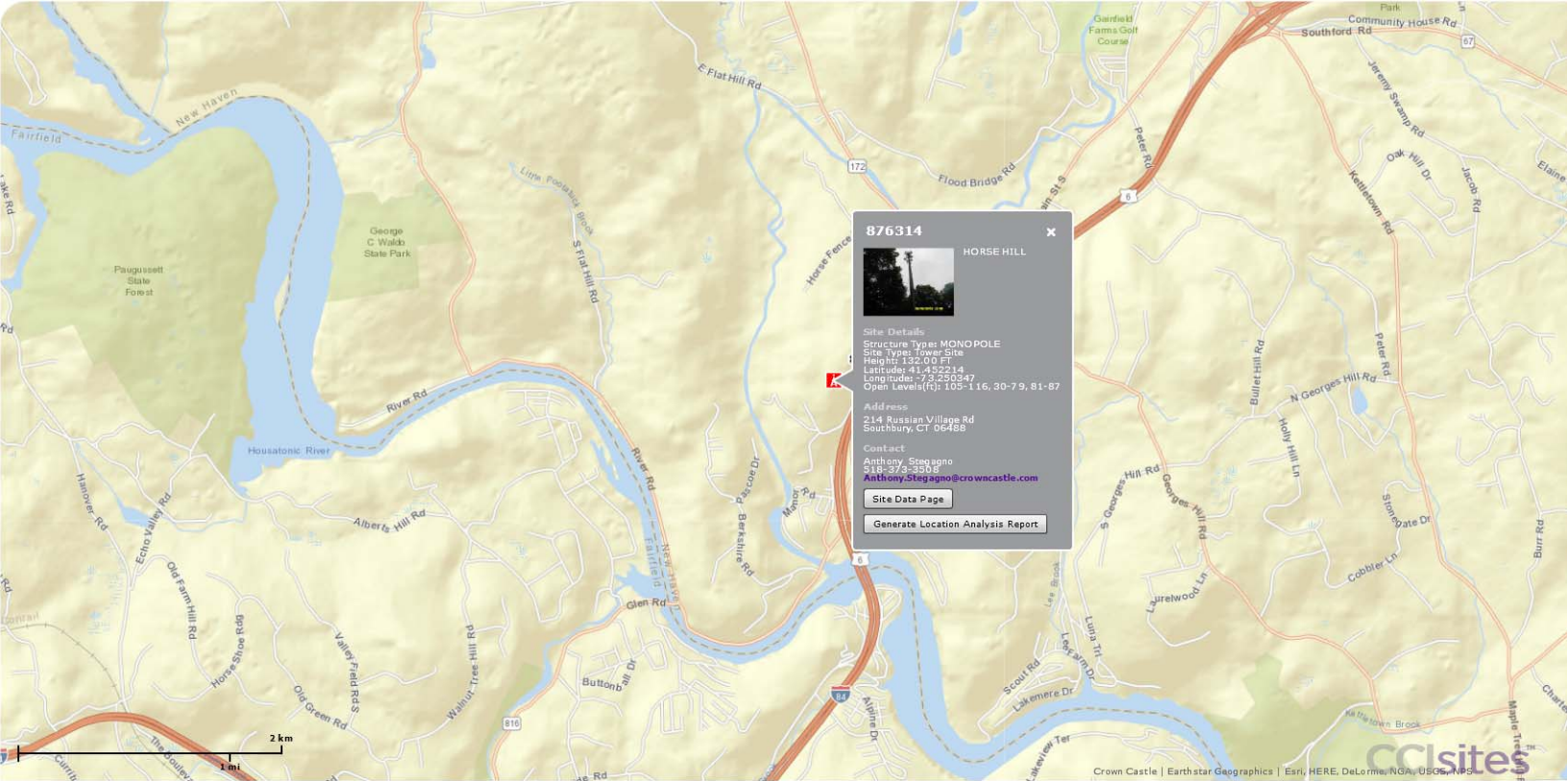
Outbuildings	Legend
No Data for Outbuildings	

**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2011	\$80,000	\$90,510	\$170,510

Assessment			
Valuation Year	Improvements	Land	Total
2011	\$56,000	\$63,360	\$119,360

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876314 HORSE HILL



Site Details  
Structure Type: MONOPOLE  
Site Type: Tower Site  
Height: 132.00 FT  
Latitude: 41.452214  
Longitude: -73.250347  
Open Levels(ft): 105-116, 30-79, 81-87

Address  
214 Russian Village Rd  
Southbury, CT 06488

Contact  
Anthony Stegano  
518-373-3508  
[Anthony.Stegano@crowncastle.com](mailto:Anthony.Stegano@crowncastle.com)

[Site Data Page](#)  
[Generate Location Analysis Report](#)

# Exhibit C

## **Construction Drawings**





DISH Wireless L.L.C. SITE ID:

**BOHVN00022A**

DISH Wireless L.L.C. SITE ADDRESS:

**214 RUSSIAN VILLAGE RD  
SOUTHBUURY, CT 06488**

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:	
<b>TOWER SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED PLATFORM MOUNT</li> <li>• INSTALL PROPOSED JUMPERS</li> <li>• INSTALL (6) PROPOSED RRUs (2 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)</li> <li>• INSTALL (1) PROPOSED HYBRID CABLE</li> </ul>	
<b>GROUND SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (1) PROPOSED METAL PLATFORM</li> <li>• REMOVE SECTION OF EXISTING ICE BRIDGE</li> <li>• INSTALL (1) PROPOSED PPC CABINET</li> <li>• INSTALL (1) PROPOSED EQUIPMENT CABINET</li> <li>• INSTALL (1) PROPOSED POWER CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO-FIBER BOX</li> <li>• INSTALL (1) PROPOSED GPS UNIT</li> <li>• INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)</li> <li>• EXISTING METER SOCKET ON EXISTING H-FRAME TO BE UTILIZED</li> </ul>	

SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: CRIDER, THOMAS AND MIEKE	APPLICANT: DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
ADDRESS: 100 RUSSIAN VILLAGE ROAD SOUTHBUURY, CT 06488	TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
TOWER TYPE: MONOPOLE	SITE DESIGNER: INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
TOWER CO SITE ID: 876314	SITE ACQUISITION: NICHOLAS CURRY NICHOLAS.CURRY@CROWNCastle.COM
TOWER APP NUMBER: 553363	CONSTRUCTION MANAGER: JAVIER SOTO JAVIER.SOTO@DISH.COM (617) 839-6514
COUNTY: NEW HAVEN	RF ENGINEER: SYED ZAIDI SYED.ZAIDI@DISH.COM
LATITUDE (NAD 83): 41° 27' 07.97" N 41.452222 N	
LONGITUDE (NAD 83): 73° 15' 01.25" W 73.250361 W	
ZONING JURISDICTION: NEW HAVEN COUNTY	
ZONING DISTRICT: R	
PARCEL NUMBER: 19-92-45	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: CONNECTICUT LIGHT & POWER	
TELEPHONE COMPANY: AT&T	



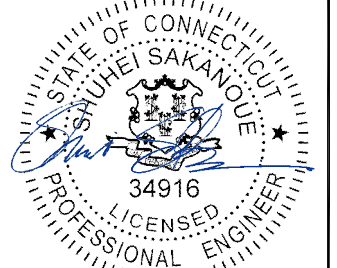
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



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



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

DRAWN BY: RCD | CHECKED BY: SS | APPROVED BY: CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2021	ISSUED FOR REVIEW
0	08/12/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
6039-Z0001-C

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBUURY, CT 06488

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
**T-1**

**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**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

**SITE PHOTO**



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



**GENERAL NOTES**

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

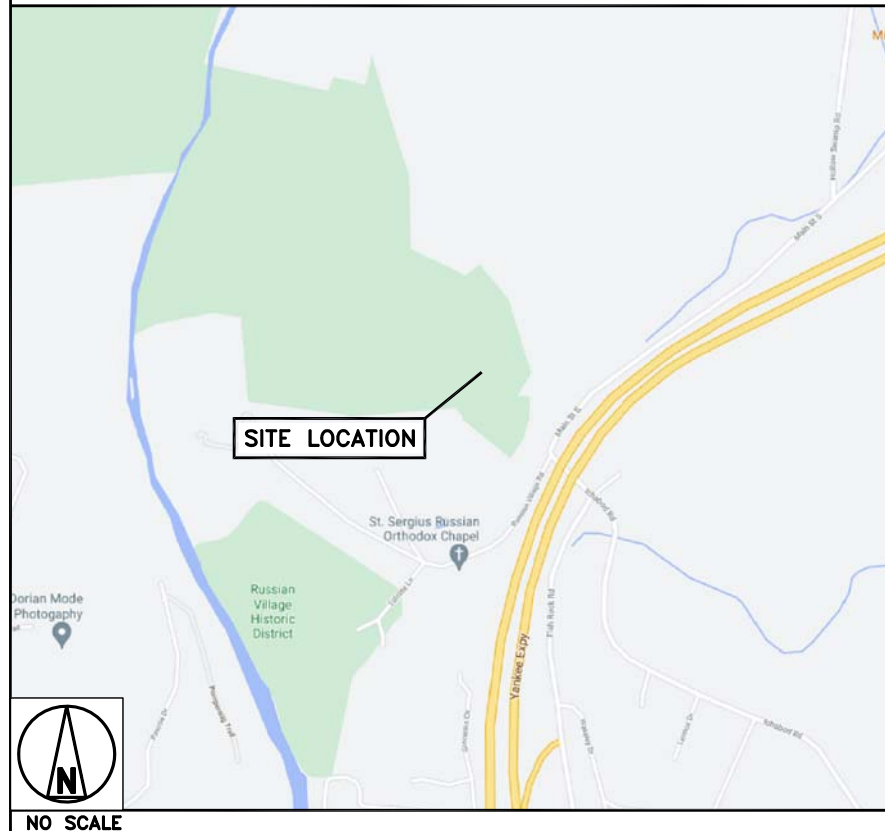
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

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

**DIRECTIONS**

DIRECTIONS FROM WHELAN FARMS AIRPORT:  
DEPART AND HEAD TOWARDS TOWN LINE RD, TURN LEFT ONTO TOWN LINE RD, TURN LEFT ONTO CT-61 / MAIN ST N, TURN RIGHT ONTO US-6 W / MAIN ST N, TAKE THE SLIP ROAD ON THE RIGHT FOR I-84 W / US-6 W, HEAD RIGHT ON THE SLIP ROAD FOR CT-172 TOWARDS SOUTH BRITAIN / SOUTHBUURY TRAINING SCHOOL, TURN RIGHT ONTO CT-172 / LAKESIDE RD TOWARDS SOUTH BRITAIN / SOUTHBUURY TRAINING SCHOOL, TURN LEFT ONTO MAIN ST S, ARRIVE AT 214 RUSSIAN VILLAGE RD, SOUTHBUURY, CT 06488.

**VICINITY MAP**



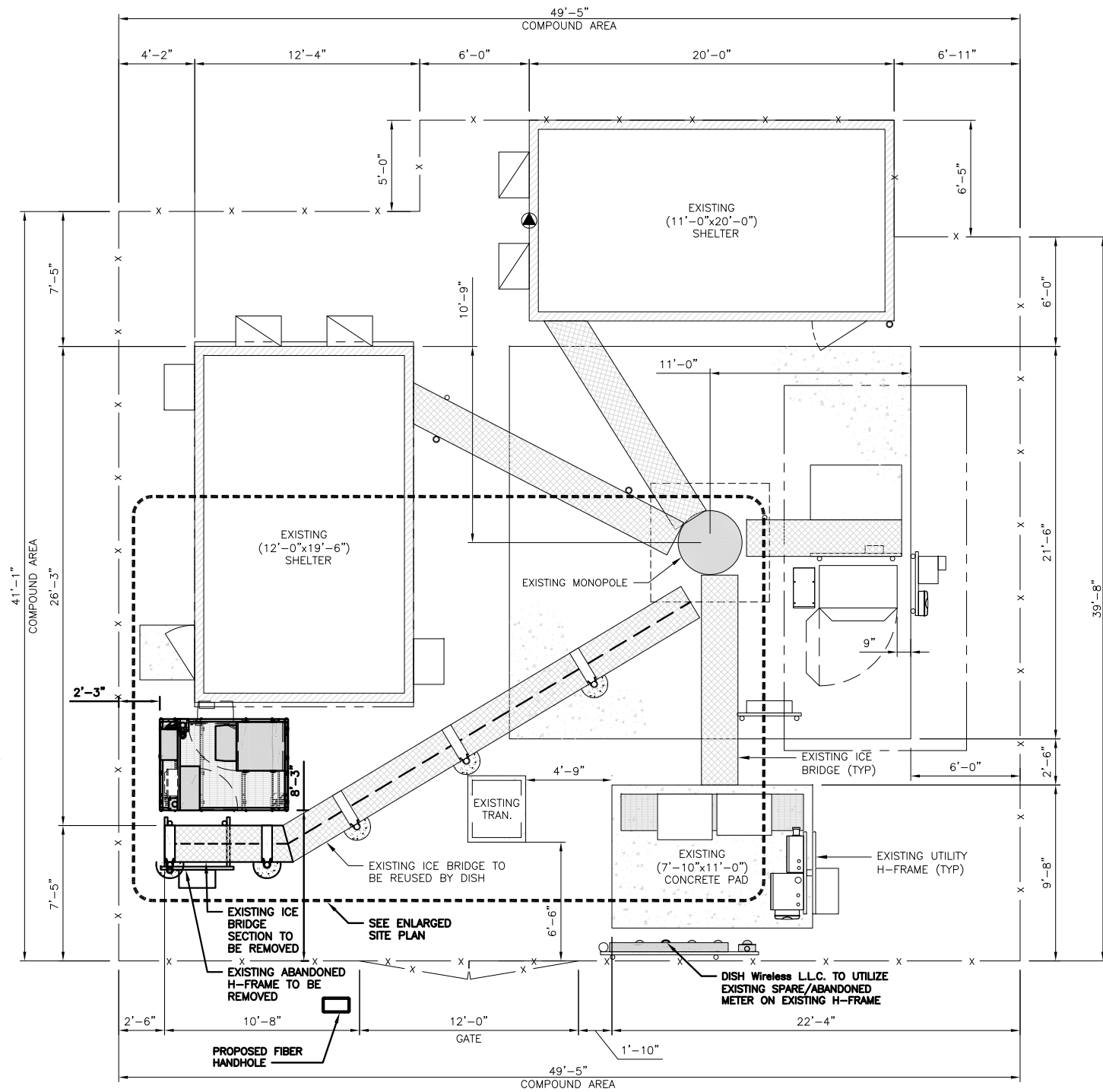


**NOTES**

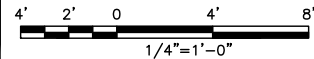
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

**NOTES**

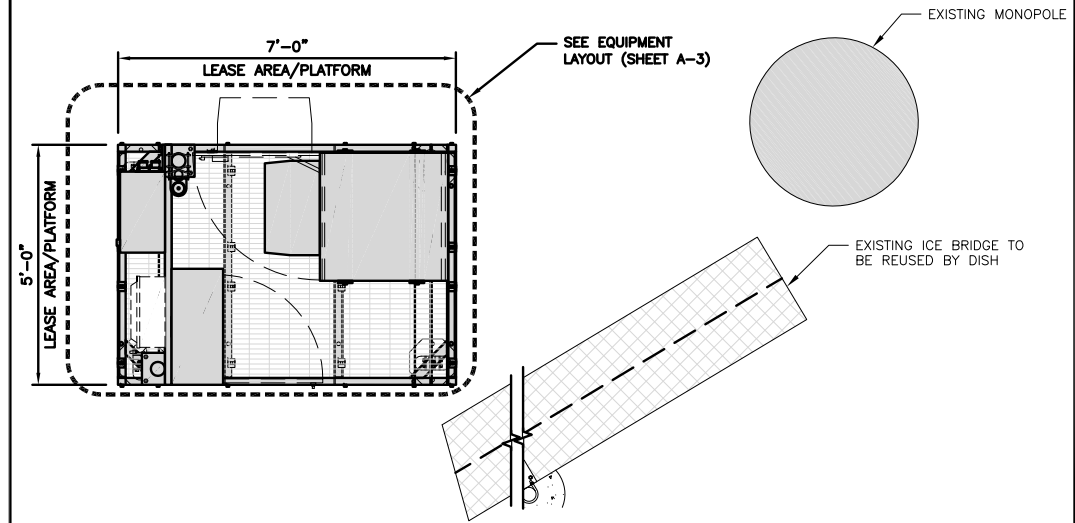
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



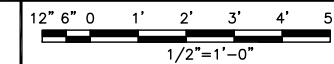
**OVERALL SITE PLAN**



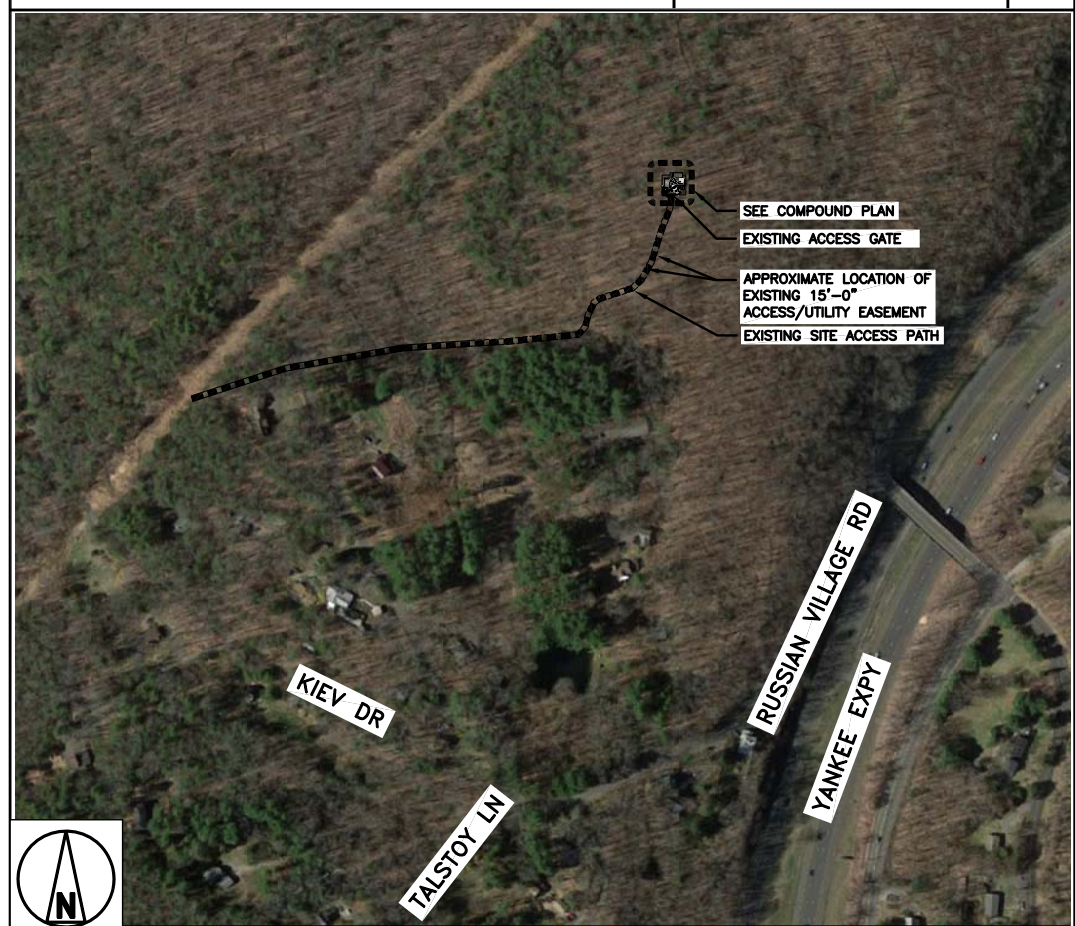
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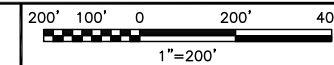
**ENLARGED SITE PLAN**



2



**SITE PLAN**



3



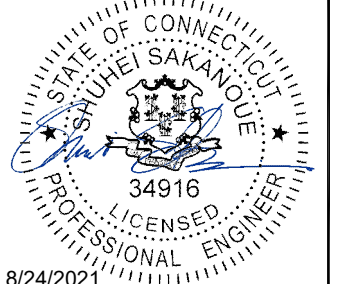
5701 SOUTH SANTA FE DRIVE  
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2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



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HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



8/24/2021

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

DRAWN BY: CHECKED BY: APPROVED BY:  
RCD SS CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2021	ISSUED FOR REVIEW
0	08/24/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
6039-Z0001-C

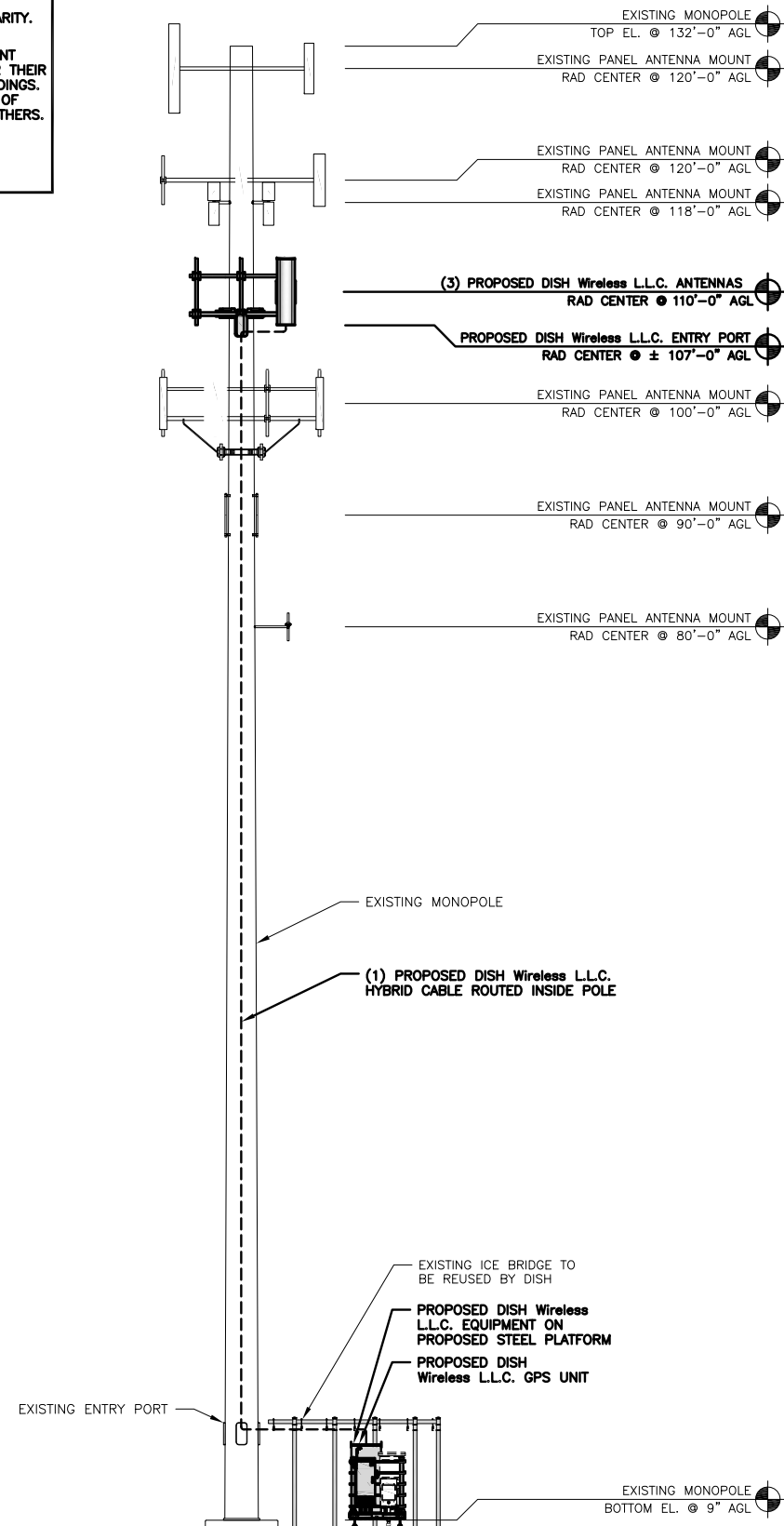
DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHURY, CT 06488

SHEET TITLE  
OVERALL AND ENLARGED  
SITE PLAN

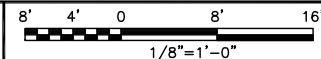
SHEET NUMBER  
**A-1**

**NOTES**

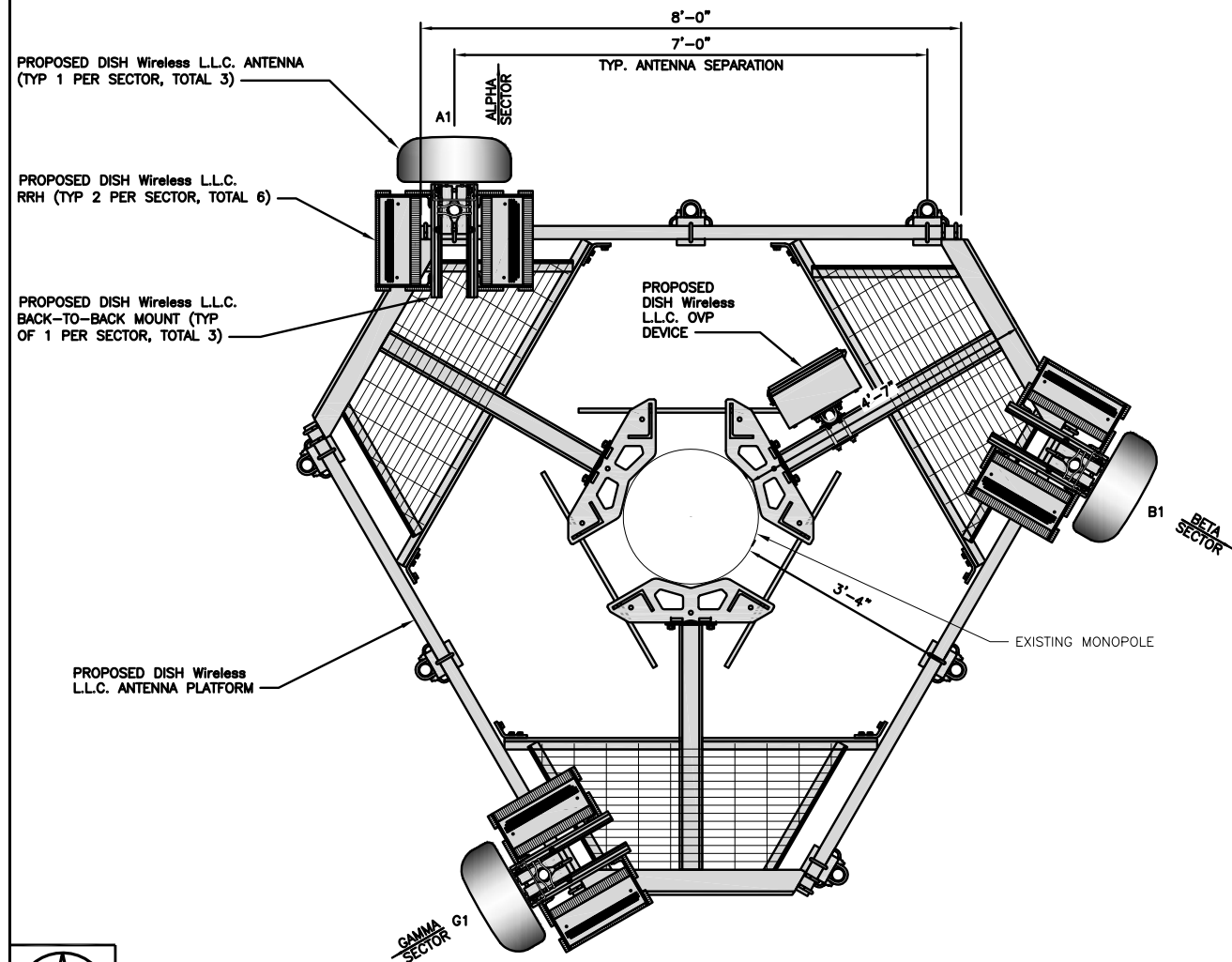
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR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



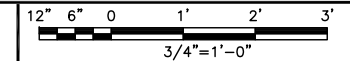
**PROPOSED WEST ELEVATION**



1



**ANTENNA LAYOUT**



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	0°	110'-0"	(1) HIGH-CAPACITY HYBRID CABLE (152' LONG)
BETA	B1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	120°	110'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	240°	110'-0"	

**NOTES**

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B604	5G	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.
	A1	FUJITSU - TA08025-B605	5G	
BETA	B1	FUJITSU - TA08025-B604	5G	
	B1	FUJITSU - TA08025-B605	5G	
GAMMA	G1	FUJITSU - TA08025-B604	5G	
	G1	FUJITSU - TA08025-B605	5G	

**ANTENNA SCHEDULE**

NO SCALE

3



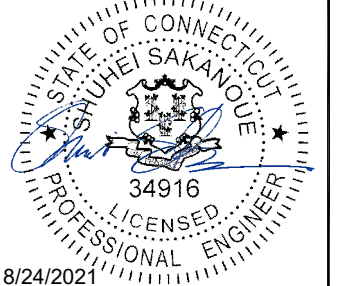
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



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DRAWN BY: CHECKED BY: APPROVED BY:  
RCD SS CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2021	ISSUED FOR REVIEW
0	08/12/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
6039-Z0001-C

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

SHEET TITLE  
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER  
**A-2**





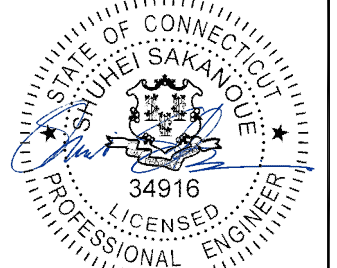
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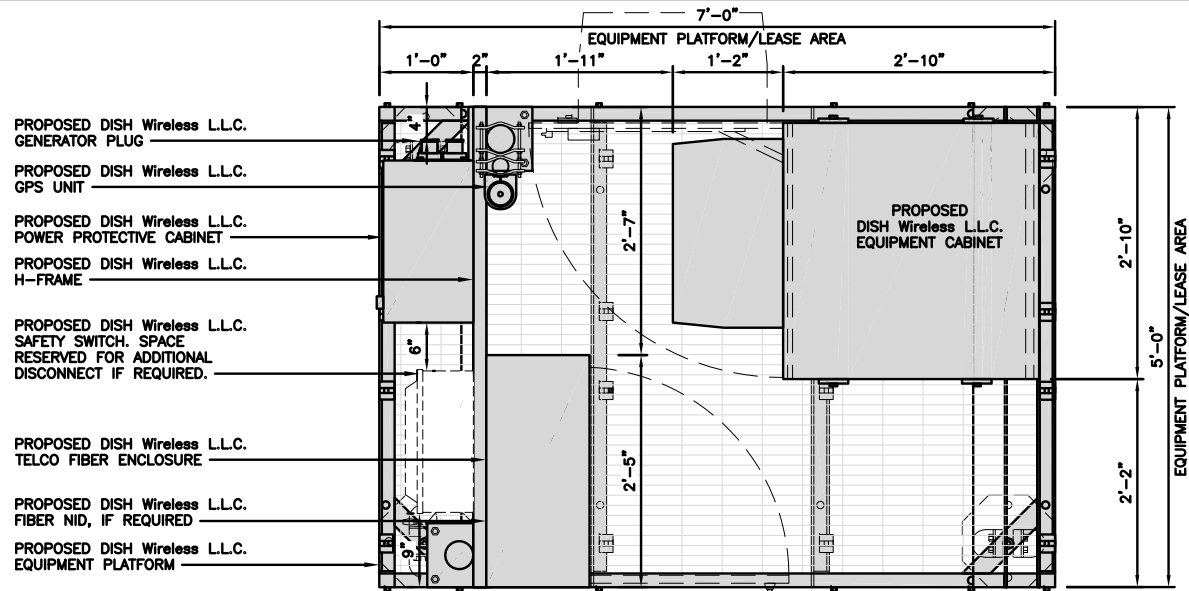
DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

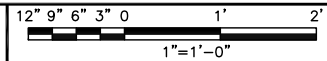
SHEET NUMBER  
**A-3**

**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



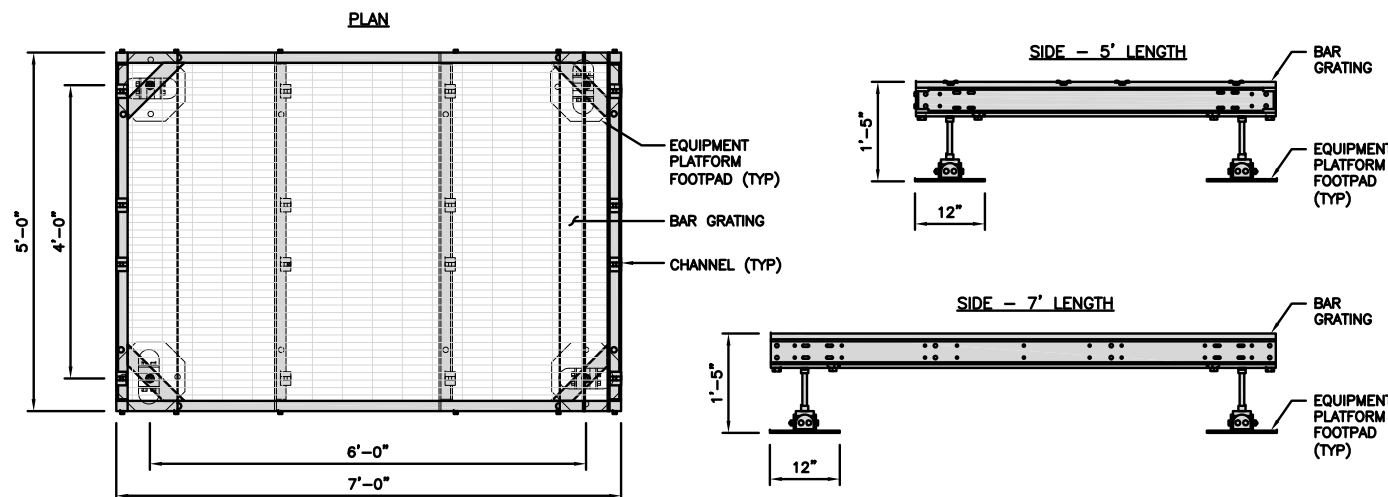
PLATFORM EQUIPMENT PLAN



**COMMSCOPE MTC4045LP  
5X7 PLATFORM**

DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

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



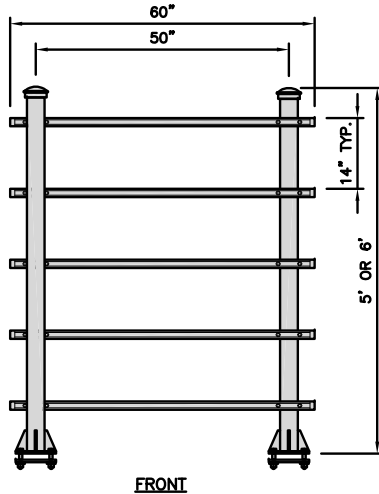
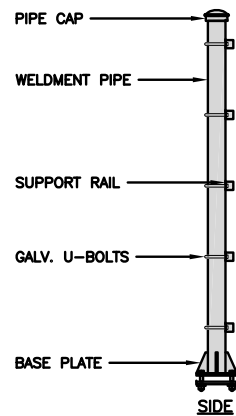
PLATFORM DETAIL

NO SCALE 2

**COMMSCOPE MTC4045HFLD  
H-FRAME**

UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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

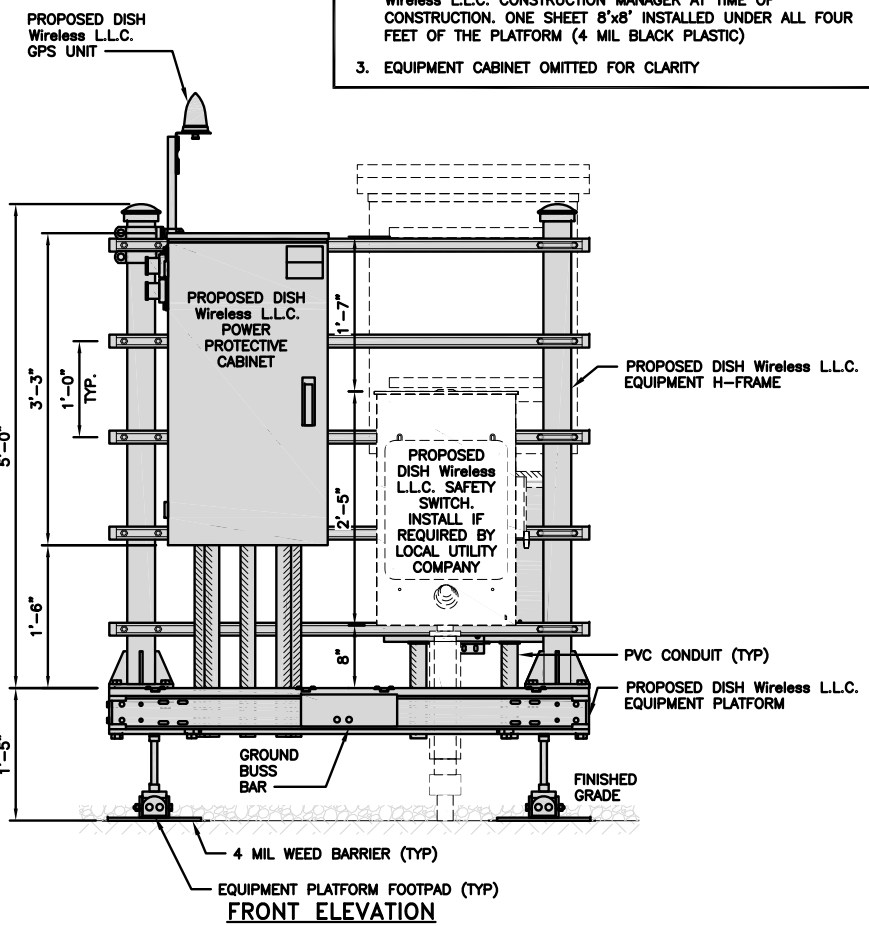


H-FRAME DETAIL

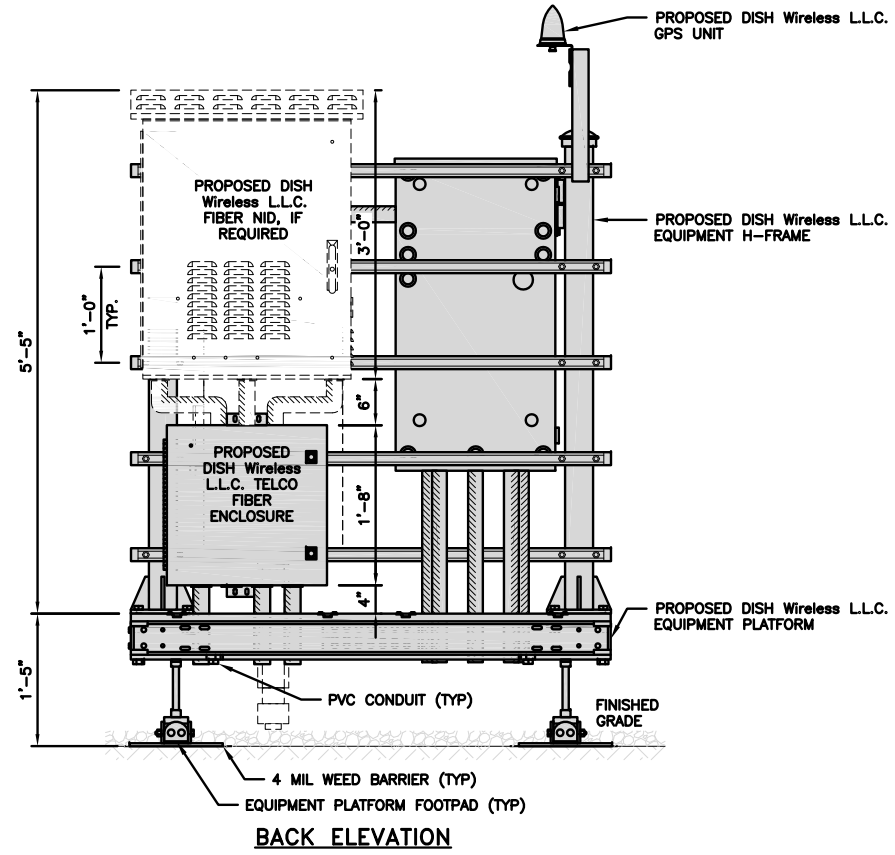
NO SCALE 3

NOT USED

NO SCALE 4

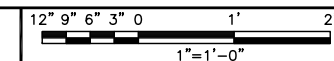


FRONT ELEVATION

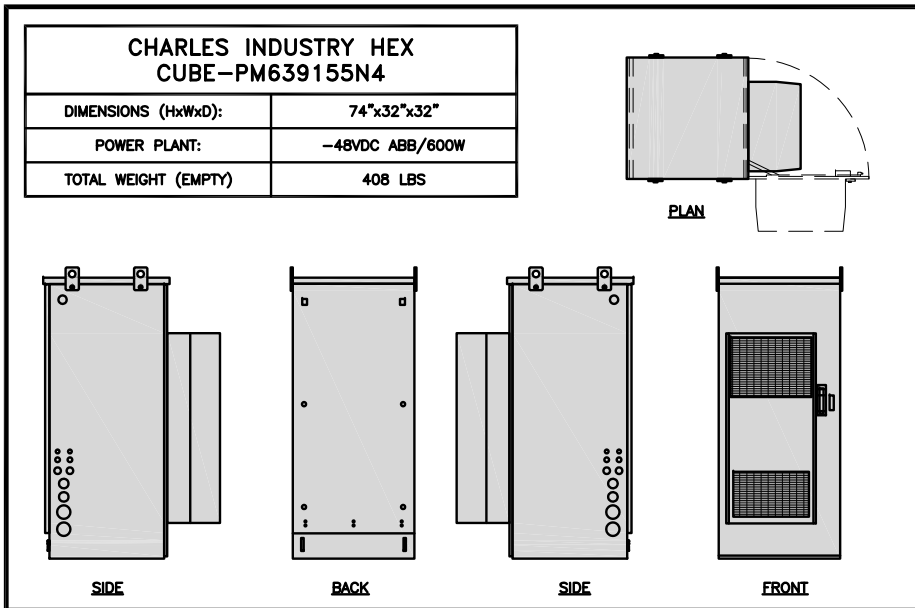


BACK ELEVATION

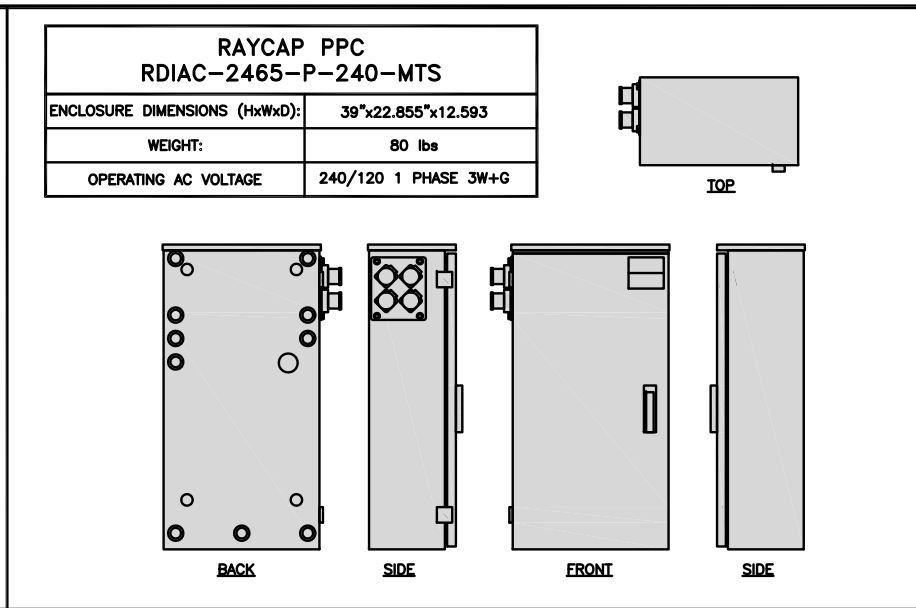
H-FRAME EQUIPMENT ELEVATION



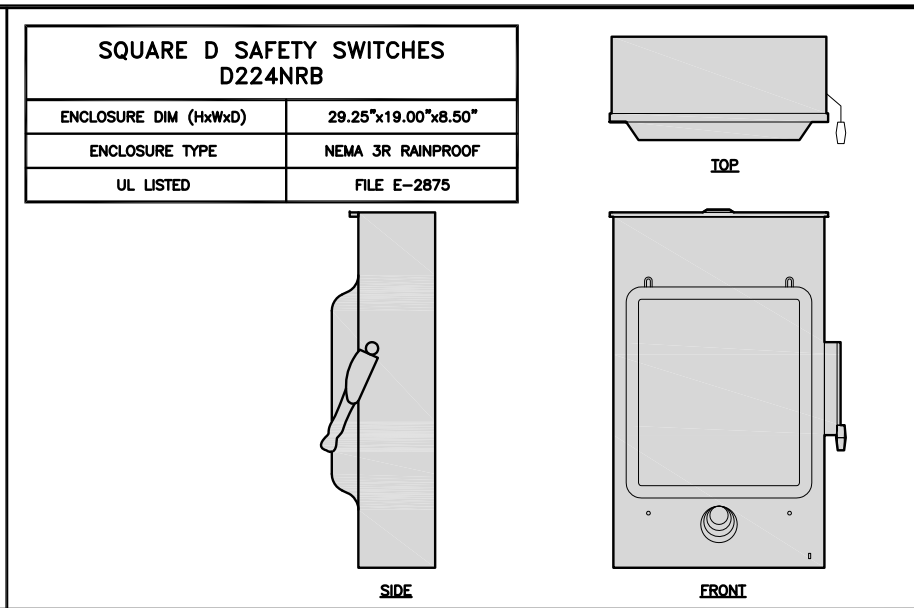
5



**CABINET DETAIL** NO SCALE 1



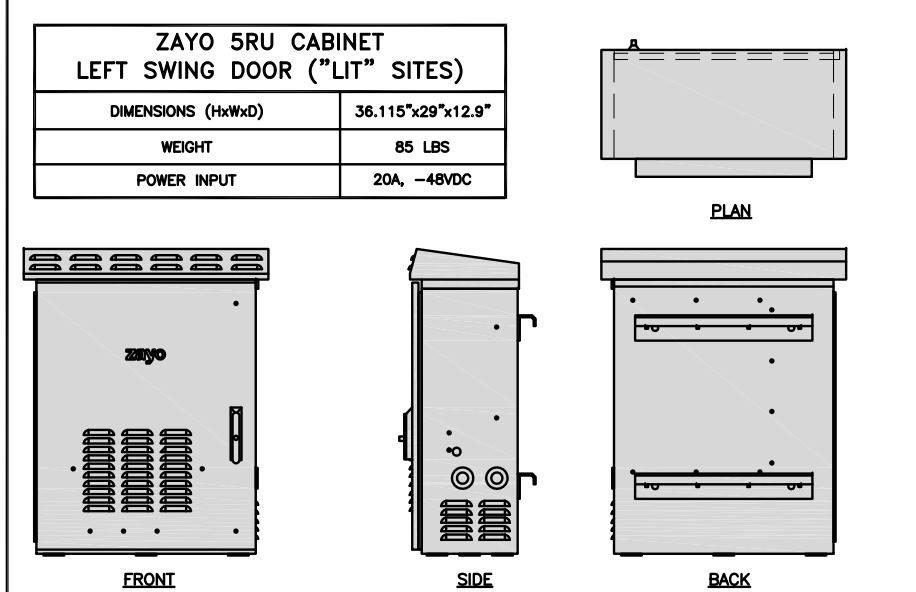
**POWER PROTECTION CABINET (PPC) DETAIL** NO SCALE 2



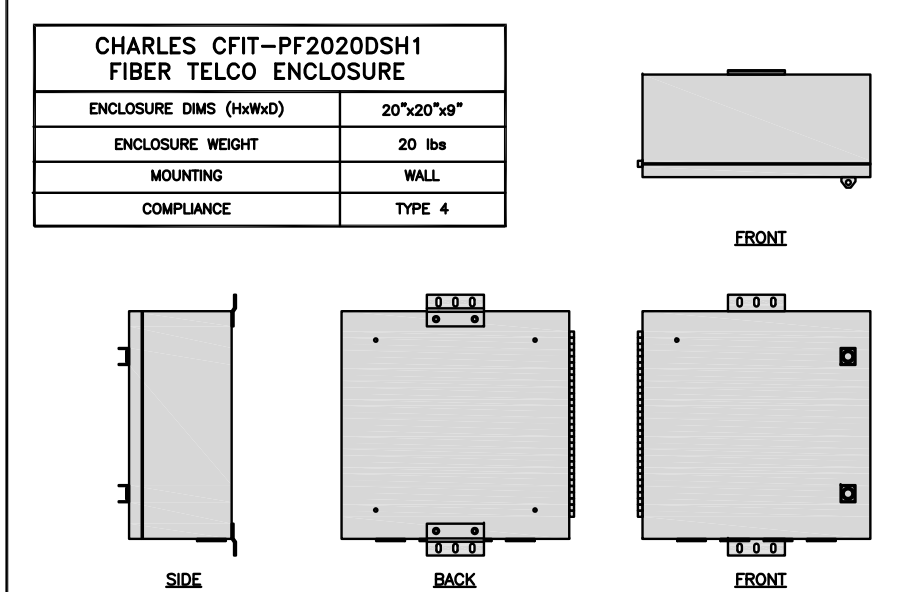
**SAFETY SWITCH DETAIL** NO SCALE 3



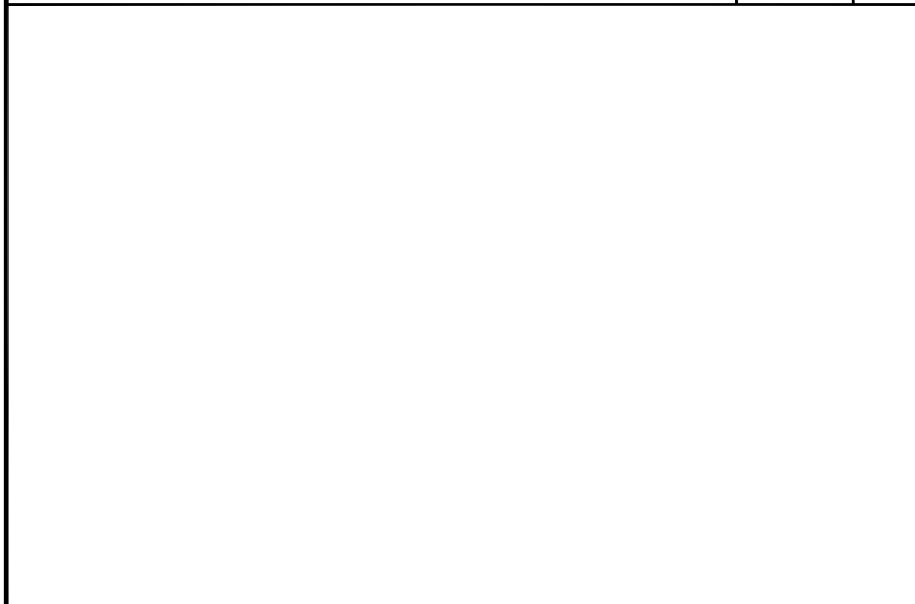
**NOT USED** NO SCALE 4



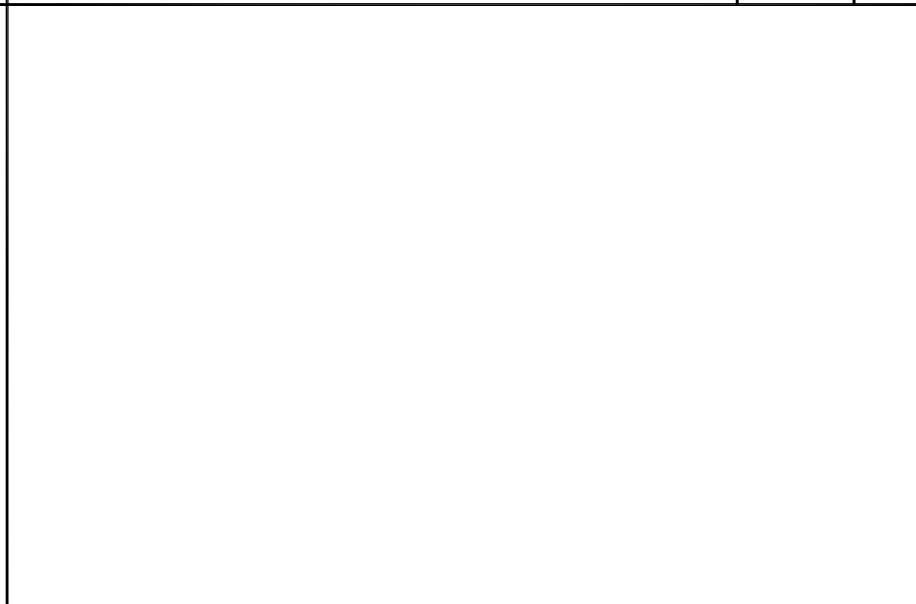
**NETWORK INTERFACE UNIT DETAIL** NO SCALE 5



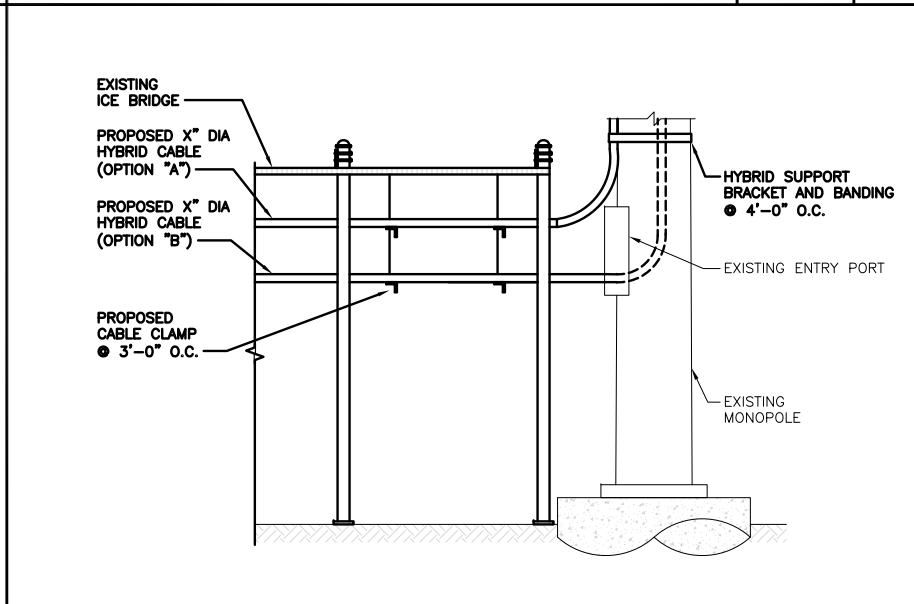
**FIBER TELCO ENCLOSURE DETAIL** NO SCALE 6



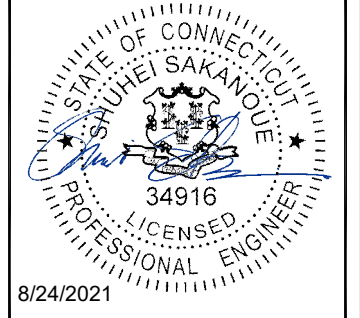
**NOT USED** NO SCALE 7



**NOT USED** NO SCALE 8



**HYBRID CABLE RUN** NO SCALE 9



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DRAWN BY: RCD CHECKED BY: SS APPROVED BY: CJW

RFDS REV #: N/A

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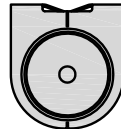
A&E PROJECT NUMBER  
6039-Z0001-C

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

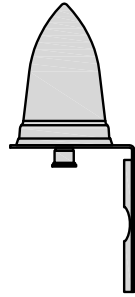
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-4**

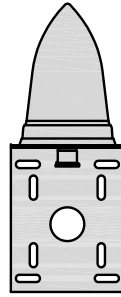
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



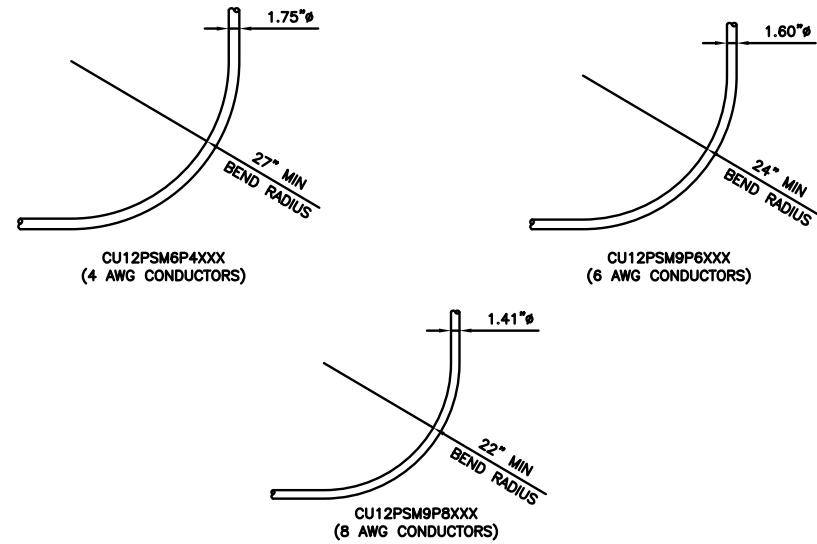
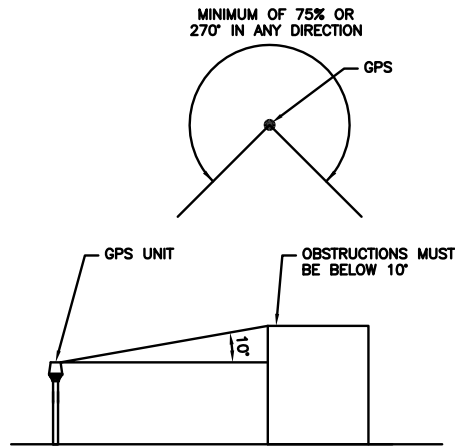
TOP



BACK



SIDE



GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE  
MINIMUM BEND RADIUSES

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

**dish**  
wireless.

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LITTLETON, CO 80120

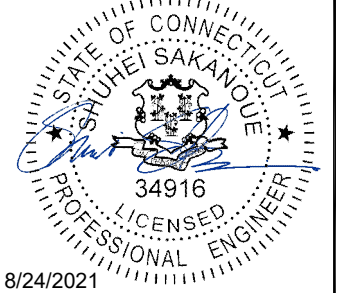
**CROWN CASTLE**

2000 CORPORATE DRIVE  
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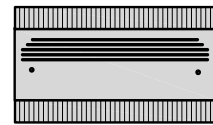
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SOUTHBURY, CT 06488

SHEET TITLE  
EQUIPMENT DETAILS

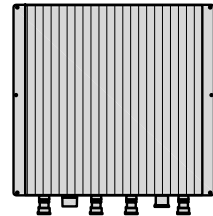
SHEET NUMBER

**A-5**

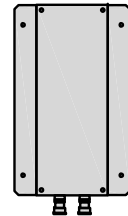
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



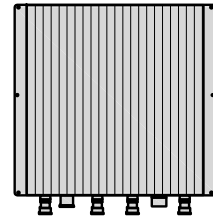
PLAN



BACK



SIDE



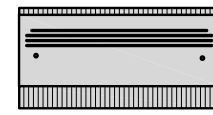
FRONT

RRH DETAIL

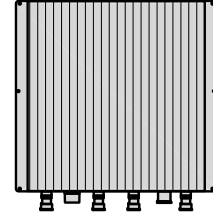
NO SCALE

1

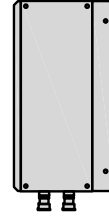
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



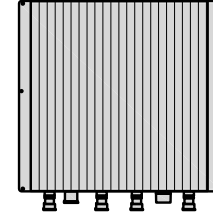
PLAN



BACK



SIDE



FRONT

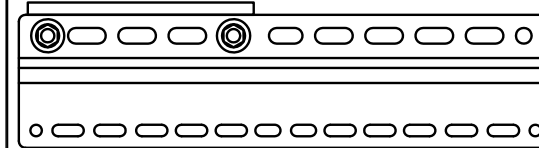
RRH DETAIL

NO SCALE

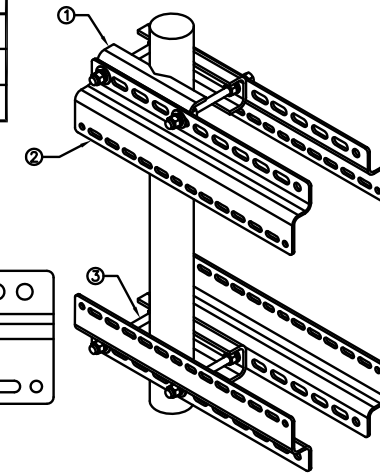
2

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

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



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

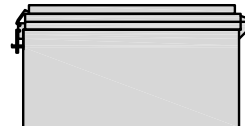


RRH MOUNT DETAIL

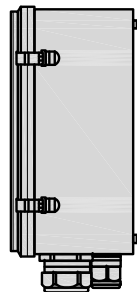
NO SCALE

3

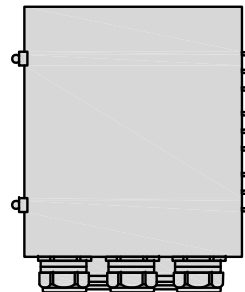
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



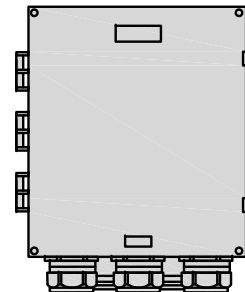
PLAN



SIDE



BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP)

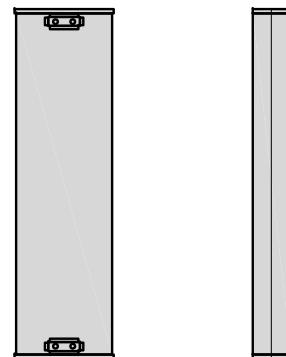
NO SCALE

4

JMA WIRELESS MX08FR0665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.8"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

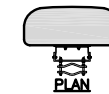
NOTES

FINAL ANTENNA SPECIFICATIONS  
TO BE CONFIRMED BY GC



BACK

SIDE



FRONT

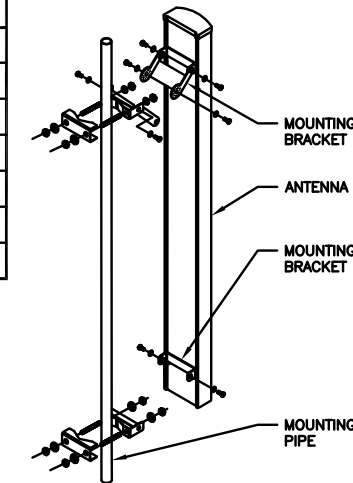
ANTENNA DETAIL

NO SCALE

5

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

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



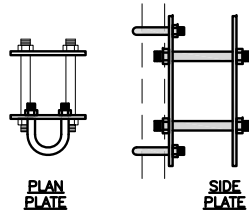
ANTENNA MOUNTING DETAIL

NO SCALE

6

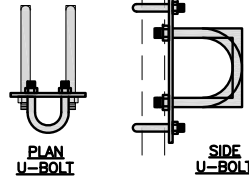
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



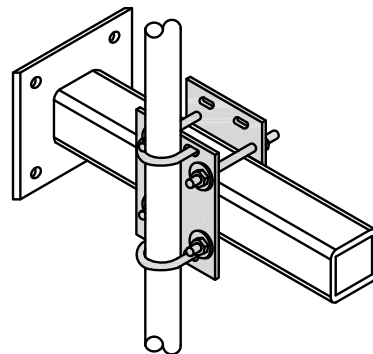
PLAN  
PLATE

SIDE  
PLATE



PLAN  
U-BOLT

SIDE  
U-BOLT



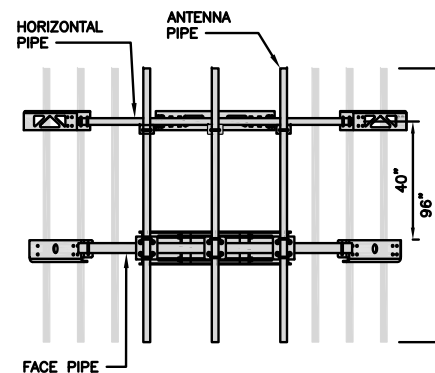
RRH/OVP MOUNT DETAIL

NO SCALE

7

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

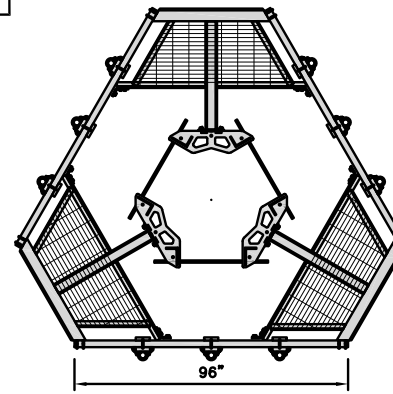
NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT



FACE PIPE

HORIZONTAL  
PIPE

ANTENNA  
PIPE



96"

ANTENNA PLATFORM DETAIL

NO SCALE

8

NOT USED

NO SCALE

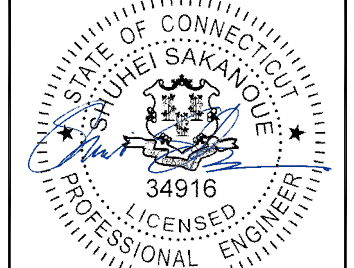
9

**dish**  
wireless.

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LITTLETON, CO 80120

**CROWN  
CASTLE**  
2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

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EQUIPMENT DETAILS

SHEET NUMBER  
**A-6**



**NOTES**

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

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

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



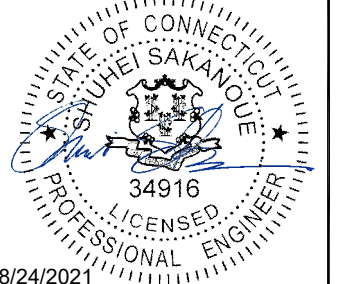
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SUBMITTALS		
REV	DATE	DESCRIPTION
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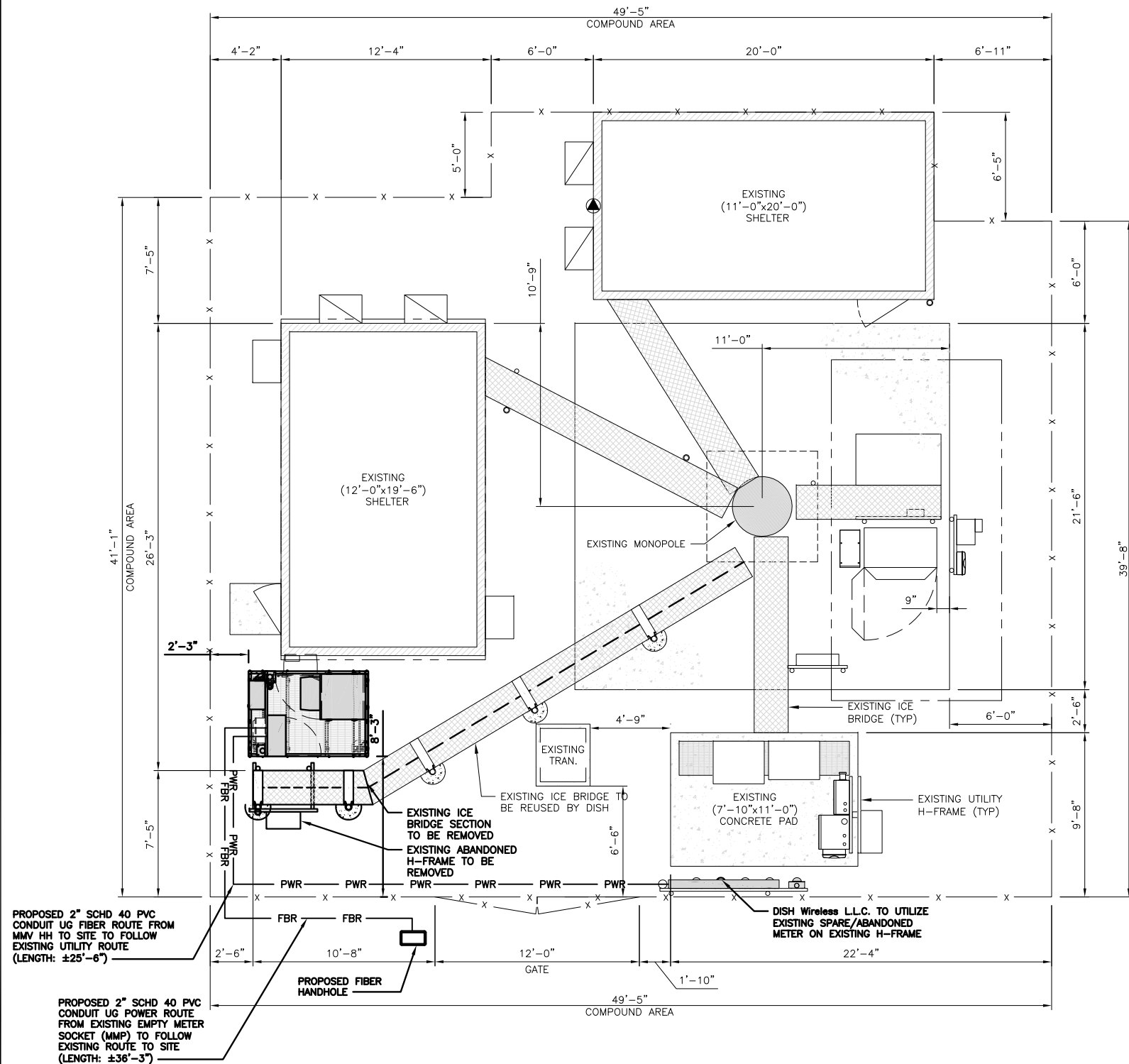
A&E PROJECT NUMBER  
6039-Z0001-C  
DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHURY, CT 06488

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

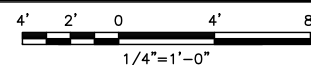
SHEET NUMBER  
**E-1**

**ELECTRICAL NOTES**

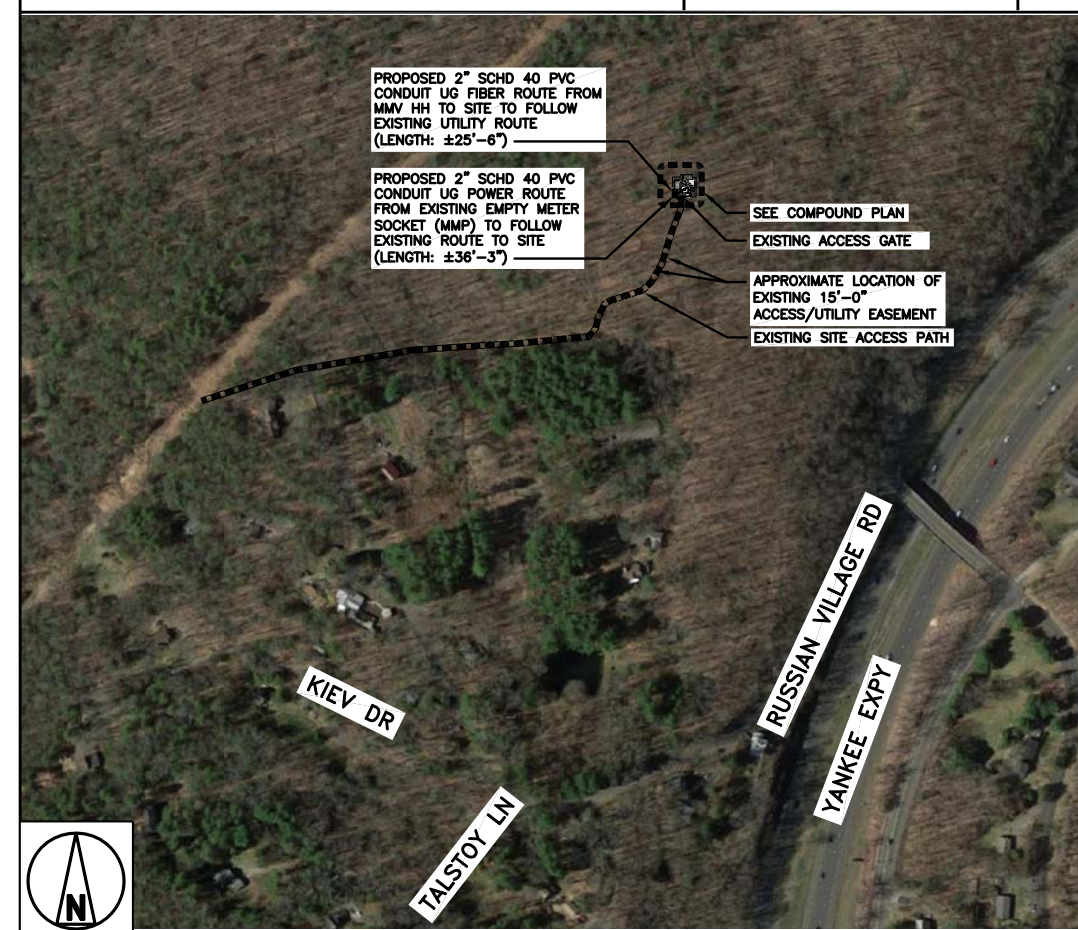
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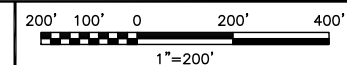
**UTILITY ROUTE PLAN**



1



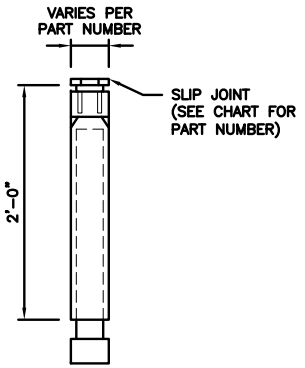
**OVERALL UTILITY ROUTE PLAN**



3

**CARLON EXPANSION FITTINGS**

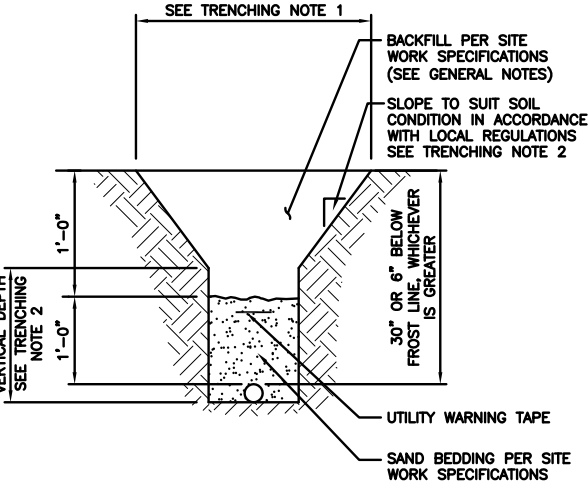
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

**TRENCHING NOTES**

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



**EXPANSION JOINT DETAIL**

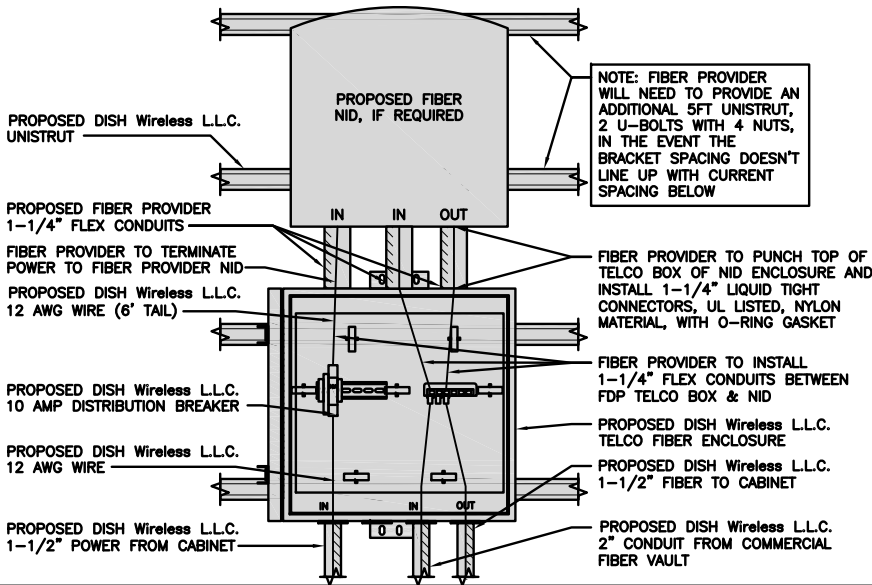
NO SCALE 1

**TYPICAL UNDERGROUND TRENCH DETAIL**

NO SCALE 2

**NOT USED**

NO SCALE 3



NOTE: FIBER PROVIDER WILL NEED TO PROVIDE AN ADDITIONAL 5FT UNISTRUT, 2 U-BOLTS WITH 4 NUTS, IN THE EVENT THE BRACKET SPACING DOESN'T LINE UP WITH CURRENT SPACING BELOW

**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



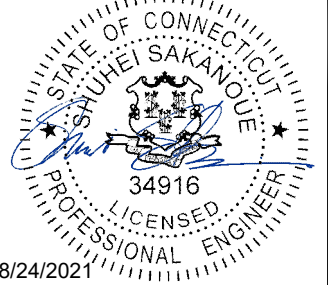
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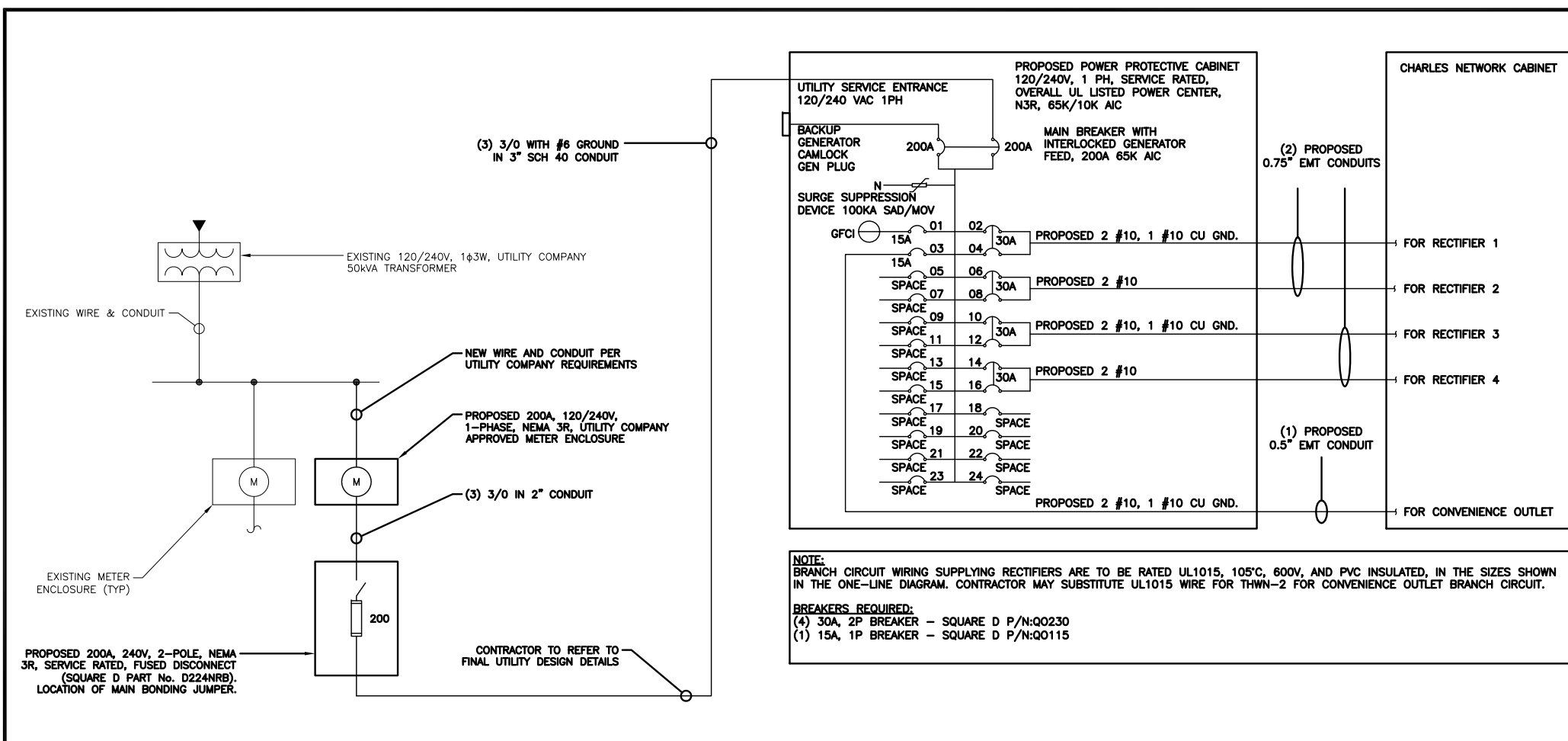
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DISH Wireless L.L.C.  
PROJECT INFORMATION  
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214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER  
**E-2**





**NOTES**

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

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

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

**CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT):** USING THWN-2, CU.  
 #10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN  
 #10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND  
**TOTAL = 0.0633 SQ. IN**

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

**RECTIFIER CONDUCTORS (2 CONDUITS):** USING UL1015, CU.  
 #10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN  
 #10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND  
**TOTAL = 0.1146 SQ. IN**

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

**PPC FEED CONDUCTORS (1 CONDUIT):** USING THWN, CU.  
 3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN  
 #6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND  
**TOTAL = 0.8544 SQ. IN**

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



PPC ONE-LINE DIAGRAM

NO SCALE 1

**PROPOSED CHARLES PANEL SCHEDULE**

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

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

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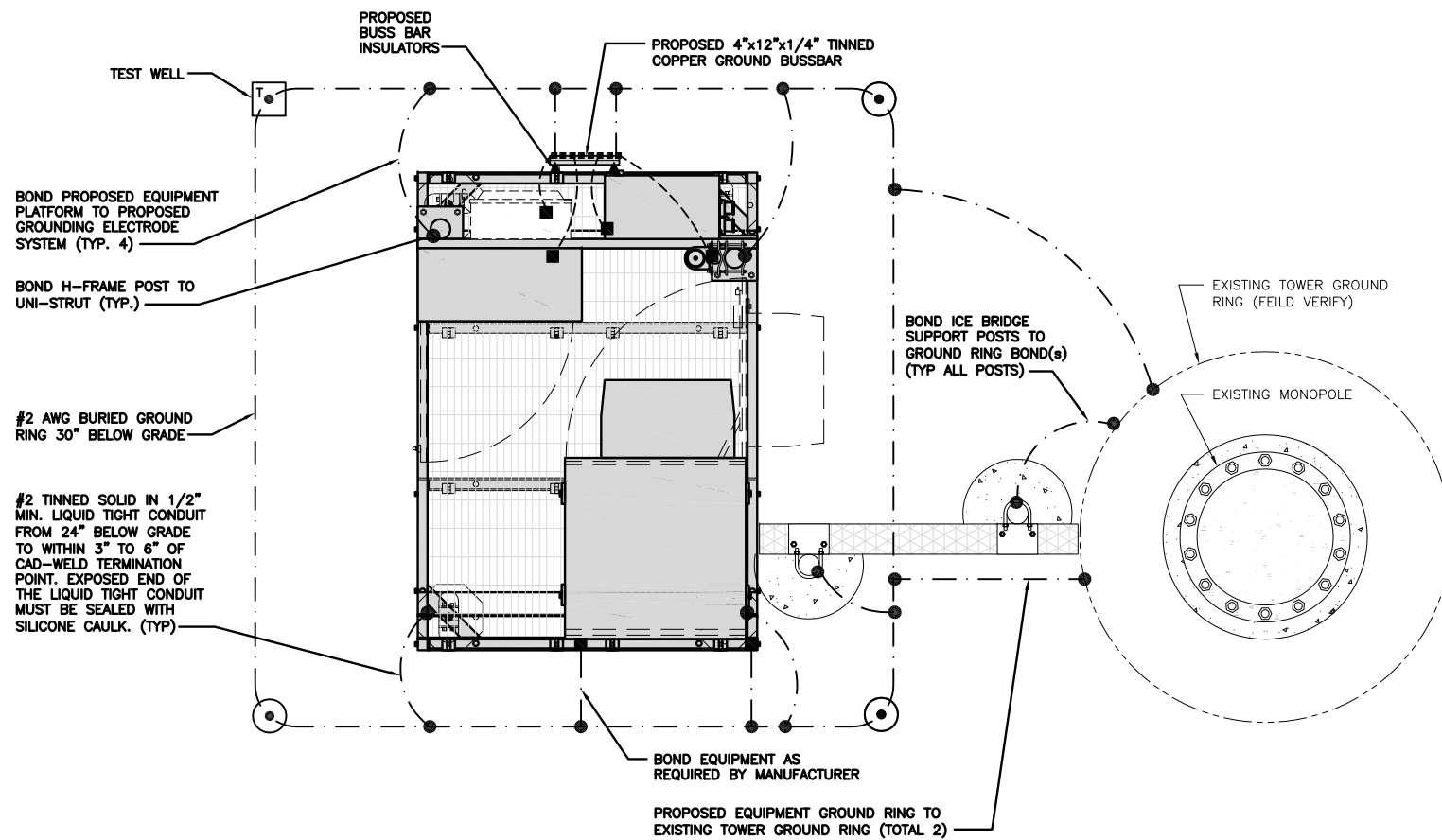
A&E PROJECT NUMBER  
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DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

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

SHEET NUMBER  
**E-3**



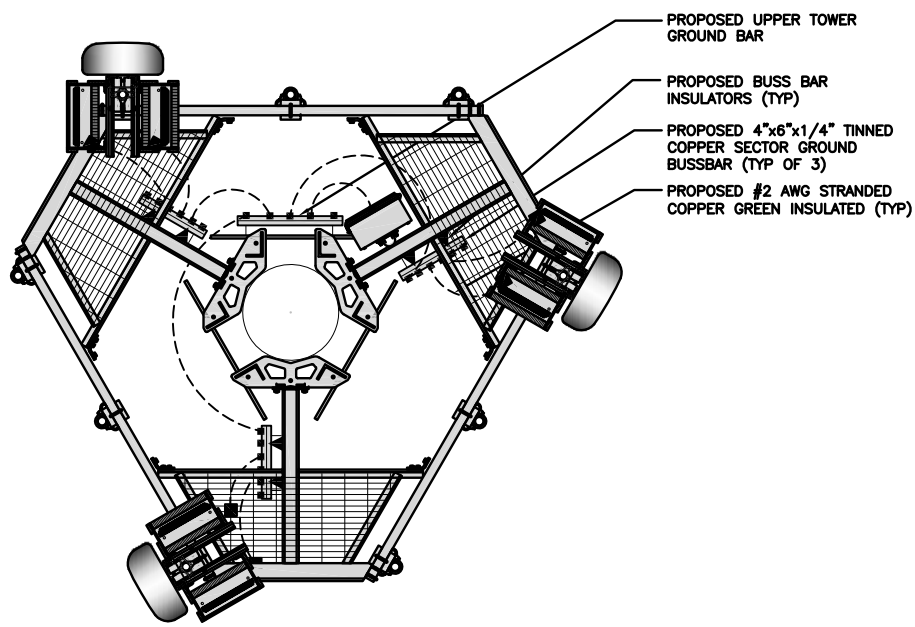


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

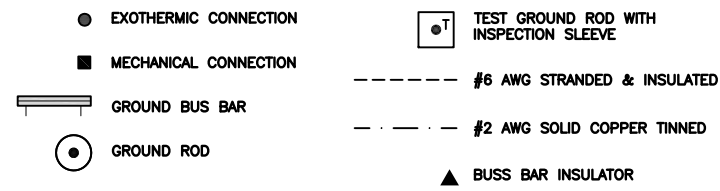
NOTES

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



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



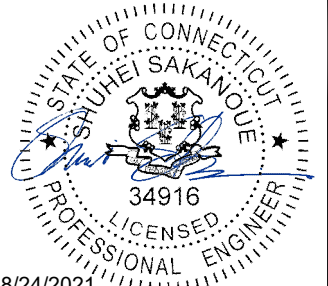
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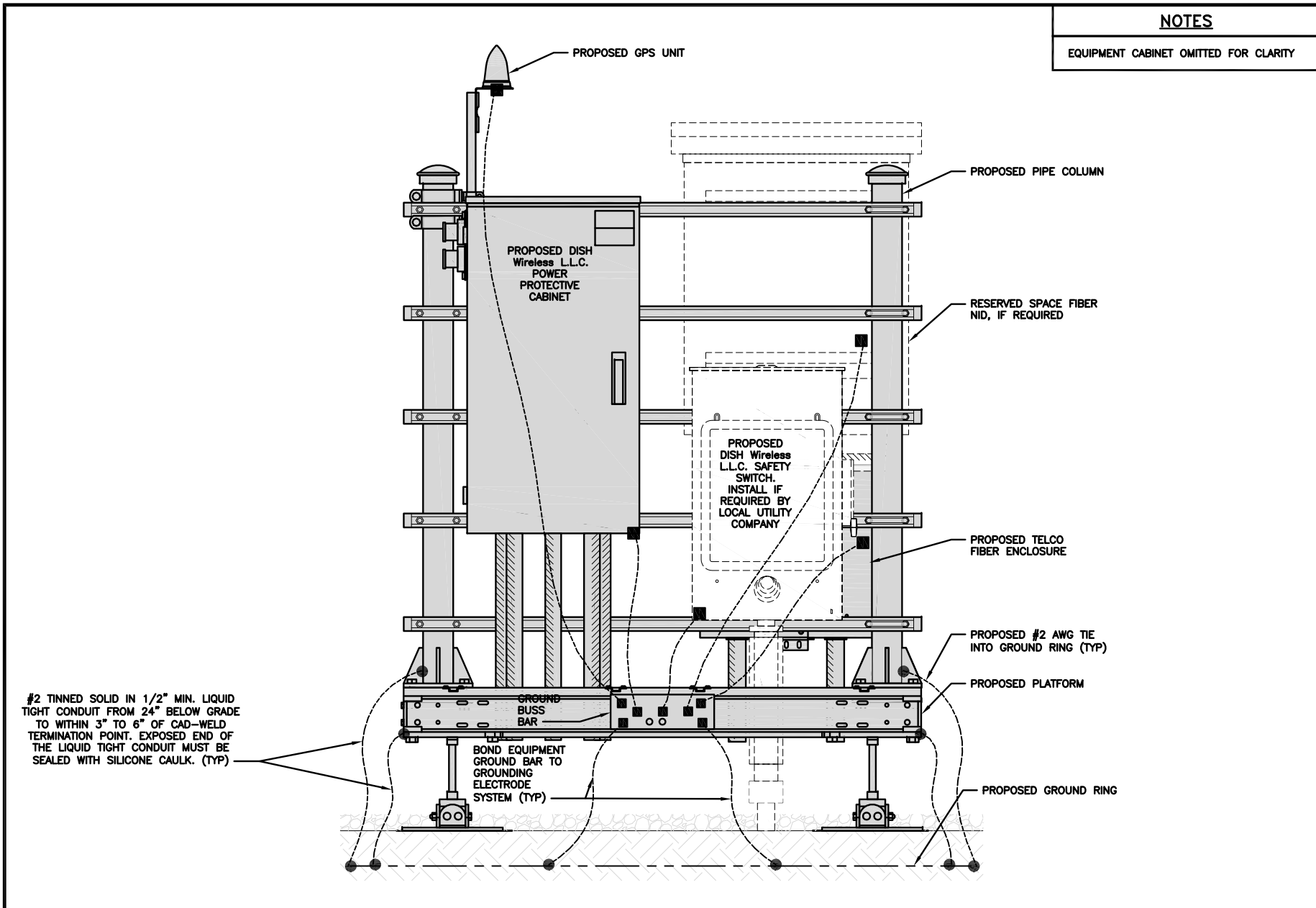
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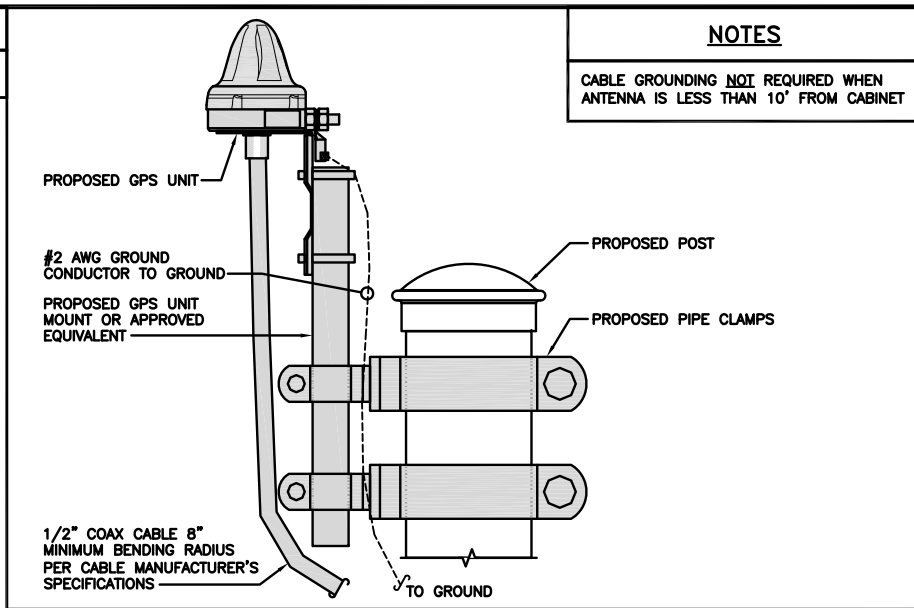
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GROUNDING PLANS  
AND NOTES

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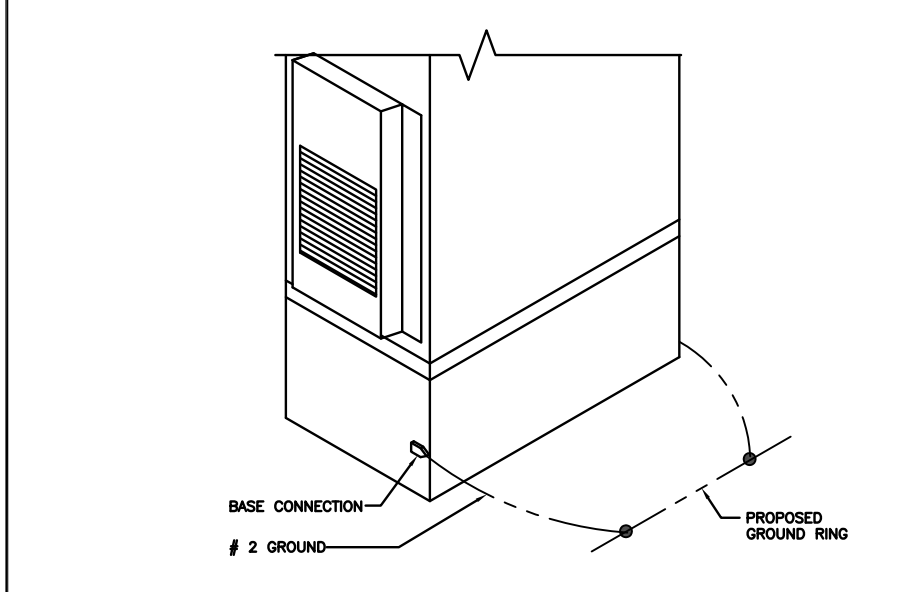
**H-FRAME GROUNDING DETAIL**

NO SCALE 1



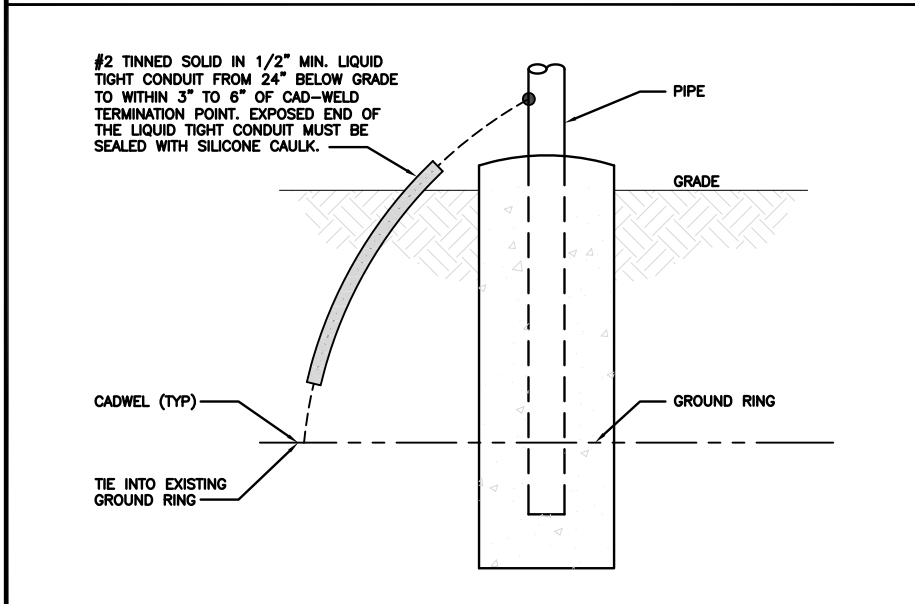
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



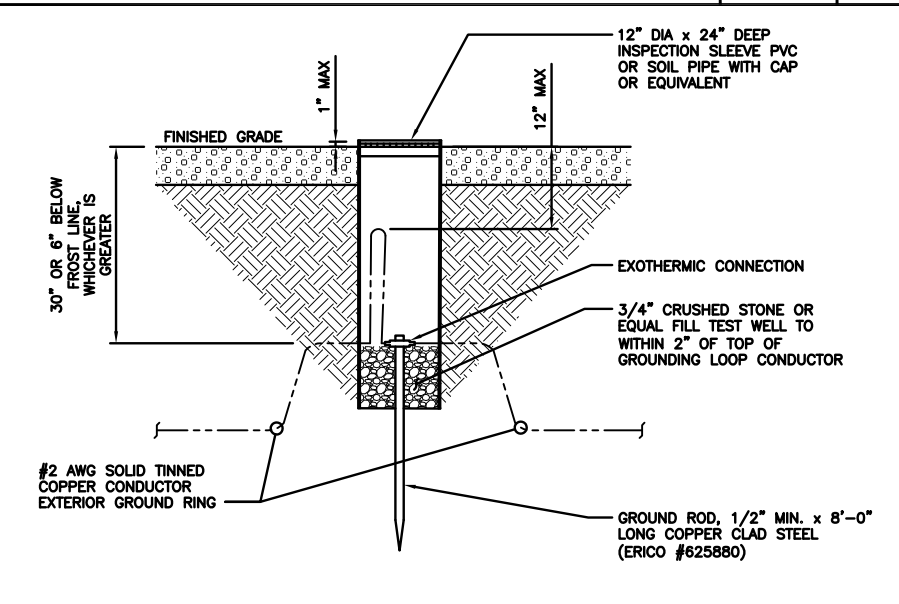
**OUTDOOR CABINET GROUNDING**

NO SCALE 3



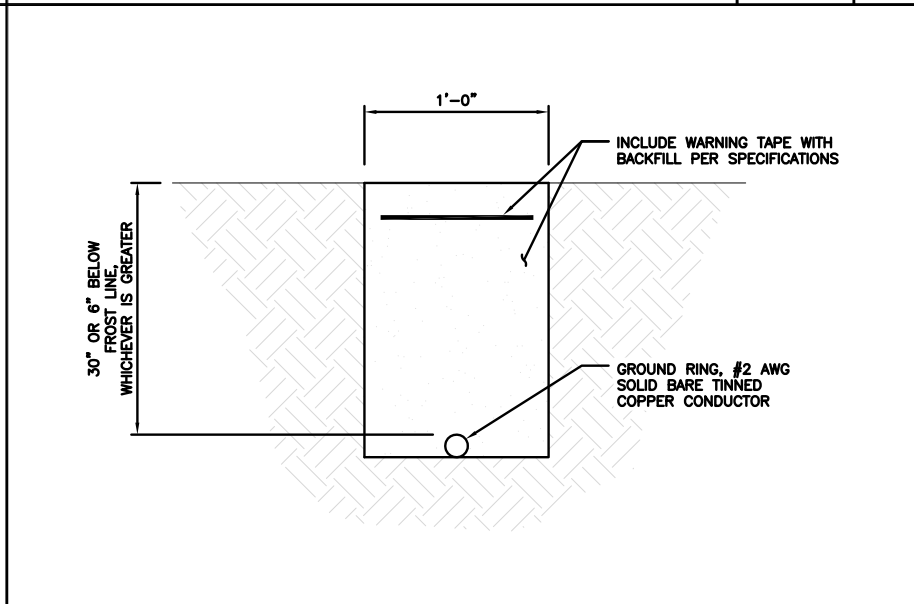
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6



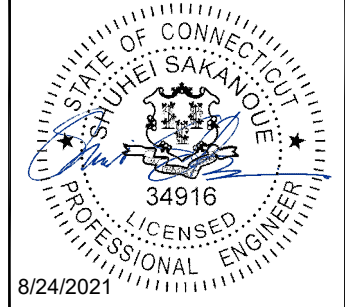
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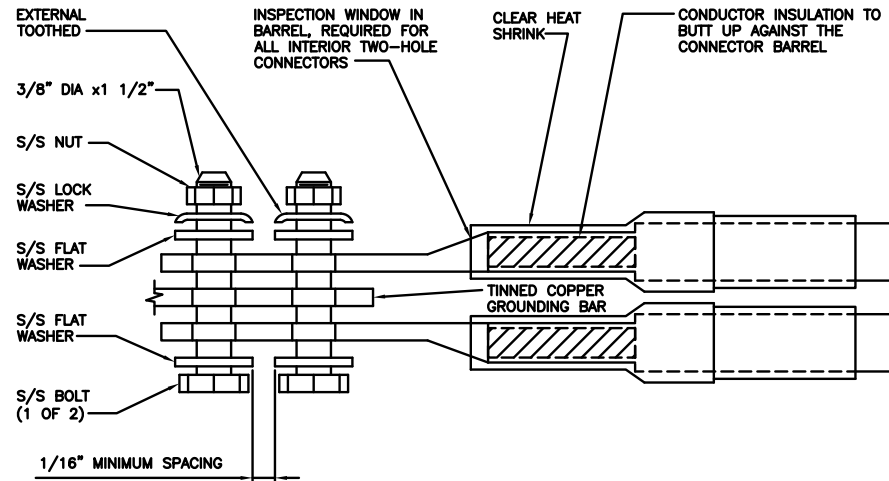
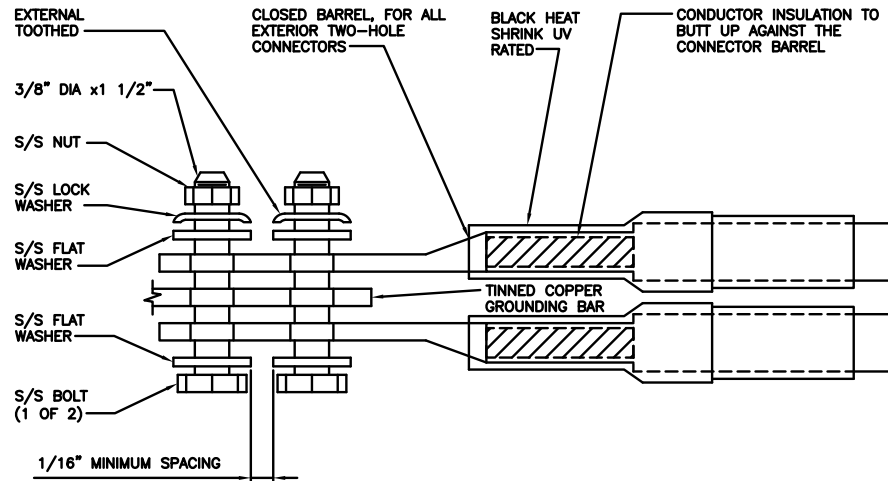
A&E PROJECT NUMBER  
6039-Z0001-C

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

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

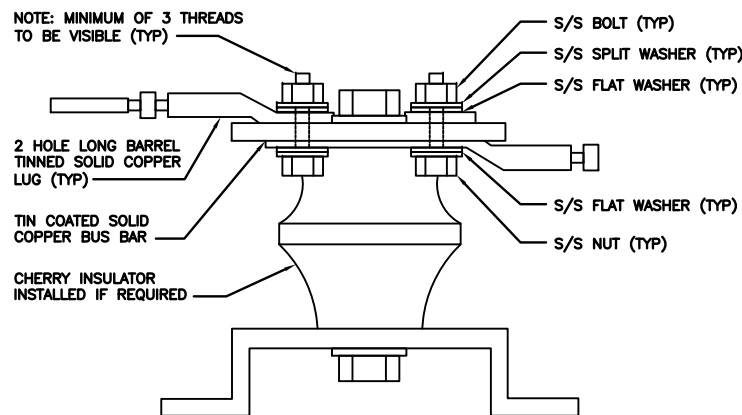
NO SCALE 1

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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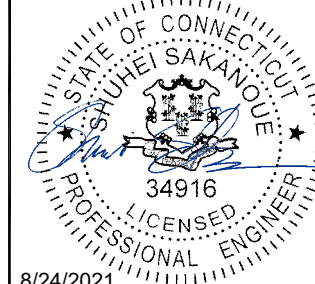
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RCD SS CJW

RFDS REV #: N/A

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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)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH -  
(AWS BANDS N66+N70)

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED  
ALONG WITH FREQUENCY BANDS

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

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

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	ORANGE
ORANGE	YELLOW	PURPLE
PURPLE		

**FIBER JUMPERS TO RRHs**

LOW-BAND RRH FIBER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**POWER CABLES TO RRHs**

LOW-BAND RRH POWER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**RET MOTORS AT ANTENNAS**

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**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

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

**RF CABLE COLOR CODES**

NO SCALE

1

LOW BANDS (N71+N26)  
OPTIONAL - (N29)



AWS  
(N66+N70+H-BLOCK)



CBRS TECH  
(3 GHz)



NEGATIVE SLANT PORT  
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4

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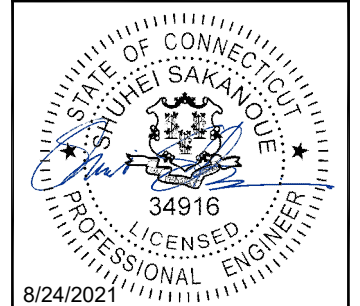
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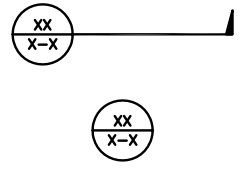
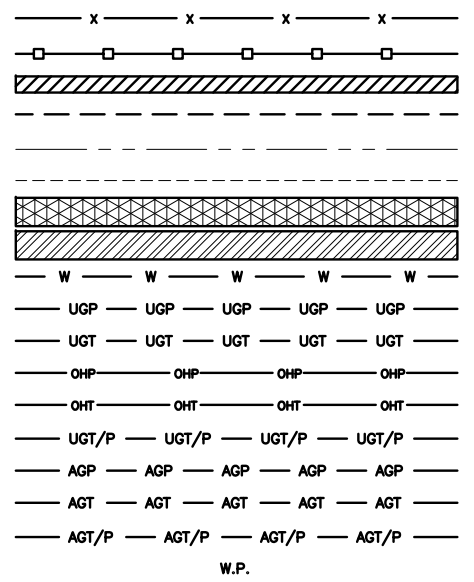
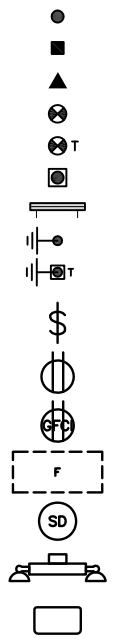
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SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER  
**RF-1**

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DOBTD  
 CHAIN LINK FENCE  
 WOOD/WROUGHT IRON FENCE  
 WALL STRUCTURE  
 LEASE AREA  
 PROPERTY LINE (PL)  
 SETBACKS  
 ICE BRIDGE  
 CABLE TRAY  
 WATER LINE  
 UNDERGROUND POWER  
 UNDERGROUND TELCO  
 OVERHEAD POWER  
 OVERHEAD TELCO  
 UNDERGROUND TELCO/POWER  
 ABOVE GROUND POWER  
 ABOVE GROUND TELCO  
 ABOVE GROUND TELCO/POWER  
 WORKPOINT



SECTION REFERENCE  
 DETAIL REFERENCE

**LEGEND**

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

**ABBREVIATIONS**



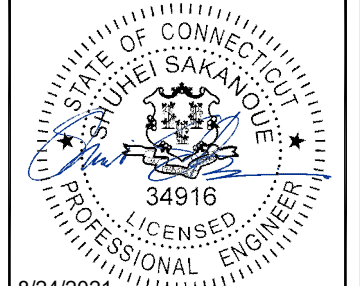
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SHEET TITLE  
 LEGEND AND ABBREVIATIONS

SHEET NUMBER  
**GN-1**

**SITE ACTIVITY REQUIREMENTS:**

- 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.
- "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.
- 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.
- 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).
- 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."
- 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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:**

- 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
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



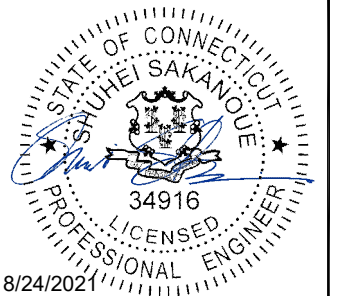
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214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-2**



**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

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

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
  - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
  - 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C."
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



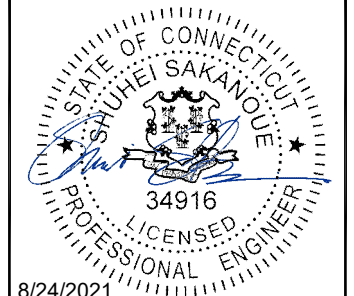
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6039-Z0001-C

DISH Wireless L.L.C.  
PROJECT INFORMATION  
BOHVN00022A  
214 RUSSIAN VILLAGE RD  
SOUTHBURY, CT 06488

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-3**



**GROUNDING NOTES:**

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.



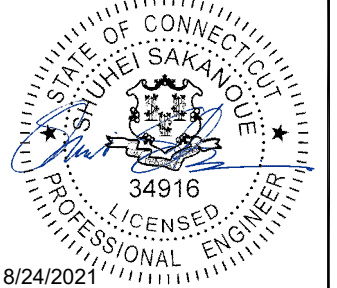
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SOUTHBURY, CT 06488

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-4**

# Exhibit D

## **Structural Analysis Report**

Date: **June 09, 2021**



Crown Castle  
2000 Corporate Dr.  
Canonsburg, PA  
(724) 416-2000

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **DISH Network Co-Locate**  
**Site Number:** BOHVN00022A  
**Site Name:** CT-CCI-T-876314

**Crown Castle Designation:** **BU Number:** 876314  
**Site Name:** HORSE HILL  
**JDE Job Number:** 645172  
**Work Order Number:** 1966186  
**Order Number:** 553363 Rev. 1

**Engineering Firm Designation:** **Crown Castle Project Number:** 1966186

**Site Data:** **214 Russian Village Rd, Southbury, NEW HAVEN County, CT**  
**Latitude 41° 27' 7.97", Longitude -73° 15' 1.25"**  
**130 Foot - Monopole Tower**

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

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

LC5: Proposed Equipment Configuration

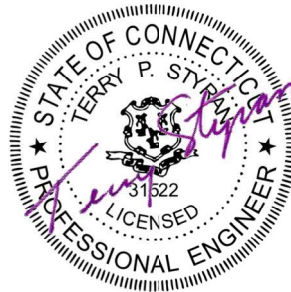
**Sufficient Capacity – 69.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Alexander Greguric, E.I.T.

Respectfully submitted by:

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



Terry P Styran  
2021.06.09  
17:37:58 -04'00'

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## 1) INTRODUCTION

This tower is a 130 ft Monopole tower designed by SUMMIT. The tower has been modified in the past to accommodate additional loading.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	120 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)
110.0	110.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

**Table 2 - Other Considered Equipment**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	130.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	2 1 6	3/4 3/8 1-5/8
		3	ericsson	RRUS 12		
		3	ericsson	RRUS-11		
		3	kathrein	800 10121 w/ Mount Pipe		
		6	kathrein	860 10025		
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 303-1]		
120.0	120.0	3	alcatel lucent	TD-RRH8x20-25	4	1-1/4
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 1201-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	119.0	3	alcatel lucent	1900MHz RRH (65MHz)	-	-
	118.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		1	tower mounts	Side Arm Mount [SO 102-3]		
	117.0	3	alcatel lucent	800MHZ RRH w/ Mount Pipe		
100.0	101.0	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	1 12	1-1/4 1-5/8
	100.0	6	ems wireless	RR90-17-02DP w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	KRY 112 489/2		
		3	ericsson	RADIO 4449 B12/B71		
		1	tower mounts	Miscellaneous [NA 509-3]		
		1	tower mounts	Platform Mount [LP 1201-1]		
90.0	90.0	-	-	-	6	1-5/8
80.0	80.0	1	gps	GPS_A	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1529735	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1611741	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1529812	CCISITES
4-POST-MODIFICATION INSPECTION	3797830	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3797841	CCISITES

#### 3.1) Analysis Method

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

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

#### 3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

#### 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
130 - 125	Pole	TP16x16x0.375	Pole	4.3%	Pass
125 - 120	Pole	TP16x16x0.375	Pole	8.6%	Pass
120 - 114.9	Pole + Reinf.	TP17.249x16x0.5125	Reinf. 7 Tension Rupture	12.8%	Pass
114.9 - 114.67	Pole + Reinf.	TP17.305x17.249x0.5125	Reinf. 7 Tension Rupture	13.1%	Pass
114.67 - 109.67	Pole + Reinf.	TP18.53x17.305x0.4813	Reinf. 7 Tension Rupture	18.9%	Pass
109.67 - 109.42	Pole + Reinf.	TP18.591x18.53x0.4813	Reinf. 7 Tension Rupture	19.3%	Pass
109.42 - 109.17	Pole + Reinf.	TP18.652x18.591x0.425	Reinf. 7 Tension Rupture	20.4%	Pass
109.17 - 104.17	Pole + Reinf.	TP19.877x18.652x0.4125	Reinf. 7 Tension Rupture	27.9%	Pass
104.17 - 103.92	Pole + Reinf.	TP19.938x19.877x0.4063	Reinf. 7 Tension Rupture	28.3%	Pass
103.92 - 103.67	Pole + Reinf.	TP19.999x19.938x0.45	Reinf. 7 Tension Rupture	27.6%	Pass
103.67 - 98.67	Pole + Reinf.	TP21.224x19.999x0.4375	Reinf. 7 Tension Rupture	35.2%	Pass
98.67 - 96.42	Pole + Reinf.	TP21.775x21.224x0.425	Reinf. 7 Tension Rupture	39.0%	Pass
96.42 - 96.17	Pole + Reinf.	TP21.836x21.775x0.3875	Reinf. 7 Tension Rupture	40.7%	Pass
96.17 - 94.5	Pole + Reinf.	TP22.98x21.836x0.3813	Reinf. 7 Tension Rupture	43.4%	Pass
94.5 - 89.5	Pole + Reinf.	TP23.095x21.87x0.4375	Reinf. 7 Tension Rupture	44.7%	Pass
89.5 - 88.92	Pole + Reinf.	TP23.237x23.095x0.4375	Reinf. 7 Tension Rupture	45.4%	Pass
88.92 - 88.67	Pole + Reinf.	TP23.299x23.237x0.325	Reinf. 7 Tension Rupture	52.7%	Pass
88.67 - 88.25	Pole + Reinf.	TP23.401x23.299x0.325	Reinf. 7 Tension Rupture	53.3%	Pass
88.25 - 88	Pole + Reinf.	TP23.463x23.401x0.4	Reinf. 7 Tension Rupture	48.7%	Pass
88 - 87.42	Pole + Reinf.	TP23.605x23.463x0.4	Reinf. 7 Tension Rupture	49.4%	Pass
87.42 - 87.17	Pole	TP23.666x23.605x0.25	Pole	55.5%	Pass
87.17 - 86.92	Pole	TP23.727x23.666x0.25	Pole	55.8%	Pass
86.92 - 86.67	Pole + Reinf.	TP23.789x23.727x0.4313	Reinf. 4 Tension Rupture	48.0%	Pass
86.67 - 81.67	Pole + Reinf.	TP25.014x23.789x0.4188	Reinf. 4 Tension Rupture	53.1%	Pass
81.67 - 80.75	Pole + Reinf.	TP25.239x25.014x0.4188	Reinf. 4 Tension Rupture	54.0%	Pass
80.75 - 80.5	Pole + Reinf.	TP25.3x25.239x0.3188	Reinf. 4 Tension Rupture	61.9%	Pass
80.5 - 75.5	Pole + Reinf.	TP26.525x25.3x0.3188	Reinf. 4 Tension Rupture	66.5%	Pass
75.5 - 71.83	Pole + Reinf.	TP27.424x26.525x0.3125	Reinf. 4 Tension Rupture	69.5%	Pass
71.83 - 71.58	Pole + Reinf.	TP27.485x27.424x0.4	Reinf. 4 Tension Rupture	61.6%	Pass
71.58 - 68.83	Pole + Reinf.	TP28.159x27.485x0.4	Reinf. 4 Tension Rupture	63.5%	Pass
68.83 - 68.58	Pole + Reinf.	TP28.22x28.159x0.4625	Reinf. 3 Tension Rupture	55.0%	Pass
68.58 - 68.25	Pole + Reinf.	TP29.22x28.22x0.4625	Reinf. 3 Tension Rupture	55.2%	Pass
68.25 - 63.25	Pole + Reinf.	TP29.026x27.801x0.5188	Reinf. 3 Tension Rupture	52.6%	Pass
63.25 - 58.25	Pole + Reinf.	TP30.251x29.026x0.5125	Reinf. 3 Tension Rupture	54.7%	Pass
58.25 - 53.25	Pole + Reinf.	TP31.476x30.251x0.5	Reinf. 3 Tension Rupture	56.6%	Pass
53.25 - 48.25	Pole + Reinf.	TP32.701x31.476x0.4875	Reinf. 3 Tension Rupture	58.3%	Pass
48.25 - 46.75	Pole + Reinf.	TP34.11x32.701x0.4875	Reinf. 3 Tension Rupture	58.8%	Pass
46.75 - 41.83	Pole + Reinf.	TP33.648x32.444x0.5188	Reinf. 3 Tension Rupture	58.4%	Pass
41.83 - 41.58	Pole	TP33.709x33.648x0.3438	Pole	62.0%	Pass
41.58 - 41.17	Pole	TP33.81x33.709x0.3438	Pole	62.1%	Pass
41.17 - 40.92	Pole + Reinf.	TP33.871x33.81x0.5188	Reinf. 2 Tension Rupture	58.6%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
40.92 - 35.92	Pole + Reinf.	TP35.095x33.871x0.5063	Reinf. 2 Tension Rupture	59.8%	Pass
35.92 - 30.92	Pole + Reinf.	TP36.318x35.095x0.5063	Reinf. 2 Tension Rupture	60.7%	Pass
30.92 - 25.92	Pole + Reinf.	TP37.542x36.318x0.4938	Reinf. 2 Tension Rupture	61.6%	Pass
25.92 - 25.25	Pole + Reinf.	TP38.93x37.542x0.4938	Reinf. 2 Tension Rupture	61.7%	Pass
25.25 - 19.25	Pole + Reinf.	TP38.49x37.019x0.525	Reinf. 2 Tension Rupture	60.8%	Pass
19.25 - 14.15	Pole + Reinf.	TP39.74x38.49x0.5188	Reinf. 1 Tension Rupture	61.3%	Pass
14.15 - 13.92	Pole + Reinf.	TP39.797x39.74x0.5188	Reinf. 1 Tension Rupture	61.3%	Pass
13.92 - 8.92	Pole + Reinf.	TP41.023x39.797x0.5125	Reinf. 1 Tension Rupture	61.7%	Pass
8.92 - 3.92	Pole + Reinf.	TP42.249x41.023x0.5125	Reinf. 1 Tension Rupture	62.1%	Pass
3.92 - 0	Pole + Reinf.	TP43.21x42.249x0.5063	Reinf. 1 Tension Rupture	62.3%	Pass
				Summary	
			Pole	62.1%	Pass
			Reinforcement	69.5%	Pass
			Overall	69.5%	Pass

**Table 5 - Tower Component Stresses vs. Capacity - LC5**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	41.9	Pass
1	Base Plate	0	52.6	Pass
1	Base Foundation (Structure)	0	38.4	Pass
1	Base Foundation (Soil Interaction)	0	54.6	Pass

<b>Structure Rating (max from all components) =</b>	<b>69.5%</b>
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Notes:

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

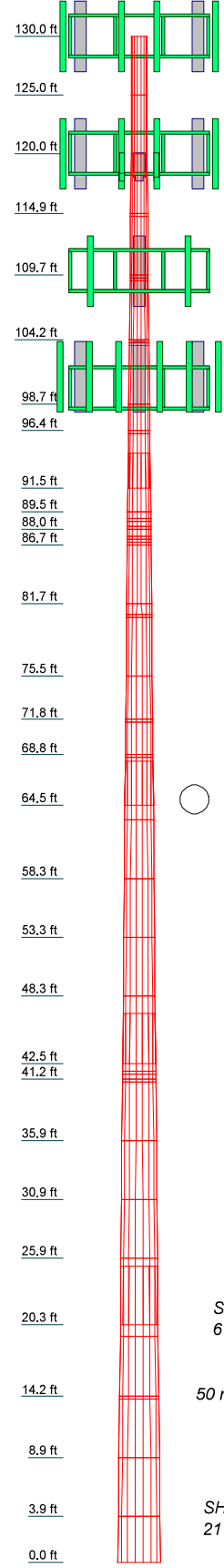
#### 4.1) Recommendations

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	0	0.375				A500-42	0.3
2	5.00	0	0.375				A500-42	0.3
3	5.00	0.23	5.10				A500-42	0.4
4	5.00	0.23	5.10				A500-42	0.4
5	5.00	0.23	5.10				A500-42	0.4
6	5.00	0.23	5.10				A500-42	0.4
7	5.00	0.23	5.10				A500-42	0.4
8	5.00	0.23	5.10				A500-42	0.4
9	5.00	0.23	5.10				A500-42	0.4
10	5.00	0.23	5.10				A500-42	0.4
11	5.00	0.23	5.10				A500-42	0.4
12	5.00	0.23	5.10				A500-42	0.4
13	5.00	0.23	5.10				A500-42	0.4
14	5.00	0.23	5.10				A500-42	0.4
15	5.00	0.23	5.10				A500-42	0.4
16	5.00	0.23	5.10				A500-42	0.4
17	5.00	0.23	5.10				A500-42	0.4
18	5.00	0.23	5.10				A500-42	0.4
19	5.00	0.23	5.10				A500-42	0.4
20	5.00	0.23	5.10				A500-42	0.4
21	5.00	0.23	5.10				A500-42	0.4
22	5.00	0.23	5.10				A500-42	0.4
23	5.00	0.23	5.10				A500-42	0.4
24	5.00	0.23	5.10				A500-42	0.4
25	5.00	0.23	5.10				A500-42	0.4
26	5.00	0.23	5.10				A500-42	0.4
27	5.00	0.23	5.10				A500-42	0.4
28	5.00	0.23	5.10				A500-42	0.4
29	5.00	0.23	5.10				A500-42	0.4
30	5.00	0.23	5.10				A500-42	0.4
31	5.00	0.23	5.10				A500-42	0.4
32	5.00	0.23	5.10				A500-42	0.4
33	5.00	0.23	5.10				A500-42	0.4
34	5.00	0.23	5.10				A500-42	0.4
35	5.00	0.23	5.10				A500-42	0.4
36	5.00	0.23	5.10				A500-42	0.4
37	5.00	0.23	5.10				A500-42	0.4
38	5.00	0.23	5.10				A500-42	0.4
39	5.00	0.23	5.10				A500-42	0.4
40	5.00	0.23	5.10				A500-42	0.4
41	5.00	0.23	5.10				A500-42	0.4
42	5.00	0.23	5.10				A500-42	0.4
43	5.00	0.23	5.10				A500-42	0.4
44	5.00	0.23	5.10				A500-42	0.4
45	5.00	0.23	5.10				A500-42	0.4
46	5.00	0.23	5.10				A500-42	0.4
47	5.00	0.23	5.10				A500-42	0.4
48	5.00	0.23	5.10				A500-42	0.4
49	5.00	0.23	5.10				A500-42	0.4
50	5.00	0.23	5.10				A500-42	0.4
51	5.00	0.23	5.10				A500-42	0.4

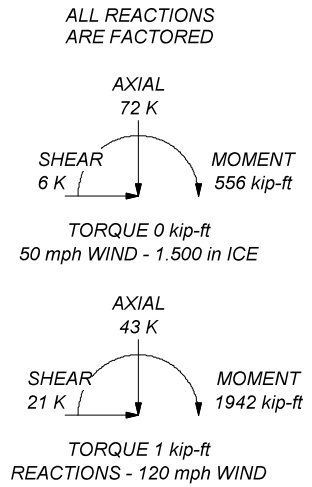


**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-42	42 ksi	58 ksi	A607-60	60 ksi	75 ksi
A607-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

- Tower is located in New Haven County, Connecticut.
- Tower designed for Exposure B to the TIA-222-H Standard.
- Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
- Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
- Deflections are based upon a 60 mph wind.
- Tower Risk Category II.
- Topographic Category 1 with Crest Height of 0.00 ft
- TOWER RATING: 69.5%



<b>Crown Castle</b>		Job: <b>BU 876314</b>	
2000 Corporate Dr.		Project:	
Canonsburg, PA		Client: Crown Castle	Drawn by: AGreguric
The Pathway to Possible		Code: TIA-222-H	Date: 06/09/21
Phone: (724) 416-2000		App'd:	
FAX:		Scale: NTS	
		Dwg No. E-1	

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## Tower Input Data

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

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 445.00 ft.
- Basic wind speed of 120 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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## 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	130.00-125.00	5.00	0.000	Round	16.000	16.000	0.375		A500-42 (42 ksi)
L2	125.00-120.00	5.00	0.000	Round	16.000	16.000	0.375		A500-42 (42 ksi)
L3	120.00-114.90	5.10	0.000	12	16.000	17.249	0.512	2.050	A607-65 (65 ksi)
L4	114.90-114.67	0.23	0.000	12	17.249	17.305	0.512	2.050	A607-65 (65 ksi)
L5	114.67-109.67	5.00	0.000	12	17.305	18.530	0.481	1.925	A607-65 (65 ksi)
L6	109.67-109.42	0.25	0.000	12	18.530	18.591	0.481	1.925	A607-65 (65 ksi)
L7	109.42-109.17	0.25	0.000	12	18.591	18.652	0.425	1.700	A607-65 (65 ksi)
L8	109.17-104.17	5.00	0.000	12	18.652	19.877	0.412	1.650	A607-65 (65 ksi)
L9	104.17-103.92	0.25	0.000	12	19.877	19.938	0.406	1.625	A607-65 (65 ksi)
L10	103.92-103.67	0.25	0.000	12	19.938	19.999	0.450	1.800	A607-65 (65 ksi)
L11	103.67-98.67	5.00	0.000	12	19.999	21.224	0.438	1.750	A607-65 (65 ksi)
L12	98.67-96.42	2.25	0.000	12	21.224	21.775	0.425	1.700	A607-65 (65 ksi)
L13	96.42-96.17	0.25	0.000	12	21.775	21.836	0.388	1.550	A607-65 (65 ksi)
L14	96.17-91.50	4.67	3.000	12	21.836	22.980	0.381	1.525	A607-65 (65 ksi)
L15	91.50-89.50	5.00	0.000	12	21.870	23.095	0.438	1.750	A607-65 (65 ksi)
L16	89.50-88.92	0.58	0.000	12	23.095	23.237	0.438	1.750	A607-65 (65 ksi)
L17	88.92-88.67	0.25	0.000	12	23.237	23.299	0.325	1.300	A607-65 (65 ksi)
L18	88.67-88.25	0.42	0.000	12	23.299	23.401	0.325	1.300	A607-65 (65 ksi)
L19	88.25-88.00	0.25	0.000	12	23.401	23.463	0.400	1.600	A607-65 (65 ksi)
L20	88.00-87.42	0.58	0.000	12	23.463	23.605	0.400	1.600	A607-65 (65 ksi)
L21	87.42-87.17	0.25	0.000	12	23.605	23.666	0.250	1.000	A607-65 (65 ksi)
L22	87.17-86.92	0.25	0.000	12	23.666	23.727	0.250	1.000	A607-65 (65 ksi)
L23	86.92-86.67	0.25	0.000	12	23.727	23.789	0.431	1.725	A607-65 (65 ksi)
L24	86.67-81.67	5.00	0.000	12	23.789	25.014	0.419	1.675	A607-65 (65 ksi)
L25	81.67-80.75	0.92	0.000	12	25.014	25.239	0.419	1.675	A607-65 (65 ksi)
L26	80.75-80.50	0.25	0.000	12	25.239	25.300	0.319	1.275	A607-65 (65 ksi)
L27	80.50-75.50	5.00	0.000	12	25.300	26.525	0.319	1.275	A607-65 (65 ksi)
L28	75.50-71.83	3.67	0.000	12	26.525	27.424	0.313	1.250	A607-65 (65 ksi)
L29	71.83-71.58	0.25	0.000	12	27.424	27.485	0.400	1.600	A607-65 (65 ksi)
L30	71.58-68.83	2.75	0.000	12	27.485	28.159	0.400	1.600	A607-65 (65 ksi)
L31	68.83-68.58	0.25	0.000	12	28.159	28.220	0.463	1.850	A607-65 (65 ksi)
L32	68.58-64.50	4.08	3.750	12	28.220	29.220	0.463	1.850	A607-65 (65 ksi)
L33	64.50-63.25	5.00	0.000	12	27.801	29.026	0.519	2.075	A607-65 (65 ksi)
L34	63.25-58.25	5.00	0.000	12	29.026	30.251	0.512	2.050	A607-65 (65 ksi)
L35	58.25-53.25	5.00	0.000	12	30.251	31.476	0.500	2.000	A607-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L36	53.25-48.25	5.00	0.000	12	31.476	32.701	0.487	1.950	(65 ksi) A607-65
L37	48.25-42.50	5.75	4.250	12	32.701	34.110	0.487	1.950	(65 ksi) A607-65
L38	42.50-41.83	4.92	0.000	12	32.444	33.648	0.519	2.075	(65 ksi) A607-65
L39	41.83-41.58	0.25	0.000	12	33.648	33.709	0.344	1.375	(65 ksi) A607-65
L40	41.58-41.17	0.41	0.000	12	33.709	33.810	0.344	1.375	(65 ksi) A607-65
L41	41.17-40.92	0.25	0.000	12	33.810	33.871	0.519	2.075	(65 ksi) A607-65
L42	40.92-35.92	5.00	0.000	12	33.871	35.095	0.506	2.025	(65 ksi) A607-65
L43	35.92-30.92	5.00	0.000	12	35.095	36.318	0.506	2.025	(65 ksi) A607-65
L44	30.92-25.92	5.00	0.000	12	36.318	37.542	0.494	1.975	(65 ksi) A607-65
L45	25.92-20.25	5.67	5.000	12	37.542	38.930	0.494	1.975	(65 ksi) A607-65
L46	20.25-19.25	6.00	0.000	12	37.019	38.490	0.525	2.100	(60 ksi) A607-60
L47	19.25-14.15	5.10	0.000	12	38.490	39.740	0.519	2.075	(60 ksi) A607-60
L48	14.15-13.92	0.23	0.000	12	39.740	39.797	0.519	2.075	(60 ksi) A607-60
L49	13.92-8.92	5.00	0.000	12	39.797	41.023	0.512	2.050	(60 ksi) A607-60
L50	8.92-3.92	5.00	0.000	12	41.023	42.249	0.512	2.050	(60 ksi) A607-60
L51	3.92-0.00	3.92		12	42.249	43.210	0.506	2.025	(60 ksi) A607-60

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L2	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L3	16.384	25.558	782.492	5.545	8.288	94.413	1585.540	12.579	2.914	5.687
L4	17.677	27.619	987.492	5.992	8.935	110.519	2000.927	13.593	3.249	6.34
L5	17.746	26.071	941.913	6.023	8.964	105.075	1908.570	12.831	3.348	6.957
L6	19.014	27.969	1162.920	6.461	9.599	121.156	2356.392	13.765	3.676	7.639
L7	19.077	28.064	1174.796	6.483	9.630	121.990	2380.454	13.812	3.693	7.673
L8	19.165	24.227	1028.805	6.530	9.662	106.480	2084.638	11.924	3.893	9.438
L9	20.433	25.854	1250.239	6.968	10.296	121.426	2533.323	12.724	4.222	10.234
L10	20.435	25.470	1232.482	6.971	10.296	119.702	2497.343	12.536	4.238	10.433
L11	20.498	25.550	1244.146	6.992	10.328	120.464	2520.977	12.575	4.255	10.473
L12	20.483	28.238	1368.891	6.977	10.328	132.542	2773.744	13.898	4.137	9.194
L13	20.546	28.327	1381.834	6.999	10.360	133.386	2799.970	13.942	4.154	9.231
L14	20.551	27.558	1346.028	7.003	10.360	129.929	2727.418	13.563	4.187	9.571
L15	21.818	29.283	1614.963	7.442	10.994	146.895	3272.354	14.412	4.516	10.321
L16	21.823	28.463	1571.653	7.446	10.994	142.955	3184.596	14.009	4.549	10.704
L17	22.393	29.218	1699.912	7.643	11.279	150.709	3444.482	14.380	4.697	11.051
L18	22.406	26.686	1558.101	7.657	11.279	138.136	3157.134	13.134	4.797	12.38
L19	22.470	26.763	1571.521	7.679	11.311	138.935	3184.327	13.172	4.814	12.422
L20	22.472	26.339	1547.526	7.681	11.311	136.814	3135.706	12.963	4.830	12.67

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L15	23.656	27.743	1808.443	8.090	11.904	151.924	3664.397	13.654	5.137	13.474
	23.248	30.193	1770.331	7.673	11.329	156.268	3587.170	14.860	4.689	10.717
	23.756	31.919	2091.551	8.111	11.963	174.830	4238.049	15.710	5.017	11.467
L16	23.756	31.919	2091.551	8.111	11.963	174.830	4238.049	15.710	5.017	11.467
	23.903	32.119	2131.149	8.162	12.037	177.051	4318.286	15.808	5.055	11.555
L17	23.942	23.978	1606.690	8.203	12.037	133.480	3255.589	11.801	5.357	16.482
	24.006	24.042	1619.609	8.225	12.069	134.200	3281.767	11.833	5.373	16.532
L18	24.006	24.042	1619.609	8.225	12.069	134.200	3281.767	11.833	5.373	16.532
	24.112	24.150	1641.469	8.261	12.122	135.413	3326.061	11.886	5.401	16.617
L19	24.086	29.626	2000.635	8.235	12.122	165.042	4053.830	14.581	5.200	12.999
	24.149	29.705	2016.660	8.256	12.154	165.930	4086.299	14.620	5.216	13.04
L20	24.149	29.705	2016.660	8.256	12.154	165.930	4086.299	14.620	5.216	13.04
	24.296	29.888	2054.165	8.307	12.227	167.998	4162.296	14.710	5.254	13.135
L21	24.349	18.801	1308.912	8.361	12.227	107.048	2652.210	9.253	5.656	22.624
	24.413	18.850	1319.237	8.383	12.259	107.614	2673.131	9.277	5.673	22.69
L22	24.413	18.850	1319.237	8.383	12.259	107.614	2673.131	9.277	5.673	22.69
	24.476	18.899	1329.616	8.405	12.291	108.180	2694.162	9.302	5.689	22.756
L23	24.412	32.349	2240.875	8.340	12.291	182.322	4540.620	15.921	5.203	12.065
	24.476	32.435	2258.596	8.362	12.322	183.291	4576.528	15.963	5.220	12.103
L24	24.480	31.511	2196.652	8.366	12.322	178.264	4451.013	15.509	5.253	12.545
	25.748	33.163	2560.495	8.805	12.957	197.615	5188.257	16.322	5.581	13.329
L25	25.748	33.163	2560.495	8.805	12.957	197.615	5188.257	16.322	5.581	13.329
	25.982	33.467	2631.537	8.886	13.074	201.284	5332.207	16.471	5.642	13.473
L26	26.017	25.577	2027.419	8.921	13.074	155.076	4108.101	12.588	5.910	18.54
	26.080	25.640	2042.405	8.943	13.105	155.844	4138.466	12.619	5.926	18.592
L27	26.080	25.640	2042.405	8.943	13.105	155.844	4138.466	12.619	5.926	18.592
	27.348	26.898	2357.824	9.382	13.740	171.603	4777.591	13.238	6.254	19.622
L28	27.351	26.376	2313.247	9.384	13.740	168.359	4687.265	12.982	6.271	20.068
	28.281	27.281	2559.545	9.706	14.206	180.177	5186.332	13.427	6.512	20.839
L29	28.251	34.807	3244.599	9.675	14.206	228.401	6574.437	17.131	6.278	15.694
	28.314	34.886	3266.710	9.697	14.237	229.445	6619.240	17.170	6.294	15.735
L30	28.314	34.886	3266.710	9.697	14.237	229.445	6619.240	17.170	6.294	15.735
	29.011	35.754	3516.593	9.938	14.586	241.086	7125.570	17.597	6.475	16.187
L31	28.989	41.247	4038.658	9.915	14.586	276.877	8183.416	20.301	6.307	13.637
	29.053	41.339	4065.510	9.937	14.618	278.113	8237.826	20.346	6.324	13.673
L32	29.053	41.339	4065.510	9.937	14.618	278.113	8237.826	20.346	6.324	13.673
	30.088	42.827	4520.713	10.295	15.136	298.674	9160.190	21.078	6.591	14.252
L33	29.550	45.572	4329.662	9.767	14.401	300.649	8773.069	22.429	6.060	11.683
	29.867	47.618	4939.449	10.206	15.036	328.517	10008.664	23.436	6.389	12.316
L34	29.869	47.055	4883.148	10.208	15.036	324.772	9894.582	23.159	6.406	12.499
	31.138	49.076	5539.935	10.646	15.670	353.534	11225.411	24.154	6.734	13.139
L35	31.142	47.900	5411.633	10.651	15.670	345.346	10965.436	23.575	6.767	13.535
	32.410	49.872	6107.999	11.090	16.305	374.616	12376.461	24.545	7.096	14.191
L36	32.415	48.645	5962.511	11.094	16.305	365.693	12081.664	23.941	7.129	14.624
	33.683	50.568	6697.930	11.533	16.939	395.409	13571.822	24.888	7.457	15.297
L37	33.683	50.568	6697.930	11.533	16.939	395.409	13571.822	24.888	7.457	15.297
	35.141	52.779	7615.641	12.037	17.669	431.018	15431.353	25.976	7.835	16.072
L38	34.482	53.332	6937.974	11.429	16.806	412.831	14058.217	26.248	7.305	14.08
	34.652	55.344	7753.082	11.860	17.430	444.821	15709.847	27.238	7.627	14.702
L39	34.714	36.869	5219.687	11.923	17.430	299.472	10576.501	18.146	8.096	23.549
	34.777	36.937	5248.511	11.945	17.461	300.579	10634.906	18.179	8.113	23.597
L40	34.777	36.937	5248.511	11.945	17.461	300.579	10634.906	18.179	8.113	23.597
	34.881	37.048	5296.012	11.981	17.513	302.399	10731.155	18.234	8.140	23.675
L41	34.819	55.613	7867.053	11.918	17.513	449.203	15940.782	27.371	7.671	14.785
	34.883	55.716	7910.513	11.940	17.545	450.869	16028.845	27.422	7.687	14.817
L42	34.887	54.394	7728.600	11.944	17.545	440.501	15660.240	26.771	7.720	15.249
	36.154	56.389	8610.641	12.383	18.179	473.659	17447.493	27.753	8.048	15.897
L43	36.154	56.389	8610.641	12.383	18.179	473.659	17447.493	27.753	8.048	15.897
	37.421	58.384	9557.361	12.821	18.813	508.021	19365.804	28.735	8.376	16.544
L44	37.425	56.962	9331.164	12.825	18.813	495.998	18907.468	28.035	8.410	17.031
	38.692	58.908	10320.503	13.263	19.447	530.703	20912.137	28.993	8.738	17.695
L45	38.692	58.908	10320.503	13.263	19.447	530.703	20912.137	28.993	8.738	17.695
	40.129	61.115	11524.292	13.760	20.166	571.479	23351.339	30.079	9.110	18.448
L46	39.409	61.692	10486.983	13.065	19.176	546.891	21249.470	30.363	8.514	16.217
	39.662	64.180	11807.142	13.591	19.938	592.201	23924.470	31.587	8.908	16.968
L47	39.665	63.426	11672.343	13.594	19.938	585.440	23651.332	31.216	8.925	17.205
	40.959	65.515	12863.997	14.041	20.586	624.906	26065.947	32.244	9.260	17.851
L48	40.959	65.515	12863.997	14.041	20.586	624.906	26065.947	32.244	9.260	17.851
	41.018	65.609	12919.569	14.062	20.615	626.716	26178.550	32.291	9.275	17.88
L49	41.020	64.829	12770.006	14.064	20.615	619.461	25875.494	31.907	9.292	18.131

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L50	42.289	66.852	14003.327	14.503	21.250	658.986	28374.537	32.903	9.621	18.772
	42.289	66.852	14003.327	14.503	21.250	658.986	28374.537	32.903	9.621	18.772
	43.558	68.875	15313.605	14.942	21.885	699.735	31029.516	33.898	9.949	19.413
L51	43.561	68.046	15133.651	14.944	21.885	691.512	30664.879	33.490	9.966	19.686
	44.556	69.612	16203.353	15.288	22.383	723.920	32832.387	34.261	10.224	20.195

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L1 130.00-125.00				1	1	1			
L2 125.00-120.00				1	1	1			
L3 120.00-114.90				1	1	0.902328			
L4 114.90-114.67				1	1	0.900528			
L5 114.67-109.67				1	1	0.918712			
L6 109.67-109.42				1	1	0.916923			
L7 109.42-109.17				1	1	0.915841			
L8 109.17-104.17				1	1	0.912221			
L9 104.17-103.92				1	1	0.924502			
L10 103.92-103.67				1	1	0.938408			
L11 103.67-98.67				1	1	0.933024			
L12 98.67-96.42				1	1	0.946501			
L13 96.42-96.17				1	1	0.925437			
L14 96.17-91.50				1	1	0.931944			
L15 91.50-89.50				1	1	0.942607			
L16 89.50-88.92				1	1	0.940294			
L17 88.92-88.67				1	1	1.13663			
L18 88.67-88.25				1	1	1.13499			
L19 88.25-88.00				1	1	1.02283			
L20 88.00-87.42				1	1	1.0204			
L21 87.42-87.17				1	1	1			
L22 87.17-86.92				1	1	1			
L23 86.92-86.67				1	1	0.944835			
L24 86.67-81.67				1	1	0.953816			
L25 81.67-80.75				1	1	0.950576			
L26 80.75-80.50				1	1	1.12861			
L27 80.50-75.50				1	1	1.11252			
L28 75.50-71.83				1	1	1.12341			
L29 71.83-71.58				1	1	0.963745			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_r$	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
ft	ft <sup>2</sup>	in							
L30 71.58-68.83				1	1	0.955524			
L31 68.83-68.58				1	1	0.944879			
L32 68.58-64.50				1	1	0.943705			
L33 64.50-63.25				1	1	0.954191			
L34 63.25-58.25				1	1	0.950957			
L35 58.25-53.25				1	1	0.960507			
L36 53.25-48.25				1	1	0.971668			
L37 48.25-42.50				1	1	0.967939			
L38 42.50-41.83				1	1	0.965111			
L39 41.83-41.58				1	1	1			
L40 41.58-41.17				1	1	1			
L41 41.17-40.92				1	1	0.963091			
L42 40.92-35.92				1	1	0.975621			
L43 35.92-30.92				1	1	0.965486			
L44 30.92-25.92				1	1	0.97989			
L45 25.92-20.25				1	1	0.97864			
L46 20.25-19.25				1	1	0.97488			
L47 19.25-14.15				1	1	0.978059			
L48 14.15-13.92				1	1	0.977693			
L49 13.92-8.92				1	1	0.981658			
L50 8.92-3.92				1	1	0.974315			
L51 3.92-0.00				1	1	0.980671			

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***Safety*** Safety Line 3/8	A	No	Surface Ar (CaAa)	130.00 - 0.00	1	1	-0.250 -0.250	0.375		0.220
***120*** HB114-21U3M12-XXXF(1-1/4")	A	No	Surface Ar (CaAa)	120.00 - 0.00	4	4	-0.250 -0.250	1.540		1.220
***90*** LDF7-50A(1-5/8")	C	No	Surface Ar (CaAa)	90.00 - 0.00	6	6	0.000 0.000	1.980		0.820
****Mods**** (Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	15.50 - 0.50	1	1	-0.250 -0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	15.50 - 0.50	1	1	0.500 0.500	4.780	12.780	0.000



Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r in	Perimeter r in	Weight plf
(Area) Aero MP3-04 (H)	B	No	Surface Af (CaAa)	15.50 - 0.50	1	1	0.250 0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H) ***	C	No	Surface Af (CaAa)	15.50 - 0.50	1	1	0.000 0.000	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	15.50 - 12.67	1	1	-0.250 -0.250	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	15.50 - 12.67	1	1	0.500 0.500	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	B	No	Surface Af (CaAa)	15.50 - 12.67	1	1	0.250 0.250	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	C	No	Surface Af (CaAa)	15.50 - 12.67	1	1	0.000 0.000	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	42.67 - 15.50	1	1	-0.250 -0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	42.67 - 15.50	1	1	0.500 0.500	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	B	No	Surface Af (CaAa)	42.67 - 15.50	1	1	0.250 0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H) ***	C	No	Surface Af (CaAa)	42.67 - 15.50	1	1	0.000 0.000	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	42.67 - 40.33	1	1	-0.250 -0.250	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	42.67 - 40.33	1	1	0.500 0.500	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	B	No	Surface Af (CaAa)	42.67 - 40.33	1	1	0.250 0.250	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	C	No	Surface Af (CaAa)	42.67 - 40.33	1	1	0.000 0.000	4.780	9.560	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	70.33 - 42.67	1	1	-0.250 -0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	A	No	Surface Af (CaAa)	70.33 - 42.67	1	1	0.500 0.500	4.780	12.780	0.000
(Area) Aero MP3-04 (H)	B	No	Surface Af (CaAa)	70.33 - 42.67	1	1	0.250 0.250	4.780	12.780	0.000
(Area) Aero MP3-04 (H) ***	C	No	Surface Af (CaAa)	70.33 - 42.67	1	1	0.000 0.000	4.780	12.780	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	70.33 - 68.17	1	1	-0.250 -0.250	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	70.33 - 68.17	1	1	0.500 0.500	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	B	No	Surface Af (CaAa)	70.33 - 68.17	1	1	0.250 0.250	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	C	No	Surface Af (CaAa)	70.33 - 68.17	1	1	0.000 0.000	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	88.17 - 70.33	1	1	-0.250 -0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	88.17 - 70.33	1	1	0.500 0.500	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	B	No	Surface Af (CaAa)	88.17 - 70.33	1	1	0.250 0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	C	No	Surface Af (CaAa)	73.08 - 70.33	1	1	0.000 0.000	4.060	11.260	0.000
(Area) Aero MP3-03 (H) ***	C	No	Surface Af (CaAa)	89.50 - 79.50	1	1	0.000 0.000	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	C	No	Surface Af (CaAa)	89.50 - 86.17	1	1	0.000 0.000	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	C	No	Surface Af (CaAa)	116.17 - 89.50	1	1	0.000 0.000	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	88.17 - 86.17	1	1	0.500 0.500	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	B	No	Surface Af (CaAa)	88.17 - 86.17	1	1	0.250 0.250	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	116.17 - 88.17	1	1	0.500 0.500	4.060	11.260	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
(Area) Aero MP3-03 (H) **	B	No	Surface Af (CaAa)	116.17 - 88.17	1	1	0.250 0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	88.17 - 87.67	1	1	-0.250 -0.250	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	97.67 - 88.17	1	1	-0.250 -0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	C	No	Surface Af (CaAa)	103.92 - 95.17	1	1	0.000 0.000	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	97.67 - 95.17	1	1	-0.250 -0.250	4.060	8.120	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	103.92 - 97.67	1	1	-0.250 -0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	109.42 - 103.92	1	1	-0.250 -0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H)	A	No	Surface Af (CaAa)	116.17 - 109.42	1	1	-0.250 -0.250	4.060	11.260	0.000
(Area) Aero MP3-03 (H) ***	C	No	Surface Af (CaAa)	116.17 - 109.42	1	1	0.000 0.000	4.060	8.120	0.000

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CAAA ft <sup>2</sup> /ft	Weight plf
***130*** CR 50 1873(1-5/8")	A	No	No	Inside Pole	130.00 - 0.00	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.830 0.830 0.830 0.830
FB-L98B-002-75000( 3/8")	A	No	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.059 0.059 0.059 0.059
2" Flexible Conduit	A	No	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.340 0.340 0.340 0.340
WR-VG86ST-BRD(3/4")	A	No	No	Inside Pole	130.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.584 0.584 0.584 0.584
***100*** LDF7-50A(1-5/8")	B	No	No	Inside Pole	100.00 - 0.00	13	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.820 0.820 0.820 0.820
***80*** LDF4-50A(1/2")	C	No	No	Inside Pole	80.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.150 0.150 0.150 0.150
* CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	2.350 2.350 2.350 2.350
***									

### Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	$A_R$	$A_F$	$C_{AA}$	$C_{AA}$	Weight K
			ft <sup>2</sup>	ft <sup>2</sup>	In Face ft <sup>2</sup>	Out Face ft <sup>2</sup>	
L1	130.00-125.00	A	0.000	0.000	0.188	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	125.00-120.00	A	0.000	0.000	0.188	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	120.00-114.90	A	0.000	0.000	4.960	0.000	0.06
		B	0.000	0.000	0.859	0.000	0.00
		C	0.000	0.000	1.646	0.000	0.00
L4	114.90-114.67	A	0.000	0.000	0.445	0.000	0.00
		B	0.000	0.000	0.156	0.000	0.00
		C	0.000	0.000	0.298	0.000	0.00
L5	114.67-109.67	A	0.000	0.000	9.674	0.000	0.06
		B	0.000	0.000	3.383	0.000	0.00
		C	0.000	0.000	6.482	0.000	0.00
L6	109.67-109.42	A	0.000	0.000	0.484	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.324	0.000	0.00
L7	109.42-109.17	A	0.000	0.000	0.474	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.169	0.000	0.00
L8	109.17-104.17	A	0.000	0.000	9.479	0.000	0.06
		B	0.000	0.000	3.383	0.000	0.00
		C	0.000	0.000	3.383	0.000	0.01
L9	104.17-103.92	A	0.000	0.000	0.474	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.169	0.000	0.00
L10	103.92-103.67	A	0.000	0.000	0.480	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.338	0.000	0.00
L11	103.67-98.67	A	0.000	0.000	9.596	0.000	0.06
		B	0.000	0.000	3.383	0.000	0.01
		C	0.000	0.000	6.767	0.000	0.01
L12	98.67-96.42	A	0.000	0.000	5.025	0.000	0.03
		B	0.000	0.000	1.523	0.000	0.02
		C	0.000	0.000	3.045	0.000	0.01
L13	96.42-96.17	A	0.000	0.000	0.621	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.338	0.000	0.00
L14	96.17-91.50	A	0.000	0.000	9.850	0.000	0.05
		B	0.000	0.000	3.160	0.000	0.05
		C	0.000	0.000	3.837	0.000	0.01
L15	91.50-89.50	A	0.000	0.000	4.014	0.000	0.02
		B	0.000	0.000	1.353	0.000	0.02
		C	0.000	0.000	1.947	0.000	0.01
L16	89.50-88.92	A	0.000	0.000	1.164	0.000	0.01
		B	0.000	0.000	0.392	0.000	0.01
		C	0.000	0.000	1.375	0.000	0.00
L17	88.92-88.67	A	0.000	0.000	0.502	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.593	0.000	0.00
L18	88.67-88.25	A	0.000	0.000	0.843	0.000	0.00
		B	0.000	0.000	0.284	0.000	0.00
		C	0.000	0.000	0.996	0.000	0.00
L19	88.25-88.00	A	0.000	0.000	0.648	0.000	0.00
		B	0.000	0.000	0.247	0.000	0.00
		C	0.000	0.000	0.593	0.000	0.00
L20	88.00-87.42	A	0.000	0.000	1.563	0.000	0.01
		B	0.000	0.000	0.658	0.000	0.01
		C	0.000	0.000	1.375	0.000	0.00
L21	87.42-87.17	A	0.000	0.000	0.616	0.000	0.00
		B	0.000	0.000	0.283	0.000	0.00
		C	0.000	0.000	0.593	0.000	0.00
L22	87.17-86.92	A	0.000	0.000	0.616	0.000	0.00
		B	0.000	0.000	0.283	0.000	0.00
		C	0.000	0.000	0.593	0.000	0.00

Tower Sectio n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L23	86.92-86.67	A	0.000	0.000	0.616	0.000	0.00
		B	0.000	0.000	0.283	0.000	0.00
		C	0.000	0.000	0.593	0.000	0.00
L24	86.67-81.67	A	0.000	0.000	10.263	0.000	0.06
		B	0.000	0.000	3.612	0.000	0.05
		C	0.000	0.000	9.576	0.000	0.04
L25	81.67-80.75	A	0.000	0.000	1.846	0.000	0.01
		B	0.000	0.000	0.623	0.000	0.01
		C	0.000	0.000	1.715	0.000	0.01
L26	80.75-80.50	A	0.000	0.000	0.502	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.466	0.000	0.00
L27	80.50-75.50	A	0.000	0.000	10.034	0.000	0.06
		B	0.000	0.000	3.383	0.000	0.05
		C	0.000	0.000	6.617	0.000	0.04
L28	75.50-71.83	A	0.000	0.000	7.365	0.000	0.04
		B	0.000	0.000	2.483	0.000	0.04
		C	0.000	0.000	4.960	0.000	0.03
L29	71.83-71.58	A	0.000	0.000	0.502	0.000	0.00
		B	0.000	0.000	0.169	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L30	71.58-68.83	A	0.000	0.000	7.272	0.000	0.03
		B	0.000	0.000	2.737	0.000	0.03
		C	0.000	0.000	5.759	0.000	0.02
L31	68.83-68.58	A	0.000	0.000	0.794	0.000	0.00
		B	0.000	0.000	0.315	0.000	0.00
		C	0.000	0.000	0.612	0.000	0.00
L32	68.58-64.50	A	0.000	0.000	9.548	0.000	0.05
		B	0.000	0.000	3.441	0.000	0.04
		C	0.000	0.000	8.288	0.000	0.03
L33	64.50-63.25	A	0.000	0.000	2.809	0.000	0.01
		B	0.000	0.000	0.996	0.000	0.01
		C	0.000	0.000	2.481	0.000	0.01
L34	63.25-58.25	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L35	58.25-53.25	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L36	53.25-48.25	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L37	48.25-42.50	A	0.000	0.000	13.102	0.000	0.07
		B	0.000	0.000	4.672	0.000	0.06
		C	0.000	0.000	11.503	0.000	0.04
L38	42.50-41.83	A	0.000	0.000	2.226	0.000	0.01
		B	0.000	0.000	0.894	0.000	0.01
		C	0.000	0.000	1.690	0.000	0.00
L39	41.83-41.58	A	0.000	0.000	0.831	0.000	0.00
		B	0.000	0.000	0.334	0.000	0.00
		C	0.000	0.000	0.631	0.000	0.00
L40	41.58-41.17	A	0.000	0.000	1.362	0.000	0.00
		B	0.000	0.000	0.547	0.000	0.00
		C	0.000	0.000	1.034	0.000	0.00
L41	41.17-40.92	A	0.000	0.000	0.831	0.000	0.00
		B	0.000	0.000	0.334	0.000	0.00
		C	0.000	0.000	0.631	0.000	0.00
L42	40.92-35.92	A	0.000	0.000	11.869	0.000	0.06
		B	0.000	0.000	4.301	0.000	0.05
		C	0.000	0.000	10.241	0.000	0.04
L43	35.92-30.92	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L44	30.92-25.92	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L45	25.92-20.25	A	0.000	0.000	12.740	0.000	0.07
		B	0.000	0.000	4.517	0.000	0.06
		C	0.000	0.000	11.253	0.000	0.04

Tower Section	Tower Elevation	Face	A <sub>R</sub>	A <sub>F</sub>	C <sub>AA</sub> <sub>A</sub> In Face	C <sub>AA</sub> <sub>A</sub> Out Face	Weight
n	ft		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L46	20.25-19.25	A	0.000	0.000	2.247	0.000	0.01
		B	0.000	0.000	0.797	0.000	0.01
		C	0.000	0.000	1.985	0.000	0.01
L47	19.25-14.15	A	0.000	0.000	12.968	0.000	0.06
		B	0.000	0.000	4.818	0.000	0.05
		C	0.000	0.000	10.877	0.000	0.04
L48	14.15-13.92	A	0.000	0.000	0.774	0.000	0.00
		B	0.000	0.000	0.312	0.000	0.00
		C	0.000	0.000	0.585	0.000	0.00
L49	13.92-8.92	A	0.000	0.000	12.632	0.000	0.06
		B	0.000	0.000	4.682	0.000	0.05
		C	0.000	0.000	10.622	0.000	0.04
L50	8.92-3.92	A	0.000	0.000	11.234	0.000	0.06
		B	0.000	0.000	3.983	0.000	0.05
		C	0.000	0.000	9.923	0.000	0.04
L51	3.92-0.00	A	0.000	0.000	8.011	0.000	0.05
		B	0.000	0.000	2.725	0.000	0.04
		C	0.000	0.000	7.382	0.000	0.03

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>AA</sub> <sub>A</sub> In Face	C <sub>AA</sub> <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	130.00-125.00	A	1.460	0.000	0.000	1.647	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	125.00-120.00	A	1.454	0.000	0.000	1.641	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	120.00-114.90	A	1.448	0.000	0.000	9.634	0.000	0.16
		B		0.000	0.000	1.227	0.000	0.01
		C		0.000	0.000	2.206	0.000	0.02
L4	114.90-114.67	A	1.444	0.000	0.000	0.732	0.000	0.01
		B		0.000	0.000	0.222	0.000	0.00
		C		0.000	0.000	0.399	0.000	0.00
L5	114.67-109.67	A	1.441	0.000	0.000	15.906	0.000	0.22
		B		0.000	0.000	4.824	0.000	0.05
		C		0.000	0.000	8.676	0.000	0.09
L6	109.67-109.42	A	1.438	0.000	0.000	0.795	0.000	0.01
		B		0.000	0.000	0.241	0.000	0.00
		C		0.000	0.000	0.434	0.000	0.00
L7	109.42-109.17	A	1.437	0.000	0.000	0.785	0.000	0.01
		B		0.000	0.000	0.241	0.000	0.00
		C		0.000	0.000	0.241	0.000	0.00
L8	109.17-104.17	A	1.434	0.000	0.000	15.688	0.000	0.22
		B		0.000	0.000	4.817	0.000	0.05
		C		0.000	0.000	4.817	0.000	0.06
L9	104.17-103.92	A	1.430	0.000	0.000	0.784	0.000	0.01
		B		0.000	0.000	0.241	0.000	0.00
		C		0.000	0.000	0.241	0.000	0.00
L10	103.92-103.67	A	1.430	0.000	0.000	0.789	0.000	0.01
		B		0.000	0.000	0.241	0.000	0.00
		C		0.000	0.000	0.449	0.000	0.00
L11	103.67-98.67	A	1.426	0.000	0.000	15.774	0.000	0.22
		B		0.000	0.000	4.809	0.000	0.06
		C		0.000	0.000	8.972	0.000	0.10
L12	98.67-96.42	A	1.421	0.000	0.000	7.996	0.000	0.11
		B		0.000	0.000	2.162	0.000	0.04
		C		0.000	0.000	4.034	0.000	0.04
L13	96.42-96.17	A	1.419	0.000	0.000	0.969	0.000	0.01
		B		0.000	0.000	0.240	0.000	0.00
		C		0.000	0.000	0.448	0.000	0.00
L14	96.17-91.50	A	1.415	0.000	0.000	15.783	0.000	0.21
		B		0.000	0.000	4.482	0.000	0.09
		C		0.000	0.000	5.314	0.000	0.06

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L15	91.50-89.50	A	1.410	0.000	0.000	6.492	0.000	0.09
		B		0.000	0.000	1.920	0.000	0.04
		C		0.000	0.000	2.839	0.000	0.03
L16	89.50-88.92	A	1.408	0.000	0.000	1.879	0.000	0.03
		B		0.000	0.000	0.556	0.000	0.01
		C		0.000	0.000	1.944	0.000	0.02
L17	88.92-88.67	A	1.408	0.000	0.000	0.810	0.000	0.01
		B		0.000	0.000	0.240	0.000	0.00
		C		0.000	0.000	0.838	0.000	0.01
L18	88.67-88.25	A	1.407	0.000	0.000	1.361	0.000	0.02
		B		0.000	0.000	0.402	0.000	0.01
		C		0.000	0.000	1.407	0.000	0.02
L19	88.25-88.00	A	1.407	0.000	0.000	1.030	0.000	0.01
		B		0.000	0.000	0.342	0.000	0.01
		C		0.000	0.000	0.838	0.000	0.01
L20	88.00-87.42	A	1.406	0.000	0.000	2.486	0.000	0.03
		B		0.000	0.000	0.907	0.000	0.02
		C		0.000	0.000	1.943	0.000	0.02
L21	87.42-87.17	A	1.405	0.000	0.000	0.990	0.000	0.01
		B		0.000	0.000	0.391	0.000	0.01
		C		0.000	0.000	0.837	0.000	0.01
L22	87.17-86.92	A	1.405	0.000	0.000	0.990	0.000	0.01
		B		0.000	0.000	0.391	0.000	0.01
		C		0.000	0.000	0.837	0.000	0.01
L23	86.92-86.67	A	1.404	0.000	0.000	0.990	0.000	0.01
		B		0.000	0.000	0.391	0.000	0.01
		C		0.000	0.000	0.837	0.000	0.01
L24	86.67-81.67	A	1.400	0.000	0.000	17.057	0.000	0.22
		B		0.000	0.000	5.086	0.000	0.10
		C		0.000	0.000	13.779	0.000	0.18
L25	81.67-80.75	A	1.395	0.000	0.000	3.079	0.000	0.04
		B		0.000	0.000	0.879	0.000	0.02
		C		0.000	0.000	2.473	0.000	0.03
L26	80.75-80.50	A	1.394	0.000	0.000	0.836	0.000	0.01
		B		0.000	0.000	0.239	0.000	0.00
		C		0.000	0.000	0.672	0.000	0.01
L27	80.50-75.50	A	1.389	0.000	0.000	16.710	0.000	0.22
		B		0.000	0.000	4.773	0.000	0.10
		C		0.000	0.000	10.016	0.000	0.14
L28	75.50-71.83	A	1.382	0.000	0.000	12.240	0.000	0.16
		B		0.000	0.000	3.497	0.000	0.07
		C		0.000	0.000	7.501	0.000	0.10
L29	71.83-71.58	A	1.378	0.000	0.000	0.833	0.000	0.01
		B		0.000	0.000	0.238	0.000	0.00
		C		0.000	0.000	0.614	0.000	0.01
L30	71.58-68.83	A	1.375	0.000	0.000	11.341	0.000	0.14
		B		0.000	0.000	3.710	0.000	0.07
		C		0.000	0.000	8.332	0.000	0.11
L31	68.83-68.58	A	1.372	0.000	0.000	1.196	0.000	0.01
		B		0.000	0.000	0.420	0.000	0.01
		C		0.000	0.000	0.877	0.000	0.01
L32	68.58-64.50	A	1.368	0.000	0.000	15.036	0.000	0.19
		B		0.000	0.000	4.615	0.000	0.09
		C		0.000	0.000	12.069	0.000	0.14
L33	64.50-63.25	A	1.362	0.000	0.000	4.454	0.000	0.06
		B		0.000	0.000	1.338	0.000	0.03
		C		0.000	0.000	3.621	0.000	0.04
L34	63.25-58.25	A	1.355	0.000	0.000	17.764	0.000	0.22
		B		0.000	0.000	5.339	0.000	0.10
		C		0.000	0.000	14.458	0.000	0.17
L35	58.25-53.25	A	1.344	0.000	0.000	17.714	0.000	0.22
		B		0.000	0.000	5.327	0.000	0.10
		C		0.000	0.000	14.431	0.000	0.17
L36	53.25-48.25	A	1.331	0.000	0.000	17.661	0.000	0.21
		B		0.000	0.000	5.314	0.000	0.10
		C		0.000	0.000	14.403	0.000	0.17
L37	48.25-42.50	A	1.316	0.000	0.000	20.468	0.000	0.25
		B		0.000	0.000	6.209	0.000	0.11
		C		0.000	0.000	16.640	0.000	0.19

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L38	42.50-41.83	A	1.307	0.000	0.000	3.264	0.000	0.04
		B		0.000	0.000	1.163	0.000	0.02
		C		0.000	0.000	2.379	0.000	0.03
L39	41.83-41.58	A	1.305	0.000	0.000	1.215	0.000	0.01
		B		0.000	0.000	0.433	0.000	0.01
		C		0.000	0.000	0.886	0.000	0.01
L40	41.58-41.17	A	1.304	0.000	0.000	1.992	0.000	0.02
		B		0.000	0.000	0.710	0.000	0.01
		C		0.000	0.000	1.453	0.000	0.02
L41	41.17-40.92	A	1.303	0.000	0.000	1.214	0.000	0.01
		B		0.000	0.000	0.433	0.000	0.01
		C		0.000	0.000	0.886	0.000	0.01
L42	40.92-35.92	A	1.294	0.000	0.000	18.301	0.000	0.22
		B		0.000	0.000	5.675	0.000	0.10
		C		0.000	0.000	14.718	0.000	0.17
L43	35.92-30.92	A	1.277	0.000	0.000	17.430	0.000	0.21
		B		0.000	0.000	5.260	0.000	0.10
		C		0.000	0.000	14.281	0.000	0.16
L44	30.92-25.92	A	1.256	0.000	0.000	17.342	0.000	0.20
		B		0.000	0.000	5.239	0.000	0.10
		C		0.000	0.000	14.234	0.000	0.16
L45	25.92-20.25	A	1.230	0.000	0.000	19.541	0.000	0.23
		B		0.000	0.000	5.912	0.000	0.11
		C		0.000	0.000	16.076	0.000	0.18
L46	20.25-19.25	A	1.211	0.000	0.000	3.446	0.000	0.04
		B		0.000	0.000	1.043	0.000	0.02
		C		0.000	0.000	2.835	0.000	0.03
L47	19.25-14.15	A	1.191	0.000	0.000	19.246	0.000	0.22
		B		0.000	0.000	6.197	0.000	0.10
		C		0.000	0.000	15.289	0.000	0.17
L48	14.15-13.92	A	1.171	0.000	0.000	1.094	0.000	0.01
		B		0.000	0.000	0.393	0.000	0.01
		C		0.000	0.000	0.802	0.000	0.01
L49	13.92-8.92	A	1.147	0.000	0.000	18.566	0.000	0.20
		B		0.000	0.000	5.974	0.000	0.10
		C		0.000	0.000	14.833	0.000	0.16
L50	8.92-3.92	A	1.082	0.000	0.000	16.604	0.000	0.18
		B		0.000	0.000	5.066	0.000	0.09
		C		0.000	0.000	13.843	0.000	0.14
L51	3.92-0.00	A	0.961	0.000	0.000	11.624	0.000	0.12
		B		0.000	0.000	3.382	0.000	0.06
		C		0.000	0.000	10.145	0.000	0.10

### Feed Line Center of Pressure

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L1	130.00-125.00	-0.367	0.000	-1.214	0.000
L2	125.00-120.00	-0.367	0.000	-1.211	0.000
L3	120.00-114.90	-1.413	0.880	-2.060	0.681
L4	114.90-114.67	0.068	1.870	-0.375	1.629
L5	114.67-109.67	0.073	1.919	-0.383	1.678
L6	109.67-109.42	0.077	1.967	-0.390	1.726
L7	109.42-109.17	0.165	1.119	-0.390	1.003
L8	109.17-104.17	0.172	1.144	-0.396	1.029
L9	104.17-103.92	0.178	1.168	-0.402	1.055
L10	103.92-103.67	0.113	2.134	-0.386	1.882
L11	103.67-98.67	0.118	2.181	-0.392	1.930
L12	98.67-96.42	-0.403	2.394	-0.848	2.139
L13	96.42-96.17	-0.792	2.526	-1.186	2.269
L14	96.17-91.50	-0.227	1.643	-0.743	1.482
L15	91.50-89.50	-0.036	1.905	-0.561	1.791
L16	89.50-88.92	-0.028	3.797	-0.441	3.474
L17	88.92-88.67	-0.028	3.806	-0.442	3.485



Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L18	88.67-88.25	-0.028	3.815	-0.443	3.495
L19	88.25-88.00	0.454	3.395	-0.078	3.177
L20	88.00-87.42	0.898	3.179	0.291	3.002
L21	87.42-87.17	1.246	3.113	0.598	2.938
L22	87.17-86.92	1.248	3.119	0.600	2.944
L23	86.92-86.67	1.252	3.126	0.601	2.951
L24	86.67-81.67	0.124	3.368	-0.481	3.147
L25	81.67-80.75	-0.027	3.448	-0.632	3.230
L26	80.75-80.50	-0.026	3.458	-0.634	3.242
L27	80.50-75.50	-0.027	2.675	-0.685	2.611
L28	75.50-71.83	-0.025	2.807	-0.698	2.740
L29	71.83-71.58	-0.023	3.360	-0.678	3.214
L30	71.58-68.83	0.498	3.508	-0.153	3.428
L31	68.83-68.58	0.818	3.612	0.186	3.564
L32	68.58-64.50	0.277	3.758	-0.422	3.650
L33	64.50-63.25	0.201	3.779	-0.505	3.667
L34	63.25-58.25	0.207	3.853	-0.510	3.737
L35	58.25-53.25	0.216	3.971	-0.519	3.845
L36	53.25-48.25	0.225	4.087	-0.528	3.951
L37	48.25-42.50	0.265	4.210	-0.506	4.065
L38	42.50-41.83	1.021	4.059	0.315	4.075
L39	41.83-41.58	1.023	4.066	0.318	4.084
L40	41.58-41.17	1.025	4.073	0.319	4.091
L41	41.17-40.92	1.027	4.081	0.320	4.100
L42	40.92-35.92	0.362	4.306	-0.421	4.156
L43	35.92-30.92	0.250	4.418	-0.547	4.254
L44	30.92-25.92	0.259	4.526	-0.551	4.352
L45	25.92-20.25	0.268	4.640	-0.555	4.455
L46	20.25-19.25	0.268	4.651	-0.556	4.466
L47	19.25-14.15	0.578	4.730	-0.251	4.547
L48	14.15-13.92	1.182	4.538	0.430	4.631
L49	13.92-8.92	0.571	4.835	-0.264	4.642
L50	8.92-3.92	0.290	4.926	-0.533	4.715
L51	3.92-0.00	0.047	5.056	-0.746	4.774

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 <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	3	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L2	3	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L3	3	Safety Line 3/8	114.90 - 120.00	1.0000	1.0000
L3	10	HB114-21U3M12-XXXXF(1-1/4")	114.90 - 120.00	1.0000	1.0000
L3	54	(Area) Aero MP3-03 (H)	114.90 - 116.17	1.0000	1.0000
L3	57	(Area) Aero MP3-03 (H)	114.90 - 116.17	1.0000	1.0000
L3	58	(Area) Aero MP3-03 (H)	114.90 - 116.17	1.0000	1.0000
L3	66	(Area) Aero MP3-03 (H)	114.90 - 116.17	1.0000	1.0000
L3	67	(Area) Aero MP3-03 (H)	114.90 - 116.17	1.0000	1.0000
L4	3	Safety Line 3/8	114.67 - 114.90	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L4	10	HB114-21U3M12-XXXF(1-1/4")	114.67 - 114.90	1.0000	1.0000
L4	54	(Area) Aero MP3-03 (H)	114.67 - 114.90	1.0000	1.0000
L4	57	(Area) Aero MP3-03 (H)	114.67 - 114.90	1.0000	1.0000
L4	58	(Area) Aero MP3-03 (H)	114.67 - 114.90	1.0000	1.0000
L4	66	(Area) Aero MP3-03 (H)	114.67 - 114.90	1.0000	1.0000
L4	67	(Area) Aero MP3-03 (H)	114.67 - 114.90	1.0000	1.0000
L5	3	Safety Line 3/8	109.67 - 114.67	1.0000	1.0000
L5	10	HB114-21U3M12-XXXF(1-1/4")	109.67 - 114.67	1.0000	1.0000
L5	54	(Area) Aero MP3-03 (H)	109.67 - 114.67	1.0000	1.0000
L5	57	(Area) Aero MP3-03 (H)	109.67 - 114.67	1.0000	1.0000
L5	58	(Area) Aero MP3-03 (H)	109.67 - 114.67	1.0000	1.0000
L5	66	(Area) Aero MP3-03 (H)	109.67 - 114.67	1.0000	1.0000
L5	67	(Area) Aero MP3-03 (H)	109.67 - 114.67	1.0000	1.0000
L6	3	Safety Line 3/8	109.42 - 109.67	1.0000	1.0000
L6	10	HB114-21U3M12-XXXF(1-1/4")	109.42 - 109.67	1.0000	1.0000
L6	54	(Area) Aero MP3-03 (H)	109.42 - 109.67	1.0000	1.0000
L6	57	(Area) Aero MP3-03 (H)	109.42 - 109.67	1.0000	1.0000
L6	58	(Area) Aero MP3-03 (H)	109.42 - 109.67	1.0000	1.0000
L6	66	(Area) Aero MP3-03 (H)	109.42 - 109.67	1.0000	1.0000
L6	67	(Area) Aero MP3-03 (H)	109.42 - 109.67	1.0000	1.0000
L7	3	Safety Line 3/8	109.17 - 109.42	1.0000	1.0000
L7	10	HB114-21U3M12-XXXF(1-1/4")	109.17 - 109.42	1.0000	1.0000
L7	54	(Area) Aero MP3-03 (H)	109.17 - 109.42	1.0000	1.0000
L7	57	(Area) Aero MP3-03 (H)	109.17 - 109.42	1.0000	1.0000
L7	58	(Area) Aero MP3-03 (H)	109.17 - 109.42	1.0000	1.0000
L7	65	(Area) Aero MP3-03 (H)	109.17 - 109.42	1.0000	1.0000
L8	3	Safety Line 3/8	104.17 - 109.17	1.0000	1.0000
L8	10	HB114-21U3M12-XXXF(1-1/4")	104.17 - 109.17	1.0000	1.0000
L8	54	(Area) Aero MP3-03 (H)	104.17 - 109.17	1.0000	1.0000
L8	57	(Area) Aero MP3-03 (H)	104.17 - 109.17	1.0000	1.0000
L8	58	(Area) Aero MP3-03 (H)	104.17 - 109.17	1.0000	1.0000
L8	65	(Area) Aero MP3-03 (H)	104.17 - 109.17	1.0000	1.0000
L9	3	Safety Line 3/8	103.92 - 104.17	1.0000	1.0000
L9	10	HB114-21U3M12-XXXF(1-1/4")	103.92 - 104.17	1.0000	1.0000
L9	54	(Area) Aero MP3-03 (H)	103.92 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L9	57	(Area) Aero MP3-03 (H)	104.17 103.92 - 104.17	1.0000	1.0000
L9	58	(Area) Aero MP3-03 (H)	103.92 - 104.17	1.0000	1.0000
L9	65	(Area) Aero MP3-03 (H)	103.92 - 104.17	1.0000	1.0000
L10	3	Safety Line 3/8	103.67 - 103.92	1.0000	1.0000
L10	10	HB114-21U3M12-XXXF(1-1/4")	103.67 - 103.92	1.0000	1.0000
L10	54	(Area) Aero MP3-03 (H)	103.67 - 103.92	1.0000	1.0000
L10	57	(Area) Aero MP3-03 (H)	103.67 - 103.92	1.0000	1.0000
L10	58	(Area) Aero MP3-03 (H)	103.67 - 103.92	1.0000	1.0000
L10	62	(Area) Aero MP3-03 (H)	103.67 - 103.92	1.0000	1.0000
L10	64	(Area) Aero MP3-03 (H)	103.67 - 103.92	1.0000	1.0000
L11	3	Safety Line 3/8	98.67 - 103.67	1.0000	1.0000
L11	10	HB114-21U3M12-XXXF(1-1/4")	98.67 - 103.67	1.0000	1.0000
L11	54	(Area) Aero MP3-03 (H)	98.67 - 103.67	1.0000	1.0000
L11	57	(Area) Aero MP3-03 (H)	98.67 - 103.67	1.0000	1.0000
L11	58	(Area) Aero MP3-03 (H)	98.67 - 103.67	1.0000	1.0000
L11	62	(Area) Aero MP3-03 (H)	98.67 - 103.67	1.0000	1.0000
L11	64	(Area) Aero MP3-03 (H)	98.67 - 103.67	1.0000	1.0000
L12	3	Safety Line 3/8	96.42 - 98.67	1.0000	1.0000
L12	10	HB114-21U3M12-XXXF(1-1/4")	96.42 - 98.67	1.0000	1.0000
L12	54	(Area) Aero MP3-03 (H)	96.42 - 98.67	1.0000	1.0000
L12	57	(Area) Aero MP3-03 (H)	96.42 - 98.67	1.0000	1.0000
L12	58	(Area) Aero MP3-03 (H)	96.42 - 98.67	1.0000	1.0000
L12	61	(Area) Aero MP3-03 (H)	96.42 - 97.67	1.0000	1.0000
L12	62	(Area) Aero MP3-03 (H)	96.42 - 98.67	1.0000	1.0000
L12	63	(Area) Aero MP3-03 (H)	96.42 - 97.67	1.0000	1.0000
L12	64	(Area) Aero MP3-03 (H)	97.67 - 98.67	1.0000	1.0000
L13	3	Safety Line 3/8	96.17 - 96.42	1.0000	1.0000
L13	10	HB114-21U3M12-XXXF(1-1/4")	96.17 - 96.42	1.0000	1.0000
L13	54	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000
L13	57	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000
L13	58	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000
L13	61	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000
L13	62	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000
L13	63	(Area) Aero MP3-03 (H)	96.17 - 96.42	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L14	3	Safety Line 3/8	91.50 - 96.17	1.0000	1.0000
L14	10	HB114-21U3M12-XXXF(1-1/4")	91.50 - 96.17	1.0000	1.0000
L14	54	(Area) Aero MP3-03 (H)	91.50 - 96.17	1.0000	1.0000
L14	57	(Area) Aero MP3-03 (H)	91.50 - 96.17	1.0000	1.0000
L14	58	(Area) Aero MP3-03 (H)	91.50 - 96.17	1.0000	1.0000
L14	61	(Area) Aero MP3-03 (H)	91.50 - 96.17	1.0000	1.0000
L14	62	(Area) Aero MP3-03 (H)	95.17 - 96.17	1.0000	1.0000
L14	63	(Area) Aero MP3-03 (H)	95.17 - 96.17	1.0000	1.0000
L15	3	Safety Line 3/8	89.50 - 91.50	1.0000	1.0000
L15	10	HB114-21U3M12-XXXF(1-1/4")	89.50 - 91.50	1.0000	1.0000
L15	16	LDF7-50A(1-5/8")	89.50 - 90.00	1.0000	1.0000
L15	54	(Area) Aero MP3-03 (H)	89.50 - 91.50	1.0000	1.0000
L15	57	(Area) Aero MP3-03 (H)	89.50 - 91.50	1.0000	1.0000
L15	58	(Area) Aero MP3-03 (H)	89.50 - 91.50	1.0000	1.0000
L15	61	(Area) Aero MP3-03 (H)	89.50 - 91.50	1.0000	1.0000
L16	3	Safety Line 3/8	88.92 - 89.50	1.0000	1.0000
L16	10	HB114-21U3M12-XXXF(1-1/4")	88.92 - 89.50	1.0000	1.0000
L16	16	LDF7-50A(1-5/8")	88.92 - 89.50	1.0000	1.0000
L16	51	(Area) Aero MP3-03 (H)	88.92 - 89.50	1.0000	1.0000
L16	53	(Area) Aero MP3-03 (H)	88.92 - 89.50	1.0000	1.0000
L16	57	(Area) Aero MP3-03 (H)	88.92 - 89.50	1.0000	1.0000
L16	58	(Area) Aero MP3-03 (H)	88.92 - 89.50	1.0000	1.0000
L16	61	(Area) Aero MP3-03 (H)	88.92 - 89.50	1.0000	1.0000
L17	3	Safety Line 3/8	88.67 - 88.92	1.0000	1.0000
L17	10	HB114-21U3M12-XXXF(1-1/4")	88.67 - 88.92	1.0000	1.0000
L17	16	LDF7-50A(1-5/8")	88.67 - 88.92	1.0000	1.0000
L17	51	(Area) Aero MP3-03 (H)	88.67 - 88.92	1.0000	1.0000
L17	53	(Area) Aero MP3-03 (H)	88.67 - 88.92	1.0000	1.0000
L17	57	(Area) Aero MP3-03 (H)	88.67 - 88.92	1.0000	1.0000
L17	58	(Area) Aero MP3-03 (H)	88.67 - 88.92	1.0000	1.0000
L17	61	(Area) Aero MP3-03 (H)	88.67 - 88.92	1.0000	1.0000
L18	3	Safety Line 3/8	88.25 - 88.67	1.0000	1.0000
L18	10	HB114-21U3M12-XXXF(1-1/4")	88.25 - 88.67	1.0000	1.0000
L18	16	LDF7-50A(1-5/8")	88.25 - 88.67	1.0000	1.0000
L18	51	(Area) Aero MP3-03 (H)	88.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L18	53	(Area) Aero MP3-03 (H)	88.67 88.25 - 88.67	1.0000	1.0000
L18	57	(Area) Aero MP3-03 (H)	88.25 - 88.67	1.0000	1.0000
L18	58	(Area) Aero MP3-03 (H)	88.25 - 88.67	1.0000	1.0000
L18	61	(Area) Aero MP3-03 (H)	88.25 - 88.67	1.0000	1.0000
L19	3	Safety Line 3/8	88.00 - 88.25	1.0000	1.0000
L19	10	HB114-21U3M12-XXXF(1-1/4")	88.00 - 88.25	1.0000	1.0000
L19	16	LDF7-50A(1-5/8")	88.00 - 88.25	1.0000	1.0000
L19	47	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	48	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	49	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	51	(Area) Aero MP3-03 (H)	88.00 - 88.25	1.0000	1.0000
L19	53	(Area) Aero MP3-03 (H)	88.00 - 88.25	1.0000	1.0000
L19	55	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	56	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	57	(Area) Aero MP3-03 (H)	88.17 - 88.25	1.0000	1.0000
L19	58	(Area) Aero MP3-03 (H)	88.17 - 88.25	1.0000	1.0000
L19	60	(Area) Aero MP3-03 (H)	88.00 - 88.17	1.0000	1.0000
L19	61	(Area) Aero MP3-03 (H)	88.17 - 88.25	1.0000	1.0000
L20	3	Safety Line 3/8	87.42 - 88.00	1.0000	1.0000
L20	10	HB114-21U3M12-XXXF(1-1/4")	87.42 - 88.00	1.0000	1.0000
L20	16	LDF7-50A(1-5/8")	87.42 - 88.00	1.0000	1.0000
L20	47	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	48	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	49	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	51	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	53	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	55	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	56	(Area) Aero MP3-03 (H)	87.42 - 88.00	1.0000	1.0000
L20	60	(Area) Aero MP3-03 (H)	87.67 - 88.00	1.0000	1.0000
L21	3	Safety Line 3/8	87.17 - 87.42	1.0000	1.0000
L21	10	HB114-21U3M12-XXXF(1-1/4")	87.17 - 87.42	1.0000	1.0000
L21	16	LDF7-50A(1-5/8")	87.17 - 87.42	1.0000	1.0000
L21	47	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L21	48	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L21	49	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L21	51	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L21	53	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L21	55	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L21	56	(Area) Aero MP3-03 (H)	87.17 - 87.42	1.0000	1.0000
L22	3	Safety Line 3/8	86.92 - 87.17	1.0000	1.0000
L22	10	HB114-21U3M12-XXXF(1- 1/4")	86.92 - 87.17	1.0000	1.0000
L22	16	LDF7-50A(1-5/8")	86.92 - 87.17	1.0000	1.0000
L22	47	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	48	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	49	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	51	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	53	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	55	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L22	56	(Area) Aero MP3-03 (H)	86.92 - 87.17	1.0000	1.0000
L23	3	Safety Line 3/8	86.67 - 86.92	1.0000	1.0000
L23	10	HB114-21U3M12-XXXF(1- 1/4")	86.67 - 86.92	1.0000	1.0000
L23	16	LDF7-50A(1-5/8")	86.67 - 86.92	1.0000	1.0000
L23	47	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	48	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	49	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	51	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	53	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	55	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L23	56	(Area) Aero MP3-03 (H)	86.67 - 86.92	1.0000	1.0000
L24	3	Safety Line 3/8	81.67 - 86.67	1.0000	1.0000
L24	10	HB114-21U3M12-XXXF(1- 1/4")	81.67 - 86.67	1.0000	1.0000
L24	16	LDF7-50A(1-5/8")	81.67 - 86.67	1.0000	1.0000
L24	47	(Area) Aero MP3-03 (H)	81.67 - 86.67	1.0000	1.0000
L24	48	(Area) Aero MP3-03 (H)	81.67 - 86.67	1.0000	1.0000
L24	49	(Area) Aero MP3-03 (H)	81.67 - 86.67	1.0000	1.0000
L24	51	(Area) Aero MP3-03 (H)	81.67 - 86.67	1.0000	1.0000
L24	53	(Area) Aero MP3-03 (H)	86.17 - 86.67	1.0000	1.0000
L24	55	(Area) Aero MP3-03 (H)	86.17 - 86.67	1.0000	1.0000
L24	56	(Area) Aero MP3-03 (H)	86.17 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L25	3	Safety Line 3/8	86.67 80.75 - 81.67	1.0000	1.0000
L25	10	HB114-21U3M12-XXXF(1-1/4")	80.75 - 81.67	1.0000	1.0000
L25	16	LDF7-50A(1-5/8")	80.75 - 81.67	1.0000	1.0000
L25	47	(Area) Aero MP3-03 (H)	80.75 - 81.67	1.0000	1.0000
L25	48	(Area) Aero MP3-03 (H)	80.75 - 81.67	1.0000	1.0000
L25	49	(Area) Aero MP3-03 (H)	80.75 - 81.67	1.0000	1.0000
L25	51	(Area) Aero MP3-03 (H)	80.75 - 81.67	1.0000	1.0000
L26	3	Safety Line 3/8	80.50 - 80.75	1.0000	1.0000
L26	10	HB114-21U3M12-XXXF(1-1/4")	80.50 - 80.75	1.0000	1.0000
L26	16	LDF7-50A(1-5/8")	80.50 - 80.75	1.0000	1.0000
L26	47	(Area) Aero MP3-03 (H)	80.50 - 80.75	1.0000	1.0000
L26	48	(Area) Aero MP3-03 (H)	80.50 - 80.75	1.0000	1.0000
L26	49	(Area) Aero MP3-03 (H)	80.50 - 80.75	1.0000	1.0000
L26	51	(Area) Aero MP3-03 (H)	80.50 - 80.75	1.0000	1.0000
L27	3	Safety Line 3/8	75.50 - 80.50	1.0000	1.0000
L27	10	HB114-21U3M12-XXXF(1-1/4")	75.50 - 80.50	1.0000	1.0000
L27	16	LDF7-50A(1-5/8")	75.50 - 80.50	1.0000	1.0000
L27	47	(Area) Aero MP3-03 (H)	75.50 - 80.50	1.0000	1.0000
L27	48	(Area) Aero MP3-03 (H)	75.50 - 80.50	1.0000	1.0000
L27	49	(Area) Aero MP3-03 (H)	75.50 - 80.50	1.0000	1.0000
L27	51	(Area) Aero MP3-03 (H)	79.50 - 80.50	1.0000	1.0000
L28	3	Safety Line 3/8	71.83 - 75.50	1.0000	1.0000
L28	10	HB114-21U3M12-XXXF(1-1/4")	71.83 - 75.50	1.0000	1.0000
L28	16	LDF7-50A(1-5/8")	71.83 - 75.50	1.0000	1.0000
L28	47	(Area) Aero MP3-03 (H)	71.83 - 75.50	1.0000	1.0000
L28	48	(Area) Aero MP3-03 (H)	71.83 - 75.50	1.0000	1.0000
L28	49	(Area) Aero MP3-03 (H)	71.83 - 75.50	1.0000	1.0000
L28	50	(Area) Aero MP3-03 (H)	71.83 - 73.08	1.0000	1.0000
L29	3	Safety Line 3/8	71.58 - 71.83	1.0000	1.0000
L29	10	HB114-21U3M12-XXXF(1-1/4")	71.58 - 71.83	1.0000	1.0000
L29	16	LDF7-50A(1-5/8")	71.58 - 71.83	1.0000	1.0000
L29	47	(Area) Aero MP3-03 (H)	71.58 - 71.83	1.0000	1.0000
L29	48	(Area) Aero MP3-03 (H)	71.58 - 71.83	1.0000	1.0000
L29	49	(Area) Aero MP3-03 (H)	71.58 - 71.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L29	50	(Area) Aero MP3-03 (H)	71.58 - 71.83	1.0000	1.0000
L30	3	Safety Line 3/8	68.83 - 71.58	1.0000	1.0000
L30	10	HB114-21U3M12-XXXF(1-1/4")	68.83 - 71.58	1.0000	1.0000
L30	16	LDF7-50A(1-5/8")	68.83 - 71.58	1.0000	1.0000
L30	38	(Area) Aero MP3-04 (H)	68.83 - 70.33	1.0000	1.0000
L30	39	(Area) Aero MP3-04 (H)	68.83 - 70.33	1.0000	1.0000
L30	40	(Area) Aero MP3-04 (H)	68.83 - 70.33	1.0000	1.0000
L30	41	(Area) Aero MP3-04 (H)	68.83 - 70.33	1.0000	1.0000
L30	43	(Area) Aero MP3-03 (H)	68.83 - 70.33	1.0000	1.0000
L30	44	(Area) Aero MP3-03 (H)	68.83 - 70.33	1.0000	1.0000
L30	45	(Area) Aero MP3-03 (H)	68.83 - 70.33	1.0000	1.0000
L30	46	(Area) Aero MP3-03 (H)	68.83 - 70.33	1.0000	1.0000
L30	47	(Area) Aero MP3-03 (H)	70.33 - 71.58	1.0000	1.0000
L30	48	(Area) Aero MP3-03 (H)	70.33 - 71.58	1.0000	1.0000
L30	49	(Area) Aero MP3-03 (H)	70.33 - 71.58	1.0000	1.0000
L30	50	(Area) Aero MP3-03 (H)	70.33 - 71.58	1.0000	1.0000
L31	3	Safety Line 3/8	68.58 - 68.83	1.0000	1.0000
L31	10	HB114-21U3M12-XXXF(1-1/4")	68.58 - 68.83	1.0000	1.0000
L31	16	LDF7-50A(1-5/8")	68.58 - 68.83	1.0000	1.0000
L31	38	(Area) Aero MP3-04 (H)	68.58 - 68.83	1.0000	1.0000
L31	39	(Area) Aero MP3-04 (H)	68.58 - 68.83	1.0000	1.0000
L31	40	(Area) Aero MP3-04 (H)	68.58 - 68.83	1.0000	1.0000
L31	41	(Area) Aero MP3-04 (H)	68.58 - 68.83	1.0000	1.0000
L31	43	(Area) Aero MP3-03 (H)	68.58 - 68.83	1.0000	1.0000
L31	44	(Area) Aero MP3-03 (H)	68.58 - 68.83	1.0000	1.0000
L31	45	(Area) Aero MP3-03 (H)	68.58 - 68.83	1.0000	1.0000
L31	46	(Area) Aero MP3-03 (H)	68.58 - 68.83	1.0000	1.0000
L32	3	Safety Line 3/8	64.50 - 68.58	1.0000	1.0000
L32	10	HB114-21U3M12-XXXF(1-1/4")	64.50 - 68.58	1.0000	1.0000
L32	16	LDF7-50A(1-5/8")	64.50 - 68.58	1.0000	1.0000
L32	38	(Area) Aero MP3-04 (H)	64.50 - 68.58	1.0000	1.0000
L32	39	(Area) Aero MP3-04 (H)	64.50 - 68.58	1.0000	1.0000
L32	40	(Area) Aero MP3-04 (H)	64.50 - 68.58	1.0000	1.0000
L32	41	(Area) Aero MP3-04 (H)	64.50 - 68.58	1.0000	1.0000
L32	43	(Area) Aero MP3-03 (H)	68.17 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L32	44	(Area) Aero MP3-03 (H)	68.58 68.17 - 68.58	1.0000	1.0000
L32	45	(Area) Aero MP3-03 (H)	68.17 - 68.58	1.0000	1.0000
L32	46	(Area) Aero MP3-03 (H)	68.17 - 68.58	1.0000	1.0000
L33	3	Safety Line 3/8	63.25 - 64.50	1.0000	1.0000
L33	10	HB114-21U3M12-XXXF(1-1/4")	63.25 - 64.50	1.0000	1.0000
L33	16	LDF7-50A(1-5/8")	63.25 - 64.50	1.0000	1.0000
L33	38	(Area) Aero MP3-04 (H)	63.25 - 64.50	1.0000	1.0000
L33	39	(Area) Aero MP3-04 (H)	63.25 - 64.50	1.0000	1.0000
L33	40	(Area) Aero MP3-04 (H)	63.25 - 64.50	1.0000	1.0000
L33	41	(Area) Aero MP3-04 (H)	63.25 - 64.50	1.0000	1.0000
L34	3	Safety Line 3/8	58.25 - 63.25	1.0000	1.0000
L34	10	HB114-21U3M12-XXXF(1-1/4")	58.25 - 63.25	1.0000	1.0000
L34	16	LDF7-50A(1-5/8")	58.25 - 63.25	1.0000	1.0000
L34	38	(Area) Aero MP3-04 (H)	58.25 - 63.25	1.0000	1.0000
L34	39	(Area) Aero MP3-04 (H)	58.25 - 63.25	1.0000	1.0000
L34	40	(Area) Aero MP3-04 (H)	58.25 - 63.25	1.0000	1.0000
L34	41	(Area) Aero MP3-04 (H)	58.25 - 63.25	1.0000	1.0000
L35	3	Safety Line 3/8	53.25 - 58.25	1.0000	1.0000
L35	10	HB114-21U3M12-XXXF(1-1/4")	53.25 - 58.25	1.0000	1.0000
L35	16	LDF7-50A(1-5/8")	53.25 - 58.25	1.0000	1.0000
L35	38	(Area) Aero MP3-04 (H)	53.25 - 58.25	1.0000	1.0000
L35	39	(Area) Aero MP3-04 (H)	53.25 - 58.25	1.0000	1.0000
L35	40	(Area) Aero MP3-04 (H)	53.25 - 58.25	1.0000	1.0000
L35	41	(Area) Aero MP3-04 (H)	53.25 - 58.25	1.0000	1.0000
L36	3	Safety Line 3/8	48.25 - 53.25	1.0000	1.0000
L36	10	HB114-21U3M12-XXXF(1-1/4")	48.25 - 53.25	1.0000	1.0000
L36	16	LDF7-50A(1-5/8")	48.25 - 53.25	1.0000	1.0000
L36	38	(Area) Aero MP3-04 (H)	48.25 - 53.25	1.0000	1.0000
L36	39	(Area) Aero MP3-04 (H)	48.25 - 53.25	1.0000	1.0000
L36	40	(Area) Aero MP3-04 (H)	48.25 - 53.25	1.0000	1.0000
L36	41	(Area) Aero MP3-04 (H)	48.25 - 53.25	1.0000	1.0000
L37	3	Safety Line 3/8	42.50 - 48.25	1.0000	1.0000
L37	10	HB114-21U3M12-XXXF(1-1/4")	42.50 - 48.25	1.0000	1.0000
L37	16	LDF7-50A(1-5/8")	42.50 - 48.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L37	29	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	30	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	31	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	32	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	34	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	35	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	36	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	37	(Area) Aero MP3-04 (H)	42.50 - 42.67	1.0000	1.0000
L37	38	(Area) Aero MP3-04 (H)	42.67 - 48.25	1.0000	1.0000
L37	39	(Area) Aero MP3-04 (H)	42.67 - 48.25	1.0000	1.0000
L37	40	(Area) Aero MP3-04 (H)	42.67 - 48.25	1.0000	1.0000
L37	41	(Area) Aero MP3-04 (H)	42.67 - 48.25	1.0000	1.0000
L38	3	Safety Line 3/8	41.83 - 42.50	1.0000	1.0000
L38	10	HB114-21U3M12-XXXF(1-1/4")	41.83 - 42.50	1.0000	1.0000
L38	16	LDF7-50A(1-5/8")	41.83 - 42.50	1.0000	1.0000
L38	29	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	30	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	31	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	32	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	34	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	35	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	36	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L38	37	(Area) Aero MP3-04 (H)	41.83 - 42.50	1.0000	1.0000
L39	3	Safety Line 3/8	41.58 - 41.83	1.0000	1.0000
L39	10	HB114-21U3M12-XXXF(1-1/4")	41.58 - 41.83	1.0000	1.0000
L39	16	LDF7-50A(1-5/8")	41.58 - 41.83	1.0000	1.0000
L39	29	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	30	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	31	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	32	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	34	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	35	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	36	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L39	37	(Area) Aero MP3-04 (H)	41.58 - 41.83	1.0000	1.0000
L40	3	Safety Line 3/8	41.17 -	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L40	10	HB114-21U3M12-XXXF(1-1/4")	41.58	1.0000	1.0000
L40	16	LDF7-50A(1-5/8")	41.17 - 41.58	1.0000	1.0000
L40	29	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	30	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	31	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	32	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	34	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	35	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	36	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L40	37	(Area) Aero MP3-04 (H)	41.17 - 41.58	1.0000	1.0000
L41	3	Safety Line 3/8	40.92 - 41.17	1.0000	1.0000
L41	10	HB114-21U3M12-XXXF(1-1/4")	40.92 - 41.17	1.0000	1.0000
L41	16	LDF7-50A(1-5/8")	40.92 - 41.17	1.0000	1.0000
L41	29	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	30	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	31	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	32	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	34	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	35	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	36	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L41	37	(Area) Aero MP3-04 (H)	40.92 - 41.17	1.0000	1.0000
L42	3	Safety Line 3/8	35.92 - 40.92	1.0000	1.0000
L42	10	HB114-21U3M12-XXXF(1-1/4")	35.92 - 40.92	1.0000	1.0000
L42	16	LDF7-50A(1-5/8")	35.92 - 40.92	1.0000	1.0000
L42	29	(Area) Aero MP3-04 (H)	35.92 - 40.92	1.0000	1.0000
L42	30	(Area) Aero MP3-04 (H)	35.92 - 40.92	1.0000	1.0000
L42	31	(Area) Aero MP3-04 (H)	35.92 - 40.92	1.0000	1.0000
L42	32	(Area) Aero MP3-04 (H)	35.92 - 40.92	1.0000	1.0000
L42	34	(Area) Aero MP3-04 (H)	40.33 - 40.92	1.0000	1.0000
L42	35	(Area) Aero MP3-04 (H)	40.33 - 40.92	1.0000	1.0000
L42	36	(Area) Aero MP3-04 (H)	40.33 - 40.92	1.0000	1.0000
L42	37	(Area) Aero MP3-04 (H)	40.33 - 40.92	1.0000	1.0000
L43	3	Safety Line 3/8	30.92 - 35.92	1.0000	1.0000
L43	10	HB114-21U3M12-XXXF(1-1/4")	30.92 - 35.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L43	16	LDF7-50A(1-5/8")	30.92 - 35.92	1.0000	1.0000
L43	29	(Area) Aero MP3-04 (H)	30.92 - 35.92	1.0000	1.0000
L43	30	(Area) Aero MP3-04 (H)	30.92 - 35.92	1.0000	1.0000
L43	31	(Area) Aero MP3-04 (H)	30.92 - 35.92	1.0000	1.0000
L43	32	(Area) Aero MP3-04 (H)	30.92 - 35.92	1.0000	1.0000
L44	3	Safety Line 3/8	25.92 - 30.92	1.0000	1.0000
L44	10	HB114-21U3M12-XXXF(1-1/4")	25.92 - 30.92	1.0000	1.0000
L44	16	LDF7-50A(1-5/8")	25.92 - 30.92	1.0000	1.0000
L44	29	(Area) Aero MP3-04 (H)	25.92 - 30.92	1.0000	1.0000
L44	30	(Area) Aero MP3-04 (H)	25.92 - 30.92	1.0000	1.0000
L44	31	(Area) Aero MP3-04 (H)	25.92 - 30.92	1.0000	1.0000
L44	32	(Area) Aero MP3-04 (H)	25.92 - 30.92	1.0000	1.0000
L45	3	Safety Line 3/8	20.25 - 25.92	1.0000	1.0000
L45	10	HB114-21U3M12-XXXF(1-1/4")	20.25 - 25.92	1.0000	1.0000
L45	16	LDF7-50A(1-5/8")	20.25 - 25.92	1.0000	1.0000
L45	29	(Area) Aero MP3-04 (H)	20.25 - 25.92	1.0000	1.0000
L45	30	(Area) Aero MP3-04 (H)	20.25 - 25.92	1.0000	1.0000
L45	31	(Area) Aero MP3-04 (H)	20.25 - 25.92	1.0000	1.0000
L45	32	(Area) Aero MP3-04 (H)	20.25 - 25.92	1.0000	1.0000
L46	3	Safety Line 3/8	19.25 - 20.25	1.0000	1.0000
L46	10	HB114-21U3M12-XXXF(1-1/4")	19.25 - 20.25	1.0000	1.0000
L46	16	LDF7-50A(1-5/8")	19.25 - 20.25	1.0000	1.0000
L46	29	(Area) Aero MP3-04 (H)	19.25 - 20.25	1.0000	1.0000
L46	30	(Area) Aero MP3-04 (H)	19.25 - 20.25	1.0000	1.0000
L46	31	(Area) Aero MP3-04 (H)	19.25 - 20.25	1.0000	1.0000
L46	32	(Area) Aero MP3-04 (H)	19.25 - 20.25	1.0000	1.0000
L47	3	Safety Line 3/8	14.15 - 19.25	1.0000	1.0000
L47	10	HB114-21U3M12-XXXF(1-1/4")	14.15 - 19.25	1.0000	1.0000
L47	16	LDF7-50A(1-5/8")	14.15 - 19.25	1.0000	1.0000
L47	20	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	21	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	22	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	23	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	25	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	26	(Area) Aero MP3-04 (H)	14.15 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L47	27	(Area) Aero MP3-04 (H)	15.50 14.15 - 15.50	1.0000	1.0000
L47	28	(Area) Aero MP3-04 (H)	14.15 - 15.50	1.0000	1.0000
L47	29	(Area) Aero MP3-04 (H)	15.50 - 19.25	1.0000	1.0000
L47	30	(Area) Aero MP3-04 (H)	15.50 - 19.25	1.0000	1.0000
L47	31	(Area) Aero MP3-04 (H)	15.50 - 19.25	1.0000	1.0000
L47	32	(Area) Aero MP3-04 (H)	15.50 - 19.25	1.0000	1.0000
L48	3	Safety Line 3/8	13.92 - 14.15	1.0000	1.0000
L48	10	HB114-21U3M12-XXXF(1-1/4")	13.92 - 14.15	1.0000	1.0000
L48	16	LDF7-50A(1-5/8")	13.92 - 14.15	1.0000	1.0000
L48	20	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	21	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	22	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	23	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	25	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	26	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	27	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L48	28	(Area) Aero MP3-04 (H)	13.92 - 14.15	1.0000	1.0000
L49	3	Safety Line 3/8	8.92 - 13.92	1.0000	1.0000
L49	10	HB114-21U3M12-XXXF(1-1/4")	8.92 - 13.92	1.0000	1.0000
L49	16	LDF7-50A(1-5/8")	8.92 - 13.92	1.0000	1.0000
L49	20	(Area) Aero MP3-04 (H)	8.92 - 13.92	1.0000	1.0000
L49	21	(Area) Aero MP3-04 (H)	8.92 - 13.92	1.0000	1.0000
L49	22	(Area) Aero MP3-04 (H)	8.92 - 13.92	1.0000	1.0000
L49	23	(Area) Aero MP3-04 (H)	8.92 - 13.92	1.0000	1.0000
L49	25	(Area) Aero MP3-04 (H)	12.67 - 13.92	1.0000	1.0000
L49	26	(Area) Aero MP3-04 (H)	12.67 - 13.92	1.0000	1.0000
L49	27	(Area) Aero MP3-04 (H)	12.67 - 13.92	1.0000	1.0000
L49	28	(Area) Aero MP3-04 (H)	12.67 - 13.92	1.0000	1.0000
L50	3	Safety Line 3/8	3.92 - 8.92	1.0000	1.0000
L50	10	HB114-21U3M12-XXXF(1-1/4")	3.92 - 8.92	1.0000	1.0000
L50	16	LDF7-50A(1-5/8")	3.92 - 8.92	1.0000	1.0000
L50	20	(Area) Aero MP3-04 (H)	3.92 - 8.92	1.0000	1.0000
L50	21	(Area) Aero MP3-04 (H)	3.92 - 8.92	1.0000	1.0000
L50	22	(Area) Aero MP3-04 (H)	3.92 - 8.92	1.0000	1.0000
L50	23	(Area) Aero MP3-04 (H)	3.92 - 8.92	1.0000	1.0000
L51	3	Safety Line 3/8	0.00 - 3.92	1.0000	1.0000
L51	10	HB114-21U3M12-XXXF(1-1/4")	0.00 - 3.92	1.0000	1.0000
L51	16	LDF7-50A(1-5/8")	0.00 - 3.92	1.0000	1.0000
L51	20	(Area) Aero MP3-04 (H)	0.50 - 3.92	1.0000	1.0000
L51	21	(Area) Aero MP3-04 (H)	0.50 - 3.92	1.0000	1.0000
L51	22	(Area) Aero MP3-04 (H)	0.50 - 3.92	1.0000	1.0000
L51	23	(Area) Aero MP3-04 (H)	0.50 - 3.92	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
L3	54	(Area) Aero MP3-03 (H)	114.90 - 116.17	Manual	1.0000
L3	57	(Area) Aero MP3-03 (H)	114.90 - 116.17	Manual	1.0000
L3	58	(Area) Aero MP3-03 (H)	114.90 - 116.17	Manual	1.0000
L3	66	(Area) Aero MP3-03 (H)	114.90 - 116.17	Manual	1.0000
L3	67	(Area) Aero MP3-03 (H)	114.90 - 116.17	Manual	1.0000
L4	54	(Area) Aero MP3-03 (H)	114.67 - 114.90	Manual	1.0000
L4	57	(Area) Aero MP3-03 (H)	114.67 - 114.90	Manual	1.0000
L4	58	(Area) Aero MP3-03 (H)	114.67 - 114.90	Manual	1.0000
L4	66	(Area) Aero MP3-03 (H)	114.67 - 114.90	Manual	1.0000
L4	67	(Area) Aero MP3-03 (H)	114.67 - 114.90	Manual	1.0000
L5	54	(Area) Aero MP3-03 (H)	109.67 - 114.67	Manual	1.0000
L5	57	(Area) Aero MP3-03 (H)	109.67 - 114.67	Manual	1.0000
L5	58	(Area) Aero MP3-03 (H)	109.67 - 114.67	Manual	1.0000
L5	66	(Area) Aero MP3-03 (H)	109.67 - 114.67	Manual	1.0000
L5	67	(Area) Aero MP3-03 (H)	109.67 - 114.67	Manual	1.0000
L6	54	(Area) Aero MP3-03 (H)	109.42 - 109.67	Manual	1.0000
L6	57	(Area) Aero MP3-03 (H)	109.42 - 109.67	Manual	1.0000
L6	58	(Area) Aero MP3-03 (H)	109.42 - 109.67	Manual	1.0000
L6	66	(Area) Aero MP3-03 (H)	109.42 - 109.67	Manual	1.0000
L6	67	(Area) Aero MP3-03 (H)	109.42 - 109.67	Manual	1.0000
L7	54	(Area) Aero MP3-03 (H)	109.17 - 109.42	Manual	1.0000
L7	57	(Area) Aero MP3-03 (H)	109.17 - 109.42	Manual	1.0000
L7	58	(Area) Aero MP3-03 (H)	109.17 - 109.42	Manual	1.0000
L7	65	(Area) Aero MP3-03 (H)	109.17 - 109.42	Manual	1.0000
L8	54	(Area) Aero MP3-03 (H)	104.17 - 109.17	Manual	1.0000
L8	57	(Area) Aero MP3-03 (H)	104.17 - 109.17	Manual	1.0000
L8	58	(Area) Aero MP3-03 (H)	104.17 - 109.17	Manual	1.0000
L8	65	(Area) Aero MP3-03 (H)	104.17 - 109.17	Manual	1.0000
L9	54	(Area) Aero MP3-03 (H)	103.92 - 104.17	Manual	1.0000
L9	57	(Area) Aero MP3-03 (H)	103.92 - 104.17	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L9	58	(Area) Aero MP3-03 (H)	104.17 103.92 - 104.17	Manual	1.0000
L9	65	(Area) Aero MP3-03 (H)	103.92 - 104.17	Manual	1.0000
L10	54	(Area) Aero MP3-03 (H)	103.67 - 103.92	Manual	1.0000
L10	57	(Area) Aero MP3-03 (H)	103.67 - 103.92	Manual	1.0000
L10	58	(Area) Aero MP3-03 (H)	103.67 - 103.92	Manual	1.0000
L10	62	(Area) Aero MP3-03 (H)	103.67 - 103.92	Manual	1.0000
L10	64	(Area) Aero MP3-03 (H)	103.67 - 103.92	Manual	1.0000
L11	54	(Area) Aero MP3-03 (H)	98.67 - 103.67	Manual	1.0000
L11	57	(Area) Aero MP3-03 (H)	98.67 - 103.67	Manual	1.0000
L11	58	(Area) Aero MP3-03 (H)	98.67 - 103.67	Manual	1.0000
L11	62	(Area) Aero MP3-03 (H)	98.67 - 103.67	Manual	1.0000
L11	64	(Area) Aero MP3-03 (H)	98.67 - 103.67	Manual	1.0000
L12	54	(Area) Aero MP3-03 (H)	96.42 - 98.67	Manual	1.0000
L12	57	(Area) Aero MP3-03 (H)	96.42 - 98.67	Manual	1.0000
L12	58	(Area) Aero MP3-03 (H)	96.42 - 98.67	Manual	1.0000
L12	61	(Area) Aero MP3-03 (H)	96.42 - 97.67	Manual	1.0000
L12	62	(Area) Aero MP3-03 (H)	96.42 - 98.67	Manual	1.0000
L12	63	(Area) Aero MP3-03 (H)	96.42 - 97.67	Manual	1.0000
L12	64	(Area) Aero MP3-03 (H)	97.67 - 98.67	Manual	1.0000
L13	54	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L13	57	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L13	58	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L13	61	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L13	62	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L13	63	(Area) Aero MP3-03 (H)	96.17 - 96.42	Manual	1.0000
L14	54	(Area) Aero MP3-03 (H)	91.50 - 96.17	Manual	1.0000
L14	57	(Area) Aero MP3-03 (H)	91.50 - 96.17	Manual	1.0000
L14	58	(Area) Aero MP3-03 (H)	91.50 - 96.17	Manual	1.0000
L14	61	(Area) Aero MP3-03 (H)	91.50 - 96.17	Manual	1.0000
L14	62	(Area) Aero MP3-03 (H)	95.17 - 96.17	Manual	1.0000
L14	63	(Area) Aero MP3-03 (H)	95.17 - 96.17	Manual	1.0000
L15	54	(Area) Aero MP3-03 (H)	89.50 - 91.50	Manual	1.0000
L15	57	(Area) Aero MP3-03 (H)	89.50 - 91.50	Manual	1.0000
L15	58	(Area) Aero MP3-03 (H)	89.50 -	Manual	1.0000



Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L15	61	(Area) Aero MP3-03 (H)	91.50 89.50 - 91.50	Manual	1.0000
L16	51	(Area) Aero MP3-03 (H)	88.92 - 89.50	Manual	1.0000
L16	53	(Area) Aero MP3-03 (H)	88.92 - 89.50	Manual	1.0000
L16	57	(Area) Aero MP3-03 (H)	88.92 - 89.50	Manual	1.0000
L16	58	(Area) Aero MP3-03 (H)	88.92 - 89.50	Manual	1.0000
L16	61	(Area) Aero MP3-03 (H)	88.92 - 89.50	Manual	1.0000
L17	51	(Area) Aero MP3-03 (H)	88.67 - 88.92	Manual	1.0000
L17	53	(Area) Aero MP3-03 (H)	88.67 - 88.92	Manual	1.0000
L17	57	(Area) Aero MP3-03 (H)	88.67 - 88.92	Manual	1.0000
L17	58	(Area) Aero MP3-03 (H)	88.67 - 88.92	Manual	1.0000
L17	61	(Area) Aero MP3-03 (H)	88.67 - 88.92	Manual	1.0000
L18	51	(Area) Aero MP3-03 (H)	88.25 - 88.67	Manual	1.0000
L18	53	(Area) Aero MP3-03 (H)	88.25 - 88.67	Manual	1.0000
L18	57	(Area) Aero MP3-03 (H)	88.25 - 88.67	Manual	1.0000
L18	58	(Area) Aero MP3-03 (H)	88.25 - 88.67	Manual	1.0000
L18	61	(Area) Aero MP3-03 (H)	88.25 - 88.67	Manual	1.0000
L19	47	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	48	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	49	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	51	(Area) Aero MP3-03 (H)	88.00 - 88.25	Manual	1.0000
L19	53	(Area) Aero MP3-03 (H)	88.00 - 88.25	Manual	1.0000
L19	55	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	56	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	57	(Area) Aero MP3-03 (H)	88.17 - 88.25	Manual	1.0000
L19	58	(Area) Aero MP3-03 (H)	88.17 - 88.25	Manual	1.0000
L19	60	(Area) Aero MP3-03 (H)	88.00 - 88.17	Manual	1.0000
L19	61	(Area) Aero MP3-03 (H)	88.17 - 88.25	Manual	1.0000
L20	47	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	48	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	49	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	51	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	53	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	55	(Area) Aero MP3-03 (H)	87.42 - 88.00	Manual	1.0000
L20	56	(Area) Aero MP3-03 (H)	87.42 -	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L20	60	(Area) Aero MP3-03 (H)	88.00 87.67 - 88.00	Manual	1.0000
L21	47	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	48	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	49	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	51	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	53	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	55	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L21	56	(Area) Aero MP3-03 (H)	87.17 - 87.42	Manual	1.0000
L22	47	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	48	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	49	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	51	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	53	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	55	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L22	56	(Area) Aero MP3-03 (H)	86.92 - 87.17	Manual	1.0000
L23	47	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	48	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	49	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	51	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	53	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	55	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L23	56	(Area) Aero MP3-03 (H)	86.67 - 86.92	Manual	1.0000
L24	47	(Area) Aero MP3-03 (H)	81.67 - 86.67	Manual	1.0000
L24	48	(Area) Aero MP3-03 (H)	81.67 - 86.67	Manual	1.0000
L24	49	(Area) Aero MP3-03 (H)	81.67 - 86.67	Manual	1.0000
L24	51	(Area) Aero MP3-03 (H)	81.67 - 86.67	Manual	1.0000
L24	53	(Area) Aero MP3-03 (H)	86.17 - 86.67	Manual	1.0000
L24	55	(Area) Aero MP3-03 (H)	86.17 - 86.67	Manual	1.0000
L24	56	(Area) Aero MP3-03 (H)	86.17 - 86.67	Manual	1.0000
L25	47	(Area) Aero MP3-03 (H)	80.75 - 81.67	Manual	1.0000
L25	48	(Area) Aero MP3-03 (H)	80.75 - 81.67	Manual	1.0000
L25	49	(Area) Aero MP3-03 (H)	80.75 - 81.67	Manual	1.0000
L25	51	(Area) Aero MP3-03 (H)	80.75 - 81.67	Manual	1.0000
L26	47	(Area) Aero MP3-03 (H)	80.50 -	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L26	48	(Area) Aero MP3-03 (H)	80.75 80.50 - 80.75	Manual	1.0000
L26	49	(Area) Aero MP3-03 (H)	80.50 - 80.75	Manual	1.0000
L26	51	(Area) Aero MP3-03 (H)	80.50 - 80.75	Manual	1.0000
L27	47	(Area) Aero MP3-03 (H)	75.50 - 80.50	Manual	1.0000
L27	48	(Area) Aero MP3-03 (H)	75.50 - 80.50	Manual	1.0000
L27	49	(Area) Aero MP3-03 (H)	75.50 - 80.50	Manual	1.0000
L27	51	(Area) Aero MP3-03 (H)	79.50 - 80.50	Manual	1.0000
L28	47	(Area) Aero MP3-03 (H)	71.83 - 75.50	Manual	1.0000
L28	48	(Area) Aero MP3-03 (H)	71.83 - 75.50	Manual	1.0000
L28	49	(Area) Aero MP3-03 (H)	71.83 - 75.50	Manual	1.0000
L28	50	(Area) Aero MP3-03 (H)	71.83 - 73.08	Manual	1.0000
L29	47	(Area) Aero MP3-03 (H)	71.58 - 71.83	Manual	1.0000
L29	48	(Area) Aero MP3-03 (H)	71.58 - 71.83	Manual	1.0000
L29	49	(Area) Aero MP3-03 (H)	71.58 - 71.83	Manual	1.0000
L29	50	(Area) Aero MP3-03 (H)	71.58 - 71.83	Manual	1.0000
L30	38	(Area) Aero MP3-04 (H)	68.83 - 70.33	Manual	1.0000
L30	39	(Area) Aero MP3-04 (H)	68.83 - 70.33	Manual	1.0000
L30	40	(Area) Aero MP3-04 (H)	68.83 - 70.33	Manual	1.0000
L30	41	(Area) Aero MP3-04 (H)	68.83 - 70.33	Manual	1.0000
L30	43	(Area) Aero MP3-03 (H)	68.83 - 70.33	Manual	1.0000
L30	44	(Area) Aero MP3-03 (H)	68.83 - 70.33	Manual	1.0000
L30	45	(Area) Aero MP3-03 (H)	68.83 - 70.33	Manual	1.0000
L30	46	(Area) Aero MP3-03 (H)	68.83 - 70.33	Manual	1.0000
L30	47	(Area) Aero MP3-03 (H)	70.33 - 71.58	Manual	1.0000
L30	48	(Area) Aero MP3-03 (H)	70.33 - 71.58	Manual	1.0000
L30	49	(Area) Aero MP3-03 (H)	70.33 - 71.58	Manual	1.0000
L30	50	(Area) Aero MP3-03 (H)	70.33 - 71.58	Manual	1.0000
L31	38	(Area) Aero MP3-04 (H)	68.58 - 68.83	Manual	1.0000
L31	39	(Area) Aero MP3-04 (H)	68.58 - 68.83	Manual	1.0000
L31	40	(Area) Aero MP3-04 (H)	68.58 - 68.83	Manual	1.0000
L31	41	(Area) Aero MP3-04 (H)	68.58 - 68.83	Manual	1.0000
L31	43	(Area) Aero MP3-03 (H)	68.58 - 68.83	Manual	1.0000
L31	44	(Area) Aero MP3-03 (H)	68.58 - 68.83	Manual	1.0000
L31	45	(Area) Aero MP3-03 (H)	68.58 -	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L31	46	(Area) Aero MP3-03 (H)	68.83 68.58 - 68.83	Manual	1.0000
L32	38	(Area) Aero MP3-04 (H)	64.50 - 68.58	Manual	1.0000
L32	39	(Area) Aero MP3-04 (H)	64.50 - 68.58	Manual	1.0000
L32	40	(Area) Aero MP3-04 (H)	64.50 - 68.58	Manual	1.0000
L32	41	(Area) Aero MP3-04 (H)	64.50 - 68.58	Manual	1.0000
L32	43	(Area) Aero MP3-03 (H)	68.17 - 68.58	Manual	1.0000
L32	44	(Area) Aero MP3-03 (H)	68.17 - 68.58	Manual	1.0000
L32	45	(Area) Aero MP3-03 (H)	68.17 - 68.58	Manual	1.0000
L32	46	(Area) Aero MP3-03 (H)	68.17 - 68.58	Manual	1.0000
L33	38	(Area) Aero MP3-04 (H)	63.25 - 64.50	Manual	1.0000
L33	39	(Area) Aero MP3-04 (H)	63.25 - 64.50	Manual	1.0000
L33	40	(Area) Aero MP3-04 (H)	63.25 - 64.50	Manual	1.0000
L33	41	(Area) Aero MP3-04 (H)	63.25 - 64.50	Manual	1.0000
L34	38	(Area) Aero MP3-04 (H)	58.25 - 63.25	Manual	1.0000
L34	39	(Area) Aero MP3-04 (H)	58.25 - 63.25	Manual	1.0000
L34	40	(Area) Aero MP3-04 (H)	58.25 - 63.25	Manual	1.0000
L34	41	(Area) Aero MP3-04 (H)	58.25 - 63.25	Manual	1.0000
L35	38	(Area) Aero MP3-04 (H)	53.25 - 58.25	Manual	1.0000
L35	39	(Area) Aero MP3-04 (H)	53.25 - 58.25	Manual	1.0000
L35	40	(Area) Aero MP3-04 (H)	53.25 - 58.25	Manual	1.0000
L35	41	(Area) Aero MP3-04 (H)	53.25 - 58.25	Manual	1.0000
L36	38	(Area) Aero MP3-04 (H)	48.25 - 53.25	Manual	1.0000
L36	39	(Area) Aero MP3-04 (H)	48.25 - 53.25	Manual	1.0000
L36	40	(Area) Aero MP3-04 (H)	48.25 - 53.25	Manual	1.0000
L36	41	(Area) Aero MP3-04 (H)	48.25 - 53.25	Manual	1.0000
L37	29	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	30	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	31	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	32	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	34	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	35	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	36	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	37	(Area) Aero MP3-04 (H)	42.50 - 42.67	Manual	1.0000
L37	38	(Area) Aero MP3-04 (H)	42.67 -	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L37	39	(Area) Aero MP3-04 (H)	48.25 42.67 - 48.25	Manual	1.0000
L37	40	(Area) Aero MP3-04 (H)	42.67 - 48.25	Manual	1.0000
L37	41	(Area) Aero MP3-04 (H)	42.67 - 48.25	Manual	1.0000
L38	29	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	30	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	31	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	32	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	34	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	35	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	36	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L38	37	(Area) Aero MP3-04 (H)	41.83 - 42.50	Manual	1.0000
L39	29	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	30	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	31	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	32	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	34	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	35	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	36	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L39	37	(Area) Aero MP3-04 (H)	41.58 - 41.83	Manual	1.0000
L40	29	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	30	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	31	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	32	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	34	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	35	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	36	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L40	37	(Area) Aero MP3-04 (H)	41.17 - 41.58	Manual	1.0000
L41	29	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	30	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	31	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	32	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	34	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	35	(Area) Aero MP3-04 (H)	40.92 - 41.17	Manual	1.0000
L41	36	(Area) Aero MP3-04 (H)	40.92 -	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L41	37	(Area) Aero MP3-04 (H)	41.17 40.92 - 41.17	Manual	1.0000
L42	29	(Area) Aero MP3-04 (H)	35.92 - 40.92	Manual	1.0000
L42	30	(Area) Aero MP3-04 (H)	35.92 - 40.92	Manual	1.0000
L42	31	(Area) Aero MP3-04 (H)	35.92 - 40.92	Manual	1.0000
L42	32	(Area) Aero MP3-04 (H)	35.92 - 40.92	Manual	1.0000
L42	34	(Area) Aero MP3-04 (H)	40.33 - 40.92	Manual	1.0000
L42	35	(Area) Aero MP3-04 (H)	40.33 - 40.92	Manual	1.0000
L42	36	(Area) Aero MP3-04 (H)	40.33 - 40.92	Manual	1.0000
L42	37	(Area) Aero MP3-04 (H)	40.33 - 40.92	Manual	1.0000
L43	29	(Area) Aero MP3-04 (H)	30.92 - 35.92	Manual	1.0000
L43	30	(Area) Aero MP3-04 (H)	30.92 - 35.92	Manual	1.0000
L43	31	(Area) Aero MP3-04 (H)	30.92 - 35.92	Manual	1.0000
L43	32	(Area) Aero MP3-04 (H)	30.92 - 35.92	Manual	1.0000
L44	29	(Area) Aero MP3-04 (H)	25.92 - 30.92	Manual	1.0000
L44	30	(Area) Aero MP3-04 (H)	25.92 - 30.92	Manual	1.0000
L44	31	(Area) Aero MP3-04 (H)	25.92 - 30.92	Manual	1.0000
L44	32	(Area) Aero MP3-04 (H)	25.92 - 30.92	Manual	1.0000
L45	29	(Area) Aero MP3-04 (H)	20.25 - 25.92	Manual	1.0000
L45	30	(Area) Aero MP3-04 (H)	20.25 - 25.92	Manual	1.0000
L45	31	(Area) Aero MP3-04 (H)	20.25 - 25.92	Manual	1.0000
L45	32	(Area) Aero MP3-04 (H)	20.25 - 25.92	Manual	1.0000
L46	29	(Area) Aero MP3-04 (H)	19.25 - 20.25	Manual	1.0000
L46	30	(Area) Aero MP3-04 (H)	19.25 - 20.25	Manual	1.0000
L46	31	(Area) Aero MP3-04 (H)	19.25 - 20.25	Manual	1.0000
L46	32	(Area) Aero MP3-04 (H)	19.25 - 20.25	Manual	1.0000
L47	20	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	21	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	22	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	23	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	25	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	26	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	27	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	28	(Area) Aero MP3-04 (H)	14.15 - 15.50	Manual	1.0000
L47	29	(Area) Aero MP3-04 (H)	15.50 -	Manual	1.0000



Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L47	30	(Area) Aero MP3-04 (H)	19.25 - 15.50 - 19.25	Manual	1.0000
L47	31	(Area) Aero MP3-04 (H)	15.50 - 19.25	Manual	1.0000
L47	32	(Area) Aero MP3-04 (H)	15.50 - 19.25	Manual	1.0000
L48	20	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	21	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	22	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	23	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	25	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	26	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	27	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L48	28	(Area) Aero MP3-04 (H)	13.92 - 14.15	Manual	1.0000
L49	20	(Area) Aero MP3-04 (H)	8.92 - 13.92	Manual	1.0000
L49	21	(Area) Aero MP3-04 (H)	8.92 - 13.92	Manual	1.0000
L49	22	(Area) Aero MP3-04 (H)	8.92 - 13.92	Manual	1.0000
L49	23	(Area) Aero MP3-04 (H)	8.92 - 13.92	Manual	1.0000
L49	25	(Area) Aero MP3-04 (H)	12.67 - 13.92	Manual	1.0000
L49	26	(Area) Aero MP3-04 (H)	12.67 - 13.92	Manual	1.0000
L49	27	(Area) Aero MP3-04 (H)	12.67 - 13.92	Manual	1.0000
L49	28	(Area) Aero MP3-04 (H)	12.67 - 13.92	Manual	1.0000
L50	20	(Area) Aero MP3-04 (H)	3.92 - 8.92	Manual	1.0000
L50	21	(Area) Aero MP3-04 (H)	3.92 - 8.92	Manual	1.0000
L50	22	(Area) Aero MP3-04 (H)	3.92 - 8.92	Manual	1.0000
L50	23	(Area) Aero MP3-04 (H)	3.92 - 8.92	Manual	1.0000
L51	20	(Area) Aero MP3-04 (H)	0.50 - 3.92	Manual	1.0000
L51	21	(Area) Aero MP3-04 (H)	0.50 - 3.92	Manual	1.0000
L51	22	(Area) Aero MP3-04 (H)	0.50 - 3.92	Manual	1.0000
L51	23	(Area) Aero MP3-04 (H)	0.50 - 3.92	Manual	1.0000

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft
**130**					
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	130.00
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	130.00
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000		
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	0.000 4.00	0.000	130.00
			0.000		
SBNH-1D6565C w/ Mount Pipe	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) 860 10025	A	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) 860 10025	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) 860 10025	C	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) LGP21401	A	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) LGP21401	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
(2) LGP21401	C	From Leg	0.000 4.00	0.000	130.00
			0.000		
DC6-48-60-18-8F	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS-11	A	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS-11	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS-11	C	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS 12	A	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS 12	B	From Leg	0.000 4.00	0.000	130.00
			0.000		
RRUS 12	C	From Leg	0.000 4.00	0.000	130.00
			0.000		
Platform Mount [LP 303-1] **120**	A	None		0.000	130.00
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.000	0.000	120.00
			0.000		
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.000	0.000	120.00
			0.000		
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.000	0.000	120.00
			0.000		
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.000	0.000	120.00
			0.000		
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.000	0.000	120.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz	Lateral		
			ft	ft	°	ft
			0.000			
			0.000			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
TD-RRH8x20-25	A	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
TD-RRH8x20-25	B	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
TD-RRH8x20-25	C	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(3) ACU-A20-N	A	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(3) ACU-A20-N	B	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(3) ACU-A20-N	C	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	4.00		0.000	120.00
			0.000			
			0.000			
Platform Mount [LP 1201-1] **118**	A	None			0.000	120.00
800MHZ RRH w/ Mount Pipe	A	From Leg	1.00		0.000	118.00
			0.000			
			-1.000			
800MHZ RRH w/ Mount Pipe	B	From Leg	1.00		0.000	118.00
			0.000			
			-1.000			
800MHZ RRH w/ Mount Pipe	C	From Leg	1.00		0.000	118.00
			0.000			
			-1.000			
1900MHz RRH (65MHz)	A	From Leg	1.00		0.000	118.00
			0.000			
			1.000			
1900MHz RRH (65MHz)	B	From Leg	1.00		0.000	118.00
			0.000			
			1.000			
1900MHz RRH (65MHz)	C	From Leg	1.00		0.000	118.00
			0.000			
			1.000			
800 EXTERNAL NOTCH FILTER	A	From Leg	1.00		0.000	118.00
			0.000			
			0.000			
800 EXTERNAL NOTCH FILTER	B	From Leg	1.00		0.000	118.00
			0.000			
			0.000			
800 EXTERNAL NOTCH FILTER	C	From Leg	1.00		0.000	118.00
			0.000			
			0.000			
Side Arm Mount [SO 102-3] *	A	None			0.000	118.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00		0.000	110.00
			0.000			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment  °	Placement  ft
			Horz Lateral ft	Vert ft		
MX08FRO665-21 w/ Mount Pipe	B	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
MX08FRO665-21 w/ Mount Pipe	C	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B604	A	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B604	B	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B604	C	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B605	A	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B605	B	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
TA08025-B605	C	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
RDIDC-9181-PF-48	A	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
(2) 8' x 2" Mount Pipe	A	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
(2) 8' x 2" Mount Pipe	B	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
(2) 8' x 2" Mount Pipe	C	From Leg	0.000	4.00	0.000	110.00
			0.000	0.000		
Commscope MC-PK8-DSH **100**	C	None			0.000	110.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.000	0.000	100.00
			0.000	1.000		
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00	0.000	0.000	100.00
			0.000	1.000		
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.000	0.000	100.00
			0.000	1.000		
(2) RR90-17-02DP w/ Mount Pipe	A	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		
(2) RR90-17-02DP w/ Mount Pipe	B	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		
(2) RR90-17-02DP w/ Mount Pipe	C	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		
(2) KRY 112 144/1	A	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		
KRY 112 144/1	B	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		
KRY 112 489/2	B	From Leg	4.00	0.000	0.000	100.00
			0.000	0.000		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
(2) KRY 112 489/2	C	From Leg	0.000 4.00 0.000	0.000	100.00
RADIO 4449 B12/B71	A	From Leg	0.000 4.00 0.000	0.000	100.00
RADIO 4449 B12/B71	B	From Leg	0.000 4.00 0.000	0.000	100.00
RADIO 4449 B12/B71	C	From Leg	0.000 4.00 0.000	0.000	100.00
2.4" Dia x 6-ft Pipe	A	From Leg	0.000 4.00 0.000	0.000	100.00
2.4" Dia x 6-ft Pipe	B	From Leg	0.000 4.00 0.000	0.000	100.00
2.4" Dia x 6-ft Pipe	C	From Leg	0.000 4.00 0.000	0.000	100.00
Platform Mount [LP 1201-1]	A	None	0.000	0.000	100.00
Miscellaneous [NA 509-3] **80**	A	None	0.000	0.000	100.00
GPS_A	A	From Leg	3.00 0.000 0.000	0.000	80.00
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.000 0.000	0.000	80.00
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## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice

Comb. No.	Description
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

**Maximum Member Forces**

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6.25	-0.75	-0.01
			Max. Mx	8	-2.80	-11.82	0.04
			Max. My	2	-2.79	-0.14	11.92
			Max. Vy	8	2.43	-11.82	0.04
			Max. Vx	2	-2.47	-0.14	11.92
			Max. Torque	24			-0.37
L2	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6.83	-0.74	-0.01
			Max. Mx	8	-3.21	-24.40	0.07
			Max. My	2	-3.20	-0.16	24.71
			Max. Vy	8	2.61	-24.40	0.07
			Max. Vx	2	-2.65	-0.16	24.71
			Max. Torque	24			-0.37
L3	120 - 114.9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.22	-0.66	0.03
			Max. Mx	8	-7.70	-51.66	0.10
			Max. My	2	-7.68	-0.17	52.41
			Max. Vy	8	5.79	-51.66	0.10
			Max. Vx	2	-5.90	-0.17	52.41
			Max. Torque	24			-0.37
L4	114.9 - 114.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.27	-0.66	0.03
			Max. Mx	8	-7.73	-52.99	0.10
			Max. My	2	-7.70	-0.17	53.77
			Max. Vy	8	5.81	-52.99	0.10
			Max. Vx	2	-5.92	-0.17	53.77
			Max. Torque	24			-0.37
L5	114.67 - 109.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.18	-0.57	0.50
			Max. Mx	8	-11.34	-83.79	0.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	109.67 - 109.42	Pole	Max. My	2	-11.29	-0.17	85.64
			Max. Vy	8	8.83	-83.79	0.24
			Max. Vx	2	-9.12	-0.17	85.64
			Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.23	-0.57	0.50
			Max. Mx	8	-11.37	-86.00	0.24
			Max. My	2	-11.32	-0.17	87.92
			Max. Vy	8	8.85	-86.00	0.24
			Max. Vx	2	-9.14	-0.17	87.92
L7	109.42 - 109.17	Pole	Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.28	-0.57	0.50
			Max. Mx	8	-11.40	-88.21	0.25
			Max. My	2	-11.35	-0.17	90.21
			Max. Vy	8	8.86	-88.21	0.25
			Max. Vx	2	-9.17	-0.17	90.21
			Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			L8	109.17 - 104.17	Pole	Max. Compression	26
Max. Mx	8	-11.94				-133.42	0.28
Max. My	2	-11.88				-0.17	137.26
Max. Vy	8	9.23				-133.42	0.28
Max. Vx	2	-9.66				-0.17	137.26
Max. Torque	24						-0.46
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-24.33				-0.47	0.57
Max. Mx	8	-11.97				-135.72	0.29
Max. My	2	-11.91				-0.17	139.68
L9	104.17 - 103.92	Pole	Max. Vy	8	9.25	-135.72	0.29
			Max. Vx	2	-9.68	-0.17	139.68
			Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.38	-0.46	0.57
			Max. Mx	8	-12.00	-138.04	0.29
			Max. My	2	-11.94	-0.17	142.10
			Max. Vy	8	9.27	-138.04	0.29
			Max. Vx	2	-9.70	-0.17	142.10
			Max. Torque	24			-0.46
L10	103.92 - 103.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.38	-0.46	0.57
			Max. Mx	8	-12.00	-138.04	0.29
			Max. My	2	-11.94	-0.17	142.10
			Max. Vy	8	9.27	-138.04	0.29
			Max. Vx	2	-9.70	-0.17	142.10
			Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.88	-0.31	0.51
			Max. Mx	8	-16.64	-190.35	0.24
L11	103.67 - 98.67	Pole	Max. My	2	-16.56	-0.12	197.04
			Max. Vy	8	12.83	-190.35	0.24
			Max. Vx	2	-13.45	-0.12	197.04
			Max. Torque	24			-0.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.43	-0.26	0.53
			Max. Mx	8	-16.96	-219.39	0.26
			Max. My	2	-16.88	-0.12	227.55
			Max. Vy	8	13.01	-219.39	0.26
			Max. Vx	2	-13.68	-0.12	227.55
L12	98.67 - 96.42	Pole	Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.49	-0.25	0.53
			Max. Mx	8	-17.00	-222.65	0.26
			Max. My	2	-16.91	-0.12	230.97
			Max. Vy	8	13.02	-222.65	0.26
			Max. Vx	2	-13.70	-0.12	230.97
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			L13	96.42 - 96.17	Pole	Max. Compression	26
Max. Mx	8	-17.00				-222.65	0.26
Max. My	2	-16.91				-0.12	230.97
Max. Vy	8	13.02				-222.65	0.26
Max. Vx	2	-13.70				-0.12	230.97
Max. Torque	24						-0.42
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-34.49				-0.25	0.53
Max. Mx	8	-17.00				-222.65	0.26
L14	96.17 - 91.5	Pole				Max. My	2
			Max. Vy	8	13.02	-222.65	0.26
			Max. Vx	2	-13.70	-0.12	230.97
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.49	-0.25	0.53
			Max. Mx	8	-17.00	-222.65	0.26
			Max. My	2	-16.91	-0.12	230.97
			Max. Vy	8	13.02	-222.65	0.26
			Max. Vx	2	-13.70	-0.12	230.97



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L15	91.5 - 89.5	Pole	Max. Compression	26	-34.87	-0.21	0.55
			Max. Mx	8	-17.22	-244.49	0.28
			Max. My	2	-17.13	-0.12	253.99
			Max. Vy	8	13.16	-244.49	0.28
			Max. Vx	2	-13.87	-0.12	253.99
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.54	-0.10	0.61
			Max. Mx	8	-18.29	-311.28	0.32
			Max. My	2	-18.19	-0.11	324.70
L16	89.5 - 88.92	Pole	Max. Vy	8	13.57	-311.28	0.32
			Max. Vx	2	-14.41	-0.11	324.70
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.70	-0.09	0.60
			Max. Mx	8	-18.38	-319.16	0.32
			Max. My	2	-18.29	-0.11	333.06
			Max. Vy	8	13.62	-319.16	0.32
			Max. Vx	2	-14.46	-0.11	333.06
			Max. Torque	24			-0.42
L17	88.92 - 88.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.77	-0.09	0.59
L18	88.67 - 88.25	Pole	Max. Mx	8	-18.42	-322.57	0.32
			Max. My	2	-18.33	-0.11	336.68
			Max. Vy	8	13.65	-322.57	0.32
			Max. Vx	2	-14.49	-0.11	336.68
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.88	-0.08	0.59
			Max. Mx	8	-18.49	-328.30	0.32
			Max. My	2	-18.40	-0.11	342.77
			Max. Vy	8	13.69	-328.30	0.32
L19	88.25 - 88	Pole	Max. Vx	2	-14.53	-0.11	342.77
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.96	-0.07	0.58
			Max. Mx	8	-18.53	-331.73	0.32
			Max. My	2	-18.44	-0.11	346.41
			Max. Vy	8	13.71	-331.73	0.32
			Max. Vx	2	-14.56	-0.11	346.41
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
L20	88 - 87.42	Pole	Max. Compression	26	-37.13	-0.06	0.58
			Max. Mx	8	-18.62	-339.69	0.32
			Max. My	2	-18.53	-0.11	354.86
			Max. Vy	8	13.77	-339.69	0.32
			Max. Vx	2	-14.62	-0.11	354.86
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.19	-0.06	0.58
			Max. Mx	8	-18.65	-343.13	0.32
			Max. My	2	-18.56	-0.11	358.52
L21	87.42 - 87.17	Pole	Max. Vy	8	13.79	-343.13	0.32
			Max. Vx	2	-14.64	-0.11	358.52
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.25	-0.05	0.58
			Max. Mx	8	-18.68	-346.58	0.33
			Max. My	2	-18.60	-0.11	362.18
			Max. Vy	8	13.82	-346.58	0.33
			Max. Vx	2	-14.66	-0.11	362.18
			Max. Torque	24			-0.42
L22	87.17 - 86.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.33	-0.05	0.57
L23	86.92 - 86.67	Pole	Max. Compression	26	-37.33	-0.05	0.57

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L24	86.67 - 81.67	Pole	Max. Mx	8	-18.73	-350.04	0.33
			Max. My	2	-18.64	-0.11	365.84
			Max. Vy	8	13.84	-350.04	0.33
			Max. Vx	2	-14.69	-0.11	365.84
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.71	0.06	0.52
			Max. Mx	8	-19.55	-420.43	0.34
			Max. My	2	-19.47	-0.11	440.47
			Max. Vy	8	14.34	-420.43	0.34
L25	81.67 - 80.75	Pole	Max. Vx	2	-15.19	-0.11	440.47
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.97	0.08	0.51
			Max. Mx	8	-19.71	-433.65	0.34
			Max. My	2	-19.63	-0.10	454.47
			Max. Vy	8	14.42	-433.65	0.34
			Max. Vx	2	-15.26	-0.10	454.47
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
L26	80.75 - 80.5	Pole	Max. Compression	26	-39.03	0.09	0.51
			Max. Mx	8	-19.76	-437.25	0.34
			Max. My	2	-19.67	-0.10	458.29
			Max. Vy	8	14.43	-437.25	0.34
			Max. Vx	2	-15.28	-0.10	458.29
			Max. Torque	24			-0.42
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.48	0.20	0.85
			Max. Mx	8	-20.66	-510.48	0.54
			Max. My	2	-20.58	-0.10	535.94
L27	80.5 - 75.5	Pole	Max. Vy	8	14.84	-510.48	0.54
			Max. Vx	2	-15.70	-0.10	535.94
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.47	0.29	0.84
			Max. Mx	8	-21.29	-565.31	0.55
			Max. My	2	-21.21	-0.09	593.97
			Max. Vy	8	15.08	-565.31	0.55
			Max. Vx	2	-15.97	-0.09	593.97
			Max. Torque	22			-0.55
L28	75.5 - 71.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.54	0.30	0.83
			Max. Mx	8	-21.34	-569.07	0.55
			Max. My	2	-21.27	-0.09	597.96
			Max. Vy	8	15.09	-569.07	0.55
			Max. Vx	2	-15.98	-0.09	597.96
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.38	0.37	0.81
			Max. Mx	8	-21.83	-610.85	0.55
L29	71.83 - 71.58	Pole	Max. My	2	-21.76	-0.08	642.18
			Max. Vy	8	15.32	-610.85	0.55
			Max. Vx	2	-16.21	-0.08	642.18
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.47	0.38	0.80
			Max. Mx	8	-21.89	-614.68	0.56
			Max. My	2	-21.82	-0.08	646.23
			Max. Vy	8	15.34	-614.68	0.56
			Max. Vx	2	-16.22	-0.08	646.23
L30	71.58 - 68.83	Pole	Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.58	0.39	0.80
			Max. Mx	8	-21.96	-619.74	0.56
			Max. My	2	-21.96	-0.08	646.23
			Max. Vy	8	15.34	-614.68	0.56
			Max. Vx	2	-16.22	-0.08	646.23
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.58	0.39	0.80
L31	68.83 - 68.58	Pole	Max. Mx	8	-21.96	-619.74	0.56
			Max. My	2	-21.96	-0.08	646.23
			Max. Vy	8	15.34	-614.68	0.56
			Max. Vx	2	-16.22	-0.08	646.23
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.58	0.39	0.80
			Max. Mx	8	-21.96	-619.74	0.56
			Max. My	2	-21.96	-0.08	646.23
			Max. Vy	8	15.34	-614.68	0.56
L32	68.58 - 64.5	Pole	Max. Vx	2	-16.22	-0.08	646.23
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.58	0.39	0.80
			Max. Mx	8	-21.96	-619.74	0.56
			Max. My	2	-21.96	-0.08	646.23
			Max. Vy	8	15.34	-614.68	0.56
			Max. Vx	2	-16.22	-0.08	646.23
			Max. Torque	22			-0.55
			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			
L33	64.5 - 63.25	Pole	Max. My	2	-21.89	-0.08	651.58			
			Max. Vy	8	15.36	-619.74	0.56			
			Max. Vx	2	-16.25	-0.08	651.58			
			Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-45.08	0.52	0.74			
			Max. Mx	8	-23.66	-697.72	0.56			
			Max. My	2	-23.60	-0.07	733.98			
			Max. Vy	8	15.84	-697.72	0.56			
			Max. Vx	2	-16.72	-0.07	733.98			
L34	63.25 - 58.25	Pole	Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-46.80	0.65	0.68			
			Max. Mx	8	-24.82	-777.84	0.57			
			Max. My	2	-24.76	-0.06	818.51			
			Max. Vy	8	16.25	-777.84	0.57			
			Max. Vx	2	-17.12	-0.06	818.51			
			Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			L35	58.25 - 53.25	Pole	Max. Compression	26	-48.54	0.79	0.62
Max. Mx	8	-26.00				-859.98	0.57			
Max. My	2	-25.94				-0.05	905.04			
Max. Vy	8	16.64				-859.98	0.57			
Max. Vx	2	-17.52				-0.05	905.04			
Max. Torque	22						-0.55			
Max Tension	1	0.00				0.00	0.00			
L36	53.25 - 48.25	Pole				Max. Compression	26	-50.32	0.93	0.55
						Max. Mx	8	-27.20	-944.09	0.57
						Max. My	2	-27.15	-0.03	993.50
			Max. Vy	8	17.03	-944.09	0.57			
			Max. Vx	2	-17.90	-0.03	993.50			
			Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			L37	48.25 - 42.5	Pole	Max. Compression	26	-50.86	0.97	0.53
						Max. Mx	8	-27.57	-969.70	0.57
						Max. My	2	-27.52	-0.02	1020.42
Max. Vy	8	17.15				-969.70	0.57			
Max. Vx	2	-18.02				-0.02	1020.42			
Max. Torque	22						-0.55			
Max Tension	1	0.00				0.00	0.00			
L38	42.5 - 41.83	Pole				Max. Compression	26	-53.83	1.11	0.47
						Max. Mx	8	-29.70	-1055.08	0.58
						Max. My	2	-29.65	-0.01	1110.07
			Max. Vy	8	17.59	-1055.08	0.58			
			Max. Vx	2	-18.45	-0.01	1110.07			
			Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			L39	41.83 - 41.58	Pole	Max. Compression	26	-53.92	1.12	0.46
						Max. Mx	8	-29.75	-1059.48	0.58
						Max. My	2	-29.71	-0.01	1114.68
Max. Vy	8	17.61				-1059.48	0.58			
Max. Vx	2	-18.47				-0.01	1114.68			
Max. Torque	22						-0.55			
Max Tension	1	0.00				0.00	0.00			
L40	41.58 - 41.17	Pole				Max. Compression	26	-54.06	1.13	0.46
						Max. Mx	8	-29.83	-1066.70	0.58
						Max. My	2	-29.79	-0.01	1122.26
			Max. Vy	8	17.64	-1066.70	0.58			
			Max. Vx	2	-18.50	-0.01	1122.26			
			Max. Torque	22			-0.55			
			Max Tension	1	0.00	0.00	0.00			
			L41	41.17 - 40.92	Pole	Max. Compression	26	-54.16	1.14	0.46
						Max. Mx	8	-29.90	-1071.11	0.58

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L42	40.92 - 35.92	Pole	Max. My	2	-29.86	-0.00	1126.88
			Max. Vy	8	17.66	-1071.11	0.58
			Max. Vx	2	-18.52	-0.00	1126.88
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.07	1.29	0.39
			Max. Mx	8	-31.23	-1160.23	0.58
			Max. My	2	-31.19	0.01	1220.31
			Max. Vy	8	18.02	-1160.23	0.58
			Max. Vx	2	-18.88	0.01	1220.31
L43	35.92 - 30.92	Pole	Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.99	1.44	0.32
			Max. Mx	8	-32.59	-1251.11	0.58
			Max. My	2	-32.56	0.03	1315.47
			Max. Vy	8	18.37	-1251.11	0.58
			Max. Vx	2	-19.22	0.03	1315.47
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			L44	30.92 - 25.92	Pole	Max. Compression	26
Max. Mx	8	-33.98				-1343.68	0.58
Max. My	2	-33.95				0.05	1412.29
Max. Vy	8	18.70				-1343.68	0.58
Max. Vx	2	-19.55				0.05	1412.29
Max. Torque	22						-0.55
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-60.21				1.61	0.24
Max. Mx	8	-34.17				-1356.21	0.58
Max. My	2	-34.15				0.06	1425.39
L45	25.92 - 20.25	Pole	Max. Vy	8	18.74	-1356.21	0.58
			Max. Vx	2	-19.59	0.06	1425.39
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.16	1.79	0.15
			Max. Mx	8	-37.12	-1470.04	0.57
			Max. My	2	-37.10	0.08	1544.29
			Max. Vy	8	19.22	-1470.04	0.57
			Max. Vx	2	-20.06	0.08	1544.29
			Max. Torque	22			-0.55
L46	20.25 - 19.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.29	1.95	0.08
			Max. Mx	8	-38.67	-1568.84	0.57
			Max. My	2	-38.66	0.11	1647.36
			Max. Vy	8	19.57	-1568.84	0.57
			Max. Vx	2	-20.40	0.11	1647.36
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.39	1.96	0.07
			Max. Mx	8	-38.75	-1573.34	0.57
L47	19.25 - 14.15	Pole	Max. My	2	-38.73	0.11	1652.05
			Max. Vy	8	19.58	-1573.34	0.57
			Max. Vx	2	-20.41	0.11	1652.05
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.50	2.12	0.00
			Max. Mx	8	-40.30	-1672.00	0.57
			Max. My	2	-40.29	0.14	1754.86
			Max. Vy	8	19.92	-1672.00	0.57
			Max. Vx	2	-20.75	0.14	1754.86
L48	14.15 - 13.92	Pole	Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.58	2.27	-0.07
			Max. Mx	8	-40.30	-1672.00	0.57
			Max. My	2	-40.29	0.14	1754.86
			Max. Vy	8	19.92	-1672.00	0.57
			Max. Vx	2	-20.75	0.14	1754.86
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.58	2.27	-0.07
L49	13.92 - 8.92	Pole	Max. My	2	-40.29	0.14	1754.86
			Max. Vy	8	19.92	-1672.00	0.57
			Max. Vx	2	-20.75	0.14	1754.86
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.58	2.27	-0.07
			Max. Mx	8	-40.30	-1672.00	0.57
			Max. My	2	-40.29	0.14	1754.86
			Max. Vy	8	19.92	-1672.00	0.57
			Max. Vx	2	-20.75	0.14	1754.86
L50	8.92 - 3.92	Pole	Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.58	2.27	-0.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L51	3.92 - 0	Pole	Max. Mx	8	-41.89	-1772.35	0.56
			Max. My	2	-41.88	0.16	1859.33
			Max. Vy	8	20.26	-1772.35	0.56
			Max. Vx	2	-21.08	0.16	1859.33
			Max. Torque	22			-0.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.17	2.37	-0.14
			Max. Mx	8	-43.15	-1852.20	0.56
			Max. My	2	-43.15	0.18	1942.39
			Max. Vy	8	20.53	-1852.20	0.56
			Max. Vx	2	-21.34	0.18	1942.39
			Max. Torque	22			-0.55

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	72.17	-0.00	5.50
	Max. H <sub>x</sub>	20	43.16	20.44	-0.00
	Max. H <sub>z</sub>	2	43.16	-0.00	21.32
	Max. M <sub>x</sub>	2	1942.39	-0.00	21.32
	Max. M <sub>z</sub>	8	1852.20	-20.51	0.00
	Max. Torsion	10	0.55	-18.50	-10.70
	Min. Vert	23	32.37	18.37	10.62
	Min. H <sub>x</sub>	8	43.16	-20.51	0.00
	Min. H <sub>z</sub>	14	43.16	0.00	-21.25
	Min. M <sub>x</sub>	14	-1935.35	0.00	-21.25
	Min. M <sub>z</sub>	20	-1846.63	20.44	-0.00
	Min. Torsion	22	-0.55	18.37	10.62

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	35.96	0.00	0.00	0.03	0.61	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	43.16	0.00	-21.32	-1942.39	0.18	0.33
0.9 Dead+1.0 Wind 0 deg - No Ice	32.37	0.00	-21.32	-1917.37	-0.01	0.33
1.2 Dead+1.0 Wind 30 deg - No Ice	43.16	10.62	-18.43	-1633.47	-939.82	0.06
0.9 Dead+1.0 Wind 30 deg - No Ice	32.37	10.62	-18.43	-1612.54	-927.98	0.06
1.2 Dead+1.0 Wind 60 deg - No Ice	43.16	18.38	-10.63	-942.11	-1625.54	-0.22
0.9 Dead+1.0 Wind 60 deg - No Ice	32.37	18.38	-10.63	-930.04	-1604.92	-0.22
1.2 Dead+1.0 Wind 90 deg - No Ice	43.16	20.51	-0.00	-0.56	-1852.20	-0.37
0.9 Dead+1.0 Wind 90 deg - No Ice	32.37	20.51	-0.00	-0.55	-1828.56	-0.37
1.2 Dead+1.0 Wind 120 deg - No Ice	43.16	18.50	10.70	946.40	-1634.04	-0.55
0.9 Dead+1.0 Wind 120 deg - No Ice	32.37	18.50	10.70	934.30	-1613.36	-0.54
1.2 Dead+1.0 Wind 150 deg - No Ice	43.16	10.68	18.53	1639.60	-942.65	-0.50
0.9 Dead+1.0 Wind 150 deg - No Ice	32.37	10.68	18.53	1618.63	-930.80	-0.50

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 180 deg - No Ice	43.16	-0.00	21.25	1935.35	1.35	-0.33
0.9 Dead+1.0 Wind 180 deg - No Ice	32.37	-0.00	21.25	1910.42	1.14	-0.33
1.2 Dead+1.0 Wind 210 deg - No Ice	43.16	-10.68	18.53	1639.94	945.06	-0.06
0.9 Dead+1.0 Wind 210 deg - No Ice	32.37	-10.68	18.53	1618.97	932.80	-0.06
1.2 Dead+1.0 Wind 240 deg - No Ice	43.16	-18.50	10.70	947.17	1635.75	0.22
0.9 Dead+1.0 Wind 240 deg - No Ice	32.37	-18.50	10.70	935.06	1614.67	0.22
1.2 Dead+1.0 Wind 270 deg - No Ice	43.16	-20.44	0.00	0.61	1846.63	0.37
0.9 Dead+1.0 Wind 270 deg - No Ice	32.37	-20.44	0.00	0.60	1822.67	0.37
1.2 Dead+1.0 Wind 300 deg - No Ice	43.16	-18.37	-10.62	-940.87	1626.08	0.55
0.9 Dead+1.0 Wind 300 deg - No Ice	32.37	-18.37	-10.62	-928.82	1605.08	0.54
1.2 Dead+1.0 Wind 330 deg - No Ice	43.16	-10.62	-18.42	-1632.65	940.20	0.50
0.9 Dead+1.0 Wind 330 deg - No Ice	32.37	-10.62	-18.42	-1611.74	927.99	0.50
1.2 Dead+1.0 Ice+1.0 Temp	72.17	0.00	0.00	0.14	2.37	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	72.17	0.00	-5.50	-555.88	2.43	0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	72.17	2.64	-4.56	-458.62	-262.01	0.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	72.17	4.56	-2.63	-264.57	-455.09	-0.05
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	72.17	5.27	-0.00	-0.09	-526.62	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	72.17	4.56	2.63	264.18	-454.56	-0.15
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	72.17	2.63	4.56	457.64	-261.28	-0.15
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	72.17	-0.00	5.49	554.45	2.65	-0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	72.17	-2.63	4.56	457.70	266.53	-0.03
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	72.17	-4.56	2.63	264.33	459.67	0.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	72.17	-5.27	0.00	0.14	531.62	0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	72.17	-4.56	-2.63	-264.33	459.98	0.15
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	72.17	-2.63	-4.56	-458.46	266.87	0.15
Dead+Wind 0 deg - Service	35.96	0.00	-5.02	-453.97	0.50	0.08
Dead+Wind 30 deg - Service	35.96	2.50	-4.34	-381.77	-219.21	0.02
Dead+Wind 60 deg - Service	35.96	4.33	-2.50	-220.18	-379.48	-0.05
Dead+Wind 90 deg - Service	35.96	4.83	-0.00	-0.12	-432.44	-0.08
Dead+Wind 120 deg - Service	35.96	4.36	2.52	221.21	-381.47	-0.13
Dead+Wind 150 deg - Service	35.96	2.51	4.36	383.24	-219.88	-0.12
Dead+Wind 180 deg - Service	35.96	-0.00	5.01	452.35	0.77	-0.08
Dead+Wind 210 deg - Service	35.96	-2.52	4.36	383.32	221.34	-0.02
Dead+Wind 240 deg - Service	35.96	-4.36	2.52	221.40	382.78	0.05
Dead+Wind 270 deg - Service	35.96	-4.81	0.00	0.16	432.04	0.08
Dead+Wind 300 deg - Service	35.96	-4.33	-2.50	-219.89	380.51	0.13
Dead+Wind 330 deg - Service	35.96	-2.50	-4.34	-381.58	220.21	0.12

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.96	0.00	0.00	35.96	0.00	0.000%
2	0.00	-43.16	-21.32	-0.00	43.16	21.32	0.000%
3	0.00	-32.37	-21.32	-0.00	32.37	21.32	0.000%
4	10.62	-43.16	-18.43	-10.62	43.16	18.43	0.000%
5	10.62	-32.37	-18.43	-10.62	32.37	18.43	0.000%
6	18.38	-43.16	-10.63	-18.38	43.16	10.63	0.000%
7	18.38	-32.37	-10.63	-18.38	32.37	10.63	0.000%
8	20.51	-43.16	-0.00	-20.51	43.16	0.00	0.000%
9	20.51	-32.37	-0.00	-20.51	32.37	0.00	0.000%
10	18.50	-43.16	10.70	-18.50	43.16	-10.70	0.000%
11	18.50	-32.37	10.70	-18.50	32.37	-10.70	0.000%
12	10.68	-43.16	18.53	-10.68	43.16	-18.53	0.000%
13	10.68	-32.37	18.53	-10.68	32.37	-18.53	0.000%
14	-0.00	-43.16	21.25	0.00	43.16	-21.25	0.000%
15	-0.00	-32.37	21.25	0.00	32.37	-21.25	0.000%
16	-10.68	-43.16	18.53	10.68	43.16	-18.53	0.000%
17	-10.68	-32.37	18.53	10.68	32.37	-18.53	0.000%
18	-18.50	-43.16	10.70	18.50	43.16	-10.70	0.000%
19	-18.50	-32.37	10.70	18.50	32.37	-10.70	0.000%
20	-20.44	-43.16	0.00	20.44	43.16	-0.00	0.000%
21	-20.44	-32.37	0.00	20.44	32.37	-0.00	0.000%
22	-18.37	-43.16	-10.62	18.37	43.16	10.62	0.000%
23	-18.37	-32.37	-10.62	18.37	32.37	10.62	0.000%
24	-10.62	-43.16	-18.42	10.62	43.16	18.42	0.000%
25	-10.62	-32.37	-18.42	10.62	32.37	18.42	0.000%
26	0.00	-72.17	0.00	0.00	72.17	0.00	0.000%
27	0.00	-72.17	-5.50	-0.00	72.17	5.50	0.000%
28	2.64	-72.17	-4.56	-2.64	72.17	4.56	0.000%
29	4.56	-72.17	-2.63	-4.56	72.17	2.63	0.000%
30	5.27	-72.17	-0.00	-5.27	72.17	0.00	0.000%
31	4.56	-72.17	2.63	-4.56	72.17	-2.63	0.000%
32	2.63	-72.17	4.56	-2.63	72.17	-4.56	0.000%
33	-0.00	-72.17	5.49	0.00	72.17	-5.49	0.000%
34	-2.63	-72.17	4.56	2.63	72.17	-4.56	0.000%
35	-4.56	-72.17	2.63	4.56	72.17	-2.63	0.000%
36	-5.27	-72.17	0.00	5.27	72.17	-0.00	0.000%
37	-4.56	-72.17	-2.63	4.56	72.17	2.63	0.000%
38	-2.63	-72.17	-4.56	2.63	72.17	4.56	0.000%
39	0.00	-35.96	-5.02	-0.00	35.96	5.02	0.000%
40	2.50	-35.96	-4.34	-2.50	35.96	4.34	0.000%
41	4.33	-35.96	-2.50	-4.33	35.96	2.50	0.000%
42	4.83	-35.96	-0.00	-4.83	35.96	0.00	0.000%
43	4.36	-35.96	2.52	-4.36	35.96	-2.52	0.000%
44	2.51	-35.96	4.36	-2.51	35.96	-4.36	0.000%
45	-0.00	-35.96	5.01	0.00	35.96	-5.01	0.000%
46	-2.52	-35.96	4.36	2.52	35.96	-4.36	0.000%
47	-4.36	-35.96	2.52	4.36	35.96	-2.52	0.000%
48	-4.81	-35.96	0.00	4.81	35.96	-0.00	0.000%
49	-4.33	-35.96	-2.50	4.33	35.96	2.50	0.000%
50	-2.50	-35.96	-4.34	2.50	35.96	4.34	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	14	0.00000001	0.00000000
2	Yes	5	0.00000001	0.00067071
3	Yes	5	0.00000001	0.00031976
4	Yes	7	0.00000001	0.00010204



5	Yes	6	0.00000001	0.00053903
6	Yes	7	0.00000001	0.00010180
7	Yes	6	0.00000001	0.00053808
8	Yes	5	0.00000001	0.00066345
9	Yes	5	0.00000001	0.00031900
10	Yes	7	0.00000001	0.00009937
11	Yes	6	0.00000001	0.00052428
12	Yes	7	0.00000001	0.00010359
13	Yes	6	0.00000001	0.00054752
14	Yes	5	0.00000001	0.00063397
15	Yes	5	0.00000001	0.00030085
16	Yes	7	0.00000001	0.00010141
17	Yes	6	0.00000001	0.00053527
18	Yes	7	0.00000001	0.00010091
19	Yes	6	0.00000001	0.00053255
20	Yes	5	0.00000001	0.00062933
21	Yes	5	0.00000001	0.00030126
22	Yes	7	0.00000001	0.00010306
23	Yes	6	0.00000001	0.00054498
24	Yes	7	0.00000001	0.00009958
25	Yes	6	0.00000001	0.00052539
26	Yes	4	0.00000001	0.00000001
27	Yes	7	0.00000001	0.00014661
28	Yes	7	0.00000001	0.00017978
29	Yes	7	0.00000001	0.00017936
30	Yes	7	0.00000001	0.00013909
31	Yes	7	0.00000001	0.00017700
32	Yes	7	0.00000001	0.00017850
33	Yes	7	0.00000001	0.00014545
34	Yes	7	0.00000001	0.00017865
35	Yes	7	0.00000001	0.00017850
36	Yes	7	0.00000001	0.00013977
37	Yes	7	0.00000001	0.00018073
38	Yes	7	0.00000001	0.00017976
39	Yes	5	0.00000001	0.00006829
40	Yes	5	0.00000001	0.00030303
41	Yes	5	0.00000001	0.00030168
42	Yes	5	0.00000001	0.00006382
43	Yes	5	0.00000001	0.00028272
44	Yes	5	0.00000001	0.00031626
45	Yes	5	0.00000001	0.00006774
46	Yes	5	0.00000001	0.00029530
47	Yes	5	0.00000001	0.00029419
48	Yes	5	0.00000001	0.00006358
49	Yes	5	0.00000001	0.00031575
50	Yes	5	0.00000001	0.00028459

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 125	15.543	39	1.053	0.002
L2	125 - 120	14.441	39	1.050	0.002
L3	120 - 114.9	13.346	39	1.039	0.002
L4	114.9 - 114.67	12.244	39	1.025	0.001
L5	114.67 - 109.67	12.194	39	1.024	0.001
L6	109.67 - 109.42	11.133	39	1.002	0.001
L7	109.42 - 109.17	11.081	39	1.001	0.001
L8	109.17 - 104.17	11.028	39	1.000	0.001
L9	104.17 - 103.92	9.998	39	0.967	0.001
L10	103.92 - 103.67	9.948	39	0.965	0.001
L11	103.67 - 98.67	9.897	39	0.963	0.001
L12	98.67 - 96.42	8.908	39	0.925	0.001
L13	96.42 - 96.17	8.476	39	0.906	0.001
L14	96.17 - 91.5	8.429	39	0.904	0.001
L15	94.5 - 89.5	8.116	39	0.887	0.001
L16	89.5 - 88.92	7.202	39	0.851	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L17	88.92 - 88.67	7.099	39	0.846	0.001
L18	88.67 - 88.25	7.055	39	0.842	0.001
L19	88.25 - 88	6.981	39	0.836	0.001
L20	88 - 87.42	6.938	39	0.834	0.001
L21	87.42 - 87.17	6.837	39	0.827	0.001
L22	87.17 - 86.92	6.794	39	0.822	0.001
L23	86.92 - 86.67	6.751	39	0.818	0.001
L24	86.67 - 81.67	6.708	39	0.815	0.001
L25	81.67 - 80.75	5.883	39	0.759	0.001
L26	80.75 - 80.5	5.738	39	0.749	0.001
L27	80.5 - 75.5	5.699	39	0.745	0.001
L28	75.5 - 71.83	4.958	39	0.670	0.000
L29	71.83 - 71.58	4.464	39	0.614	0.000
L30	71.58 - 68.83	4.432	39	0.611	0.000
L31	68.83 - 68.58	4.090	39	0.578	0.000
L32	68.58 - 64.5	4.060	39	0.575	0.000
L33	68.25 - 63.25	4.020	39	0.571	0.000
L34	63.25 - 58.25	3.436	39	0.540	0.000
L35	58.25 - 53.25	2.896	39	0.491	0.000
L36	53.25 - 48.25	2.408	39	0.441	0.000
L37	48.25 - 42.5	1.973	39	0.391	0.000
L38	46.75 - 41.83	1.852	39	0.377	0.000
L39	41.83 - 41.58	1.476	39	0.350	0.000
L40	41.58 - 41.17	1.458	39	0.346	0.000
L41	41.17 - 40.92	1.429	39	0.340	0.000
L42	40.92 - 35.92	1.411	39	0.338	0.000
L43	35.92 - 30.92	1.082	39	0.290	0.000
L44	30.92 - 25.92	0.802	39	0.244	0.000
L45	25.92 - 20.25	0.571	39	0.198	0.000
L46	25.25 - 19.25	0.543	39	0.192	0.000
L47	19.25 - 14.15	0.319	39	0.161	0.000
L48	14.15 - 13.92	0.171	39	0.117	0.000
L49	13.92 - 8.92	0.166	39	0.115	0.000
L50	8.92 - 3.92	0.067	39	0.073	0.000
L51	3.92 - 0	0.013	39	0.032	0.000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	800 10121 w/ Mount Pipe	39	15.543	1.053	0.002	39418
120.00	APXVTM14-ALU-I20 w/ Mount Pipe	39	13.346	1.039	0.002	22879
118.00	800MHZ RRR w/ Mount Pipe	39	12.912	1.034	0.001	19951
110.00	MX08FRO665-21 w/ Mount Pipe	39	11.202	1.004	0.001	11079
100.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	39	9.167	0.936	0.001	7256
80.00	GPS_A	39	5.621	0.738	0.001	4203

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 125	66.625	2	4.520	0.009
L2	125 - 120	61.902	2	4.505	0.007
L3	120 - 114.9	57.211	2	4.459	0.006
L4	114.9 - 114.67	52.483	2	4.397	0.005
L5	114.67 - 109.67	52.271	2	4.394	0.005
L6	109.67 - 109.42	47.721	2	4.300	0.005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	109.42 - 109.17	47.497	2	4.295	0.005
L8	109.17 - 104.17	47.272	2	4.289	0.005
L9	104.17 - 103.92	42.856	2	4.148	0.004
L10	103.92 - 103.67	42.639	2	4.140	0.004
L11	103.67 - 98.67	42.423	2	4.133	0.004
L12	98.67 - 96.42	38.181	2	3.972	0.004
L13	96.42 - 96.17	36.330	2	3.888	0.003
L14	96.17 - 91.5	36.127	2	3.878	0.003
L15	94.5 - 89.5	34.784	2	3.806	0.003
L16	89.5 - 88.92	30.867	2	3.653	0.003
L17	88.92 - 88.67	30.425	2	3.628	0.003
L18	88.67 - 88.25	30.236	2	3.613	0.003
L19	88.25 - 88	29.919	2	3.588	0.003
L20	88 - 87.42	29.732	2	3.576	0.003
L21	87.42 - 87.17	29.299	2	3.548	0.003
L22	87.17 - 86.92	29.114	2	3.529	0.003
L23	86.92 - 86.67	28.930	2	3.509	0.003
L24	86.67 - 81.67	28.747	2	3.498	0.003
L25	81.67 - 80.75	25.211	2	3.257	0.002
L26	80.75 - 80.5	24.588	2	3.212	0.002
L27	80.5 - 75.5	24.421	2	3.196	0.002
L28	75.5 - 71.83	21.243	2	2.875	0.002
L29	71.83 - 71.58	19.127	2	2.632	0.002
L30	71.58 - 68.83	18.990	2	2.620	0.002
L31	68.83 - 68.58	17.523	2	2.476	0.001
L32	68.58 - 64.5	17.393	2	2.465	0.001
L33	68.25 - 63.25	17.223	2	2.450	0.001
L34	63.25 - 58.25	14.718	2	2.315	0.001
L35	58.25 - 53.25	12.406	2	2.103	0.001
L36	53.25 - 48.25	10.316	2	1.890	0.001
L37	48.25 - 42.5	8.449	2	1.677	0.001
L38	46.75 - 41.83	7.932	2	1.614	0.001
L39	41.83 - 41.58	6.322	2	1.498	0.001
L40	41.58 - 41.17	6.244	2	1.483	0.001
L41	41.17 - 40.92	6.118	2	1.459	0.001
L42	40.92 - 35.92	6.042	2	1.449	0.001
L43	35.92 - 30.92	4.633	2	1.244	0.001
L44	30.92 - 25.92	3.434	2	1.045	0.000
L45	25.92 - 20.25	2.444	2	0.848	0.000
L46	25.25 - 19.25	2.326	2	0.822	0.000
L47	19.25 - 14.15	1.367	2	0.689	0.000
L48	14.15 - 13.92	0.732	2	0.500	0.000
L49	13.92 - 8.92	0.708	2	0.492	0.000
L50	8.92 - 3.92	0.289	2	0.311	0.000
L51	3.92 - 0	0.055	2	0.135	0.000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	800 10121 w/ Mount Pipe	2	66.625	4.520	0.009	9555
120.00	APXVTM14-ALU-I20 w/ Mount Pipe	2	57.211	4.459	0.006	5430
118.00	800MHZ RRH w/ Mount Pipe	2	55.349	4.437	0.006	4712
110.00	MX08FRO665-21 w/ Mount Pipe	2	48.019	4.307	0.005	2610
100.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	39.293	4.017	0.004	1705
80.00	GPS_A	2	24.088	3.164	0.002	984

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$KI/r$	A $in^2$	$P_u$ K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
L1	130 - 125 (1)	TP16x16x0.375	5.00	0.00	0.0	18.408	-2.80	695.81	0.004
L2	125 - 120 (2)	TP16x16x0.375	5.00	0.00	0.0	18.408	-3.20	695.81	0.005
L3	120 - 114.9 (3)	TP17.249x16x0.513	5.10	0.00	0.0	27.619	-7.68	1615.74	0.005
L4	114.9 - 114.67 (4)	TP17.305x17.249x0.513	0.23	0.00	0.0	27.712	-7.70	1621.18	0.005
L5	114.67 - 109.67 (5)	TP18.53x17.305x0.481	5.00	0.00	0.0	27.969	-11.29	1636.17	0.007
L6	109.67 - 109.42 (6)	TP18.591x18.53x0.481	0.25	0.00	0.0	28.064	-11.32	1641.72	0.007
L7	109.42 - 109.17 (7)	TP18.652x18.591x0.425	0.25	0.00	0.0	24.944	-11.35	1459.24	0.008
L8	109.17 - 104.17 (8)	TP19.877x18.652x0.413	5.00	0.00	0.0	25.854	-11.88	1512.44	0.008
L9	104.17 - 103.92 (9)	TP19.938x19.877x0.406	0.25	0.00	0.0	25.550	-11.91	1494.69	0.008
L10	103.92 - 103.67 (10)	TP19.999x19.938x0.45	0.25	0.00	0.0	28.327	-11.94	1657.14	0.007
L11	103.67 - 98.67 (11)	TP21.224x19.999x0.438	5.00	0.00	0.0	29.283	-16.56	1713.05	0.010
L12	98.67 - 96.42 (12)	TP21.775x21.224x0.425	2.25	0.00	0.0	29.218	-16.88	1709.22	0.010
L13	96.42 - 96.17 (13)	TP21.836x21.775x0.388	0.25	0.00	0.0	26.763	-16.91	1565.62	0.011
L14	96.17 - 91.5 (14)	TP22.98x21.836x0.381	4.67	0.00	0.0	26.841	-17.13	1570.19	0.011
L15	91.5 - 89.5 (15)	TP23.095x21.87x0.438	5.00	0.00	0.0	31.919	-18.19	1867.27	0.010
L16	89.5 - 88.92 (16)	TP23.237x23.095x0.438	0.58	0.00	0.0	32.119	-18.29	1878.98	0.010
L17	88.92 - 88.67 (17)	TP23.299x23.237x0.325	0.25	0.00	0.0	24.042	-18.33	1406.45	0.013
L18	88.67 - 88.25 (18)	TP23.401x23.299x0.325	0.42	0.00	0.0	24.149	-18.40	1412.75	0.013
L19	88.25 - 88 (19)	TP23.463x23.401x0.4	0.25	0.00	0.0	29.705	-18.44	1737.73	0.011
L20	88 - 87.42 (20)	TP23.605x23.463x0.4	0.58	0.00	0.0	29.888	-18.53	1748.44	0.011
L21	87.42 - 87.17 (21)	TP23.666x23.605x0.25	0.25	0.00	0.0	18.850	-18.56	1102.72	0.017
L22	87.17 - 86.92 (22)	TP23.727x23.666x0.25	0.25	0.00	0.0	18.899	-18.60	1105.60	0.017
L23	86.92 - 86.67 (23)	TP23.789x23.727x0.431	0.25	0.00	0.0	32.435	-18.64	1897.42	0.010
L24	86.67 - 81.67 (24)	TP25.014x23.789x0.419	5.00	0.00	0.0	33.163	-19.47	1940.03	0.010
L25	81.67 - 80.75 (25)	TP25.239x25.014x0.419	0.92	0.00	0.0	33.467	-19.63	1957.81	0.010
L26	80.75 - 80.5 (26)	TP25.3x25.239x0.319	0.25	0.00	0.0	25.640	-19.67	1499.96	0.013
L27	80.5 - 75.5 (27)	TP26.525x25.3x0.319	5.00	0.00	0.0	26.897	-20.58	1573.51	0.013
L28	75.5 - 71.83 (28)	TP27.424x26.525x0.313	3.67	0.00	0.0	27.281	-21.21	1595.95	0.013
L29	71.83 - 71.58 (29)	TP27.485x27.424x0.4	0.25	0.00	0.0	34.886	-21.27	2040.84	0.010
L30	71.58 - 68.83 (30)	TP28.159x27.485x0.4	2.75	0.00	0.0	35.754	-21.76	2091.60	0.010
L31	68.83 - 68.58 (31)	TP28.22x28.159x0.463	0.25	0.00	0.0	41.339	-21.82	2418.30	0.009
L32	68.58 - 64.5 (32)	TP29.22x28.22x0.463	4.08	0.00	0.0	41.459	-21.89	2425.35	0.009
L33	64.5 - 63.25 (33)	TP29.026x27.801x0.519	5.00	0.00	0.0	47.618	-23.60	2785.67	0.008

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> φP <sub>n</sub>
L34	63.25 - 58.25 (34)	TP30.251x29.026x0.513	5.00	0.00	0.0	49.076	-24.76	2870.97	0.009
L35	58.25 - 53.25 (35)	TP31.476x30.251x0.5	5.00	0.00	0.0	49.872	-25.94	2917.50	0.009
L36	53.25 - 48.25 (36)	TP32.701x31.476x0.488	5.00	0.00	0.0	50.568	-27.15	2958.20	0.009
L37	48.25 - 42.5 (37)	TP34.11x32.701x0.488	5.75	0.00	0.0	51.144	-27.52	2991.95	0.009
L38	42.5 - 41.83 (38)	TP33.648x32.444x0.519	4.92	0.00	0.0	55.343	-29.65	3237.60	0.009
L39	41.83 - 41.58 (39)	TP33.709x33.648x0.344	0.25	0.00	0.0	36.937	-29.71	2160.80	0.014
L40	41.58 - 41.17 (40)	TP33.81x33.709x0.344	0.41	0.00	0.0	37.048	-29.79	2167.30	0.014
L41	41.17 - 40.92 (41)	TP33.871x33.81x0.519	0.25	0.00	0.0	55.716	-29.86	3259.36	0.009
L42	40.92 - 35.92 (42)	TP35.095x33.871x0.506	5.00	0.00	0.0	56.389	-31.19	3298.74	0.009
L43	35.92 - 30.92 (43)	TP36.318x35.095x0.506	5.00	0.00	0.0	58.384	-32.56	3415.46	0.010
L44	30.92 - 25.92 (44)	TP37.542x36.318x0.494	5.00	0.00	0.0	58.908	-33.95	3446.13	0.010
L45	25.92 - 20.25 (45)	TP38.93x37.542x0.494	5.67	0.00	0.0	59.169	-34.15	3461.39	0.010
L46	20.25 - 19.25 (46)	TP38.49x37.019x0.525	6.00	0.00	0.0	64.179	-37.10	3465.69	0.011
L47	19.25 - 14.15 (47)	TP39.74x38.49x0.519	5.10	0.00	0.0	63.426	-37.11	3425.00	0.011
L48	14.15 - 13.92 (48)	TP39.797x39.74x0.519	0.23	0.00	0.0	65.515	-38.67	3537.80	0.011
L49	13.92 - 8.92 (49)	TP41.023x39.797x0.513	5.00	0.00	0.0	64.829	-38.74	3500.76	0.011
L50	8.92 - 3.92 (50)	TP42.249x41.023x0.513	5.00	0.00	0.0	66.852	-40.30	3610.01	0.011
L51	3.92 - 0 (51)	TP43.21x42.249x0.506	3.92	0.00	0.0	68.046	-41.90	3674.46	0.011

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> φM <sub>ny</sub>
L1	130 - 125 (1)	TP16x16x0.375	11.93	288.45	0.041	0.00	288.45	0.000
L2	125 - 120 (2)	TP16x16x0.375	24.71	288.45	0.086	0.00	288.45	0.000
L3	120 - 114.9 (3)	TP17.249x16x0.513	52.41	678.87	0.077	0.00	678.87	0.000
L4	114.9 - 114.67 (4)	TP17.305x17.249x0.513	53.77	683.51	0.079	0.00	683.51	0.000
L5	114.67 - 109.67 (5)	TP18.53x17.305x0.481	85.64	744.20	0.115	0.00	744.20	0.000
L6	109.67 - 109.42 (6)	TP18.591x18.53x0.481	87.92	749.33	0.117	0.00	749.33	0.000
L7	109.42 - 109.17 (7)	TP18.652x18.591x0.425	90.21	672.49	0.134	0.00	672.49	0.000
L8	109.17 - 104.17 (8)	TP19.877x18.652x0.413	137.26	745.86	0.184	0.00	745.86	0.000
L9	104.17 - 103.92 (9)	TP19.938x19.877x0.406	139.68	739.95	0.189	0.00	739.95	0.000
L10	103.92 - 103.67 (10)	TP19.999x19.938x0.45	142.10	819.32	0.173	0.00	819.32	0.000
L11	103.67 - 98.67 (11)	TP21.224x19.999x0.438	197.04	902.30	0.218	0.00	902.30	0.000
L12	98.67 - 96.42 (12)	TP21.775x21.224x0.425	227.55	925.73	0.246	0.00	925.73	0.000
L13	96.42 - 96.17 (13)	TP21.836x21.775x0.388	230.97	853.41	0.271	0.00	853.41	0.000

Section No.	Elevation	Size	$M_{ux}$	$\phi M_{nx}$	Ratio	$M_{uy}$	$\phi M_{ny}$	Ratio
	ft		kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L14	96.17 - 91.5 (14)	TP22.98x21.836x0.381	253.99	873.01	0.291	0.00	873.01	0.000
L15	91.5 - 89.5 (15)	TP23.095x21.87x0.438	324.70	1073.89	0.302	0.00	1073.89	0.000
L16	89.5 - 88.92 (16)	TP23.237x23.095x0.438	333.06	1087.53	0.306	0.00	1087.53	0.000
L17	88.92 - 88.67 (17)	TP23.299x23.237x0.325	336.68	824.32	0.408	0.00	824.32	0.000
L18	88.67 - 88.25 (18)	TP23.401x23.299x0.325	342.77	831.77	0.412	0.00	831.77	0.000
L19	88.25 - 88 (19)	TP23.463x23.401x0.4	346.41	1019.23	0.340	0.00	1019.23	0.000
L20	88 - 87.42 (20)	TP23.605x23.463x0.4	354.86	1031.93	0.344	0.00	1031.93	0.000
L21	87.42 - 87.17 (21)	TP23.666x23.605x0.25	358.52	633.63	0.566	0.00	633.63	0.000
L22	87.17 - 86.92 (22)	TP23.727x23.666x0.25	362.18	636.38	0.569	0.00	636.38	0.000
L23	86.92 - 86.67 (23)	TP23.789x23.727x0.431	365.84	1125.87	0.325	0.00	1125.87	0.000
L24	86.67 - 81.67 (24)	TP25.014x23.789x0.419	440.48	1213.85	0.363	0.00	1213.85	0.000
L25	81.67 - 80.75 (25)	TP25.239x25.014x0.419	454.47	1236.38	0.368	0.00	1236.38	0.000
L26	80.75 - 80.5 (26)	TP25.3x25.239x0.319	458.29	957.27	0.479	0.00	957.27	0.000
L27	80.5 - 75.5 (27)	TP26.525x25.3x0.319	535.94	1053.47	0.509	0.00	1053.47	0.000
L28	75.5 - 71.83 (28)	TP27.424x26.525x0.313	593.97	1088.16	0.546	0.00	1088.16	0.000
L29	71.83 - 71.58 (29)	TP27.485x27.424x0.4	597.96	1409.37	0.424	0.00	1409.37	0.000
L30	71.58 - 68.83 (30)	TP28.159x27.485x0.4	642.18	1480.88	0.434	0.00	1480.88	0.000
L31	68.83 - 68.58 (31)	TP28.22x28.159x0.463	646.23	1708.31	0.378	0.00	1708.31	0.000
L32	68.58 - 64.5 (32)	TP29.22x28.22x0.463	651.58	1718.36	0.379	0.00	1718.36	0.000
L33	64.5 - 63.25 (33)	TP29.026x27.801x0.519	733.98	2017.92	0.364	0.00	2017.92	0.000
L34	63.25 - 58.25 (34)	TP30.251x29.026x0.513	818.51	2171.58	0.377	0.00	2171.58	0.000
L35	58.25 - 53.25 (35)	TP31.476x30.251x0.5	905.03	2301.07	0.393	0.00	2301.07	0.000
L36	53.25 - 48.25 (36)	TP32.701x31.476x0.488	993.50	2428.80	0.409	0.00	2428.80	0.000
L37	48.25 - 42.5 (37)	TP34.11x32.701x0.488	1020.42	2484.95	0.411	0.00	2484.95	0.000
L38	42.5 - 41.83 (38)	TP33.648x32.444x0.519	1110.07	2732.32	0.406	0.00	2732.32	0.000
L39	41.83 - 41.58 (39)	TP33.709x33.648x0.344	1114.68	1747.50	0.638	0.00	1747.50	0.000
L40	41.58 - 41.17 (40)	TP33.81x33.709x0.344	1122.26	1756.15	0.639	0.00	1756.15	0.000
L41	41.17 - 40.92 (41)	TP33.871x33.81x0.519	1126.88	2769.47	0.407	0.00	2769.47	0.000
L42	40.92 - 35.92 (42)	TP35.095x33.871x0.506	1220.31	2909.45	0.419	0.00	2909.45	0.000
L43	35.92 - 30.92 (43)	TP36.318x35.095x0.506	1315.47	3120.52	0.422	0.00	3120.52	0.000
L44	30.92 - 25.92 (44)	TP37.542x36.318x0.494	1412.29	3259.84	0.433	0.00	3259.84	0.000
L45	25.92 - 20.25 (45)	TP38.93x37.542x0.494	1425.39	3288.96	0.433	0.00	3288.96	0.000
L46	20.25 - 19.25 (46)	TP38.49x37.019x0.525	1544.28	3357.78	0.460	0.00	3357.78	0.000
L47	19.25 - 14.15 (47)	TP39.74x38.49x0.519	1544.28	3319.45	0.465	0.00	3319.45	0.000
L48	14.15 - 13.92	TP39.797x39.74x0.519	1647.36	3543.22	0.465	0.00	3543.22	0.000

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L49	(48) 13.92 - 8.92	TP41.023x39.797x0.513	1652.05	3512.34	0.470	0.00	3512.34	0.000
L50	(49) 8.92 - 3.92	TP42.249x41.023x0.513	1754.87	3736.45	0.470	0.00	3736.45	0.000
L51	(50) 3.92 - 0 (51)	TP43.21x42.249x0.506	1859.33	3920.88	0.474	0.00	3920.88	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	130 - 125 (1)	TP16x16x0.375	2.46	208.74	0.012	0.23	286.76	0.001
L2	125 - 120 (2)	TP16x16x0.375	2.65	208.74	0.013	0.35	286.76	0.001
L3	120 - 114.9 (3)	TP17.249x16x0.513	5.90	484.72	0.012	0.35	713.61	0.000
L4	114.9 - 114.67 (4)	TP17.305x17.249x0.513	5.92	486.35	0.012	0.35	718.42	0.000
L5	114.67 - 109.67 (5)	TP18.53x17.305x0.481	9.12	490.85	0.019	0.35	779.28	0.000
L6	109.67 - 109.42 (6)	TP18.591x18.53x0.481	9.14	492.52	0.019	0.35	784.58	0.000
L7	109.42 - 109.17 (7)	TP18.652x18.591x0.425	9.17	437.77	0.021	0.35	701.89	0.000
L8	109.17 - 104.17 (8)	TP19.877x18.652x0.413	9.66	453.73	0.021	0.35	776.86	0.000
L9	104.17 - 103.92 (9)	TP19.938x19.877x0.406	9.68	448.41	0.022	0.35	770.40	0.000
L10	103.92 - 103.67 (10)	TP19.999x19.938x0.45	9.70	497.14	0.020	0.35	854.89	0.000
L11	103.67 - 98.67 (11)	TP21.224x19.999x0.438	13.45	513.92	0.026	0.33	939.67	0.000
L12	98.67 - 96.42 (12)	TP21.775x21.224x0.425	13.68	512.77	0.027	0.33	962.98	0.000
L13	96.42 - 96.17 (13)	TP21.836x21.775x0.388	13.70	469.69	0.029	0.33	886.15	0.000
L14	96.17 - 91.5 (14)	TP22.98x21.836x0.381	13.87	471.06	0.029	0.33	905.95	0.000
L15	91.5 - 89.5 (15)	TP23.095x21.87x0.438	14.41	560.18	0.026	0.32	1116.46	0.000
L16	89.5 - 88.92 (16)	TP23.237x23.095x0.438	14.46	563.69	0.026	0.32	1130.51	0.000
L17	88.92 - 88.67 (17)	TP23.299x23.237x0.325	14.49	421.93	0.034	0.32	852.65	0.000
L18	88.67 - 88.25 (18)	TP23.401x23.299x0.325	14.53	423.82	0.034	0.32	860.31	0.000
L19	88.25 - 88 (19)	TP23.463x23.401x0.4	14.56	521.32	0.028	0.32	1057.58	0.000
L20	88 - 87.42 (20)	TP23.605x23.463x0.4	14.62	524.53	0.028	0.33	1070.65	0.000
L21	87.42 - 87.17 (21)	TP23.666x23.605x0.25	14.64	330.82	0.044	0.33	681.40	0.000
L22	87.17 - 86.92 (22)	TP23.727x23.666x0.25	14.66	331.68	0.044	0.33	684.97	0.000
L23	86.92 - 86.67 (23)	TP23.789x23.727x0.431	14.69	569.23	0.026	0.33	1169.52	0.000
L24	86.67 - 81.67 (24)	TP25.014x23.789x0.419	15.19	582.01	0.026	0.33	1259.13	0.000
L25	81.67 - 80.75 (25)	TP25.239x25.014x0.419	15.26	587.34	0.026	0.33	1282.32	0.000
L26	80.75 - 80.5 (26)	TP25.3x25.239x0.319	15.28	449.99	0.034	0.33	988.82	0.000
L27	80.5 - 75.5 (27)	TP26.525x25.3x0.319	15.70	472.05	0.033	0.33	1088.17	0.000
L28	75.5 - 71.83	TP27.424x26.525x0.313	15.97	478.78	0.033	0.33	1141.82	0.000



Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L29	(28) 71.83 - 71.58	TP27.485x27.424x0.4	15.98	612.25	0.026	0.33	1458.70	0.000
L30	(29) 71.58 - 68.83	TP28.159x27.485x0.4	16.21	627.48	0.026	0.33	1532.17	0.000
L31	(30) 68.83 - 68.58	TP28.22x28.159x0.463	16.22	725.49	0.022	0.33	1771.41	0.000
L32	(31) 68.58 - 64.5	TP29.22x28.22x0.463	16.25	727.60	0.022	0.33	1781.74	0.000
L33	(32) 64.5 - 63.25	TP29.026x27.801x0.519	16.72	835.70	0.020	0.33	2095.61	0.000
L34	(33) 63.25 - 58.25	TP30.251x29.026x0.513	17.12	861.29	0.020	0.33	2253.06	0.000
L35	(34) 58.25 - 53.25	TP31.476x30.251x0.5	17.52	875.25	0.020	0.33	2384.85	0.000
L36	(35) 53.25 - 48.25	TP32.701x31.476x0.488	17.90	887.46	0.020	0.33	2514.72	0.000
L37	(36) 48.25 - 42.5	TP34.11x32.701x0.488	18.02	897.59	0.020	0.33	2572.43	0.000
L38	(37) 42.5 - 41.83	TP33.648x32.444x0.519	18.45	971.28	0.019	0.33	2830.44	0.000
L39	(38) 41.83 - 41.58	TP33.709x33.648x0.344	18.47	648.24	0.028	0.33	1902.53	0.000
L40	(39) 41.58 - 41.17	TP33.81x33.709x0.344	18.50	650.19	0.028	0.33	1913.99	0.000
L41	(40) 41.17 - 40.92	TP33.871x33.81x0.519	18.52	977.81	0.019	0.33	2868.63	0.000
L42	(41) 40.92 - 35.92	TP35.095x33.871x0.506	18.88	989.62	0.019	0.33	3010.91	0.000
L43	(42) 35.92 - 30.92	TP36.318x35.095x0.506	19.22	1024.64	0.019	0.33	3227.75	0.000
L44	(43) 30.92 - 25.92	TP37.542x36.318x0.494	19.55	1033.84	0.019	0.33	3369.17	0.000
L45	(44) 25.92 - 20.25	TP38.93x37.542x0.494	19.59	1038.42	0.019	0.33	3399.06	0.000
L46	(45) 20.25 - 19.25	TP38.49x37.019x0.525	20.06	1032.99	0.019	0.33	3472.10	0.000
L47	(46) 19.25 - 14.15	TP39.74x38.49x0.519	20.13	1027.50	0.020	0.33	3431.90	0.000
L48	(47) 14.15 - 13.92	TP39.797x39.74x0.519	20.41	1062.87	0.019	0.33	3661.68	0.000
L49	(48) 13.92 - 8.92	TP41.023x39.797x0.513	20.48	1050.23	0.020	0.33	3629.13	0.000
L50	(49) 8.92 - 3.92	TP42.249x41.023x0.513	20.81	1083.00	0.019	0.33	3859.18	0.000
L51	(50) 3.92 - 0 (51)	TP43.21x42.249x0.506	21.17	1102.34	0.019	0.33	4047.57	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L1	130 - 125 (1)	0.004	0.041	0.000	0.012	0.001	0.046	1.050	4.8.2
L2	125 - 120 (2)	0.005	0.086	0.000	0.013	0.001	0.090	1.050	4.8.2
L3	120 - 114.9 (3)	0.005	0.077	0.000	0.012	0.000	0.082	1.050	4.8.2
L4	114.9 - 114.67 (4)	0.005	0.079	0.000	0.012	0.000	0.084	1.050	4.8.2
L5	114.67 - 109.67 (5)	0.007	0.115	0.000	0.019	0.000	0.122	1.050	4.8.2
L6	109.67 - 109.42 (6)	0.007	0.117	0.000	0.019	0.000	0.125	1.050	4.8.2
L7	109.42 -	0.008	0.134	0.000	0.021	0.000	0.142	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$ $\phi P_n$	$M_{ux}$ $\phi M_{nx}$	$M_{uy}$ $\phi M_{ny}$	$V_u$ $\phi V_n$	$T_u$ $\phi T_n$			
L8	109.17 (7) 109.17 - 104.17 (8)	0.008	0.184	0.000	0.021	0.000	0.192	1.050	4.8.2
L9	104.17 - 103.92 (9)	0.008	0.189	0.000	0.022	0.000	0.197	1.050	4.8.2
L10	103.92 - 103.67 (10)	0.007	0.173	0.000	0.020	0.000	0.181	1.050	4.8.2
L11	103.67 - 98.67 (11)	0.010	0.218	0.000	0.026	0.000	0.229	1.050	4.8.2
L12	98.67 - 96.42 (12)	0.010	0.246	0.000	0.027	0.000	0.256	1.050	4.8.2
L13	96.42 - 96.17 (13)	0.011	0.271	0.000	0.029	0.000	0.282	1.050	4.8.2
L14	96.17 - 91.5 (14)	0.011	0.291	0.000	0.029	0.000	0.303	1.050	4.8.2
L15	91.5 - 89.5 (15)	0.010	0.302	0.000	0.026	0.000	0.313	1.050	4.8.2
L16	89.5 - 88.92 (16)	0.010	0.306	0.000	0.026	0.000	0.317	1.050	4.8.2
L17	88.92 - 88.67 (17)	0.013	0.408	0.000	0.034	0.000	0.423	1.050	4.8.2
L18	88.67 - 88.25 (18)	0.013	0.412	0.000	0.034	0.000	0.426	1.050	4.8.2
L19	88.25 - 88 (19)	0.011	0.340	0.000	0.028	0.000	0.351	1.050	4.8.2
L20	88 - 87.42 (20)	0.011	0.344	0.000	0.028	0.000	0.355	1.050	4.8.2
L21	87.42 - 87.17 (21)	0.017	0.566	0.000	0.044	0.000	0.585	1.050	4.8.2
L22	87.17 - 86.92 (22)	0.017	0.569	0.000	0.044	0.000	0.588	1.050	4.8.2
L23	86.92 - 86.67 (23)	0.010	0.325	0.000	0.026	0.000	0.335	1.050	4.8.2
L24	86.67 - 81.67 (24)	0.010	0.363	0.000	0.026	0.000	0.374	1.050	4.8.2
L25	81.67 - 80.75 (25)	0.010	0.368	0.000	0.026	0.000	0.378	1.050	4.8.2
L26	80.75 - 80.5 (26)	0.013	0.479	0.000	0.034	0.000	0.493	1.050	4.8.2
L27	80.5 - 75.5 (27)	0.013	0.509	0.000	0.033	0.000	0.523	1.050	4.8.2
L28	75.5 - 71.83 (28)	0.013	0.546	0.000	0.033	0.000	0.560	1.050	4.8.2
L29	71.83 - 71.58 (29)	0.010	0.424	0.000	0.026	0.000	0.435	1.050	4.8.2
L30	71.58 - 68.83 (30)	0.010	0.434	0.000	0.026	0.000	0.445	1.050	4.8.2
L31	68.83 - 68.58 (31)	0.009	0.378	0.000	0.022	0.000	0.388	1.050	4.8.2
L32	68.58 - 64.5 (32)	0.009	0.379	0.000	0.022	0.000	0.389	1.050	4.8.2
L33	64.5 - 63.25 (33)	0.008	0.364	0.000	0.020	0.000	0.373	1.050	4.8.2
L34	63.25 - 58.25 (34)	0.009	0.377	0.000	0.020	0.000	0.386	1.050	4.8.2
L35	58.25 - 53.25 (35)	0.009	0.393	0.000	0.020	0.000	0.403	1.050	4.8.2
L36	53.25 - 48.25 (36)	0.009	0.409	0.000	0.020	0.000	0.419	1.050	4.8.2
L37	48.25 - 42.5 (37)	0.009	0.411	0.000	0.020	0.000	0.420	1.050	4.8.2
L38	42.5 - 41.83 (38)	0.009	0.406	0.000	0.019	0.000	0.416	1.050	4.8.2
L39	41.83 - 41.58 (39)	0.014	0.638	0.000	0.028	0.000	0.652	1.050	4.8.2
L40	41.58 - 41.17 (40)	0.014	0.639	0.000	0.028	0.000	0.654	1.050	4.8.2
L41	41.17 - 40.92 (41)	0.009	0.407	0.000	0.019	0.000	0.416	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$	$M_{ux}$	$M_{uy}$	$V_u$	$T_u$			
L42	40.92 - 35.92 (42)	0.009	0.419	0.000	0.019	0.000	0.429	1.050	4.8.2
L43	35.92 - 30.92 (43)	0.010	0.422	0.000	0.019	0.000	0.431	1.050	4.8.2
L44	30.92 - 25.92 (44)	0.010	0.433	0.000	0.019	0.000	0.443	1.050	4.8.2
L45	25.92 - 20.25 (45)	0.010	0.433	0.000	0.019	0.000	0.444	1.050	4.8.2
L46	20.25 - 19.25 (46)	0.011	0.460	0.000	0.019	0.000	0.471	1.050	4.8.2
L47	19.25 - 14.15 (47)	0.011	0.465	0.000	0.020	0.000	0.476	1.050	4.8.2
L48	14.15 - 13.92 (48)	0.011	0.465	0.000	0.019	0.000	0.476	1.050	4.8.2
L49	13.92 - 8.92 (49)	0.011	0.470	0.000	0.020	0.000	0.482	1.050	4.8.2
L50	8.92 - 3.92 (50)	0.011	0.470	0.000	0.019	0.000	0.481	1.050	4.8.2
L51	3.92 - 0 (51)	0.011	0.474	0.000	0.019	0.000	0.486	1.050	4.8.2

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	130 - 125	Pole	TP16x16x0.375	1	-2.80	730.60	4.3	Pass
L2	125 - 120	Pole	TP16x16x0.375	2	-3.20	730.60	8.6	Pass
L3	120 - 114.9	Pole	TP17.249x16x0.513	3	-7.68	1696.53	7.8	Pass
L4	114.9 - 114.67	Pole	TP17.305x17.249x0.513	4	-7.70	1702.24	8.0	Pass
L5	114.67 - 109.67	Pole	TP18.53x17.305x0.481	5	-11.29	1717.98	11.7	Pass
L6	109.67 - 109.42	Pole	TP18.591x18.53x0.481	6	-11.32	1723.81	11.9	Pass
L7	109.42 - 109.17	Pole	TP18.652x18.591x0.425	7	-11.35	1532.20	13.6	Pass
L8	109.17 - 104.17	Pole	TP19.877x18.652x0.413	8	-11.88	1588.06	18.3	Pass
L9	104.17 - 103.92	Pole	TP19.938x19.877x0.406	9	-11.91	1569.42	18.8	Pass
L10	103.92 - 103.67	Pole	TP19.999x19.938x0.45	10	-11.94	1740.00	17.2	Pass
L11	103.67 - 98.67	Pole	TP21.224x19.999x0.438	11	-16.56	1798.70	21.8	Pass
L12	98.67 - 96.42	Pole	TP21.775x21.224x0.425	12	-16.88	1794.68	24.4	Pass
L13	96.42 - 96.17	Pole	TP21.836x21.775x0.388	13	-16.91	1643.90	26.9	Pass
L14	96.17 - 91.5	Pole	TP22.98x21.836x0.381	14	-17.13	1648.70	28.8	Pass
L15	91.5 - 89.5	Pole	TP23.095x21.87x0.438	15	-18.19	1960.63	29.8	Pass
L16	89.5 - 88.92	Pole	TP23.237x23.095x0.438	16	-18.29	1972.93	30.2	Pass
L17	88.92 - 88.67	Pole	TP23.299x23.237x0.325	17	-18.33	1476.77	40.3	Pass
L18	88.67 - 88.25	Pole	TP23.401x23.299x0.325	18	-18.40	1483.39	40.6	Pass
L19	88.25 - 88	Pole	TP23.463x23.401x0.4	19	-18.44	1824.62	33.5	Pass
L20	88 - 87.42	Pole	TP23.605x23.463x0.4	20	-18.53	1835.86	33.8	Pass
L21	87.42 - 87.17	Pole	TP23.666x23.605x0.25	21	-18.56	1157.86	55.7	Pass
L22	87.17 - 86.92	Pole	TP23.727x23.666x0.25	22	-18.60	1160.88	56.0	Pass
L23	86.92 - 86.67	Pole	TP23.789x23.727x0.431	23	-18.64	1992.29	31.9	Pass
L24	86.67 - 81.67	Pole	TP25.014x23.789x0.419	24	-19.47	2037.03	35.6	Pass
L25	81.67 - 80.75	Pole	TP25.239x25.014x0.419	25	-19.63	2055.70	36.0	Pass
L26	80.75 - 80.5	Pole	TP25.3x25.239x0.319	26	-19.67	1574.96	47.0	Pass
L27	80.5 - 75.5	Pole	TP26.525x25.3x0.319	27	-20.58	1652.19	49.8	Pass
L28	75.5 - 71.83	Pole	TP27.424x26.525x0.313	28	-21.21	1675.75	53.4	Pass
L29	71.83 - 71.58	Pole	TP27.485x27.424x0.4	29	-21.27	2142.88	41.5	Pass
L30	71.58 - 68.83	Pole	TP28.159x27.485x0.4	30	-21.76	2196.18	42.4	Pass
L31	68.83 - 68.58	Pole	TP28.22x28.159x0.463	31	-21.82	2539.21	36.9	Pass
L32	68.58 - 64.5	Pole	TP29.22x28.22x0.463	32	-21.89	2546.62	37.0	Pass
L33	64.5 - 63.25	Pole	TP29.026x27.801x0.519	33	-23.60	2924.95	35.5	Pass
L34	63.25 - 58.25	Pole	TP30.251x29.026x0.513	34	-24.76	3014.52	36.8	Pass
L35	58.25 - 53.25	Pole	TP31.476x30.251x0.5	35	-25.94	3063.37	38.3	Pass
L36	53.25 - 48.25	Pole	TP32.701x31.476x0.488	36	-27.15	3106.11	39.9	Pass
L37	48.25 - 42.5	Pole	TP34.11x32.701x0.488	37	-27.52	3141.55	40.0	Pass
L38	42.5 - 41.83	Pole	TP33.648x32.444x0.519	38	-29.65	3399.48	39.6	Pass

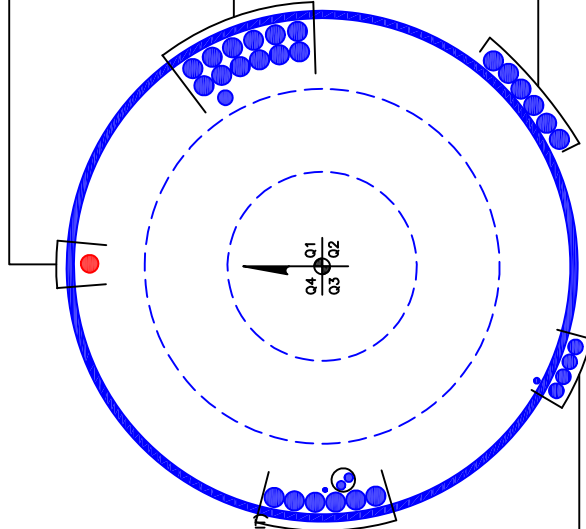
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L39	41.83 - 41.58	Pole	TP33.709x33.648x0.344	39	-29.71	2268.84	62.1	Pass	
L40	41.58 - 41.17	Pole	TP33.81x33.709x0.344	40	-29.79	2275.66	62.2	Pass	
L41	41.17 - 40.92	Pole	TP33.871x33.81x0.519	41	-29.86	3422.33	39.7	Pass	
L42	40.92 - 35.92	Pole	TP35.095x33.871x0.506	42	-31.19	3463.68	40.9	Pass	
L43	35.92 - 30.92	Pole	TP36.318x35.095x0.506	43	-32.56	3586.23	41.1	Pass	
L44	30.92 - 25.92	Pole	TP37.542x36.318x0.494	44	-33.95	3618.44	42.2	Pass	
L45	25.92 - 20.25	Pole	TP38.93x37.542x0.494	45	-34.15	3634.46	42.2	Pass	
L46	20.25 - 19.25	Pole	TP38.49x37.019x0.525	46	-37.10	3638.97	44.9	Pass	
L47	19.25 - 14.15	Pole	TP39.74x38.49x0.519	47	-37.11	3596.25	45.4	Pass	
L48	14.15 - 13.92	Pole	TP39.797x39.74x0.519	48	-38.67	3714.69	45.4	Pass	
L49	13.92 - 8.92	Pole	TP41.023x39.797x0.513	49	-38.74	3675.80	45.9	Pass	
L50	8.92 - 3.92	Pole	TP42.249x41.023x0.513	50	-40.30	3790.51	45.8	Pass	
L51	3.92 - 0	Pole	TP43.21x42.249x0.506	51	-41.90	3858.18	46.3	Pass	
							Summary		
							Pole (L40)	62.2	Pass
							<b>RATING =</b>	<b>62.2</b>	<b>Pass</b>

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

**APPENDIX B**  
**BASE LEVEL DRAWING**



(PROPOSED EQUIPMENT CONFIGURATION)  
(1) 1-1/2" TO 110 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)  
(1) 1-1/4" TO 100 FT LEVEL  
(12) 1-5/8" TO 100 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(6) 1-5/8" TO 90 FT LEVEL

(OTHER CONSIDERED EQUIPMENT—IN 2" CONDUIT)  
(2) 3/4" TO 130 FT LEVEL  
(OTHER CONSIDERED EQUIPMENT)  
(1) 3/8" TO 130 FT LEVEL  
(6) 1-5/8" TO 130 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(1) 1/2" TO 80 FT LEVEL  
(4) 1-1/4" TO 120 FT LEVEL

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**



Site BU: 876314  
Work Order: 1966186



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**Pole Geometry**

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	130	10	0	0	16	16	0.375		A500-42
2	120	28.5	3	12	16.00	22.98	0.1875	Auto	A607-65
3	94.5	30	3.75	12	21.87	29.22	0.25	Auto	A607-65
4	68.25	25.75	4.25	12	27.80	34.11	0.3125	Auto	A607-65
5	46.75	26.5	5	12	32.44	38.93	0.3438	Auto	A607-65
6	25.25	25.25	0	12	37.02	43.21	0.375	Auto	A607-60

**Reinforcement Configuration**

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	14.17	channel	MP3-04 (1.25in)	4												
2	14.17	41.17	channel	MP3-04 (1.25in)	4												
3	41.83	68.83	channel	MP3-04 (1.25in)	4												
4	68.83	86.92	channel	MP3-03 (1.25in)	3												
5	68.83	71.83	channel	MP3-03 (1.25in)	1												
6	80.75	88.25	channel	MP3-03 (1.25in)	1												
7	87.42	114.92	channel	MP3-03 (1.25in)	3												
8	88.92	96.42	channel	MP3-03 (1.25in)	1												
9	96.42	103.92	channel	MP3-03 (1.25in)	2												
10	103.92	109.42	channel	MP3-03 (1.25in)	1												
11	109.42	114.92	channel	MP3-03 (1.25in)	2												
12																	

**Reinforcement Details**

	B (in)	H (in)	Gross Area (in <sup>2</sup> )	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in <sup>2</sup> )	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.566	1.2500	A572-65
2	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.566	1.2500	A572-65
3	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.566	1.2500	A572-65
4	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
5	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
6	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
7	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
8	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
9	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
10	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
11	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65

# 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	130 - 125	5		0	16.000	16.000	0.375	A500-42	1.000
2	125 - 120	5	0	0	16.000	16.000	0.375	A500-42	1.000
3	120 - 114.9	5.1		12	16.000	17.249	0.5125	A607-65	0.902
4	114.9 - 114.67	0.23		12	17.249	17.305	0.5125	A607-65	0.901
5	114.67 - 109.67	5		12	17.305	18.530	0.48125	A607-65	0.919
6	109.67 - 109.42	0.25		12	18.530	18.591	0.48125	A607-65	0.917
7	109.42 - 109.17	0.25		12	18.591	18.652	0.425	A607-65	0.916
8	109.17 - 104.17	5		12	18.652	19.877	0.4125	A607-65	0.912
9	104.17 - 103.92	0.25		12	19.877	19.938	0.40625	A607-65	0.925
10	103.92 - 103.67	0.25		12	19.938	19.999	0.45	A607-65	0.938
11	103.67 - 98.67	5		12	19.999	21.224	0.4375	A607-65	0.933
12	98.67 - 96.42	2.25		12	21.224	21.775	0.425	A607-65	0.947
13	96.42 - 96.17	0.25		12	21.775	21.836	0.3875	A607-65	0.925
14	96.17 - 94.5	4.67	3	12	21.836	22.980	0.38125	A607-65	0.932
15	94.5 - 89.5	5		12	21.870	23.095	0.4375	A607-65	0.943
16	89.5 - 88.92	0.58		12	23.095	23.237	0.4375	A607-65	0.940
17	88.92 - 88.67	0.25		12	23.237	23.299	0.325	A607-65	1.137
18	88.67 - 88.25	0.42		12	23.299	23.401	0.325	A607-65	1.135
19	88.25 - 88	0.25		12	23.401	23.463	0.4	A607-65	1.023
20	88 - 87.42	0.58		12	23.463	23.605	0.4	A607-65	1.020
21	87.42 - 87.17	0.25		12	23.605	23.666	0.25	A607-65	1.000
22	87.17 - 86.92	0.25		12	23.666	23.727	0.25	A607-65	1.000
23	86.92 - 86.67	0.25		12	23.727	23.789	0.43125	A607-65	0.945
24	86.67 - 81.67	5		12	23.789	25.014	0.41875	A607-65	0.954
25	81.67 - 80.75	0.92		12	25.014	25.239	0.41875	A607-65	0.951
26	80.75 - 80.5	0.25		12	25.239	25.300	0.31875	A607-65	1.129
27	80.5 - 75.5	5		12	25.300	26.525	0.31875	A607-65	1.113
28	75.5 - 71.83	3.67		12	26.525	27.424	0.3125	A607-65	1.123
29	71.83 - 71.58	0.25		12	27.424	27.485	0.4	A607-65	0.964
30	71.58 - 68.83	2.75		12	27.485	28.159	0.4	A607-65	0.956
31	68.83 - 68.58	0.25		12	28.159	28.220	0.4625	A607-65	0.945
32	68.58 - 68.25	4.08	3.75	12	28.220	29.220	0.4625	A607-65	0.944
33	68.25 - 63.25	5		12	27.801	29.026	0.51875	A607-65	0.954
34	63.25 - 58.25	5		12	29.026	30.251	0.5125	A607-65	0.951
35	58.25 - 53.25	5		12	30.251	31.476	0.5	A607-65	0.961
36	53.25 - 48.25	5		12	31.476	32.701	0.4875	A607-65	0.972
37	48.25 - 46.75	5.75	4.25	12	32.701	34.110	0.4875	A607-65	0.968
38	46.75 - 41.83	4.92		12	32.444	33.648	0.5188	A607-65	0.965
39	41.83 - 41.58	0.25		12	33.648	33.709	0.3438	A607-65	1.000
40	41.58 - 41.17	0.41		12	33.709	33.810	0.3438	A607-65	1.000
41	41.17 - 40.92	0.25		12	33.810	33.871	0.5188	A607-65	0.963
42	40.92 - 35.92	5		12	33.871	35.095	0.5063	A607-65	0.976
43	35.92 - 30.92	5		12	35.095	36.318	0.5063	A607-65	0.965
44	30.92 - 25.92	5		12	36.318	37.542	0.4938	A607-65	0.980
45	25.92 - 25.25	5.67	5	12	37.542	38.930	0.4938	A607-65	0.979
46	25.25 - 19.25	6		12	37.019	38.490	0.525	A607-60	0.975
47	19.25 - 14.15	5.1		12	38.490	39.740	0.51875	A607-60	0.978
48	14.15 - 13.92	0.23		12	39.740	39.797	0.51875	A607-60	0.978
49	13.92 - 8.92	5		12	39.797	41.023	0.5125	A607-60	0.982
50	8.92 - 3.92	5		12	41.023	42.249	0.5125	A607-60	0.974
51	3.92 - 0	3.92		12	42.249	43.210	0.50625	A607-60	0.981

## TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)
1	130 - 125		2.80	11.93	2.46
2	125 - 120		3.20	24.71	2.65
3	120 - 114.9		7.68	52.41	5.90
4	114.9 - 114.67		7.70	53.77	5.92
5	114.67 - 109.67		11.29	85.64	9.12
6	109.67 - 109.42		11.32	87.92	9.14
7	109.42 - 109.17		11.35	90.21	9.17
8	109.17 - 104.17		11.88	137.26	9.66
9	104.17 - 103.92		11.91	139.68	9.68
10	103.92 - 103.67		11.94	142.10	9.70
11	103.67 - 98.67		16.56	197.04	13.45
12	98.67 - 96.42		16.88	227.55	13.68
13	96.42 - 96.17		16.91	230.97	13.70
14	96.17 - 94.5		17.13	253.99	13.87
15	94.5 - 89.5		18.19	324.70	14.41
16	89.5 - 88.92		18.29	333.06	14.46
17	88.92 - 88.67		18.33	336.68	14.49
18	88.67 - 88.25		18.40	342.77	14.53
19	88.25 - 88		18.44	346.41	14.56
20	88 - 87.42		18.53	354.86	14.62
21	87.42 - 87.17		18.56	358.52	14.64
22	87.17 - 86.92		18.60	362.18	14.66
23	86.92 - 86.67		18.64	365.84	14.69
24	86.67 - 81.67		19.47	440.48	15.19
25	81.67 - 80.75		19.63	454.47	15.26
26	80.75 - 80.5		19.67	458.29	15.28
27	80.5 - 75.5		20.58	535.94	15.70
28	75.5 - 71.83		21.21	593.97	15.97
29	71.83 - 71.58		21.27	597.96	15.98
30	71.58 - 68.83		21.76	642.18	16.21
31	68.83 - 68.58		21.82	646.23	16.22
32	68.58 - 68.25		21.89	651.58	16.25
33	68.25 - 63.25		23.60	733.98	16.72
34	63.25 - 58.25		24.76	818.51	17.12
35	58.25 - 53.25		25.94	905.04	17.52
36	53.25 - 48.25		27.15	993.50	17.90
37	48.25 - 46.75		27.52	1020.42	18.02
38	46.75 - 41.83		29.65	1110.07	18.45
39	41.83 - 41.58		29.71	1114.68	18.47
40	41.58 - 41.17		29.79	1122.26	18.50
41	41.17 - 40.92		29.86	1126.88	18.52
42	40.92 - 35.92		31.19	1220.31	18.88
43	35.92 - 30.92		32.56	1315.47	19.22
44	30.92 - 25.92		33.95	1412.29	19.55
45	25.92 - 25.25		34.15	1425.39	19.59
46	25.25 - 19.25		37.10	1544.29	20.06
47	19.25 - 14.15		38.66	1647.36	20.40
48	14.15 - 13.92		38.73	1652.05	20.41
49	13.92 - 8.92		40.29	1754.86	20.75
50	8.92 - 3.92		41.88	1859.33	21.08
51	3.92 - 0		43.15	1942.39	21.34

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
130 - 125	Pole	TP16x16x0.375	Pole	4.3%	Pass
125 - 120	Pole	TP16x16x0.375	Pole	8.6%	Pass
120 - 114.9	Pole + Reinf.	TP17.249x16x0.5125	Reinf. 7 Tension Rupture	12.8%	Pass
114.9 - 114.67	Pole + Reinf.	TP17.305x17.249x0.5125	Reinf. 7 Tension Rupture	13.1%	Pass
114.67 - 109.67	Pole + Reinf.	TP18.53x17.305x0.4813	Reinf. 7 Tension Rupture	18.9%	Pass
109.67 - 109.42	Pole + Reinf.	TP18.591x18.53x0.4813	Reinf. 7 Tension Rupture	19.3%	Pass
109.42 - 109.17	Pole + Reinf.	TP18.652x18.591x0.425	Reinf. 7 Tension Rupture	20.4%	Pass
109.17 - 104.17	Pole + Reinf.	TP19.877x18.652x0.4125	Reinf. 7 Tension Rupture	27.9%	Pass
104.17 - 103.92	Pole + Reinf.	TP19.938x19.877x0.4063	Reinf. 7 Tension Rupture	28.3%	Pass
103.92 - 103.67	Pole + Reinf.	TP19.999x19.938x0.45	Reinf. 7 Tension Rupture	27.6%	Pass
103.67 - 98.67	Pole + Reinf.	TP21.224x19.999x0.4375	Reinf. 7 Tension Rupture	35.2%	Pass
98.67 - 96.42	Pole + Reinf.	TP21.775x21.224x0.425	Reinf. 7 Tension Rupture	39.0%	Pass
96.42 - 96.17	Pole + Reinf.	TP21.836x21.775x0.3875	Reinf. 7 Tension Rupture	40.7%	Pass
96.17 - 94.5	Pole + Reinf.	TP22.98x21.836x0.3813	Reinf. 7 Tension Rupture	43.4%	Pass
94.5 - 89.5	Pole + Reinf.	TP23.095x21.87x0.4375	Reinf. 7 Tension Rupture	44.7%	Pass
89.5 - 88.92	Pole + Reinf.	TP23.237x23.095x0.4375	Reinf. 7 Tension Rupture	45.4%	Pass
88.92 - 88.67	Pole + Reinf.	TP23.299x23.237x0.325	Reinf. 7 Tension Rupture	52.7%	Pass
88.67 - 88.25	Pole + Reinf.	TP23.401x23.299x0.325	Reinf. 7 Tension Rupture	53.3%	Pass
88.25 - 88	Pole + Reinf.	TP23.463x23.401x0.4	Reinf. 7 Tension Rupture	48.7%	Pass
88 - 87.42	Pole + Reinf.	TP23.605x23.463x0.4	Reinf. 7 Tension Rupture	49.4%	Pass
87.42 - 87.17	Pole	TP23.666x23.605x0.25	Pole	55.5%	Pass
87.17 - 86.92	Pole	TP23.727x23.666x0.25	Pole	55.8%	Pass
86.92 - 86.67	Pole + Reinf.	TP23.789x23.727x0.4313	Reinf. 4 Tension Rupture	48.0%	Pass
86.67 - 81.67	Pole + Reinf.	TP25.014x23.789x0.4188	Reinf. 4 Tension Rupture	53.1%	Pass
81.67 - 80.75	Pole + Reinf.	TP25.239x25.014x0.4188	Reinf. 4 Tension Rupture	54.0%	Pass
80.75 - 80.5	Pole + Reinf.	TP25.3x25.239x0.3188	Reinf. 4 Tension Rupture	61.9%	Pass
80.5 - 75.5	Pole + Reinf.	TP26.525x25.3x0.3188	Reinf. 4 Tension Rupture	66.5%	Pass
75.5 - 71.83	Pole + Reinf.	TP27.424x26.525x0.3125	Reinf. 4 Tension Rupture	69.5%	Pass
71.83 - 71.58	Pole + Reinf.	TP27.485x27.424x0.4	Reinf. 4 Tension Rupture	61.6%	Pass
71.58 - 68.83	Pole + Reinf.	TP28.159x27.485x0.4	Reinf. 4 Tension Rupture	63.5%	Pass
68.83 - 68.58	Pole + Reinf.	TP28.22x28.159x0.4625	Reinf. 3 Tension Rupture	55.0%	Pass
68.58 - 68.25	Pole + Reinf.	TP29.22x28.22x0.4625	Reinf. 3 Tension Rupture	55.2%	Pass
68.25 - 63.25	Pole + Reinf.	TP29.026x27.801x0.5188	Reinf. 3 Tension Rupture	52.6%	Pass
63.25 - 58.25	Pole + Reinf.	TP30.251x29.026x0.5125	Reinf. 3 Tension Rupture	54.7%	Pass
58.25 - 53.25	Pole + Reinf.	TP31.476x30.251x0.5	Reinf. 3 Tension Rupture	56.6%	Pass
53.25 - 48.25	Pole + Reinf.	TP32.701x31.476x0.4875	Reinf. 3 Tension Rupture	58.3%	Pass
48.25 - 46.75	Pole + Reinf.	TP34.11x32.701x0.4875	Reinf. 3 Tension Rupture	58.8%	Pass
46.75 - 41.83	Pole + Reinf.	TP33.648x32.444x0.5188	Reinf. 3 Tension Rupture	58.4%	Pass
41.83 - 41.58	Pole	TP33.709x33.648x0.3438	Pole	62.0%	Pass
41.58 - 41.17	Pole	TP33.81x33.709x0.3438	Pole	62.1%	Pass
41.17 - 40.92	Pole + Reinf.	TP33.871x33.81x0.5188	Reinf. 2 Tension Rupture	58.6%	Pass
40.92 - 35.92	Pole + Reinf.	TP35.095x33.871x0.5063	Reinf. 2 Tension Rupture	59.8%	Pass
35.92 - 30.92	Pole + Reinf.	TP36.318x35.095x0.5063	Reinf. 2 Tension Rupture	60.7%	Pass
30.92 - 25.92	Pole + Reinf.	TP37.542x36.318x0.4938	Reinf. 2 Tension Rupture	61.6%	Pass
25.92 - 25.25	Pole + Reinf.	TP38.93x37.542x0.4938	Reinf. 2 Tension Rupture	61.7%	Pass
25.25 - 19.25	Pole + Reinf.	TP38.49x37.019x0.525	Reinf. 2 Tension Rupture	60.8%	Pass
19.25 - 14.15	Pole + Reinf.	TP39.74x38.49x0.5188	Reinf. 1 Tension Rupture	61.3%	Pass
14.15 - 13.92	Pole + Reinf.	TP39.797x39.74x0.5188	Reinf. 1 Tension Rupture	61.3%	Pass
13.92 - 8.92	Pole + Reinf.	TP41.023x39.797x0.5125	Reinf. 1 Tension Rupture	61.7%	Pass
8.92 - 3.92	Pole + Reinf.	TP42.249x41.023x0.5125	Reinf. 1 Tension Rupture	62.1%	Pass
3.92 - 0	Pole + Reinf.	TP43.21x42.249x0.5063	Reinf. 1 Tension Rupture	62.3%	Pass
				Summary	
			Pole	62.1%	Pass
			Reinforcement	69.5%	Pass
			Overall	69.5%	Pass

# Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
130 - 125	562	n/a	562	18.41	n/a	18.41	4.3%											
125 - 120	562	n/a	562	18.41	n/a	18.41	8.6%											
120 - 114.9	390	602	992	10.29	14.60	24.89	8.5%							12.8%				11.0%
114.9 - 114.67	394	606	1000	10.32	14.60	24.92	8.7%							13.1%				11.2%
114.67 - 109.67	484	689	1172	11.06	14.60	25.66	12.9%							18.9%				16.2%
109.67 - 109.42	489	693	1182	11.10	14.60	25.70	13.2%							19.3%				16.6%
109.42 - 109.17	486	578	1064	11.13	11.68	22.81	13.9%							20.4%			20.4%	
109.17 - 104.17	589	651	1240	11.87	11.68	23.55	19.5%							27.9%			27.9%	
104.17 - 103.92	595	655	1249	11.91	11.68	23.59	19.8%							28.3%			28.3%	
103.92 - 103.67	609	795	1404	11.94	14.60	26.54	19.4%							27.6%		23.8%		
103.67 - 98.67	728	890	1618	12.68	14.60	27.28	25.4%							35.2%		30.5%		
98.67 - 96.42	787	934	1721	13.01	14.60	27.61	28.5%							39.0%		33.8%		
96.42 - 96.17	783	777	1560	13.05	11.68	24.73	29.7%							40.7%	40.7%			
96.17 - 94.5	828	805	1633	13.30	11.68	24.98	32.0%							43.4%	43.4%			
94.5 - 89.5	1227	864	2091	18.36	11.68	30.04	29.9%							44.7%	44.7%			
89.5 - 88.92	1250	874	2124	18.48	11.68	30.16	30.4%							45.4%	45.4%			
88.92 - 88.67	1292	362	1654	18.53	8.76	27.29	43.6%							52.7%				
88.67 - 88.25	1309	365	1674	18.61	8.76	27.37	44.1%							53.3%				
88.25 - 88	1288	746	2034	18.66	11.68	30.34	34.5%						44.9%	48.7%				
88 - 87.42	1312	755	2066	18.77	11.68	30.45	35.1%						45.6%	49.4%				
87.42 - 87.17	1321	n/a	1321	18.82	n/a	18.82	55.5%											
87.17 - 86.92	1331	n/a	1331	18.87	n/a	18.87	55.8%											
86.92 - 86.67	1342	914	2256	18.92	11.68	30.60	32.4%				48.0%		48.0%					
86.67 - 81.67	1562	1005	2568	19.91	11.68	31.59	36.5%				53.1%		53.1%					
81.67 - 80.75	1605	1023	2628	20.09	11.68	31.77	37.3%				54.0%		54.0%					
80.75 - 80.5	1653	427	2081	20.14	8.76	28.90	52.3%				61.9%							
80.5 - 75.5	1905	470	2375	21.12	8.76	29.88	56.9%				66.5%							
75.5 - 71.83	2105	503	2608	21.84	8.76	30.60	60.1%				69.5%							
71.83 - 71.58	2079	1203	3282	21.89	11.68	33.57	44.1%				61.6%	61.6%						
71.58 - 68.83	2237	1260	3497	22.43	11.68	34.11	46.0%				63.5%	63.5%						
68.83 - 68.58	2251	1799	4050	22.48	16.52	39.00	40.0%			55.0%								
68.58 - 68.25	2271	1809	4080	22.55	16.52	39.07	40.3%			55.2%								
68.25 - 63.25	3045	1898	4943	28.85	16.52	45.37	35.5%			52.6%								
63.25 - 58.25	3451	2054	5505	30.08	16.52	46.60	37.6%			54.7%								
58.25 - 53.25	3893	2216	6109	31.31	16.52	47.83	39.5%			56.6%								
53.25 - 48.25	4370	2385	6755	32.54	16.52	49.06	41.4%			58.3%								
48.25 - 46.75	4520	2437	6957	32.91	16.52	49.43	41.9%			58.8%								
46.75 - 41.83	5227	2519	7746	36.82	16.52	53.34	40.4%			58.4%								
41.83 - 41.58	5256	n/a	5256	36.88	n/a	36.88	62.0%											
41.58 - 41.17	5303	n/a	5303	36.99	n/a	36.99	62.1%											
41.17 - 40.92	5332	2552	7884	37.06	16.52	53.58	40.7%		58.6%									
40.92 - 35.92	5938	2732	8670	38.42	16.52	54.94	42.1%		59.8%									
35.92 - 30.92	6587	2919	9506	39.77	16.52	56.29	43.4%		60.7%									
30.92 - 25.92	7283	3112	10395	41.12	16.52	57.64	44.6%		61.6%									
25.92 - 25.25	7380	3138	10518	41.30	16.52	57.82	44.8%		61.7%									
25.25 - 19.25	8546	3265	11811	45.96	16.52	62.48	45.9%		60.8%									
19.25 - 14.15	9415	3473	12888	47.47	16.52	63.99	46.9%	61.3%										
14.15 - 13.92	9455	3483	12938	47.53	16.52	64.05	46.9%	61.3%										
13.92 - 8.92	10365	3694	14059	49.01	16.52	65.53	47.8%	61.7%										
8.92 - 3.92	11331	3911	15242	50.49	16.52	67.01	48.7%	62.1%										
3.92 - 0	12130	4085	16215	51.65	16.52	68.17	49.4%	62.3%										

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

# Monopole Flange Plate Connection

Elevation = 120 ft.

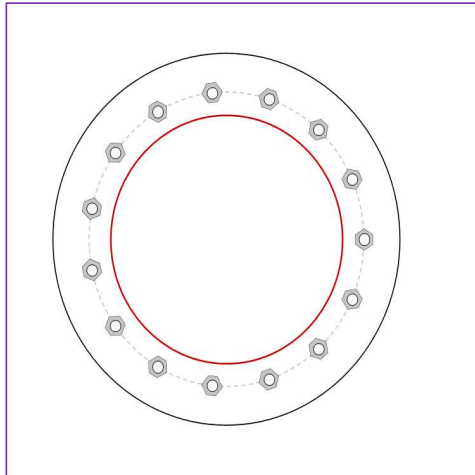


BU #	876314
Site Name	Horse Hill
Order #	553363 rev. 1
TIA-222 Revision	
	H

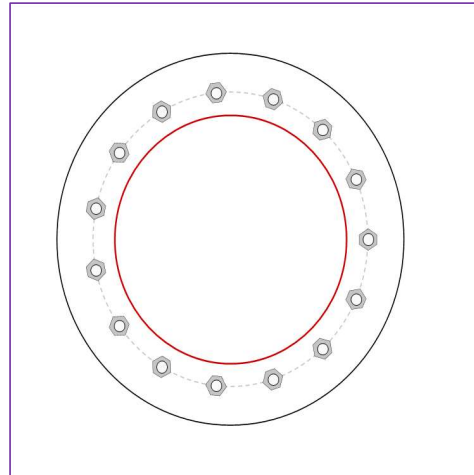
Applied Loads	
Moment (kip-ft)	24.71
Axial Force (kips)	3.20
Shear Force (kips)	2.65

\*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



### Connection Properties

#### Bolt Data

(15) 3/4"  $\phi$  bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19" BC

#### Top Plate Data

24" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

#### Top Stiffener Data

N/A

#### Top Pole Data

16" x 0.375" round pole (A500-42; Fy=42 ksi, Fu=58 ksi)

#### Bottom Plate Data

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

#### Bottom Stiffener Data

N/A

#### Bottom Pole Data

16" x 0.1875" round pole (A607-65; Fy=65 ksi, Fu=80 ksi)

### Analysis Results

#### Bolt Capacity

Max Load (kips)	3.95
Allowable (kips)	30.06
Stress Rating:	<b>12.5%</b> Pass

#### Top Plate Capacity

Max Stress (ksi):	2.08	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>6.1%</b>	Pass
Tension Side Stress Rating:	<b>2.4%</b>	Pass

#### Bottom Plate Capacity

Max Stress (ksi):	8.33	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>24.5%</b>	Pass
Tension Side Stress Rating:	<b>9.8%</b>	Pass

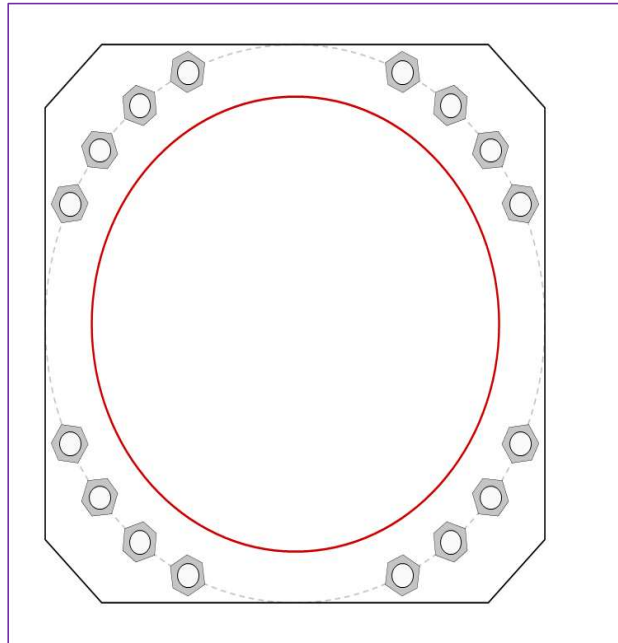
# Monopole Base Plate Connection

Site Info	
BU #	876314
Site Name	Horse Hill
Order #	553363 rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{ar}$ (in)	1.625

Applied Loads	
Moment (kip-ft)	1942.39
Axial Force (kips)	43.15
Shear Force (kips)	21.34

\*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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**Anchor Rod Data**

(16) 2-1/4"  $\phi$  bolts (A615-75 N;  $F_y=75$  ksi,  $F_u=100$  ksi) on 53" BC  
Anchor Spacing: 6 in

**Base Plate Data**

53" W x 3" Plate (A572-50;  $F_y=50$  ksi,  $F_u=65$  ksi); Clip: 6 in

**Stiffener Data**

N/A

**Pole Data**

43.21" x 0.375" 12-sided pole (A607-60;  $F_y=60$  ksi,  $F_u=75$  ksi)

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

$P_{u,t} = 107.17$	$\phi P_{n,t} = 243.75$	<b>Stress Rating</b>
$V_u = 1.33$	$\phi V_n = 149.1$	<b>41.9%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>

**Base Plate Summary**

Max Stress (ksi):	24.84	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	<b>52.6%</b>	<b>Pass</b>

# Pile Foundation

Checks the capacity of pile foundation configurations for monopoles or self-support towers with individual foundations in Rev. F, G, and H.



BU #:	876314
Site Name:	Horse Hill
Order:	553363 rev. 1

Tower Type:	Monopole
TIA Revision:	H

Top & Bot. Pad Rein. Different?:	<input type="checkbox"/>
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Factored Design Reactions At Base			
Moment, M:	1942.39	ft-kips	
Axial, Pu:	43.16	kips	
Shear, Sc:	21.32	kips	
Load Eccentricity, Ecc:	0	in	
Bolt Circle / Bearing Plate Width, BC:	53	in	

Pile Properties			
Pile Shape:	Round		
Pile Material:	Concrete		
Length of Pile, Lpile:	20	ft	
Pile Diameter:	2.0	in	
Pile (Soil) Capacity Given?	No		
Steel Grade, Fy:	70	ksi	
Pile Rebar Size, Psize:	14		
Rebar Quantity, Pquan:	1		

Pile Group			
Group Configuration:	Rectangular		
Number of Columns, Nx:	3		
Number of Rows, Ny:	3		
Column Spacing, Dx:	81	in	
Row Spacing, Dy:	81	in	
Orientation of Neutral Axis, θ:	0	deg	
Group Efficiency Given in Geotech?	No		

Program Calculated Group Efficiency, Eg: 1.00

Pile Cap			
Cap Type:	Block		
Depth to Bottom of Block, D:	3.50	ft	
Thickness of Block, T:	4.00	ft	
Block Width, Wx:	16.50	ft	
Block Length, Wy:	16.50	ft	
Pad Rebar Size (Bot.), Spad:	8		
Pad Rebar Quantity (X-direction) (Bot.), Mpad:	32		
Pad Rebar Quantity (Y-direction) (Bot.), Mpad <sub>y</sub> :	32		

Material Properties			
Rebar Grade, Fy:	60	ksi	
Concrete Strength, Fc:	3	ksi	
Clear Cover, cc:	3	in	

Soil Properties			
Groundwater Depth, GW:	99.00	ft	
Soil Unit Weight:	165	pcf	
Cohesion, Co:	0	ksf	
Friction Angle, φ:	30	deg	
Neglected Depth, ND:	3	ft	
Negative Friction Force (per pile), Sw:	0	kips	
SPT Blow Count, N <sub>60sw</sub> :	99		

Design Checks				
	Capacity	Demand	Rating*	Check
<b>PILE CHECKS</b>				
Soil Compression (kips per pile):	169.65	97.29	54.6%	Pass
Soil Uplift (kips per pile):	169.65	50.81	28.5%	Pass
Pile Tensile Strength (kips):	126.00	50.81	38.4%	Pass
<b>PAD CHECKS</b>				
One-Way Shear (kips):	707.63	131.73	17.7%	Pass
Pad Shear - Comp Two-Way (ksi):	0.164	0.003	1.6%	Pass
Flexural Two-Way (Comp) (kip*ft):	6977.86	0.00	0.0%	Pass
Pad Flexure (kip*ft):	4777.68	1146.49	22.9%	Pass

\*Rating per TIA-222-H Section 15.5

Structural Rating:	38.4%
Soil Rating:	54.6%

Ultimate Pile Capacities Based on Soil Properties								
						Skin Friction Given?		Yes
Depth (ft)		Cohesion	Friction Angle	Soil Weight	Blows per Foot (N)	Ult. Comp.	Ult. Uplift	
Top	Bottom	(ksf)	(deg)	(pcf)		(ksf)	(ksf)	
0	20	0	0	0	0	21.60	21.60	
20	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
0	0	0	0	0	0	0.00	0.00	
Ultimate End Bearing (ksf):						0.00	-	
Total Capacities (kips):						226.19	226.19	

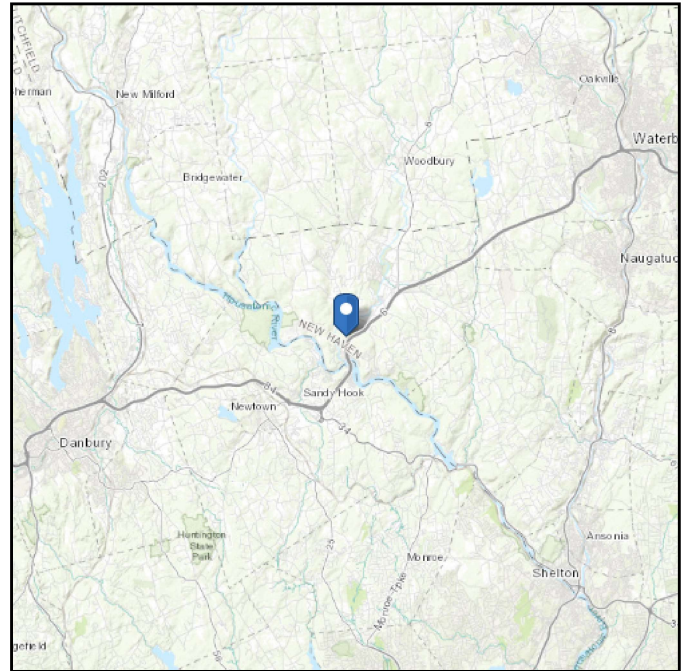
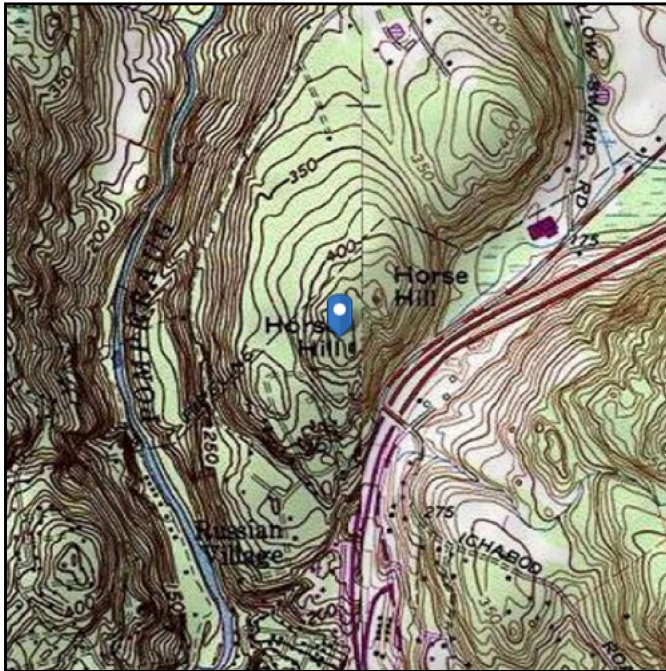


# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 445.14 ft (NAVD 88)  
**Latitude:** 41.452214  
**Longitude:** -73.250347



## Wind

### Results:

Wind Speed:	119 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	97 Vmph

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

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).

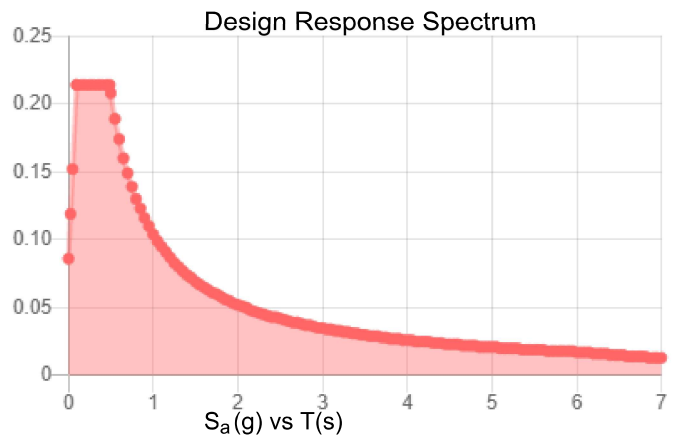
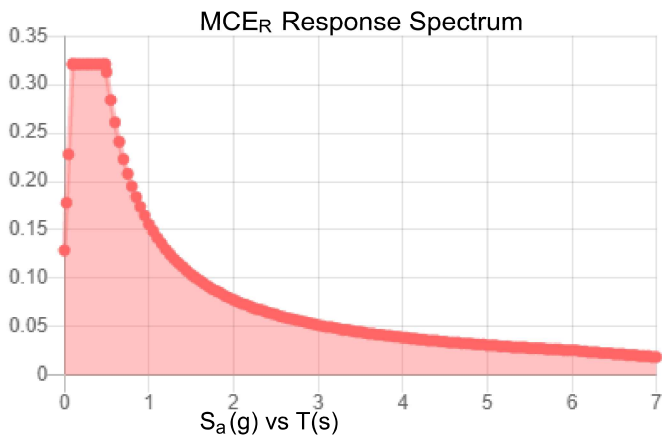
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_s$ :	0.201	$S_{DS}$ :	0.214
$S_1$ :	0.065	$S_{D1}$ :	0.104
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.107
$S_{MS}$ :	0.321	PGA <sub>M</sub> :	0.169
$S_{M1}$ :	0.156	$F_{PGA}$ :	1.587
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Tue Jun 08 2021

**Date Source:**

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

## Ice

---

**Results:**

Ice Thickness: 0.75 in.  
Concurrent Temperature: 15 F  
Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

**Date Accessed:** Tue Jun 08 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

---

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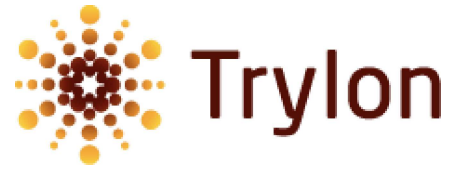
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# Exhibit E

## **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:** BOHVN00022A  
**Carrier Site Name:** CT-CCI-T-876314

**Crown Castle Designation:** **Crown Castle BU Number:** 876314  
**Crown Castle Site Name:** HORSE HILL  
**Crown Castle JDE Job Number:** 645172  
**Crown Castle Order Number:** 553363 Rev. 1

**Engineering Firm Designation:** **Trylon Report Designation:** 189035

**Site Data:** **214 Russian Village Road, Southbury, New Haven County, CT, 06488**  
**Latitude 41°27'7.97" Longitude -73°15'1.25"**

**Structure Information:** **Tower Height & Type:** **130.0 ft Monopole**  
**Mount Elevation:** **110.0 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.

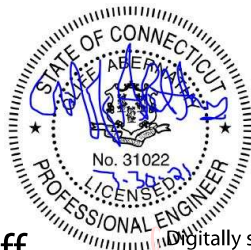
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

**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 120 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.



Cliff  
Abernathy  
Digitally signed by  
Cliff Abernathy  
Date: 2021.07.30  
16:18:24 -04'00'

## TABLE OF CONTENTS

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### 4) ANALYSIS RESULTS

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### 8) APPENDIX D

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### 9) APPENDIX E

Supplemental Drawings

## 1) INTRODUCTION

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

## 2) ANALYSIS CRITERIA

<b>Building Code:</b>	2015 IBC
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	120 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor at Base:</b>	1.0
<b>Topographic Factor at Mount:</b>	1.0
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic <math>S_s</math>:</b>	0.198
<b>Seismic <math>S_1</math>:</b>	0.065
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 - Proposed Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
110.0	110.0	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	553363 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. Tylon 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	110.0	24.8	Pass
	Horizontal(s)	H1		10.3	Pass
	Standoff(s)	M2		47.6	Pass
	Bracing(s)	M1		36.8	Pass
	Handrail(s)	M19		9.7	Pass
	Mount Connection(s)	-		16.9	Pass

<b>Structure Rating (max from all components) =</b>	<b>47.6%</b>
---	--------------

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**

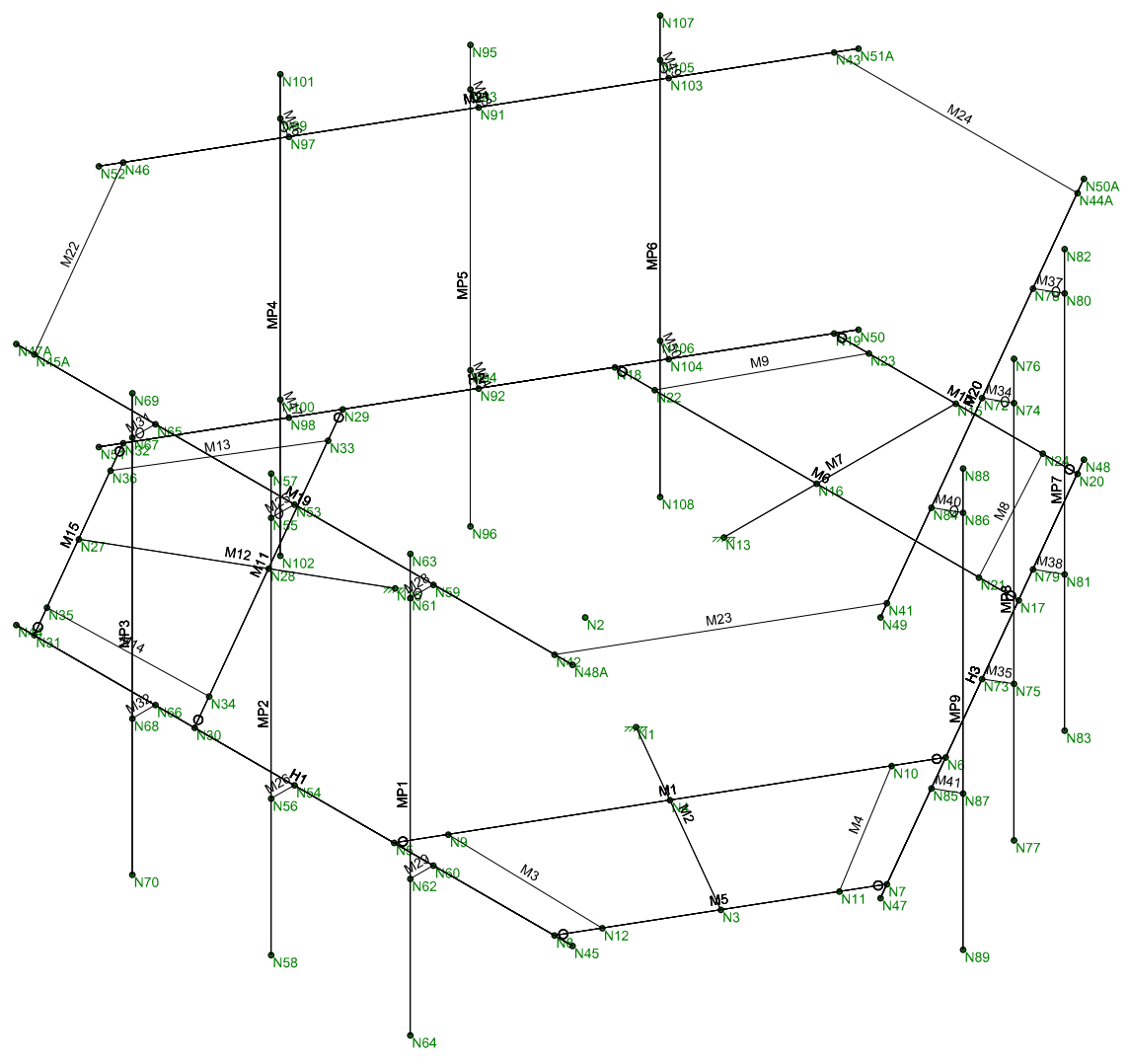
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

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



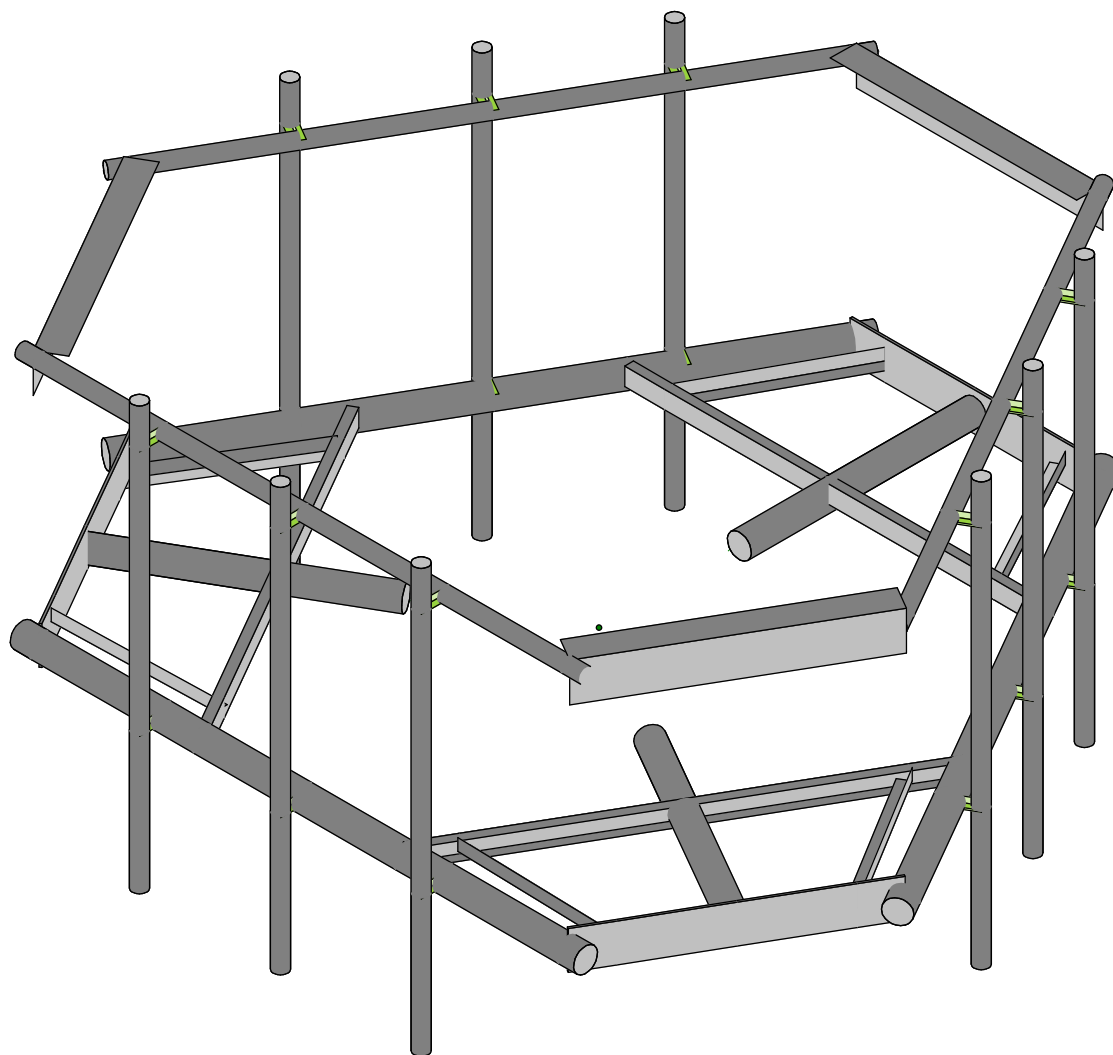
**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**



Trylon  
SMM  
189035

876314

Wireframe  
July 30, 2021 at 9:15 AM  
876314\_loaded.r3d



Trylon

SMM

189035

876314

Render

July 30, 2021 at 9:15 AM

876314\_loaded.r3d

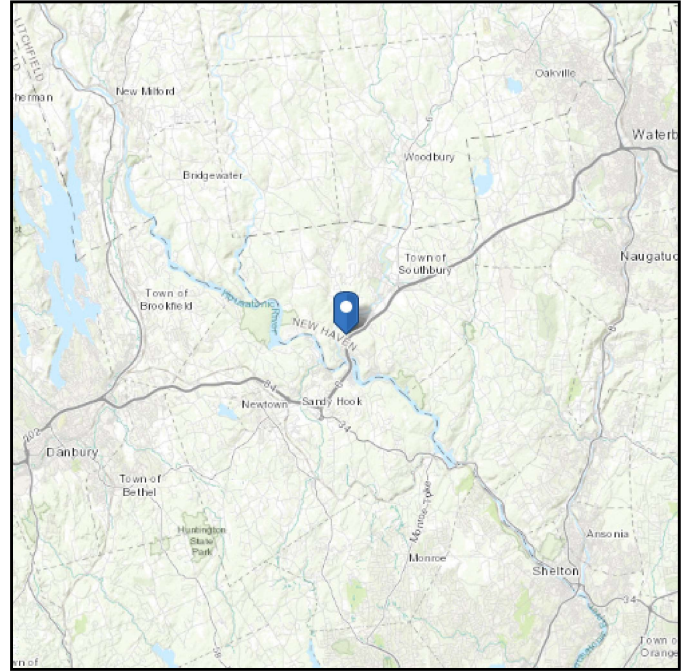
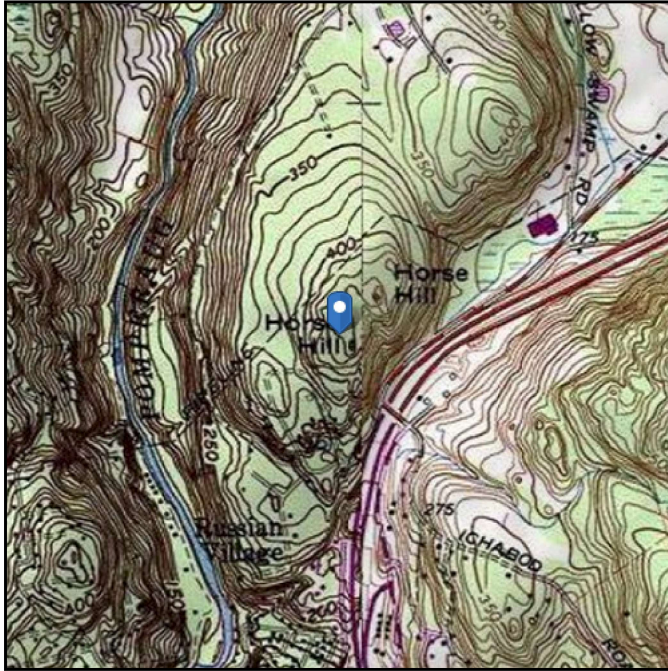
**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 445.14 ft (NAVD 88)  
**Latitude:** 41.452214  
**Longitude:** -73.250347



## Ice

### Results:

Ice Thickness: 0.75 in.  
Concurrent Temperature: 15 F  
Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

**Date Accessed:** 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.

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**CONNECTICUT DESIGN CRITERIA - STATE**

Revision: R-397 7/2/2021

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

**(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS**

Municipality	Ground Snow Load	MCE Spectral Accelerations (%g)		Wind Design Parameters				Wind-Borne Debris Regions <sup>1</sup>	Hurricane-Prone Regions			
		S <sub>s</sub>	S <sub>1</sub>	Ultimate Design Wind Speeds, V <sub>ult</sub> (mph)		Nominal Design Wind Speeds, V <sub>asd</sub> (mph)						
				Risk Cat. I	Risk Cat. II	Risk Cat III-IV	Risk Cat. I-III-IV					
Southbury	35	0.198	0.065	110	120	130	85	93	101	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	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:	189035
Carrier Site ID:	BU# 876314
Carrier Site Name:	HORSE HILL

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	110.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	130.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	445.14	ft.

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

WIND PARAMETERS		
Design Wind Speed:	120	mph
Wind Escalation Factor ( $K_s$ ):	1.00	--
Velocity Coefficient ( $K_z$ ):	1.02	--
Directionality Factor ( $K_d$ ):	0.95	--
Gust Effect Factor ( $G_h$ ):	1.00	--
Shielding Factor ( $K_a$ ):	0.90	--
Velocity Pressure ( $q_z$ ):	35.00	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness ( $t_i$ ):	1.50	in
Importance Factor ( $I_i$ ):	1.00	--
Ice Velocity Pressure ( $q_{zi}$ ):	35.00	psf
Mount Ice Thickness ( $t_{iz}$ ):	1.69	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	62.99	psf
Round Member Pressure:	37.80	psf
Ice Wind Pressure:	7.29	psf

SEISMIC PARAMETERS		
Importance Factor ( $I_e$ ):	1.00	--
Short Period Accel. ( $S_s$ ):	0.20	g
1 Second Accel. ( $S_1$ ):	0.07	g
Short Period Des. ( $S_{DS}$ ):	0.21	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 ( $C_s$ ):	0.11	--
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









**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)
RISAC Connection 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 ADM 1-10: 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
Parame 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 S S Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 S S 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



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### 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	8C U1.25X0..	Beam	None	A653 S S 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			-.127		13		
24	Seismic Load X	ELX	-.127				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		



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### 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

	Des cription	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..	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		



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**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...	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 .858		23	1	24								
67	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	.866	24	.5							
68	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	.707	24	.707							
69	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	.5	24	.866							
70	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23		24	1							
71	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.5	24	.866							
72	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.707	24	.707							
73	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.866	24	.5							
74	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-1	24								
75	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.866	24	-.5							
76	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.707	24	-.707							
77	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	-.5	24	-.866							
78	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23		24	-1							
79	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	.5	24	-.866							
80	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		23	.707	24	-.707							
81	(0.9-0.2Sds)DL + 1E...	Yes	Y		DL .858		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									



Company : Trylon  
 Designer : SMM  
 Job Number : 189035  
 Model Name : 876314

July 30, 2021  
 9:17 AM  
 Checked By: \_\_\_\_\_

**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...	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	.063	3		4	.063				
92	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.054	3	.031	5	.063				
93	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.044	3	.044	6	.063				
94	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.031	3	.054	7	.063				
95	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2		3	.063	8	.063				
96	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.031	3	.054	9	.063				
97	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.044	3	.044	10	.063				
98	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.054	3	.031	11	.063				
99	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.063	3		4	-.063				
100	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.054	3	-.031	5	-.063				
101	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.044	3	-.044	6	-.063				
102	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	-.031	3	-.054	7	-.063				
103	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2		3	-.063	8	-.063				
104	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.031	3	-.054	9	-.063				
105	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.044	3	-.044	10	-.063				
106	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	34	1.5	2	.054	3	-.031	11	-.063				
107	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.063	3		4	.063				
108	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.054	3	.031	5	.063				
109	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.044	3	.044	6	.063				
110	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.031	3	.054	7	.063				
111	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2		3	.063	8	.063				
112	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.031	3	.054	9	.063				
113	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.044	3	.044	10	.063				
114	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.054	3	.031	11	.063				
115	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.063	3		4	-.063				
116	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.054	3	-.031	5	-.063				
117	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.044	3	-.044	6	-.063				
118	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	-.031	3	-.054	7	-.063				
119	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2		3	-.063	8	-.063				
120	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.031	3	-.054	9	-.063				
121	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.044	3	-.044	10	-.063				
122	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	35	1.5	2	.054	3	-.031	11	-.063				
123	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.063	3		4	.063				
124	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.054	3	.031	5	.063				
125	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.044	3	.044	6	.063				
126	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.031	3	.054	7	.063				
127	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2		3	.063	8	.063				
128	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.031	3	.054	9	.063				
129	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.044	3	.044	10	.063				
130	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.054	3	.031	11	.063				
131	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.063	3		4	-.063				
132	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.054	3	-.031	5	-.063				
133	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.044	3	-.044	6	-.063				
134	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	-.031	3	-.054	7	-.063				
135	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2		3	-.063	8	-.063				
136	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.031	3	-.054	9	-.063				
137	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.044	3	-.044	10	-.063				
138	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	36	1.5	2	.054	3	-.031	11	-.063				
139	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.063	3		4	.063				
140	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.054	3	.031	5	.063				



Company : Trylon  
 Designer : SMM  
 Job Number : 189035  
 Model Name : 876314

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 Checked By: \_\_\_\_\_

**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...	BLC Fac...	BLC Fac...
141	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.044	3	.044	6	.063				
142	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.031	3	.054	7	.063				
143	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2		3	.063	8	.063				
144	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.031	3	.054	9	.063				
145	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.044	3	.044	10	.063				
146	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.054	3	.031	11	.063				
147	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.063	3		4	-.063				
148	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.054	3	-.031	5	-.063				
149	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.044	3	-.044	6	-.063				
150	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	-.031	3	-.054	7	-.063				
151	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2		3	-.063	8	-.063				
152	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.031	3	-.054	9	-.063				
153	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.044	3	-.044	10	-.063				
154	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	37	1.5	2	.054	3	-.031	11	-.063				
155	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.063	3		4	.063				
156	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.054	3	.031	5	.063				
157	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.044	3	.044	6	.063				
158	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.031	3	.054	7	.063				
159	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2		3	.063	8	.063				
160	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.031	3	.054	9	.063				
161	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.044	3	.044	10	.063				
162	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.054	3	.031	11	.063				
163	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.063	3		4	-.063				
164	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.054	3	-.031	5	-.063				
165	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.044	3	-.044	6	-.063				
166	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	-.031	3	-.054	7	-.063				
167	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2		3	-.063	8	-.063				
168	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.031	3	-.054	9	-.063				
169	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.044	3	-.044	10	-.063				
170	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	38	1.5	2	.054	3	-.031	11	-.063				
171	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.063	3		4	.063				
172	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.054	3	.031	5	.063				
173	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.044	3	.044	6	.063				
174	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.031	3	.054	7	.063				
175	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2		3	.063	8	.063				
176	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.031	3	.054	9	.063				
177	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.044	3	.044	10	.063				
178	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.054	3	.031	11	.063				
179	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.063	3		4	-.063				
180	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.054	3	-.031	5	-.063				
181	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.044	3	-.044	6	-.063				
182	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	-.031	3	-.054	7	-.063				
183	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2		3	-.063	8	-.063				
184	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.031	3	-.054	9	-.063				
185	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.044	3	-.044	10	-.063				
186	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	39	1.5	2	.054	3	-.031	11	-.063				
187	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.063	3		4	.063				
188	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.054	3	.031	5	.063				
189	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.044	3	.044	6	.063				
190	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.031	3	.054	7	.063				
191	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2		3	.063	8	.063				
192	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-.031	3	.054	9	.063				





Company : Trylon  
 Designer : SMM  
 Job Number : 189035  
 Model Name : 876314

July 30, 2021  
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**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...	BLC Fac...	BLC Fac...
193	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.44	3	.044	10	.063				
194	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.54	3	.031	11	.063				
195	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.63	3		4	-0.63				
196	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.54	3	-0.31	5	-0.63				
197	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.44	3	-0.44	6	-0.63				
198	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	-0.31	3	-0.54	7	-0.63				
199	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2		3	-0.63	8	-0.63				
200	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.031	3	-0.54	9	-0.63				
201	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.044	3	-0.44	10	-0.63				
202	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	40	1.5	2	.054	3	-0.31	11	-0.63				
203	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.063	3		4	.063				
204	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.054	3	.031	5	.063				
205	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.044	3	.044	6	.063				
206	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.031	3	.054	7	.063				
207	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2		3	.063	8	.063				
208	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.31	3	.054	9	.063				
209	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.44	3	.044	10	.063				
210	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.54	3	.031	11	.063				
211	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.63	3		4	-0.63				
212	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.54	3	-0.31	5	-0.63				
213	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.44	3	-0.44	6	-0.63				
214	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	-0.31	3	-0.54	7	-0.63				
215	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2		3	-0.63	8	-0.63				
216	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.031	3	-0.54	9	-0.63				
217	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.044	3	-0.44	10	-0.63				
218	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	41	1.5	2	.054	3	-0.31	11	-0.63				
219	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.063	3		4	.063				
220	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.054	3	.031	5	.063				
221	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.044	3	.044	6	.063				
222	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.031	3	.054	7	.063				
223	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2		3	.063	8	.063				
224	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.31	3	.054	9	.063				
225	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.44	3	.044	10	.063				
226	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.54	3	.031	11	.063				
227	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.63	3		4	-0.63				
228	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.54	3	-0.31	5	-0.63				
229	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.44	3	-0.44	6	-0.63				
230	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	-0.31	3	-0.54	7	-0.63				
231	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2		3	-0.63	8	-0.63				
232	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.031	3	-0.54	9	-0.63				
233	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.044	3	-0.44	10	-0.63				
234	1.2DL + 1.5Lm + 1...	Yes	Y		DL 1.2	42	1.5	2	.054	3	-0.31	11	-0.63				

**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	786.999	20	1846.52	39	1184.537	3	58.42	33	1405.636	19	-145.092	31
2		min	-791.091	12	164.981	31	-1179.256	27	-1936.191	130	-1409.039	11	-3381.27	39
3	N1	max	702.523	8	1897.177	45	1242.962	17	22.173	19	1434.525	25	3308.222	45
4		min	-695.621	32	174.452	21	-1241.089	25	-2256.916	43	-1439.273	17	148.607	21
5	N13	max	1207.072	22	1802.308	34	315.755	18	3751.396	34	1183.369	30	744.452	167



Company : Trylon  
 Designer : SMM  
 Job Number : 189035  
 Model Name : 876314

July 30, 2021  
 9:17 AM  
 Checked By: \_\_\_\_\_

**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	-1209.704	14	137.506	26	-323.007	10	91.277	26	-1186.503	6	-609.362	223
7	Totals:	max	2278.368	22	5291.226	42	2437.409	18						
8		min	-2278.368	30	1340.792	66	-2437.411	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	.500	40	45	.162	40	1..75262...	78750	7953.75	7953.75	2...H1-1b	
2	M12	PIPE_3.5	.483	40	39	.156	40	2..75262...	78750	7953.75	7953.75	2...H1-1b	
3	M7	PIPE_3.5	.472	40	34	.158	40	1..75262...	78750	7953.75	7953.75	2...H1-1b	
4	M1	C3X5	.386	34.856	45	.135	63....	y 40	11202...	47628	981.263	4 104	1...H1-1b
5	M11	C3X5	.376	34.856	40	.133	63....	y 35	11202...	47628	981.263	4 104	1...H1-1b
6	M6	C3X5	.367	34.856	34	.128	63....	y 45	37027...	47628	981.263	4020.2...	1 H1-1b
7	MP1	PIPE_2.0	.260	48	17	.036	48	17	20866...	32130	1871.6...	1871.6...	1...H1-1b
8	MP4	PIPE_2.0	.245	48	11	.037	48	11	20866...	32130	1871.6...	1871.6...	2...H1-1b
9	MP7	PIPE_2.0	.227	48	10	.028	48	9	20866...	32130	1871.6...	1871.6...	1...H1-1b
10	MP3	PIPE_2.0	.225	48	5	.024	48	10	20866...	32130	1871.6...	1871.6...	2...H1-1b
11	MP9	PIPE_2.0	.224	48	10	.021	48	3	20866...	32130	1871.6...	1871.6...	1...H1-1b
12	MP8	PIPE_2.0	.219	48	10	.028	48	10	20866...	32130	1871.6...	1871.6...	1...H1-1b
13	MP2	PIPE_2.0	.218	48	5	.033	48	9	20866...	32130	1871.6...	1871.6...	2...H1-1b
14	MP5	PIPE_2.0	.200	48	16	.032	48	3	20866...	32130	1871.6...	1871.6...	2...H1-1b
15	MP6	PIPE_2.0	.195	48	15	.022	48	9	20866...	32130	1871.6...	1871.6...	2...H1-1b
16	M10	6.5"x0.37...	.190	21	2	.091	21	y 48	3513.8...	75757.5	583.963	6425.8...	1...H1-1b
17	M15	6.5"x0.37...	.189	21	7	.093	21	y 37	3513.8...	75757.5	583.963	6383.3...	1...H1-1b
18	M5	6.5"x0.37...	.186	21	12	.097	21	y 42	3513.8...	75757.5	583.963	6658.1...	1...H1-1b
19	M13	L2x2x3	.146	0	14	.026	0	z 43	18051...	23392.8	557.717	1239.29	2...H2-1
20	M3	L2x2x3	.141	0	3	.027	0	z 49	18051...	23392.8	557.717	1239.29	2...H2-1
21	M8	L2x2x3	.126	0	9	.026	0	z 38	18051...	23392.8	557.717	1239.29	2...H2-1
22	M4	L2x2x3	.109	0	13	.029	0	y 41	18051...	23392.8	557.717	1239.29	2...H2-1
23	H1	PIPE_3.5	.108	72	121	.073	24	10	60666...	78750	7953.75	7953.75	1...H1-1b
24	H2	PIPE_3.5	.105	72	211	.064	24	5	60666...	78750	7953.75	7953.75	1...H1-1b
25	H3	PIPE_3.5	.105	72	158	.070	24	16	60666...	78750	7953.75	7953.75	1...H1-1b
26	M19	PIPE_2.0	.102	24	11	.090	72	2	14916...	32130	1871.6...	1871.6...	1...H1-1b
27	M20	PIPE_2.0	.102	24	16	.085	72	8	14916...	32130	1871.6...	1871.6...	1...H1-1b
28	M22	L6 5/8x4 ...	.101	0	21	.020	42	z 4	15453...	66065...	1040.5...	3031.0...	2...H2-1
29	M9	L2x2x3	.097	0	2	.027	0	y 46	18051...	23392.8	557.717	1239.29	2...H2-1
30	M21	PIPE_2.0	.094	24	5	.085	72	13	14916...	32130	1871.6...	1871.6...	1...H1-1b
31	M23	L6 5/8x4 ...	.094	0	26	.020	42	y 17	15453...	66065...	1040.5...	3031.0...	1...H2-1
32	M14	L2x2x3	.089	0	7	.028	0	y 35	18051...	23392.8	557.717	1239.29	2...H2-1
33	M24	L6 5/8x4 ...	.080	5.688	33	.018	42	y 6	15453...	66065...	1040.5...	3031.0...	1...H2-1

**Envelope AISI 100-16: LRFD Cold Formed Steel Code Checks**

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



**APPENDIX D**  
**ADDITIONAL CALCUATIONS**

**BOLT TOOL 1.5.2**

Project Data	
Job Code:	189035
Carrier Site ID:	BU# 876314
Carrier Site Name:	HORSE HILL

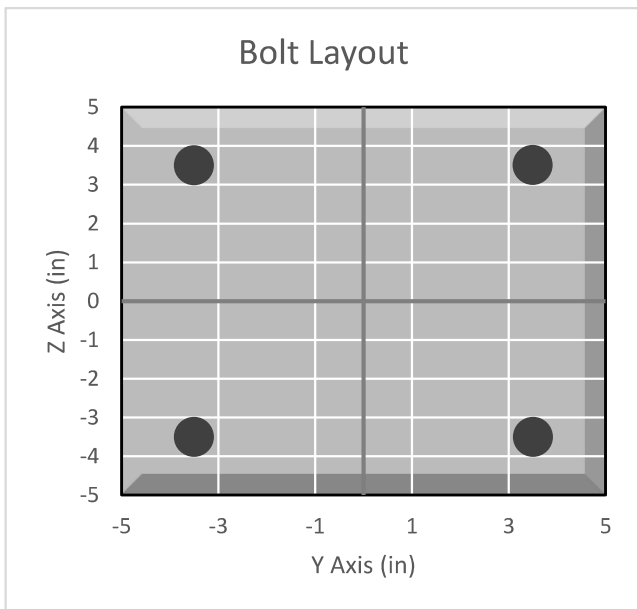
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

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 ( $\phi T_n$ ):	20340.1	lbs
Shear Capacity ( $\phi V_n$ ):	13805.8	lbs
Tension Force ( $T_u$ ):	3615.3	lbs
Shear Force ( $V_u$ ):	663.2	lbs
Tension Usage:	16.9%	--
Shear Usage:	4.6%	--
Interaction:	16.9%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

\*Rating per TIA-222-H Section 15.5

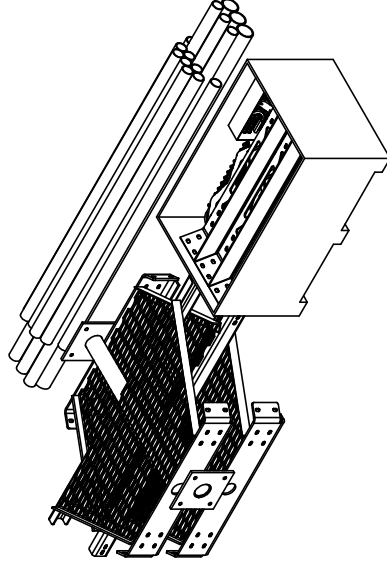


**APPENDIX E**  
**SUPPLEMENTAL DRAWINGS**

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	



# FOR BOM ENTRY ONLY



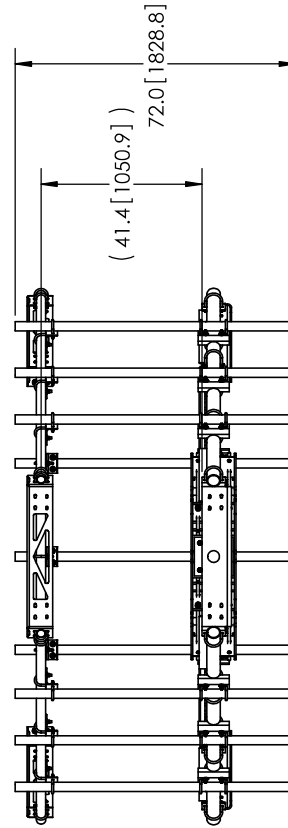
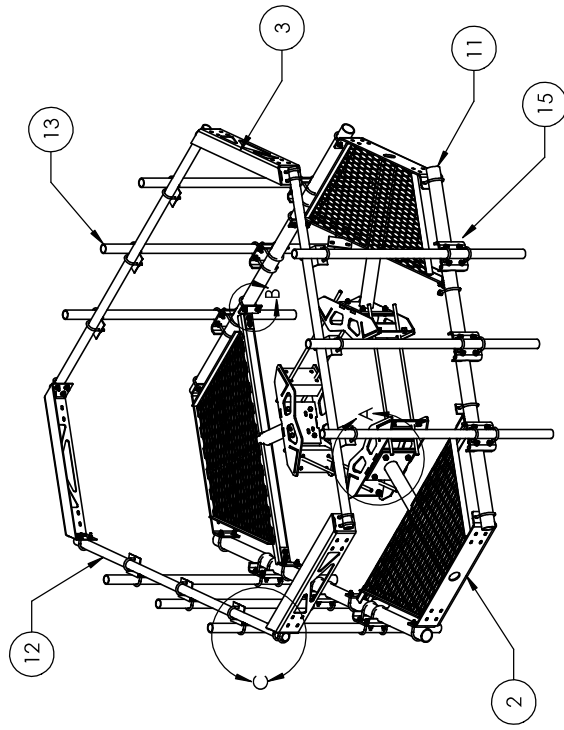
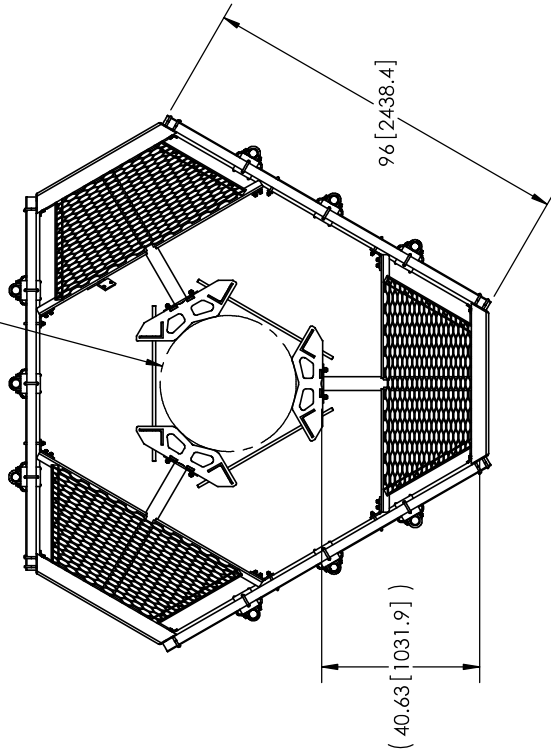
REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT. ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

<p>These drawings are specifications for the assembly property of Andrew Corporation and may be used only for the specific application intended in writing by Andrew Corporation.</p> <p>ALL DIMENSIONS ARE IN INCHES UNLESS TOLERANCES UNLESS OTHERWISE SPECIFIED:  X = ± .12 ANGLES ±Z  XX = ± .06 FRACTIONS ±1/32  XXX = ± .03  REMOVE BURRS AND BREAK EDGES 0.05</p> <p>DO NOT SCALE THIS PRINT</p>		<p>REV. BY</p> <p>MSM TP</p> <p>DATE 10/18/11</p> <p>REGION C</p>	<p>REV. BY</p> <p>1 of 3</p> <p>NTS</p> <p>A36, A500</p> <p>GALV. A123</p> <p>1410.14 LBS</p>	<p>REV. BY</p> <p>MC-PK8-C</p> <p>LOW PROFILE PLATFORM KIT 8' FACE</p> <p>ASSEMBLY DRAWING</p>
---	--	---	---	--

NOTES:  
1. CUSTOMER ASSEMBLY SHEETS 2-3.



$\phi$  38 [965.2]  
15 [381.0]



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

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
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	MT1195801	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	GW-F-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	MT154796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	$\phi$ 2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT119617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

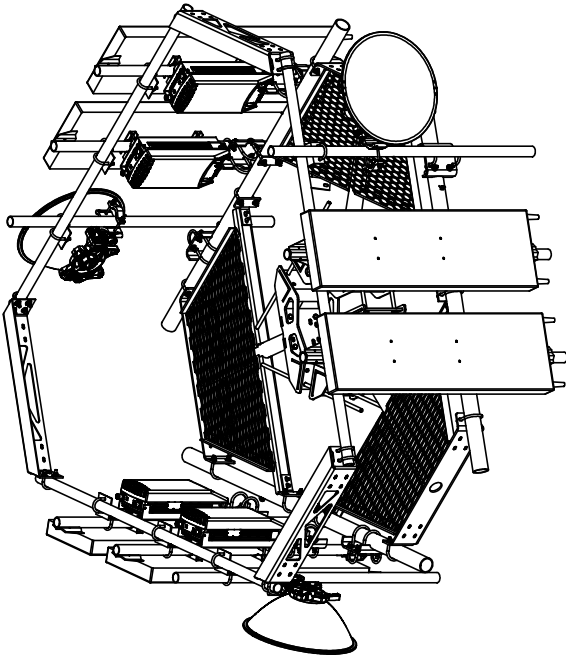
These drawings are the property of Andrew Corporation and may be used only for the specific application intended in writing by Andrew Corporation.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED:  
 X = ± .12  
 ANGLES 4Z  
 XX = ± .06  
 FRACTIONS ±.732  
 XXX = ± .03  
 REMOVE BURRS AND BREAK EDGES (D5)

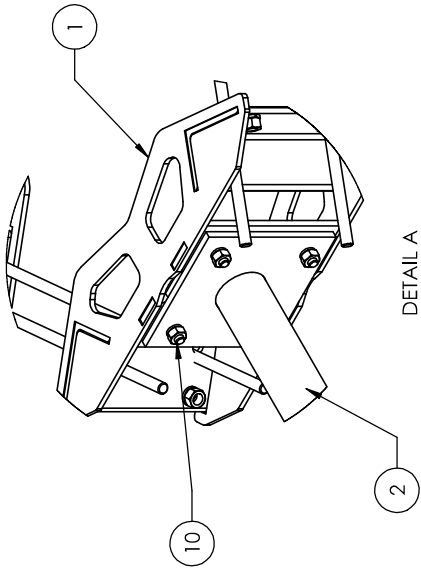
DO NOT SCALE THIS PRINT

REV. NO.	MSM	DATE	2 of 3	REV. NO.	MC-PK8-C
DATE	NTS	DATE	25" OD Snub Nose MT-196	DATE	ASSEMBLY DRAWING
REV. NO.	A36, A53	REV. NO.	GALV A123	REV. NO.	136127 LBS

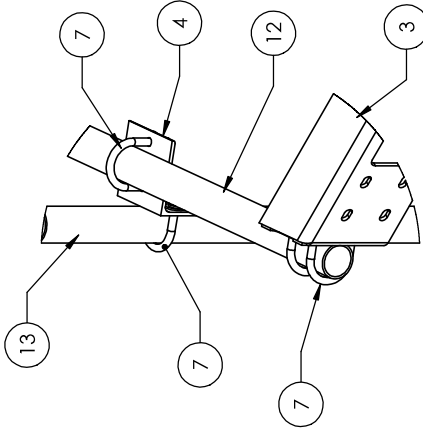
WESTCHESTER, IL. 60154  
**ANDREW**®  
 U.S.A.



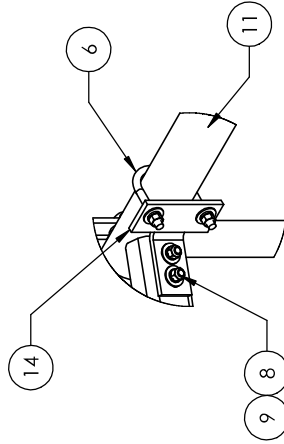
# WITH ANTENNAS



DETAIL A  
SCALE 1 : 8



DETAIL C  
SCALE 1 : 8



DETAIL B  
SCALE 1 : 8

<p>These drawings are specifications on the proprietary property of Andrew Corporation and may be used only for the specific product in which they are used.</p>		<p>DATE: 10/18/11</p>	<p>REV: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED:</p>	<p>ANGLES: ±Z</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>X = ± .12</p>	<p>ANGLES: ±Z</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>XX = ± .06</p>	<p>FRACTIONS: ±1/32</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>XXX = ± .03</p>	<p>FRACTIONS: ±1/32</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>REMOVE BURRS AND BREAK EDGES: D05</p>	<p>FRACTIONS: ±1/32</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>
<p>DO NOT SCALE THIS PRINT</p>	<p>FRACTIONS: ±1/32</p>	<p>REGIONS: GALV. A123</p>	<p>REVISION: C</p>	<p>QUANTITY: 3 of 3</p>	<p>PROJECT: 25" OD Sub. Nose W1-196</p>	<p>MODEL: MC-PK8-C</p>

NOTES:  
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

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# Exhibit F

## **Power Density/RF Emissions Report**

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

Dish Wireless Existing Facility

Site ID: BOHVN00022A

876314

214 Russian Village Road  
Southbury, Connecticut 06488

**October 26, 2021**

**EBI Project Number: 6221006489**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>16.79%</b>



October 26, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00022A - 876314

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **214 Russian Village Road in Southbury, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 214 Russian Village Road in Southbury, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 110 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

## Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	110 feet	Height (AGL):	110 feet	Height (AGL):	110 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna AI MPE %:	<b>2.19%</b>	Antenna BI MPE %:	<b>2.19%</b>	Antenna CI MPE %:	<b>2.19%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	2.19%
Metro PCS	0.96%
Sprint	4.09%
T-Mobile	5.9%
AT&T	3.65%
<b>Site Total MPE % :</b>	<b>16.79%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	2.19%
Dish Wireless Sector B Total:	2.19%
Dish Wireless Sector C Total:	2.19%
<b>Site Total MPE % :</b>	<b>16.79%</b>

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 ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	110.0	2.97	600 MHz n71	400	0.74%
Dish Wireless 1900 MHz n70	4	542.70	110.0	7.22	1900 MHz n70	1000	0.72%
Dish Wireless 2190 MHz n66	4	542.70	110.0	7.22	2190 MHz n66	1000	0.72%
<b>Total:</b>							<b>2.19%</b>

• 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:	2.19%
Sector B:	2.19%
Sector C:	2.19%
Dish Wireless Maximum MPE % (Sector A):	2.19%
Site Total:	16.79%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **16.79%** 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**

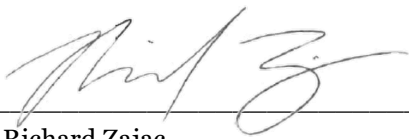
Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

**Re: Tower Share Application**  
**Crown Castle telecommunications site at:**  
**214 RUSSIAN VILLAGE RD, SOUTHURY, CT 06488**

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

**Crown Site ID/Name: 876314/HORSE HILL**  
**Customer Site ID: BOHVN00022A/CT-CCI-T-876314**  
**Site Address: 214 Russian Village Rd, Southbury, CT 06488**


Crown Castle

By:  \_\_\_\_\_ Date: 10/26/2021  
Richard Zajac  
Site Acquisition Specialist



# Exhibit H

## Recipient Mailings



**UNITED STATES  
POSTAL SERVICE®**

**Click-N-Ship®**

**P**

usps.com 9405 5036 9930 0046 3044 13 0087 0000 0031 4586  
**US POSTAGE**  
 Flat Rate Envoy

**U.S. POSTAGE PAID**  
Click-N-Ship®

10/28/2021 Mailed from 01566

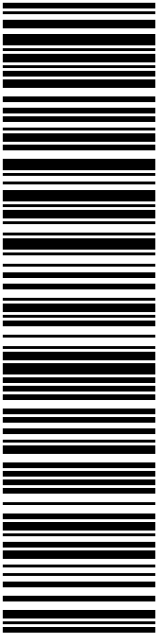
**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 11/01/21  
 Re#: DS-876314  
**0006**

**R013**

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

**USPS TRACKING #**



**9405 5036 9930 0046 3044 13**

Electronic Rate Approved #038555749



Cut on dotted line.

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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 0046 3044 13**

Trans. #: 547062451	Priority Mail® Postage: <b>\$8.70</b>
Print Date: 10/28/2021	Total: <b>\$8.70</b>
Ship Date: 10/28/2021	
Expected Delivery Date: 11/01/2021	

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

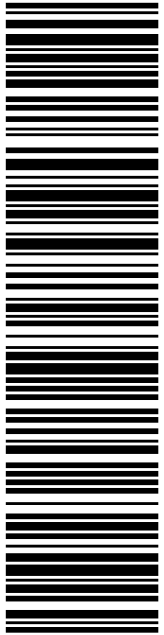
Re#: DS-876314

**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.



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**USPS TRACKING #**

**9405 5036 9930 0046 3044 20**

Electronic Rate Approved #038555749

**P**

10/28/2021

**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 11/01/21  
Re#: DS-876314  
**0006**

**C008**


**SHIP**

TO: JEFF MANVILLE  
FIRST SELECTMAN-SOUTHBURY  
501 MAIN ST S  
SOUTHBURY CT 06488-4217

USPS.com 9405 5036 9930 0046 3044 20 0087 0000 0010 6488  
**US POSTAGE**  
Flat Rate Envoy

**U.S. POSTAGE PAID**  
Click-N-Ship®

Mailed from 01566



**Click-N-Ship®**



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### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0046 3044 20**

Trans. #: 547062451	Priority Mail® Postage: <b>\$8.70</b>
Print Date: 10/28/2021	Total: <b>\$8.70</b>
Ship Date: 10/28/2021	
Expected Delivery Date: 11/01/2021	

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

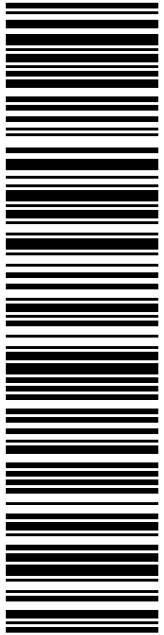
Re#: DS-876314

**To:** JEFF MANVILLE  
FIRST SELECTMAN-SOUTHBURY  
501 MAIN ST S  
SOUTHBURY CT 06488-4217

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**USPS TRACKING #**

**9405 5036 9930 0046 3044 44**

Electronic Rate Approved #038555749

**SHIP**

TO: KATHY CASTAGNETTA  
AICP, LAND USE ADMINISTRATOR  
501 MAIN ST S  
SOUTHURY CT 06488-4217

**P**

**PRIORITY MAIL 2-DAY™**

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

Expected Delivery Date: 11/01/21  
Re#: DS-876314  
**0006**

**C008**

**UNITED STATES POSTAL SERVICE®**

**Click-N-Ship®**

**U.S. POSTAGE PAID**

Flat Rate Env  
usps.com 9405 5036 9930 0046 3044 44 0087 0000 0010 6488  
\$8.70  
US POSTAGE

Mailed from 01566  
10/28/2021



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### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0046 3044 44**

Trans. #: 547062451	Priority Mail® Postage: <b>\$8.70</b>
Print Date: 10/28/2021	Total: <b>\$8.70</b>
Ship Date: 10/28/2021	
Expected Delivery Date: 11/01/2021	

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



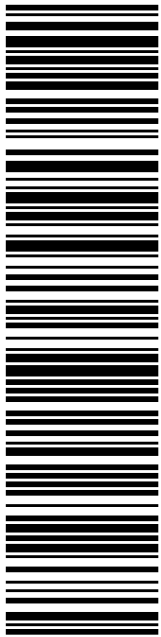
Re#: DS-876314

**To:** KATHY CASTAGNETTA  
AICP, LAND USE ADMINISTRATOR  
501 MAIN ST S  
SOUTHURY CT 06488-4217

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 <b>UNITED STATES POSTAL SERVICE®</b> <b>Click-N-Ship®</b>	
	<small>usps.com</small> <b>US POSTAGE</b> <small>Flat Rate Env</small> <b>U.S. POSTAGE PAID</b> <small>click-n-ship®</small>
<small>usps.com</small> 9405 5036 9930 0046 3044 51 0087 0000 0010 6488	10/28/2021 Mailed from 01566
<b>PRIORITY MAIL 2-DAY™</b> Expected Delivery Date: 11/01/21 Re#: DS-876314 <b>0006</b>	
SHIP TO: <b>MIEKE AND THOMAS CRIDER</b> 100 RUSSIAN VILLAGE RD SOUTHBRURY CT 06488-2111	
<b>USPS TRACKING #</b>  <b>9405 5036 9930 0046 3044 51</b>	
Electronic Rate Approved #038555749	



Cut on dotted line.

### Instructions

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- 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.
- Mail your package on the "Ship Date" you selected when creating this label.

### Click-N-Ship® Label Record

<b>USPS TRACKING # :</b> <b>9405 5036 9930 0046 3044 51</b>	
Trans. #: 547062451 Print Date: 10/28/2021 Ship Date: 10/28/2021 Expected Delivery Date: 11/01/2021	Priority Mail® Postage: <b>\$8.70</b> Total: <b>\$8.70</b>
<b>From:</b> DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Re#: DS-876314
<b>To:</b> MIEKE AND THOMAS CRIDER 100 RUSSIAN VILLAGE RD SOUTHBRURY CT 06488-2111	
<small>* 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.</small>	



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876314



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

10/29/2021

02:26 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.10 oz			
Acceptance Date:			
Fri 10/29/2021			
Tracking #:			
9405 5036 9930 0046 3044 13			

Prepaid Mail	1		\$0.00
Southbury, CT 06488			
Weight: 0 lb 14.90 oz			
Acceptance Date:			
Fri 10/29/2021			
Tracking #:			
9405 5036 9930 0046 3044 20			

Prepaid Mail	1		\$0.00
Southbury, CT 06488			
Weight: 0 lb 14.80 oz			
Acceptance Date:			
Fri 10/29/2021			
Tracking #:			
9405 5036 9930 0046 3			

Prepaid Mail	1		\$0.00
Southbury, CT 06488			
Weight: 0 lb 14.80 oz			
Acceptance Date:			
Fri 10/29/2021			
Tracking #:			
9405 5036 9930 0			

Grand Total:

\*\*\*\*\*  
-del\*\*\*\*\*  
-101-2